U.S.
OFFICIAL GAZETTE
UNITED STATES
PATENT OFFICE
VOL. 900

JULY
1972

MICRO PHOTO DIVISION

BELL & HOWELL

S W

OFFICIAL GAZETTE of the UNITED STATES PATENT OFFICE

July 4, 1972 Volume 900 Number 1

CONTENTS

	Page
Patents and Trademark Notices	
Board of Appeals Decisions Rendered in the Month of May 1972	2
Trademarks—Proposed Adoption of International Classification	2
Patent Suits	3
Patent Notices	
Certificates of Correction for the Week of July 4, 1972	5
Service by Publication	5
Adverse Decisions in Interferences	5
Condition of Patent Applications	6
Reissue Patents Granted	7
Plant Patents Granted	10
Patents Granted	
General and Mechanical	11
Chemical	213
Electrical	300
Design Patents Granted	391
Index of Patentees	PI 1
Indices of Reissues, Plants, and Designs	PI 50
Classification of	
Patents (Including Reissues)	PI 53
Designs and Plants	PI 56
Geographical Index of Residence of Inventors	
Patents (Including Reissues)	PI 57
Designs and Plants	PI 59

The following are mailed under direction of the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402, to whom all subscriptions should be made payable and all communications addressed:

THE OFFICIAL GAZETTE (PATENTS SECTION), issued weekly, subscription $89.00 per annum, foreign mailing $22.25 additional; single copies $2.00 each.

THE OFFICIAL GAZETTE (TRADEMARK SECTION), issued weekly, subscription $17.00 per annum, foreign mailing $4.25 additional; single copies 40 cents each.

CIRCULARS OF GENERAL INFORMATION concerning PATENTS or TRADEMARKS, price 15 cents each.

PRINTED COPIES OF PATENTS are furnished by the Patent Office at 50 cents each; PLANT PATENTS in color, $1.00 each; copies of TRADEMARKS and DESIGN PATENTS at 20 cents each. Address orders to the Commissioner of Patents, Washington, D.C., 20231.

Printing authorized by Section 11(a)3 of Title 35, U.S. Code P.O.

PATENT OFFICE NOTICES

Board of Appeals Decisions Rendered in the Month of May 1972

Examiner affirmed	166
Examiner affirmed in part	10
Examiner reversed	24
Total	200

Trademarks—Proposed Adoption of International Classification

On March 29, 1972, the Patent Office published a notice of proposed rule making in the Federal Register at 37 F.R. 6404. That notice proposed to amend Rule 6.1 of the Trademark Rules of Practice. A public hearing on the proposed amendment was held on June 14, 1972 in Arlington, Virginia, and interested persons were given the opportunity to submit comments regarding the proposed amendment until that date. It has come to our attention that the Federal Register notice never appeared in the OFFICIAL GAZETTE.

In order to insure that all interested persons have had an opportunity to comment, the date for written comments is hereby extended to August 18, 1972.

The notice as it appeared in the Federal Register is reproduced below.

ROBERT GOTTSCHALK,
Commissioner of Patents.

Date: June 9, 1972.

Proposed Rule Making

CLASSIFICATION OF GOODS AND SERVICES

[37 CFR Part 6]

International Schedule

The Patent Office proposes to establish the "International Classification of Goods and Services to Which Trademarks Are Applied" (the subject of the "Nice Agreement Concerning the International Classification of Goods and Services for the Purposes of the Registration of Marks" of 1957 as revised at Stockholm, on July 14, 1967) as the primary classification of goods and services for registration of trademarks and service marks.

The Patent Office has studied the International Classification and, since March 5, 1968, has indicated the appropriate international class in all publications and on all issued registrations and renewals, as a subsidiary classification. Based on this experience, it is now believed that adoption of the international schedule as the primary classification is desirable. The international schedule is in use in more than 60 countries and is the subject of the aforementioned Nice Agreement to which the United States has recently become a party. The Nice Agreement provides for an International Committee of Experts whose task is to keep the classification current. The classification of specific goods and services is set forth in an alphabetical list entitled "International Classification of Goods and Services to Which Trademarks Are Applied" (published by the World Intellectual Property Organization). This listing is currently used by the office as a guideline for determining the degree of particularity of identification of goods. See "Identification of Goods and Services in Trademark Applications," 893 O.G. 390, TM 54.

Specifically it is proposed that all applications for registration of marks and renewals of registrations having a filing date later than September 30, 1972, be classified according to the International Classification for all administrative purposes set forth in the Trademark Act. Accordingly, the international classification would be the sole criteria for determining fees and classification of goods and services. Applications and renewals which are pending at the close of business on September 30, 1972, would continue to be processed under the present classification system. However, the Office would continue to mark all such published applications and registrations with the appropriate international class as a subsidiary classification as it has been doing for several years.

It is not proposed that the existing documents in the Trademark Search Room be reclassified. The U.S. classification system would continue to be used for purposes of searching registered and pending marks until such time as a complete conversion of the Trademark Search Room file to the international classification system is effected. Until such conversion is made, the U.S. class number would continue to be printed on all registrations in addition to the international class number so that searches can be made on the basis of the existing U.S. system. It should be noted that approximately 53 percent of these documents are indexed alphabetically, without regard to class. The remaining 47 percent of the files are organized under approximately 50 headings (e.g., common prefixes such as SAN, GOLD, etc. and numerals, letters, design features, etc.) and under each, the documents are filed by class. This portion of the search file would be maintained as at present, i.e. classified according to the present schedule of classes. Until such time as all documents in the search room include the international classification, the documents organized by class would continue to be filed according to the present U.S. classification.

For an interim period (i.e., until all marks pending as of September 30, 1972, have been disposed of) the trademark sections of the OFFICIAL GAZETTE which are organized by class would include two parts, one part for applications published or marks issued on the basis of applications filed prior to October 1, 1972, organized by class according to the existing schedule of classes; the other for applications published or marks issued on the basis of applications filed after September 30, 1972, organized by class according to the new international schedule. All publications of applications will show both the U.S. and the international class number.

None of the above changes apply to certification marks and collective membership marks which would continue to be classified as set forth in §§ 6.2 and 6.3.

All persons are invited to present their views, objections, recommendations, or suggestions in connection with the proposed change to the Commissioner of Patents, Washington, D.C. 20231, on or before June 14, 1972, on which date a hearing will be held at 2 p.m. e.d.s.t., in Room 8C06, Building 2, 2011 Jefferson Davis Highway, Arlington, Va. All persons wishing to be heard at the hearing are requested to notify the Commissioner of Patents of their intended appearance. Any written comments or suggestions may be inspected by any person upon written request a reasonable time after the closing date for submitting comments.

Notice is hereby given, therefore, that, pursuant to the authority contained in section 6 of the Act of July 19, 1952 (66 Stat. 792; 35 U.S.C. 6) and in section 30 of the Trademark Act of 1946, as amended (October 9, 1962, 76 Stat. 773; 16 U.S.C. 1112), the Patent Office proposes to amend Title 37 of the Code of Federal Regulations by revising § 6.1.

ROBERT GOTTSCHALK,
Commissioner of Patents.

Dated: March 21, 1972.

Approved:

JAMES H. WAKELIN, Jr.,
Assistant Secretary
for Science and Technology.

§ 6.1. SCHEDULE OF CLASSES OF GOODS AND SERVICES

Goods

1. Chemical products used in industry, science, photography, agriculture, horticulture, forestry; artificial and synthetic resins; plastics in the form of powders, liquids or pastes, for industrial use; manures (natural and artificial); fire extinguishing compositions; tempering substances and chemical preparations for soldering; chemical substances for preserving foodstuffs; tanning substances; adhesive substances used in industry.

2. Paints, varnishes, lacquers; preservatives against rust and against deterioration of wood; coloring matters, dyestuff; mordants; natural resins; metals in foil and powder form for painters and decorators.

3. Bleaching preparations and other substances for laundry use; cleaning, polishing, scouring, and abrasive preparations; soaps; perfumery, essential oils, cosmetics, hair lotions; dentifrices.

4. Industrial oils and greases (other than edible oils and fats and essential oils); lubricants; dust laying and absorbing compositions; fuels (including motor spirit) and illuminants; candles, tapers, night lights and wicks.

5. Pharmaceutical, veterinary, and sanitary substances; infants' and invalids' foods; Plasters, material for bandaging; material for stopping teeth, dental wax; disinfectants; preparations for killing weeds and destroying vermin.

6. Unwrought and partly wrought common metals and their alloys; anchors, anvils, bells, rolled and cast building materials; rails and other metallic materials for railway tracks; chains (except driving chains for vehicles); cables and wires (nonelectric); locksmiths' work; metallic pipes and tubes; safes and cash boxes; steel balls; horseshoes; nails and screws; other goods in nonprecious metal not included in other classes; ores.

7. Machines and machine tools; motors (except for land vehicles); machine couplings and belting (except for land vehicles); large size agricultural implements; incubators.

8. Hand tools and instruments; cutlery, forks, and spoons; side arms.

9. Scientific, nautical, surveying and electrical apparatus and instruments (including wireless), photographic, cinematographic, optical, weighing, measuring, signalling, checking (supervision), lifesaving and teaching apparatus and instruments; coin or counterfreed apparatus; talking machines; cash registers calculating machines; fire extinguishing apparatus.

10. Surgical, medical, dental, and veterinary instruments and apparatus (including artificial limbs, eyes, and teeth).

11. Installations for lighting, heating, steam generating, cooking, refrigerating, drying, ventilating, water supply and sanitary purposes.

12. Vehicles; apparatus for locomotion by land, air, or water.

13. Firearms; ammunition and projectiles; explosive substances; fireworks.

14. Precious metals and their alloys and goods in precious metals or coated therewith (except cutlery, forks, and spoons); jewellery, precious stones, horological, and other chronometric instruments.

15. Musical instruments (other than talking machines and wireless apparatus).

16. Paper and paper articles, cardboard and cardboard articles; printed matter, newspaper and periodicals, books; bookbinding material; photographs; stationery, adhesive materials (stationery); artists' materials; paint brushes; typewriters and office requisites (other than furniture); instructional and teaching material (other than apparatus); playing cards; printers' type and cliches (stereotype).

17. Gutta percha, indiarubber, balata, and substitutes, articles made from these substances and not included in other classes; plastics in the form of sheets, blocks, and rods, being for use in manufacture; materials for packing, stopping, or insulating; asbestos, mica and their products; hose pipes (nonmetallic).

18. Leather and imitations of leather, and articles made from these materials and not included in other classes; skins, hides; trunks and traveling bags; umbrellas, parasols, and walking sticks; whips, harness, and saddlery.

19. Building materials, natural and artificial stone, cement, lime, mortar, plaster, and gravel; pipes of earthernware or cement; roadmaking materials; asphalt, pitch, and bitumen; portable buildings; stone monuments; chimney pots.

20. Furniture, mirrors, picture frames; articles (not included in other classes) of wood, cork, reeds, cane, wicker, horn bone, ivory, whalebone, shell, amber, mother-of-pearl, meerschaum, celluloid, substitutes for all these materials, or of plastics.

21. Small domestic utensils and containers (not of precious metals, or coated therewith); combs and sponges; brushes (other than paint brushes); brushmaking materials; instruments and material for cleaning purposes, steel wool; unworked or semiworked glass (excluding glass used in building); glassware, porcelain, and earthernware, not included in other classes.

22. Ropes, string, nets, tents, awnings, tarpaulins, sails, sacks; padding and stuffing materials (hair, kapok, feathers, seaweed, etc.); raw fibrous textile materials.

23. Yarns, threads.

24. Tissues (piece goods); bed and table covers; textile articles not included in other classes.

25: Clothing, including boots, shoes, and slippers.

26. Lace and embroidery, ribands and braid; buttons, press buttons, hooks and eyes, pins and needles; artificial flowers.

27. Carpets, rugs, mats, and matting; linoleums and other materials for covering existing floors; wall hangings (nontextile).

28. Games and playthings; gymnastic and sporting articles (except clothing); ornaments and decorations for Christmas trees.

29. Meat, fish, poultry, and game; meat extracts; preserved, dried and cooked fruits and vegetables; jellies, jams; eggs, milk, and other dairy products; edible oils and fats; preserves, pickles.

30. Coffee, tea, cocoa, sugar, rice, tapioca, sago, coffee substitutes; flour, and preparations made from cereals; bread, biscuits, cakes, pastry and confectionery, ices; honey, treacle; yeast, baking powder; salt, mustard, pepper, vinegar, sauces, spices; ice.

31. Agricultural, horticultural, and forestry products and grains not included in other classes; living animals; fresh fruits and vegetables; seeds; live plants and flowers; foodstuffs for animals, malt.

32. Beer, ale, and porter; mineral and aerated waters and other nonalcoholic drinks; syrups and other preparations for making beverages.

33. Wines, spirits, and liqueurs.

34. Tobacco, raw or manufactured; smokers' articles; matches.

Services

35. Advertising and business.
36. Insurance and financial.
37. Construction and repair.
38. Communication.
39. Transportation and storage.
40. Material treatment.
41. Education and entertainment.
42. Miscellaneous.

[FR Doc. 72-4744 Filed 3-28-72; 8:47 am]

Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

2,892,911, D. W. Crouch, VACUUM-TYPE CIRCUIT INTERRUPTER; **2,892,912**, Greenwood, Lee and Schneider, same; **3,246,979**, Lafferty, Barkan, Lee and Talento, VACUUM CIRCUIT INTERRUPTER CONTACTS; **3,263,162**, Lucek and Pearce, APPARATUS AND METHOD FOR MEASURING THE PRESSURE INSIDE A VACUUM CIRCUIT INTERRUPTER, **filed** Oct. 12, 1971, D.C., W.D.N.Y. (Buffalo), Doc. C-1971-452. *General Electric Company* v. *Westinghouse Electric Corporation.*

2,892,912. (See 2,892,911.)

2,897,481, D. H. Shepard, APPARATUS FOR READING, **filed** Dec. 20, 1971, D.C. District of Columbia (Washington), Doc. 2530-71, *John W. Davidge, Jr., as trustee of Farrington Electronics, Inc. et al.* v. *The National Cash Register Co.*

2,936,899, P. Tashman, TRAY OR PAN CABINETS, **filed** Mar. 17, 1970, D.C., S.D. Fla. (Miami), Doc. 70-344-C-JLK. *Precision Metal Products, Inc.* v. *Brunor, Inc. and Brunor Onori.* Cause dismissed without prejudice, Nov. 24, 1971.

2,951,761, J. T. Stephan, FISH BAIT, **filed** Feb. 9, 1972, D.C., W.D. Wis. (Madison), Doc. 72-C-50. *Puget Sound Salmon Egg Company, Inc. and John Thomas Stephan* v. *Uncle Josh Bait Company and James J. Vander Mause.*

2,956,073, Whetstone and Harman, INSECTICIDALLY ACTIVE ESTERS OF PHOSPHORUS ACIDS AND PREPARATION OF THE SAME; **Reg. No. 709,813** (VAPONA), Shell Oil Company, **filed** Mar. 22, 1965, D.C., N.D. Iowa (Cedar Rapids), Doc. 65-C-508-EC, *Shell Oil Company* v. *Barco Corporation and John Barakat.* Defendants enjoined and restrained from infringing Patent 2,956,073 and Trademark Reg. No. 709,813 for remaining term of patent and as long as said trademark registration shall be effective, Oct. 15, 1971.

2,974,467, W. R. Long, PICKUP AND THRESHING UNIT FOR PEANUT COMBINE, **3,007,475**, same, PEANUT COMBINE, **filed** Nov. 4, 1971, U.S. Ct. of App., 4th Cir., Va. (Richmond), Doc. 71-2016 and 2017, *Long Manufacturing Company* v. *Lilliston Implement Company.*

2,979,119, H. Kramer, WEB-TO-TUBE FASTENINGS; **3,042,113,** same; **3,092,177,** same, **filed** Mar. 31, 1965, D.C., S.D.N.Y., Doc. 65–C–968, *Hyman Kramer, doing business as Hy Kramer Enterprises* v. *Living Aluminum, Inc. et al.* Agreement and stipulation of dismissal of action and counterclaim with prejudice, Oct. 27, 1971.

3,007,475. (See 2,974,467.)

3,016,308, N. Macaulay, RECORDING PAPER COATED WITH MICROSCOPIC CAPSULES OF COLORING MATERIAL, CAPSULES AND METHOD OF MAKING, **filed** Jan. 25, 1972, D.C., W.D.N.Y. (Buffalo), Doc. C–1972–47, *Moore Business Forms, Inc.* v. *Minnesota Mining and Manufacturing Company.*

3,042,113. (See 3,092,177.)

3,092,177. (See 2,979,119.)

3,106,400, O. Hendrickson, PNEUMATIC FILING MACHINE; **3,274,895,** same, DOUBLE PISTON PNEUMATIC FILING MACHINE; **3,399,494,** same, AIR OPERATED SANDING MACHINE, **filed** Oct. 28, 1971, D.C., C.D. Calif. (Los Angeles), Doc. 71–2582–CC, *Allan Air Products, Inc.* v. *Harvey Rodstein, Rodac Pneumatic Tools, Inc., Rodac International Corp.*

3,150,224, N. A. Libman, APPARATUS FOR MAKING STEEL SHOT; **3,245,840,** same, ABRASIVE MATERIAL AND METHOD OF MAKING SAME; **3,259,529,** same, ABRASIVE MATERIAL, **filed** Dec. 5, 1966, D.C., S.D. Ohio (Cincinnati), Doc. 6306, *Metal Blast, Inc.* v. *Steel Abrasives, Inc. et al.* Stipulation of dismissal, Oct. 15, 1971.

3,177,703, Waters, Helfer and Jones, METHOD AND APPARATUS FOR RUNNING AND TESTING AN ASSEMBLY FOR SEALING BETWEEN WELLHEAD CONDUITS; **3,179,448,** M. R. Jones, WELLHEAD APPARATUS; **3,419,071,** Williams and Gruller, UNDERWATER WELLHEAD APPARATUS; **3,481,396,** same, CONNECTOR FOR UNDERWATER PIPELINES, **filed** Oct. 21, 1971, D.C., S.D. Tex. (Houston), Doc. 71–H–1153, *Cameron Iron Works, Inc.* v. *Vetco Offshore Industries Inc., Vetco-Texas, Inc.,* same, **filed** Feb. 10, 1972, D.C., C.D. Calif. (Los Angeles), Doc. 72–313–CC, *Vetco Offshore Industries, Inc. and Vetco Offshore, Inc.* v. *Cameron Iron Works, Inc.*

3,179,448. (See 3,177,703.)

3,245,840. (See 3,150,224.)

3,246,979. (See 2,892,911.)

3,259,529. (See 3,150,224.)

3,263,162. (See 2,892,911.)

3,274,895. (See 3,106,409.)

3,296,052, A. M. Bechtold, MEANS AND METHOD FOR POSTFORMING PLASTIC LAMINATED PRODUCTS; **3,296,056,** same, MEANS FOR POSTFORMING PLASTIC LAMINATED PRODUCTS, **filed** Apr. 23, 1970, D.C., E.D. Calif. (Fresno), Doc. F–405–C, *Roberts Consolidated Industries, Inc.* v. *Frank Monschein, doing business as Campus Plastic Products.* Case dismissed by plaintiff, July 27, 1970.

3,296,056. (See 3,296,052.)

3,390,532, J. B. Lawrence, APPARATUS FOR LAYING PIPELINES; **3,487,648,** same, METHODS FOR LAYING PIPELINES, **filed** Oct. 27, 1971, D.C., N.D. Tex. (Dallas), Doc. CA–3–5225–C, *Brown & Root, Inc.* v. *Sedco, doing business as Houston Contracting Company.*

3,399,494. (See 3,106,409.)

3,419,071. (See 3,177,703.)

3,476,191, C. V. Schlabs, UNIVERSAL HITCH FOR TOWING TILLING IMPLEMENTS; **3,539,015,** same, TANDEM PLOW PACKERS, **filed** Nov. 1, 1971, D.C., N.D. Tex. (Lubbock), Doc. CA–5–970, *Charles V. Schlabs* v. *Stanton Supply Corporation.*

3,481,396. (See 3,177,703.)

3,487,648. (See 3,390,532.)

3,496,635, McLean, Chatfield and Turner, REMOVABLE HAND LEVER AND WEAR COMPENSATING CAN OPENER CONSTRUCTION; **3,520,056,** R. J. Scott, REMOVABLE HAND LEVER CONSTRUCTION, **filed** Nov. 30, 1971, D.C., W.D. Mo. (Kansas City), Doc. 19903–4, *General Electric Company* v. *Rival Manufacturing Company.* Notice of voluntary dismissal, Dec. 30, 1971.

3,520,056. (See 3,496,635.)

3,539,015. (See 3,476,191.)

D. 212,825, R. A. Claridge, PITCHER; **D. 212,826,** same, COMBINED PITCHER AND COVER THEREFOR, **filed** May 6, 1969, D.C., W.D.N.C. (Charlotte), Doc. 2475, *Alprod Corporation* v. *Southeastern Plastics Corporation.* Stipulation and order of dismissal under FRCP 41(a)(c), Dec. 21, 1971.

D. 212,826. (See D. 212,825.)

D. 221,797, R. H. Annesley, RING, **filed** Jan. 19, 1972, D.C., E.D. Tex. (Austin), Doc. A–72–CA–6, *Stuckey & Speer, Inc.* v. *John Roberts, Incorporated.*

Reg. No. 709,813. (See 2,956,073.)

Certificates of Correction for the Week of July 4, 1972

Re. 26,885	3,622,324	3,629,999	3,639,117
3,531,549	3,622,376	3,630,145	3,639,230
3,533,967	3,622,438	3,630,484	3,639,338
3,557,160	3,622,587	3,630,622	3,639,379
3,564,683	3,622,601	3,630,630	3,639,598
3,574,955	3,622,649	3,630,670	3,639,822
3,576,383	3,622,660	3,630,678	3,639,914
3,577,521	3,622,667	3,630,729	3,639,915
3,578,258	3,623,151	3,630,833	3,640,383
3,579,362	3,623,416	3,630,933	3,640,515
3,583,840	3,623,418	3,630,935	3,640,633
3,585,988	3,623,528	3,630,957	3,640,711
3,591,067	3,623,726	3,630,980	3,640,771
3,592,284	3,623,746	3,630,997	3,640,778
3,592,325	3,623,806	3,631,043	3,640,807
3,592,837	3,624,018	3,631,186	3,640,914
3,593,334	3,624,024	3,631,243	3,641,000
3,595,751	3,624,120	3,631,328	3,641,052
3,599,324	3,624,128	3,631,340	3,641,367
3,599,969	3,624,549	3,631,412	3,641,397
3,601,731	3,625,029	3,631,432	3,641,534
3,602,916	3,625,229	3,632,092	3,641,881
3,603,144	3,625,268	3,632,311	3,641,921
3,607,343	3,625,306	3,632,541	3,642,644
3,607,749	3,625,595	3,632,569	3,642,759
3,608,057	3,625,624	3,632,666	3,642,771
3,609,514	3,625,712	3,632,679	3,642,850
3,611,869	3,625,791	3,632,710	3,643,316
3,612,014	3,625,830	3,632,776	3,643,361
3,613,854	3,625,846	3,632,784	3,643,756
3,613,907	3,625,976	3,632,883	3,643,876
3,613,983	3,625,997	3,632,947	3,643,918
3,614,517	3,626,017	3,633,018	3,644,138
3,614,567	3,626,256	3,633,064	3,644,498
3,615,268	3,626,388	3,634,081	3,644,532
3,615,821	3,626,482	3,634,091	3,644,572
3,616,012	3,626,606	3,634,202	3,644,585
3,618,037	3,626,799	3,634,419	3,644,664
3,618,169	3,626,821	3,634,880	3,644,884
3,618,512	3,626,962	3,634,894	3,645,433
3,618,629	3,627,287	3,635,061	3,645,476
3,618,719	3,627,640	3,635,128	3,645,678
3,618,778	3,627,727	3,635,369	3,645,769
3,619,111	3,627,839	3,635,460	3,645,780
3,619,155	3,627,954	3,635,653	3,646,027
3,619,427	3,627,974	3,635,754	3,646,327
3,619,564	3,627,977	3,635,826	3,646,447
3,620,493	3,628,023	3,635,900	3,646,528
3,620,663	3,628,182	3,635,922	3,646,708
3,620,733	3,629,084	3,635,963	3,647,086
3,621,223	3,629,090	3,636,113	3,647,269
3,621,441	3,629,097	3,636,224	3,647,616
3,621,742	3,629,137	3,636,310	3,647,667
3,621,900	3,629,206	3,636,389	3,648,097
3,622,035	3,629,304	3,638,504	3,650,185
3,622,178	3,629,373	3,638,527	3,650,692
3,622,219	3,629,424	3,638,591	3,651,140
3,622,312	3,629,590	3,639,054	

Service by Publication

Mahmoud Muftic

In accordance with Rule 47 of the Rules of Practice of the United States Patent Office in Patent Cases, notice is hereby given of the filing on October 31, 1968, of an application for patent entitled "5-Nitro-Furfurylidene Antimicrobic Agents," on behalf of Mahmoud Muftic, whose last known address is Cornavin-Geneve, Switzerland. The application was made in compliance with Rule 47(a) and 35 U.S.C. 116 by joint inventors Rudolf Albrecht and Eberhard Schroder without execution by the said Mahmoud Muftic. Notice of the filing directed to the above noted address has been returned undelivered.

Any action to be taken by the said Mahmoud Muftic in connection with the said application must be taken within thirty days of the publication of this notice.

/s/ F. H. BRONAUGH,
for RICHARD A. WAHL,
Assistant Commissioner of Patents.

June 7, 1972.

Adverse Decisions in Interferences

In the designated interferences involving the indicated claim of the following patents final decisions have been rendered that the respective patentees were not the first inventors with respect to the claims listed.

Patent No. 3,270,016, M. Duennenberger, H. R. Biland and C. Luethi, ARYL-1,3,5-TRIAZINES, decided Feb. 11, 1972, Interference No. 97,117, claims 1, 2 and 3.

Patent No. 3,278,534, M. Schellenbaum, C. Luethi and M. Duennenberger, NEW HYDROXYPHENYL-1,3,5-TRIAZINES, decided Feb. 11, 1972, Interference No. 97,119, claims 1 and 2.

Patent No. 3,293,247, M. Duennenberger, H. R. Biland, C. Luethi and M. Schellenbaum, HYDROXYPHENYL-1,3,5-TRIAZINES, decided Feb. 11, 1972, Interference No. 97,118, claims 1, 2, 3, 5, 7, 8 and 9.

Patent No. 3,293,249, H. R. Biland, C. Luethi and M. Duennenberger, HYDROXYPHENYL-TRIAZINES AND PROCESS FOR THEIR MANUFACTURE, decided Feb. 11, 1972, Interference No. 97, 116, claims 1 and 2.

Patent No. 3,330,981, M. A. Ala, PHOSPHOR COATED ARTICLES, decided Nov. 17, 1971, Interference No. 97,005, claim 1.

Patent No. 3,343,742, L. Siegler, PARTITION, decided Jan. 19, 1972, Interference No. 96,790, claims 1 and 2.

Patent No. 3,378,376, M. Sebring, EGG WHITE COMPOSITION, METHOD OF PREPARING AND PROCESS UTILIZING SAME, decided Jan. 81, 1972, Interference No. 96,680, claims 1, 2, 3, 4, 5, 6, 7, 8, 9, 10 and 11.

Patent No. 3,386,082, T. S. Stafford, D. C. Burnstine, G. T. Paul and J. R. Rogaski, CONFIGURATION CONTROL IN MULTIPROCESSORS, decided Jan. 27, 1972, Interference No. 96,917, claims 1, 2, 3, 15 and 17.

Patent No. 3,446,837, V. H. Wallingford, 3-(N-SUBSTITUTED - ACYLAMINO) - 2,4,6 - TRIIODOPHENYL FATTY ACID COMPOUNDS, decided May 26, 1972, Interference No. 97,664, claim 10.

Patent No. 3,501,401, C. Calmon, CONDENSATION PURIFICATION PROCESS, decided May 19, 1972, Interference No. 97,584, claims 1 thru 10.

Patent No. 3,501,424, S. Imoto, K. Ikari and T. Hattori, COATING COMPOSITION CONTAINING ALKALINE AND NON-ALKALINE PIGMENT WITH BINDER AND DISPERSANT, decided May 19, 1972, Interference No. 97,781, claims 1, 2, 3 and 5.

Patent No. 3,511,233, E. Holy, FOOT PROTECTOR, decided May 24, 1972, Interference No. 97,686, claims 1, 2 and 4.

PATENT EXAMINING CORPS

R. A. WAHL, Assistant Commissioner
F. H. BRONAUGH, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF JUNE 13, 1972

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	4-05-71
GENERAL ORGANIC CHEMISTRY, GROUP 120—I. MARCUS, Director. Heterocyclic; Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	1-11-71
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—L. J. BERCOVITZ, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	3-03-71
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. P. KENT, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	3-01-71
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—W. B. KNIGHT, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	12-30-70
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS AND RELATED ELEMENTS, GROUP 210—N. ANSHER, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Miscellaneous.	10-19-71
SECURITY, GROUP 220—R. L. CAMPBELL, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	3-03-71
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	6-02-71
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—W. L. CARLSON, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	5-06-71
PHYSICS, GROUP 280—R. L. EVANS, Director. Photography; Sound and Lighting; Indicators and Optics; Measuring and Testing; Geometrical Instruments.	4-12-71
DESIGNS, GROUP 290—R. L. CAMPBELL, Director. Industrial Arts; Household, Personal and Fine Arts.	2-01-71
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—A. BERLIN, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Railways and Railway Equipment; Brakes; Rigid Flexible and Special Receptacles and Packages.	5-12-71
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders Woodworking; Tools; Cutlery; Jacks.	3-15-71
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—A. RUEGG, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	3-25-71
HEAT, POWER AND FLUID ENGINEERING, GROUP 340—M. M. NEWMAN, Director. Power Plants; Combustion Engines; Fluid Motors; Pumps; Turbines; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Vaporizing; Temperature and Humidity Regulation; Machine Elements; Power Transmission; Fluid Handling; Lubrication; Joint Packing.	6-07-71
CONSTRUCTIONS, SUPPORTS, TEXTILES, CLEANING, GROUP 350—T. J. HICKEY, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Receptacles; Supports; Cabinet Structures; Centrifugal Separations; Cleaning; Coating; Pressing; Agitating; Foods; Textiles; Apparel and Shoes; Sewing Machines; Winding and Reeling.	4-12-71

Expiration of patents: The patents within the range of numbers indicated below expire during July 1972, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 2,712,131 to 2,714,206, inclusive
Plant Patents ..... Numbers 1,404 to 1,407, inclusive

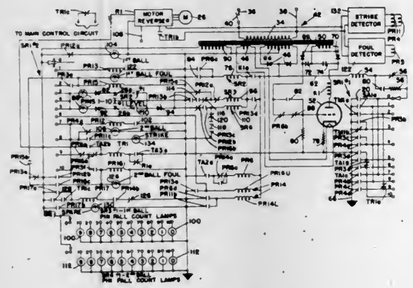
REISSUES

JULY 4, 1972

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

27,416
CONTROL MECHANISM FOR BOWLING PIN SPOTTING MACHINE

Richard D. Walsh, Shelby, Ohio, assignor to American Machine & Foundry Company
Original No. 2,974,955, dated Mar. 14, 1961, Ser. No. 719,823, Mar. 7, 1958. Application for reissue Mar. 12, 1963, Ser. No. 266,135
Int. Cl. A63d *5/04*
U.S. Cl. 273—43 A **11 Claims**

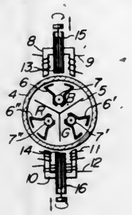


17. In combination with a bowling pin spotting machine having first and second ball operating cycles for each discrete playing frame of a bowling game, sensing means associated with said machine for detecting the presence or absence of standing pins after each ball of said frame is rolled, first and second totalizing means each operative respectively after said first and second ball has been rolled in response to actuation of said detector elements for indicating for said discrete frame only, the actual, numerical pinfall during said first or second ball cycles respectively, means operative after said second ball has been rolled for conditioning said second totalizing means for actuation by said detecting elements, said last-named means including means for incapacitating said first totalizing means after said second ball is rolled.

27,417
DYNAMIC CONVERGENCE DEVICE FOR THREE ELECTRON GUN COLOR TELEVISION RECEIVER

Susumu Egawa, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Original No. 3,461,341, dated Aug. 12, 1969, Ser. No. 689,551, Dec. 11, 1967. Application for reissue May 26, 1970, Ser. No. 40,748
Int. Cl. H01j *29/50, 29/70*
U.S. Cl. 315—13 C **7 Claims**

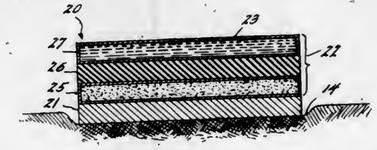
A dynamic convergence device for a three-electron-gun color television receiver, which is miniaturized and manufactured at low cost as compared with the conventional devices of this type. In the dynamic convergence device disclosed herein, a pair of convergence assemblies each comprising a core and a coil are positioned symmetrically with respect to the longitudinal axis of a picture tube, one of the convergence assemblies being associated with one of the pole pieces for said picture tube and the other convergence assembly being associated with the remaining



two pole pieces, and currents of parabolic waveform flow through said coils.

27,418
METHOD AND APPARATUS FOR IMPROVING SEISMIC IMPACT SIGNALS

William H. Mayne, San Antonio, Tex., assignor to Petty Geophysical Engineering Company, San Antonio, Tex.
Original No. 3,367,443, dated Feb. 6, 1968, Ser. No. 464,406, June 16, 1965. Application for reissue Feb. 2, 1970, Ser. No. 8,048
Int. Cl. G01v *1/14*
U.S. Cl. 181—.5 EC **11 Claims**



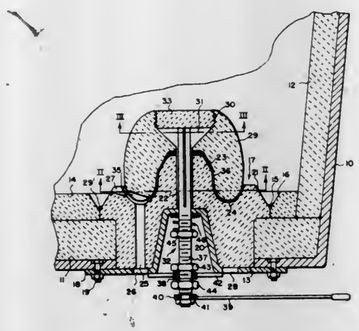
An impact buffer zone of special construction is provided for operation in a seismic system with a seismic impulse hammer that impacts the earth to provide a shock wave. The buffer zone, when coupled with a rigid plate on the earth, preferably has a specific thickness relationship to permit a seismic wave traverse time through the buffer zone greater than the traverse time through the rigid plate. The buffer zone may include multiple layers of elastic materials such as water, rubber, sand, oil, or foam plastic. Accordingly, means and methods are disclosed for elastically absorbing a portion of the impact of a moving mass generating seismic impulses in such a manner that seismic impulses are produced with a rise time of less than one millisecond.

27,419
CLOSURE FOR A BOTTOM POUR METALLURGICAL LADLE

John Nadrich, 9756 South Ave. 44514, and John A. Ericson, 732 Market St. 44502, both of Youngstown, Ohio
Original No. 3,386,633, dated June 4, 1968, Ser. No. 544,009, Apr. 20, 1966. Application for reissue June 5, 1970, Ser. No. 43,841
Int. Cl. B22d *37/00*
U.S. Cl. 222—548 **10 Claims**

A valve and nozzle assembly for a bottom pour metallurgical ladle which can be controlled from below the

ladle without the use of the usual refractory shield stopper rod. The nozzle has a pair of spaced concentric annular wells in its top surface with a discharge port extending downwardly from the lower surface of the inner well. The valve element is bell-shaped with its skirt portion fitted



into the inner well. The valving element is rotated by a rod extending downwardly through the nozzle on the axes of the wells and has a notch in its skirt portion which is rotated into and out of registry with the discharge port thus opening and closing the valve.

27,420

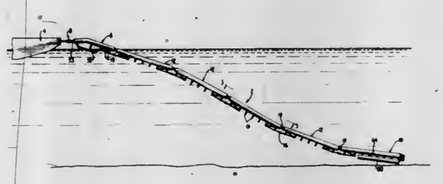
MARINE APPARATUS FOR SUPPORTING FLEXIBLE ELONGATE PIPE MEANS DURING UNDERWATER LAYING THEREOF

William R. Rochelle, Joe C. Lochridge, and Ardeshir Rustomji Dessi, Houston, Tex., assignors to Brown & Root, Inc., Houston, Tex.

Original No. 3,507,126, dated Apr. 21, 1970, Ser. No. 696,005, Jan. 5, 1968. Application for reissue Nov. 3, 1971, Ser. No. 195,503

Int. Cl. B63b *5/34*; F16l *1/00*

U.S. Cl. 61—72.3 **18 Claims**



A marine apparatus for supporting flexible elongate pipe means during underwater laying thereof from a vessel floating on the surface of a body of water. The apparatus includes a longitudinally extending elongate ramp adapted to be secured at one end to the vessel extending away therefrom generally down into the water. The ramp includes a plurality of longitudinally spaced support members each provided with closed hollow chamber portions to provide each member with at least partial buoyancy. Means connnecting adjacent support members together includes at least one pivotal connection means positioned between at least one pair of adjacent support members for permitting relative pivotal motion therebetween about a generally horizontal pivot axis. At least one torque applying means is connected with the hinge means for applying torque thereto to selectively vary and thus rigidly or fix the relative inclination of the adjacent support members. Pipe contacting means secured to and spaced along the ramp are adapted to underlie and support the pipe means. Flooding means is connected with the support members for selectively and separately causing the passage of water between the interior and exterior of the various hollow chamber portions of the various support members so that the torque acting about the pivotal connection means may be changed to reduce the effort required to be exerted by the torque applying means.

27,421

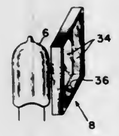
PYROTECHNIC MEANS FOR INTERRUPTING THE LIGHT OUTPUT OF A FLASH BULB

Wiley H. Owens, Bloomington, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Original No. 3,517,196, dated June 23, 1970, Ser. No. 700,998, Jan. 26, 1968. Application for reissue Sept. 24, 1970, Ser. No. 74,964

Int. Cl. G01j *1/20*

U.S. Cl. 250—201 **10 Claims**



In a photoflash system, means are provided for controlling the effective light output from a flash bulb in accordance with demand. The means include light sensing means responsive to light reflected from the object of the photo. Signals from the sensing means are integrated and used to trigger means for obfuscating the light source. The latter means may include a vaporizable substance, a deflagrating substance or the like which, in response to the trigger signal, forms an opaque shield between the light source and the photographic object.

27,422

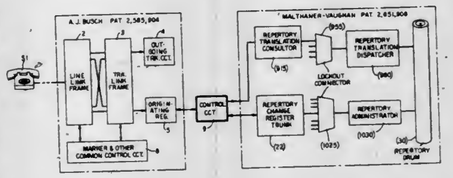
AUTOMATIC RECALL SWITCHING SYSTEM

Max S. Schoeffler, Madison Township, Middlesex County, N.J., assignor to Bell Telephone Laboratories, Incorporated, New York, N.Y.

Original No. 3,493,688, dated Feb. 3, 1970, Ser. No. 536,872, Mar. 23, 1966. Application for reissue Nov. 5, 1971, Ser. No. 196,172

Int. Cl. H04m *3/44*

U.S. Cl. 179—18 BA **9 Claims**



An arrangement is disclosed for automatically establishing a calling connection from a privileged telephone customer to a previously called station in response to an abbreviated dialed code. The called directory number dialed from the station of a privileged customer is automatically written into a designated location of a central

memory to the exclusion of any priorly written directory number. The privileged customer can initiate retrieval of the last called directory number from the designated location by dialing an abbreviated number. The directory number retrieved from the designated location is then automatically used to establish a calling connection to the station defined thereby.

27,423

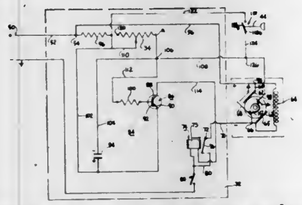
WINDSHIELD CLEANING SYSTEM FOR MOTOR VEHICLES

William C. Riester, Clarence, N.Y., assignor to Trico Products Corporation, Buffalo, N.Y.

Original No. 3,339,123, dated Aug. 29, 1967, Ser. No. 330,139, Dec. 16, 1963. Application for reissue Aug. 15, 1969, Ser. No. 853,568

Int. Cl. B60s *1/08*

U.S. Cl. 318—443 **10 Claims**



A windshield wiper control system for producing timed dwell periods between each cycle of windshield wiper operation is provided with a manually settable timing network including a transistor which controls the energization of a circuit interrupter. The circuit interrupter is connected in parallel with a cyclically actuated, motor operated parking switch. The parking switch opens to stop the wiper motor at the end of each cycle. In a preset time interval after stopping, the timing network operates to actuate the circuit interrupter thus restarting the motor. The motor remains energized through the parking switch until the next dwell period. The timing network includes a manually variable resistor which controls the discharge time of a capacitor. The transistor is triggered conductive when the capacitor is charged. The timing network is energized by a switch responsive to motor rotation.

27,424

ZINC BORATE OF LOW HYDRATION AND METHOD FOR PREPARING SAME

Nelson P. Nies, Laguna Beach, and Richard W. Hulbert, Garden Grove, Calif., assignors to United States Borax & Chemical Corporation, Los Angeles, Calif.

No Drawing. Original No. 3,549,316, dated Dec. 22, 1970, Ser. No. 648,968, June 26, 1967. Application for reissue May 18, 1971, Ser. No. 144,659

Int. Cl. C01b *25/00*

U.S. Cl. 23—59 **11 Claims**

A crystalline zinc borate having the approximate composition $2ZnO \cdot 3B_2O_3 \cdot 3.5H_2O$, and the preparation of the zinc borate. Preparation of the zinc borate is accomplished by reacting boric acid and an inorganic zinc compound in an aqueous medium at temperatures above about 70° C.

PLANT PATENTS

GRANTED JULY 4, 1972

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

3,224
CHRYSANTHEMUM PLANT (HOSTESS)
Leonard H. Shoesmith, Westfield, Woking Surrey, England, assignor to Pan-American Plant Company, Chicago, Ill.
Filed Oct. 5, 1970, Ser. No. 78,309
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—76 **1 Claim**

A new variety of greenhouse pot-plant type of chrysanthemum distinguished by the pink-purple color of its profusely produced blooms, its compact habit of growth which breaks freely with many branches, and its uniform, dependable response to protoperiod control for flowering at any preselected time of the year.

3,225
CHRYSANTHEMUM PLANT (COPPERPLATE)
Leonard H. Shoesmith, Westfield-Woking Surrey, England, assignor to Pan-American Plant Company, Chicago, Ill.
Filed Oct. 5, 1970, Ser. No. 78,310
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—79 **1 Claim**

A new variety of chrysanthemum plant of the decorative type suitable for pot-plant culture, distinguished by its good branching quality and profuse production of very distinctive generally copper colored or bronze-red blooms. This variety is a free breaker and produces short symmetrical plants that provide a brilliant display as a potted plant.

3,226
ROSE PLANT
Samuel D. McGredy IV, Portadown, Ireland, assignor to Howard Rose Company, Hemet, Calif.
Filed Oct. 8, 1970, Ser. No. 79,365
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—11 **1 Claim**

1. A new and distinct variety of rose plant of the hybrid tea class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of a bushy, upright and vigorous habit of growth, abundant and attractive foliage, a profuse blooming habit, both outdoors and in the greenhouse, high centered flowers of double form and large size, and a distinctive and attractive light red flower color.

3,227
ROSE PLANT
Louis Lens, O. L. Vrouwe Wavre, Belgium, assignor to Jackson & Perkins Company, Medford, Oreg.
Filed Oct. 8, 1970, Ser. No. 79,366
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—20 **1 Claim**

1. A new and distinct variety of rose plant of the hybrid tea class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of a moderately vigorous bush habit, leathery, non-glossy, attractive foliage, large flowers of a form similar to that of its parent "Mustang" (U.S. Plant Patent No. 2,657), an exceptionally clear, uniform and pure Vermilion flower color which lightens slightly to Dutch Vermilion as the flowers mature, and an excellent flower petal substance which produces a long-lasting effect both on the plant and as cut flowers, with the outer petals being of good quality and requiring no "cleaning" when used as cut flowers.

3,228
ROSE PLANT
Reimer Kordes, Holstein, Germany, assignor to Jackson & Perkins Company, Medford, Oreg.
Filed Dec. 28, 1970, Ser. No. 100,244
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—15 **1 Claim**

1. A new and distinct variety of rose plant of the hybrid tea class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of an unusually freely branched plant habit, oval pointed and leathery leaflets of medium size and dark green color, a constant and unusually abundant blooming habit, so that the plants nearly always have flowers during the growing season, a uniform Mimosa Yellow flower color, and a moderately strong tea flower fragrance.

3,229
ROSE PLANT
Reimer Kordes, Sparrieshoop, near Elmshorn, Holstein, Germany, assignor to Jackson & Perkins Company, Medford, Oreg.
Filed Dec. 28, 1970, Ser. No. 102,274
Int. Cl. A01h *5/00*
U.S. Cl. Plt.—22 **1 Claim**

1. A new and distinct variety of rose plant of the floribunda class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of a bushy and compact plant habit when grown outdoors, exceptionally stiff and erect stems, an unusually vivid flower color in both the half-open and open flowers, corresponding to Capsicum Red on the upper surface of the petals and fading from Orange Buff to nearly white on the reverse of the petals, and little or no flower fragrance.

3,230
PEACH TREE
Grant Merrill, Tulare County, Calif.
(416 N. Anderson Road, Exeter, Calif. 93221)
Filed Jan. 7, 1971, Ser. No. 104,821
Int. Cl. A01h *5/03*
U.S. Cl. Plt.—43 **1 Claim**

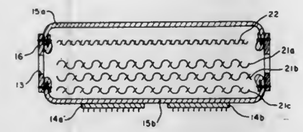
1. A new and distinct variety of peach tree substantially as illustrated and described and being characterized by a vigorously growing tree regularly bearing fruit which matures very late and has 10% to 50% of its skin surface covered with a bright red blush with an under color of bright yellow, and with firm flesh, these being good characteristics for shipping, and by bright yellow flesh with a small amount of light red around the stone, these being good characteristics for commercial freezing, and which most nearly resembles the Halloween II (U.S. Plant Pat. No. 1,472), but is an improvement on that variety by its higher skin color and its firmer and brighter yellow flesh color with less but brighter red next to the stone, thus providing better shipping and freezing qualities.

PATENTS

GRANTED JULY 4, 1972

GENERAL AND MECHANICAL

3,673,609
PROTECTIVE HELMET
David N. De Simone, Philadelphia, Pa., assignor to The United States of America as represented by the Secretary of the Navy
Filed Jan. 27, 1971, Ser. No. 110,198
Int. Cl. A42b *3/00*
U.S. Cl. 2—3 R **8 Claims**



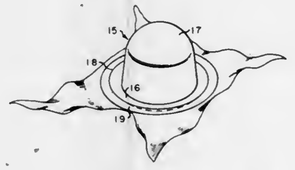
A protective helmet having pads disposed therein for distributing and cushioning the head of a wearer from impacts to the outside of the helmet. The pads are formed from spacer cloth arranged in layers having resilient properties for energy absorption of the impact, each pad having segments of nylon fastener tape attached to one side and an open weave cloth covering on the other side allowing free permeability of air. The nylon fastener tape attaches to felt strips contiguously attached within the helmet, by which the pads are mounted in the helmet, allowing for easy replacement.

3,673,610
RESILIENT HEADBAND FOR SPECTACLES
Philip J. Liautaud, Hoffman Estates, Ill., assignor to Fendall Company, Chicago, Ill.
Division of Ser. No. 776,546, Nov. 18, 1968, Pat. No. 3,582,194. This application April 5, 1971, Ser. No. 131,268
Int. Cl. G02c *3/00*
U.S. Cl. 2—14 V **6 Claims**



A resilient headband for spectacles providing light tension for retaining the spectacles on the wearer's head, comprising a length of rubberlike material having its ends of a larger diameter than the intermediate portion and arranged for securement to the spectacles whereby stretch forces applied to the headband during use result mainly in elongation of the intermediate portion.

3,673,611
MOLDED HATS HAVING IMPROVED SHAPE RETENTION AND RECOVERABILITY
James P. Cain, Spartanburg, and John H. Cross, Anderson, both of S.C., assignors to Deering Milliken Research Corporation, Spartanburg, S.C.
Continuation of Ser. No. 624,511, March 20, 1967, abandoned. This application May 18, 1970, Ser. No. 37,464
Int. Cl. A42b *1/00*; **A42c** *1/00*; **D06m** *3/00*
U.S. Cl. 2—192 **3 Claims**



A molded hat having improved shape retention and recoverability properties wherein the fabric of the crown and brim comprises a single unit eliminating the need for sewing the brim to the crown, said fabric containing a stabilizing polymeric composition. These molded hats are prepared by placing the stabilized fabric in a hat mold and thereafter applying heat and pressure to effect the desired shape. The improved shape retention and recoverability properties result from the presence of the polymeric composition in the fabric.

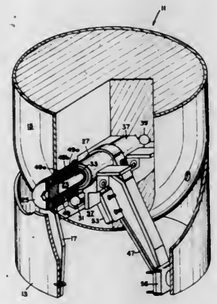
3,673,612
NON-THROMBOGENIC MATERIALS AND METHODS FOR THEIR PREPARATION
Edward W. Merrill, and Patrick Seck-Lai Wong, both of Cambridge, Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.
Continuation-in-part of Ser. No. 745,400, July 17, 1968, abandoned, Continuation-in-part of Ser. No. 747,789, July 26, 1968, abandoned. This application Aug. 28, 1970, Ser. No. 67,969
Int. Cl. A61f *1/00*; **A61m** *25/00*; **A61k** *17/18*
U.S. Cl. 3—1 **64 Claims**

Non-thrombogenic materials prepared by reacting a heparin-type anticoagulant, hydroxyl, or combinations of hydroxyl and acetal groups that are part of already synthesized macromolecules having an atomic carbon-to-oxygen ratio in excess of unity, an aldehyde and an acid catalyst. The non-thrombogenic materials can be used for implanted and extracorporeal biomedical devices and prostheses intended to be used in direct contact with blood, including tubes, valves, membrane assemblies for blood dialysis and oxygenation, anesthesia-carrying tubes, etc.

3,673,613
VARIABLE FRICTION KNEE UNIT WITH AN IMPROVED SWING PHASE CONTROL OF ARTIFICIAL LEGS

Charles C. Asbelle, Oakland; Michael F. Arrigo, Berkeley; Kenneth E. Hunting, Hayward, and Gene R. Helmuth, Castro Valley, all of Calif., assignors to The United States of America as represented by the Secretary of the Navy

Filed April 8, 1971, Ser. No. 132,465
Int. Cl. A61f 1/04, 1/08
U.S. Cl. 3—27 10 Claims



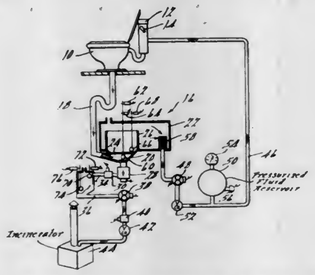
A variable friction knee unit that applies independent braking forces at different times to the swing phase of an artificial leg during walking which simulates the actions and efficiencies of the quadriceps and hamstring muscles of the thigh. Two braking modes are applied with an additional continuous braking mode. One operates at each end of swing phase. The second brake is applied a few degrees after the first brake and superimposed over the first brake. Both brakes are applied at each end of the swing phase of the walking cycle. In addition to being operative at the terminus of the swing, the two brakes are engaged at different times and are superimposed over the application of continuous friction so that the deceleration is a stepping function thereby simulating the function of the quadriceps and hamstring muscles of the thigh.

The invention described herein may be manufactured and used by or for the Government of the United States of America for governmental purposes without the payment of any royalties thereon or therefor.

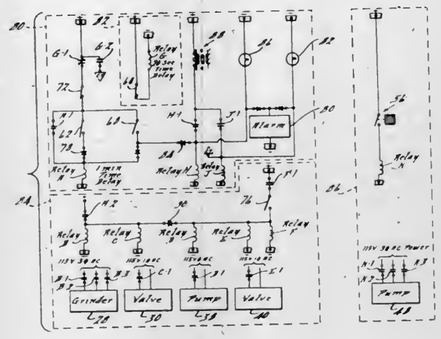
3,673,614
SEWAGE DISPOSAL SYSTEM WITH REUSABLE FLUSH MEDIUM

Robert W. Claunch, New Orleans, La., assignor to Chrysler Corporation, Highland Park, Mich.

Filed Dec. 21, 1970, Ser. No. 99,865
Int. Cl. E03d 3/00, 5/014, 5/016, 5/10
U.S. Cl. 4—10 23 Claims



A sewage disposal system comprising a flush medium separation and distribution sub-system and a final sewage disposal sub-system. The disposal system is connected directly to existing plumbing. Sewage is transmitted from commodes and the like to a separation tank where the sewage is separated

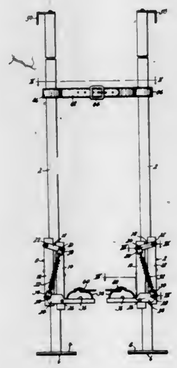


from the flush medium. A reusable flush medium replaces water to facilitate the separation process. The sewage is transferred to the final disposal sub-system and the flush medium is re-cycled for re-use.

3,673,615
BODY ATTACHED STILTS WITH VERTICALLY ADJUSTABLE STEPS

Forest M. Ellis, 2301 North 59 Street, Kansas City, Kans.

Filed April 27, 1970, Ser. No. 32,111
Int. Cl. A61f 3/00; A63b 25/00
U.S. Cl. 3—4 7 Claims

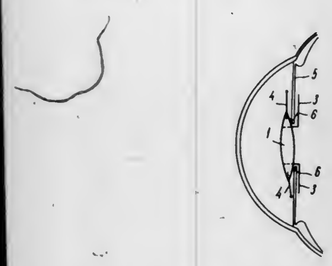


A pair of stilts each consisting of a standard having a gripping device movable vertically thereon but capable of gripping said standard to prevent movement thereof, and a step or foot rest carried by said gripping device, said gripping device being operable by a load imposed on said step by the user's weight to grip said standard, and being operable by a somewhat unnatural movement of the user's foot on the step to release its grip on the standard, whereby the elevation of the step on the standard may be changed at will during usage. In order to allow free use of a user's hands while maintaining balance a flexible waist belt is pivotally secured to a pair of small retainer loops which are freely slidable along the standards.

3,673,616
ARTIFICIAL ANTERIOR CHAMBER LENS

Svyatoslav Nikolaevich Fedorov, ulitsa Novopeschanaya, 2-a, kv. 28, and Valery Dmitrievich Zakharov, ulitsa Geroev Panfilovtsev, 1, korpus 5, kv. 332, both of Moscow, U.S.S.R.

Filed Jan. 16, 1970, Ser. No. 3,459
Int. Cl. A61f 1/16, 1/24
U.S. Cl. 3—13 3 Claims



An artificial lens, comprising a lens with supporting loops attached to on one of its sides and arranged behind the iris, and supporting rods fixed on said lens peripherally and directed radially with respect to the latter, said rods being located in front of the iris.

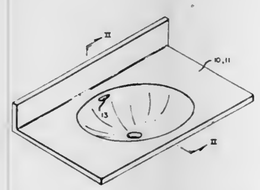
ERRATUM

For Class 4—10 see:
Patent No. 3,673,614

3,673,617
INTEGRAL TOPS AND BOWLS FOR SINKS AND THE LIKE AND METHODS OF MAKING THE SAME

Robert D. Schulz, Jr., 1386 Cardial Drive, Pittsburgh, Pa.

Filed Sept. 16, 1969, Ser. No. 858,369
Int. Cl. E03c 1/18
U.S. Cl. 4—187 7 Claims



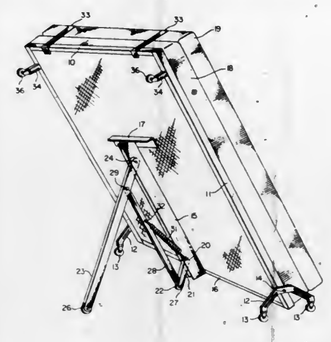
An integral sink top and bowl structure and method of making the same are provided having an outer layer of rigid resin reinforced with fibers and an inner layer of substantially greater thickness of a foamed in situ resin fixed to said outer layer, said foamed resin having a density between about 5 to 20 lbs per cubic foot and a dense, hard skin on the exposed surfaces thereof.

3,673,618
FOLDING BED ARRANGEMENT

Samuel G. Wells, Whittier, Calif., assignor to Teledyne, Inc., Los Angeles, Calif.

Filed Jan. 28, 1971, Ser. No. 110,726
Int. Cl. A47c 19/00
U.S. Cl. 5—164 6 Claims

A bed lift mechanism for easy tilting of full size beds between a horizontal sleeping position and a vertical storage position. A bed frame is pivotally mounted for rotation about a horizontal axis near an edge. A support member extends from the pivoted edge toward the center of the frame. A floor engaging link pivotally mounted on the support member engages the floor as the frame is tilted from the vertical storage



position. A floor engaging leg also pivotally mounted on the support member engages the floor as the angle of tilt from the vertical increases. The link and the leg are coupled by a leg actuator. Spring biasing of the mechanism aids the frame tilting action.

3,673,619
TRAPEZOIDAL STABILIZERS FOR INNER SPRING UNITS

John C. Kline, Merrick, and Albert F. Kronman, Locust Valley, both of N.Y., assignors to Eclipse Sleep Products, Inc., Brooklyn, N.Y.

Filed Jan. 7, 1970, Ser. No. 1,228
Int. Cl. A47c 23/00
U.S. Cl. 5—260 5 Claims



Wire elements of generally trapezoidal shape having a variety of spring members in the non-parallel arms of the trapezoids are disclosed. The spring members are incorporated between the upper and lower edges of inner spring box springs, mattresses and the like to provide a wide variety of support to the edges. The spring members, upon the application of pressure flex inwardly or axially, permitting close spacing of individual trapezoidal elements.

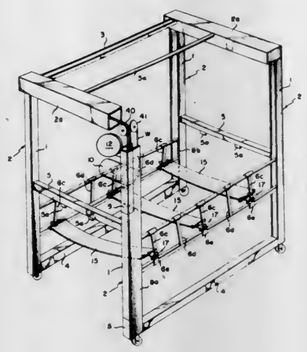
3,673,620
HYDRAULICALLY-OPERATED TROLLEY FOR HOSPITAL BEDS

Barbara Joan Saunders, Mill House, Cricket Hill, Yateley, near Camberley, Surrey, England

Filed Feb. 28, 1969, Ser. No. 803,238
Int. Cl. A61g 7/10; A47c 3/32
U.S. Cl. 5—63 6 Claims

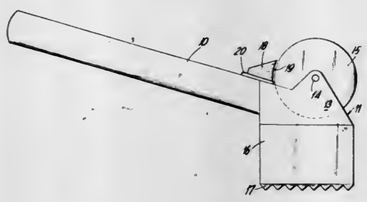
A trolley for use in conjunction with a hospital bed, the trolley comprising a pair of end frames each having one transverse vertically movable bar which carries means to attach the trolley to the bed. There being a pair of side rail frames vertically movable connected between the end frames, and having a plu-

rality of horizontally spaced webs interconnecting the side rail frames for supporting a patient. Lastly, there are hydraulic



means for selectively raising and lowering the side rail frames and the webs. Optionally, a weighing device can be used in combination with the trolley to weigh patients in situ.

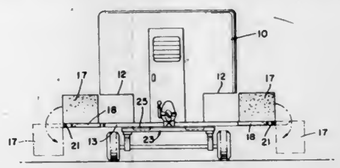
3,673,621
MULTI-PURPOSE CARPET SEAM JOINING TOOL
James Pecorella, 84-11 - 90th Street, Woodhaven, N.Y.
Filed March 3, 1971, Ser. No. 120,560
Int. Cl. B25f *1/00*
U.S. Cl. 7—8 **6 Claims**



A tool is adapted to attach the ends of carpet onto a flat strip having protruding prongs to form a joining handle and having a spindle, a roller rotatably mounted on the spindle, and a hammer head integral with the yoke. The roller levels the carpet on the strip, forces the prongs through the backing of the carpet, and the hammer flattens the prongs.

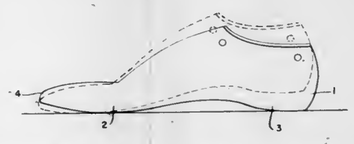
3,673,622
AMPHIBIAN CAMPER VEHICLE
Randy B. Allen, 2179 India Hook Road, Rock Hill, S.C.
Filed Dec. 4, 1970, Ser. No. 95,191
Int. Cl. B63b *35/00*
U.S. Cl. 9—1 T **6 Claims**

A camper vehicle body travels over land on a wheeled trailer bed behind any towing vehicle having suitable hitch means. To sustain the camper body in the water, the same is equipped with laterally extendable outrigger floats or pontoons. The pontoons are nestable within side notches of the



camper body during over land travel so that the caravan will not exceed highway width regulations.

3,673,623
LAST FOR SHOE PRODUCTION
Itzchak Zohar, 71 Sokoloff Street, Holon, Israel
Filed June 26, 1970, Ser. No. 50,083
Claims priority, application Israel, July 10, 1969, 32,598
Int. Cl. A43d *3/00*
U.S. Cl. 12—133 R **1 Claim**



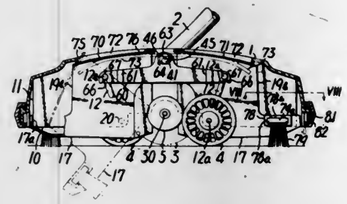
A last for shoe production. In that last there is defined a metartasal line being the line corresponding to that line of the foot sole connecting the joints which separate the metartasus from the phalanges. The last is characterized by at least one bulge at the metatarsal line region so designed that when the last is rested on a horizontal surface the toe portion remains clear of that surface while when the last is tilted by lifting the heel portion by the height of the designated heel, the toe portion touches the surface. It is further characterized by the fact that a cord extending between the two end points of the metartasal line is normal to the median vertical plane of the last.

3,673,624
SUSPENSION BRIDGE
Ulrich Finsterwalder, Munich-Obermenzing; Klemens Finsterwalder, Socking, and Hans Stefaniak, Freising-Weihenstephan, all of Germany, assignors to Dyckerhoff & Widmann Kommanditgesellschaft, Munich, Germany
Filed Aug. 18, 1970, Ser. No. 64,725
Claims priority, application Germany, Aug. 18, 1969, P 19 41 977.3; Aug. 18, 1969, P 19 41 978.4
Int. Cl. E01d *11/00*
U.S. Cl. 14—19 **7 Claims**



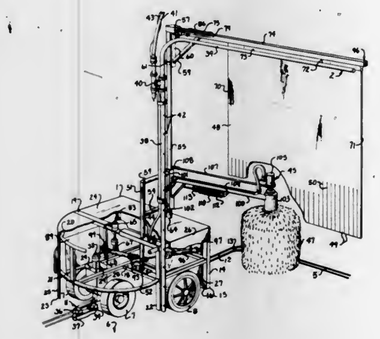
Wide span suspension bridge having a strengthening or reinforcing girder in the form of a streamlined solid walled box girder, which box girder is suspended by vertical trusses or supports from a supporting cable disposed in the vertical central plane of the bridge with which supports it is articulately connected.

3,673,625
CARPET SWEEPER AUXILIARY BRUSH MEANS
Hiroshi Fukuba, 2-320-82 Matsugaoka, Nigareyama, Japan
Division of Ser. No. 823,570, May 12, 1969, Pat. No. 3,628,211. This application March 4, 1971, Ser. No. 121,013
Int. Cl. A47l *11/33*
U.S. Cl. 15—42 **3 Claims**



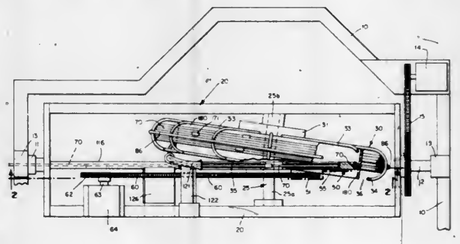
A carpet sweeper to be moved back and forth by operating a handle is provided with a rotary cleaning brush adapted to be moved in contact with the floor by means of drive wheels on a sweeper body. The frame cover of the sweeper body is of a double wall structure made of a thin, lightweight synthetic resin plate. The sweeper body further includes dust receptacles covering the under portion and positioned to the front and rear of the rotary brush, auxiliary brush means mounted on each end of the dust receptacles and means for elevating the drive wheels and comb members to clean the rotary brush. The operating members for opening or closing the dust receptacles and for elevating means are disposed on the upper surface of the frame cover.

3,673,626
VEHICLE WASH APPARATUS
Gordon V. Lieffring, 2 East Gregory Boulevard, Kansas City, Mo.
Division of Ser. No. 831,598, June 9, 1969, Pat. No. 3,581,333. This application March 15, 1971, Ser. No. 124,221
Int. Cl. B60s *3/04*
U.S. Cl. 15—97 R **6 Claims**



An automatic vehicle washing apparatus having a mobile carriage for movement along a predetermined path to wash a vehicle parked within such path. The improvement includes a standard swingably mounted on the carriage with a brush arm extending therefrom and supporting an arm with a mop frame movable thereon and supporting a depending fabric member with strips for engaging the upper surfaces of the vehicle during the washing cycle. The apparatus has controls whereby at the end of the washing cycle the standard is swung to move the brush arm and mop arm to a position trailing the carriage and away from the vehicle. The apparatus has a structure responsive to change of direction of the carriage for moving the mop arm toward but spaced from the vehicle and thereby reduce the space required for the path of the apparatus.

3,673,627
DRIVE FOR RODDING MACHINE
Charles B. Caperton, Montgomery Court Apartments, Narberth, Pa.
Continuation-in-part of Ser. No. 75,568, Sept. 25, 1970
Filed June 25, 1971, Ser. No. 156,867
Int. Cl. B08b *9/02*
U.S. Cl. 15—104.3 SN **3 Claims**

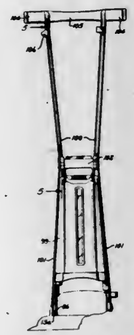


A drive for a sewer rodding machine is disclosed which includes a circular arcuate channel surface, such as the channel periphery of a wheel, around which the rod is looped. The wheel functions both as a drive wheel and as a torsion-taking wheel for preventing the twist of the twisting rod from getting back into the storage reel. The storage reel, and the drive-and-torsion-taking wheel, are supported on a fixed axle for rotation in a rotatable carriage. The fixed axle is slightly bent or angled. The storage reel is mounted on the bent or angled part of the axle so that the storage reel is rotatable in a plane which is disposed at a slight angle with respect to the axis of rotation of the carriage. The drive-and-torsion-taking wheel is mounted on the straight part of the bent axle, so that the wheel is rotatable in a plane which is parallel to the axis of the carriage. The storage reel includes, as a fixed component part thereof, an inner annular confining band which embraces a substantial portion of the channel periphery of the drive-and-torsion-taking wheel. This band functions to confine the rod in the peripheral channel of the wheel against radially outward movement. Due to the angular disposition of the annual confining band relative to the drive-and-torsion-taking wheel, openings are available for entry and exit of the rod into and out of the wheel's peripheral channel.

3,673,628
ARTICULATED HANDLE AND SHAMPOO TANK FOR A FLOOR CARE MACHINE
Paul E. Gaudry, Laval des Rapides, Quebec; Edouard Gaudry, Cite-St.-Laurent, Quebec; Raymond Descarries, Montreal, Quebec, and James Anderson, Dale-D-Durfe, Quebec, all of Canada, assignors to Consolidated Foods Corporation, Chicago, Ill.
Division of Ser. No. 798,549, Dec. 19, 1968, abandoned, which is a division of Ser. No. 647,378, June 20, 1967, abandoned. This application Oct. 16, 1970, Ser. No. 81,454
Int. Cl. A47l *11/40*
U.S. Cl. 15—143 A **1 Claim**

In accordance with the present invention there is provided a floor polisher or the like having a manipulating and carrying handle comprising a lower fork pivotally connected to the

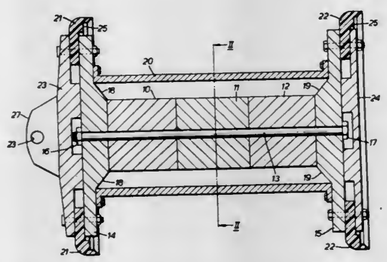
polisher base and an upper fork pivotally connected to the lower fork, there being releasable locking means for securing the forks in extended fixed position relative to each other. A shampoo tank is removably carried by the lower fork and is provided with a discharge valve having a valve stem extending from the upper end of the tank adjacent to the pivotal joint between the forks. Valve actuating mechanism is carried by the upper fork and is so arranged that when the forks are in extended locked position, the mechanism is in cooperative position with the valve stem for actuating the latter to open the valve. Conduit means extends from the discharge valve to the polisher base which includes a plurality of rotary brushes, at least one of which has an annular recess in which the conduit discharges. Each brush has a ring of sponge material, the rings of the different brushes being in compressive contact with each other. A channel is provided between the annular recess and the sponge on that brush.



3,673,629
MAGNETIC PIPELINE PIGS

Ernest D. Casey, Alveston, and Lloyd H. Sole, Bristol, both of England, assignors to Ernest-Lloyd Limited, Bristol, England

Filed June 16, 1970, Ser. No. 46,701
Claims priority, application Great Britain, June 16, 1969, 30,474/69; Oct. 8, 1969, 49,347/69
Int. Cl. B08b 9/04; F17d 3/02
U.S. Cl. 15—104.06 R 7 Claims

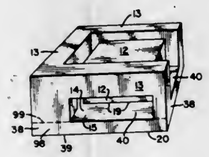


A pig or traveller for use in a pipeline contains a magnetic device having poles disposed close to, but out of contact with, the inside walls of the pipe so as to be capable of magnetically saturating the walls and creating a magnetic field outside the pipe which can readily be detected, e.g. by means of a sensitive magnetometer. Pole pieces in the form of radial flanges may be used with an axially extending magnet assembly. Alternatively, the magnetic device may be rotatably mounted in the pig and provided with an impeller which employs pipeline pressure to rotate the magnetic device, and so creates a rotating magnetic field, if the pig becomes stuck. By establishing detector stations at intervals along the pipeline, the progress of the pig can be monitored.

3,673,630
BRUSH HANDLE COMPRISING FENCELIKE PORTIONS FOR FENCING IN ITS BRISTLES, AND THE LIKE

Thomas P. O'Donnell, 220 Highland Boulevard, Kings County, N.Y.

Filed March 17, 1969, Ser. No. 809,477
Int. Cl. A46b 15/00
U.S. Cl. 15—160 5 Claims

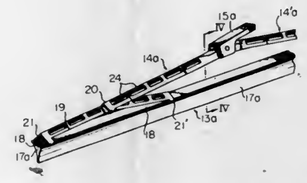


A brush handle comprising a handle portion comprising at least a bottom surface comprising at least a center portion for attaching brush bristles therewith and a surrounding border portion comprising each of opposite side portions abutting upwardly into a pair of fencelike portions sized overall for fencing-in and bordering said brush bristles and for safely fencing-in a dirty tool brushed against said brush bristles. A said fencelike portion comprises a bottom opening portion therethrough and leading to and from said brush bristles and through which said dirt can penetrate from said brush bristles and article after being brushed from said tool.

3,673,631
WINDSHIELD WIPERS FOR VEHICLES

Tadaaki Yamadai, Yokosuka; Tadao Kushida, Nakagun; Hiroshi Konishi, Fujisawa, and Yoshinari Inaba, Machida, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan and Ichikoh Industries Limited, Tokyo, Japan

Filed June 18, 1970, Ser. No. 47,476
Claims priority, application Japan, June 27, 1969, 44/60375; Oct. 3, 1969, 44/94144
Int. Cl. B60s 1/38
U.S. Cl. 15—250.42 11 Claims

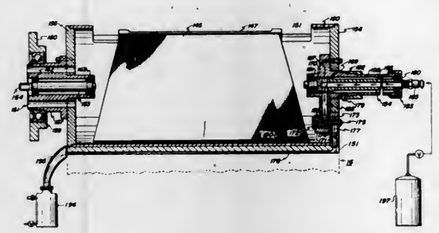


A windshield wiper for wiping a windshield of a vehicle, wherein improvements are made on the wiper blade so that the lifting force which is imparted to the wiper blade when the vehicle is driven at a high speed is significantly reduced by reducing the overall width of the wiper blade or by producing a force counteracting the lifting force through provision of a plurality of holes in the leeward side wall of each of the wiper blade supporting elements or stays each of which is configured in a shape of an inverted letter V in cross section.

3,673,632
CLEANING APPARATUS

Raymond K. Egnaczak, Williamson, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Filed Nov. 14, 1969, Ser. No. 876,715
Int. Cl. B08b 5/00
U.S. Cl. 15—316 9 Claims

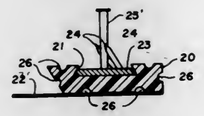


A system for removing accumulations of liquid and fine solid materials from between two movable contacting members that seal the accumulated materials in a slot where they are blasted by air to a receptacle. The blast is timed to occur when the slot is sealed between the member which carries it and a second member moving over it. An actuator releases air when the slot is sealed.

3,673,633
CARPET TACK STRIP

James Frebraro, 540 Idlewood Road, Pittsburgh, Pa.

Filed Sept. 23, 1969, Ser. No. 860,323
Int. Cl. A47g 27/04
U.S. Cl. 16—16 4 Claims



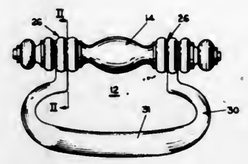
A carpet tack strip of plastic material having tack-like elements projecting angularly from the top surface thereof and having spacer means along one edge to provide accurate spacing from a base board. The tack-like members may be either embedded or driven through the plastic or struck-up from a metal insert that extends through a dove-tailed groove on the top of the plastic strip. Holes extend through the strip for driving nails therethrough for anchoring it to the floor.

3,673,634
DRAWER PULL

Edwin Van Ryn, Walker, and Edwin V. Driesenga, Holland, both of Mich., assignors to Keeler Brass Company, Grand Rapids, Mich.

Filed Dec. 4, 1969, Ser. No. 882,042
Int. Cl. A47b 95/02
U.S. Cl. 16—126 10 Claims

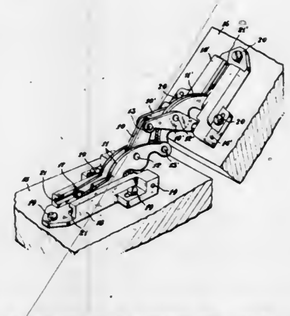
An improved drawer pull and method of assembly, the pull utilizing a support having rearwardly-mounted, axially-extending ears which cam against a cut-away portion of the bail of the pull so as to cause the support to pivot during assembly into coaxial alignment with the bail with the axle of the bail mounted in a bearing slot in the support. The ears and the extremities of the cut-away portion serve to limit the possible rotation of the bail on the support once the support is attached by screws to the drawer. The bail axle and the support bearing slot can be either short so as to require two of each, or the axle and slot can extend across the full length of the support.



3,673,635
HINGE FOR INTERNAL SURFACE MOUNTING, FOR DOORS OF PIECES OF FURNITURE OR CABINET DOORS IN GENERAL

Livio Cencioni, Km. 21.750, Via Nettunense, Aprilia, Italy

Filed July 22, 1970, Ser. No. 57,169
Claims priority, application Italy, July 22, 1969, 38867 A/69
Int. Cl. E05d 3/06
U.S. Cl. 16—163 3 Claims



A hinge for internal surface mounting, characterized in that comprises two pairs of levers crossing each other, and in particular that each lever of the first pair is pivoted together with the corresponding lever of the second pair, and moreover, the two converging ends of the levers which constitute the first pair are articulated each other, as also articulated each other, as also articulated each other are the two converging ends of the levers constituting the second pair, so as to constitute an articulated parallelogram, whereas the other two ends (diverging) of the first pair of levers are articulated the first on the fixed part of the cabinet and the other on the door, and the (diverging) ends of the second pair of levers are articulated each in a sliding way, the first with respect to the fixed part of the cabinet and the other with respect to the door.

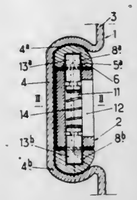
3,673,636
HINGE THAT TAKES TO PIECES

Jose Antonio Ruiz, 75, rue des Chantiers, Le Havre Graville, France

Filed Oct. 16, 1969, Ser. No. 866,952
Claims priority, application France, Oct. 18, 1968, 68170551
Int. Cl. E05d 1/06
U.S. Cl. 16—175 11 Claims

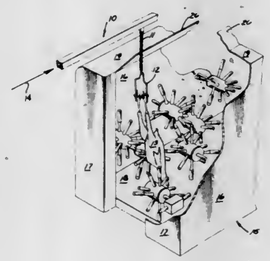
A hinge that takes to pieces for doors, cupboards, etc., comprising a male and a female part which slide around an axis. This hinge comprises two retractable pivots, each of which

can be inserted into a corresponding housing in the female part. The female part comprises a cavity whose two extremities terminate in two portions of a sphere into which are



lodged the stops comprising a housing for the retractable, interdependent pivots in the male part. The pivots are separated axially by a compression spring which holds them in position in the housing provided by the two stops.

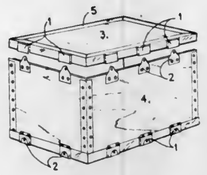
3,673,637
POULTRY PICKER
Edward J. Crane, Ottumwa, Iowa, assignor to International Agri-Systems, Inc., Ottumwa, Iowa
Continuation of Ser. No. 631,989, April 19, 1967, abandoned. This application March 12, 1970, Ser. No. 19,075
Int. Cl. A22c *21/02*
U.S. Cl. 17—11.1 **16 Claims**



A poultry picker having an overhead conveyor from which the poultry to be plucked are adapted to be flexibly suspended and carried through the machine. Positioned to either side of the path of travel of the poultry through the apparatus are a plurality of bullet-shaped, flexible finger supports. Each of the supports are rotatable about axes oriented generally toward the path of travel of the bird. The supports are arranged in upper and lower rows on each side of the machine with non-coinciding axes of rotation permitting sections of the bird to swing laterally after being engaged by the fingers on any particular support.

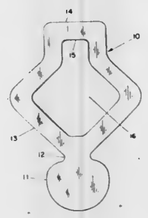
The individual supports are easily removable for cleaning and finger replacement by means of a depressible knob or button slidably and resiliently retained within the particular support hub. The support slides onto the hub and the knob extends to protrude through a suitable aperture therein. By depressing the knob, the support may be removed easily from the hub. It is understood that this abstract is not to be utilized to limit the scope of this invention.

3,673,638
DEVICE IN FOLDABLE ENCLOSURES
Hans Elov Nordgren, Ovanaker, 82800, Edbyn, Sweden
Filed Jan. 15, 1971, Ser. No. 106,722
Claims priority, application Sweden, Jan. 19, 1970, 569/70; March 20, 1970, 3825/70
Int. Cl. E05d *5/02*; **B65d** *9/12*
U.S. Cl. 24—19 **10 Claims**



This disclosure relates to a locking device for foldable enclosures to interlock parts thereof together, at least one part of the enclosure being provided with female members and another part being provided with male members which interlock with the female members, and at least one set of the members being carried by a band which has integrally struck therefrom tabs which are of a self-reinforced construction for ease of penetrating relatively hard fibrous material including wood.

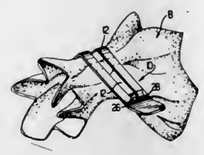
3,673,639
LAUNDERING CLASP
Rosemary F. Driscoll, New Richmond, Wis.
Filed Dec. 29, 1970, Ser. No. 102,408
Int. Cl. A44b *21/00*; **B65d** *63/00*
U.S. Cl. 24—16 PB **1 Claim**



A clasping device for preventing a pair of clothing articles such as stockings, socks, mittens and the like from becoming separated during laundering. A flat strip of flexible and resilient material having a head portion, a narrower neck portion, a body portion connected to the head portion by the neck portion and having an opening sufficiently large to admit the head portion, and an end portion having a slot extending from the body opening large enough to receive the neck portion but small enough to prevent passage therethrough of the head portion.

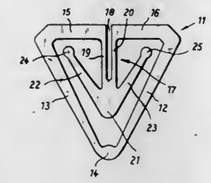
3,673,640
BAG CLOSURE
Dwight C. Brown, 414 North Granada Street, Arlington, Va.
Filed Jan. 13, 1971, Ser. No. 106,024
Int. Cl. B65d *77/10*; **A44b** *21/00*
U.S. Cl. 24—30.5 R **9 Claims**

A closure for sealing the mouth of a bag including a bowed strap and a clamping bar struck from the interior thereof and hinged at one end to the strap. Striking the clamping bar from the interior of the strap leaves an elongated slot in the strap defined by a plurality of contiguous edges. A hook is provided on the other end of the clamping bar which can be snapped over an edge of the slot in the strap with one hand to lock the



strap and bar together. Prior to locking them together, the mouth of the bag to be sealed is inserted between the strap and clamping bar.

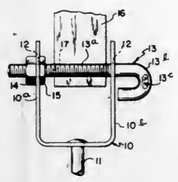
3,673,641
PAPER-CLIPS
Kurt Lorber, Postfach 100, 7301 Aichelberg/Wurttemberg, Germany
Filed July 19, 1971, Ser. No. 163,806
Claims priority, application Germany, July 29, 1970, P 20 37 708.6
Int. Cl. B42f *1/10*
U.S. Cl. 24—67.9 **8 Claims**



The present invention discloses and claims a paper-clip which is injection moulded in one piece from resilient plastics material. The clip has outer clamping limbs and an inner clamping member which lie in substantially the same plane when in an unstressed state, the inner clamping member comprising two clamping portions which are interconnected at one end by a connecting portion which is resistant to bending, the clamping portions having a low resistance to torsion and having smaller cross section than bridge portions which extend transversely, one from each of the other adjacent ends of the clamping portions, the ends of the transverse bridge portions remote from each other being interconnected by the outer clamping limbs which extend around the inner clamping member, the inner clamping member having, contiguous to its end remote from the transverse bridge portions, a support member which lies substantially in the plane of the inner clamping member and which extends into the vicinity of the transverse bridge portions, the transverse bridge portions being resistant to bending and the support member together with the connecting portion forming a unit which is resistant to bending in its central region and less resistant to bending in its outer regions.

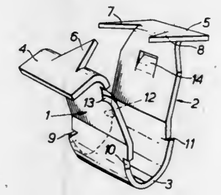
3,673,642
TENSION DEVICE FOR WIRES, STRAPS, AND THE LIKE
Earnest W. Harwell, Airport Road, Mansfield, Ohio
Filed Oct. 30, 1970, Ser. No. 85,349
Int. Cl. B65d *63/00*
U.S. Cl. 24—68 D **3 Claims**

A tensioning device for flexible wires, straps, and the like utilizes a U-shape yoke having parallel legs through which passes a straight portion of a cylindrical rod about which the flexible wire or strap is wound by rotation of the rod to provide the desired tension. One end of the rod is threaded and provided with a securing nut on the outside of the associated yoke leg and a lock nut on the inside of the same leg for controlling the endwise movement of the straight portion of the rod relative to the yoke. The other end of the rod is provided with a bent portion which aids in the rotation of the rod to



wind up the flexible member thereon and which is interengaged with a part of the associated yoke leg to hold the rod against unwinding action after the desired tension has been attained. The nuts at the other end of the rod hold this locking position.

3,673,643
HEAT SEAL RETAINING CLIPS
Colin David Kindell, Bushey, England, assignor to AMP Incorporated, Harrisburg, Pa.
Filed Oct. 26, 1970, Ser. No. 84,008
Claims priority, application Great Britain, Nov. 19, 1969, 56,565/69
Int. Cl. A44b *21/00*
U.S. Cl. 24—73 B **7 Claims**

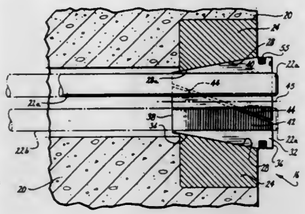


A fastener, for reception in a hole in a panel to secure a sealing strip to the panel, comprises a generally U-shaped member of spring metal, the member having a pair of arms which extend away from a bight portion of the member, the free end of the arms being formed with outwardly extending ears and with inwardly extending teeth to grip a sealing strip.

3,673,644
TENDON ANCHORAGE
George H. Howlett, Oakland, and James W. Howlett, Richmond Annex, both of Calif., assignors to Howlett Machine Works
Continuation-in-part of Ser. No. 751,951, Aug. 12, 1968, Pat. No. 3,520,032. This application July 10, 1970, Ser. No. 53,787. The portion of the term of this patent subsequent to July 13, 1987, has been disclaimed.
Int. Cl. F16g *11/00*
U.S. Cl. 24—122.6 **6 Claims**

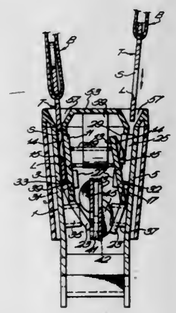
A tendon anchorage, primarily for use in pre-tensioning and post-tensioning concrete, in which the anchorage includes an axially convergent bore and a tendon gripping wedge assembly disposed in the bore. The wedge assembly preferably includes two wedges in which interiorly located gripping portions for engaging the tendons are formed. The gripping portions may

be aligned along opposed internal faces of the wedges. One or more slots or grooves, which may be angularly skewed to the longitudinal axis of the wedge assembly, extend from the gripping portions toward or through to the peripheral wall of



the wedges over a portion of the axial length to provide relatively movably wedge segments adjacent the gripping portions which afford the desired wedge assembly flexure and the addition of gripping forces.

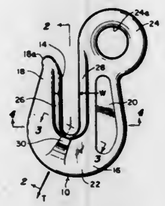
3,673,645
SAFETY BELT ANCHORAGE
David William Burleigh, Yately, England, assignor to Britax (London) Limited, Byfleet, Surrey, England
Filed June 4, 1970, Ser. No. 43,439
Int. Cl. A44b *11/26*
U.S. Cl. 24—203 **13 Claims**



A double anchorage for securing a pair of safety straps, said anchorage being adapted to be secured to a vehicle frame or to an equivilently strong support point between a pair of adjacent passenger seats, said anchorage comprising a pair of latch plates pivotally mounted within a single housing, means biasing said latch plates apart and towards respective side walls of the housing, the face of each latch plate facing a housing side wall being provided with a latching surface adapted to engage with a belt tongue when the latter is inserted between the latch plate and the respective side wall of the housing.

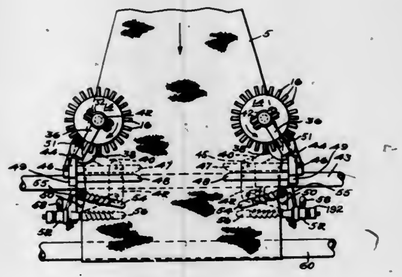
3,673,646
CHAIN HOOK
Stig Svensson, Ramnas, Sweden, assignor to Ramnas Bruks Aktiebolag, Ramnas, Sweden
Filed Dec. 9, 1970, Ser. No. 96,342
Int. Cl. A43c *11/08*
U.S. Cl. 24—230.5 CR **5 Claims**

A chain hook adapted to be detachably connected to an intermediate link in a chain between a pair of adjoining links connected thereto. The hook comprises a body having a lower bight and a pair of spaced-apart, upstanding legs defining a throat open at the upper end for receiving the intermediate link of the chain on a plane generally transverse of the body of the hook. The legs include spaced-apart stop surfaces on opposite sides which are engageable with said adjoining links for limiting transverse movement of the intermediate link once it is engaged in the throat, yet permitting free downward pivotal



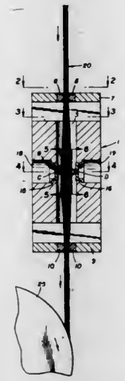
movement of one of said adjoining links toward the bight portion when pull is exerted on the chain. The body is provided with link support means extending transversely outwardly of said bight from at least one side thereof beyond said stop surfaces for supporting said intermediate link outwardly of said stop surfaces to reduce stress thereon.

3,673,647
SHEET GUIDING AND OPENING APPARATUS
Klaus Koster, Am Pferdekamp, Germany, assignor to Mount Hope Machinery Company, Taunton, Mass.
Filed Jan. 7, 1971, Ser. No. 104,577
Int. Cl. D06c *3/06*
U.S. Cl. 26—54 **10 Claims**



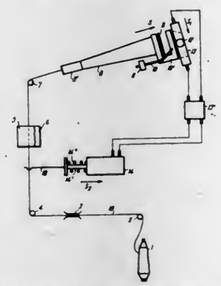
Apparatus for opening and uncurling sheet or web material, and for guiding the material along a given path, includes first and second pairs of rotatable selvage uncurlers arranged in serial order. The uncurlers of each pair engage opposite edges of the material. The lateral pull exerted by each uncurler is controlled by position sensors at either edge of the material. These are connected to react to an outward lateral shift of a first edge of the sheet by reducing the lateral pull applied to it by one of the first pair of uncurlers, and also by increasing the lateral pull on the other edge of the sheet by one of the second pair of uncurlers. This causes an inward lateral shift of the first edge that produces opposite results, increasing the pull of the first-mentioned uncurler and decreasing the pull of the second. The two remaining uncurlers are similarly affected by lateral shifts of the second edge of the material. The apparatus guides the material with a quickly responsive continuous hunting action, while opening and uncurling the material into a flat form.

3,673,648
NO-TWIST ENTANGLEMENT OF FILAMENT AND APPARATUS THEREFOR
Bernard L. Thacker, Jr., Hopewell, Va., assignor to The Firestone Tire & Rubber Company, Akron, Ohio
Filed Sept. 1, 1970, Ser. No. 68,687
Int. Cl. D02g *1/16*
U.S. Cl. 28—1.4 **4 Claims**



A bundle of untangled filaments is passed through a confining passageway in which it is subjected to a number of air jets to entangle the yarn. Preferably, there are four air jets, three jets on one side of the yarn and the fourth on the opposite side. Usually two jets on the one side are directed perpendicularly to the yarn path at an angle to spread and entangle the yarn, and the single jet on the opposite side is directed perpendicularly against the bundle, slightly offset from where the two air jets contact it. These jets spread and impart a twist factor to the yarn filaments about the bundle axis and thereby impart some entanglement to the yarn. The fourth jet is directed countercurrently to the flow of the yarn and further separates and entangles it.

3,673,649
YARN FEED CONTROL MEANS
Jiri Havlas; Premsyl Kostelecky, and Jaroslav Sedlarik, all of Liberec, Czechoslovakia, assignors to Elitex Zavody textilniho strojirenstvi generalni reditelstvi, Liberec, Czechoslovakia
Filed Jan. 13, 1970, Ser. No. 2,571
Claims priority, application Czechoslovakia, Jan. 20, 1969, 338-69
Int. Cl. D02q *1/12*
U.S. Cl. 28—1.7 **6 Claims**



Apparatus for automatically controlling the feeding of yarn into yarn supply magazines whereby to form a sufficient yarn supply in the yarn magazine for knotting together the two yarn ends, upon their breakage, without stopping the machine. The apparatus of the invention employs an adjustable sensor mounted upon the magazine, means for feeding yarn into the yarn supply magazine and means responsive to the sensor for feeding yarn into the magazine upon the attainment of a predetermined desired volume of yarn in the magazine. The apparatus of the invention responds to the completion of the filling of the yarn supply in the magazine, as well as responding to fluctuations of the volume of said supply, with a minimum delay.

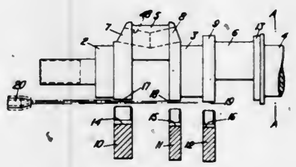
3,673,650
METHOD FOR PRODUCING A THERMOPLASTIC SYNTHETIC YARN HAVING A LATENT CRIMP
Giacomo Cerutti, Gozzano, Italy, assignor to Bemberg S.p.A., Milan, Italy
Filed April 29, 1970, Ser. No. 32,796
Claims priority, application Italy, May 19, 1969, 16977A/69
Int. Cl. B29c *17/02*; D01d *5/22*
U.S. Cl. 28—72.1 **4 Claims**



A drawing method and device for thermoplastic synthetic yarn is disclosed, by which simultaneously a latent crimp is imparted to the yarn, wherein the yarn is drawn by means of a heated drawing roll, the contact between the yarn and the heated surface of the roll is not continuous.

The invention contemplates also the yarn thus obtained and the textile articles made by the yarns as above referred.

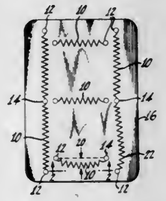
3,673,651
CRANKSHAFT BALANCE WEIGHTS AND METHOD OF ASSEMBLY
William F. Stewart, Peterborough, England, assignor to Perkins Engines Limited, Peterborough, England
Filed April 9, 1970, Ser. No. 26,922
Claims priority, application Great Britain, April 25, 1969, 21,147/69
Int. Cl. B21k *1/08*
U.S. Cl. 29—6 **6 Claims**



A crankshaft is formed with stub web portions for attachment of balance weights. The crankshaft bearing surfaces

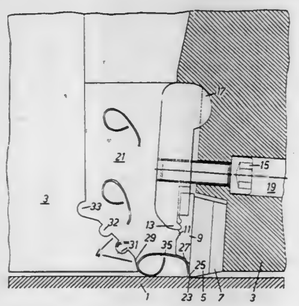
are ground and then the weights are electron beam welded to the web portions, which have a stepped configuration to enable indexing for sequential weight welding. After hardening trimmer plates are fastened to the weights axially of the crankshaft to complete the balancing. This provides an inexpensive, easily machined, accurately balanced crankshaft.

3,673,652
FILAMENTARY DISPLAY DEVICES
Richard Arthur Bonnette, New Providence, N.J., assignor to RCA Corporation
Filed May 26, 1970, Ser. No. 40,659
Int. Cl. H01j *9/18, 9/36*
U.S. Cl. 29—25.16 **8 Claims**



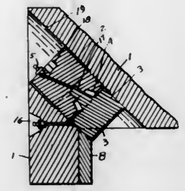
In the mounting of filamentary coils between support terminals, the coils are stretched an amount in the range of 30–120 percent of the original length thereof. After mounting, but prior to the final sealing-in of the devices, the coils are heated to a temperature well in excess of the normal coil operating temperature. The coils are then restretched. After the sealing-in of the devices, the coils are again heated to a temperature well in excess of the normal coil operating temperature.

3,673,653
CHIP DEFORMER AND BREAKER FOR USE WITH METAL CUTTING TOOL
Alfred Kaser, Rieden/Baden, Switzerland, assignor to Aktiengesellschaft Brown, Boveri & Cie, Baden, Switzerland
Filed May 13, 1970, Ser. No. 36,984
Claims priority, application Switzerland, June 3, 1969, 8394/69
Int. Cl. B26d *1/00*
U.S. Cl. 29—96 **5 Claims**



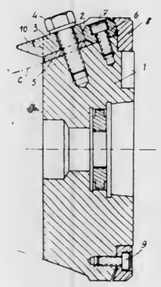
A chip breaker for deforming and breaking chips cut by a metal tool includes at least one deflecting surface for the chips constituted by a series of plane surface elements and which may also include at least one curved surface element.

3,673,654
CUTTING HEAD FOR A CHAMFERING TOOL
Frank G. Rick, 114 Gilfillan Street, Franklin, Pa.
Filed June 18, 1970, Ser. No. 47,191
Int. Cl. B26d *1/00*
U.S. Cl. 29—97 **4 Claims**



A cutter bit made up of a cutter head block, a fixed cutter and a rotary cutter bit in said block. The fixed cutter is provided to do a limited amount of cutting along the side edge of a plate and the rotary cutter is free to rotate in the hollow in a cylindrical hollow bore in the cutter head block. The inner end of the rotary cutter rests on a thrust bearing and a threaded member positions the rotary cutter in the bore. Suitable lubrication fittings are provided to supply lubricant to the inside of the hollow around the cutter.

3,673,655
MILLING CUTTERS WITH DETACHABLE BLADES
Marius Eydieux, Billancourt, France, assignor to Regie Nationale des Usines Renault, Billancourt, France
Filed May 18, 1970, Ser. No. 38,361
Int. Cl. B26d *1/12*
U.S. Cl. 29—105 **4 Claims**

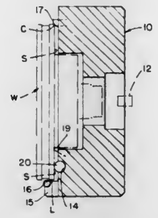


Front milling cutter of the detachable blade type comprising blade inserts fitted in peripheral notches of a cutter body and secured by means of screws, characterized in that the bottoms of said notches consist of flat faces tangent to a cone coaxial with the milling cutter and converging in the forward direction thereof, so that the cutting edges of the blades are relatively close to each other.

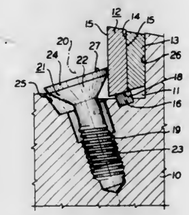
3,673,656
PLUNGE FACING TOOL
Wilbur R. Gerchow, Ann Arbor, Mich., assignor to Buhr Machine Tool Corporation
Continuation of Ser. No. 723,518, April 23, 1968, abandoned. This application Oct. 12, 1970, Ser. No. 80,218
Int. Cl. B26d *1/12*
U.S. Cl. 29—105 A **7 Claims**

The tool has a cutter holding head which may be rotatively engaged with or by a coaxial workpiece, the head removably

and replaceably mounting on an axial face thereof a multiplicity of known type circular cutting inserts. These cutters are circumferentially spaced from one another about the axis of the tool, and they are also spaced or staggered slightly relative to one another in the radial sense, so that upon relative rotation of the tool and work in removing material from the latter, the cutters sweep shallow circular groove paths which radially overlap one another.



3,673,657
DEVICE FOR CLAMPING A CUTTING INSERT TO A SEAT OF A TOOLHOLDER BODY
Manfred Wallace Gustafson, and Torsten Sandrud, both of Fagersta, Sweden, assignors to Fagersta Bruks Aktiebolag, Fagersta, Sweden
Filed Nov. 14, 1969, Ser. No. 876,896
Claims priority, application Sweden, Nov. 22, 1968, 15,944/68; Nov. 22, 1968, 15945/68
Int. Cl. B26d *1/12*
U.S. Cl. 29—105 **4 Claims**



A device for clamping a cutting insert to a seat of a toolholder body, said seat having a supporting and a pair of transversely oriented holding surfaces against which the insert is firmly wedged during the threaded engagement of a clamp screw in an inclined threaded opening in the toolholder seat. The inclination of the threaded opening is such as to produce the desired wedging effect against one holding surface during rotative or tightening manipulation of the screw, while said rotative screw movement produces the wedging effect against the other transverse holding surface.

3,673,658
STRUCTURAL STEEL CONVEYOR LINE
William Dobson Hagen, Beaconsfield, Quebec, Canada, assignor to Dominion Bridge Company Limited, Montreal, Quebec, Canada
Filed Feb. 1, 1971, Ser. No. 111,489
Claims priority, application Canada, Dec. 29, 1970, 101665
Int. Cl. B23p *17/00, 19/00*
U.S. Cl. 29—155 R **17 Claims**

A production line for the fabrication of structural steel members including a storage area from which selected material is delivered to a selected conveyor of a pair by side transfer apparatus, adjustable gauge means alongside the conveyor for locating the material with respect to cutting apparatus for cutting the material to length on the conveyor, side transfer means for transferring the cut-to-length material from its conveyor to an intermediate conveyor, advancing the material on the intermediate conveyor through a shot blast zone, transferring selected material to another conveyor by side transfer means and advancing the selected material through a punch and drill unit, and advancing all of the material on the conveyors to a marshalling zone where all pertinent material and instructions are placed on the members before further advance and side traverse into selected work areas for final assembly of the material to form the structural steel members.



3,673,659
METHOD FOR BONDING VANES IN TORQUE CONVERTER
Hirozi Ishii, and Koichi Okamoto, both of Fuji, Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan
Filed Nov. 6, 1969, Ser. No. 874,477
Claims priority, application Japan, Nov. 16, 1968, 43/83530
Int. Cl. B21k *3/04;* **B23p** *15/02, 15/04*
U.S. Cl. 29—156.8 CF **2 Claims**

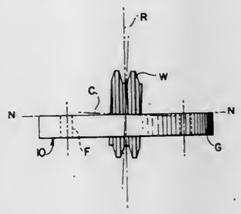


A method for bonding vanes to the impeller or turbine of a torque converter wherein the vanes are pressed to have their inner and outer flanges extending in the same direction and its blade web warped or curved in cross section, spot-welded to the core structure, snapped into the shell structure complete with the core structure, and then heated together with flux material to have the joint connections welded together at a temperature higher than the melting point of the flux material.

3,673,660
METHOD OF PRODUCING INTERNAL GEARING
Joseph J. Osplack, 14001 Piedmont, Detroit, Mich., and Rodman J. Osplack, 27425 Skye Drive West, Farmington, Mich.
Filed Nov. 13, 1969, Ser. No. 876,368
Int. Cl. B21d *53/28;* **B21h** *5/00;* **B21k** *1/30;* **B23p** *15/14;* **B29d** *15/00*
U.S. Cl. 29—159.2 **10 Claims**

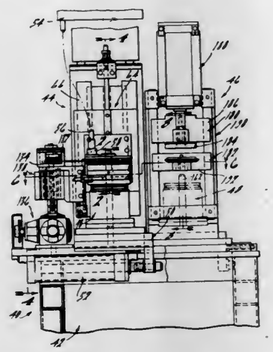
The method of producing internal spur gears, internal helical gears, tapered internal spur gears, and tapered internal helical gears consists of employing a machining or stock removing tool having an effective transverse rack cross sec-

tion composed of a basic or modified rack section of a width restricted to that required to produce the finished tooth profile without destroying the tooth profile of gear teeth adjacent to or spaced from gear teeth being cut, which machining or stock removing tool generates the tooth profile of the



internal gear being cut with which the generating tool is operatively engaged while machining such an internal gear by timed translational displacement, the effective transverse rack cross section being the apparent rack envelope of the generating tool in the transverse plane cross section of said gear.

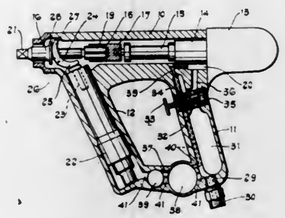
3,673,661
ROLLER BEARING ASSEMBLY FIXTURE
Kenneth Secunda, Detroit, Mich., assignor to Federal-Mogul Corporation, Southfield, Mich.
Filed Sept. 29, 1970, Ser. No. 76,530
Int. Cl. B23p *19/04*
U.S. Cl. 29—201 **27 Claims**



Apparatus for assembling rollers into pockets in a split retainer and in assembly with a double shouldered race member.

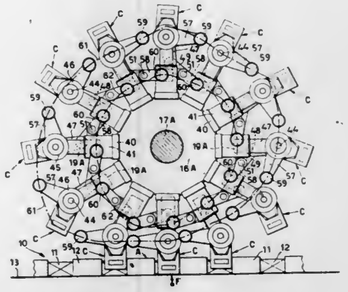
3,673,662
APPARATUS FOR TIGHTENING AND LOCKING A NUT ON A BOLT
John Hilton Turnbull, Stourport on Severn, England, assignor to G.K.N. Screws & Fasteners Limited, Warley, England
Filed Aug. 12, 1970, Ser. No. 53,080
Int. Cl. B23p *19/00;* **B23d** *19/04*
U.S. Cl. 29—200 B **6 Claims**

Apparatus for tightening a nut on a bolt comprising a body, a nut engaging wrench member rotatably and slidably mounted in the body, a pneumatic motor in the body to rotate the wrench member and a pneumatically operated vibratory impact device provided in the body and adapted to apply impacts to a deforming tool associated with the socket so that the



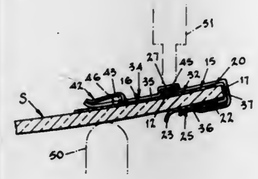
deforming tool acts on the nut and displaces parts of the thread of the nut into locking engagement with the thread of the bolt.

3,673,663
MACHINE FOR APPLYING POURING SPOUTS TO CONTAINERS
Carlo Taddei, Padenghe Sul Garda (Brescia), Italy, assignor to Seal Spout Europe S.p.a., Castiglione Delle Stiviere, Italy
Filed Dec. 11, 1970, Ser. No. 97,173
Int. Cl. B23p *19/04*
U.S. Cl. 29—200 A **8 Claims**



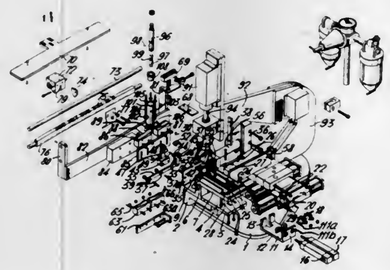
A mechanism is disclosed for applying a pouring spout to a container, such as, for example, the collapsible hopper-like metal spouts to cartons of sugar, rice or also liquid materials. The subject mechanism comprises a body which can be rotated about a vertical axis, a plurality of slidable members which can be reciprocated within said body, a conveyor mechanism for conveying and applying already formed pouring spouts, the individual assemblies of said conveying mechanism being universally connected to the slidable members aforesaid, a cam member affixed to the machine frame for guiding the individual assemblies along a preselected path. Means are also provided which are active when the assemblies travel along their preselected path, as guided by the cam members, for applying a pouring spout to a container. Anvil and hammer members are provided for clinching fastening pricks of the spouts after that they have been applied to the respective container.

3,673,664
LOCATING DEVICE
William F. Niese, Toledo, Ohio, assignor to Libbey-Owens-Ford Company, Toledo, Ohio
Filed May 6, 1970, Ser. No. 35,024
Int. Cl. B23p *19/04, 3/20;* **B23k** *37/04*
U.S. Cl. 29—203 P **3 Claims**



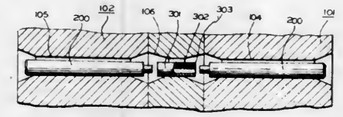
A relatively inexpensive locating device by which electric connector elements or bus bars can be attached to electrode on a glass sheet. Specifically, such locating devices can be employed to advantage during the location and soldering of the connector elements along the opposite sides of the glass sheet to conduct electrical energy to a plurality of fine metal lines fused to the glass and serving to heat the same.

3,673,665
STAKING MACHINE
Colin David Kindell, 22 Forest Walk, Bushey, and Terence Robert Raynor, 15 Russell Road, London, both of England
Filed May 21, 1970, Ser. No. 39,409
Claims priority, application Great Britain, June 17, 1969, 30,724/69
Int. Cl. H01r *43/04*
U.S. Cl. 29—203 D **5 Claims**



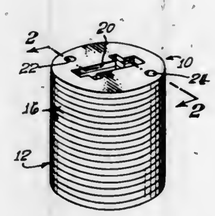
A machine is disclosed for staking terminal pins to a printed circuit board in which two strips of terminal pins are fed alternately towards a shear anvil along separate paths. The leading terminal pin of each strip is received within one of a pair of spaced channels in a shear anvil positioned adjacent a shear block. The shear anvil is arranged to move between a first position in which one channel is in alignment with a terminal pin feed path while the second channel is in alignment with a staker and a second position in which the one channel is in alignment with the staker and the second channel is in alignment with a terminal feed path. Movement of a channel from a position in alignment with a feed path to a position in alignment with the staker causes a terminal pin in the channel to be sheared from the strip.

3,673,666
APPARATUS FOR ASSEMBLING AND SECURING ELECTRICAL COMPONENTS BY DIE COMPACTING
Shiro Hozumi, Sakai; Kenichi Hirai, Osaka; Yoshiyuki Tanigawa, Neyagawa; Katuro Yoshida, Osaka, and Kanji Sugihara, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Aug. 19, 1970, Ser. No. 65,020
Int. Cl. H01r *43/04*
U.S. Cl. 29—203 DT **7 Claims**



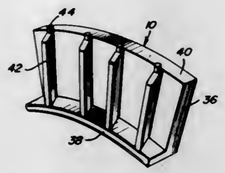
Apparatus for assembling and die compacting electric components having coaxial leads. A pair of lead magazines is provided having a plurality of tubular pins provided with terminal leads inserted into holes formed therein. A pellet magazine which is adapted to have a plurality of pellets inserted into a plurality of holes formed therein is sandwiched between the lead magazines to form a combined magazine. Transfer means transfers the combined magazine to a loading position adjacent, at least one die frame in which a plurality of die-holes are formed and in which heating means is provided. Loading means loads said plurality pellets and leads from said combined magazine into said die blank. Pressing means presses the heated pellets in said die-holes through said pins independently of each other to compact them. Unloading means then uploads the components formed within said die frame from said die frame into an empty combined magazine. With this system batches of hundreds of pellets of raw material for the electric components can be formed into intimate and integral bodies, each of which has coaxial terminal leads embedded in the ends thereof.

3,673,667
METHOD FOR PRODUCING COMPLEX SHAPES BY FILLED BILLET EXTRUSION
Paul Loewenstein, Lincoln, and Thomas A. Gorecki, Stow, both of Mass., assignors to Whittaker Corporation
Filed Nov. 23, 1970, Ser. No. 91,663
Int. Cl. B23p *17/00*
U.S. Cl. 29—423 **8 Claims**



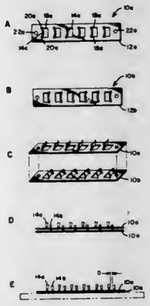
The method of this disclosure comprises the production of solid complex shapes of substantially uniform cross-sectional shape throughout their length from filled billets by extrusion of the latter with either the replica or filler, which together comprise the billets, being formed from a plurality of stacked, thin plates. The plates are preferably indexed and keyed together to maintain the desired complex shape throughout the extrusion step.

3,673,668
VANE EJECTOR TOOL
Richard D. Crook, Topeka, Kans., assignor to Industrial Problem Solvers, Inc.
Filed Aug. 31, 1970, Ser. No. 68,337
Int. Cl. B23p 19/04
U.S. Cl. 29—254 10 Claims



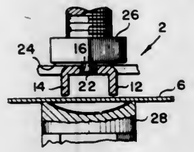
A tool for removing vanes from a jet engine compressor casing in the form of an arcuate plate having a plurality of projecting blades on one side thereof spaced apart and angulated to fit between the vanes in a jet engine together with projections on the outer end of each blade for engaging corresponding openings in the vane assembly in the jet engine compressor casing. The opposite surface of the arcuate plate is provided with an angulated socket having a rounded inner end for receiving the output member of an impact tool such as an air hammer to apply a driving force to the tool.

3,673,669
METHOD OF MAKING SIDE ENTRY CARD GUIDES
Woodrow O. Edstrom, and Charles H. Norling, both of Bloomington, Minn., assignors to Sperry Rand Corporation, New York, N.Y.
Filed Nov. 19, 1970, Ser. No. 90,992
Int. Cl. B23p 19/00
U.S. Cl. 29—428 6 Claims



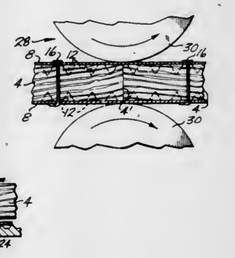
A method of forming a device for guiding and supporting a plurality of printed circuit cards incorporating electronic circuitry is disclosed. The device is formed of two sheet members having a series of tabs formed therefrom. The tabs of the two sheet members are oriented with the tabs of one sheet member extending through corresponding openings in the second sheet member forming pairs of opposing tabs between which printed circuit cards are compressively restrained. The sheet members may be of heat conductive and/or electrically conductive materials to function as a heat sink coupling means and/or as a ground/voltage bus for side entry of printed circuit cards.

3,673,670
METHOD FOR ATTACHING BRACKET MEANS TO AN IMPERFORATE SUPPORT
William O. Arnold, Jr., Parkersburg, W. Va., assignor to Union Insulating Company, Inc., Parkersburg, W. Va.
Division of Ser. No. 733,642, May 31, 1968, Pat. No. 3,522,924. This application March 17, 1970, Ser. No. 8,116
Int. Cl. B23p 11/00
U.S. Cl. 29—432.2 1 Claim



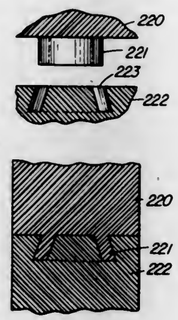
Bracket means, method and apparatus for securing an article such as an electrical wiring box to a sheet metal support, characterized in that the bracket means includes at least one stamped point extending downwardly into engagement with the support, said bracket containing an orientation opening adjacent the point. To effect penetration of the support by the points and crimping of the points relative to the support, cooperating jaw means are provided on opposite sides of the bracket and the support, one jaw face member having a male projection extending into the orientation opening to properly align the jaws relative to the points.

3,673,671
METHOD OF FABRICATING WOOD TRUSSES
George R. Petersen, Kent, Wash., assignor to P. H. Bowman Company, Inc., Seattle, Wash.
Filed Nov. 14, 1969, Ser. No. 876,625
Int. Cl. B23p 11/00
U.S. Cl. 29—432.2 12 Claims



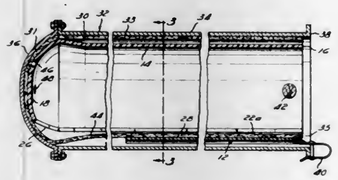
After the coplanar structural members of the truss assembly are arranged in end-adjacent array to form the necessary joints, a pair of toothed truss plates or the like is loosely applied to the sides of each joint; and a secondary fastener such as a clinch nail is impaled through the body of each member at each joint, and through the plates thereadjacent, so as to partially interlock the plates with the members in the plane of the assembly. So interlocked at the joints, the assembly is then passed in planar fashion through a roller press or the like, to flatten the plates against the sides of the joints, and to impale the teeth on the plates into the bodies of the structural members.

3,673,672
METHOD OF JOINING TWO BODIES IN CAPTIVE, INDEPENDENTLY ROTATABLE ASSEMBLY
Clemens A. Iten, Staunton, Va., assignor to Philip Morris Incorporated, New York, N.Y.
Division of Ser. No. 738,570, June 20, 1968, Pat. No. 3,541,683. This application Nov. 26, 1969, Ser. No. 877,584
Int. Cl. B23p 11/00
U.S. Cl. 29—443 11 Claims



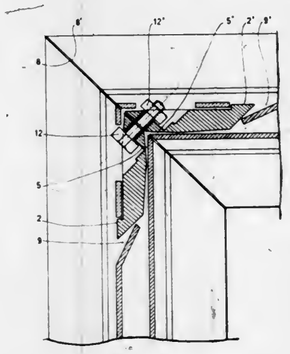
A safety razor of the clam shell type in which certain of the several components of the razor are of improved construction lending to reduction in manufacturing and assembling costs of the razor. Thus, spider bar movement for controlling the opening and closing of the cap members is effected by rotating a control knob connected to the bottom of a grip member in captive but independently rotatable movement therewith, the control knob being internally threaded for receiving the threaded lower end of a spindle which is fixedly connected at its upper end with the spider bar, the captive assembly of the control knob with the grip member being effected by plastically deforming a projecting part on the control knob in a n undercut groove in the grip member without allowing any adhesion between the two to occur. The spider bar also has a stem which is provided with a pair of lateral shoulders, at least one of which is adapted to abut on the underside of the razor bridge member when the spider bar is raised up to open the cap member thereby providing an upstop means to limit the degree of cap member opening and also to preclude accidental disengagement of the spindle from the control knob.

3,673,673
METHOD OF INSERTING A FLEXIBLE PREFORM IN A MOLD
Arthur J. Wiltshire, Cleveland, Ohio, assignor to Structural Fibers, Inc., Chardon, Ohio
Filed Feb. 4, 1970, Ser. No. 8,670
Int. Cl. B23p 11/02
U.S. Cl. 29—451 7 Claims



A method for inserting a flexible, oversized preform into an opening in a hollow mold is disclosed. The oversized preform is initially formed so as to have a configuration similar to that of the interior surfaces of the mold. The cross sectional size of the preform relative to the mold is temporarily reduced by forming an inwardly projecting furrow in the preform so that the preform may be inserted into the mold. An assembly for inserting the preform into the mold and reducing the cross sectional size of the preform as it is inserted into the mold is also disclosed.

3,673,674
METHOD FOR ASSEMBLING TOGETHER OF FRAME SECTIONS
Lyderic G. Catulle, Brussels, Belgium, assignor to S.A. Sodialox, Zug, Switzerland
Filed March 12, 1968, Ser. No. 712,539
Int. Cl. B23q 3/00
U.S. Cl. 29—464 5 Claims

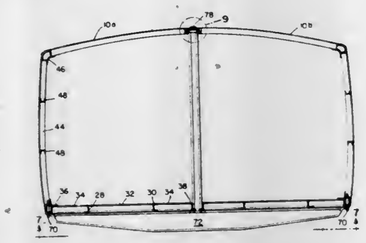


A process for the fitting of sections, particularly sections for metal carpentry, intended for the building of frames, the section being cut at 45°, comprising the steps of executing on the sections a local recessing of the cage in order to provide the sections with at least one notch and a corresponding number of oriented straps, inserting into each of the sections to be put together a fitting-element of an almost trapezoidal shape provided with at least one snug on the opposite side to the one provided with tenons and slots, the at least one snug serving the purpose of lateral guiding, this same element being also provided with a drilling perpendicular to the miter of the section cut at 45°, drilling to be found on the tenons and slots side and in the longitudinal axis of the section; bringing the at least one snug of the fitting element to the at least one corresponding notch provided on the section, at least one strap serving as guide for the purpose; fitting the sections together by joining the miters, and fitting the tenons and slots of the fitting element already inserted into the cage of a first section, into the slots and tenons of a similar fitting element previously placed in the cage of another section; introducing a tightening part into the drilling made on the two fitting elements, which in this manner prolong each other, and tightening the part into situ.

3,673,675
METHOD OF ASSEMBLYING A VEHICLE BODY
Walter S. Eggert, Jr., Huntingdon Valley, Pa., assignor to Boothe Airside Systems, Inc.
Filed Nov. 3, 1969, Ser. No. 873,422
Int. Cl. B23p 21/00
U.S. Cl. 29—469 5 Claims

A method for assemblying a vehicle body that is manufactured in two equal but opposite half sections about a longitu-

dinal center line. This method provides welded frame, riveted and adhesive bonded skin for supporting portions of the load



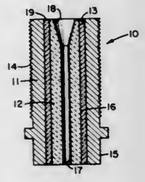
as shear panels, and cross bears and bolsters for supporting the body on running gear.

3,673,676

METHOD FOR FORMING TOOL ASSEMBLY

Everett H. Lock, Houston, and Joe K. Heilhecker, Bellaire, both of Tex., assignors to Esso Production Research Company

Filed May 13, 1970, Ser. No. 36,834
Int. Cl. B23k 31/02
U.S. Cl. 29—473.1 6 Claims



A member composed of a hard, refractory ceramic is mechanically bonded to a ferroalloy support. The assembly is fabricated by placing the hard refractory ceramic member concentrically in an opening formed in the support; packing the space separating the two parts with a refractory hard metal powder; and at an elevated temperature, infiltrating the packed interval with a filler metal which wets the ferroalloy support and the refractory hard metal particles but not the refractory ceramic member. Upon cooling, the support and solidified filler metal contract about the ceramic member, holding it in place by compressive forces exerted thereon. The method can be used to fabricate a variety of tool assemblies for use in applications requiring hard, wear-resistant, high-temperature strength parts.

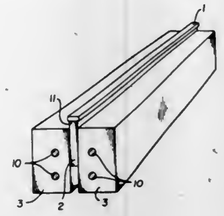
3,673,677

METHOD FOR BRAZING DISSIMILAR METALS AND COMPOSITE ARTICLES PRODUCED THEREBY

Kaj R. Loqvist, Fagersta, Sweden, assignor to Fagersta Bruks Aktiebolag, Fagersta, Sweden

Filed Feb. 5, 1970, Ser. No. 8,833
Claims priority, application Sweden, Feb. 14, 1969, 2059/69
Int. Cl. B23k 31/02
U.S. Cl. 29—473.1 9 Claims

The invention provides a method of joining a first hard metal carbide article and a second article (preferably steel), said second article having a higher coefficient of heat expansion than said first article comprising positioning said articles adjacent each other and applying brazing filler metal to the joint between said articles and heating said brazing filler metal sufficient to braze said first and second articles together along said joint and then cooling said articles to obtain a permanent joint between them; and cooling said second article, while said



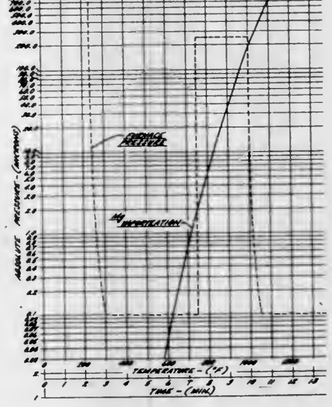
brazing filler metal is being heated, sufficiently so that the amount of contraction of said second article during the cooling period subsequent to the brazing is substantially of the same magnitude as the contraction of said first article. The invention is particularly applicable to the production of elongated articles and of rimmed wheels and includes such novel composite articles.

3,673,678

FLUXLESS BRAZING PROCESS

Glenn T. Moreau, and Irvin P. Bielefeldt, both of Rockford, Ill., assignors to Alco Standard Corporation, Valley Forge, Pa.

Filed May 8, 1970, Ser. No. 35,703
Int. Cl. B23k 31/02, 35/38
U.S. Cl. 29—494 4 Claims



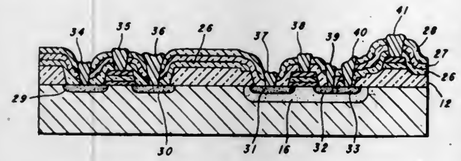
A process for the fluxless brazing of aluminum parts in a vacuum furnace in the presence of magnesium wherein a non-oxidizing gas is introduced into the evacuated furnace chamber to increase the pressure thereof and retard vaporization of at least part of the magnesium until just before the brazing temperature is reached.

3,673,679

COMPLEMENTARY INSULATED GATE FIELD EFFECT DEVICES

Bernard G. Carbajal, III; William Milton Gosney, both of Richardson, and Lou H. Hall, Dallas, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 1, 1970, Ser. No. 94,138
Int. Cl. B01j 17/00; H01g 13/00
U.S. Cl. 29—571 11 Claims



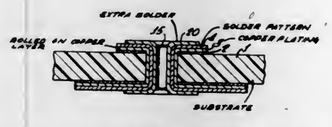
A complementary pair of insulated gate field effect transistors is fabricated in a monocrystalline silicon wafer. The method features the use of doped-oxide diffusion sources, self-aligned, passivated-gate electrodes, and the concurrent diffusion of the source and the drain regions for both the n-channel device and the p-channel device in a single step.

3,673,680

METHOD OF CIRCUIT BOARD WITH SOLDER COATED PATTERN

Edward Y. Tanaka, Huntington Beach; Darrel D. Cossaart, Garden Grove, and Norman B. Edwards, Placentia, all of Calif., assignors to California Computer Products, Inc., Anaheim, Calif.

Filed Dec. 14, 1970, Ser. No. 97,615
Int. Cl. H05k 1/18, 3/24
U.S. Cl. 29—626 7 Claims



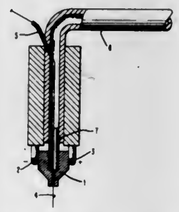
Printed wiring boards can be fabricated so as to leave a relatively thick solder layer where electrical and mechanical connections are required. Individual soldering operations can be eliminated using any one of several batch reflow soldering techniques.

3,673,681

ELECTRICAL CIRCUIT BOARD WIRING

James J. Steranko, Weston, Mass., assignor to Inforex, Inc., Waltham, Mass.

Filed April 1, 1969, Ser. No. 812,022
Int. Cl. H05k 3/30
U.S. Cl. 29—626 4 Claims



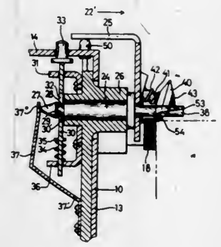
In the wiring of an electrical circuit on a circuit board having solder pads suitable for connection to circuit components, insulated wire passes through a solder tip which is moved relative to the position of the board. A portion of the wire extending from the head successively contacts the pads to which a wire connection is to be made. The application of heat to the insulated wire and the pad with which the tip is in contact sublimate the insulation on the wire and reflow solders the wire to the pad.

3,673,682

CAN OPENER DEVICE

Osamu Yamamoto, Kasugai-shi, Japan, assignor to Kabushikikaisha Aichidenkikosakusho, Kasugai-shi, Japan

Filed Aug. 20, 1969, Ser. No. 851,635
Claims priority, application Japan, April 23, 1969, 44/31914
Int. Cl. B67b 7/38
U.S. Cl. 30—4 R 3 Claims



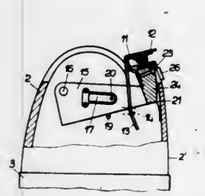
A can opener comprising a body frame, a feeder wheel, a movable frame pivotally supported on the body frame by a detachable shaft inserted in a bearing member carried by said body frame, a cutter rotatably supported by said movable frame and a holding mechanism for keeping said shaft in the inserted position, the shaft being pushed out toward the front of said body frame by operating said holding mechanism thereby making the cutter together with said movable frame easily removable.

3,673,683

SHEARING HEAD FOR DRY SHAVER

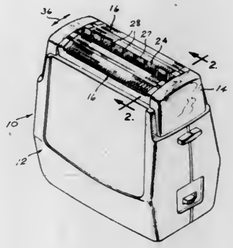
Richard Fischer, Frankfurt am Main, Germany, assignor to Braun Aktiengesellschaft, Frankfurt/Main, Germany

Filed July 13, 1970, Ser. No. 54,521
Claims priority, application Luxembourg, July 11, 1969, 59082
Int. Cl. B02c 19/10
U.S. Cl. 30—34.1 7 Claims



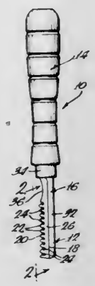
The shearing head includes a short hair shearing unit and a long hair shearing unit driven by a common reciprocating driving member. The long hair shearing unit is supported on a tiltable supporting member which can be angularly displaced and locked in a lifted position exceeding the top of the short hair shearing unit.

3,673,684
SHAVER WITH IMPROVED HAIR SETUP
Frank F. Muntz, 3164 South Third Street, Niles, Mich.
Filed Aug. 23, 1971, Ser. No. 173,882
Int. Cl. B26b *19/42*
U.S. Cl. 30—34.2 8 Claims



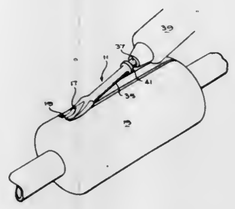
A shaver for hair which includes a hair setup part positioned adjacent the cutter of the shaver. The setup part includes a plurality of uniformly spaced diagonally extending grooves positioned in front of the cutter of the shaver which contact the skin of the shaver user and cause the hair thereon to be lifted up in the path of shaver movement with a resulting closer and smoother shave.

3,673,685
SHAPING AND RIBBING TOOL FOR BOWLING BALL FINGER HOLES
Salvatore J. Eppolito, 8649 Major, Stickney, Ill.
Filed Sept. 18, 1970, Ser. No. 73,444
Int. Cl. B26b *11/00*
U.S. Cl. 30—142 5 Claims



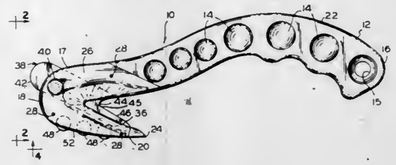
The shaping and ribbing tool for the finger holes in a bowling ball has a bit which is generally triangular in cross section with two sharp edges and a rounded edge. The first sharp edge is straight and is used to smooth or hone the interior of the finger hole. The second sharp edge is divided into a plurality of spaced teeth which is used to form finger gripping furrows and ribs or ridges in the finger hole. The third edge is rounded and acts as a bearing during use of the tool. A handle is secured to the bit's shank.

3,673,686
LEAD SLEEVE CUTTING TOOL
Neil W. Benedict, Jr., Evanston, Ill., assignor to Ajax Tool Works, Inc., Franklin Park, Ill.
Filed Dec. 21, 1970, Ser. No. 100,091
Int. Cl. B25d *3/00*
U.S. Cl. 30—168 6 Claims



A ripper tool usable with a pneumatic hammer or the like is provided to cut a soft ductile material such as a lead splice sleeve at a fast rate and with a clean cut. On a forward end of the tool is a ripper section having a pair of spaced toes for sliding along the sleeve and having a ripping tooth which projects inwardly into the sleeve and forces lead which, as it compresses and expands laterally, is forced rearwardly and upwardly through a wide slot between the toes and outwardly above the ripping tooth. Tools to make a circumferentially extending cut may be provided with a downwardly and forwardly projecting ripper section; and tools to make a longitudinally extending cut may be provided with an upwardly and forwardly projecting ripper section.

3,673,687
TAPE AND BANDAGE CUTTER
Cecil E. Phillips, and Fay M. Bennett, Eugene, Oreg., assignors to SaftPla Corporation, Eugene, Oreg.
Filed Dec. 31, 1970, Ser. No. 103,197
Int. Cl. B26b *29/02*
U.S. Cl. 30—294 2 Claims

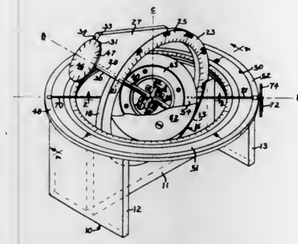


A tape and bandage cutter has a reversely curved toe portion formed at one end of a handle and a curved cutting blade removably mounted in a slot in such portion. Part of the blade extends generally parallel to the tape contacting surface of the toe portion. The handle is formed generally parallel to the toe portion such that a force applied to the handle in the direction of the toe portion draws the latter underneath the tape to be cut. Rollers mounted beneath the toe portion facilitate movement over the skin.

ERRATUM

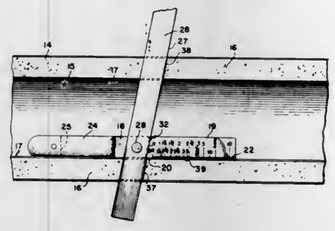
For Class 32—22 see:
Patent No. 3,673,709

3,673,688
GEOLOGICAL MECHANICAL COMPUTER
George F. Garlick, Richland, Wash., assignor to Holosonics, Inc., Richland, Wash.
Filed Feb. 11, 1970, Ser. No. 10,359
Int. Cl. G06g *1/08, 3/10;* E21b *47/00*
U.S. Cl. 33—1 8 Claims



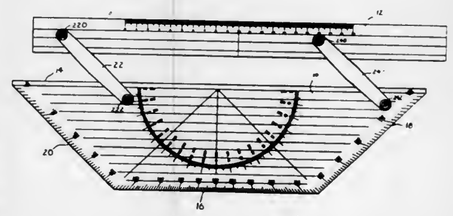
A geological mechanical computer is disclosed for displaying an analog of a stratum intersected by a borehole and determining the true dip and strike of the stratum from input information of the bearing and angle of inclination of the borehole and the structure angle and angle of orientation of the stratum with respect to the borehole. The computer has a stratum plane assembly mounted on a base for rotational movement about a vertical axis and pivotal movement about a horizontal axis. A shaft representing the borehole is operatively connected to a disc of the stratum plane assembly through a structure angle mechanism in which the shaft has a rotational axis that intersects the vertical axis and horizontal axis at a fixed intersection. A ring is rotatably mounted to the disc for rotation about the fixed reference in the plane of the stratum plane assembly. The ring has shaft elements extending therefrom having an axis coincident to the horizontal axis. A true dip pointer is radially affixed to one of the shaft elements for rotation about the shaft element. A protractor is freely suspended on the shaft element adjacent the pointer to visually display the true dip of the stratum plane assembly.

3,673,689
INSTRUMENT FOR MARKING PIPE INSULATION FOR MITER CUTS
Frank A. Magnotto, 3101 South 13th Road, Arlington, Va.
Filed April 7, 1971, Ser. No. 131,952
Int. Cl. B43l *7/06*
U.S. Cl. 33—75 R 4 Claims



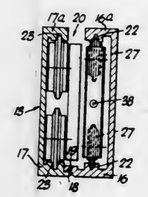
This specification discloses an instrument intended for field use in marking pipe insulation for the cutting of miters so that the insulation may be applied to a pipe elbow. The instrument comprises an elongate strip having a working face and flanges at one edge normal to the strip and extending in opposite directions from the strip. A straight edge is pivoted adjacent to one end to the strip and over the working face. The latter displays two sets of indicia. One of these is an angular index which indicates the angle which the straight edge is to assume with respect to an edge of the strip for a particular range of pipe sizes and the other is a lineal index which indicates where a second cut is to be made in relation to a first cut as determined by pipe size.

3,673,690
NAVIGATIONAL TRAPEZOID
Fernando De Barros, Rua do Dr. Antonio Candido-Lote 8-3° Esg., Parede, Portugal
Filed March 16, 1970, Ser. No. 19,690
Int. Cl. B43l *13/02*
U.S. Cl. 33—75 4 Claims



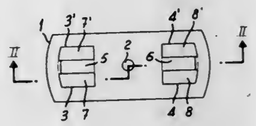
A navigational trapezoid to trace courses and azimuths on a chart and to inversely measure courses and azimuths in the form of an isosceles trapezoid to which an auxiliary ruler is coupled, the trapezoid having two opposite sides inclined at an angle of 45° to the larger base, and the trapezoid having two engraved protractors, one for use with longitudes of a chart as reference and the other for use with the latitudes as reference, the trapezoid also being engraved with lines parallel to the bases, and the auxiliary ruler also having lines engraved parallel to those of the trapezoid besides having a linear scale.

3,673,691
DRAFTING MACHINE
Leslie Arthur Gilbert, Glen Iris, Victoria, Australia, assignor to Ray And Gilbert Proprietary Limited, Victoria, Australia
Filed Dec. 11, 1969, Ser. No. 884,245
Int. Cl. B43l *13/02*
U.S. Cl. 33—76 5 Claims



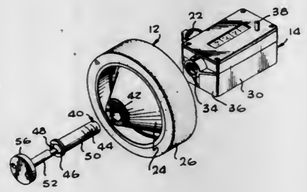
A track-type drafting machine wherein the tracks are tubular enclosures each comprising channel-shaped members disposed in open face to face relation with one flange of each member interfitting with the corresponding flange of the other member and with the other flange of each member disposed in spaced relation to define a slot therebetween them which elements of the carriages extend.

3,673,692
FOLDING MEASURING INSTRUMENT WITH IMPROVED LINKAGE MEMBERS
Andre Quenot, Besancon, France, assignor to Manufacture Quenot Mabo, Besanson, France
Filed Dec. 22, 1969, Ser. No. 886,872
Claims priority, application France, Dec. 30, 1968, 68182122. The portion of the term of this patent subsequent to Aug. 5, 1986, has been disclaimed.
Int. Cl. B43l 7/06; G01b 3/06
U.S. Cl. 33—118 **2 Claims**



A folding measuring instrument has alternate pairs of bosses and grooves on each side of the pivot on each linkage member. Pairs of bosses are aligned with and fit into pairs of grooves but do not contact the bases of the grooves.

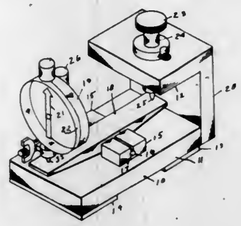
3,673,693
MEASURING WHEEL APPARATUS
Wallace D. Evans, Jr., Malibu, Calif., assignor to Rolatape Corporation, Santa Monica, Calif.
Filed Feb. 1, 1971, Ser. No. 111,561
Int. Cl. G01b 3/12; G01c 22/00; G01b 7/04
U.S. Cl. 33—141 R **9 Claims**



A measuring wheel apparatus where the rotatable wheel is mounted upon a conical recessed hub, a counter mechanism is secured to the wheel and extends within the recessed hub, the counter mechanism being adapted to record the rotational movement of the wheel, the wheel being connected to the counter mechanism by the flange of a sleeve element which is threadably secured within the counter mechanism, the driving connection for the counter mechanism being established by a shaft passing through the sleeve element, the shaft being attached to a cap which is secured to the hub of the wheel.

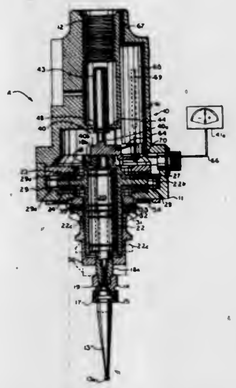
3,673,694
SETTING DEVICE FOR A BORING TOOL
Robert Adam, 463 Nagle Road, Erie, Pa., and Dayle Keefer, R. D. #2, Luther Road, Girard, Pa.
Filed March 26, 1970, Ser. No. 22,877
Int. Cl. B27g 23/00
U.S. Cl. 33—185 R **3 Claims**

This specification discloses a fixture suitable for use in machine shops for setting boring tools for boring holes to accurate dimensions. The fixture has a frame on which a dial indicator is supported in position spaced from a plunger. A rocking bar is supported on a fulcrum between the indicator and the plunger. The distance from the dial indicator point to



the fulcrum is twice the distance from the plunger to the fulcrum. The fixture base has pads on it suitable to be supported on a machine table.

3,673,695
NON-TILTING PROBE
William F. Rethwish, Bonita, Calif., assignor to Rohr Corporation, Chula Vista, Calif.
Filed May 22, 1970, Ser. No. 39,934
Int. Cl. G01b 7/28
U.S. Cl. 33—174 L **10 Claims**



An inspection probe comprises a housing for mounting on an inspection element of a programmed type of metal working machine.

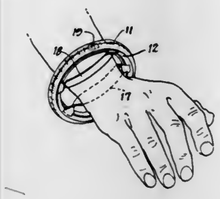
A coaxial assembly of parts is mounted in the housing, said assembly comprising an elongated inspection tip mounted for axial movement coaxially of a bearing, the bearing being mounted coaxially within a bearing support, which in turn is mounted for guided movement in a plane at right angles to the common axis of said assembly.

A restraining sleeve is mounted coaxially on the bearing assembly for limited axial movement to either of two adjusted, detent latched positions. In one adjusted, detent latched position of the restraining sleeve, the bearing assembly is restrained against lateral movement, but the inspection tip is free for movement axially of the assembly. In the other adjusted, detent latched position of the restraining sleeve, the inspection tip is restrained against axial movement but is free, with the bearing assembly, for guided movement in such plane at right angles to the inspection tip axis.

Electrical transducer means are actuated by movement of the inspection tip with the restraining sleeve in either of said

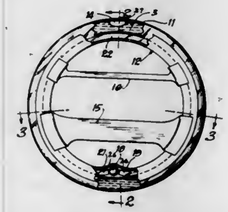
adjusted, detent latched positions to accurately measure and indicate the amount of inspection tip movement in either of said directions.

3,673,696
ATTITUDE INDICATOR
Gene B. Wasson, 1553 Gamon Road, Wheaton, Ill.
Filed Feb. 22, 1971, Ser. No. 117,352
Int. Cl. G01c 9/00
U.S. Cl. 33—348 **9 Claims**



An attitude indicator, or detector, having a circular, annular transparent tube containing a liquid, preferably colored, and a gas bubble, the tube being shaped and constructed for encircling and for fastening non-rotatably upon the forearm and perpendicularly to the length of the forearm of a diver. The position of the bubble in the tube, responsive to the forces of gravity, enables the diver to determine at any moment the attitude, or angular position, of the tube with reference to the planes or lines of gravitational forces, the attitude of his forearm and body, and by visual comparison with the tube the attitude of visible nearby structures and surfaces, and, as well, the attitude of his existing or any contemplated line of travel. Illumination of the tube and its contents, preferably constantly, is provided by means of a light emitter such as radium or other light emitting substance, whereby the bubble may be viewed conveniently and frequently and its location comprehended instantaneously by the diver, whether he be in open waters or in dark areas or in murky waters.

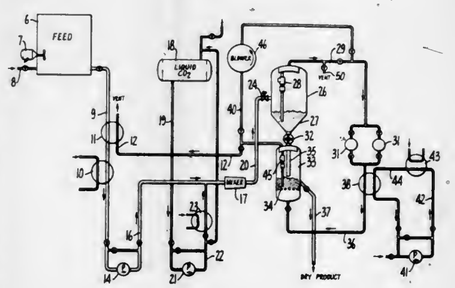
3,673,697
ATTITUDE INDICATOR
Gene B. Wasson, 1553 Gamon Road, Wheaton, Ill.
Filed Feb. 22, 1971, Ser. No. 117,353
Int. Cl. G01c 9/00
U.S. Cl. 33—348 **10 Claims**



An attitude indicator having a circular, annular transparent tube containing a liquid, preferably colored, and a gas bubble, the tube being constructed for encircling and for being fastened non-rotatably upon the forearm, in a position perpendicular to the length of the forearm of a diver. The readily visible position of the bubble in the tube enables the diver to compare and determine instantly, at any moment, the angular attitude, with reference to gravitational lines of force, of the tube itself, the attitude of his forearm and body, and the angular attitudes of nearby structures and surfaces.

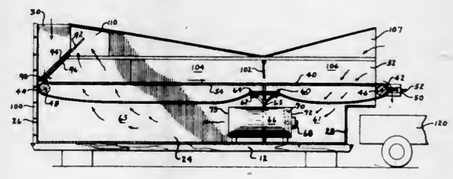
As this indicator is intended especially for use where light is absent, or minimal, or obstructed by dark colored sediment suspended in the surrounding water, strong illumination is provided. A battery powered lamp filament sends its light rays in a circular path through a strip of light-conducting plastic material, such as "Plexiglas," for example. The strip is positioned radially inwardly but adjacent to the tube, carrying adequate illumination to the tube contents throughout the entire tube length or circumference.

3,673,698
PROCESS FOR FREEZE DRYING WITH CARBON DIOXIDE
Albert S. Guerard, 3181 Bird Rock Road, Pebble Beach, Calif.
Filed Nov. 25, 1970, Ser. No. 92,791
Int. Cl. F26b 5/06
U.S. Cl. 34—5 **4 Claims**



A continuous process is provided for the improved freeze drying of an aqueous solution to remove the water by sublimation from ice crystals to produce a dry product which can be reconstituted with water more readily than like products heretofore. Such aqueous solutions comprise coffee or tea syrups, fruit juices, milk, eggs, broths and the like.

3,673,699
GRAIN DRYING APPARATUS
James F. Buffington, R.R. #3, Plymouth, Ind.
Filed Jan. 29, 1970, Ser. No. 6,771
Int. Cl. F26b 17/04
U.S. Cl. 34—66 **9 Claims**

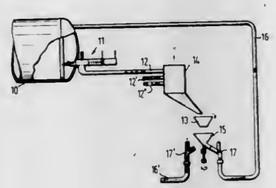


A grain drying apparatus having a housing and horizontally disposed porous conveyor. The housing is divided into a cool air compartment and a hot air compartment with a heating unit therebetween. A blower draws cool air through the grain on the conveyor in the cool air compartment and discharges it through the grain on the conveyor in the hot air compartment after the air has passed through the heating unit.

3,673,700
COFFEE ROASTING PLANT WITH AUTOMATIC SAMPLING ARRANGEMENT

Roland Schabbel, Emmerich-Huthum, Germany, assignor to Probat-Werke von Gimborn & Co. K.G., Emmerich, Germany

Filed Aug. 19, 1970, Ser. No. 64,963
Claims priority, application Germany, Sept. 11, 1969, P 19 46 132.6
Int. Cl. A23n *9/00*
U.S. Cl. 34—89 **8 Claims**

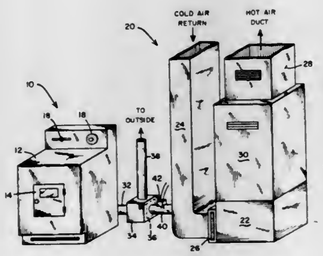


The several roasting ovens of a coffee roasting plant are equipped with mechanical samplers connected by pneumatic conveyors to a common testing station. Electronic controls operate the samplers in timed sequence to withdraw samples for testing which are thereafter returned automatically to the same oven by a distributor at the testing station and pneumatic conveyors, the distributor being operated by the electronic controls. Withdrawal of samples may be automatic or semi-automatic. Special design of samplers prevents mixing of material sequentially withdrawn from the same oven.

3,673,701
COMBINED BUILDING HUMIDIFIER AND CLOTHES DRYER

Robert V. Albertson, Wayzata, Minn.

Filed June 16, 1970, Ser. No. 46,614
Int. Cl. F26b *19/00*
U.S. Cl. 34—90 **4 Claims**

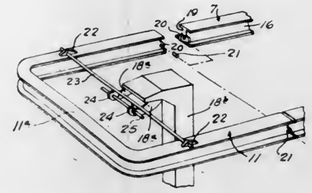


Moisture laden air from a clothes dryer is selectively directed either to the outside of the building or to the cold air return of the building's forced air heating system. Control means are provided for sensing the flow of air from the dryer to the cold air return for insuring that the motor driven blower of the forced air heating system is energized whenever the moisture laden air from the dryer is flowing to the cold air return.

3,673,702
APPARATUS FOR DRYING CLOTHING

Guillermo M. Obrador, Calle Vizcaya No. 341, Barcelona, Spain

Filed March 16, 1970, Ser. No. 19,756
Claims priority, application Spain, May 3, 1969, 366764
Int. Cl. F26b *13/00*
U.S. Cl. 34—162 **1 Claim**

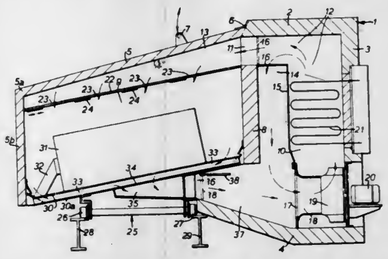


The present apparatus is for drying clothing by supporting and conveying clothing along an endless track which follows a right angular course and which has a loading and unloading zone, a shaker zone and a heating zone extending through a tunnel in which are located heating units and air exhausting units.

3,673,703
SHRINK-WRAP FILM HEATING APPARATUS

Friedrich Wieligmann, Westerkappeln, Germany, assignor to C. Keller, Laggenbeck/Westphalia, Germany

Filed Jan. 21, 1971, Ser. No. 108,477
Claims priority, application Germany, Jan. 22, 1970, P 20 02 786.5
Int. Cl. F26b *19/00*
U.S. Cl. 34—225 **6 Claims**



Apparatus for heating shrink-wrap film includes a heating space incorporating a heater element and a fan. A shrinkage chamber is formed by a pivotal hood disposed alongside the structure defining the heating space and pivotal movement of the hood effects control movement of flap valves in ducts leading to and from the shrinkage chamber so that when the chamber is open the flap valves are closed and vice versa.

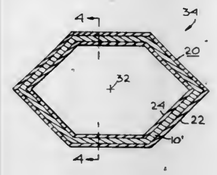
3,673,704
TEACHING DEVICE

Marguerite B. Dills, 770 West Twenty-sixth Street #B, San Pedro, Calif.

Filed Dec. 5, 1969, Ser. No. 882,536
Int. Cl. G09b *1/24*
U.S. Cl. 35—8 **8 Claims**

There is disclosed herein an improved teaching arrangement in which there is provided a thin strip-like body member that is foldable into a polygon such as a hexagon and has

material printed on the external faces thereof and on the internal faces thereof. The polygon is a thin rim-like polygon and hence, the internal faces are also visible. There is information

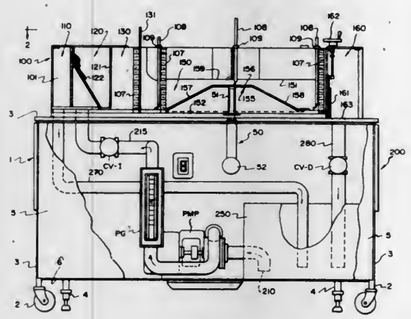


printed on the external faces and corresponding pertinent information is printed on the internal faces and the body member is enclosed in a holder means that maintains the body member in the polygon configuration.

3,673,705
EDUCATIONAL FLUID FLOW SYSTEM

David Ellis Wright, 13 Hornefield Road, Radlett, and John David Hardwick, 13 Princes Gardens, London, both of England

Filed March 9, 1970, Ser. No. 17,618
Int. Cl. G09b *23/12*
U.S. Cl. 35—19 R **15 Claims**



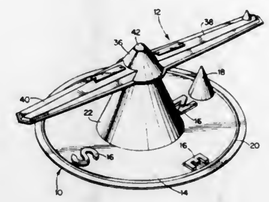
An educational fluid flow observation and measuring system, primarily a functional apparatus, which is designed to serve as an educational aid. The apparatus can be considered to consist of two major components: fluid circulation system and a fluid observation and measuring apparatus. The fluid circulation system is self-contained and is designed to pump a fluid, such as water, at a controllable flow rate from a sump to and through the observation and measuring apparatus and to return the fluid to the sump for recirculation. The observation and measuring apparatus contains various means for measuring and studying hydraulic and fluid flow principles and includes control devices for varying fluid inlet and outlet openings and a manually adjustable mechanism to permit the vertical variation of the fluid flow channel.

3,673,706
DEMONSTRATION COMPASS

Ralph Cavalucci, and John Walters, both of Cambridge, Mass., assignors to American Science & Engineering, Cambridge, Mass.

Filed June 8, 1970, Ser. No. 44,359
Int. Cl. G09b *23/18*
U.S. Cl. 35—19 A **12 Claims**

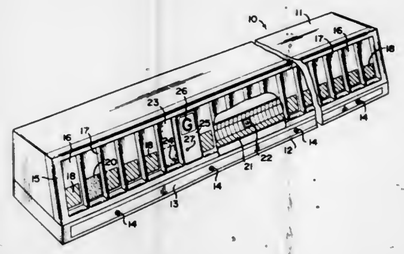
An educational or demonstration compass for classroom and teaching use. The compass is formed of molded plastic and includes a separable base and pointer. The base includes an integral compass card. The pointer is supported at its mid portion above the base by a needle pivot bearing which is secured to the center of the base. Bar magnets are embedded removably within sockets formed in the pointer, the bar magnets being color coded or otherwise identified to permit visual identification of their north-seeking poles. The north indication on the compass card is supplemented by an enlarged projection. A similar, but smaller, projection is formed at the north-seeking end of the pointer to permit the student to correlate these ends readily.



3,673,707
EDUCATIONAL APPARATUS

Virgil B. Manning, 978 Virginia Drive, Brevard County, Fla.

Filed March 15, 1971, Ser. No. 124,308
Int. Cl. G09b *1/06*
U.S. Cl. 35—35 D **6 Claims**

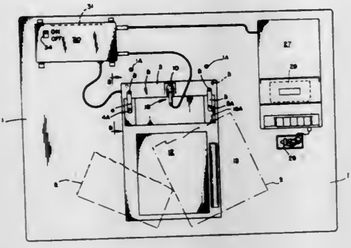


A teaching machine apparatus is provided for teaching symbols such as numerals or letters along with their interrelationship, having a flashing light source in a casing. The casing has a segmented front having each segment having a transparent portion to allow the light from the light source to pass therethrough. Means are provided on the casing for attaching coded members over the transparent portions of the casing which coded members have openings located in predetermined locations. A symbol bearing member can be placed over each coded member which member also has a predetermined opening therein. When the correct symbol bearing member is placed over the correct coded member their opening will align, allowing the passage of light therethrough. The unit also provides for a light reflector so that a lamp can be used for a plurality of transparent openings and also for the transparent openings to be covered with transparent colored material for providing different colored flashing lights.

3,673,708
MULTISENSORY TEACHING APPARATUS

Darwin K. Bevens, 394 Blair Avenue, Eugene, Oreg.

Filed Feb. 18, 1970, Ser. No. 12,189
Int. Cl. G09b 11/04
U.S. Cl. 35—37 2 Claims

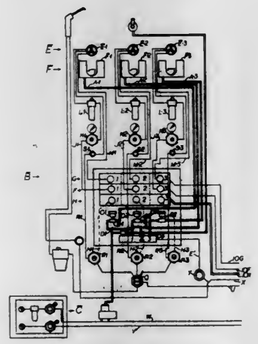


An apparatus for the teaching of handwriting skills wherein multisensory signals are fed back to the student to reinforce his learning process. Impairment of one or more of the students senses is overcome by the multisensory feedback by both auditory and visual signals. Grooved conductor plates and a stylus combine to train the students "muscle memory" with interchangeable plates of lessened groove depth being used as writing skill develops. Recorded instructions are provided the student and played upon completion of a circuit by stylus and plate contact.

3,673,709
DENTAL INSTRUMENT OPERATING SYSTEM

Richard W. Page, P.O. Box 258B, Old Salt Works Road, Chatham, Mass.

Filed July 17, 1970, Ser. No. 55,664
Int. Cl. A61c 11/02
U.S. Cl. 32—22 5 Claims

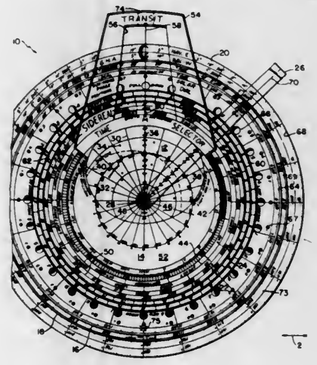


An arrangement of air-driven dental instruments is provided with foot control means for regulating supply of power air, syringe air and water and chip blower air, which, through pneumatically operated valve mechanism, controls air and water supplies. Bleed valve means, in the clip means for holding the cable of an instrument which is in use, operates selector valves for directing the controlled fluids to the proper instrument.

3,673,710
APPARATUS FOR PROVIDING A REPRESENTATION OF CELESTIAL BODIES

William A. Eisenhauer, Van Wert, Ohio, assignor to William A. Eisenhauer; William P. Eisenhauer; Ida J. Trust and Leigh E. Eisenhauer, Co-partners

Continuation of Ser. No. 600,920, Dec. 12, 1966, which is a continuation-in-part of Ser. No. 369,958, May 25, 1964, Pat. No. 3,290,799, which is a continuation-in-part of Ser. No. 271,658, April 9, 1963, Pat. No. 3,251,143, which is a continuation-in-part of Ser. No. 851,648, Nov. 9, 1959, Pat. No. 3,088,228. This application Jan. 5, 1970, Ser. No. 500. The portion of the term of this patent subsequent to Dec. 13, 1983, has been disclaimed.
Int. Cl. G09b 27/04, 29/00
U.S. Cl. 35—44 7 Claims



A Copernican planisphere for providing an indication of stars visible from a particular latitude on a predetermined date at a selected time and the method of operation thereof is disclosed. The planisphere structure and method of operation disclosed facilitates understanding of the Copernican principles of the relation of the heavenly bodies, accurate estimation of moon phases, and the determination of the time before which a particular heavenly body will appear at a viewing meridian, the rising and setting time of a heavenly body, the declination of heavenly bodies and the altitude thereof. Both astronomical and navigational information are provided on the planisphere disclosed.

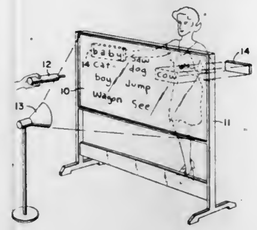
The planisphere structure includes a plurality of concentric dials, which are progressively larger in diameter downwardly, centrally mounted for relative rotation on a pivot pin. The upper dial is a mask through which a portion of the dial below is viewable. The mask includes an indicator portion having a window therethrough extending radially outwardly over the remainder of the dials. A reference rule is pivotally mounted centrally of the dials at one end and extends radially beyond the outer diameter of the larger of the dials. The reference rule is positioned between the mask and adjacent dial.

3,673,711
METHOD OF AND APPARATUS FOR VISUAL INSTRUCTION

Dolores J. English, Split Rock Road, Syosset, N.Y.

Filed Jan. 4, 1971, Ser. No. 103,492
Int. Cl. B43l 1/12
U.S. Cl. 35—62 3 Claims

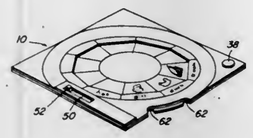
An apparatus for visual instruction comprises a substantially planar translucent screen having an observation surface and a reverse surface, a writing instrument for writing alphanumeric characters on one surface of the screen with an erasable writing medium, and means for illuminating the observation surface of the screen. The instruction apparatus further comprises means for enhancing the visibility of selected characters with respect to the rest, for example a series of reflecting blocks of white Styrofoam, of dimensions corresponding to predetermined characters and groups of characters, such blocks being adapted to be held on the reverse surface of the screen in registration with a selected character or characters.



3,673,712
EDUCATIONAL DEVICE

Paul F. Dacey, Nashua, N.H.; Samuel De Toma, Natick; Thomas F. Hayes, Woburn, and Matthew F. McNamara, Cambridge, all of Mass., assignors to EDUJ Corporation, Boston, Mass.

Filed Dec. 21, 1970, Ser. No. 100,216
Int. Cl. G09b 1/22
U.S. Cl. 35—74 8 Claims



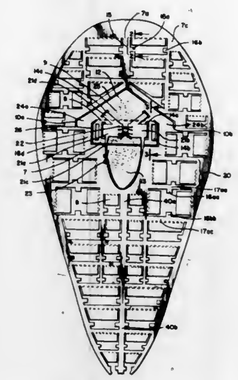
A rotatable dial, bearing pictures of common objects, is provided with a plurality of individual word cards which may be mounted to the dial by a pupil adjacent an identifying picture. The dial is provided with a word identification of each picture but the word is normally hidden from view being exposed only by a slide window by which the child confirms identification and word association. A transparent overlay is provided by which the child may trace the picture and word to further enhance word association.

3,673,713
HIGH-LIFT SNOW SHOE

Anthony Fedewitz, 44 Upland Way, Cedar Grove, N.J.

Filed May 27, 1971, Ser. No. 147,321
Int. Cl. A43b 00/00
U.S. Cl. 36—2.5 AB 27 Claims

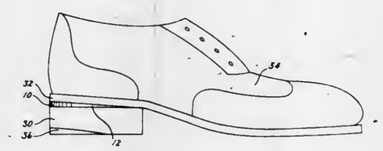
In a preferred embodiment, a snow shoe of injection-molded polypropylene, the tread of the snow shoe having a plurality of resiliently polypropylene-hinged valve flaps angled downwardly at about 45°, as measured from a horizontal, within a respective open cell space per flap such that as the snow shoe — on the boot of the wearer — is pressed downwardly the snow causes the flap to move upwardly to thereby close-off the open space to substantially prevent large quantities of snow from passing through the open space, to cause the trapped snow pushing upwardly against the underside face of the flap to contribute to lifting force against the flap which is pressed against a stop "limiting means" thereby supporting the snow shoe tread and snow shoe wearer on top of the snow, but also such that when the snow shoe is lifted the snow collected on the upper face thereof and on the upper face of the flap falls through the open space as the flap returns resiliently to the downwardly angled molded position.



3,673,714
HEEL WEDGE FOR SHOE

Antonio Procopio, 4690 Clayton Street, Denver, Colo.

Filed May 12, 1971, Ser. No. 142,538
Int. Cl. A43b 7/16
U.S. Cl. 36—81 7 Claims



A wedge, having an edge conforming to an exterior surface of the side of a shoe heel, is approximately the shape of one-half a heel, tapered from the exterior edge to the interior edge and has a series of elongated nail bracketing slots. The wedge is arranged to be forced between the nailed-on heel of a shoe and its sole to thereby compensate for a worn-down heel.

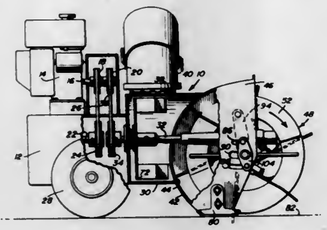
3,673,715
CONVERTIBLE SNOWBLOWER AND LAWN RAKE

Jerry J. Lines, 5327 Hampshire Avenue North, Minneapolis, Minn.

Filed Jan. 26, 1970, Ser. No. 5,873
Int. Cl. E01h 6/00
U.S. Cl. 37—43 E 9 Claims

A snowblower of the type including a forward transverse driven auger assembly provided with axially spaced opposite end right and left hand convolute auger blades and with the

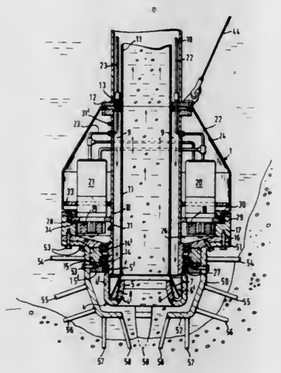
rear peripheral portions of the auger assemble embraced in a forwardly opening generally semi-cylindrical transverse shield having a central outlet opening formed therein toward which loose material against which the auger blades are advanced is conveyed. The auger assembly is displaceable forwardly relative to the transverse shield from its usual position so as to increase the spacing between the shield and the opposing outer peripheral portions of the auger blades and a plurality of resilient and removable raking tines are removably carried by the auger assembly and project at least slightly radially outwardly beyond the blades whereby the snowblower is converted to a raking machine.



3,673,716
COMPRESSED AIR OPERATED APPARATUS FOR RAISING UNDERWATER DEPOSITS

Alois Trondle, Wasserburger Landstrasse 209, 8000 Munich 82, Germany

Filed Sept. 22, 1969, Ser. No. 859,872
Claims priority, application Germany, Dec. 20, 1968, P 18 16 221.5
Int. Cl. E02f 3/92
U.S. Cl. 37—61 **17 Claims**



Apparatus for raising deposits, using a pressure medium, the material being raised being conveyed via a dredge pipe from the deposit to a separator in which the material raised is separated from the pressure medium and possibly from entrained portions of a liquid medium disposed above the deposit, the pressure medium being introduced at the lower end of the dredge pipe into the latter with a rotational component and in such a manner that a partial vacuum is produced under the effect of which the material to be raised enters the dredge pipe, the inlet end of the dredge pipe being held during dredging at a small distance from the deposit.

3,673,717
WOOD MARKING TAGS

Kajetan Latschbacher, A 4484 Kronstorf 120, Austria
Continuation-in-part of Ser. No. 722,609, April 19, 1968, abandoned. This application Dec. 9, 1970, Ser. No. 96,573

Claims priority, application Austria, April 20, 1967, 3758; April 20, 1967, 3759; April 20, 1967, 3760; Nov. 30, 1967, 10809
Int. Cl. G09f 3/12
U.S. Cl. 40—2 **10 Claims**



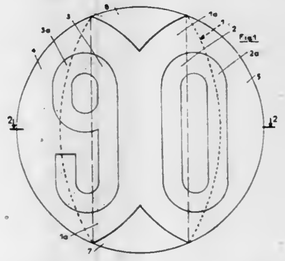
A wood-marking tag for wood identification purposes printed with or without markings thereon or punched therein, made of soft material, permitting its cutting without damage to the cutter means. The hardness of the tags is less than that of conventional saws made from steel alloys, to a degree avoiding dulling of the saw and optionally also permitting the punching of markings into said discs by means such as pliers and punchers. The material is preferably a glass-fiber reinforced plastic; preferably suitable for injection-molding. Optimum results are accomplished with plastics selected from the group consisting of 6-polyamide and ABS acylic nitrile-butadien-styrene-copolymers. The tag material in one embodiment is magnetically non-permeable, in another it includes metallic particles to make the tag magnetically permeable. The tag is equipped with projections applying it to the lumber such as for driving it into the lumber and/or for retaining the tag applied to the lumber thereon.

In one embodiment, the retaining projections comprise retaining clips, optionally with claws. In various embodiments, the tag is provided with indentations in its outer edge, with apertures near its outer rim, with barbs at its outer edge; with tubular projections at at least one side thereof; optionally with barbs on the tubular projection and/or with corrugated projections, optionally provided with barbs. In other embodiments, the tag is separable into two parts having identical markings, by a weakened line of cohesion, or by a perforated line, optionally asymmetrically with one of the parts having the shape of a segment.

3,673,718
PLATE CARRYING A PLURALITY OF INSCRIPTIONS

Piq Bernard, 07-Alissas, France

Filed Sept. 8, 1970, Ser. No. 70,447
Claims priority, application France, Sept. 11, 1969, 6931683
Int. Cl. G09f 3/20
U.S. Cl. 40—5 **9 Claims**

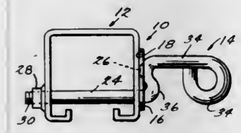


A plate for carrying at least two separate inscriptions comprises a base plate adapted to be fixed on a support. The front face of the base plate has a first inscription. Two flaps are hinged to the base plate and can be folded over the base plate, so that the first inscription is hidden and a second inscription is displayed on a surface of each flap.

3,673,719
INDICIA PLATE WITH MEANS FOR ALIGNING SAME WITH A FRAME MEMBER

Junius T. Moore, Jr., Charleston, W. Va., assignor to The Moore Company, Charleston, W. Va.

Filed July 27, 1970, Ser. No. 58,725
Int. Cl. G09f 3/08
U.S. Cl. 40—20 R **5 Claims**

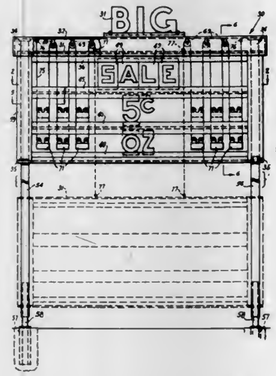


An indicia plate and bolt combination provide for both fastening and aligning of the plate relative to the surface of a frame member. The plate includes a pair of openings formed through it in spaced positions so that one opening can receive passage of a main shank portion of the bolt while the second of the openings can receive a portion of a curved section of the same bolt. The curved section is provided on the bolt by bending a portion of the bolt back onto itself by a limited amount to provide a curved section which fits into the second opening of the indicia plate.

3,673,720
CHANGEABLE SIGN

William S. Thornton, 204 Ella Street, Lafayette, La.

Filed Sept. 11, 1970, Ser. No. 71,517
Int. Cl. G09f 7/10
U.S. Cl. 40—125 R **8 Claims**

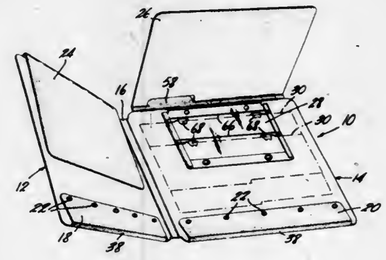


A changeable sign in which the letter panels form the background of the sign as well as carrying the indica. The letters carry horizontal tongues on their upper and lower edges which fit into grooves locking the letters therein. The framework of the changeable sign is mounted for vertical movement so that it may be lowered to the ground for changing the letters. End caps lock the letters in their groove support to prevent pilferage. Moveable guide poles are used to guide the framework as it is moved vertically to prevent damage to the sign and injury to the operator. Counter weights are used to support the weight of the sign through a system of pulleys so that the sign can be easily moved up and down as required.

3,673,721
RECORD CARD BOOK

George W. Wassell, Westport, Conn., assignor to Wright Barry Corporation

Filed Nov. 18, 1969, Ser. No. 877,685
Int. Cl. B42f 11/00
U.S. Cl. 40—104.07 **18 Claims**



A book for card records and the like comprises a one-piece blank of polymeric sheet material scored and folded to provide front and rear covers and a back, the covers being hinged to the back along integral hinge formations constituted by spaced-apart, parallel, scored hinge lines along the parallel longer edges of the back. An inside spacer flap is folded back along scored lines at the bottom edge of each of the covers into overlying relation with the lower portion of the inside face of the cover and is secured along its free edge to the cover. An internal cover flap is bent in from the top edge along an integral hinge so that the cover flap can be folded down over material supported on the inside face of the respective cover or opened-out to reveal the contents of the book. Brackets for supporting hinge-type record card mounting elements are fastened to the inside faces of the covers underneath the cover flaps. Hand-hold formations along the bottom edge of the cover facilitate removing and replacing the book in a storage shelf or other receptacle, and a protective flange bridges the edge of the book between the top edges of the covers, preferably in a position near the back of the book, to prevent the book from accidentally being damaged by attempting to force it into a storage location with an object intruding between the two covers.

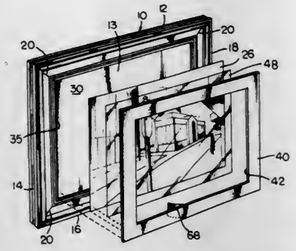
3,673,722
FRAME CONSTRUCTION FOR DISPLAYING PICTURES AND THE LIKE

Richard W. Robertson, Fort Wayne, Ind., assignor to Robertson Manufacturing Company, Inc., Fort Wayne, Ind.

Filed March 17, 1971, Ser. No. 125,052
Int. Cl. G09f 1/12
U.S. Cl. 40—152 **14 Claims**

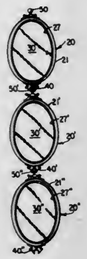
An improved frame construction enabling front mounting of articles and providing a rear mounting effect. The frame is of plastic composition and has a well and border members. The well includes a smooth front panel and a groove is formed coplanar with the front panel within the frame. The picture overlies the smooth front panel and there is overlying the pic-

ture a transparent non-marring and non-discoloring plastic sheet which is completely transparent. A mat having a pressure-sensitive adhesive at the outer periphery seals the transparent sheet cover to the picture and the outer periphery fits within the groove and adhesively secures the picture at its



outer periphery to the frame with the outermost edges of the mat being located within the groove. The picture is totally sealed and once the picture is mounted it provides the effect of a rear mounted picture, with mortised grooves located diagonally at each of the corners of the border members, enhancing the effect of a rear mounted picture.

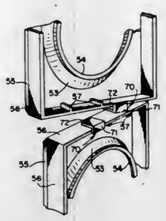
3,673,723
INTERCONNECTED HANGING PICTURE FRAMES
Burton A. Lazar, Chicago; Randall P. Bell, Oak Park, and John P. Vanderhoef, Evanston, all of Ill., assignors to Intercraft Industries Corporation, Chicago, Ill.
Filed March 12, 1971, Ser. No. 123,772
Int. Cl. G09f *1/12*
U.S. Cl. 40—152.1 **19 Claims**



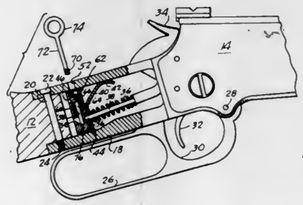
The picture frames are of one-piece construction and are used for displaying pictures, photographs, or the like. Two projections protrude respectively from opposite points on the side wall of the frame. One projection of a first picture frame is inserted through an opening in the projection of a second picture frame which is attached to the wall. Thus, the first frame will hang from the second frame.

3,673,724
INTERCONNECTING PICTURE FRAMES
Randall P. Bell, Oak Park, and John P. Vanderhoef, Evanston, both of Ill., assignors to Intercraft Industries Corporation, Chicago, Ill.
Filed Nov. 25, 1970, Ser. No. 92,551
Int. Cl. G09f *1/12*
U.S. Cl. 40—152 **3 Claims**

The picture frames are of one-piece construction and used for displaying pictures, photographs, or the like. On one of the side walls of each frame is a hook which is constructed frictionally and removably to engage the side wall of another picture frame.

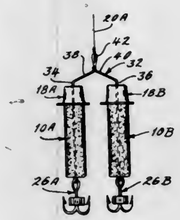


3,673,725
TAMPER-PROOF LOCK FOR SMALL ARMS
James A. Cravener, 1627 5th Avenue, Ford City, Pa.
Filed Oct. 23, 1970, Ser. No. 82,932
Int. Cl. F41c *17/00, 17/08*
U.S. Cl. 42—1 R **6 Claims**



A safety lock for small arms, said lock preventing opening, breaking, loading or discharge of the piece. The lock comprises a pin mounted in a selected portion of the small arm. The pin is axially advanceable and retractable by means of a separate externally applied key which at all times is retained by the owner. The pin, when in one of its extreme positions, engages a portion of the conventional small arms mechanism to lock the gun against firing, loading or even opening of the action. The gun is, therefore, rendered "tamper-proof" until application of the appropriate key.

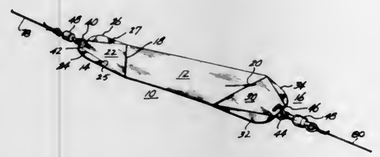
3,673,726
FISH LURE
Joseph W. La Montagne, 121 East Marceau Street, St. Louis, Mo.
Filed June 24, 1970, Ser. No. 49,275
Int. Cl. A01k *85/00*
U.S. Cl. 43—42.11 **8 Claims**



A fish lure having one or more body portions constructed of a relatively light buoyant substance and having a cup-shaped

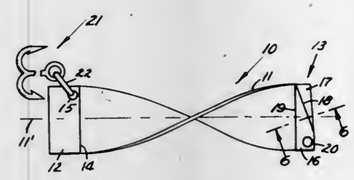
member on the forward end thereof and a hook portion on the rearward end. The subject lure is designed and constructed to produce a jerky action when moving through and/or over the water, and is particularly designed to be used simultaneously with another, usually heavier lure, which enables it to be cast to a considerable distance and yet retains its action characteristics as a very lightweight lure.

3,673,727
FISHING LURE OR ATTRACTOR
Eddie Bauer, Bellevue, Wash., assignor to Simco, a co-partnership consisting of Eddie Bauer and Eddie C. Bauer, Bellevue, Wash.
Filed Sept. 2, 1970, Ser. No. 68,821
Int. Cl. A01k *85/04*
U.S. Cl. 43—42.51 **4 Claims**



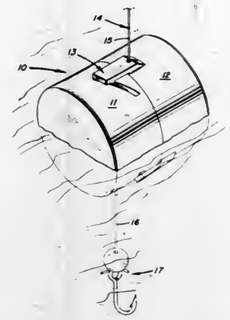
A novel trolling lure is disclosed which comprises an elongated plate or blade having an intermediate portion between an obtusely canted flat front portion and an obtusely but oppositely canted flat rear portion. The front and rear portions are joined to and cant from the intermediate portion at transverse bends or creases disposed angularly across the plate relative its longitudinal axis, oppositely thereto with respect to each other. The lure is provided with leading and trailing apertures disposed along the axis of the lure for the attachment of trolling lines. The front and rear portions each may have wings at their side edges standing from the obtusely canted faces, the wings at one being directed downwardly and at the other end upwardly with respect to the flat intermediate portion has been inserted. Preferably the wings on each portion are unbalanced as to area and this unbalance is opposite as between said two end portions and the lines along which the wings are bent are directed so as to intersect the lure axis.

3,673,728
FISH LURE
Roger G. Danbrova, 1206 South 11th Street, Manitowoc, Wis.
Filed April 29, 1971, Ser. No. 138,577
Int. Cl. A01k *85/04*
U.S. Cl. 43—42.51 **17 Claims**



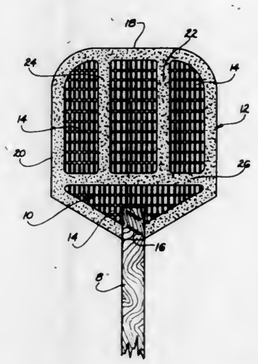
An elongated fish lure having a 180° circumvoluted spiral body member and having an angularly projecting tail and an angularly projecting deflector head both projecting on the same side of the lure. The tail section is substantially flat and is bent outwardly and rearwardly at an angle less than 90° to the longitudinal axis of the body member. The deflector head is bent outwardly and forwardly at angle less than 90° to the longitudinal axis of the body member.

3,673,729
FISHING FLOAT
Ervin E. Lintz, 1412 Martha N.E., Albuquerque, N. Mex.
Filed July 7, 1970, Ser. No. 52,886
Int. Cl. A01k *93/00*
U.S. Cl. 43—43.11 **5 Claims**



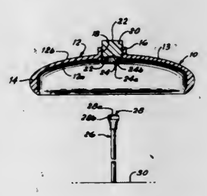
An improved fishing float, which includes means for automatically controlling and regulating the amount of drop-line to be used, comprising a pair of mating housings each having a freely rotatable spool therein and means to secure the housings together. The securing means comprises a groove and detent arrangement cooperating with resilient tongues and serves to cam the float open and closed upon application of a relative twisting motion to the housings. The spools are coupled together and a cast-line is wound onto one of the spools and extends to a fishing reel. A drop-line is wound on the other spool in the opposite direction from that of the cast-line so that as line is wound off one spool the other line is wound onto the other spool.

3,673,730
FLY SWATTER
John N. Hegenberger, Columbus, Ohio, assignor to Joseph J. Jacobs, Columbus; Joseph W. Loomis, Johnstown and Bruce A. Lehner, Columbus, Ohio, part interest to each
Filed Dec. 8, 1969, Ser. No. 883,096
Int. Cl. A01m *3/02*
U.S. Cl. 43—137 **1 Claim**



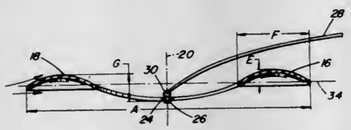
An improved fly swatter blade for killing insects without squashing them which consists of a perforated sheet of relatively resilient plastic material to which is bonded relatively thick cushioning strips formed of soft sponge-like plastic material.

3,673,731
REVERSIBLE AERODYNAMIC DISC AND GYROSCOPIC TOY
Raphael Farhi, and Edward H. Farhi, both of 1744 Monroe Avenue, New York, N.Y.
Filed June 21, 1971, Ser. No. 154,848
Int. Cl. A63h 1/32
U.S. Cl. 46—47 8 Claims



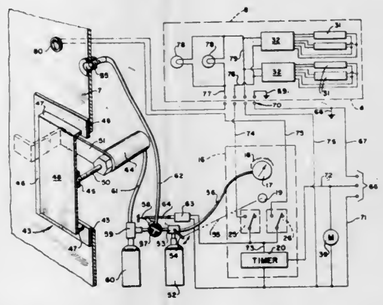
A disc with an aerodynamically shaped concave/convex surface and an inwardly turned rim has a central portion that includes a central circular depression in at least one transverse end surface thereof. The depression has a concave bottom and a right cylindrical side wall. In one embodiment of the invention, the central portion constitutes a readily removable and invertible plug so that the central depression may be arranged to face either inwardly or outwardly of the disc. In an alternative embodiment of the invention, the central portion is made integrally with the concave/convex surface and oppositely facing central depressions are formed on both (inner and outer) transverse end surfaces thereof. The disc is adapted to be spun by twirling an elongated wand the tip of which is in an inwardly or outwardly facing central depression of the disc, the disc being supported by the wand during such twirling. With the concave surface of the disc facing downwardly, twirling of the wand causes the disc to rotate, and after the disc is turning with sufficient speed a slight push of the wand in an upward direction will cause the disc either to hover or to sail through the air depending upon the magnitude and direction of the force applied by the wand and the speed of rotation of the disc. With the concave surface of the disc facing upwardly, either by inverting the central plug as in the first embodiment or by inverting the entire disc as in the second embodiment, a gyroscopic toy is provided. With the disc rotating and with its concave surface facing upwardly, the lower end of the wand the tip of which now is in the outwardly and downward facing depression can be placed on a flat surface where it will remain erect with the disc spinning on its upper end without any support for the wand. Should the wand be removed in this second mode of operation, the disc because of its aerodynamic configuration which generates a downward force, will descend and spin on the flat surface like a top. A feature of the invention is that both the central depression and the tip of the wand that coacts therewith are provided with low friction surfaces.

3,673,732
AERIAL TOY
Lance A. Liotta, 14004 Mont Avenue, East Cleveland, Ohio
Filed Oct. 15, 1970, Ser. No. 81,104
Int. Cl. A63h 27/00
U.S. Cl. 46—74 D 14 Claims



An aerial toy comprising a disc-like body having aerodynamically shaped surfaces adapted to be rotated about a center axis to which is connected an elongated elastic tether. The surfaces are shaped so as to provide lift during rotation about the axis and during lateral movement through the air in a direction perpendicular to the axis whereby the free end of the tether can be held and the disc thrown for flight away from and back to the user.

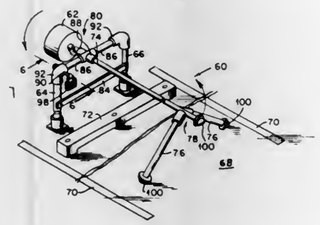
3,673,733
CONTROLLED ENVIRONMENT APPARATUS AND PROCESS FOR PLANT HUSBANDRY
Merton Allen, Schenectady, N.Y., assignor to Environment/One Corporation, Latham, N.Y.
Filed Nov. 26, 1969, Ser. No. 880,126
Int. Cl. A01g 9/14
U.S. Cl. 47—58 31 Claims



A controlled environment chamber for plant husbandry that is provided with a readily removable sealing top having therein separately sealed light source chamber containing incandescent and fluorescent lights. A control chamber is adjacent to the growing chamber and covered by the top for containing therein a fluid and electrical control circuit for energizing the lights in a timed cycle, individually manually controlling the lights, providing for the introduction of pressurized carbon dioxide into a control volume and simultaneously venting the growing chamber to the outside environment air when the lights are de-energized, discharging the carbon dioxide from the control volume into the growing chamber and simultaneously closing the vent when the lights are energized, and thermostatically controlling only the incandescent light for controlling the temperature within the growing chamber. The fresh air vent valve is spring closed and opened by means of an expansible chamber directly connected to the carbon dioxide control volume. The mixture of carbon dioxide within the growing chamber is controlled by means of a pressure regulator, and a pressure gauge determining the pressure within the control volume and indicating parts of carbon dioxide within the control volume per million parts of gas within the growing chamber. A motor drives one fan to provide circulation within the growing chamber, and another fan to circulate cooling air through the control chamber, light source chamber and through the open vent. Removable slats are provided in the bottom of the growing chamber above a nutrient filled tank for supporting plant containers.

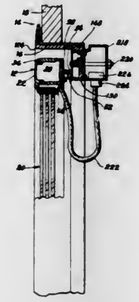
3,673,734
PARKING FIELD SECURITY DEVICE
Leonard Goldberg, 11 Sunrise Plaza, Valley Stream, N.Y.
Continuation-in-part of Ser. No. 27,600, April 13, 1970, Pat. No. 3,600,853. This application Dec. 2, 1970, Ser. No. 94,291
Int. Cl. E01f 13/00
U.S. Cl. 49—35 9 Claims

A security device for selectively blocking a parking spaoe to prevent unauthorized use of the space. Stationary vertical support means set into the pavement of ground outside and adjacent to the parking space and a moveable barrier portion is pivotally secured to the support means so as to be swingable from an upper, vertical position in which the space is free for



use by a vehicle, to a lower, horizontal position in which the barrier portion extends across a substantial portion of the parking space and blocks use thereof. Locking means may be provided to lock the barrier in either horizontal or vertical positions, or both, to prevent unauthorized moving thereof.

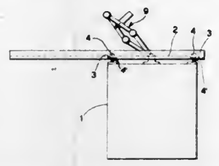
3,673,735
GLASS PANEL REFRIGERATOR DOOR
Robert J. Winsler, Elkton, Ky., and Frederic A. Richter, Chicago, Ill., assignors to Ardco, Inc., Chicago, Ill.
Division of Ser. No. 611,020, Jan. 23, 1963, Pat. No. 3,499,245. This application Dec. 31, 1969, Ser. No. 889,560
Int. Cl. E06b 7/12
U.S. Cl. 49—70 13 Claims



A glass panel refrigerator door having a glass molding secured by screws to a flange on the door frame, a magnetic gasket mounted on the glass molding, and a gasket molding retaining the gasket on the glass molding and screwed to the glass molding while also clamping the glass molding under another flange on the door frame.

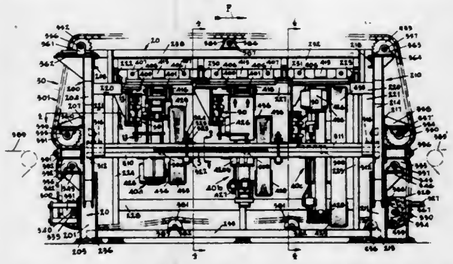
3,673,736
DEVICE FOR OPERATING SLIDING DOORS
Giovanni Marchiorello, Brenta, Italy, assignor to Inpat Establishment, Vaduz, Liechtenstein
Filed Oct. 15, 1970, Ser. No. 81,034
Claims priority, application Italy, Oct. 17, 1969, 15589/69
Int. Cl. E05d 15/56; E05f 15/06
U.S. Cl. 49—235 9 Claims

An operator for opening and closing track suspended sliding doors in which motor means, acting on a parallelogram link-age (or pantograph) cause an initial upward and subsequent horizontal movement of the door during opening movement



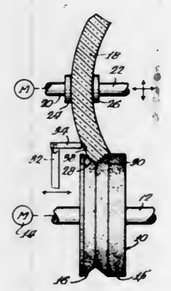
thereof. The upper articulation of the pantograph is mounted for pivotal movement above the track and door and the bottom articulation is pivotally secured to the top of the door.

3,673,737
SHEET EDGING APPARATUS
Robert H. Welker, Perrysburg, and William L. Helmbrecht, Toledo, both of Ohio, assignors to Libbey-Owens-Ford Company
Filed May 4, 1970, Ser. No. 34,278
Int. Cl. B24b 21/16
U.S. Cl. 51—38 8 Claims



Edge treating belt-grinder units are provided to produce, in sequences of operation, a desired ground surface on, for example, the lower corner, the upper corner and the vertical surface of a sheet or plate of glass. The glass is moved along a definite path and the abrasive belts are mounted for movement toward and away from the path. Monitoring elements act to control the grinder units in accordance with detected position and contour changes of the glass sheets.

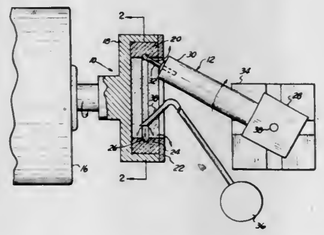
3,673,738
EDGE CONTROL DEVICE FOR GRINDING MACHINE
Theodore J. Stern, Skokie, Ill., assignor to A.I.T. Industries, Inc., Skokie, Ill.
Filed March 17, 1971, Ser. No. 125,175
Int. Cl. B24b 17/04
U.S. Cl. 51—93 9 Claims



The edge control device includes an arm having an extension engageable with a face of an object as the edge of the

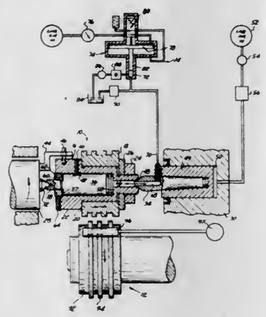
rotatably supported object is being beveled in the V-groove of a grinding wheel, the extension serving to deflect the lens toward one side of the groove. The arm is linearly adjustable by means of its attachment to a rack mounted for linear movement on a support and driven by a pinion.

3,673,739
ARRANGEMENT FOR INTERNAL FORM GRINDING PORTIONS OF SPHERICAL SURFACES
Dante S. Giardini, Dayton, Ohio, assignor to The Bendix Corporation
Filed Nov. 16, 1970, Ser. No. 89,790
Int. Cl. B24b *7/00*
U.S. Cl. 51—73 R **6 Claims**



An arrangement for high speed lap grinding ball rod ends and the like including an annular grinding wheel having an internal semicircular groove extending about its inner periphery, while the workpiece is mounted for rotation at a skewed angle to the axis of the grinding wheel and extends into the peripheral groove so as to create a form grinding action with cross grinding. Lubricant is supplied to the internal groove to provide lubricating fluid under pressure in the grind zone, trapped by an external housing surrounding the wheel, which also serves as a safety retainer therefor.

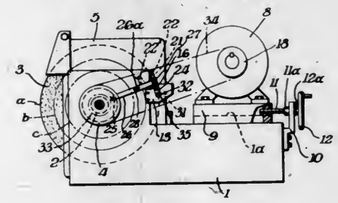
3,673,740
GRINDING METHOD AND APPARATUS
Dante S. Giardini, Dayton, and Robert S. Szempruch, Springfield, both of Ohio, assignors to The Bendix Corporation
Filed May 25, 1970, Ser. No. 41,233
Int. Cl. B24b *1/00, 5/10, 5/16*
U.S. Cl. 51—95 WH **24 Claims**



A method and apparatus for grinding involving limited transverse reciprocation of the grinding wheel relative to the workpiece during the grinding operation to allow coolant to reach the grinding zone during deep form grinding and/or to improve the surface finish. The apparatus includes a first embodiment in which cyclical hydraulic pressure is used to continuously reciprocate a workholder against a pneumatic clamping bias in a direction transverse to the grinding action and parallel to the axis of rotation of the grinding wheel simultaneously with the grinding operation.

In a second embodiment, an internally ground workpiece is similarly reciprocated by cyclically controlling fluid flow to opposed portions of a structure which is hydraulically positioned by the fluid flow and which serves to axially locate the workholder with respect to its workhead.

3,673,741
APPARATUS FOR PREVENTING CIRCUMFERENTIAL OVERSPEEDING OF GRINDING WHEEL
Tsuyoshi Koide, and Ikuo Othu, both of 1,1-chome, Kariya, Asahimachi, Japan
Filed Sept. 8, 1970, Ser. No. 70,040
Claims priority, application Japan, Sept. 16, 1969, 44/87926
Int. Cl. B24b *55/00*
U.S. Cl. 51—134.5 R **4 Claims**

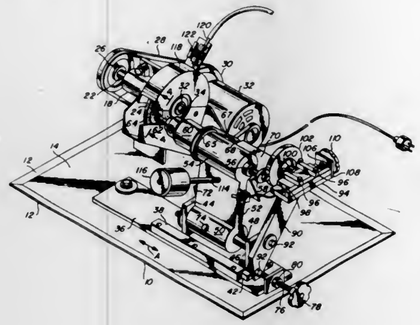


An apparatus for preventing circumferential overspeeding of a grinding wheel in a grinding machine wherein the rotating speed of the grinding wheel spindle is made variable through pulley exchange comprises a grinding wheel head with the grinding wheel spindle rotatably mounted thereto and a motor connected to drive the spindle. For the purpose of averting the hazard of circumferential overspeeding of the grinding wheel a large-diameter grinding wheel rejecting pin obstructs the space to be occupied by a large-diameter grinding wheel when a small-diameter high-speed pulley is connected to drive the grinding wheel spindle. This prevents the mounting of a large-diameter grinding wheel. A high-speed pulley rejecting pin is mechanically interlocked with the large-diameter grinding wheel rejecting pin and each moves in the same direction. The high-speed pulley rejecting pin obstructs the space to be occupied by the high-speed pulley when a large-diameter grinding wheel is connected to the spindle thereby preventing the mounting of the high-speed pulley.

3,673,742
LAPIDARY MACHINE
Syril A. Colbaugh, Chloride Star Route 93, P.O. Box 210, Kingman, Ariz.
Filed Oct. 30, 1970, Ser. No. 85,560
Int. Cl. B24b *7/00, 9/00, 17/00*
U.S. Cl. 51—101 R **11 Claims**

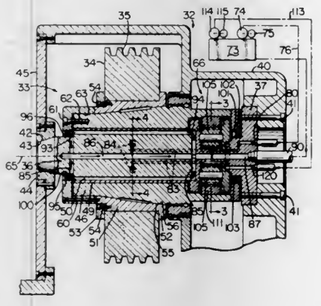
A lapidary machine adapted to produce cabochon shaped gem stones or the like; the machine having a powered rotary grinding wheel provided with a contoured in cross section annular grinding surface adapted to grind peripheries of cabochon shaped gem stones; a powered rotary dop holding shaft structure adapted rotatably to carry a dop supported gem stone in contact with said annular grinding surface; said

shaft structure axially parallel to and laterally movable relative to the rotary axis of said grinding wheel, said shaft structure having a generally oval shaped cam thereon; a normally stationary idler roller having a periphery engagable by said cam



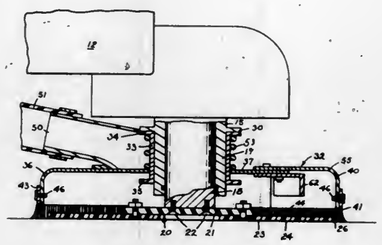
and means for adjusting the position of the periphery of said idler roller in directions laterally relative to the rotary axis of said shaft structure in order to progressively cut peripheries of stones down and to produce cabochon shaped stones of various overall sizes.

3,673,743
MACHINE ASSEMBLY
Dante S. Giardini, Kettering; Heinrich J. Wieg, New Burlington, both of Ohio, and The Bendix Corporation
Division of Ser. No. 760,307, Sept. 17, 1968, abandoned. This application Sept. 23, 1970, Ser. No. 74,879
Int. Cl. B24b *41/00*
U.S. Cl. 51—168 **26 Claims**



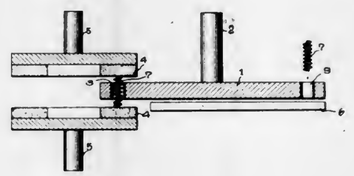
A rotatable support for a machine tool having a fixed spindle and a substantially tubular load-receiving member supported concentrically around the spindle with a fluid bearing provided therebetween and having a fluid motor for rotating the load-receiving member arranged so that its component portions are carried by both the fixed spindle and the load-receiving member whereby upon operating the fluid motor the load-receiving member is rotated in a vibration-free manner. Further, the fluid used to define the fluid bearing provides optimum cooling of the support and its adjoining components.

3,673,744
PORTABLE GRINDER
Anders Oimoen, East 2008 Third Avenue, Spokane, Wash.
Continuation-in-part of Ser. No. 56,553, July 20, 1970, abandoned. This application Feb. 12, 1971, Ser. No. 114,816
Int. Cl. B24b *23/00*
U.S. Cl. 51—177 **5 Claims**



A portable grinder having a vacuum hood enclosing the grinder disc. The hood has a wall of stiff bristles surrounding the periphery of the disc for engaging the surface being ground to permit air to flow through the bristles into the hood and to confine the dust particles inside the hood. The bristles are effectively spring biased to project the bristles forward of the disc to engage the surface before the disc to set up a vacuum in the hood before the grinding begins and after the grinding stops. While the disc is grinding the surface the bristles are biased against the surface to maintain the vacuum. A section of the hood may be removed to enable the disc to reach right up to an intersecting wall or surface.

3,673,745
AUTOMATIC SPRING FEED DEVICE FOR A SPRING GRINDER
Shigeru Watanabe, and Michinobu Ito, both of Urawa, Japan, assignors to Showa Zoki Co., Ltd., Oaza Shinkai, Urawa, Saitama-Pre., Japan
Filed Feb. 11, 1970, Ser. No. 10,480
Claims priority, application Japan, Feb. 14, 1969, 44/10816
Int. Cl. B24b *47/02, 7/16*
U.S. Cl. 51—215 HM **2 Claims**

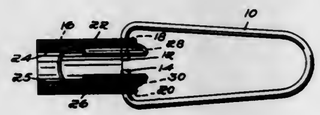


An automatic spring feed device for a spring grinder of the type which effects grinding of opposite ends of coiled springs by means of grinding wheels. The device is adapted to automatically insert one coiled spring after another in a number of spring holding openings formed equidistantly in the marginal portion of a rotary table of the grinder.

3,673,746
METHOD OF POLISHING GLASS
Carle W. Highberg, Sylvania, Ohio, assignor to Engelhard Hanovia, Inc., Newark, N.J.
Filed Feb. 3, 1971, Ser. No. 112,428
Int. Cl. B24b *1/00*
U.S. Cl. 51—283 14 Claims

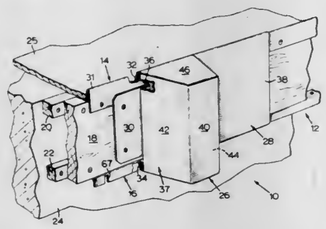
A glass workpiece is polished to obtain a surface having a high luster and a substantial absence of polishing defects by applying to the surface a slurry of a glass powder of substantially the same hardness and composition as the workpiece and a liquid carrier. The slurry also contains a buffering agent which stabilizes its pH between 8 and 12 and preferably between 10 and 11. Its specific gravity preferably lies between 1.14 and 1.19. A rotating polishing pad made of a synthetic fiber is then pressed against the workpiece to polish the piece.

3,673,747
ABRADING DEVICE FOR CLEANING CONCAVE CYLINDRICAL SURFACES
Arthur D. Pass, 27 Hazelwood Street, Malden, Mass.
Filed July 1, 1970, Ser. No. 51,638
Int. Cl. B24d *15/04*; B24b *5/40*
U.S. Cl. 51—370 3 Claims



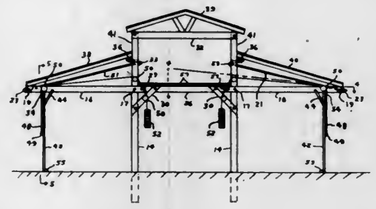
An abrading device to clean fittings and the like has an outer abrading member that receives a folded abrading sheet. The latter is retained in position by an inner retainer member that enters the outer member and retains the abrading sheet in position. A handle serves as a stop that predetermines the position of the abrading sheet on the outer abrading member.

3,673,748
FASCIA SECTIONS WITH INTERFITTING PARTS FOR BUILDING WALLS
Edward P. Minialoff, 3703 Beechollow Crescent, Mississauga, Ontario, Canada
Filed June 12, 1970, Ser. No. 45,877
Int. Cl. E04d *13/15*
U.S. Cl. 52—60 2 Claims



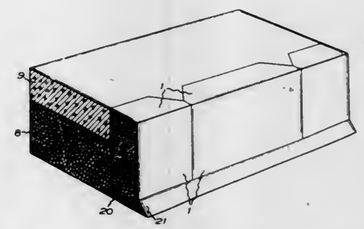
A fascia adapted to be mounted on a support on a side of a building adjacent to the roof. The fascia consists of sections each of which is adapted to be slidably engaged on the support and terminates at one end in a flap for fixing the section to the support. The flap is curved where it is connected to the main part of the section to form a recess for receiving an opposite end of a second fascia section. When in place, the opposite end of the second fascia section covers the flap on the first section to present a pleasing continuous appearance. Because each of the sections is fixed by one end only to the support, the sections are free to expand and contract both longitudinally and transversely with temperature changes.

3,673,749
AIRCRAFT STORAGE HANGAR
Julian H. Allen, 3700 Strathmoor Drive, Dayton, Ohio
Filed May 19, 1970, Ser. No. 38,676
Int. Cl. E04b *1/34*, *1/342*; E05d *15/40*, *15/48*
U.S. Cl. 52—73 2 Claims



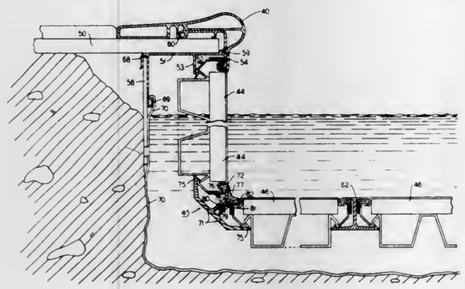
A lightweight hangar for the storage and maintenance of aircraft having a plurality of cantilever beams supported on vertical columns with the cantilever beams extending beyond the columns to support floor beams for an upper storage area. Roof support members are secured to the vertical columns and the end of the cantilever beams. Trackless doors are suspended from the cantilever beams by means of cables connected to the doors on a line through the center of gravity of the doors. Guide arms are connected between the doors and the cantilever beams. A rod passes through each door and is connected to the arms to move the arms in synchronism. Door stops are provided at the top and bottom of each door.

3,673,750
BOTTOM FOR BUILDINGS WITHOUT BASEMENT, AND A METHOD OF MAKING SUCH BOTTOM
Kjell Arne Bokvist, Solna, and Curt Holger Ingestrom, Linkoping, both of Sweden, assignors to Aktiebolaget Svenska Icopalfabriken, Malmo, Sweden
Filed June 10, 1969, Ser. No. 831,907
Claims priority, application Sweden, June 10, 1968, 7760/68
Int. Cl. E02d *27/08*; E04b *1/04*, *1/16*
U.S. Cl. 52—169 8 Claims



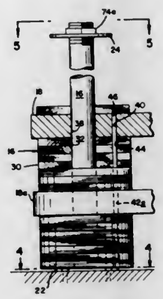
A bottom for buildings without basement founded on the soil after removal of only the humus layer and a method of making same. A foundation wall of heat and moisture insulating blocks having the same height as the foundation wall and placed in juxtaposition extends along the outer wall of the building, a heat and moisture insulating layer of pellets of burnt expanded clay is placed directly on the soil inwardly of the foundation wall, and a steel reinforced concrete layer is cast directly on top of the layer of pellets of burnt expanded clay using the foundation wall as form side wall, and is integrally united with the foundation wall.

3,673,751
BUILDING AND SWIMMING POOL CONSTRUCTION
Emil J. Boassy, Berkeley Heights, and Vincent Shanni, Scotch Plains, both of N.J., assignors to Champion Incorporated, Scotch Plains, N.J.
Filed July 21, 1970, Ser. No. 56,802
Int. Cl. E04h *3/16*
U.S. Cl. 52—169 7 Claims



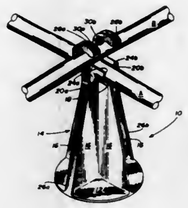
The specification describes a building panel with a snap engaging fitting for simplified interlocking of multiple panels to form building structures. The panels are especially suitable for swimming pool construction with a convenient crib-type arrangement that can be easily and quickly assembled.

3,673,752
CIRCULAR STAIR WITH CENTRAL SUPPORT AND DISC SPACERS BETWEEN TREADS
Kenneth M. Allen, 2301 South El Camino Road, San Mateo, Calif.
Filed July 17, 1970, Ser. No. 55,811
Int. Cl. E04f *11/00*, *11/18*
U.S. Cl. 52—187 9 Claims



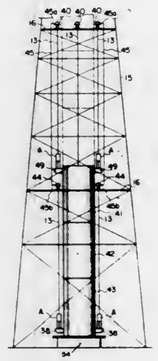
A circular stair comprising a central vertical support member of uniform cross-section and a series of treads with inner end portions that fit around the support member and extend horizontally from it. Disc-like spacers fit around the support member and between each pair of adjacent treads which are angularly spaced apart with respect to the central support member. Means are provided for applying a permanent compressive load on the spacers and treads from the ends of the central support to increase the load carrying capacity of the treads.

3,673,753
SUPPORT DEVICE FOR CONCRETE REINFORCING BARS
George C. Anderson, 8435 Birchcroft, Dallas, Tex.
Filed March 20, 1970, Ser. No. 21,379
Int. Cl. E04c *5/16*
U.S. Cl. 52—685 5 Claims



A concrete reinforcing bar support device is disclosed which includes a base supporting an upright pedestal. A lower clamping portion is supported by the pedestal which has a first rod-receiving open passageway therethrough. Resilient detents extend from the lower clamping portion to retain a reinforcing rod disposed through the first passageway. An upper clamping portion is provided which includes a pair of hook members extending from the lower clamping portion. Each of the hook members has a mouth opening in the same direction to define a second rod-receiving passageway which is normally disposed to the first passageway.

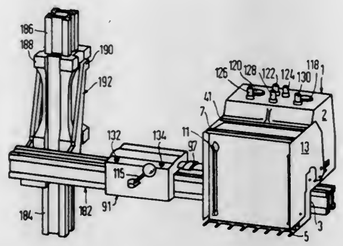
3,673,754
LIFT UP PROCESS
Hidekichi Murashige, Ichikawa; Masao Simakura, Tokyo, and Kazuo Nakazawa, Yokohama, all of Japan, assignors to Kawatetsu Kizai Kogyo Co. Ltd., Tokyo, Japan
Filed July 14, 1970, Ser. No. 54,803
Claims priority, application Japan, July 18, 1969, 44/57184; March 13, 1970, 45/21706
Int. Cl. E04g *21/24*; E04h *12/34*
U.S. Cl. 52—747 6 Claims



A lift-up process for constructing a tall tubular structure comprising providing a plurality of unit structures which, when combined together, form the tubular structure, engaging a first level unit structure with a plurality of guide rods at the same level, each of the guide rods having shoulders formed at an interval corresponding to the stroke of a piston of an incre-

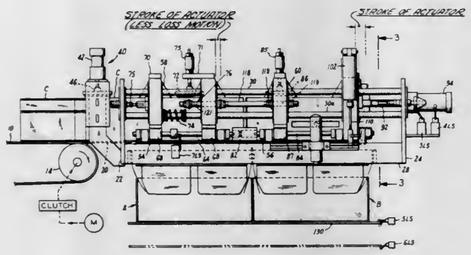
mental oil pressure jack, incrementally raising said unit structure by an oil pressure jack on each guide rod, placing a second level unit structure just below the first level unit structure and welding the first and second level unit structures together, and repeating the above steps to place and weld successive level unit structures.

3,673,755
DEVICE FOR PLACING TILES ON BUILDING WALLS OR THE LIKE
Herbert Christ, Bathildistrasse, 3548 Arolsen, Germany
Filed Feb. 5, 1971, Ser. No. 112,905
Int. Cl. E04g *21/22*
U.S. Cl. 52—749 **25 Claims**



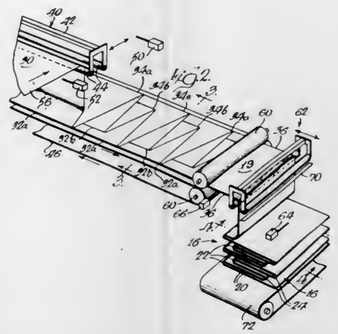
A device for placing tiles on building walls or the like area consisting of a stationary scaffold and a tile placement unit, said unit being guided along said scaffold and having means for pressing tiles on the area to be covered, a means for vibrating the pressing-on means to obtain a uniform distribution of mortar and means for feeding the tile to the press-on means.

3,673,756
APPARATUS FOR SIMULTANEOUSLY LOADING GROUPS OF ARTICLES INTO PACKING CASES
John A. Prete, Middletown, and John L. Raudat, Madison, both of Conn., assignors to Emhart Corporation, Hartford, Conn.
Filed Dec. 2, 1970, Ser. No. 94,463
Int. Cl. B65b *57/10*
U.S. Cl. 53—61 **14 Claims**



An infeed conveyor advances side-by-side lines of rectangular cartons, such as six pack cartons, into a grid structure from which the cartons are to be dropped, in two groups of four cartons each, into two upwardly open packing cases. The grid structure includes means for detecting the presence of eight cartons therein, and a line brake is set in response to the detecting means to hold back cartons on the infeed conveyor. The grid structure includes a fixed frame in which two shifting carriage portions are slidably mounted for movement through different displacements in the downstream direction, and each carriage portion carries one of said carton groups. After being so shifted the two carton groups are dropped downwardly through doors in these carriage portions and into the upwardly open packing cases.

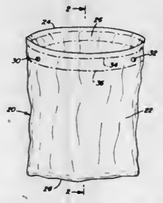
3,673,757
METHOD OF MAKING PILLOWS
Arnold L. Willis, 1000 North Lake Shore Drive, Chicago, Ill.
Filed Jan. 4, 1971, Ser. No. 103,639
Int. Cl. B65b *63/04*
U.S. Cl. 53—21 FW **11 Claims**



An improved method for making three- or four-way taper pillows from a web of soft compressible material that is folded into a batt and encased in a pillow tick. This is accomplished by folding the web along first fold lines to produce a multi-ply web having a plurality of superimposed plies located between opposite edges while positioning some of the fold lines between the opposite edges such that there are a greater number of plies along the center of the multi-ply web then at the opposite edges and subsequently folding the multi-ply web along second fold lines extending perpendicular to the opposite sides of the multi-ply web to produce a pillow batt having a plurality of layers each having a plurality of plies. The batt is then enclosed in a pillowed tick by compressing the peripheral edge to produce a completed pillow.

In one embodiment, a three-way tapered pillow is produced by locating all of the fold lines along one edge of the layers in a common plane while the fold lines along the opposite edge are staggered relative to each other and in an alternative embodiment a four-way taper is produced by staggering the fold lines of the layers along both edges.

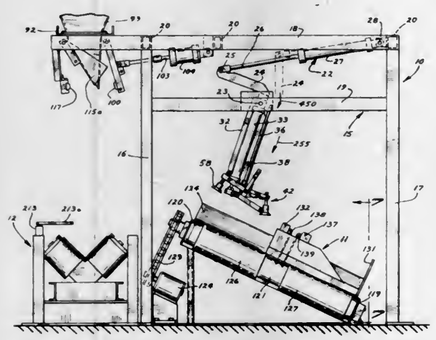
3,673,758
METHOD OF PACKAGING AND PRESERVING PERISHABLE PRODUCTS
Joseph J. Esty, San Diego, Calif.
Division of Ser. No. 827,852, May 26, 1969, Pat. No. 3,610,516. This application Dec. 21, 1970, Ser. No. 100,338
Int. Cl. B65b *31/04*
U.S. Cl. 53—22 B **10 Claims**



The steps in the method of preserving a perishable product in a container formed of impermeable material, which steps

comprise purging the container with an inert fluid after the product is in the container, and after the purging step, sealing the container against the ingress of environmental air. The container is provided with a product inlet opening, with openings for the ingress of inert fluid and for the egress of air and for sealing the container (1) after the product is within the container and (2) after completing the purging.

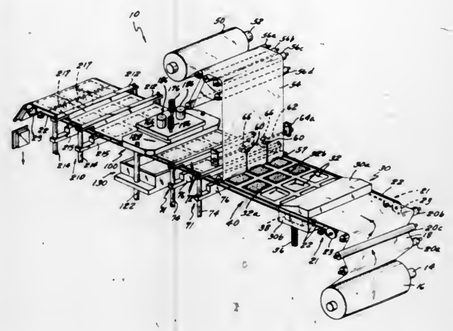
3,673,759
BAG HANGER APPARATUS
Richard H. Ayres, and Gaylerd M. Lieder, both of Minneapolis, Minn., assignors to Bemis Company, Inc., Minneapolis, Minn.
Filed April 22, 1970, Ser. No. 30,681
Int. Cl. B65b *43/18*; B65h *3/08*; B65g *43/08*
U.S. Cl. 53—29 **49 Claims**



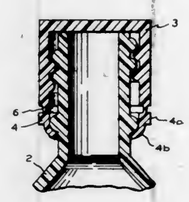
For filling bags, a V-trough conveyor to receive a filled bag from a hopper assembly, a longitudinally elongated bag magazine to hold spaced stacks of bags in an inclined condition, a first piston cylinder combination to reciprocate vacuum cups and a break rod to abut against one bag side wall and to partially open the bag mouth as said cups and rod are retracted, a second piston cylinder combination to rotate the first combination between a bag pick up position and a hopper assembly transfer position and a third piston cylinder combination to relatively move a bag clamp and a hopper jaw from a hopper jaw closed position to receive a partially opened bag from the cups when the second combination is in the transfer position and a bag release position.

3,673,760
PACKAGING METHOD AND APPARATUS
Ernest V. Canamero, Fair Lawn, N.J., and Christoph Ullmann, St. Mang/near Kempten, Germany, assignors to American Can Company, Greenwich, Conn.
Filed Oct. 26, 1970, Ser. No. 83,902
Int. Cl. B65b *31/02*
U.S. Cl. 53—22 A **18 Claims**

An automatic packaging machine makes hermetically sealed packages from which air has been exhausted by laminating two continuous sheets of packaging material. A roll of film on one end of the machine supplies a continuous support sheet to a chain belt conveyor which grips the opposite edges of the support sheet leaving the web unsupported, and transports this sheet the length of the machine. A vacuum forming die makes a plurality of receptacles in the support sheet in aligned longitudinal and transverse rows with transverse and longitudinal margins about the periphery of the receptacles. Another roll of film supplies a continuous cover sheet which is applied over the support sheet, the cover sheet being expediently severed longitudinally by a cutting blade in alignment with the inner longitudinal margins between the receptacles prior to application over the support sheet. The sheets are then heat sealed along the transverse margins. Subsequently, an evacuation unit heat seals the sheets along the outer longitudinal edge margins and an evacuation head exhausts the air from the receptacles through the evacuation opening advantageously provided by the severed cover sheet. A sealing bar in the evacuation head then closes the opening and the cover sheet is finally heat sealed to the support sheet in the areas adjacent the opening.



3,673,761
METHOD OF APPLYING PILFER-PROOF CLOSURES
Wilfried Leitz, Muilheim/Baden, Germany, assignor to CIBA-Geigy AG.
Continuation-in-part of Ser. No. 810,113, March 25, 1969, abandoned. This application Feb. 4, 1971, Ser. No. 112,735
Claims priority, application Germany, March 30, 1968, L 47079; July 23, 1968, P 17 79 252.8
Int. Cl. B65b *7/28*
U.S. Cl. 53—42 **4 Claims**

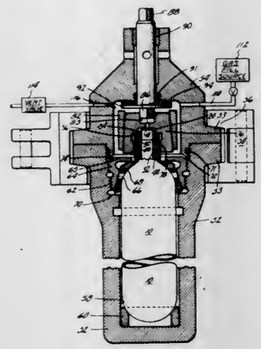


Method of applying a pilferproof closure which has a capping portion and has joined thereto along a failure line of reduced strength a security ring which has adjacent said failure line an annular portion from which extends a skirt portion having a thickness less than that of the annular portion. The closure member is formed from thermoplastic material and the skirt portion is warm rolled onto an undercut section of the neck of a container without heating the material at the failure line so as to distort it.

3,673,762
APPARATUS FOR FILLING A PRESSURE VESSEL

Herbert G. Bock, Farmington, and Walter J. Szerejko, Newington, both of Conn., assignors to Chandler Evans Inc., West Hartford, Conn.

Division of Ser. No. 856,226, April 29, 1969, Pat. No. 3,577,696. This application April 23, 1971, Ser. No. 136,860
Int. Cl. B65b 31/02
U.S. Cl. 53—86 5 Claims

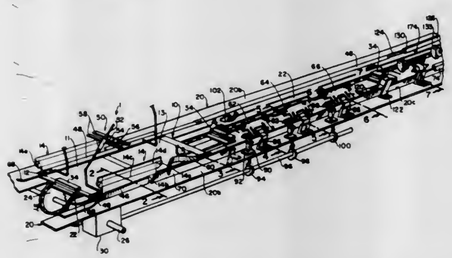


A filling fixture has a flanged base having a cavity and a cover having a bore. The base and cover are urged together by a hinged split ring to form a fluid tight enclosure receiving a gas storage vessel. A rotatable shaft is mounted in the cover to engage and tighten a cap on the vessel.

3,673,763
CARTON ERECTING AND PACKAGING MACHINE

Oskar Dorfmann, North Bergen, N.J., assignor to Grand-City Container Corporation, North Bergen, N.J.

Filed June 26, 1970, Ser. No. 50,238
Int. Cl. B65b 5/02, 11/18
U.S. Cl. 53—183 25 Claims

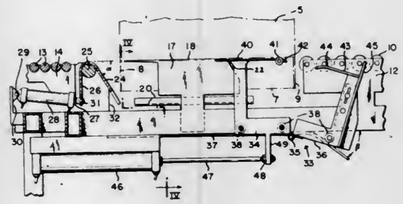


Automatic carton erecting and packaging machines for single blank (one part) and double blank (two part) cartons are described. Tubular bumpers are automatically formed on initially flat carton blanks in a low friction operation by folding the side flaps of the blanks over a forming bar with a series of roll over cams. The newly formed bumpers are then brought into engagement with a series of double angle wheels which simultaneously apply lateral and downward pressure to the bumpers to insure that their cross-sections form true squares or rectangles. The forming bar, the roll over cams and the double angle wheels are easily adjustable in the horizontal and vertical directions so as to accommodate carton blanks of various sizes. Also, the angular positions of the roll over cams and the double angle wheels are easily adjustable. A contoured flight which pushes the carton blank through the bumper forming and gluing operations also engages the article to be packaged and inserts it into proper position in the carton blank. In the double blank carton machine, the filled carton and its cover are simultaneously conveyed into engagement for the final gluing and closing operation. In the single blank carton machine, a rotating roll-over bar closes the carton cover as it is conveyed to the final gluing and closing operation.

3,673,764
BOTTOM FLAP FOLDING AND CONVEYING APPARATUS

Jack T. Bell, Olympia, Wash., and Barton K. Smith, Winnetka, Ill., assignors to Weyerhaeuser Company, Tacoma, Wash.

Filed March 29, 1971, Ser. No. 128,789
Int. Cl. B65b 7/20
U.S. Cl. 53—374 9 Claims



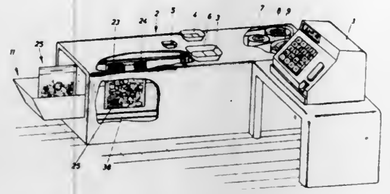
A pair of axially extending horizontal conveyor surfaces are provided with a space therebetween which accommodates a bottom flap folding and conveying apparatus. Stationary support members which are on the same horizontal level as are the conveyor surfaces accept the incoming product for packaging. A movable carriage having a downstream supporting portion and an upstream combination support-folder pusher plate portion operates in the axial direction through the utilization of an air or hydraulic cylinder and carriage track. After a carton is placed over the product the bottom end flaps are folded upwardly in a manner which positions them adjacently underneath the product. The upstream bottom end flap is folded by the combination support-folder pusher plate which not only folds the flap but causes the carton and product to be moved axially toward the output conveyor surface while supporting a portion of it. The downstream bottom end flap folding means can be either movable or stationary.

3,673,765
PACKAGING DEVICE

Arnold Dohmeier, Lienen, and Diether Schwedhelm, Osnabruck, both of Germany, assignors to Dohmeier & Strothotte KG, Lienen, Germany

Filed June 1, 1970, Ser. No. 41,873
Claims priority, application Germany, June 6, 1969, P 19 28 661.4
Int. Cl. B65b 43/12, 67/04, 7/02
U.S. Cl. 53—187 9 Claims

A device for packaging goods, such as in a supermarket and the like, is arranged to pack the goods in a flexible bag-like member held in an open position at a loading station and, after the loading operation is completed, the bag-like member is sealed and delivered to a pick-up station in an automatically performed operation. Belts convey the bag-like members individually to the loading station where the members are opened for carrying out the packing operation. Other belts convey the packed bag from the loading station to the pick-up station and at a point between the loading station and the pick-up station the mouth of the bag is sealed. A belt conveyor can be used to support the packed bag-like member from the loading station to the pick-up station. The bag-like members

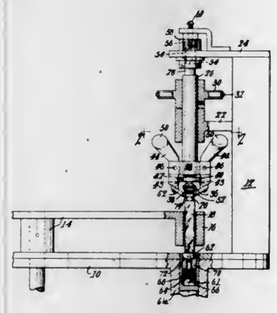


are withdrawn from a supply roll containing a continuous strip of interconnected bag-like members which have a reinforced mouth and the bag-like members are formed from a folded over longitudinally extending strip of flexible film material welded together at spaced positions to form the individual bag-like member.

3,673,766
SEALING CLOSURE CAPS

Norman W. Melott, Moundsville, W. Va., assignor to Cook-Waite Laboratories, Inc., New York, N.Y.

Filed March 8, 1966, Ser. No. 532,663. The portion of the term of this patent subsequent to July 4, 1987, has been disclaimed.
Int. Cl. B65b 7/28
U.S. Cl. 53—335 10 Claims



1. Apparatus for sealing skirted closure caps onto containers having open mouths, comprising a support for the containers each of which has one of the skirted closure caps thereon closing the mouth thereof, with the skirt depending circumferentially thereabout,

rotatably mounted sealing means rotating on an axis substantially coaxial with the cap and the skirt thereof, means rotating the sealing means, the sealing means being axially fixed but movably mounted to tend to move radially inwardly to engage the cap at the skirt portion thereof by centrifugal force, means restraining said sealing means against moving inwardly whereby the sealing means normally stays in spaced relation with respect to the cap without impinging upon it,

and means interdicting the action of the cap sealing motion restraining means to allow centrifugal force to move the cap sealing means toward the container cap and impinge upon the same to seal it relative to the mouth of the container,

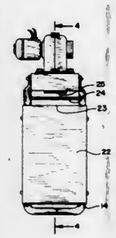
the cap sealing restraining means being movable between an operative position where it engages the sealing means and limits the inward motion thereof due to the centrifugal action, and an inoperative position where it wholly releases the sealing means, and means to move the container in a direction to engage and move the cap sealing restraining means from operative to inoperative position,

a rotary support for said cap sealing means and means to rotate it thereby rotating the cap sealing means, said cap sealing restraining means including a rotary member having an operative position for restraining the cap sealing means in engagement with said rotary support, and an inoperative position out of cooperation relationship with respect to said rotary support.

3,673,767
APPARATUS FOR LOADING BAGS WITH ARTICLES

Frank J. Hutchinson, 613 Ridgedale, Garland, Tex.

Filed Nov. 24, 1969, Ser. No. 879,230
Int. Cl. B65b 43/36
U.S. Cl. 53—385 8 Claims

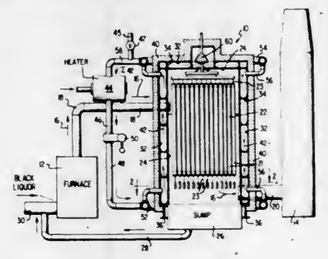


Apparatus for loading bags with articles, such as rolled newspapers, comprised of a platform, a retainer means for holding a bag supply relative to an air stream, and a blower having an outlet spaced apart from the retainer means. The bag supply is affixed to a bag supply pad which also serves as a baffle for directing air from the blower outlet into the uppermost bag so as to cause the bag to be inflated, whereupon the article can be inserted thereinto, and the bag then torn from the bag supply pad.

3,673,768
JACKETED PRECIPITATOR APPARATUS

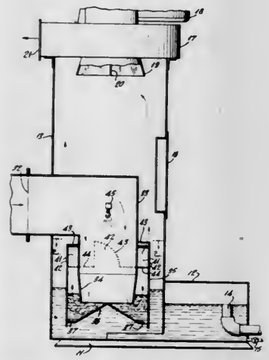
Gerald D. Leonard, Millstone, N.J., assignor to Research-Cottrell, Inc., Bridgewater Township, Somerset County, N.J.

Continuation of Ser. No. 607,839, Jan. 6, 1967, abandoned. This application Oct. 17, 1969, Ser. No. 869,447
Int. Cl. B03c 3/01
U.S. Cl. 55—135 1 Claim



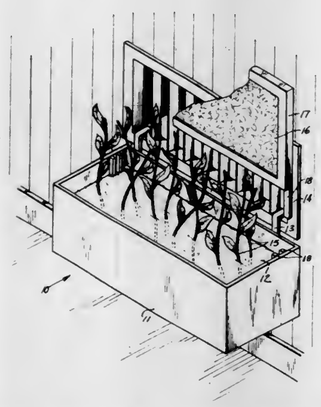
An improved electrostatic precipitator having a temperature regulated precipitator chamber for the treatment of particle-laden gases.

3,673,769
GAS SCRUBBER
Thomas G. Gleason, Manhasset, N.Y., assignor to Combustion Equipment Associates, Inc., New York, N.Y.
Filed July 17, 1970, Ser. No. 55,711
Int. Cl. B01d *47/00*
U.S. Cl. 55—223 **7 Claims**



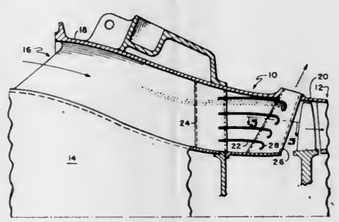
A gas scrubber in which the entering gas is driven through a turbulent bed of water and impinges on a submerged baffle to aspirate the gas and water upwardly through slots which impart a cyclonic flow to the water-entrained gas to effect a spinout of the solids which collect in the surge tank and the cleansed gas is discharged. The need for the usual pump for re-cycling water to provide scrubbing action is eliminated.

3,673,770
FURNACE REGISTER HUMIDIFIER
Opal B. Novak, 4148 West Maryland Avenue, Phoenix, Ariz.
Filed Dec. 7, 1970, Ser. No. 95,459
Int. Cl. B01d *50/00*
U.S. Cl. 55—234 **3 Claims**



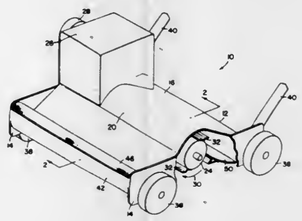
A device resembling an ornamental planter which is provided with hooks to depend it from a furnace register. The device includes water and plants of an artificial nature the plants having a wick-like surface on the rear which will put moisture into the air which is expelled from the furnace register.

3,673,771
MULTI-CHANNEL PARTICLE SEPARATOR
Thomas A. Dickey, Westport, Conn., assignor to Avco Corporation, Stratford, Conn.
Filed Nov. 23, 1970, Ser. No. 91,820
Int. Cl. B01d *46/48*
U.S. Cl. 55—306 **7 Claims**



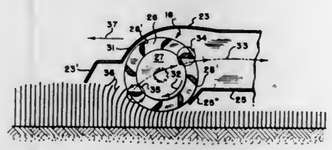
A multi-channel particle separator for separating and removing foreign particles from engine inlet air is disclosed. The multi-channel particle separator utilizes a plurality of concentric catching rings mounted in the air inlet passageway. The leading edge of each ring is mounted to the air swirl vanes. Each trailing or catching portion of the rings is connected with struts which serve as particle scavenge vanes and air deswirl vanes.

3,673,772
IMPACT MOWING MACHINE
Don Earl Holzhei, Reese, Mich., assignor to Deere & Company, Moline, Ill.
Filed Dec. 17, 1970, Ser. No. 99,142
Int. Cl. A01d *45/30*
U.S. Cl. 56—13.1 **18 Claims**



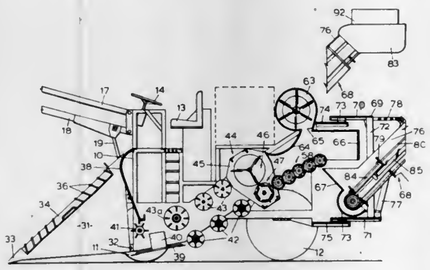
A cylindrical mower rotor has a pair of blades fixed along diametrically opposite sides thereof and the rotor is transversely and horizontally mounted in a fore-and-aft extending housing. The rotor is driven such that the blades are moving forwardly when they reach the lower portion of their path of travel. The blades are angled to cause air to be drawn in through a duct in the forward end of the housing and the duct is so shaped and located that the air discharging therefrom creates a vacuum which lifts the grass just forwardly of the cutting blades at the lower portion of their path of travel. The lower surface of the duct includes a portion which is lower than the cutting height of the mower and which serves to bend the grass into a dense mat to prevent objects from being thrown from under the housing by the mower blades.

3,673,773
CROSS-FLOW MOWING MACHINE
Hugo S. Ferguson, Averill Park, N.Y., assignor to Reel Vortex, Inc., Paestenkill, N.Y.
Continuation-in-part of Ser. No. 699,596, Jan. 22, 1968, abandoned. This application Dec. 12, 1968, Ser. No. 783,192
Int. Cl. A01d *35/24*
U.S. Cl. 56—13.3 **33 Claims**



A cylindrical reel having a plurality of spaced blades is horizontally mounted on a carriage. The reel is driven at high speed about its axis and the outer leading edges of the blades are sharp. A blower conduit cooperates with the reel. The reel, the speed of rotation and the blower conduit are designed to form a blower of the cross-flow type. Vortex action around the leading blades of the reel bend the grass toward the cutting edges of the blades to yield effective mowing, and the cut grass is discharged through the blower conduit. Reel, blade and housing features promoting satisfactory operation are described.

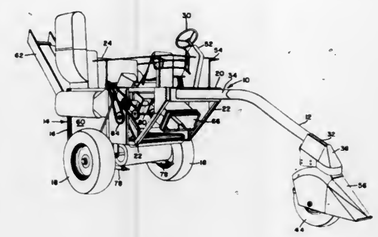
3,673,774
CANE HARVESTER
Joseph Michael Mizzi, Halifax Road, Ingham, Australia
Filed Nov. 23, 1971, Ser. No. 201,359
Int. Cl. A01d *45/10*
U.S. Cl. 56—13.9 **6 Claims**



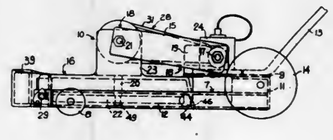
A sugar cane harvester has cutters for removing cane tops and cutting the stalks which are conveyed to a chopper having a bladed and a slotted rotor interacting to cut the stalks into billets and deliver them to a cane cleaner of toothed parallel rotating drums which tear leaf from the billets and discharge them to an elevator, on which they are carried over parallel screws, alternate screws being oppositely wound and oppositely rotated, for pulling leafy matter from the billets before the billets are discharged from the elevator.

3,673,775
SELF-PROPELLED AGRICULTURAL MACHINE
Frank D. Lloyd Jones, Moline, Ill., assignor to Deere & Company, Moline, Ill.
Filed Oct. 23, 1970, Ser. No. 83,434
Int. Cl. A01d *45/02*
U.S. Cl. 56—14.7 **9 Claims**

A self-propelled machine in which the basic frame comprises a two-wheeled rear traction section and a front arched or "gooseneck" section supported on steerable wheel means and capable of mounting a variety of crop-handling and harvesting means.



3,673,776
ROTARY BLADE APPARATUS
James I. Smith, 232 County Road, Tenafly, N.J.
Filed April 20, 1971, Ser. No. 135,647
Int. Cl. A01d *35/26*
U.S. Cl. 56—16.9 **3 Claims**

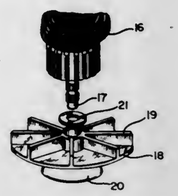


A method is disclosed of pivotally mounting a rotary blade housing on a frame of a rotary blade apparatus which apparatus has a blade shaft adapted to carry a rotary blade and is rotatably supported by said rotary blade housing, said rotary blade housing having an open face affording access to said rotary blade for grass or snow and horizontal and vertical positions on said frame in which said open face faces, respectively, downwardly and forwardly and in which said rotary blade apparatus is operative, respectively, as a grass mower and a snow blower, said rotary blade apparatus also having motor means mounted on said frame, a V-belt power train between said motor means and said blade shaft for rotatably driving the latter, said power train including a gear train mounted on said rotary blade housing, said gear train having an input shaft and said blade shaft for an output shaft, said method comprising providing two longitudinally spaced apart pivot axes, one of which is stationary and the other of which is moveable, axially aligning the motor shaft of said motor means with the stationary pivot axis and axially aligning the gear train input shaft with the moveable pivot axis so that the same said V-belt is useable in either position of said rotary blade housing.

3,673,777
BLADE MOUNTING MEANS
Edwin J. Weber, Baltimore, Md., assignor to The Black and Decker Manufacturing Company, Towson, Md.
Filed Sept. 3, 1970, Ser. No. 69,329
Int. Cl. A01d *35/26*
U.S. Cl. 56—17.5 **2 Claims**

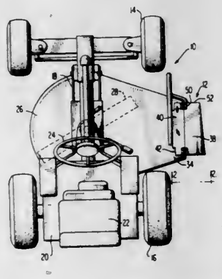
A coupling assembly for attaching a plastic part to a metal shaft, such as a blade holding hub to an electric motor shaft in a grass trimming device. The coupling comprises a plurality of

knurled portions spaced along the shaft at the location of the plastic part. The plastic part is provided with a bore equal in diameter to that of the shaft and is press fitted over the shaft so that the knurled portions compress the plastic. The portion of



the plastic which passes beyond the knurled portions and between the knurled portions returns via elastic cold flow to a diameter less than that of the knurled portions so that the plastic part is axially locked by multiple surfaces.

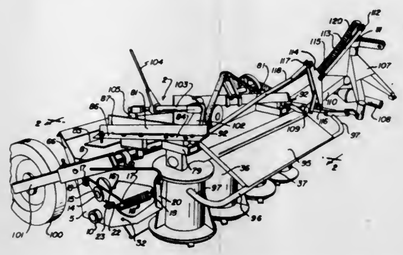
3,673,778
WINDROW ATTACHMENT FOR MOWERS
Leslie C. Ramey, Route 7 Liberty Church Road, Macon, Ga.
Filed May 11, 1971, Ser. No. 142,140
Int. Cl. A01d *35/02*
U.S. Cl. 56—320.2 **7 Claims**



The attachment includes a generally inverted L-shaped member having a horizontally disposed base portion hingedly mounted along its free edge to a bracket secured to the mower housing adjacent the clipping discharge opening. The opposite edge of the base portion carries a depending flange or baffle which angles laterally outwardly from the forward to the rear end of the attachment. The attachment is pivotable between a position wherein the baffle lies in horizontal spaced registry from the discharge opening for deflecting the clippings to form a windrow and a second position wherein the attachment overlies the mower housing with the baffle thereof extending substantially vertically upwardly from the base portion permitting non-interference with and free scattering and distribution of the clippings flowing through the discharge opening over the mowed area.

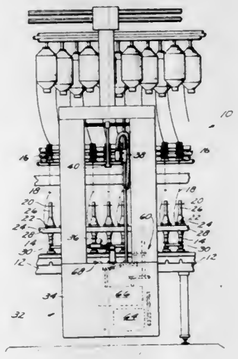
3,673,779
HARVESTING MACHINE
Thomas J. Scarnato, Barrington; Paul C. Grodon, Hinsdale; Stephen R. Hunter, Downers Grove; Paul W. Krage, Elmhurst, and Richard A. Zablocki, Chicago, all of Ill., assignors to International Harvester Company, Chicago, Ill.
Filed April 23, 1970, Ser. No. 31,111
Int. Cl. A01d *49/00*
U.S. Cl. 56—503 **19 Claims**

A mower conditioner comprising disk-type mowers ahead of the conditioning rollers functioning to cut and throw the material directly to the conditioning rollers. Another embodiment utilizes disks which provide unobstructed top surfaces



which serve to accept the material and to sling the material rearwardly into the conditioning rollers.

3,673,780
SPINDLE CONTROL MEANS FOR AUTOMATIC YARN PIECING APPARATUS
James K. Merck, Piedmont, S.C., assignor to Maremont Corporation, Chicago, Ill.
Filed Sept. 10, 1970, Ser. No. 70,962
Int. Cl. D01h *15/00*
U.S. Cl. 57—34 R **18 Claims**

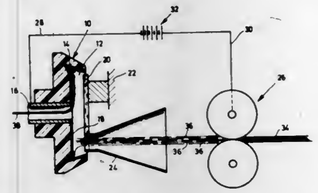


Spindle rotation at a spinning frame delivery being serviced by an automatic yarn piecing apparatus is controlled by a rotatable disc member which is pivotably movable about two pivot axes to a plurality of different positions of engagement with and disengagement from a continuously rotated drive wheel and the spindle. Movement of the disc is influenced in various desired ways by biasing means acting thereon and by a cam assembly or other control actuator loosely interconnected to the disc's bipivot mount.

3,673,781
APPARATUS FOR SPINNING YARN
Karl-Heinz Breitenbach, Stuttgart-Bad Cannstatt, Germany, assignor to SKF Kugellagerfabriken GmbH, Ernst-Sachs Str., Schweinfurt, Germany
Filed April 27, 1970, Ser. No. 32,134
Claims priority, application Germany, May 3, 1969, P 19 22 743.1
Int. Cl. D01h *1/12*
U.S. Cl. 57—58.89 **6 Claims**

Yarn spinning apparatus comprising a spinning rotor and

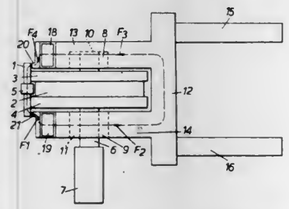
means for feeding fiber slivers thereto. An electrostatic field



being impressed across the fed sliver preferably by employing the rotor and feed means as the respective electrodes

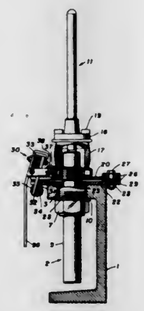
---

3,673,782
MAGNETIC FALSE TWIST SPINDLE
Josef Raschle, Butschwil, Switzerland, assignor to Moulinage & Retorderie De Chavanoz, Chavanoz, France
Filed July 30, 1970, Ser. No. 59,552
Claims priority, application France, Aug. 1, 1969, 69/26460
Int. Cl. D01h *7/92*; D02g *1/04*
U.S. Cl. 57—77.45 **14 Claims**



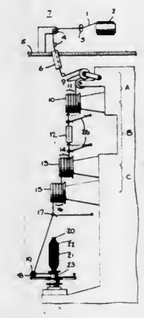
A magnetic false twist spindle comprising a support formed from magnetic material, a single driving roller mounted in this support, at least two magnets located in said support with the poles or associated pole pieces adjacent the periphery of the roller near the axial ends thereof and a spindlette, having a false twist locking means, the spindlette being held in frictional contact with the single driving roller by means of the magnets, the magnetic path being completed by the spindlette and the support.

3,673,783
TEXTILE SPINDLE MOUNTING
Robert W. Timbie, Pensacola, Fla., assignor to Monsanto Company, St. Louis, Mo.
Filed March 10, 1971, Ser. No. 122,711
Int. Cl. D01h *7/08*
U.S. Cl. 57—135 **4 Claims**



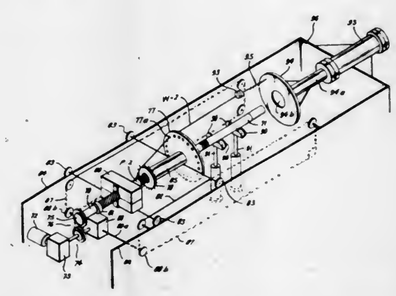
A textile spindle assembly is mounted on a machine rail by means of two correlative supporting plates separated by elastic members with the result that audible frequency vibrations are reduced during operation thereof.

3,673,784
PROCESS FOR CHANGING SUPPLY SPOOLS AND FINISH WOUND COPS ON DRAW-TWISTING AND DRAW-WINDING MACHINES
Fritz Preysch, Winterthur, Switzerland, assignor to Rieter Machine Works, Ltd., Winterthur, Switzerland
Filed June 16, 1970, Ser. No. 46,720
Int. Cl. D01h *9/02*
U.S. Cl. 57—156 **6 Claims**



When the supply spool is to be replaced, the thread is severed between the supply spool and delivery mechanism. Next, a fresh supply spool is put in place and the new thread connected to the thread still in the stretching mechanism. Thereafter, the thread is pulled from the rollers below the preliminary stretching zone and brought to the waste cone. After attachment at the waste cone, the machine is started at low speed until the thread connection comes to the waste cone. Thereafter, the machine is accelerated to production speed.

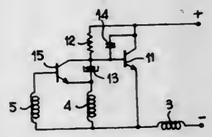
3,673,785
METHOD FOR WIRE-WRAPPING PIPE
Roy H. Cullen, and Charles H. Elliott, both of Houston, Tex., assignors to Youngstown Sheet and Tube Company, Youngstown, Ohio
Continuation-in-part of Ser. No. 592,410, Nov. 7, 1966, Pat. No. 3,481,549. This application Nov. 7, 1969, Ser. No. 874,852
Int. Cl. D07b *1/06*
U.S. Cl. 57—161 **3 Claims**



This patent discloses a method for wrapping a plurality of wires about an elongate member in a planetary lay. In one

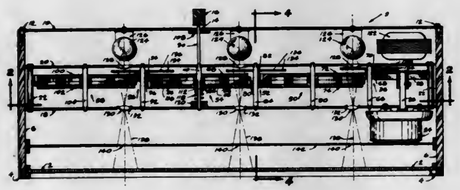
method the wires are permitted to turn as they are applied to obtain the planetary lay. In the other method the wires are pre-twisted and are held against rotation as they are applied so that they will untwist during application and provide a planetary lay.

3,673,786
TIMEKEEPING DEVICES
Claude Leyri, Taverny, France, assignor to Jaeger, Levallois Perret, France
Filed Sept. 30, 1970, Ser. No. 76,708
Claims priority, application France, Oct. 2, 1969, 6933575; April 14, 1970, 7013352
Int. Cl. G04c *3/04*; H03b *3/02*
U.S. Cl. 58—28 A 11 Claims



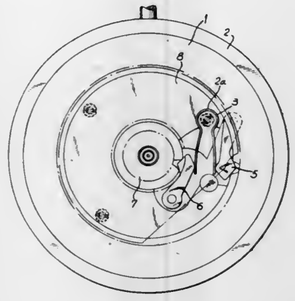
A timekeeping device is provided with a mechanical oscillator electronically sustained without contact. A balance-wheel bearing permanent magnets induces electromotive force in two coils placed at the point of static equilibrium of the wheel. The electromotive forces are used in an amplifier transistor to supply through a third coil coaxial with the two previous ones a sustaining power, and are further used to control a regulator transistor which acts upon the point of operation of the amplifier transistor in such a way as to vary the power supplied in inverse ratio to the amplitude of the oscillations.

3,673,787
DIGITAL CLOCK MECHANISM
Radoslav Kovacevic, 300 North State Street, Apt. 3406, Chicago, Ill.
Filed March 26, 1971, Ser. No. 128,308
Int. Cl. G04b *19/30*; G03b *21/00*; G04c *17/02*
U.S. Cl. 58—50 R 16 Claims



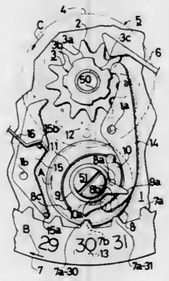
A digital read-out display type of electric clock or alarm clock uses back projection of light as a means of displaying numerals representing the time in hours, minutes, and seconds upon a front screen. Means are provided to shut off the light projection when the numerals are altered, and the alteration of numerals is carried out in a fraction of a second.

3,673,788
DAY-DATE JUMPER SPRING IN CALENDAR WATCH
Kazuo Kurihara, Funabashi, Japan, assignor to Kabushiki Kaisha Daini Seikosha, Tokyo, Japan
Filed April 6, 1970, Ser. No. 25,716
Claims priority, application Japan, April 8, 1969, 44/31357
Int. Cl. G04b *19/24*
U.S. Cl. 58—58 1 Claim



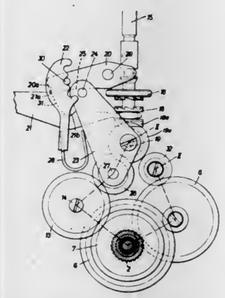
In a calendar watch a single spring is used to urge the day jumper against the day star and the date jumper against the date dial. The day and date mechanism is so engineered that the spring can be emplaced while unstressed.

3,673,789
CALENDAR TIMEPIECE WITH MONTH ADVANCEMENT MECHANISM FOR 29, 30, OR 31 DAY MONTHS
Akira Tsuzuki, and Choken Suzuki, both of Tokyo, Japan, assignors to Citizen Watch Company Limited, Tokyo, Japan
Filed June 11, 1971, Ser. No. 1,521
Claims priority, application Japan, June 13, 1970, 45/51251; Dec. 24, 1970, 45/118312
Int. Cl. G04b *19/24*
U.S. Cl. 58—58 1 Claim



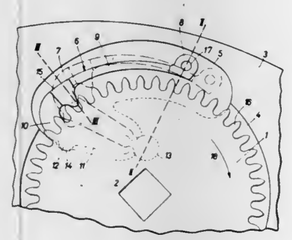
A calendar watch comprising a date calendar display dial, a month calendar display dial and a date feed wheel, all being rotatably mounted on the movement of said watch, said wheel being driven by said movement for performing a complete revolution per 24 hours, said watch being characterized by that a spring-loaded pawl means for performing an automatic month end date feed operation to said date display dial is pivotably mounted on said wheel.

3,673,790
ONE-HOUR INCREMENTAL WATCH SETTING DEVICE
Francois W. Gasser, Bern, and Pierre L. Girard, Biel, both of Switzerland, assignors to Manufacture des Montres Rolex S.A., Bienne, Berne, Switzerland
Filed June 19, 1970, Ser. No. 47,672
Claims priority, application Switzerland, June 23, 1969, 9575/69
Int. Cl. G04b *27/02*
U.S. Cl. 58—63 8 Claims



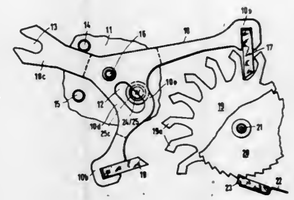
An apparatus for setting the hands of a watch having a three position stem in which the middle position is for adjusting only the hour hand, the outer position is the normal time setting position for adjusting both the minute and hour hands as in a normal watch, and the inner position is the normal winding position.

3,673,791
DEVICE FOR UNIDIRECTIONALLY BLOCKING A RATCHET WHEEL IN A CLOCKWORK MOVEMENT
Roland Zaugg, Rebgasse 22, Grenchen, Switzerland
Filed Sept. 14, 1970, Ser. No. 71,986
Claims priority, application Switzerland, Sept. 15, 1969, 13910/69
Int. Cl. G04b *1/16, 3/06, 3/10*
U.S. Cl. 58—86 7 Claims



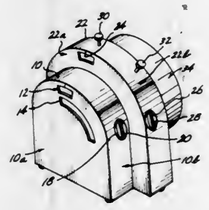
A device for unidirectionally blocking a ratchet wheel, comprising a unique blocking organ having on the one hand retaining means co-operating with stop means formed by stationary parts of a clockwork movement and, on the other hand, a tooth and a disengaging means, both of which co-operate with the toothing of said ratchet wheel, advantages resulting mainly in the automatic mounting of the device.

3,673,792
DEVICE FOR THE MAGNETIC ARRESTING OF A SWITCH WHEEL OF A TIMEKEEPING DEVICE
Gunther Scholz, Schramberg, Germany, assignor to Gebruder Junghans G.m.b.H., Schramberg, Germany
Filed March 10, 1971, Ser. No. 122,942
Claims priority, application Germany, March 17, 1970, G 70 09 864.5
Int. Cl. G04c *3/04*
U.S. Cl. 58—116 8 Claims



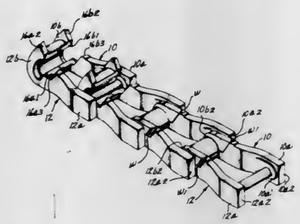
A magnet arresting device for a clock or watch movement including a magnet core housed in a field confining shroud means of magnetically permeable material.

3,673,793
DIRECT CHARGE-RATE INDICATOR
George A. Barnard, III, 12223 Northeast 32nd Street, Bellevue, Wash.
Filed Feb. 25, 1971, Ser. No. 118,889
Int. Cl. G04b *47/00*; G07c *1/00*
U.S. Cl. 58—152 R 10 Claims



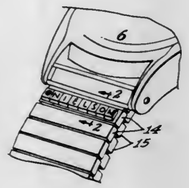
A device for indicating the cost of an operation having at least one charge-rate applicable thereto comprises a compound dial including fixed and movable dial surface which have inscribed thereon logarithmic time and charge scales. A clutch arrangement is provided to allow pre-setting of an applicable charge-rate by manipulation of the dial surfaces. To effect multiplication of that charge-rate by the operation's elapsed time, a timer is included having start and stop controls which provides an output movement proportional to elapsed time. A drive linkage couples this output movement to the movable dial surface so that relative movement between the scales proceeds logarithmically with respect to elapsed time. An embodiment of the device for use as a telephone long-distance call charge indicator is described, including various embodiments of the compound dial and drive linkage therefor.

3,673,794
INDUSTRIAL CHAIN AND METHOD OF MANUFACTURING SAME
Thomas I'Anson, 4014 Hunts Point Road, Bellevue, Wash.
Filed Dec. 16, 1970, Ser. No. 98,661
Int. Cl. B21l *11/00*; F16g *13/18*
U.S. Cl. 59—35 **15 Claims**



A chain construction is disclosed wherein the individual links are cast in a one-piece unit including side bars, and transverse pivotal connecting elements, one of which in the H-type chain disclosed comprises a shaft and the other a shaft journal sleeve element interconnecting the side bars at the respective opposite ends thereof. The connecting sleeve portion of a link is preformed with an open-sided configuration bendable into closed encirclement around the adjoining link's pivot shaft and the slit edges are welded shut at the sides of the link. A Teflon antifriction bearing pad retained in a wall pocket in the sleeve formation is also disclosed.

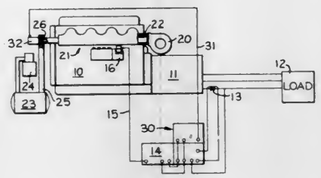
3,673,795
EXPANSIBLE WRIST BAND
Lonnie R. Nielson, Las Vegas, Nev., assignor to Carlon Engineering Company, Incorporated, Las Vegas, Nev.
Filed April 16, 1970, Ser. No. 29,003
Int. Cl. F16g *13/24*
U.S. Cl. 59—79 R **11 Claims**



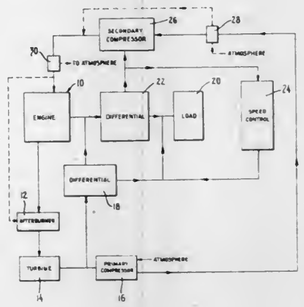
An outer transversely positioned hollow link is formed with an outer opening of less width than the link to receive an ornamental insert that has opposite laterally extending retaining flanges, the retaining flanges of the insert being interposed between the outer wall of the link and a hollow member inside the link.

3,673,796
ANTICIPATING AIR INJECTION SYSTEM FOR TURBOCHARGED ENGINES
Louis F. Weick, Washington, and William F. Linne, Peoria, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.
Filed March 3, 1970, Ser. No. 16,133
Int. Cl. F02b *37/04*
U.S. Cl. 60—13 **6 Claims**

An air injection system for turbocharged engines wherein air is released from a container and injected into the engine manifold in response to a signal representing a change in the magnitude of the load driven by the engine includes a valve means for isolating the turbocharger from the manifold during the time the air is injected and until the pressure in the manifold falls below the turbocharger discharge pressure during which time the turbocharger increases its speed whereby engine speed deviations are minimized.



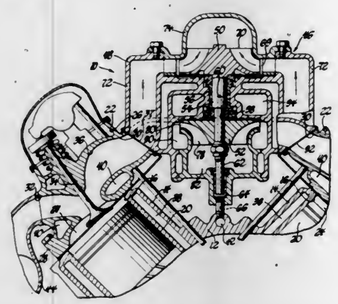
3,673,797
COMPOUND POWER PLANT
William H. Wilkinson, Columbus, Ohio, assignor to Perkins Services N. V., Curacao, Netherlands Antilles
Filed Dec. 8, 1970, Ser. No. 96,200
Int. Cl. F02b *37/04*
U.S. Cl. 60—13 **26 Claims**



A power plant for driving a load comprises an internal combustion engine, an exhaust turbine, primary and secondary compressors, and first and second planetary differentials each having an input and two outputs. The first differential has its input driven by the engine output, its first output connected to the load, and its second output driving the secondary compressor. The turbine drives the primary compressor and the second differential, which has its first output connected to the first differential input and its second output connected to the load. The compressor discharges flow in series or in parallel through a heat exchanger to the engine inlet manifold and the engine exhaust drives the turbine. A portion of the net compressor discharge is by-passed around the engine through a heat exchanger to recover heat from the turbine exhaust, and through an afterburner to the exhaust turbine.

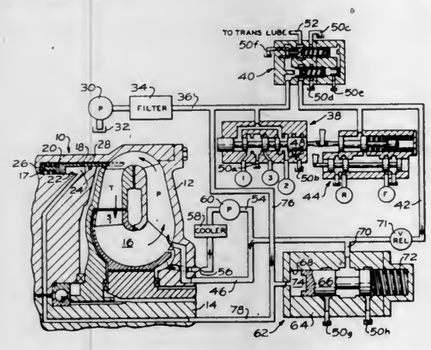
A speed control device connects the second output of the first differential and the load. The speed control device comprises a variable displacement hydrostatic pump driving a variable displacement hydrostatic motor, and a control for the displacements; it may also comprise an electric generator and motor set with a control for the fields.

3,673,798
TURBOCHARGED INTERNAL COMBUSTION ENGINE
Paul B. Kuehl, South Bend, Ind., assignor to General Motors Corporation, Detroit, Mich.
Filed Jan. 8, 1971, Ser. No. 104,866
Int. Cl. F02b *37/04*; F02d *39/04*
U.S. Cl. 60—13 **5 Claims**



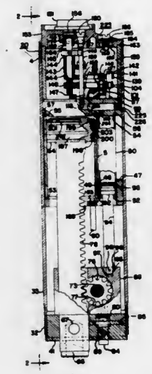
In preferred form, a V-type internal combustion engine is provided with a combination turbocharger and manifold mounted between the cylinder banks in a compact arrangement. Exhaust manifolds on the outer walls of the cylinder banks interconnect the cylinder exhaust passages with the usual exhaust heat passage extending transversely of the cylinder head through which exhaust gases are delivered to the turbine to the central manifold-turbocharger unit. The combination unit provides water cooling and oil lubrication features in addition to a compact and practical construction.

3,673,799
TORQUE CONVERTER MODULATING PISTON
Sidney J. Audiffred, Washington; Lowell E. Johnson, and Shairyl I. Pearce, both of East Peoria, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.
Filed March 1, 1971, Ser. No. 119,503
Int. Cl. F16d *31/06, 33/00*
U.S. Cl. 60—54 **7 Claims**



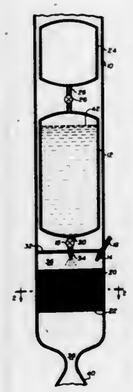
A torque converter used in combination with a multi-speed shiftable transmission is provided with control means which automatically reduces the torque transmitted by the converter at the moment of clutch engagement. The control means includes a dump valve which is responsive to the reduction in clutch engagement pressure to automatically discharge the pressure of the converter while in combination therewith a spoiler ring responsive to the same pressure drop is operative to effect a nearly complete slipping mode in the converter.

3,673,800
HYDRAULIC PRESS
Philip E. Ashton, 749 Yale Avenue, Meriden, Conn.
Filed June 12, 1970, Ser. No. 45,721
Int. Cl. F15b *7/00*; A47j *47/02*
U.S. Cl. 60—54.5 HA **21 Claims**



A press having a vertical reciprocating ram actuated mechanically and hydraulically to advance the head thereof. A hydraulic thrusting unit for actuating the ram, removable from the body and comprising a unitary assembly.

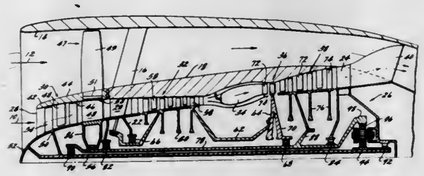
3,673,801
PROPULSION METHOD USING CATALYTIC DECOMPOSITION OF HYDRAZINE
Max Goldberger, Wapping, Conn., assignor to Pioneer Research, Inc., Manchester, Conn.
Continuation-in-part of Ser. No. 583,057, Sept. 29, 1966, abandoned. This application Sept. 23, 1968, Ser. No. 761,880
Int. Cl. C06d *5/04*
U.S. Cl. 60—218 **3 Claims**



A method is provided for decomposing fuel comprising substantially hydrazine in which the hydrazine is brought in contact with a catalyst consisting essentially of solid porous Raney cobalt. The catalyst may be adheringly supported onto a substrate, such as a foraminous nickel substrate, which has particular use in a propulsion system wherein fuel injected into a

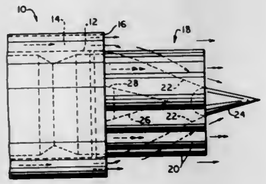
propulsion chamber is caused to contact the catalyst, whereby to decompose said fuel and effectively produce propulsion.

3,673,802
FAN ENGINE WITH COUNTER ROTATING GEARED CORE BOOSTER
James Norton Krebs, Marblehead, Mass., and Peter G. Kappus, Cincinnati, Ohio, assignors to General Electric Company
Filed June 18, 1970, Ser. No. 47,236
Int. Cl. F02k *3/06*
U.S. Cl. 60—226 **5 Claims**



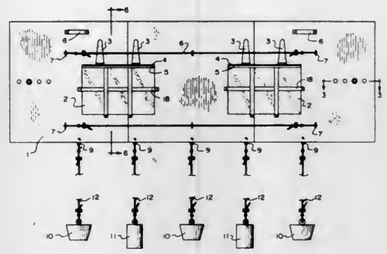
The disclosure describes a turbofan engine having high and low pressure compressors wherein the low pressure compressor, or booster, comprises two counter rotating elements, a rotating duct which carries fan blades on its exterior surface and compressor blades on its interior surface and a conventional compressor rotor which rotates in a direction counter to the direction of rotation of the rotating duct. Alternative gearing schemes for coupling the rotation of the fan to the rotation of the low pressure compressor are shown.

3,673,803
METHOD AND APPARATUS FOR SUPPRESSING THE NOISE OF A FAN-JET ENGINE
Howard R. Macdonald, San Diego, Calif., assignor to Rohr Corporation, Chula Vista, San Diego County, Calif.
Filed Oct. 6, 1969, Ser. No. 863,796
Int. Cl. F02k *1/26*
U.S. Cl. 60—226 R **3 Claims**



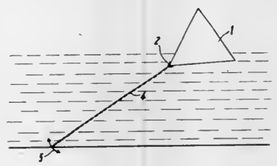
A tubular housing is disposed in spaced relation around the casing of a fan-jet engine and is coterminous with the aft end thereof, fan air of said engine being discharged to the atmosphere through the annular gap between the housing and the casing. A lobed thrust nozzle is mounted on the aft end of the engine casing and extends rearwardly therefrom in coaxial relation therewith. Exhaust gas is discharged through the lobes of the nozzle and thus enters the atmosphere in separate streams spaced apart circumferentially of the aft end of said nozzle, and a portion of the fan air flows between the lobes of the nozzle and into the spaces between the streams of exhaust gas.

3,673,804
OFF-SHORE FIRE AND POLLUTION CONTROL SYSTEM
Frank R. Washburn, 11 North York Street, Houston, Tex.
Filed Feb. 13, 1970, Ser. No. 870,295
Int. Cl. E02b *15/04*
U.S. Cl. 61—1 F **1 Claim**



A portable, flexible, floating firewall having a rectangular galvanized metal body and four essentially identical flotation packets, two disposed on each side of the metal body. The flotation packets are formed of Styrofoam and encased in a plastic container which is covered with a layer of asbestos cloth on all exposed portions of the container. A plurality of steel bands secure the flotation packet to the body and an outwardly projecting rigid shelf is mounted immediately above the flotation packet to hold the flotation packet in place. Two horizontally directed cables are anchored near each end of the body on both sides thereof. The cables are adjustable in length in order to control the degree of bending which will be allowed the body. Ballast weights removably connected by cables to the bottom edges of the body continuously urge the body in the upright position in the water.

3,673,805
FLOATABLE BREAKWATER ELEMENT
Bruno Szyfter, Kathe-Dorsch-Ring 12, 1 Berlin, 47, Germany
Filed Nov. 12, 1969, Ser. No. 876,097
Claims priority, application Germany, Nov. 12, 1968, P 18 09 506.2
Int. Cl. E02b *3/06*; **B63b** *7/00*
U.S. Cl. 61—5 **8 Claims**



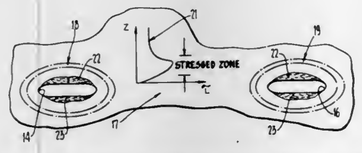
An inflatable elongate prismatic sheet-material shell of triangular profile has a reinforced edge attached to an anchor chain which, together with the shell and the anchor, can be folded into a package in which the sheet material of the shell is wrapped around the anchor and chain. The package, and/or each of its components, is held in a collapsed position by water-soluble bands whereby the anchor slips out of its sheet wrapping when the package is immersed, the shell being then automatically inflated by one or more compressed-air cartridges.

3,673,806
LINER FOR TUNNEL WALL
Siegfried Hanig, and Alfred Langer, both of Peine, Germany, assignors to Firma Ilseder Hutte, Peine, Germany
Filed June 23, 1970, Ser. No. 48,997
Claims priority, application Germany, June 25, 1969, P 19 32 107.4
Int. Cl. E21d *5/08*
U.S. Cl. 61—45 R **14 Claims**



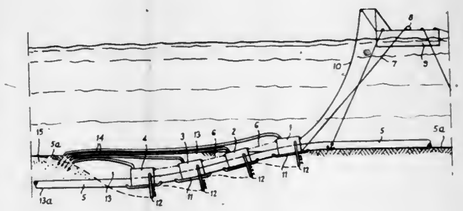
Cylinder segments of plate steel, their junctions bridged by relatively narrow axially extending steel strips welded and bolted thereto, are juxtaposed to form several axially adjoining tubes with interposition of annular reinforcements projecting radially outwardly beyond the tubes to support a protective outer jacket composed of complementary part-cylindrical shell segments. The annular reinforcements consist of complementary arcuate T-profiles with inwardly directed flange portions and complementary flat ring segments overlappingly adjoining the web portions of the T-profiles. The webs of the T-profiles, which are peripherally coextensive with respective cylinder and shell segments, can be cut off along generally radial edges except at two neighboring locations where the edges diverge from the radial direction and are substantially parallel to facilitate radial insertion, in the manner of a keystone, of an intervening shorter segment.

3,673,807
METHOD OF CONTROLLING LONG TERM SAFETY OF UNDERGROUND ENTRY SYSTEM BY REGULATING FORMATION OF STRESS ENVELOPES
Shosei Serata, 14 Calvin Court, Orinda, Calif.
Continuation-in-part of Ser. No. 886,911, Dec. 22, 1969, abandoned. This application Nov. 25, 1970, Ser. No. 92,768
Int. Cl. E02d
U.S. Cl. 61—35 **8 Claims**



The long term safety of underground rooms excavated in weak ground media which are subjected to large overburden and lateral earth pressures is regulated by controlling the formation of stress envelopes embracing an entry system. Within the entry system the rooms to be protected are placed parallel to the relief openings which are specifically designed to fail. An entry system designed with a predetermined safety period up to infinity is used for making extensive underground excavations safe and economical by supporting the overburden with an orderly development of stress envelopes. In order to create an entry system with a protected room or rooms, two relief openings are first excavated for the purpose of forming primary stress envelopes around the individual relief openings, then one or more protected rooms are excavated between the relief openings in such a manner that the primary envelopes are quickly transformed into a single secondary stress envelope which embraces the entire group of relief openings and protected rooms. A stress relieved zone is thereby created inside the secondary envelope which acts as a stable lining, forming a tubular shield against rock deterioration at the inside boundary of the stress envelope. The envelope supports the overburden and lateral earth pressures. Besides the protection of underground rooms, the stress envelopes may be utilized to control deformation and subsidence of the ground over a mined-out area by creating large protective stress envelopes in the main body of the overburden formation in the same manner as for the protection of underground rooms.

3,673,808
METHOD OF AND APPARATUS FOR BURYING SUB-SEA PIPELINES, CABLES AND THE LIKE
Johan H. Volbeda, Rijswijk, Netherlands, assignor to Nederlandse Maatschappij voor werken Buitengaats (Netherlands Offshore Company) N.V., The Hague, Netherlands
Filed April 6, 1970, Ser. No. 25,747
Claims priority, application Great Britain, April 10, 1969, 18,538/69
Int. Cl. F16l *11/00*; **E02f** *5/02*
U.S. Cl. 61—72.4 **10 Claims**

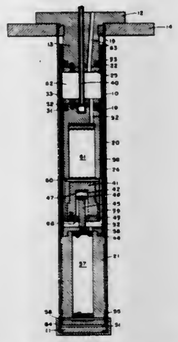


Pipelines, including cables, are buried in the seabed, which includes the bed of other water covered areas, by a succession of trenching devices travelling along the pipeline one behind the other, the trenching devices each loosening the soil beneath the pipeline and conveying the loosened material from beneath the pipeline to successively increase the depth of a trench beneath it in a continuous and gradual manner whereby the pipeline is laid in the trench at a predetermined depth in a single pass of the trenching devices. The removed soil is used to backfill the trench after the pipe has been laid.

3,673,809
IN-LINE MULTISTAGE CRYOGENIC APPARATUS
Walter H. Bamberg, Stoughton, Mass., assignor to Cryogenic Technology, Inc., Waltham, Mass.
Filed Feb. 10, 1970, Ser. No. 10,228
Int. Cl. F25b *9/02*
U.S. Cl. 62—6 **7 Claims**

Improvement in the construction of cryogenic refrigerators which operate on one of several cycles (Gifford-McMahon, Stirling or Vuilleumier) and in the apparatus of which two or

more displacers, reciprocating within an enclosure define chambers of variable volume. Each of the displacers moves within a separate axially aligned concentric enclosure thereby



making it possible to locate all of the sealing means at a warmer end of the refrigerator and to use a housing of straight cylindrical configuration in place of a stepped configuration.

3,673,810

LIQUID NITROGEN REFRIGERATION SYSTEM

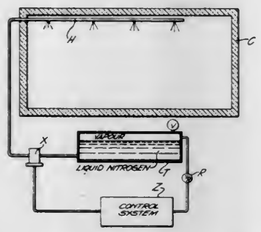
Kenneth Calvert Hales, and Gerald Robin Scrine, both of Cambridge, England, assignors to Shipowners Refrigerated Cargo Research Association, Cambridge, England

Filed Oct. 26, 1970, Ser. No. 83,722

Claims priority, application Great Britain, Oct. 27, 1969, 52,548/69

Int. Cl. F25b *41/04*

U.S. Cl. 62—158 **7 Claims**



The invention relates generally to apparatus for controlling the pressure of fluid supplied from a pressure source to a valve to open and close the valve for predetermined time intervals, the valve preferably being provided in a pipe leading from a supply of liquid nitrogen to the interior of a refrigerated cargo container to condition the interior of the container by supplying pulses of liquid nitrogen for said predetermined time intervals. The apparatus includes a fluidic logic arrangement in a closed loop with a fluidic delay unit, both the fluidic logic arrangement and the delay unit being powered by said pressure source nitrogen vapor and the fluidic logic arrangement has an output port adapted to be connected to the valve, a starter preferably connected to the pressure source to provide a fluidic pressure output starting signal to the fluidic logic arrangement, after which, in a cycle of operations, said fluidic logic arrangement delivers a fluidic pressure input to the fluidic delay unit and an output at said port for opening the valve, the delay unit causing a fluidic output to be delivered to the input of said fluidic logic arrangement after a predetermined time for closing the valve, which output delivered to the input of the fluidic logic arrangement also automatically resets the apparatus continuously to repeat the cycle.

3,673,811

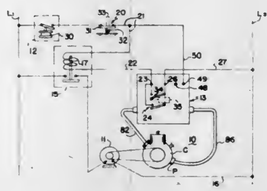
CONTROL DEVICE FOR PRESSURE LUBRICATED COMPRESSORS

Jay C. Adams, and Russell E. Cook, both of Columbus, Ohio, assignors to Ranco Incorporated, Columbus, Ohio

Filed Sept. 15, 1970, Ser. No. 72,464

Int. Cl. F25b *43/02*

U.S. Cl. 62—158 **14 Claims**



Operation of an electric motor driving a refrigerant compressor having forced oil lubrication is controlled by a solenoid operated switch, the solenoid circuit including a thermostatic switch in series with a parallel connected timer switch and oil pressure differential responsive switching means. The timer switch is operated by a relay coil energized by a timing circuit which includes voltage biased switching means having alternate output circuits, one of which includes the relay coil. The switching means is controlled by a capacitor which when charged, causes the timing switching means to change the effective flow of current from one output circuit to the other. In one form of the invention the relay coil is connected in initially energized output circuit of the switching means and is shunted to open the timer switch when the switching means is biased to change energization of the output circuits. The pressure differential responsive switch shunts the timer switch to provide a holding circuit for the solenoid after opening of the timer switch and simultaneously deenergizes the timing circuit.

In another form of the invention, the relay coil is connected in the other output circuit and is not energized for a period determined by charging of the capacitor to a given voltage. In this form the pressure responsive switch does not shunt the timer switch and is effective to deenergize the timer circuit in response to normal oil pressures.

3,673,812

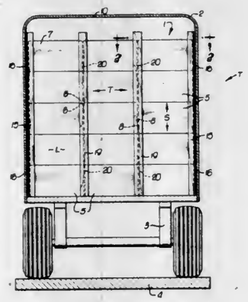
BOXED PRODUCE LOAD

Harold C. Pierce, 234 Mountain View Avenue, Pomona, Calif.

Filed Sept. 28, 1970, Ser. No. 75,975

Int. Cl. F25d *17/04*

U.S. Cl. 62—404 **6 Claims**



A boxed produce load for refrigerated transport containers having vertically corrugated longitudinal walls defining gas circulation channels. The boxes are arranged in longitudinal and transverse rows with transverse rows compacted between the longitudinal walls and longitudinally spaced apart opposite a wall channel by means bridging the channel.

ERRATUM

For Class 63—12 see:
Patent No. 3,673,815

3,673,813

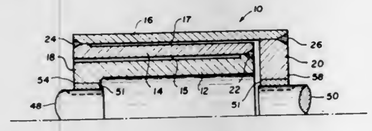
TORSIONALLY RESILIENT SHAFT COUPLING

John Wright, Baltimore, Md., assignor to Koppers Company, Inc.

Filed March 12, 1971, Ser. No. 123,666

Int. Cl. F16c *3/00*

U.S. Cl. 64—1 V **16 Claims**



A torsionally flexible shaft coupling for transmitting torque from a driving shaft to a driven shaft includes three radially overlying concentric tube members attached to each other. The attachment with a succeeding concentric member is axially spaced from the attachment with an immediately preceding concentric member for transmitting torque from the driving shaft consecutively through each succeeding concentric member and subsequently to the driven shaft.

3,673,814

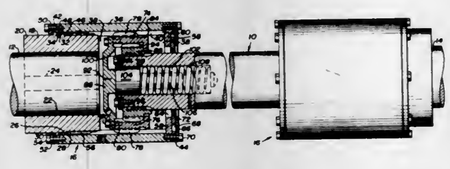
GEAR TYPE COUPLING

Kenneth K. Carman, Ellicott City, Md., assignor to Koppers Company, Inc.

Filed Nov. 16, 1970, Ser. No. 89,764

Int. Cl. F16d *3/16*

U.S. Cl. 64—8 **10 Claims**



A coupling for two shafts subject to misalignment includes an adapter secured to one of the shafts. A sleeve member is nonrotatably secured to the adapter by a retaining ring and has inwardly extending gear teeth. An outer hub member is positioned in the bore of the sleeve member and has both outwardly and inwardly extending gear teeth. The outwardly extending gear teeth mate with the sleeve member inwardly extending gear teeth and nonrotatably connect the outer hub and sleeve member. The outer hub outwardly extending gear teeth have an arcuate configuration so that the hub member is deflectable angularly. The outer hub member has a shoulder portion that limits angular deflection. An inner hub member is secured to the other of the shafts and is positioned within the bore of the outer hub member. The inner hub member has outwardly extending gear teeth that mate with the inwardly extending gear teeth of the outer hub member to nonrotatably connect the inner and outer hub members. The inner hub member gear teeth have an arcuate configuration so that the inner hub member is deflectable angularly to a limited extent. The outer hub member has a thrust plate enclosing an end portion and a thrust bar within the shaft urges the inner hub member into axial alignment with the outer hub member. The shafts are disconnected by removing the retainer ring and sliding the sleeve member over a shaft away from the adapter. The sleeves of a pair of couplings are also connected to each other to connect a pair of misaligned shafts.

3,673,815

EASILY CLASPED LOCK FOR EARWIRE

Ralph Pintarelli, Greenville, R.I., assignor to Pinta Products, Inc., Providence, R.I.

Filed Dec. 5, 1969, Ser. No. 882,479

Int. Cl. A44c *7/00*

U.S. Cl. 63—12 **4 Claims**



A pierced earring including an elongated bar formed in an open-ended construction having spaced free ends, a substantially U-shaped earwire pivotally connected to the bar adjacent to one of the free ends thereof, the other end of the earwire being removably connected to the bar for mounting of the earring on the wearer's earlobe by insertion through a laterally extending slot formed in the bar.

3,673,816

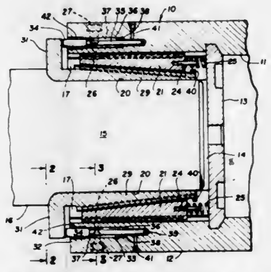
COUPLING ARRANGEMENT

Alex Mark Kuszaj, Irwin, Pa., assignor to Jones & Laughlin Steel Corporation, Pittsburgh, Pa.

Filed March 5, 1971, Ser. No. 121,282

Int. Cl. F16d *3/06*

U.S. Cl. 64—23 **5 Claims**

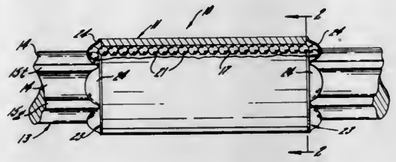


A coupling arrangement for connecting a driving member to a driven member to transfer driving torque to the latter employs opposing wedge elements to lock the members together. The wedge elements function to provide large static clearances between the coupling arrangement and driven member upon their engagement and disengagement, enabling the driven member to be readily changed. At the same time, the wedge elements function to automatically take up the static clearance upon insertion of the driven member into the coupling arrangement, and, in addition, automatically compensate for dynamic clearances occurring during operation of the driven member.

3,673,817
BALL SPLINE ASSEMBLY

Leo F. Doran, Clawson, and Theodore R. Schlenker, Troy, both of Mich., assignors to Beaver Precision Products, Inc., Troy, Mich.

Filed Sept. 23, 1970, Ser. No. 74,691
Int. Cl. F16d 3/06
U.S. Cl. 64—23.7 7 Claims

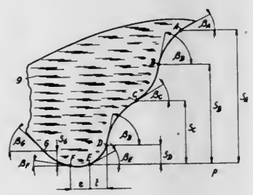


A sleeve and a splined shaft are coupled for rotation in unison and for relative linear movement by trains of anti-friction balls which circulate in pairs of load and return grooves circumferentially spaced from one another around the sized surface of the sleeve. The return grooves are size to receive the balls with free running clearance, and the balls are always in an unloaded or free return condition while traveling in the return grooves, the same grooves serving as return grooves at all times regardless of the direction of rotation of either the sleeve or the shaft. The load grooves are smaller than the return grooves, and the balls in alternate ones of the load grooves are loaded and transmit torque in one direction of rotation while the balls in the other load grooves are loaded and transmit torque in the opposite direction of rotation. If desired, the balls may be sized to fit between the load grooves and the shaft with zero clearance to establish an anti-backlash fit between the shaft and the sleeve. Also, the sleeve may be preloaded on the shaft simply by using balls sufficiently large to be deformed plastically between the load grooves and the shaft.

3,673,818
KNITTING MACHINES

Milan Havranek, Brno; Drahomir Zouhar, Blansko; Josef Dusik, Trebic; Jaromir Kucera, Trebic, and Jiri Krejcirik, Trebic, all of Czechoslovakia, assignors to Elitex-Zavody textilniho strojirenstvi, generalni reditelstvi, Liberec, Czechoslovakia

Filed Sept. 29, 1969, Ser. No. 861,816
Claims priority, application Czechoslovakia, Oct. 2, 1968, 6823/68
Int. Cl. D04b 15/32
U.S. Cl. 66—57 1 Claim

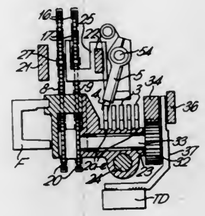


In a knitting machine a cam formed with an edge profile comprising the locus of a plurality of points related to the operation of the machine and joined by a fourth degree curved and having tangential line portions adjacent some of the points producing zero acceleration.

3,673,819
YARN CARRIER DRIVER MEANS FOR VEE BED KNITTING MACHINES

Barry Frederick Swanwick, Melton Mowbray; Ernest West, Kirby-in-Ashfield, and John Harry Cuthbertson, Skegby Sutt, all of England, assignors to S. A. Monk (Sutton-in-Ashfield) Limited, Sutton-in-Ashfield, England

Filed Nov. 6, 1970, Ser. No. 87,434
Claims priority, application Great Britain, Nov. 5, 1970, 55,008/69
Int. Cl. D04b 15/52
U.S. Cl. 66—126 R 9 Claims

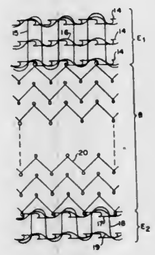


Yarn carrier driver means for vee bed knitting machines having a plurality of yarn carriers and comprising an endless chain assembly for imparting reciprocatory movement to a selected one of said yarn carriers, first adjusting means for adjusting the position of said selected yarn carrier relative to the cams of the cam boxes of the machine, and second adjusting means for reversing the position of said selected yarn carrier at the end of each stroke of said cam boxes.

3,673,820
WARP KNIT PANTY-TYPE GARMENTS

Louis Sarmiento, Hasbrouck Heights, N.J., assignor to International Stretch Products, Inc., New York, N.Y.

Filed March 20, 1970, Ser. No. 21,409
Int. Cl. A41b 9/02
U.S. Cl. 66—177 8 Claims



The invention is directed to a combination fabric of warp knit construction (as distinguished from circular knit, woven, etc.) which is comprised of a body portion having two-way effective elasticity, and integrally knitted, spaced selvedge portions having one-way effective elasticity. The fabric is constructed in a continuous web form, with the elastic selvedges forming the opposite edges of the web. The selvedges are constructed principally of yarns having substantially heavier denier than the yarns principally constituting the body portion. The elastic selvedge portions are constructed to have lateral running yarns imparting the characteristic of substantial non-extensibility to the selvedge portion in the course-wise direction of the fabric. The lateral running yarns of the selvedge are, in addition, of substantially heavier denier than the

warp-wise running yarns of the selvedge, to impart substantial wall rigidity to the selvedge portions, in the course-wise direction, while providing a high degree of flexibility in the warp-wise direction. The body portion of the fabric may be constructed entirely or partly of elastic yarns, or may derive its effective elastic characteristics solely from the knitted construction of the fabric. The fabric of the invention is especially adapted for use in the manufacture of one- or two-piece garments, such as panties or panty girdles.

3,673,821
KNIT GARMENT AND METHOD OF MANUFACTURE

Martin Robert Johnson, Broughton Astley, England, assignor to Prenihan A.G., Chur, Switzerland

Filed Jan. 10, 1969, Ser. No. 790,363
Claims priority, application Great Britain, Jan. 16, 1968, 2,414/68
Int. Cl. A41b 9/02
U.S. Cl. 66—177 19 Claims

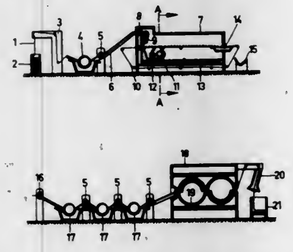


A two-legged lower-body garment of the class comprising panti-hose, body stockings, leotards, tights, pantaloons, and pants, is made from a single blank of essentially seamless tubular form throughout knitted on a circular knitting machine and comprising two leg portions and an intermediate pant-forming portion. A waist opening is made in the waist portion; toes may be formed by cutting and seaming, or automatically on the knitting machine. At least the intermediate portion and preferably each portion is knitted of stretchable yarn which may be stretch yarn or elastomeric yarn. If of stretch yarn, the garment may be unboarded but may be given a relaxing treatment.

3,673,822
AN APPARATUS FOR THE CONTINUOUS FINISHING OF KNITTED FABRICS AND HOSIERY GOODS

Heinz Fleissner, Egelsbach, near Frankfurt, Germany, assignor to VEPA AG

Division of Ser. No. 677,503, Oct. 18, 1967. This application March 19, 1969, Ser. No. 840,861
Claims priority, application Germany, Oct. 18, 1966, V 32144
Int. Cl. D06c 1/06
U.S. Cl. 68—5 17 Claims

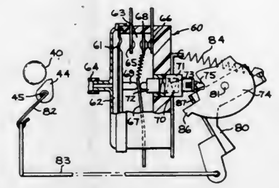


An apparatus for finishing, especially bleaching and/or desizing knitted fabrics and hosiery goods, such as for example cellulose fibers, wherein the knitted fabrics and hosiery goods are impregnated with the treatment liquor, steam, washed and/or rinsed and dried. The knitted fabrics and hosiery goods are continuously transported and guided in open width and without any substantial tension during the individual treatment stages.

3,673,823
SMALL OR LARGE LOAD AUTOMATIC WASHER

Ved P. Gakhar, Louisville, Ky., assignor to General Electric Company

Filed Feb. 22, 1971, Ser. No. 117,547
Int. Cl. D06f 37/36, 33/02; F16k 21/18
U.S. Cl. 68—12 R 5 Claims

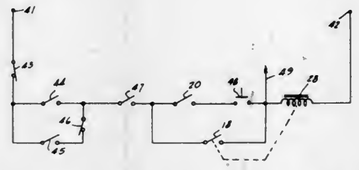


An automatic washer for washing either large or small loads of clothes or other washable articles is provided with a two speed timer for controlling the complete cycle of washing, centrifugal extraction, rinsing the centrifugal extraction operations for either a normal length of time or a shorter length of time. A water level control means for controlling the amount of water introduced into the washer is mechanically connected to the timer means so as to operate the timer on the shorter complete cycle when the water level switch is set for a minimum water level position.

3,673,824
DOOR LATCH AND INTERLOCK

William B. Ripeo, Coloma, and John W. Dietrich, Stevensville, both of Mich., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed Feb. 23, 1971, Ser. No. 118,124
Int. Cl. D06f 33/02, 39/14
U.S. Cl. 68—12 R 6 Claims



A door latch and interlock system particularly adapted for use in connection with laundry equipment including both a door latch and an associated door lock mechanism which is solenoid operated. Separate switches sense the positioning of the lock and latch members, and serve to prevent the machine from being started when the door is not latched, and act as a holding circuit for the push-to-start circuitry.

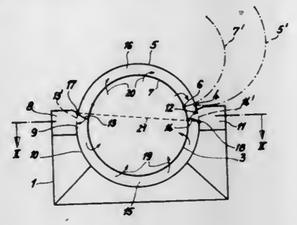
3,673,825
DRUM MACHINE

Manfred Schuierer, Erbach/Odenwald, Germany, assignor to Bruckner-Apparatebau Michelstadt GmbH, Erbach/Odenwald, Germany

Filed Feb. 1, 1971, Ser. No. 111,259
Int. Cl. F26b 11/04, 21/00; D06f 35/00
U.S. Cl. 68—20 3 Claims

A perforated drum for receiving textile webs to be treated, is rotatably mounted in a fixed drum housing having air inlet

and outlet apertures which extend over substantially the full length of the drum and are angularly offset from one another



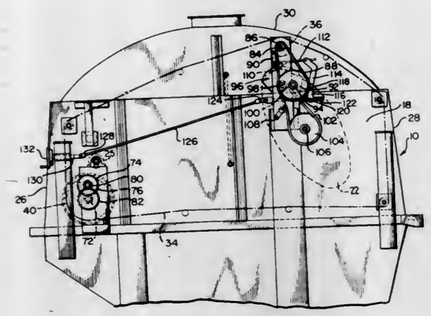
at the periphery of the drum. Partition elements extend across the gap between the drum and the drum housing to separate the air inlet and outlet apertures.

3,673,826

APPARATUS FOR THE FLUID TREATMENT OF FABRICS IN ROPE FORM

Edward Stanway, Fountain Street, Macclesfield, SK 10 1JW, England

Filed Aug. 20, 1970, Ser. No. 65,448
Claims priority, application Great Britain, Nov. 27, 1969, 57,980/69; Feb. 11, 1970, 6,509/70
Int. Cl. D06f *43/08*; G11b *15/28*
U.S. Cl. 68—176 **12 Claims**



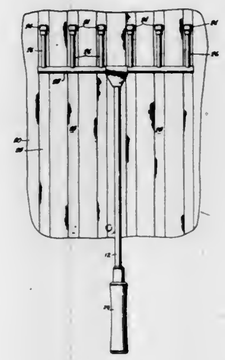
The spiral guide member in an apparatus for treating textile fabrics in rope form of the type wherein a winch roller and a parallel spiral guide member are rotatably mounted lengthwise in a tank with an endless conveyor chain rotatably mounted on the interior of one of the tank end walls and moving in a vertical orbital path around the adjacent ends of the winch roller and the guide member with one end of the fabric being connected to the chain and carried thereby around the winch roller and guide member has its center shaft surrounded by longitudinally disposed rotatable rollers. The winch roller is driven by a prime mover and through a variable speed gearing drives the conveyor chain with such gearing being adjustable by a handwheel at the front of the tank operating a screw through a universally mounted connecting rod to actuate a lever for the gearing so that the speed of the chain is regulated independently of the speed of the winch roller. The chain drives an adjustable speed unit which transmits drive to the spiral guide shaft that is mounted for easy removal from the tank walls with the spiral guide member rotating in timed relation with the rotation of the chain.

3,673,827

MANUAL STEAMING APPARATUS

John H. Hales, Aurora, Utah

Continuation-in-part of Ser. No. 765,308, Oct. 7, 1968, abandoned. This application June 19, 1970, Ser. No. 47,895
Int. Cl. D06c *1/00*
U.S. Cl. 68—222 **12 Claims**



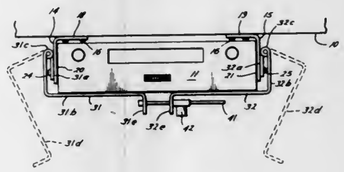
A novel manual steaming apparatus is disclosed with an improved balanced handle which is offset from the steam delivery tube and affixed axially thereto by a strap which is embedded in the handle. The steaming apparatus employs direct-spray nozzles with openings arranged to give a spray configuration which is inclined to the horizontal sufficient to prevent substantial overlap and interspray condensation, and to effect better steam penetration.

3,673,828

STEREO LOCK

Alton R. Jones, 724 South 13th Street, Nederland, Tex.

Filed Jan. 11, 1971, Ser. No. 105,305
Int. Cl. E05b *73/00*
U.S. Cl. 70—58 **6 Claims**



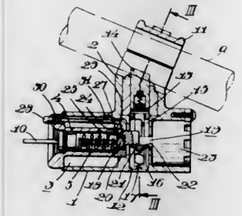
Stereo lock, for locking stereo apparatuses, or the like, in automobiles, or in other locations where such apparatuses may be disposed. The mounting brackets for the stereo units are screwed to the stereo unit, together with hinged members, one at each side of the stereo apparatus, these being pivotally movable to beneath the apparatus where they are locked together by a lock mechanism consisting of a locking slide and a keeper, the latter including a key operated locking mechanism.

3,673,829

THEFT PREVENTING DEVICES IN MOTOR VEHICLES

Tadasi Mizuno, Nagoya, Japan, assignor to Kabushiki-Kaisha Tokai Rika Denki Seisakusho, Nishi-Kasugai-gun, Aichi-ken, Japan

Filed Nov. 25, 1970, Ser. No. 92,764
Claims priority, application Japan, Dec. 6, 1969, 44/98016
Int. Cl. B60r *25/02*
U.S. Cl. 70—252 **3 Claims**



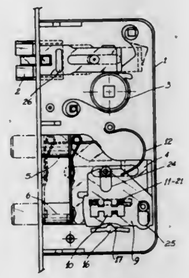
An improvement in theft preventing devices having a rotor lock of the cylinder type by means of which the ignition circuit of a vehicle is settable to various positions including a lock and drive position, and a locking bolt which is protrusible by the rotation of rotor to the lock position to block a vital part of vehicle, in which the improvement lies in that said rotor is not rotatable to the lock position when the rotor is once rotated from the lock position unless a latch means acting on the rotor is manipulated, whereby the accidental locking of the vital part of vehicle during the driving of the vehicle is positively prevented.

3,673,830

SAFETY LOCK

Rene Alfredo Billino, Lope de Vega 135, Saenz Pena, Argentina

Filed Aug. 26, 1970, Ser. No. 67,150
Int. Cl. E05b *25/08*
U.S. Cl. 70—352 **7 Claims**



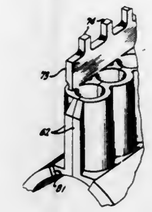
A safety lock having a latch bolt and at least one key-operated bolt both movable to an unlocking position by turning of a single key. Combination tumbler plates are located on opposite sides of an operating plate connected to the key-operated bolt. The tumbler plates are constructed to be moved to a releasing position, permitting movement of the operating plate, regardless whether the key is inserted from one or the other side of a box in which the elements of the lock are mounted. The key-operated bolt is moved to the unlocking position during turning of the key in one direction and means are provided to move the latch bolt to its unlocking position during further turning of the key in the one direction without further withdrawing the key-operated bolt.

3,673,831

LOCK CYLINDER BODY AND METHOD OF PROVIDING THE SAME

Kenneth R. Nelson, West Vancouver, British Columbia, Canada, assignor to Schlage Lock Company

Filed March 10, 1969, Ser. No. 805,510
Int. Cl. E05b *9/04*
U.S. Cl. 70—373 **3 Claims**



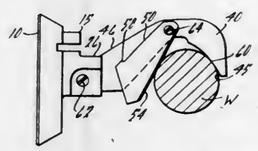
A lock cylinder body is fabricated of a strip of sheet metal with the central portion thereof folded upon itself to define an approximate cylinder and with the end portions extending approximately radially from said cylinder and disposed against each other to define a tumbler tongue in which there are opposed, concave surfaces defining pin tumbler chambers at least partially covered by an integral lip on at least one of the strips. The lock cylinder body is made by bending the central portion of a sheet of strip metal around a cylindrical form until the end portions of the strip are in substantial juxtaposition on opposite sides of a rod projecting radially from the form and then pressing the end portions toward each other until at least one of the end portions deforms around the rod.

3,673,832

CENTERING ATTACHMENT

Bruce D. Bedker, Mt. Clemens, and Frederich C. Wunderlich, Detroit, both of Mich., assignors to Salvo Tool & Engineering Company, Roseville, Mich.

Filed Dec. 9, 1970, Ser. No. 96,357
Int. Cl. B21h *1/00*
U.S. Cl. 72—35 **17 Claims**



Centering attachment for locating a machine component relative to a work piece of circular cross-section irrespective of diameter, including a pair of relatively movable elements adapted to engage circumferentially spaced portions of the work piece, and indicating surfaces on the elements adapted to form a smooth continuous surface when the component is properly spaced from the axis of the work piece.

3,673,833

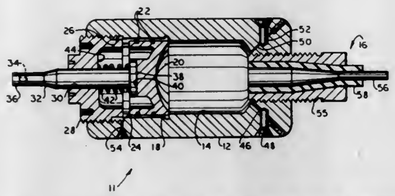
SHOCK WAVE RIVETING MEANS AND METHOD

Gilbert C. Cadwell, Lakeside, Calif., assignor to Rohr Corporation, Chula Vista, Calif.

Filed April 20, 1970, Ser. No. 30,002
Int. Cl. B23p *17/00*
U.S. Cl. 72—56 **9 Claims**

Method and means for upsetting a high strength rivet in a single operation which includes a housing having a cavity for receiving electrically conductive water. A transducer is

mounted on the housing at one end of the cavity and has spaced electrodes defining a gap across which high voltage electrical energy is discharged to generate high velocity shock waves in the water. A piston in the housing at the other end of the cavity faces the transducer and moves in response to the application of shock wave forces transferred thereto through the water. A cavitated anvil is engaged with the upsettable end of a rivet and is moved by the piston to upset the rivet end by



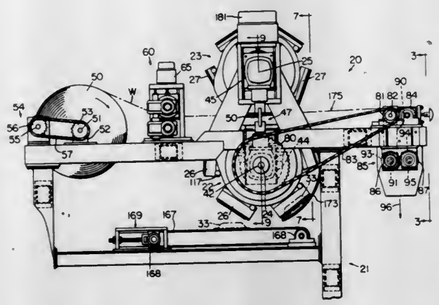
flowing it upon said application of shock wave forces to form a headed enlargement. The several parts of the device are proportioned in size, and weight and mass for dynamic balancing of forces and easy handling by a single worker. The electrical energy is delivered to the transducer by coupling means having high dielectric and strength properties for insuring the safety of the worker.

3,673,834

APPARATUS FOR AND METHOD OF OPERATING ON CONTAINER CONSTRUCTIONS

Hans A. Brunner, Chester, and Geroge B. Vogeleer, Hopewell, both of Va., assignors to Reynolds Metals Company, Richmond, Va.

Filed Oct. 19, 1970, Ser. No. 81,740
Int. Cl. B21d *26/04*
U.S. Cl. 72—57 **21 Claims**



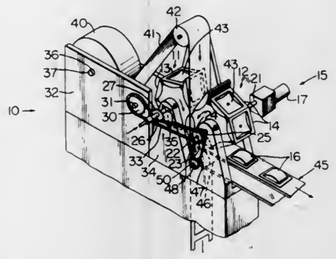
A supporting structure is provided having a pair of wheels each supported thereon about an associated axis of rotation and each of the wheels has a plurality of die halves provided thereon. The wheels are rotated by a drive in a synchronized manner so that each die half of one wheel is arranged opposite an associated die half of the other wheel to provide a plurality of cooperating sets of dies with each set being adapted to operate on a container construction. Mechanical cam means is provided and holds the die halves of each set against opposite sides of an associated container construction over an angular increment enabling a fluid under pressure to be supplied through one of the die halves during such angular increment to operate on the associated container construction.

3,673,835

APPARATUS FOR AND METHOD OF OPERATING ON CONTAINER CONSTRUCTIONS

Horst F. W. Arfert, Richmond, Va., assignor to Reynolds Metals Company, Richmond, Va.

Filed Oct. 19, 1970, Ser. No. 81,739
Int. Cl. B21d *26/04*
U.S. Cl. 72—57 **16 Claims**



A pair of wheels each having a plurality of die halves are rotatably driven in a synchronized manner so that each die half of one wheel is arranged opposite an associated die half of the other wheel to provide a plurality of cooperating sets of dies with each set being adapted to operate on an associated container construction. With the wheels rotating continuously, the die halves of each set are held against opposite surfaces of an associated container construction over an angular increment and during such increment a fluid under pressure is applied through one of the die halves against one of the surfaces of the construction to operate on such construction.

3,673,836

METHOD OF ROLLING HOLLOW STOCK

Ulrich Petersen, Duesseldorf, and Friedrich-Hans Grandin, Muhlheim/Ruhr, both of Germany, assignors to Mannesmann Aktiengesellschaft, Duesseldorf, Germany

Filed Aug. 10, 1970, Ser. No. 62,640
Int. Cl. B21b *19/06*
U.S. Cl. 72—78 **6 Claims**

Continuously cast, hollow ingots are rolled in a rolling mill of the skew rolling type, whereby the ingot is prevented from turning on its longitudinal axis, and the rolls roll on the ingot.

3,673,837

METHODS AND TOOLS FOR FINISHING GEAR TEETH BY ROLLING

Michel Tixier, Billancourt, France, assignor to Regie Nationale Des Usines Renault, Billancourt and Automobiles Peugeot, Paris, France

Filed June 15, 1970, Ser. No. 46,036
Int. Cl. B21h *5/00*
U.S. Cl. 72—102 **4 Claims**

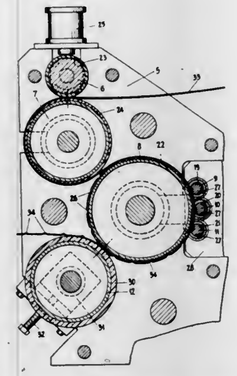
In this method of finishing teeth by rolling, notably gear teeth, the rolling operation known per se of the working surfaces of the teeth is completed by a gauging operation of the inoperative surfaces, that is, those not brought into mutual contact during the gear operation, said gauging operation consisting for example of a flattening of the ridges of the surface uneveness of the rough surface resulting from the milling cutting operation, or a simple contact or an absence of contact, as a function of machining tolerances alone, this method being applicable to the finishing of mass-produced gears, notably in the automotive industry.

3,673,838

CONTINUOUS FORMING OF TRANSVERSE STIFFENING RIBS ON STRIP MATERIAL

Philip George Clempson, Donvale, Victoria, Australia, assignor to Brownbuilt Limited, Nunawading, Victoria, Australia

Filed Jan. 29, 1970, Ser. No. 6,657
Int. Cl. B21d *13/04*
U.S. Cl. 72—187 **12 Claims**



Method of and machine for forming transverse ribs in metal strip wherein the strip is fed through a pair of back tension rolls, over a die roll having a series of elliptical shaped recesses extending transversely of and around the periphery of the die roll, a series of rotary punch rolls engaging the strip on the die roll and deforming the strip into the recesses, a forward tension roll engaging the deformed strip on the die roll and controlling the feed out of strip from the machine, the back tension rolls and the forward tension roll being driven by gearing providing a speed differential between these rolls and thus indicating tension in the strip as it passes over the die roll.

3,673,839

METHOD OF MANUFACTURING A FOIL MATERIAL EMBOSSED ON BOTH SIDES, A ROLL NIP AND A MACHINE FOR CARRYING OUT THE METHOD

Ole Nielsen, 72A, Hellerup, Hellerupvej, and Max Beidll, Sortedam Dossering 25, Copenhagen, both of Denmark

Filed Aug. 11, 1970, Ser. No. 62,850
Claims priority, application Denmark, Aug. 13, 1969, 4344/69
Int. Cl. B44b *5/00*
U.S. Cl. 72—196 **7 Claims**



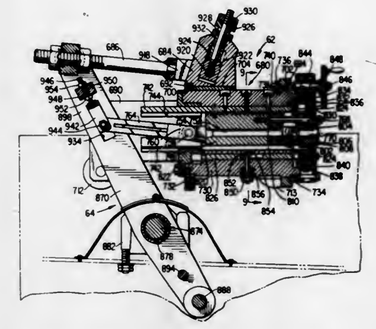
A method for embossing foil material by inserting the foil material in the roll nip between two rolls being provided with projections, each projection of a roll being surrounded on all sides by projections of the other roll, each projection of a roll is axially offset relative to the peripherally adjacent projections on the same roll, the projections of one roll form lines oblique to an axial line and so that the foil material from each projection peak on each roll is stretched to the surrounding projection peaks of the other roll.

3,673,840

COLD ROLLING PIPE ROLLER TYPE ROLLING STAND

Alexandr Ivanovich Tselikov; Vsevolod Vladimisovich Nosal, and Vadim Anatolievich Verderevsky, all of Moscow, U.S.S.R., assignors to Vsesojuzny Nauchno Issledovatelsky and Proektnokonstruktorsky Institute Metallurgicheskogo Mashinostroenlya, Moscow, U.S.S.R.

Filed Jan. 5, 1970, Ser. No. 720
Int. Cl. B21b *17/10*
U.S. Cl. 72—208 **36 Claims**



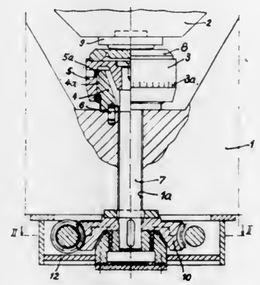
A rolling stand with a reciprocating rigid frame carriage coupled to a vertical rocking beam lever for drive reciprocation. The carriage has eight rollers, cooperating with rigid tracks, disposed to maintain the carriage against pitch. A thick walled rolling reduction head is removably and securely mounted in the carriage. The head contains working rollers maintained in a resiliently biased balanced disposition in a slide race or separator so the rollers bear against former tracks rigidly secured against axial shift in the reduction head. The separator is reciprocable and its movement is synchronized, via a connection to the rocking lever, with the reciprocation of the head so the separator follows the movement of the rollers relative to the head. A wedge mechanism under the former tracks enables radial adjustment of the tracks.

3,673,841

SCREWDOWN DEVICES FOR ROLLING MILLS

Albert Bier, St. Ingbert-Saar, Germany, assignor to Moeller & Neumann GmbH, St. Ingbert-Saar, Germany

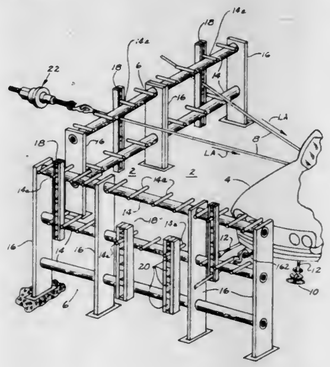
Filed Aug. 28, 1969, Ser. No. 855,460
Int. Cl. B21b *31/24*
U.S. Cl. 72—248 **3 Claims**



There is disclosed a screwdown device for displacing a chock in a window of a rolling mill frame, wherein two mu-

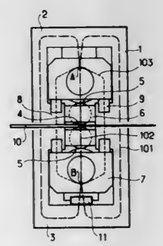
tually meshing screw members are disposed between a transverse member of the frame and the chock, one of the screw members being non-rotatably secured and the other screw member being rotatable by means of a shaft extending through the transverse member, for the purpose of effecting mutually relative displacement of said screw members and thereby the screwdown movement of the chock.

3,673,842
METHOD OF AND APPARATUS FOR REPAIRING DEFORMED YIELDABLE STRUCTURES
Anastacio V. Sanchez, 10775 Foothill Boulevard, Cupertino, Calif.
Filed Feb. 26, 1970, Ser. No. 14,558
Int. Cl. B21d *1/00*
U.S. Cl. 72—293 **12 Claims**



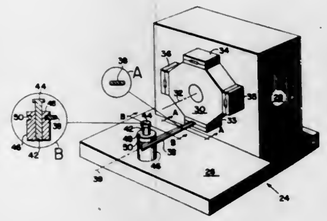
Method and apparatus for repairing vehicle bodies including placing a vehicle body to be repaired within a stall, engaging attachment tools with preshaped contour surfaces to the body about the area to be repaired, joining the tool to tension cable means guided by a select guide means to guide the cable along a desired line of action, and applying tension means to the cable means for placing the cable in tension at adjustable magnitudes along said line of action.

3,673,843
ROLLING METHOD USING PRESTRESSING
Lucien Diolot, Neuilly, France, assignor to Societe Nouvelle Spidem, Paris, France
Filed Oct. 28, 1969, Ser. No. 871,905
Claims priority, application France, Oct. 28, 1968, 68171662
Int. Cl. B21b *31/32*
U.S. Cl. 72—245 **3 Claims**



Process in which the prestress effort does not exceed, in value, that of the residual effort necessary for adjustments during rolling, it being necessary only to block the prestress circuit of the device after the product has been inserted.

3,673,844
METHOD AND APPARATUS FOR SHAPING TEMPLE PIECES FOR SPECTACLES
Berend Heijenga, Norwood, Mass., assignor to Polaroid Corporation, Cambridge, Mass.
Filed Feb. 20, 1970, Ser. No. 13,112
Int. Cl. B21d *11/02*
U.S. Cl. 72—298 **23 Claims**



The subject invention contemplates a process and apparatus for automatically shaping temple pieces used in spectacles. One end portion of a temple piece is rigidly secured by a fixture, the other end portion being unsecured, and rotates therewith so that the movement of the temple pieces generates a cylinder. A spool is rotatably secured to a spindle whose longitudinal axis is generally transverse to the axis of rotation of the temple piece and the spool is provided with an annular recess adapted to receive one end portion of the temple piece.

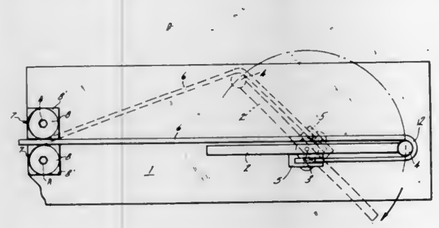
At one point in the rotation of the fixture, the unsecured end portion of the temple piece is brought into engagement with the annular recess in the spool. Further rotation of the fixture will cause a portion of the temple piece engaging the spool to bend away from the longitudinal axis of the temple piece as it rolls past the spool.

The end portion of the temple piece rolling past the spool is constrained by the annular recess so that it can only move within a single plane at any instant. At the same time, the plane of that portion of the temple piece engaged by the fixture is caused to rotate, due to the rotation of the fixture, so as to effectively twist the end portion of the temple piece, in engagement with the spool, about the longitudinal axis of such temple piece.

The spool may also be slidably secured to the spindle so as to be movable upwardly thereon. By suitably restraining the upward travel of the spool, the temple piece may be caused to bow a predetermined amount between the fixture and the spool. Thus, it is readily apparent that temple pieces may be suitably shaped in each of three mutually perpendicular planes so as to more closely conform to the head shape of the prospective wearer and provide a more comfortable and proper fit therefor.

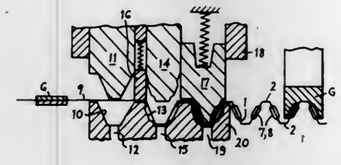
3,673,845
TENSILE BENDING OF METAL PANELS OR STRIP HAVING INFLATABLE PASSAGEWAYS
John W. Vercoglio, Benld, Ill., assignor to Olin Corporation
Filed Nov. 25, 1969, Ser. No. 879,888
Int. Cl. B21d *11/04*
U.S. Cl. 72—318 **35 Claims**

A process for bonding metal strip or panels containing inflatable passageways, wherein the passageway may be uninflated, partially inflated, preformed, or fully inflated. The strip or panels are eventually fully inflated to form one or more fluid passageways. The strip or panel is maintained under tension and is bent by contacting it with a die spindle while it is under tension. The strip or panel will be forced ahead and around the die spindle, thus creating elongation. Upon completion of the bend, the strip or panel may be inflated using air, water, or any other inflation medium. The inflation can be accomplished while the strip or panel is still under tension, or they may be freely inflated after removal of the tension. An apparatus for carrying out the process comprises a die spindle shaped to substantially mate with the strip or panel



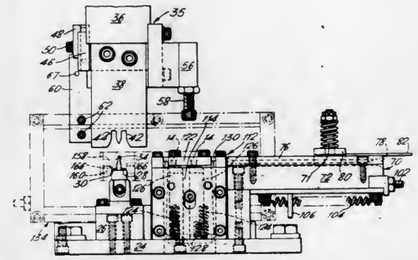
which is to be bent. The die spindle is secured to a rotatable bending arm, which is adapted to traverse the die spindle through an arc, which intercepts the strip or panel, forcing the strip or panel ahead and around the die spindle. The apparatus also contains means for 4879888X tension to the strip or panel while it is being bent. The tension is preferably slightly less than the yield strength at 0.2 percent offset of the strip or panel. The apparatus is also capable of automatic and continuous operation and is ideally suited to the formation of serpentine-like configurations for use in heat exchangers.

3,673,846
HEAT EXCHANGERS
Henry John Levington, and Charles Keith Clark, both of Leamington Spa, England, assignors to Associated Engineering Limited, Leamington Spa, England
Filed April 28, 1970, Ser. No. 32,533
Claims priority, application Great Britain, May 9, 1969, 23,835/69
Int. Cl. B21d *53/04*
U.S. Cl. 72—326 **15 Claims**



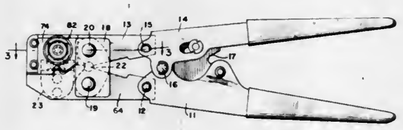
This invention relates to an apparatus for producing a heat exchanger fin structure of the type disclosed in FIGS. 1 to 3 of copending U.S. Pat. application Ser. No. 755077. The apparatus comprises means for feeding the corrugated strip forming the fin structure along the direction of the longitudinal plane of the structure to pass restraining means engaging with the corner of an area forming a fin to temporarily restrain or stop the motion of a fin area until at least the next following fin area is inclined towards the restrained area, whereafter the restraining means yield to allow the thus converged fins so formed to pass said means, whereby the resulting corrugated structure has the adjacent fins, extending from either side of a region converging towards each other.

3,673,847
ROUND SOCKET APPLICATOR
Lodevicus Lambertus Johannes van de Kerkhof, Hertogenbosch, Netherlands, assignor to AMP Incorporated, Harrisburg, Pa.
Filed Dec. 17, 1970, Ser. No. 99,085
Claims priority, application Netherlands, Jan. 7, 1970, 7000181
Int. Cl. B21j *11/00*
U.S. Cl. 72—405 **8 Claims**



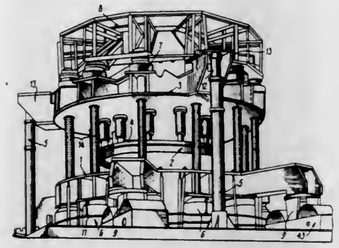
Apparatus for crimping a plurality of electrical connectors simultaneously to the ends of juxtaposed wires, the apparatus comprising crimping anvils towards which the strip of connectors is arranged to be fed along a feed path, juxtaposed crimping dies for cooperation with the anvils to crimp the connectors to the wires, a severing device arranged to sever a plurality of the connectors simultaneously from the strip of connectors at a position upstream of the anvils, and feed means arranged to advance the severed connectors simultaneously towards the anvils to position each severed connector on one of the anvils.

3,673,848
WORK LOCATOR WITH INSULATION ADJUSTMENT FOR CRIMPING TOOL
George J. Filia, Shelton, Conn., assignor to Sargent & Company, New Haven, Conn.
Filed April 21, 1970, Ser. No. 30,389
Int. Cl. B21d *9/08*
U.S. Cl. 72—410 **19 Claims**



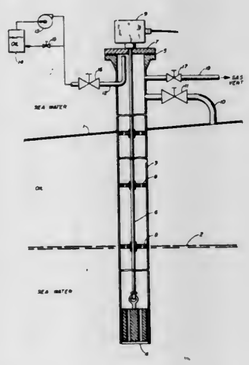
This specification discloses a tool intended for use in crimping terminals on insulated conductors having bared end portions and which tool includes a work locator for positioning a terminal in the tool in proper relation to the dies of the tool, and a bared conductor with respect to the terminal and dies, with the locator including mechanism which accomodates elongation of the terminal and conductor caused by the crimping operation. The tool also includes a crimping die which crimps a portion of the terminal about the insulation and which die is adjustable on the jaw by which it is carried to accommodate insulation of various sizes.

3,673,849
HYDRAULIC PRESS
Bogdan Vyacheslavovich Voltsekhovsky, ulitsa Akademicheskaya, 2; Alfred Alexandrovich Zuev, ulitsa Tereshkovoi, 42, kv. 37; Vladimir Nikolaevich Plaxin, ulitsa Illicha, 14, kv. 65, and Valery Nikolaevich Makarov, ulitsa Barjernaya, 6-a, kv. 36, all of Novosobirsk, U.S.S.R.
Filed Jan. 5, 1970, Ser. No. 727
Int. Cl. B21j 9/02
U.S. Cl. 72—448 7 Claims



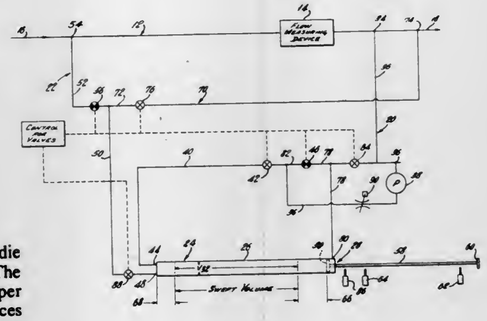
A hydraulic press comprises a lower cross-piece with a die and actuating cylinders mounted on the cross-piece. The piston rods of the cylinders are connected with an upper removable cross-piece by means of nuts of damping devices mounted in the upper cross-piece and the piston rods are articulated in the actuating cylinders serving at the same time as columns of the press. The surfaces of the rods are provided with screw threads and adjustable nuts are threaded therein to elevate the upper cross-piece and to ensure parallel arrangement of the cross-pieces at the end of the working operation of stamping. The lower cross-piece is mounted on bogies for lateral movement relative to the upper cross-piece.

3,673,850
LIQUID LEVEL DETECTOR
Bill S. Burrus, Tulsa, Okla., assignor to Combustion Engineering, Inc., New York, N.Y.
Filed Dec. 3, 1970, Ser. No. 94,758
Int. Cl. G01f 25/00
U.S. Cl. 73—1 R 3 Claims



In the environment of a subsea storage tank for petroleum production, a primary element is mounted within a tube extended through the tank top to sense the oil-water interface within the tank. A pump and storage system is connected to the tube to alternately fill the tube with sea water and oil for calibration purposes.

3,673,851
METER PROVING SYSTEM
Edward L. Wright, Plainfield, and Eugene Meseck, Lincoln Park, both of N.J., assignors to Customline Control Products, Inc., Linden, N.J.
Filed Aug. 18, 1970, Ser. No. 64,741
Int. Cl. G01f 25/00
U.S. Cl. 73—3 19 Claims

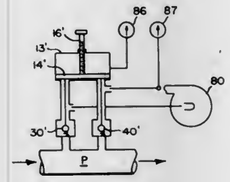


A system and method associated therewith are disclosed for proving and/or monitoring the accuracy of a flow measuring device situated in an active flow path and capable of providing an indication of the rate of flow of fluid therethrough. The system includes storage means for accumulating a predetermined volume of fluid therein and injection means cooperating with the storage means for introducing said predetermined volume of fluid into the active flow path on the upstream side of the flow measuring device within a measured period of time. In a preferred embodiment, the storage means is continually flushed with the product flowing in the active flow path thereby maintaining the temperature and product in the storage means conincident with the temperature and product flowing in the active flow path. Additionally, fluid derived from the active flow path may be utilized for driving the injection means.

3,673,852
ANALYSIS OF COMMINUTED MEAT PRODUCTS
Kenneth E. Davis, Troy, Ohio, assignor to The Hobart Manufacturing Company, Troy, Ohio
Filed April 16, 1970, Ser. No. 29,278
Int. Cl. G01n 25/02
U.S. Cl. 73—15.4 11 Claims

Rapid determination of fat in comminuted meat products, such as beef and the like, is obtained by exposing a preweighed sample to microwave energy for a period of time sufficient to achieve a relatively constant chemical analysis in the residue. During heating, a substantial portion of the fat is melted, leaves the sample and is collected, while a substantial portion of the moisture is vaporized and released directly as vapor. The sample residue, less released fat and moisture, is weighed as is the collected fat. By cooking the sample using microwave energy to the point short of decomposition of appreciable protein, fat, etc., some fat, moisture and protein and all the ash remain in the residue. Accurate determination of these components may then be calculated because the residue is at a relatively constant chemical analysis.

3,673,853
GAS CONTENT OF LIQUID DETERMINATION
Augustus W. Griswold, Rochester, and James R. Tompkins, Greece, both of N.Y., assignors to Sybron Corporation, Rochester, N.Y.
Filed May 11, 1970, Ser. No. 36,305
Int. Cl. G07n 7/14
U.S. Cl. 73—19 12 Claims



In a continuous liquid carbonation process, a pump draws liquid from a line and pumps it back in again. Periodically, the connections of the pump to the line are shut-off, trapping a sample of carbonated liquid in the pump, which agitates same, causing CO_2 to evolve into a vapor space. Such agitation eventually causes the sample to become an equilibrium mixture of free CO_2 and liquid solution of CO_2. Pressure and temperature measurements on the equilibrium mixture allow calculation of the CO_2 content. The calculation can be carried out automatically and used for automatically controlling the carbonation of the liquid.

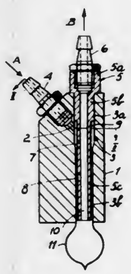
3,673,854
METHOD OF OPERATING GAS ANALYSIS APPARATUS
Dan Paul Manka, Pittsburgh, Pa., assignor to Jones & Laughlin Steel Corporation, Pittsburgh, Pa.
Filed July 22, 1970, Ser. No. 57,342
Int. Cl. G01n 31/00
U.S. Cl. 73—23 8 Claims

The time required for continuous gas analyzers of blast furnace top gas and the like to reach steady-state conditions after an interruption of furnace operation is greatly reduced by a process including drying the stream of gas analyzed and sealing a gas containing the analyzed constituents within the gas analysis apparatus during the period of interruption.

3,673,855
LEAKAGE FLOW MONITOR
Louis C. Garday, Woodland Hills, and Arthur A. Nemechek, Glendale, both of Calif., assignors to Lockheed Aircraft Corporation, Burbank, Calif.
Filed March 10, 1971, Ser. No. 122,750
Int. Cl. G01m 3/26
U.S. Cl. 73—40 13 Claims

A leakage flow measuring device for hydraulic systems has a body member with a bore interconnecting an inlet and an outlet designed for inline connection in a system. A flow restricting piston is within the bore and moves to a non-flow interfering position in response to operational fluid flow. The piston has a transducer connected to one end and a metering orifice in the opposite end. The metering orifice is of a predetermined dimension which allows fluid up to a predetermined volume to flow therethrough, with the transducer as a function of piston travel. Flow during quiescent periods of a system is indicative of system or component leakage.

3,673,856
FLUID OPERATED SENSOR
Pier L. Panigati, Via Friuli 64, Milan, Italy
Filed March 26, 1970, Ser. No. 22,953
Claims priority, application Italy, Jan. 20, 1970, 19582 A/70
Int. Cl. G01b 13/12
U.S. Cl. 73—37.5 3 Claims

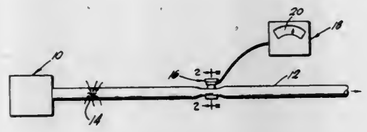


Fluid operated sensor comprising a pipe member having one end open and an opposite end connected to a fluid operated control circuit. An annular nozzle surrounds at least a portion of the pipe member and has an annular orifice surrounding the open end of the pipe member. A pressure fluid input duct connected with a source of pressurized fluid opens into the annular nozzle at a distance from the annular orifice. It conveys a stream of fluid through the annular nozzle and allows the annular orifice to create a fluid jet in a detection direction of the sensor and to determine pressure conditions within the pipe member depending on the fluid jet.

3,673,857
DEVICE FOR DETECTING LEAKS IN VACUUM OR PNEUMATIC PRESSURE LINES

Bernard R. Teitelbaum, Birmingham, Mich., assignor to The Bendix Corporation

Filed Aug. 6, 1970, Ser. No. 61,593
Int. Cl. G01m 3/24
U.S. Cl. 73—40.5 A 9 Claims

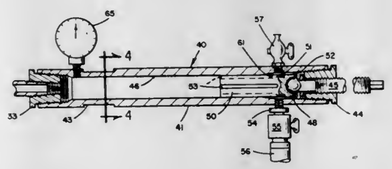


Leak detector apparatus comprising a sensor which can be clamped on a vacuum or pneumatic pressure line to detect the presence of a leak in the line near the clamping location, and an indicator coupled to the sensor to indicate the intensity of signals transmitted by the sensor. The sensor includes a transducer formed of piezoelectric material for transducing to an electric signal the low-amplitude, high-frequency random-force component applied to the clamping surfaces by the turbulence noise which results from the leak. Certain embodiments of the apparatus have a sensor which also includes a mechanical resonator for amplifying the electrical signal that is transmitted.

3,673,858
TUBE TESTING APPARATUS

Charlie D. Miller, Syracuse, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Filed Jan. 29, 1971, Ser. No. 110,986
Int. Cl. G01m 3/28
U.S. Cl. 73—40.5 R 5 Claims

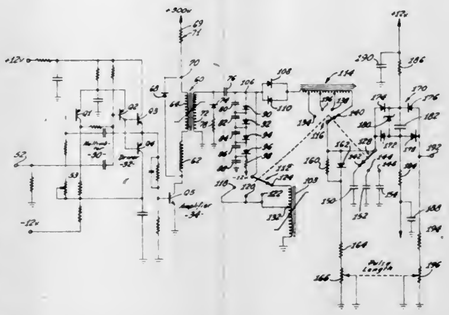


The test pump cylinder is formed with an inner smaller bore merging with a larger outer bore. The piston is dimensioned for close sliding fit with the smaller inner bore. A piston ring is mounted on the outer end portion of the piston and the piston has a greater axial length than the length of the outer enlarged bore, whereby the inner portion of the piston is always positioned in the smaller inner bore. The piston is formed with a passage extending from the inner end thereof and terminating inwardly of the piston ring for communication with the annular space encircling the outer end of the piston when the same is in outermost position. A liquid supply line is connected to the annular space for initially supplying liquid flow through the passage and the inner smaller bore of the cylinder, into the tube under test to fill the same. The piston is moved inwardly moving the piston ring into the inner smaller cylinder bore, to apply pressure on the tube, by a screw threaded in the outer closed end of the cylinder.

3,673,859
MAGNETIC PULSER CIRCUIT FOR MATERIAL TESTER

John W. Couture, Danbury, Conn., assignor to Automation Industries, Inc., Los Angeles, Calif.

Continuation of Ser. No. 794,053, Jan. 27, 1962, abandoned.
This application May 13, 1971, Ser. No. 143,211
Int. Cl. G01n 29/00
U.S. Cl. 73—67.8 R 18 Claims

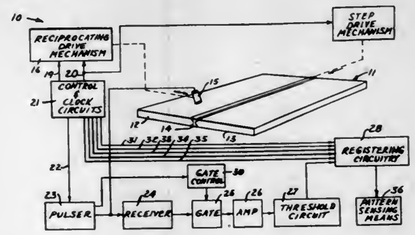


A high voltage magnetic pulser circuit is described which is used, for example, in an ultrasonic nondestructive material testing system. The circuit includes a saturable core transformer which is driven into saturation by the output of a synchronized pulse multivibrator at repetitious intervals. Upon saturation the output voltage on the secondary winding of the transformer has reached a relatively high voltage. Thereafter, the sharp down slope of the voltage creates the leading edge of the pulse and induces a resonant circuit coupled thereto into oscillation. Because of the high level of the signal induced into the resonant circuit from the transformer, the inductor therein also saturates and the trailing edge of the pulse is sharply established. After saturation the resonant circuit is caused to quickly discharge, and thus provide a low impedance to an attached L.C. tuned circuit or the like. The result is a high voltage pulse at a desired frequency.

3,673,860
NON-DESTRUCTIVE TESTING SYSTEM HAVING PATTERN RECOGNITION MEANS

John J. Flaherty, Elk Grove Village, and Henry N. Nerwin, Mount Prospect, both of Ill., assignors to Magnaflux Corporation, Chicago, Ill.

Filed Nov. 10, 1969, Ser. No. 875,304
Int. Cl. G01n 29/04
U.S. Cl. 73—67.9 11 Claims



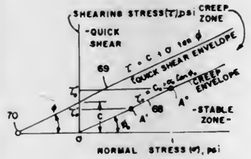
Non-destructive testing system in which patterns of defects indications, having one or more predetermined configurations, can be indicated rapidly and automatically. Defect indications are registered, preferably in a shift register matrix, and the registered indications are scanned to detect a pattern having a particular configuration, preferably by shifting the indications to a second shift register matrix to which scanning signals are applied. The system is operative to detect any pattern having a particular configuration regardless of its position in the registered indication and the pattern scanning can be carried out simultaneously with scanning of a part. The system may include ultrasonic test means operative in a B-scan mode or a C-scan mode, but other types of non-destructive testing means can be used.

3,673,861
METHOD AND APPARATUS FOR IN SITU MEASUREMENT OF SOIL CREEP STRENGTH

Richard L. Handy, Des Moines, Iowa, assignor to Iowa State University Research Foundation, Inc., Ames, Iowa

Filed June 27, 1969, Ser. No. 837,216
Int. Cl. G01n 3/24
U.S. Cl. 73—101 9 Claims



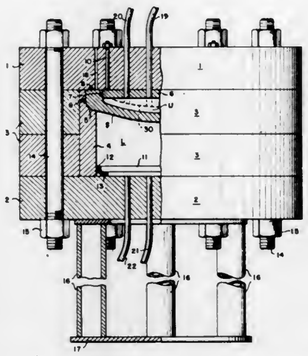


Soil creep rate is measured in situ by lowering a shear testing device into a bore hole and expanding it so that opposing pressure surfaces of the device engage facing surfaces of the bore hole with a constant normal pressure. A force less than that which would exceed the soil shearing strength under the applied normal pressure is then exerted on the device axially of the bore hole to induce a predetermined and constant shearing stress in the soil. A record is made of the deformation of the soil as a function of time for different shearing stresses to generate a family of characteristic deformation curves. The first derivative of each curve with respect to time is the shear rate, which tends to decrease to a substantially constant value with increasing time. This constant shear rate is referred to as the creep rate. A plot of the creep rate against shearing stress yields an empirical value for the creep threshold stress; and a plot of different creep threshold stresses for different values of normal stress defines a stable zone in the shearing stress-normal stress plot.

3,673,862
TRIAXIAL STRESS TEST APPARATUS

Joseph S. Di Crispino, 4030 Raleigh Road, Baltimore, Md., and Leslie M. Kaldor, 25 Sheridan Road, Arnold, Md.

Filed Sept. 25, 1970, Ser. No. 75,595
Int. Cl. G01n 3/10
U.S. Cl. 73—102 3 Claims

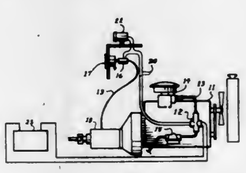


Apparatus for testing spherical tank critical sections exposed to external and internal fluid pressure in which triaxial stresses are induced in full size representative samples of hard structure containments for use in fuel cell applications in deep submergence environments.

3,673,863
FUEL CONSUMPTION INDICATOR

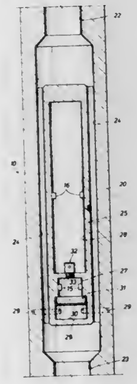
George Ctirad Spacek, 967 La Senda, Santa Barbara, Calif.

Filed Feb. 24, 1970, Ser. No. 888,561
Int. Cl. G01l 3/26
U.S. Cl. 73—114 6 Claims



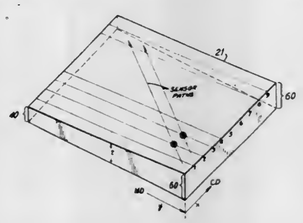
This invention relates to methods and means of measuring fuel consumption of vehicles propelled by combustion engines, and of stationery combustion engines. This invention relates also to methods and means of generating electrical signal in proportion to the speed of the vehicle, particularly sailboats and sailplanes, whether propelled by an engine or not. In the case of stationery combustion engines, the invention relates to methods and means of generating electrical signal in proportion to the flow of the fuel, and utilizing these electrical signals to give the operator instantaneously information about fuel consumption, preferably in gallons per hour, of the engine. In the case of vehicles propelled by combustion engines, the invention relates to methods and means of generating electrical signals in proportion to the speed of the vehicle, and of utilizing these electrical signals to give the operator of the vehicle information about fuel consumption per unit time, preferably in gallons per hour, to give the operator information about fuel consumption per distance travelled, preferably in miles per gallon, and to give the operator information about speed of the vehicle, preferably in miles per hour.

3,673,864
METHODS AND APPARATUS FOR DETECTING THE ENTRY OF FORMATION GASES INTO A WELL BORE
Walter E. Cubberly, Jr., Houston, Tex., assignor to Schlumberger Technology Corporation, New York, N.Y.
Filed Dec. 14, 1970, Ser. No. 97,640
Int. Cl. E21b *47/00*
U.S. Cl. 73—153 25 Claims



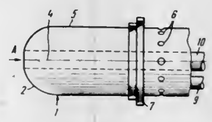
As a preferred mode for practicing the invention disclosed herein, drilling mud in a borehole is fluidly communicated with an enclosed testing chamber by means of a gas-pervious liquid barrier which is at a reduced pressure so that, should there be higher-pressure formation gases dissolved or entrained in the drilling mud, the gases will be drawn through the barrier into the testing chamber. In this manner, by monitoring either the pressure or temperature within the testing chamber, the presence or absence of formation gases in the drilling mud can be ascertained; and, if desired, these measurements can be employed to at least estimate the percentage of gases in the mud sample. In the representative embodiment of the apparatus of the present invention disclosed herein, a tool arranged for coupling into a drill string is provided with a mud-sampling passage which is fluidly coupled to an enclosed testing chamber by a liquid barrier formed of a gas-pervious material. One or more measuring devices, such as pressure and temperature monitors, are arranged in the testing chamber for detecting the admission of gas into the chamber.

3,673,865
METHOD AND APPARATUS FOR ORTHOGONAL VARIABLES
Alfred L. Michaelsen, New York, N.Y., assignor to Westvaco Corporation, New York, N.Y.
Filed April 21, 1971, Ser. No. 136,138
Int. Cl. G01n *33/34*
U.S. Cl. 73—159 10 Claims



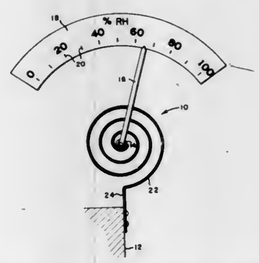
A method and apparatus for indicating a property of sheet of material of substantial width traveling at a high speed. Two sensors for sensing the property are mounted side by side so that they are simultaneously moved across the traveling sheet. The two sensors enable easy differentiation between variations in the cross direction and machine direction.

3,673,866
PITOT TUBE PROBE FOR TAKING TOTAL HEAD AND STATIC PRESSURE OF AIR FLOW
Viktor Borisovich Alperovich, Astakhousky pereulok 1/2, kv. 112, and Alfred Iosifovich Prut, ulitsa Medvedeva, 14, kv. 32, both of Moscow, U.S.S.R.
Filed Dec. 31, 1970, Ser. No. 103,133
Claims priority, application U.S.S.R., Jan. 15, 1970, 1,395,303
Int. Cl. G01p *5/16*
U.S. Cl. 73—212 1 Claim



A pitot tube for taking a total head and a static pressure of an air flow. This probe comprises a tip having a streamlined nose surface which is provided with an opening for taking a total head, which surface smoothly transforms into a cylindrical surface provided with an opening for taking a static pressure. The above-said cylindrical surface is equipped with a ring for aerodynamic compensation of the errors appearing during the measurement of the static pressure.

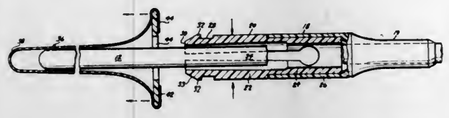
3,673,867
HUMIDITY RESPONSIVE ELEMENT
William F. Cashin, Brooklyn Center, and James R. Mourning, Minneapolis, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.
Filed Oct. 15, 1970, Ser. No. 81,097
Int. Cl. G01n *19/10*
U.S. Cl. 73—337 6 Claims



A humidity responsive element made of a strip of nylon secured to a strip of phosphor bronze. The bi-material element is heated treated after being formed into a spiral to improve the bond and stabilize its response to humidity changes.

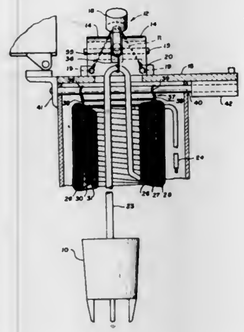
3,673,868
TEMPERATURE PROBE
James Prescott Beury, III, Upper Montclair, and Robert Ernest Burridge, Montclair, both of N.J., assignors to Becton, Dickinson & Company, East Rutherford, N.J.
Filed May 6, 1970, Ser. No. 35,006
Int. Cl. G01k *1/10, 1/08*
U.S. Cl. 73—343 R 8 Claims

An improved temperature measuring probe is provided, including a sensing element having a probe head attached at the forward end and a handle connected to the rearward end. The probe is designed for use with an elastic cot designed to fit over the sensing element and to be releasably secured to the handle. To this end a flange extends about the forward portion of the handle. A pair of diametrically opposed slits extend into



the handle from the forward end bisecting the flange. The halves of the flange are normally spaced apart a distance sufficient to engage an annular ring at the open end of the associated cot. Upon the application of a sufficient force, the halves of the flange may be shifted toward one aNother to enable the cot ring to override the flange.

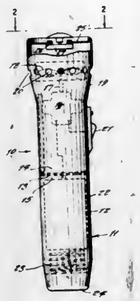
3,673,869
RELEASABLE SUPPORTING APPARATUS
Chester C. Stawarski, 388 Pinehaven Drive, Bethel Park, Pa.; Charles C. Gerding, 728 Gaywood Drive, and Richard T. Adams, 149 Rose Avenue, both of Penn Hills, Pa.
Continuation-in-part of Ser. No. 836,687, June 2, 1969, abandoned. This application Sept. 1, 1970, Ser. No. 68,778
Int. Cl. G01k *1/14, 13/00*
U.S. Cl. 73—343 R 9 Claims



Apparatus is disclosed for releasably suspending a condition measuring device, such as a weighted or sinker thermocouple, above a steel-refining vessel. The apparatus includes a fusible link, the fusing of which acts to release the device whereby it drops into the vessel. The electrical lead wire of the measuring device is arranged in a controlled bundle for ease of handling and for insuring the smooth pay-off of the wire as the device drops.

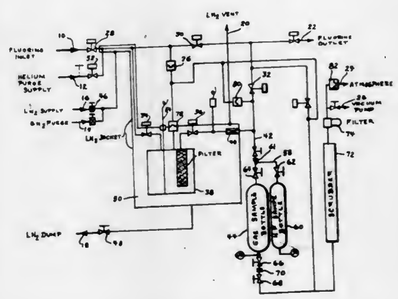
3,673,870
TEMP-A-CHECK
Armand F. Jalbert, 6313 57th Avenue North, Saint Petersburg, Fla.
Filed Oct. 7, 1970, Ser. No. 78,893
Int. Cl. G01k *1/16*
U.S. Cl. 73—349 4 Claims

A forced air thermometer for enabling temperatures to be taken accurately and quickly, the device comprising a case containing a motor driven impeller, the motor being in series electrical circuit with a dry cell battery contained within the case and an externally mounted electric switch, the case being provided with a plurality of air openings around the sides thereof in alignment with the impeller, and a thermometer



being positioned at one end of the case directly in front of the impeller.

3,673,871
PORTABLE LIQUID GAS SAMPLER SYSTEM
Walter N. Randle, Saugus; Howard H. Spieth, Los Angeles, and William D. English, Orange, all of Calif., assignors to The United States of America as represented by the Secretary of the United States Air Force
Filed June 28, 1971, Ser. No. 157,140
Int. Cl. G01n *1/10*
U.S. Cl. 73—421 R 4 Claims

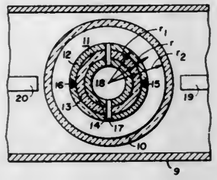


A system for removing a liquid gas sample of known volume from a flowing stream and to isolate and separate solid contaminants from the gas including a sample chamber with a jacket for liquid nitrogen to cool the gas and removable sample bottles for laboratory analysis of the gas and associated piping valves and safety valves for the system to function.

3,673,872
CRYOGENIC SOUND SUPPORTED INERTIAL REFERENCE
Donald L. Easley, San Leandro, Calif., assignor to U.S. Atomic Energy Commission under the provisions of 42 U.S.C. 2182
Filed Feb. 1, 1966, Ser. No. 524,044
Int. Cl. G01p *15/00*
U.S. Cl. 73—505 6 Claims

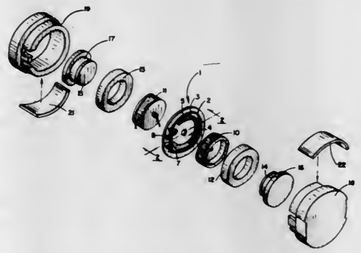
An inertial reference unit for sensing rotation about selected axes including a piezoelectric body in a cryogenic chamber. The piezoelectric body is provided with a hollow spherical cavity and is of material of low accoustic impedance. A spherical inertial reference element positioned within the

hollow cavity has optical assymetry and permits passage therethrough of radiant energy in the light spectrum. The space within the cavity outside the reference element is filled with a transmission medium, such as liquid helium. Means are



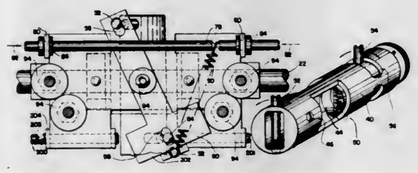
provided for directing at least one light beam through the walls of the cavity and through the inertial element for sensing rotation of the piezoelectric body relative to the inertial element.

3,673,873
SENSING INSTRUMENT HAVING A CANTILEVERED PROOF MASS
Joseph F. Estes, Fullerton, and Imre Kertesz, Placentia, both of Calif., assignors to North American Rockwell Corporation
Filed Oct. 23, 1969, Ser. No. 868,678
Int. Cl. G01p *15/08*
U.S. Cl. 73—517 **4 Claims**



Inertial sensing instrument, particularly accelerometers, that utilize a cantilevered proof mass having a flexure pivot for the inertial sensing element. Chemical etching is used to provide a smooth convex taper to the proof mass so as to establish the cantilever.

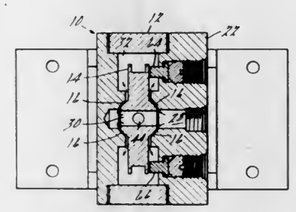
3,673,874
RECIPROCATING LINEAR ACTUATOR
Wenzel Zaruba, East Patterson, and Jan Sehnal, Upper Saddle River, both of N.J., assignors to Textol Systems, Inc., Carlstadt, N.J.
Filed June 29, 1970, Ser. No. 50,620
Int. Cl. F16h *21/16*
U.S. Cl. 74—25 **6 Claims**



A reciprocating linear actuator having a housing receiving a tubular member having a lateral opening with a shaft passing through the opening. A plurality of wheels are also mounted in the housing with the wheels being disposed against the shaft for initiating and controlling linear movement of the housing with respect to the shaft that is rotated by the source of power. The housing is made of a special sheet metal construction, and the wheels are urged against the shaft by a single spring in a special novel arrangement.

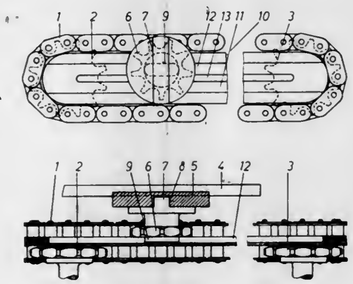
In use, the reciprocating linear actuator can be made a part of a carriage assembly of a therapeutic massaging chair, and can be fitted with shock absorbers so that reversal of movement for the chair can be achieved in a silent manner.

3,673,875
HYDRAULIC RATE GYRO FOR AN ADAPTIVE STEERING SYSTEM
John T. Kasselmann, Southfield, Mich., assignor to The Bendix Corporation
Filed March 19, 1970, Ser. No. 20,962
Int. Cl. G01c *19/52*
U.S. Cl. 74—5.43 **6 Claims**



A rate gyro providing a fluidic output signal corresponding to the yaw rate of a vehicle, for use in an adaptive steering system. The gyro rotor is hydraulically supported and spun via tangential reaction jets connected in parallel with flapper nozzles situated to provide both a differential pressure signal corresponding to yaw rate and a centering spring force creating gyro natural frequencies well above the disturbance frequencies encountered. The support, jet, and nozzle fluid supplies are all incorporated into the power steering supply circuit.

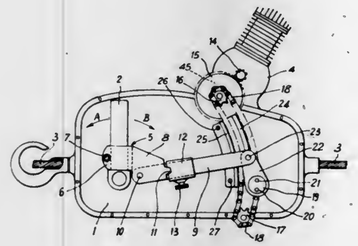
3,673,876
MOTION TRANSFORMING DEVICE FOR PRODUCING A RECIPROCATING MOTION
Friedbert R. Rohner, Kukenthalstrasse 12a, Coburg, Bavaria, 8630, Germany
Filed Sept. 21, 1970, Ser. No. 73,783
Claims priority, application Germany, Oct. 25, 1969, P 19 53 829.5; July 18, 1969, P 19 36 757.8
Int. Cl. F16h *19/06*
U.S. Cl. 74—37 **9 Claims**



The catch sprocket is driven in an endless path by the upper chain of the double chain while the lower chain is driven about

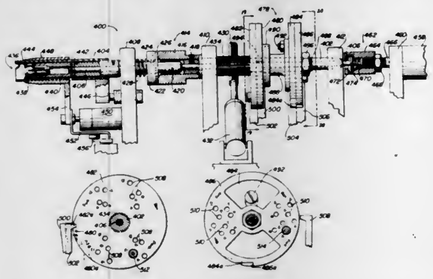
the two drive sprockets. When the motion direction is reversed, the catch sprocket is moved at a curved end of the endless chains from one guide slot to the other. The travel-to-time curve of the catch sprocket can be shaped in any suitable manner while the reversing time remains of short duration.

3,673,877
POWER OR MANUAL DRIVE CABLE TRACTION APPARATUS
Charles Jean Pierre Lebre, 16 bis boulevard Fleury 91, Viry-Chatillon, France
Filed Dec. 18, 1970, Ser. No. 99,462
Claims priority, application France, Dec. 26, 1969, 6945047; Jan. 1, 1970, 7002397
Int. Cl. G01m *3/02*; **B66f** *1/00*
U.S. Cl. 74—37 **12 Claims**



In a cable-pulling device of the type comprising clamps pulling alternately and continuously a cable or rope by means of a mechanism having a driving shaft projecting from the case of the apparatus and provided with a manual control lever, an engine is fitted to the apparatus case and adapted to drive said control lever through a chain carrying a crankpin pivotally connected to an arm releasably coupled to said control lever.

3,673,878
SHAFT ROTATING MECHANISM
John M. Biddison, Dayton, Ohio, assignor to The Globe Tool and Engineering Company, Dayton, Ohio
Filed Dec. 29, 1969, Ser. No. 888,406
Int. Cl. F16d *27/10*
U.S. Cl. 74—125.5 **9 Claims**



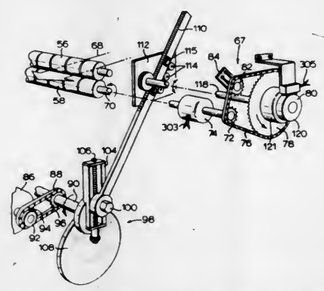
The spindle to which an armature is chucked is driven by a drive shaft stopped at plural different predetermined positions by the engagement of stop dogs with cams mounted thereon. In one embodiment there are four cams mounted on the drive shaft for stopping the drive shaft at any one of four positions for winding armatures having two coils per slot. The angular positions of the four cams are pre-adjustable on the drive shaft whereby the predetermined stopped positions thereof can be changed to accommodate different types of armatures and different patterns of wind. Two of the cams are adjustably connected by a sleeve having gear teeth meshing with gear teeth relatively fixed to one of the cams and an eccentric connection to the other of the cams. These cams are rotatable relative to other cams and locked in adjusted positions by pins projecting through apertures therein. The apertures are appropriately marked in terms of the types of armatures and winding patterns.

Two other embodiments of relatively adjustable cams are illustrated. In one embodiment, cams have radially directed slots, portions of which are aligned to obtain the desired angular relation between them. In a further embodiment cams are connected by eccentric pin means used to obtain the desired relative angular positions.

In still another embodiment, only two relatively adjustable cams are used, but with four stop dogs, two of which are angularly adjustable.

The operation of the armature rotating mechanism is described for the winding of both one and two coil per slot armatures. In all embodiments only two of the dogs are used for stopping the armature at predetermined positions for winding armatures having only one coil per slot.

3,673,879
BAG-MAKING MACHINE
Geerardus G. Plate, 2088 Martin Grove Road, Rexdale, Ontairo, and Nicolaas Van Hattem, 1168 Homewood Drive, Burlington, Ontario, both of Canada
Filed Dec. 29, 1969, Ser. No. 888,498
Int. Cl. F16d *27/10*
U.S. Cl. 74—125.5 **3 Claims**

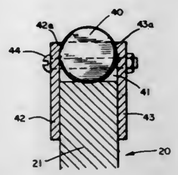


A bag-making machine for fabricating bags from tubular, flexible thermoplastic stock material by transversely heat and pressure sealing the stock, advancing a predetermined length of said stock from the machine, and then severing said stock for delivery to a stacking bin while sealing the stock end for initiation of the next bag-making cycle. The machine has a novel draw roller drive, a novel sealer-cutter mechanism, a novel control mechanism and a novel detector for bag jamming.

3,673,880
VARIABLE SPEED DRIVE
Joseph T. Faraghan, 600 Arthur Street, Philadelphia, Pa.
Filed Jan. 6, 1971, Ser. No. 104,361
Int. Cl. F16h *15/08*
U.S. Cl. 74—197 **2 Claims**

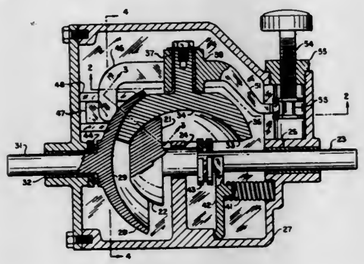
A variable speed drive has a driving wheel and a driven wheel disposed at right angles to each other, with the circumferential edge of one of the wheels engaging the side surface of

the other wheel. Either wheel may function as the driving wheel; the other then functions as the driven wheel. To change the speed and/or direction of rotation, the position of one of the wheels is changed relative to the other, without disturbing



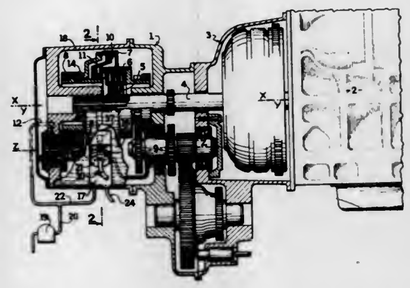
the right-angle relationship, by moving the axis of rotation of one of the wheels along the diametral plane of the other wheel. The circumferential edge of said one wheel is provided with a series of spaced-apart circular discs portions of which protrude radially from the circumferential edge of the wheel. Each of the discs is mounted for rotation on its own axis, the axis of rotation being tangential, or substantially tangential, to the wheel. The projecting discs engage, or are engaged by, the side surface of the other wheel. When the speed and/or direction of rotation is to be changed by changing the relative positions of the two wheels, the projecting discs which are in engagement with the side surface of the other wheel merely roll on the side surface.

3,673,881
VARIABLE SPEED TRACTIVE TRANSMISSION
John W. Burke, 1715 Bishop Drive, Concord, Calif.
Filed Feb. 3, 1971, Ser. No. 112,277
Int. Cl. F16h *15/08*
U.S. Cl. 74—198 **6 Claims**



A device for transmission of rotary motion by tangential tractive forces accompanying normal forces between rotating solid surfaces wherein the angular velocity ratio between input and output is controlled by varying the positional relationship between contacting surfaces. The device incorporates three main elements herein termed a "ball," a "bowl" and a "ring" therebetween. A rotary mounted bowl has a concave surface facing a convex surface of a rotary mounted ball, with a rotary mounted ring disposed between such surfaces and in contact therewith. The surfaces are urged together so that rotation of ball or bowl is transmitted by tangential tractive forces through the ring to the other. Means are provided to move the ring location for varying the points of contact of same with facing surfaces of ball and bowl to thus control the transmission ratio. The output ratio may be variable between a fraction and a multiple of the input, and input and output shafts may be disposed at the same or opposite ends of the device upon parallel, coincident or non-parallel axes.

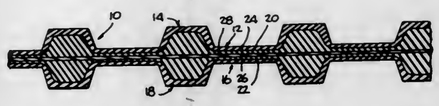
3,673,882
ENGINE-DRIVE UNIT HAVING A CONVERTER AND SPEED VARIATOR
Armand Froumajou, Pontoise, and Bernard Falay, Paris, both of France, assignors to Automobiles Peugeot, Paris, France and Regie Nationale des Usines Renault, Billancourt, France
Filed March 22, 1971, Ser. No. 126,406
Claims priority, application France, Apr. 1, 1970, 70 11 711
Int. Cl. F16h *15/08*
U.S. Cl. 74—199 **4 Claims**



Engine-drive unit comprising a speed variator and a torque converter interposed between the speed variator and the engine. The speed variator includes a fluid motor for pressing the friction elements together, the friction elements being respectively connected to rotate with two shafts one of which is carried by a movable support so as to vary the distance between the shafts. The fluid motor is supplied with fluid under pressure by a supply device controlled by a valve. The valve is controlled not only by the load on the engine but also by the position of the movable support corresponding to the maximum speed reduction.

In this way the force for pressing the friction elements together is limited to the value necessary for good operation of the variator with no loss of power and no useless wear.

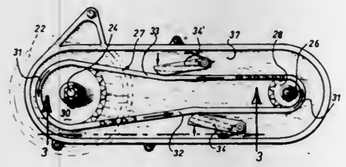
3,673,883
TOOTHED POWER TRANSMISSION BELT AND METHOD OF MANUFACTURING THE SAME
Gerald E. Adams, Mishawaka, Ind., assignor to Uniroyal, Inc., New York, N.Y.
Filed Feb. 3, 1971, Ser. No. 112,325
Int. Cl. F16g *5/16, 1/28;* **B29h** *7/22*
U.S. Cl. 74—233 **11 Claims**



A toothed power transmission belt having teeth distributed on two of the surfaces of the belt and a method of manufacturing the belt are disclosed. The belt is composed of a pair of multi-layered laminations bonded to each other with a reinforcing filament at least partially embedded in one of the laminations. The belt is manufactured by first covering the exterior surface of a longitudinally grooved mandrel with a skin coating of an elastomeric wear and abrasion resistant material. A highly viscous elastomeric tooth filler compound is then applied so as to fill the grooves in the skin coating corresponding to the grooves in the mandrel and cover the entire surface of the skin coating. A reinforcing filament is wound around the mandrel for approximately one-half the width of the covered portion of the mandrel in such a manner as to become at least

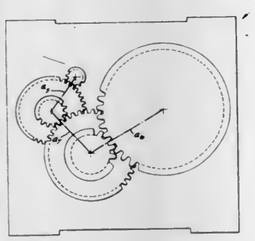
partly embedded in the filler compound. The portion of the elastometric materials not having the reinforcing filament encircling it is reversed upon itself and pulled over the reinforcing filament to form the outer toothed surface of the belt. The entire assembly is then cured, stripped from the mandrel and trimmed. If desired, the resulting finished belt slab may be cut into belts of smaller width.

3,673,884
CHAIN TENSIONING DEVICE FOR SNOWMOBILE TYPE TRANSMISSION
Bertrand Southiere, Valcourt, Quebec, Canada, assignor to Bombardier Limited, Quebec, Canada
Filed Nov. 16, 1970, Ser. No. 89,665
Int. Cl. F16h *7/12, 7/10*
U.S. Cl. 74—242.11 S **3 Claims**



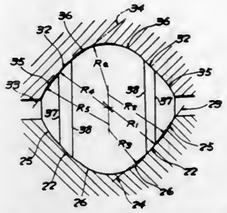
The disclosure herein describes a device for tensioning the endless chain of a snowmobile transmission consisting of a pair of hard wear-resistant members which are connected for pivotal movement to the chain case and engage the opposite outer sides of the transmission chain. The members are spring-biased toward opposite intermediate portions of the chain and operate to tighten the chain, each member alternately operating to take the slack in the chain, in one case when the snowmobile is accelerating and, in the other case, when the snowmobile is decelerating or operating in reverse.

3,673,885
SERIES OF GEAR SPEED REDUCERS
David Hansen, Mortsel, Belgium, assignor to Machinery and Gears Hansen, Edegem, Belgium
Filed Dec. 2, 1970, Ser. No. 94,439
Claims priority, application Belgium, March 11, 1970, 747171
Int. Cl. F16h *1/20, 3/08*
U.S. Cl. 74—421 R **18 Claims**



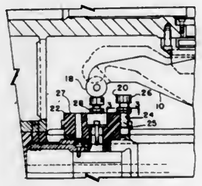
The invention relates to a series of *n* gear speed reducers with at least *n* unequal center distances in increasing order, the absolute values of the last center distance of each speed reducer in the series, i.e. of the specific center distances, form an improper geometric progression of which the successive values of the ratio form a geometric progression.

3,673,886
BALL NUT SCREW ASSEMBLY
Tamaki Tomita, Okazak, and Akira Suzuki, Kariya, both of Japan, assignors to Toyoda Koki Kabushiki Kaisha
Filed Dec. 14, 1970, Ser. No. 97,984
Int. Cl. F16h *1/18, 55/22*
U.S. Cl. 74—424.8 R **8 Claims**



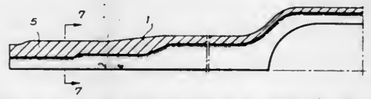
A ball nut screw assembly comprises a screw, a nut, and a train of balls within a passageway formed by the helical grooves in the screw and nut and embraced by a plurality, up to four engaging profiles perpendicular to the helical lead wherein at least one of said engaging profiles is formed by two complex profile portions to produce a moment for righting the ball to its predetermined rolling locus when the ball deviates (runs off) from the locus.

3,673,887
INDEXABLE ADJUSTABLE ABUTMENT
David W. Daniel, Birmingham, and Russell W. Anthony, Harper Woods, both of Mich., assignors to Lear Siegler, Inc., Santa Monica, Calif.
Filed Sept. 23, 1970, Ser. No. 74,701
Int. Cl. F16h *53/00*
U.S. Cl. 74—568 R **6 Claims**



An indexable adjustable abutment having a plurality of independently removable and adjustable abutment elements in the form of headed screws having adjustable stop collars threaded thereto.

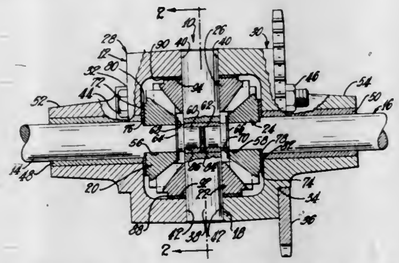
3,673,888
AXLE HOUSING
Hans Heinrich Moll, Nusshaherstrasse 7, and Otto Oeckl, Tiflanstrasse 60, both of Munich, Germany
Filed July 23, 1970, Ser. No. 57,717
Claims priority, application Germany, July 23, 1969, P 19 37 288.4; Aug. 28, 1969, P 19 43 730.0
Int. Cl. F16h *57/02*
U.S. Cl. 74—607 **1 Claim**



An axle housing for a motor vehicle is composed of two half cylinders rolled from a flat plate of uniform thickness to varied

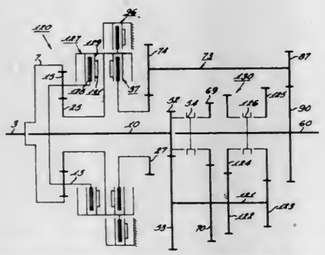
thicknesses from one end to the other, and then die pressed to half cylinder shape and then welded together. This produces a low cost, lightweight housing having adequate strength in the load bearing areas.

3,673,889
DIFFERENTIAL
Hans Hauser, Fredericktown, Ohio, assignor to The J. B. Foote Foundry Co., Fredericktown, Ohio
Continuation of Ser. No. 16,642, March 5, 1970. This application Nov. 10, 1971, Ser. No. 197,539
Int. Cl. F16h *1/40*
U.S. Cl. 74—713 **5 Claims**



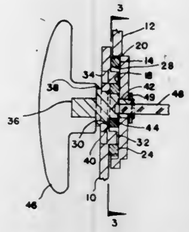
A differential is provided particularly for small self-propelled vehicles or machines such as lawn mowers, which differential is of simplified, sturdy design. Wheel axles within the differential have reduced ends which are received and rotatably supported directly in an idler shaft. These components are assembled prior to mounting the idler shaft in openings of the differential housing to assure proper alignment of the wheel axles and gears. Two miter gears are rotatably supported on the idler shaft and two additional miter gears are affixed to end portions of the wheel axles. A driven sprocket or gear is affixed to the housing which rotates the housing and the components about the common axis of the wheel axles. The differential housing is of two part construction, being joined along a line bisecting the openings which receive the idler shaft. The two housing parts are identical, which reduces manufacturing costs and also enables the driven sprocket to be mounted at two different locations on the differential housing to adapt the differential to particular requirements.

3,673,890
AUXILIARY TRANSMISSION
James W. Crooks, Milwaukee, Wis., assignor to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.
Filed Sept. 3, 1970, Ser. No. 69,260
Int. Cl. F16b *37/08*
U.S. Cl. 74—681 **10 Claims**



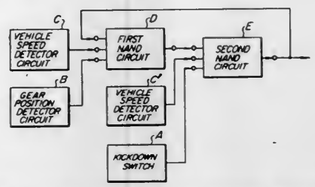
An auxiliary transmission for transmission of power to or from a main transmission to increase the overall speed range of the power gear train in a vehicle.

3,673,891
RECLINING SEAT ADJUSTER
Joseph Pickles, Birmingham, Mich., assignor to Ferro Manufacturing Corporation, Detroit, Mich.
Filed Sept. 14, 1970, Ser. No. 71,844
Int. Cl. F16h *1/28*
U.S. Cl. 74—804 **11 Claims**



Irreversible epicyclic gearing connects the seat back to the seat and includes a manually rotatable shaft having an eccentric portion on which is mounted a drive gear engaged in an internal gear carried by the seat or seat back member and having limited lost motion connection with the other member.

3,673,892
KICK-DOWN CONTROL SYSTEM FOR USE IN AUTOMATIC TRANSMISSION SYSTEM OF AUTOMOBILES
Takaaki Kato, Toyohashi; Mamoru Kawakubo, and Katsunori Ito, both of Kariya, all of Japan, assignors to Nippondenso Kabushiki Kaisha, Kariya-shi, Aichi-ken, Japan
Filed May 11, 1970, Ser. No. 36,003
Claims priority, application Japan, May 28, 1969, 44/41563; June 10, 1969, 44/45526
Int. Cl. B60k *21/00*
U.S. Cl. 74—870 **8 Claims**

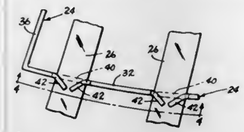


A kick-down control system in the automatic transmission system on automobiles comprising a switch acting to detect the position of the depressed accelerator pedal, a first NAND circuit receiving a signal corresponding to a position of the shifting mechanism, a signal corresponding to a speed of the automobile and an output signal of a second NAND circuit as the input signals, a second NAND circuit receiving an output signal from the first NAND circuit, a signal corresponding to the car speed and an output signal from the afore-said switch as the input signals, wherein the position of the shifting mechanism is determined by the output signal from the second NAND circuit.

3,673,893
METHOD OF MAKING RAKE TINE SUPPORT
William A. Keller, Crestwood, Mo., assignor to Keller Manufacturing Co., Inc., St. Louis, Mo.
Filed Feb. 12, 1970, Ser. No. 10,825
Int. Cl. B21d *53/63*; B21h *7/08*; B21k *11/14*
U.S. Cl. 76—111 **6 Claims**

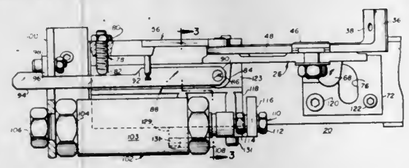
A rake having a rake tine support bar provided in its manufacture with open slots in which the tines can be laid easily and

rapidly with flanges overlying the tines at right angles and which are adapted to be bent from opposite sides of the slot to a converging or angled relationship to a tine retaining relationship. The bending of the flanges can be automatically effected



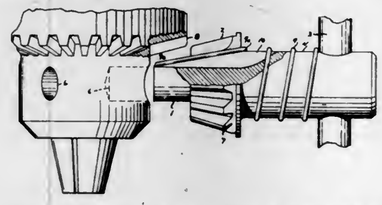
in a jig or the like by automatic means insuring a rapid installation of the tines. The converging relationship of the flanges with the rake tine loosely fitting in the slots provides a floating arrangement for the tines to minimize wear and prevent undue strain upon them.

3,673,894
STRIPPING APPARATUS
Harold Jesse Bush, Naples, Fla., assignor to Thomas & Betts Corporation, Elizabeth, N.J.
Filed July 23, 1970, Ser. No. 57,570
Int. Cl. H02g *1/12*
U.S. Cl. 81—9.51 **21 Claims**



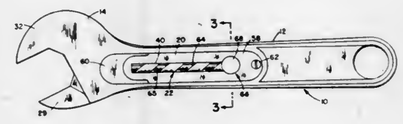
The invention is directed to an improved pneumatically operated dual-slide planarly rotatable stripping apparatus. Movably coupled to a base member and rotatable towards and away from a stripping zone adjacent thereto is a first slide member upon which is pivotally disposed a pair of adjoining wire stripper means having a pair of cutter blades movably coupled to one end thereof and a first pair of rollers coupled to the other end and operatively engageable with an appropriately slotted camming portion of a second slide member. A second pair of rollers extending outwardly from the sides of the first slide member engage arcuately slotted adjacent portions of the base member permitting the first slide member to advance and rotate away from the stripping zone, permitting the stripped wire to be simply and accurately linearly advanced from the stripping zone to a subsequent station by appropriate transfer means.

3,673,895
SELF-EJECTING CHUCK KEY
James Des Jardins, Chicago, Ill., assignor to Emerson Electric Co., St. Louis, Mo.
Filed Sept. 16, 1970, Ser. No. 73,046
Int. Cl. B25b *13/44*
U.S. Cl. 81—90 A **6 Claims**



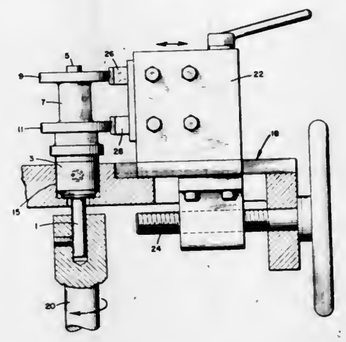
A chuck key having a pilot for insertion in the pilot hole in a chuck body, with a pinion gear for engaging the chuck gear and a T handle has a helical spring portion wrapped around the shank and an extension of the spring extends through a kerf between the teeth of the pinion with a part extending alongside the pilot. When the key is engaged with the chuck the extension of the spring is pushed back into the kerf compressing the spring and when released the spring pushes the key out of engagement with the chuck.

3,673,896
SPIRAL ACTUATED, ADJUSTABLE JAW END WRENCH
Hunter W. Vardaman, Huntsville, Ala., assignor to Mekatron Corporation
Filed Feb. 4, 1971, Ser. No. 112,688
Int. Cl. B25b *13/16*
U.S. Cl. 81—165 **4 Claims**



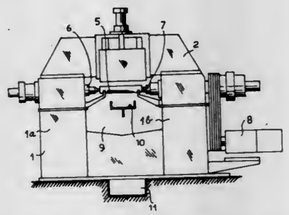
An adjustable jaw end wrench in which an adjustable jaw is operated by a worm gear, the worm gear is operated by a spiral groove drive, the spiral groove drive is operated by a circular cam riding in the spiral groove drive, and in which a thumb actuated button is rotatably connected to the cam and the button is mounted for reciprocating movement, whereby the movable jaw is opened and closed.

3,673,897
METHOD OF MACHINING A FRICTION ROLLER
Hans Gassner, Schweinfurt, Germany, assignor to Kugelfischer Georg Schafer & Co., Schweinfurt, Germany
Filed Jan. 5, 1970, Ser. No. 685
Claims priority, application Germany, Jan. 4, 1969, P 19 00 402.5
Int. Cl. B23b *1/00*
U.S. Cl. 82—1 C **3 Claims**



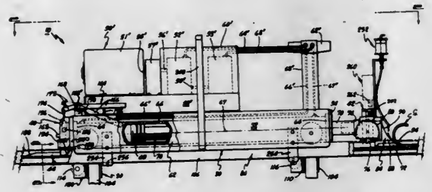
A friction roller and a method for producing a friction roller suitable for driving a spinning or twisting tube at high rotational speeds, the roller having tube-engaging driving surfaces formed of a wear-resistant resilient synthetic resin (such as polyurethane), the method comprising finishing the driving surfaces of the roller by machining them while the roller is being rotated at the maximum expected driving speed, which may be of the order of 30,000 to 40,000 r.p.m.

3,673,898
HORIZONTAL LATHE WITH OVERHEAD BRIDGE
Bruno Bronzini, Turin, Italy, assignor to Fratelli Morando & C.S.p.A., Turin, Italy
Filed June 26, 1970, Ser. No. 50,160
Claims priority, application Italy, Feb. 21, 1970, 67580 A/70
Int. Cl. B23b 15/00
U.S. Cl. 82—2.5 **2 Claims**



A horizontal lathe has an overhead bridge on each side of which a machine tool slide is disposed, the space below the workpiece being free. A conveyor for workpieces can be arranged in this free space.

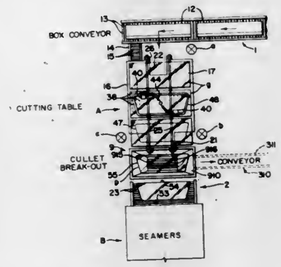
3,673,899
WORKPIECE RECLAIMING APPARATUS
Dietmar G. Plichta, Oakland, Calif., assignor to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.
Filed Dec. 11, 1970, Ser. No. 97,153
Int. Cl. B23d 7/10
U.S. Cl. 83—4 **16 Claims**



An apparatus for reclaiming metal cladding or the like from an elongated clad workpiece, with minimal or no damage to the workpiece, so that it can be reused. The apparatus includes an improved carriage-mounted shearing tool that is advanced or walked progressively along the workpiece and after making an initial separation of the cladding from the workpiece completes the separation by a unique peeling of the cladding from the workpiece. The apparatus may also be provided with an impact type tool for use in the decladding operation.

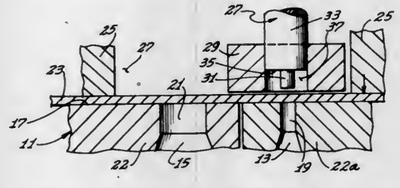
3,673,900
GLASS CUTTING APPARATUS
Joseph E. Jendrisak, Northville, Mich., and Harold E. McKelvey, Plymouth, Mich., assignors to Shatterproof Glass Corporation, Detroit, Mich.
Continuation-in-part of Ser. No. 740,202, June 26, 1968, abandoned. This application Aug. 10, 1970, Ser. No. 62,596
Int. Cl. B26d 3/08
U.S. Cl. 83—11 **35 Claims**

An automatic glass cutting apparatus having a table, a template ring supported above the table and having two peripheral cam tracks with curved shapes corresponding to that of windshield panes, motor means for feeding glass sheets to a position below the template ring, a cutter unit mounted to move on the template ring, and having one or more drive rollers engaging said ring, an air motor for driving said rollers to move the cutter rapidly around the ring, a cutting tool for engaging a glass sheet below the template, and a cam follower alternately engageable with one or the other of said cam tracks to locate the cutting tool as it travels around the template. The



cutter unit has a unique construction and includes means for alternately switching the cam follower from one cam track to the other to determine the size of the pane being cut. Means are provided to slow down or deenergize the cutter motor when the cutters approach a sharp turn or approach the stop position.

3,673,901
SHUTTLE PRESS
Paul Vinson, Orange, Calif., assignor to Vinson Industries, Inc., Orange, Calif.
Filed May 1, 1970, Ser. No. 33,592
Int. Cl. B26f 1/02
U.S. Cl. 83—14 **17 Claims**



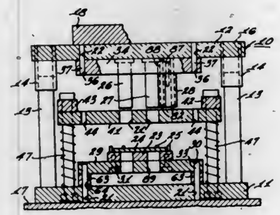
A press for performing work operations on sheet material and having first and second stations at which such work operations are performed. A shuttle which is part of the press moves back and forth along a predetermined path to index the sheet material through the stations. The press includes a platen and preferably substantially all of the press lies beneath the platen. Although various work operations can be carried out on the press, one of these operations involves impact piercing in which the punch strikes against the sheet material with sufficient velocity to form an aperture therein without entering the die cavity.

3,673,902
DIE SET; FIXTURE AND METHOD OF MAKING DIES
Walter Strobel, 4433 North 68th Street, Milwaukee, Wis.
Filed Feb. 9, 1970, Ser. No. 9,537
Int. Cl. B26f 1/14
U.S. Cl. 83—133 **3 Claims**

A die assembly having lower and upper die shoes mounted on guide pins for reciprocal movement toward and away from each other with the lower and upper die shoes having first and second series of apertures in precise alignment with each other. The assembly further includes a die plate having locating apertures in alignment with both the first and second apertures mounted on the lower shoe; a punch plate having locating apertures in alignment with both the first and second aper-

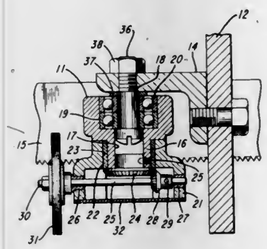
tures mounted on the upper die shoe; and a stripper plate, having locating apertures in alignment with both the first and second apertures mounted on cross bars which in turn are mounted on the die assembly.

The die and punch are precisely mounted in working align



ment on the die plate and punch plate for co-operation with a stripper by the method of placing locating pins in either the first or second apertures and successively placing the die plate, punch plate and stripper on said locator pins for precise machining of the die contour, the punch mounting openings and the punch receiving openings in the stripper.

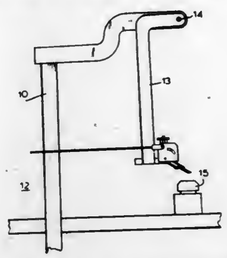
3,673,903
BAND SAW BLADE CLEANING MEANS
David T. Evans, Three Rivers, Mich., assignor to Wells Manufacturing Corporation, Three Rivers, Mich.
Filed June 1, 1970, Ser. No. 42,156
Int. Cl. B23d 59/00
U.S. Cl. 83—168 **3 Claims**



A rotary brush means adapted to sweep the cutting edge of a band saw blade and driven by a blade guide roller.

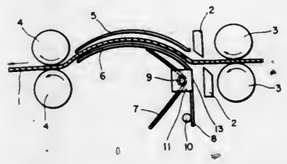
3,673,904
MICROTOME ASSEMBLIES
Michael Henry Cooper, Burnley, and Leslie Alva Fryatt, Accrington, both of England, assignors to N.G.N. Limited, Marfleet, Hull, Yorkshire, England
Filed Dec. 14, 1970, Ser. No. 97,536
Claims priority, application Great Britain, Dec. 16, 1969, 61,267/69
Int. Cl. G01n 1/06
U.S. Cl. 83—171 **9 Claims**

A microtome assembly comprises a pivotally suspended knife assembly and knife displacing means which are coupled to the knife assembly such that forward movement of the displacing means urges the knife assembly into a lower position before horizontal displacement of the knife assembly on its cutting stroke, and retractive movement of the displacing means urges the knife assembly to an upper position before horizontal displacement of the knife assembly on its return stroke. The knife body is therefore lifted clear of a specimen



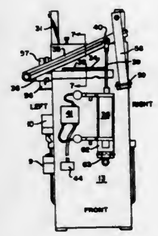
before its return stroke thereby avoiding damage to a cut surface of the specimen.

3,673,905
CUTTER DEVICE OF ROLLED COPY PAPER FOR ELECTRONIC COPYING MACHINES
Tateomi Kono, Toyokawa, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan
Filed Feb. 9, 1971, Ser. No. 113,834
Claims priority, application Japan, Feb. 27, 1970, 45/19975
Int. Cl. B26d 7/14, 5/20, 2/06
U.S. Cl. 83—175 **2 Claims**



A cutter device of rolled copy paper without interrupting the feeding of the copy paper for electronic copying machine having two sets of feeding rolls. A controllable arcuate bypass passage of the copy paper is formed, and the copy paper is cut while holding the rotation of one set of the feeding rolls and allowing the shape of the copy paper in the arcuate bypass passage to change.

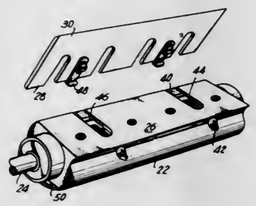
3,673,906
AUTOMATIC BORDER PANEL MEASURING AND CUTTING MACHINE
David R. Cash, Louisville, Ky., assignor to James Cash Machine Co., Louisville, Ky.
Filed Sept. 10, 1970, Ser. No. 71,086
Int. Cl. B26d 5/24, 5/00
U.S. Cl. 83—208 **2 Claims**



An automatic border panel measuring and cutting machine wherein motorized pinch rollers feed a measured length of a mattress border panel and then stop while a pivotally mounted

knife swings from a ready position through a cutting zone, in which it cuts off that measured length, and then returns to its ready position to start the next feed and cut cycle. The knife, which is pivotally mounted at one end, has its opposite or free end not only connected to an air cylinder piston, which moves the knife back and forth for cutting and return purposes, but also engaged, during the cutting movement, by a yieldable guide means which directs the cutting edge of the knife into progressively tighter yieldable cutting (and knife-sharpening) engagement with a fixed cooperative cutting edge on the machine. The air cylinder is mounted for right and left and for front and rear pivotal movements to accommodate the corresponding movements of the blade.

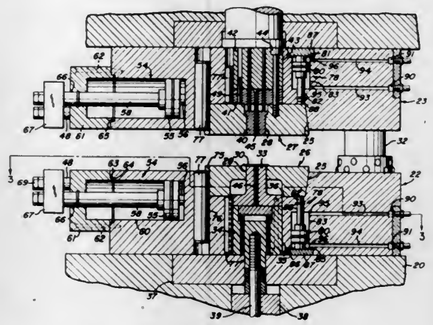
3,673,907
ROTARY CUTTER
Takashi Watanabe, Nagoya, Japan, assignor to Kabushiki Kaisha Towa Denki, Nagoya-shi, Aichi-ken, Japan
Division of Ser. No. 809,281, March 21, 1969. This application Jan. 13, 1971, Ser. No. 106,195
Claims priority, application Japan, April 5, 1968, 43/22042; April 5, 1968, 43/26699; April 5, 1968, 43/26698; July 30, 1968, 43/53369
Int. Cl. B26d 1/36
U.S. Cl. 83—674 **6 Claims**



A rotary cutter wherein a blade is removable from the body of the cutter when an edge of the blade is to be sharpened. A positioning member is adjustably connected with the blade member, so that the relative positions of the blade and positioning members can be adjusted so as to situate the cutting edge of the blade at a proper location with respect to the positioning member. The cutter body has a locating part which locates the positioning member at a predetermined position on the cutter body, so that in this way when the parts are assembled with the positioning member situated at the predetermined location on the cutter body, the blade will automatically assume its proper cutting position at the cutter body.

3,673,908
QUICK-CHANGE TOOLING FOR FINEBLANKING PRESSES
Roger K. Smith, Enon, Ohio, assignor to International Fineblanking Corporation, Dayton, Ohio
Filed Jan. 22, 1971, Ser. No. 108,759
Int. Cl. B26d 7/02
U.S. Cl. 83—685 **15 Claims**

A die set is provided in which the die shoes remain essentially as part of the press and releasably retain interchangeable die members therein. Each die shoe includes locking means supported for generally lateral movement thereon and means for actuating the locking means between a locking position which positively retains a die member within a corresponding cavity in the die shoe and a retracted position which releases the die member for removal from the cavity. Each die shoe also includes ejecting means supported for generally axial movement thereon and means for actuating said ejecting means to eject the die member when the locking means is in its



retracted position. The die members are formed with recess means for receiving the locking means.

3,673,909
PERCUSSION MUSICAL INSTRUMENT
Melvin Birnkrant, Beacon, N.Y., assignor to Colorforms, Norwood, N.J.
Filed June 4, 1971, Ser. No. 149,903
Int. Cl. G10d 13/08
U.S. Cl. 84—403 **9 Claims**

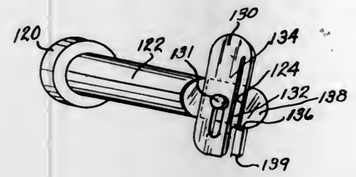


A percussion type musical instrument is formed as a representation of a flower having radiating petals. Each petal consists of an open bottom echo chamber and an elliptical tone bar secured to the top of the chamber by snap-type fastening means formed integrally with the chamber. The chambers are integrally formed with a hub section mounted to a downwardly extending stem-like post. Another hub section or cap is snap-connected to the first hub section and frictionally engages the upper end of the post to prevent rotation of the echo chambers about the post.

3,673,910
KEY BOLT
Frank C. Collister, 3641 North Dorko Drive, Port Clinton, Ohio
Continuation-in-part of Ser. No. 758,368, Sept. 9, 1968, Pat. No. 3,476,007. This application Oct. 30, 1969, Ser. No. 872,658
Int. Cl. F16b 21/00
U.S. Cl. 85—3 R **3 Claims**

A key bolt including a shank having an open transversely disposed bolt slot at one end with an elongated planar key slidably disposed in the bolt slot. The key has end portions and spaced side walls forming a closed elongated key slot disposed

intermediate the ends of the key. A pin is transversely disposed in the bolt shank and passes through the bolt slot and through the key slot at substantially right angles thereto to slidably retain the key within the bolt slot. The key is slidable in the bolt slot to an unlocked position wherein the key extends directly outwardly of the shank and forms an extension thereof and is slidable to a locked position wherein the key is substantially perpendicular to the shank. In one form of the in-



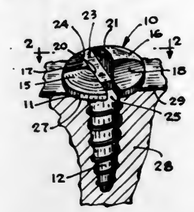
vention, at least a portion of one of the side walls of the key is severed or partially severed or slotted intermediate the ends thereof with one severed portion having its free end portion offset from and protruding out of the plane of the key to form a key lock abutting the bolt shank to retain the key in locked position. Such severed portion is yieldable to a position within the plane of the key to enable the key to be moved from locked position to unlocked position.

3,673,911
MOUNTING OF WHEELS ON SKI POLES
Rene Ramillon, 3, rue Emile Zola, Grenoble, France
Filed July 29, 1970, Ser. No. 59,309
Claims priority, application France, Aug. 1, 1969, 6926391
Int. Cl. F16b 21/00, 37/02
U.S. Cl. 85—36 **3 Claims**

A Shakeproof washer formed in a stop ring, by pressing or punching, from a single metal stop ring so as to provide two concentric series of lugs, the lugs of one series being shorter than those of the other series and directed according to the generatrices of a cone less sharp than the cone of the longer lugs, said lugs extending radially inwards so as to engage the pole surface along two concentric but axially spaced circles for constantly retaining the wheel of the pole in an optimum position in which the bearing face of the washer engages the wheel perpendicularly to the pole axis.

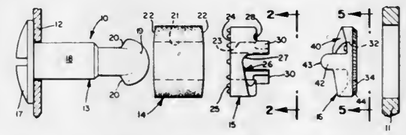
3,673,912
REMOVABLE TAMPERPROOF FASTENING MEANS
George E. Herr, 2711 West Brown Street, Milwaukee, Wis.
Filed Feb. 25, 1971, Ser. No. 118,888
Int. Cl. F16b 23/00
U.S. Cl. 85—45 **8 Claims**

A head member is provided for a fastening means such as a screw, nut or bolt which can be turned in a direction to fasten the fastening means yet can be turned in a loosening direction only by a specially adapted tool. The head member has a transverse slot with two oppositely disposed shoulders which permit the turning of the head in a fastening direction. Two upwardly extending curved portions are provided which cause



a slipping of a screwdriver when it is attempted to remove the fastening means. Removal is afforded by a notch extending into the head at the end of the slot which permits engagement by a projection on a specially adapted removing means.

3,673,913
PANEL FASTENER WITH EXPANDABLE SLEEVE
John K. Barry, Springfield, Pa., assignor to Southco, Inc., Lester, Pa.
Filed Sept. 4, 1970, Ser. No. 69,745
Int. Cl. F16b 13/06
U.S. Cl. 85—70 **1 Claim**

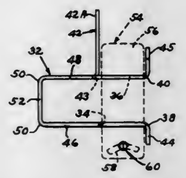


A second cam member has an axial clearance hole for receiving a T-shaped projection on 1 free end of a stud carrying a resilient sleeve radially expandable when axially compressed by axial displacement of a first cam member on the stud resulting from relative rotation between the cam members. The second cam member is also provided with notch means in its outer surface connected to the clearance hole by an internal helical ramp that operatively engages the projection upon rotation of the stud relative to the second cam member. Such relative rotation initially axially displaces both cam members and axially compresses the sleeve which exerts an opposite axial force on the cam members. Final relative rotation placing the stud in a predetermined angular position relative to the second cam member seats the projection in the notch means and keys the second cam member to the stud for rotation therewith. The residual axial force exerted by the sleeve maintains the projection seated in the notch means and develops a frictional force between the sleeve and first cam member that serves to prevent rotation therebetween.

3,673,914
DRAFT KEY RETAINER LOCK FOR RAILWAY CARS
Robert W. Randolph, and Roy R. Dare, both of St. Charles, Mo., assignors to ACF Industries, Incorporated, New York, N.Y.
Filed Oct. 19, 1970, Ser. No. 81,861
Int. Cl. F16b 21/10
U.S. Cl. 85—5 N **1 Claim**

A retainer lock formed from a metallic one piece flat rectangular blank and adapted to fit over the end of a draft key of a railway car. The one piece rectangular blank is folded into a yoke-like member and has two punched aligned openings, one opening being circular and the other being elongate with an elongate tab formed from the elongate opening and adapted to be folded downwardly over an elongate head

of a retainer pin in the aligned openings. A vertically extending projection adjacent each opening faces an adjacent center sill and the elongate tab forming the upper elongate opening

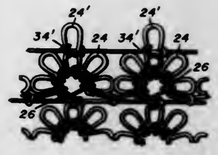


which extends into the upper adjacent vertically extending projection thereby to permit a tab of sufficient length to cover a substantial portion of the width of the elongate head of the retainer pin.

3,673,915
LOOP FABRIC STRUCTURE

Rosario Forlano Morcaldi D', 18 Haynes Street, East Boston, Mass.

Division of Ser. No. 765,886, Oct. 8, 1968, Pat. No. 3,548,706.
This application Oct. 20, 1970, Ser. No. 82,334
Int. Cl. D04g *1/00*; D04b *21/10*
U.S. Cl. 87—12 **1 Claim**



Needlework involving a loop fabric structure formed by a single thread or strand manipulated in a manner to define loops each of which is knotted to prevent unraveling thereby enabling the material to be cut at any desired point and employed for various purposes.

3,673,916
RIFLED LAUNCHING TUBE

Helge Wittholz, Oyle, Germany, assignor to Dynamit Nobel Aktiengesellschaft, Troisdorf, Germany

Filed April 24, 1969, Ser. No. 828,062
Claims priority, application Germany, April 24, 1968, P 17 03 248.3
Int. Cl. F41f *3/04*
U.S. Cl. 89—1.816 **10 Claims**

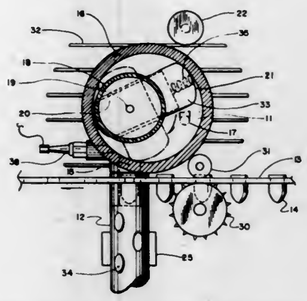


A launching tube for rockets and other projectiles, preferably with a hinged tail unit, including means for imparting a rotational motion to the rocket or projectile as it travels through the tube, which means for imparting rotation are provided in the form of helical grooves adapted to receive mating projections provided on the exterior surface of the rocket or projectile, and further including additional, substantially longitudinally-extending corrugations for imparting rigidity to the launching tube, thus facilitating the construction of the tube from relatively light-weight materials and in the form of relatively thin-walled tubes formed by drawing or extrusion processes. The present invention further contemplates a novel method for producing the rifled launching tube disclosed herein.

3,673,917
LIQUID FUEL OPERATED AUTOMATIC WEAPONS

Herman A. Myers, R.D. #1, Box 125, Lake Lynn, Pa.

Filed April 26, 1971, Ser. No. 137,287
Int. Cl. F41f *1/04*
U.S. Cl. 89—7 **10 Claims**

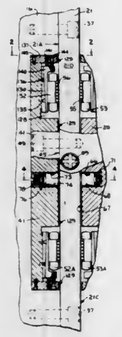


The automatic weapon has a compression chamber with a power outlet port aligned with a reciprocating barrel and an intake port aligned with a carburetor. A belt carrying a plurality of projectiles is fed between the reciprocating barrel and the power outlet port. A shaft driven rotor and vane are offset positioned within the compression chamber. The barrel, belt and rotor are synchronized so that carbureted fuel is compressed and ignited when the barrel has forced the belt to sealably engage the power outlet port with a projectile positioned in the barrel.

3,673,918
VIBRATION DAMPENER FOR A MACHINE TOOL

Frank Zankl, Milwaukee, Wis., assignor to Kearney & Trecker Corporation, West Allis, Wis.

Filed May 1, 1970, Ser. No. 33,698
Int. Cl. F16c *21/00*
U.S. Cl. 90—11 R **7 Claims**



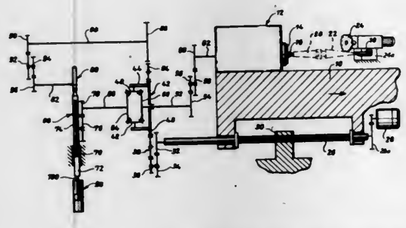
This invention comprises means for adding adjustable dampening to a slidable machine tool member, such as a spindle head, that is secured to a supporting frame member by means

of anti-friction bearings. The dampening means are particularly adapted to selectively and adjustably compensate for vibration due to the anti-friction support means in such a manner as to increase both the quality and depth of a particular metal cutting operation by overcoming the tendency to vibration.

3,673,919
APPARATUS FOR HELICALLY MACHINING A BLANK OF VARYING DIAMETER

Hans Neuhauser; Helmut Benz, both of Enzberg, Wurttemberg, and Werner Gukelberger, Prum/Eifel, all of Germany, assignors to Gustav Neuhauser Praezisionswerkzeug-Fabrik o.h.G., Enzberg/Wurttemberg, Germany

Filed Dec. 2, 1969, Ser. No. 886,609
Claims priority, application Germany, Dec. 3, 1968, P 18 12 288.8
Int. Cl. B23c *3/32*
U.S. Cl. 90—11.62 **9 Claims**

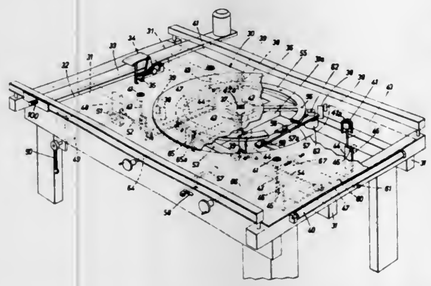


A conical blank is rotated and simultaneously advanced so that a milling cutter cuts a helical groove into the same. In order to obtain a constant helix angle and a constant peripheral speed of the successively cut blank portions of different diameter, the rotary speed of the blank is cyclically varied by a control device including a cam and a cam follower influencing a differential transmission which connects drive means with the rotary blank.

3,673,920
APPARATUS FOR CUTTING SLOTS OR GROOVES IN PUNCH SUPPORT PLATES OR THE LIKE

Werner Wahlen, Bern, and Hans Blumer, Zurich, both of Switzerland, assignors to Kapafar Business Trust Reg., Vaduz, Liechtenstein, Switzerland

Filed June 29, 1970, Ser. No. 50,801
Claims priority, application Switzerland, July 28, 1969, 11485/69; March 13, 1970, 3781/70
Int. Cl. B23c *3/28*
U.S. Cl. 90—58 B **5 Claims**

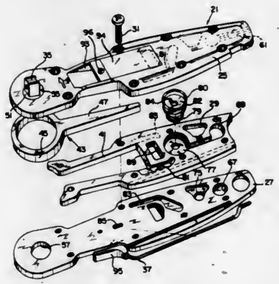


An apparatus for milling or cutting grooves in punch support plates, comprising a table-like lower or base portion at which there is mounted for rotation about a substantially vertical axis a rotary plate member constructed to support and fixedly retain a punch support plate. This rotary plate member can be locked or arrested in at least two rotational positions which are offset from one another through an angle of about 90°. Furthermore, a cutting mechanism equipped with an elevationally displaceable groove cutting tool is arranged above the rotary plate member and guided to be freely movable in one of two coordinate directions disposed at right angles to one another and being displaceable and capable of being arrested in the other coordinate directions.

3,673,921
PRESSURIZED FLUID DEVICE

Russell A. Fritts, Phoenix, and Jerome I. Rebold, Timonium, both of Md., assignors to The Black and Decker Manufacturing Company, Towson, Md.

Filed June 8, 1970, Ser. No. 44,068
Int. Cl. F01c *9/00*; F01l *25/06, 21/02*
U.S. Cl. 91—299 **2 Claims**



A portable pneumatic tool including an elongated housing having a rotatable output member supported thereon and adapted to have a wrench socket attached thereto. Lever means within the housing is interconnected with the output member through one-way clutch means and is oscillated by compressed air whereby to impart unidirectional rotation to the output member. In addition, the tool may be used as a hand-type wrench in which case the elongated housing operates as a handle and the one-way clutch means causes the output member to turn conjointly with the housing in one direction only.

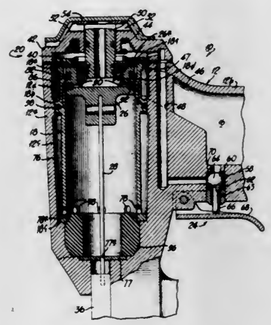
3,673,922
FASTENER DRIVING TOOL

Richard H. Doyle, Mount Prospect, Ill., assignor to Fastener Corporation, Franklin Park, Ill.

Filed Dec. 19, 1966, Ser. No. 602,728
Int. Cl. F15b *11/08*
U.S. Cl. 91—422 **15 Claims**

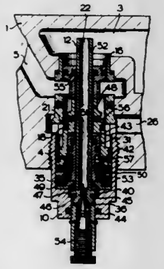
A pneumatic piston-driver blade return system for a pneumatic fastener driving tool includes an air return space continuously communicating with the lower end of a cylinder immediately adjacent a bumper. When a top valve for the cylinder is opened, compressed air drives the piston downwardly against the bumper, and a part of this air is passed through the piston into the air return space by means of an O-ring valved passage through the piston. When the cylinder top valve is closed and the top of the cylinder is vented to the atmosphere, the air in the return space enters the cylinder and acts on the lower surface of the piston to return the piston-

driver blade to a normal position in which it is held by frictional engagement of another piston O-ring with the cylinder



wall. Air below the piston leaks out to the atmosphere through a driver blade clearance at the lower end of the cylinder.

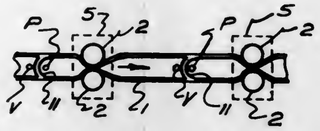
3,673,923
CONTROL VALVE MEANS FOR A PERCUSSION DEVICE ACTUATED BY COMPRESSED AIR
Dieter Volkmann, 49, Leinstrasse, Neustadt, and Wilfried Lange, 3101 Brockhold, Altenhagen, both of Germany
Filed Feb. 12, 1970, Ser. No. 10,760
Claims priority, application Germany, Feb. 15, 1969, P 19 07 788.4
Int. Cl. F01l *25/02*; F15b *13/042*
U.S. Cl. 91—309 **2 Claims**



In a control valve assembly for a pneumatically operated percussion device, a control valve piston is slidably mounted on a hollow release valve stem and encloses an auxiliary valve member to provide for automatic sequential operation. The admission of compressed air to the hollow release valve stem is blocked by a valve ring mounted on said valve stem, and the stem is provided with means for adjusting the rate of sequencing of the control valve piston and the auxiliary valve member.

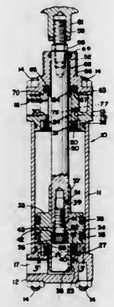
3,673,924
FLUID MOTORS
Zdzislaw Zakrzewski, 450 Vera Avenue, Redwood City, Calif.
Filed Oct. 5, 1970, Ser. No. 77,817
Int. Cl. F15b *11/08*; F01b *19/04*
U.S. Cl. 91—462 **6 Claims**

A resilient expansible chamber device having constricting rollers mounted around a resilient tube member. The controlled application of fluid pressure to the chamber and the simultaneous venting of fluid pressure from the chamber, on



opposite sides of the constricting rollers, causes the constricting rollers to move relative to the expansible chamber.

3,673,925
FLUID MOTOR
Robert H. Davies, Aurora, Ohio, assignor to Parker-Hannifin Corporation, Cleveland, Ohio
Filed Jan. 6, 1969, Ser. No. 789,304
Int. Cl. F01b *29/00*
U.S. Cl. 92—128 **2 Claims**

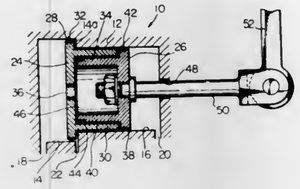


A cylinder type fluid motor in which the piston and piston rod are each symmetrical whereby either end of the rod may be attached to either side of the piston and to the external working member. The rod is of uniform diameter throughout with only internal threads for attachment by means of high strength bolts or studs to the piston and working member whereby the rod may be of low cost material and yet provide high strength.

3,673,926
FLUID OPERATED POSITION SELECTING DEVICE
Yohichi Mohri, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Kanagawa-ku, Yokohama, Japan
Filed Nov. 3, 1970, Ser. No. 86,573
Claims priority, application Japan, Nov. 12, 1969, 44/90671
Int. Cl. F07b *7/20*
U.S. Cl. 92—51 **1 Claim**

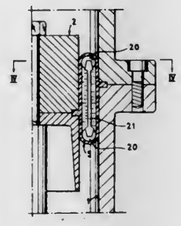
A device for selecting three different positions, which includes a hollow body having formed therein first and second bores selectively communicating with a source of pressurized fluid, a first piston having a flange slidably fitted in the first bore and a hollow extension extending from the flange and slidably fitted in the second bore, a second piston having a flange slidably fitted in the second bore and a hollow extension extending from the flange of the second piston and slidably fitted in the inner peripheral wall of the extension of

the first piston, and a piston rod rigidly connected to the flange of the second piston. The positions of the second piston



is shifted by selectively drawing a pressurized fluid into the first and/or second bores.

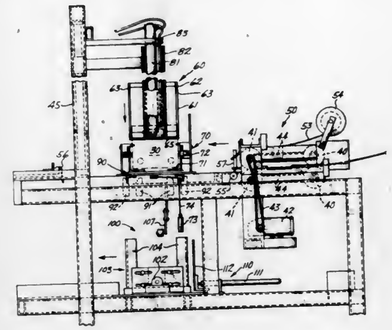
3,673,927
SEAL
Nils Allan Fluhr, Gavle, Sweden, assignor to Knut Arne Erik Rehnstrom, Sodra Fiskargatan, Gavle, Sweden
Filed Oct. 22, 1970, Ser. No. 83,084
Claims priority, application Sweden, Oct. 27, 1969, 14641/69
Int. Cl. F01b *19/00*
U.S. Cl. 92—98 **7 Claims**



This disclosure relates to a seal between two relatively movable parts being spaced by at least one space with a feature of the seal being the provision between the parts of a casing or cover shutting off the space and attach to not only the one part but also to the other part. In the preferred usage of the seal, the casing or cover is disposed between a piston and a cylinder and has an annular form.

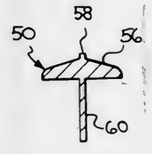
3,673,928
MACHINE FOR FORMING AND SEALING BLISS STYLE CONTAINERS
Charles D. Striplin, Concord, Calif., assignor to Weyerhaeuser Company, Tacoma, Wash.
Filed Aug. 27, 1969, Ser. No. 853,249
Int. Cl. B31b *1/46*, *1/64*, *17/02*
U.S. Cl. 93—36.3 **2 Claims**

A machine for forming and gluing a three-part container having two wall panels and a body panel forming the bottom and the other two walls of the container. The body panel is sealed to the wall panels by flanges which are attached to the bottom and walls of the body panel, and which bend over and are contiguous with the faces of the wall panels. The apparatus carries the body panel into position between a mandrel and a die, and positions the wall panels with respect to the body panel. The mandrel then carries the body panel and wall panels through the die cavity to blend the flanges toward the wall panel, and into a compression section. The compression unit has two active positions: the first holds the bent flanges at an included angle of less than 45° and the second compresses the flanges against the wall panels to bond the flanges to the



wall panels. When the compression unit retracts, the container is removed from the machine.

3,673,929
CREASING RULES FOR CUTTING DIES
Philip G. Saunders, Toledo, Ohio, assignor to Container Graphics Corporation, Toledo, Ohio
Filed Sept. 16, 1970, Ser. No. 72,577
Int. Cl. B31b *1/14*
U.S. Cl. 93—58.2 R **4 Claims**

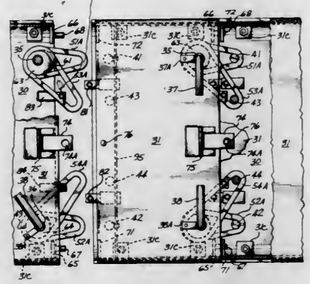


A creasing rule for a rotary cutting die is provided. The creasing rule is used to produce an indented line in a corrugated board, along which line the corrugated board is to be folded subsequently, when formed into a final product, such as a container. The cutting die comprises a curved die plate fastened on a rotatable cylinder with the creasing rule mounted in the die plate. The new creasing rule includes a base or flange which extends through the die plate to contact and be backed up by the cylinder, which then positions the creasing rule at a fixed distance from the surface of the cylinder, even with a variation in the thickness of the die plate. Further, the creasing rule is designed with a broad tapered web on each side of an indenting ridge which produces the indented line, so that the possibility of breaking of the liner of the corrugated board when the indentation is made is minimized.

3,673,930
SCREED EXTENSION ASSEMBLY FOR ASPHALT PAVING MACHINES
Ralph D. Birtchet, Galvin, Wash., assignor to Schneider-Simpson, Inc., Tacoma, Wash.
Filed June 15, 1970, Ser. No. 46,309
Int. Cl. E01c *19/22*
U.S. Cl. 94—45 R **13 Claims**

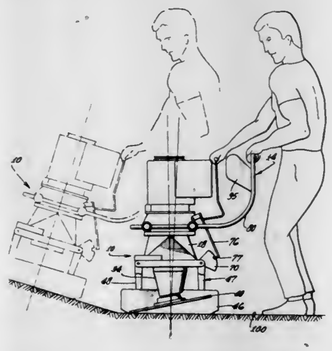
Segmental extension units which interlock to provide selected extension of the screed of an asphalt paving machine are disclosed. Each extension unit has a forward end incor-

porating locking rings adapted to mate with studs in the trailing end of a preceding extension unit. The locking rings are disposed about cam surfaces so that upon rotation of locking handles two adjacent extension units will be rigidly interconnected. Adjustment members permit adjustment of the rela-



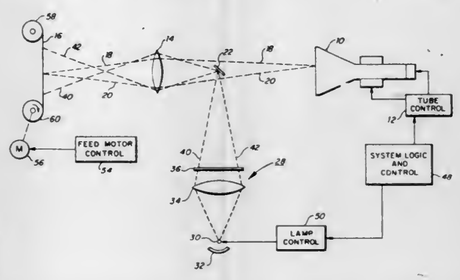
tive positions of adjacent lower surfaces of the extension members to accommodate wear of the assemblies and to permit the use of forward and trailing edges of the screed extensions as screed surfaces. Construction details of preferred embodiments are disclosed.

3,673,931
SELF-SUPPORTING COMPACTOR
Robert D. Dening, Los Angeles, and Leslie H. Garlinghouse, Pasadena, both of Calif., assignors to Garlinghouse Brothers Manufacturing Co., Los Angeles, Calif.
Filed Aug. 10, 1970, Ser. No. 62,261
Int. Cl. E01c *19/22*
U.S. Cl. 94—45 A **6 Claims**



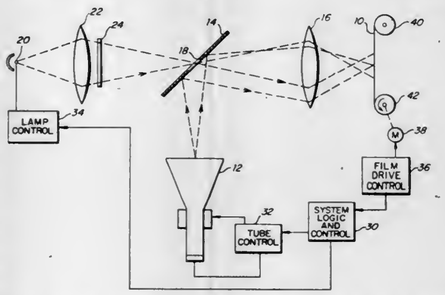
A self-supporting compactor consisting of frame, a motor on the frame, and a compactor plate at the lower end of the frame driven by the motor. The compactor plate has a central shaft tiltably mounted in a thrust head with respect to the motor drive shaft and freely rotatable so that as rotated there is one area on the edge of the compactor plate which shifts progressively around the circumference as the plate is driven with a wobble motion, thereby to provide a compacting force on a surface to be compacted. A pair of long parallel shoes on diametrically opposite sides of the frame are pivotally mounted on the frame and temporarily locked in nonpivoting position while the compactor is at rest and when the operation is being started. Once compacting commences, the shoes are released and automatically pivot from a supporting position, but return automatically and momentarily to supporting position during the compacting operation thereby to prevent the compactor from bouncing out of control.

3,673,932
IMAGE COMBINING OPTICAL SYSTEM
Edmund H. Rottmiller, San Diego, Calif., assignor to Stromberg Datagraphix, Inc., San Diego, Calif.
Filed Aug. 3, 1970, Ser. No. 60,225
Int. Cl. G03b *15/10*
U.S. Cl. 95—1.1 **8 Claims**



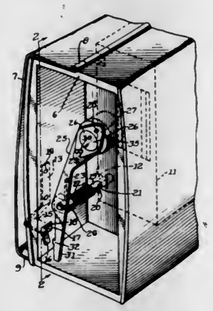
An optical system for combining two or more images from directionally and diffusely illuminated objects is disclosed. A non-directional, diffusely illuminated light-and-shadow object, such as a cathode ray tube face is positioned, approximately parallel, to an image plane, which typically may be a display screen or a photosensitive surface. A lens system is interposed along the axis between object and image plane to focus an image of the original diffusely illuminated object onto the image plane. A very small reflector is placed at an angle to the axis between the diffusely illuminated object and the lens system. A directional source is positioned so that the light projected through a conventional transparency is reflected from the small mirror along the axis and through the lens system forming an image of the transparency on the image plane in superimposed registration with the image from the diffusely illuminated object. The mirror is sufficiently small so as to block only a very small portion of the light from the diffusely illuminated object. If desired, a plurality of small reflectors may be used with a plurality of directional sources.

3,673,933
OPTICAL SYSTEM FOR SUPERIMPOSING IMAGES
Omer F. Hamann, La Jolla, Calif., assignor to Stromberg Datagraphix, Inc., San Diego, Calif.
Filed Aug. 3, 1970, Ser. No. 60,322
Int. Cl. G03b *15/10*
U.S. Cl. 95—1.1 **8 Claims**



An optical system for superimposing images on a single image plane from both directional and non-directional sources is disclosed. An apertured mirror is placed at an angle to a source of a diffused light image, to reflect light therefrom toward an image plane, such as a display screen or photosensitive sheet. A second, directional image is projected by an optical system through the aperture toward the image plane. A single objective lens assembly placed between the mirror and the image plane acts on light rays from both sources producing both images in superimposition in the image plane.

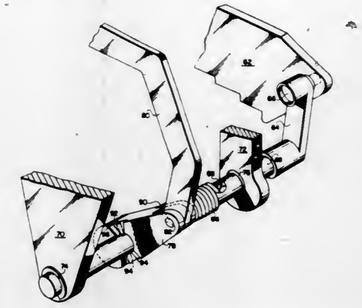
3,673,934
AUTOMATIC FILTER ACTUATOR FOR A CARTRIDGE LOAD CAMERA
Richard K. Carlson, Chicago, Ill., assignor to Bell & Howell Company, Chicago, Ill.
Filed Sept. 2, 1969, Ser. No. 854,485
Int. Cl. G03b *17/12*
U.S. Cl. 95—11 **4 Claims**



This disclosure describes an automatic filter actuator for use in a cartridge load camera. A rod, having mounted thereon a torsion-compression spring and a lever arm, is aligned with a code notch in the cartridge. A filter is mounted on one end of the lever arm and the other end of the lever arm selectively impinges on a flat spring attached to the camera housing. When the film compartment door of the camera is closed and notch is present, the flat spring does not contact the lever arm and the filter remains in front of the camera lens. When the cartridge has no notch, the rod and lever arm are axially moved to a point where the lever arm impinges on the flat spring and, hence, the filter is moved from in front of the lens when the film compartment door is closed.

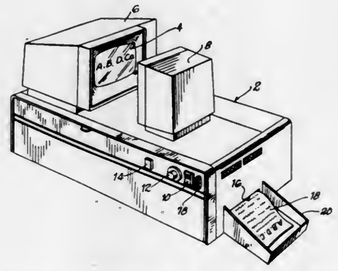
3,673,935
DRIVE SYSTEM FOR A REFLEX MEMBER
Edward H. Coughlan, Canton, Mass., assignor to Polaroid Corporation, Cambridge, Mass.
Filed Nov. 2, 1970, Ser. No. 86,250
Int. Cl. G03b *19/02, 19/12*
U.S. Cl. 95—11 R **12 Claims**

A lost-motion connection between a drive member and a reflecting member mounted in a camera of the single-lens reflex type. The reflecting member is mounted for movement between first and second positions and the lost-motion connection therebetween includes a crank mounted on the drive member for limited rotation relative thereto and a spring having one end connected to the crank and its other end connected to the drive member. Should there be any interference with the reflecting member as it is being driven to the second position, the lost-motion connection allows the energy of the drive to be stored by the spring rather than being utilized in an attempt to drive the reflecting member thereby preventing an overload on the camera's motor and/or battery. Upon removal



of the interference, the energy stored in the spring is utilized to drive the reflecting member toward the second position.

3,673,936
IMAGE COPYING APPARATUS
J. James Stone, Jr., 4058 Michelline Lane, Northbrook, Ill.; Thomas J. Madden, Jr., 428 Lilac Lane, Elk Grove Village, Ill.; Glendon T. Gerisch, 211 Maple Court, Lake Forest, Ill., and Robert I. Keur, 7138 Lill St., Niles, Ill.
Filed April 27, 1970, Ser. No. 32,305
Int. Cl. G03b *29/00*
U.S. Cl. 95—12 **6 Claims**

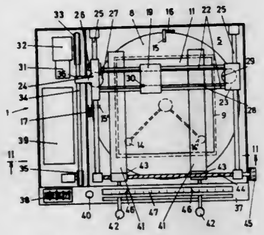


Apparatus for producing on paper a copy of images projected onto a viewing surface such as a cathode ray tube comprises elements for focusing the image onto the surface of electrostatic copying paper to expose the paper and means to then subsequently develop the exposed image. The apparatus is arranged so that the copy can be made while the surface on which the image is projected is available to be viewed by an observer. The disclosure includes means permitting the remote control of the apparatus as well as means whereby copies of images appearing on more than one viewing surface may be made.

3,673,937
LINING DEVICE
Peter Ernst Mader, Lindenmoostrasse 13, Zurich, Switzerland
Filed May 19, 1970, Ser. No. 38,658
Claims priority, application Switzerland, May 30, 1969, 8275/69
Int. Cl. G03b *29/00*
U.S. Cl. 95—12 **8 Claims**

A lining device comprising guide means and drive means which control the movement of a projection device in two

coordinate directions over a photographic film. The projection device comprises a light source, an adjustable apertured diaphragm, and a lens which serves to direct light passing



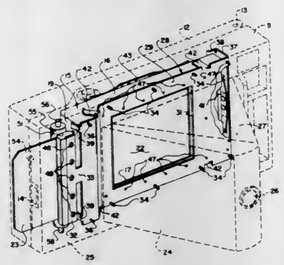
through the diaphragm onto the film in reduced size so that when the projection device is moved, a line is exposed on the film.

3,673,938
MULTIPLE FUNCTION FRAME MEMBER FOR CAMERAS

Chester W. Michatek, Rochester, and Donald M. Harvey, Webster, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed April 2, 1971, Ser. No. 130,753
Int. Cl. G03b *17/50*
U.S. Cl. 95—13 **7 Claims**

A self-processing camera adapted to be loaded with a film pack is provided with a novel internal metal frame member



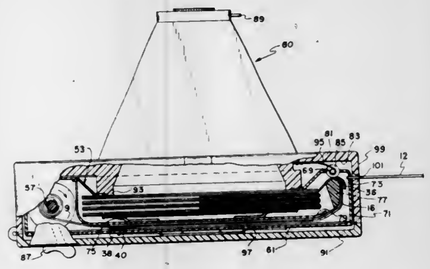
that serves a number of functions including, increasing the structural rigidity of the camera housing, accurately establishing the operative location of the film pack within the camera housing, providing for convenient light-tight attachment of the camera bellows to the camera housing, and resiliently supporting a film processing pressure member to provide uniform pressure at the nip defined between that member and a roller or the like carried by the movable cover door of the camera housing.

3,673,939
PHOTOGRAPHIC APPARATUS

Donald M. Harvey, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 2, 1970, Ser. No. 77,511
Int. Cl. G03b *17/52*
U.S. Cl. 95—13 **22 Claims**

An improved camera and cartridge for use with an assemblage of self-processing film units interconnected by an elongate, relatively flexible, unit-transporting web movable with the cartridge, each film unit including a pair of preregistered, superposed, relatively stiff, substantially flat sheets separably coupled to the web. The camera is provided with a chamber for receiving the cartridge, a spring-loaded member for applying pressure at a predetermined location in the cartridge, a mechanism for advancing the web inside the cartridge, and an exit opening at one end of the camera. The cartridge has a chamber for containing the assemblage, an exit slot at one end of the cartridge in alignment with the exit opening of the camera, through which the pairs of preregistered sheets of the film units are successively transportable along a substantially straight path as the web is moved within the cartridge in response to operation of the web advancing mechanism of the

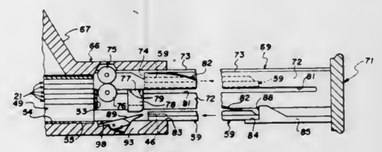


camera, a pressure-bearing and web-guiding member near the exit slot for supporting the web and film units against pressure applied by the spring-loaded member of the camera and for guiding the web along an arcuate path divergent from the straight path of the preregistered sheets to effect separation of the preregistered sheets from the web as the sheets are successively transported along the straight path, and a web take-up device at the opposite end of the cartridge which is rotatable by the web advancing mechanism of the camera for receiving and storing the web and processing waste material from the pressure-bearing and web-guiding member after the pairs of preregistered sheets have been separated from the web.

3,673,940
PRINT STRIPPING MECHANISM

Donald M. Harvey, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed July 2, 1971, Ser. No. 159,323
Int. Cl. G03b *17/52*
U.S. Cl. 95—13 **5 Claims**

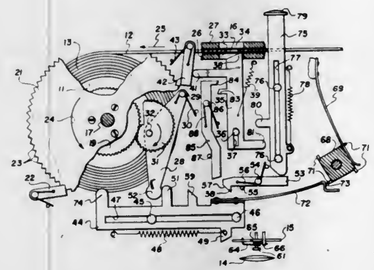


A processing camera and print stripping mechanism for use with self-processing film units. The film units include an image-recording element separably coupled to a generally rigid carrier or frame. Grooves in the frame guide movement of camera stripper fingers between the image-recording element and the frame to separate the element from the frame as the film unit is moved endwise in the camera. The stripper fingers are pivotally mounted in the camera and include frame engaging surfaces or cams for producing relative lifting movement of the fingers to enhance their stripping action.

3,673,941
CAMERA COCKING MECHANISM

Francis A. Williams, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 17, 1970, Ser. No. 99,184
Int. Cl. G03b *1/04, 17/42*
U.S. Cl. 95—31 AC **8 Claims**

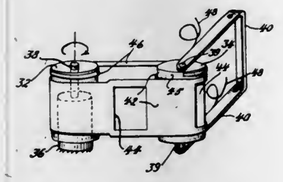


A camera mechanism for preparing a camera to effect an exposure, such as by cocking a shutter or by indexing a multilamp flash unit socket. The mechanism employs a single-lobed and spiral-shaped cam or gear in a linkage that translates motion from a drive member, associated with film movement, to the shutter or socket. Substantially one complete revolution of the gear performs its intended functions, and then the gear automatically is disengaged from the drive member to permit further rotation of the member without further influence on such functions. The mechanism is particularly adapted for translating rotational motion, such as from a film-winding drive, either to linear motion or to complex motion including a substantial linear component, for cocking the shutter and indexing the socket. The mechanism is also adapted for metering advancement of film in the camera and for preventing double exposures.

3,673,942
CAMERA SHUTTER

Frederick M. Tingley, Lincoln, Mass., assignor to The United States of America as represented by the Secretary of the Air Force

Filed Oct. 20, 1969, Ser. No. 867,620
Int. Cl. G03b *9/28*
U.S. Cl. 95—57 **3 Claims**

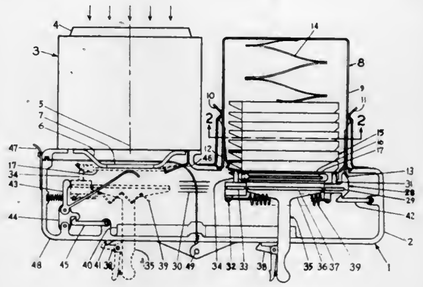


A shutter for use with a conventional camera utilizing a rotary stepper servo motor as a drive means. The motor drives a first drum which in turn drives a second drum in order to advance a curtain attached thereto. This curtain has a plurality of slits therein which act as the shutter of the camera as they pass before the optical cone of the camera.

3,673,943
CAMERAS

Harry G. Corrigan, 258 Amalfi Drive, Los Angeles, Calif.

Filed May 13, 1970, Ser. No. 36,857
Int. Cl. G03b *19/10*
U.S. Cl. 95—24 **1 Claim**



A camera in which the photographic emulsion for each single exposure is on a rigid plate in a light-proof but openable container. A removable magazine on the camera stores several of the emulsion containers. The camera contains mechanism for opening the container to permit exposure, reclosing and locking the container, and ejecting the locked container or transferring it to a storage magazine. Plates carrying the emulsion can be keyed for individual identification. When opened, the emulsion is held at the precise focal plane of the camera optical system.

3,673,944
PHOTOGRAPHIC PROCESSING APPARATUS

Hugh W. Maxwell, 999 East Valley Boulevard, Apt. 6, Alhambra, Calif.

Filed June 22, 1970, Ser. No. 48,392
Int. Cl. G03d *3/00*
U.S. Cl. 95—89 R **3 Claims**

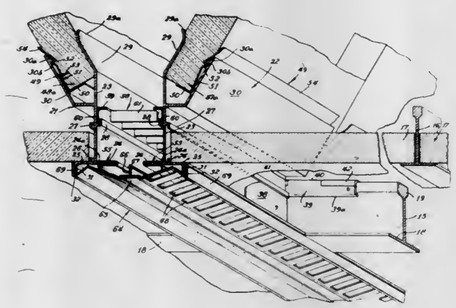


This disclosure involves a photographic processing tank designed to develop large size photographs in a compact device employing a minimum volume of standard photographic reagents. The disclosure involves a tubular tank with removable end cap or caps and a porous inner liner which is unaffected by reagents and exhibits non-capillarity and non-wetting characteristics. The liner is flexible so that it may be rolled up against the light sensitive emulsion side of printing paper without damage thereto.

The tank holds the reagents and the porous liner spaces the paper while allowing the rapid flow and circulation of reagents through the entire contents of the tube and in intimate contact with all areas of the emulsion.

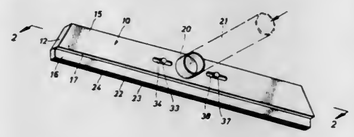
Any and all standard photographic chemicals may be used with this invention.

3,673,945
VENTILATING AIR DISTRIBUTING CHANNEL
Joel R. Rachlin, 1785 Wedgewood West, Elm Grove, Wis., and Rudolph Otto Neudek, W271N1275 Meadowbrook Road, Waukesha,, Wis.
Filed Feb. 11, 1970, Ser. No. 10,508
Int. Cl. F24f *13/06*
U.S. Cl. 98—40 D **21 Claims**



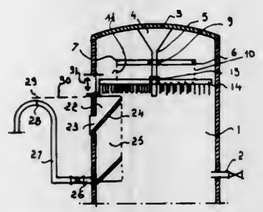
The supporting grid (e.g., main and cross inverted tees) of a suspended ceiling also completely supports ventilation air-distributing apparatus which may include the air supply duct. This apparatus, which is completely assembled before mounting in the grid, comprises a lower air flow channel section formed of two extruded metal bars having vertical webs with hooks on the outside of the web defining ways into which the wings of a bracket project to hold the spaced bars in a channel assembly. A clip integral with the bracket hooks over the top of a grid tee and has gripper conformations to mate with a clip on the opposite side of the tee to align channels. Along the top of the web of each bar are two outwardly extending spaced arms which are used to hold the sides of a fiberglass air duct. Between the webs and below the air duct is an optional air extractor. The air from the duct discharges out through the opening between the webs. At the bottom of the webs are flanges forming supports for ceiling panels and air flow control dampers.

3,673,946
AIR DIFFUSER
Douglas Ragland, Houston, Tex., assignor to Texas Investment Builders Co., Houston, Tex.
Filed March 25, 1970, Ser. No. 22,490
Int. Cl. F24f *13/06*
U.S. Cl. 98—40 D **8 Claims**



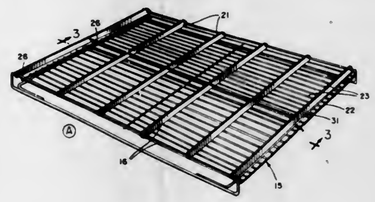
Wall means define a generally elongated, narrow air passage having an air discharge aperture extending substantially the full length of the elongated air passage and an air inlet located generally centrally of the elongated dimension of the air passage. A baffle or air deflecting means, disposed within the air passage opposite the mouth of the air inlet, is shaped so as to direct air entering the air passage in both directions along the elongated dimension of the air passage. Preferably the diffuser is equipped with adjustable shutter means mounted within the air passage and engageable with the air inlet so as to control the volume of air moving into the air passage from the air supply.

3,673,947
VINIFICATOR
Eugene Scazzola, 1 Rue de l'Averse, 94 Creteil, France
Filed April 5, 1971, Ser. No. 130,996
Claims priority, application France, May 22, 1970, 7018647
Int. Cl. C12b *1/22*
U.S. Cl. 99—278 **4 Claims**



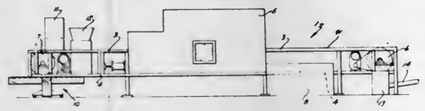
A vinificator has a vat, a plurality of radial driving arms rotatable about a vertical axis and disposed at the upper part of the vat, means for rotating the arms, a corresponding plurality of rakes disposed in the vat below the driving arms and carried by a bush rotatable about the same axis as the driving arms, said rakes being angularly pivotable with respect to the bush, a flexible connection between each driving arm and a corresponding rake, deflector means carried by at least one of said rakes for deflecting towards the wall of the vat the marc forming on top of the contents of the vat, and an evacuation funnel for marc disposed internally adjacent the wall of the vat.

3,673,948
MULTIPLE FACILITIES FOR ASSEMBLING COOKING AND DISPENSING FOOD-PRODUCTS
Charles Jere Albright, 313 W. North Ave., Chicago, Ill.
Filed Jan. 25, 1968, Ser. No. 700,608
Int. Cl. A47j *37/08*
U.S. Cl. 99—355 **10 Claims**



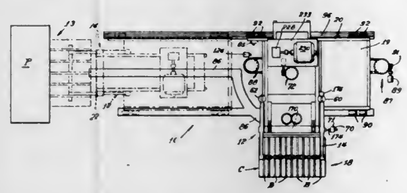
The essential concept of this invention involves one or two facilities each comprising a pair of superimposed, relatively-shiftable elements and each facility being structured to have positioned thereon an ordered arrangement of portioned food-products subject to their being transferred, in the same ordered arrangement, onto an under-positioned support as a result of the relative shifting of the respective pair of elements; the facilities being adapted for use individually or collectively to position an ordered-arrangement of food-serving components on the under-positioned support and subsequently having the same ordered-arrangement of portioned cooked food-products superimposed on the previously-arranged food-serving components on the under-positioned support.

3,673,949
CONTINUOUS PAN CONVEYOR BAKING APPARATUS
Ned H. Arganbright; Paul J. Koepnick; Carl T. Nelson, and Arthur E. O'Brien, all of Grand Rapids, Mich., assignors to Werner Lehara, Inc., Grand Rapids, Mich.
Filed Sept. 16, 1970, Ser. No. 72,733
Int. Cl. A21b *3/06*
U.S. Cl. 99—443 **24 Claims**



For baking a plurality of cakes or other edible products in pans which continuously pass through an oven, an endless pan and conveyor assembly is provided which travels along an endless path in first a forward direction through the baking oven and then return to the starting point in a return direction. The assembly includes a means along the conveyor for selectively removing the pans from the conveyor while moving in the return direction. Specifically, a plurality of brackets are provided on spaced conveyors. The brackets support the pans which span the distance between the spaced conveyors, the pans being removable by a camming mechanism associated with the conveying means. After the cakes are baked they are released from the pan by a conveying mechanism which holds the cakes while reversing their direction so that they are conveyed from the releasing mechanism in an upright position. Further operations on the cake include slicing the same by a novel slicing mechanism, topping one of the parts so sliced and then returning the parts to a station where they are placed together, such stations being spaced longitudinally along the conveyors by reason of a special type of conveyor mechanism.

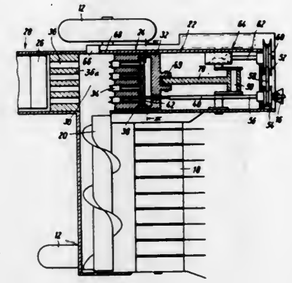
3,673,950
AUTOMATIC COTTON BALE TRANSFER APPARATUS
Albert T. Koehler, Monticello; Paul J. Shideler, Logansport, both of Ind., and Linus E. Dohogne, Paragould, Ark., assignors to A. J. Gerrard & Company, Des Plaines, Ill.
Filed Dec. 24, 1969, Ser. No. 887,963
Int. Cl. B65b *13/20*
U.S. Cl. 100—7 **8 Claims**



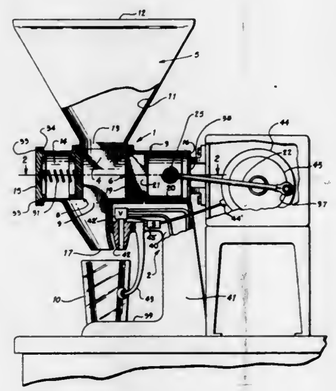
An apparatus for automatically transferring cotton bales from an unbanding station to a press and rebanding station.

3,673,951
METHOD FOR COMPACTING FODDER OR THE LIKE
Gerhard Romer, Nillbergstr. 13, Elsod/Saar, Germany
Filed Oct. 21, 1968, Ser. No. 769,143
Claims priority, application Germany, Oct. 20, 1967, P 16 27 903.1
Int. Cl. B30b *15/34*; B41f *3/42*
U.S. Cl. 100—38 **7 Claims**

Fodder is converted into shape-retaining blocks or cakes by an apparatus which collects fodder off the ground and subjects it to a preliminary compacting action, thereupon to a twisting action which results in the formation of ropes of convoluted material, and to a final compacting action resulting in conversion of ropes into blocks or cakes of firmly compacted material. The twisting and final compacting actions can be carried out sequentially or simultaneously.



3,673,952
JUICE EXTRACTING DEVICE
George A. Durbin, III, 3rd & Fremont, Manhattan, Kans.
Filed Feb. 16, 1971, Ser. No. 115,323
Int. Cl. B30b *15/08*
U.S. Cl. 100—98 **10 Claims**



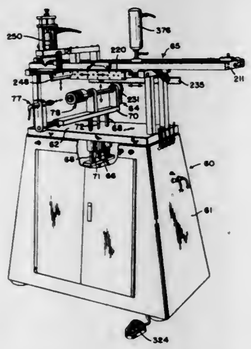
A device for extracting juice from citrus fruit and for use with a beverage dispensing device including a housing having a fruit entrance to receive fruit from a hopper-shaped member and a piston reciprocable within the housing to effect cutting and squeezing of citrus fruit by moving citrus fruit into engagement with a fixed blade and a resiliently mounted abutment member which then moves cut and squeezed fruit through a fruit exit of the housing and into a beverage container adjacent the beverage dispensing device upon movement of the piston to a release position, all in response to activation of the beverage dispensing device.

3,673,953
APPARATUS FOR CUTTING INDICIA FROM TAPE
Bernard J. Massari, 725 Hart Drive, Somerville, N.J.
Continuation of Ser. No. 10,704, Jan. 26, 1970, abandoned, which is a division of Ser. No. 618,540, Feb. 24, 1967, Pat. No. 3,558,425. This application Sept. 18, 1970, Ser. No. 73,657
Int. Cl. B44b *5/00*
U.S. Cl. 101—19 **7 Claims**



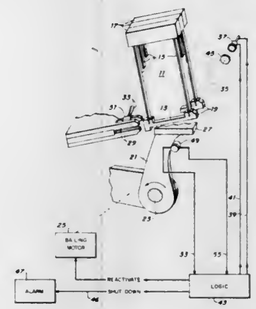
Apparatus for cutting indicia from the second layer of a multi-layer tape including at least a first layer and said second layer, including a die plate having a raised cutting ridge formed thereon with the ridge being at least equal in height to the combined thicknesses of the first and second tape layers; a pair of spaced apart pressure rollers for receiving the tape therebetween, one of the rollers provided with a flat surface along a portion of its periphery, means for positioning the flat surface opposite the tape and upon the flat surface being so positioned, the rollers also are for receiving the die plate therebetween opposite the tape received between the rollers, means for rotating the rollers to cause the rollers to move the die plate ridge into cutting engagement with the tape and to advance the tape and the die plate between the rollers in cutting engagement to cause the cutting ridge to apply cutting force through the first layer, without cutting the first layer, and to the second layer to cut indicia from the second layer, the flat surface upon the flat surface being rotated and again being positioned opposite the other roller for providing a pressure release to release the die plate from cutting engagement with the tape.

3,673,954
SILK SCREENING APPARATUS
Louis A. Lala, Dayton, Ohio, assignor to Amole, Inc.
Continuation-in-part of Ser. No. 728,449, May 14, 1968
Filed March 14, 1969, Ser. No. 807,195
Int. Cl. B41f *17/22*
U.S. Cl. 101—40 **10 Claims**



Method and apparatus for silk screening a halftone color photograph onto a container having an arcuate outer surface. Precise index marks are provided on the color art work and are utilized through the preparation of the silk screens and the setup of the screening apparatus to provide precise alignment as required to silk screen properly the several different colors onto the bottle. The machine has improved adjustments which allow the screens to be easily and quickly precisely aligned during setup so that the color halftone can be printed without overlap of the dots except where desired. The apparatus also includes automatic means for loading the bottle in position, for inflating the same, and for indexing each bottle to a precise location at the commencement of the screening stroke so that each color screen has the same relative position to the bottles.

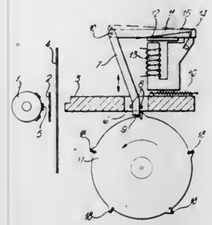
3,673,955
MEANS DETECTING NON-REBAILED PRINT HAMMERS TO RECYCLE THE BAILING MEANS
Robert H. Curtiss, Wayland; Richard Holzman, and Seldan A. Lazarow, both of Framingham, all of Mass., assignors to Nortec Computer Devices, Inc., Southboro, Mass.
Filed July 22, 1970, Ser. No. 57,103
Int. Cl. B41j *9/16*
U.S. Cl. 101—93 C **9 Claims**

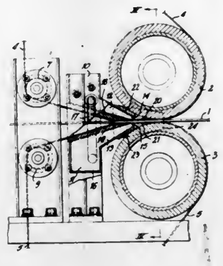


A printer is disclosed having a number of hammers aligned along a transverse axis which hammers are in a cocked position awaiting a print signal, means for simultaneously bailing all hammers not in the cocked position into such position and electrooptical means having an optical axis parallel with the transverse axis of the hammers for detecting if any one or more of the hammers have not been cocked.

3,673,956
HIGH SPEED PRINT MECHANISM WITH INTERPOSER ARM FOR PRINT HAMMER
Manfred Huber; Norbert Klimek, both of London, and Kenneth Herbert William Dee, Enfield, all of England, assignors to English Numbering Machines Limited, Enfield, Middlesex, England
Filed Jan. 22, 1970, Ser. No. 4,951
Claims priority, application Great Britain, Jan. 31, 1969, 5,307/69
Int. Cl. B41j *9/32*
U.S. Cl. 101—93C **3 Claims**

Printing mechanisms comprising print hammers driven by striker arms selectively struck by projections on a rotating striker drum so that characters on print wheels are selectively printed on a sheet interposed between the wheels and the hammers. The striker arms are normally resiliently retained out of the path of the drum projections and selective energization of electromagnets causes the striker arms to be displaced into said path and thus impacted thereby causing a print to be made. Energization of the electromagnets may be controlled through a pulse counter which is fed in dependence on the rotation of the striker drum.





3,673,957
HIGH SPEED PRINTER INCLUDING CHANGEABLE CODE MEANS
John Guzak, Jr., Arlington Heights, Ill., assignor to SCM Corporation, New York, N.Y.
Filed Feb. 17, 1969, Ser. No. 799,815
Int. Cl. B41j *7/54*; **G08c** *9/06*
U.S. Cl. 101—93 C **2 Claims**

There is disclosed a printer having a moving print symbol carrier with a plurality of print symbols, print hammer means selectively cooperable with the print symbols, a memory in the form of a code wheel, a reader for reading the memory, and a comparator for controlling initiation of operation of the print hammer means in response to a received signal when the print symbol carrier is in the proper position as determinted by the reader, the code wheel having one set of code elements corresponding to each print symbol, two sets of code elements being interchangeable.

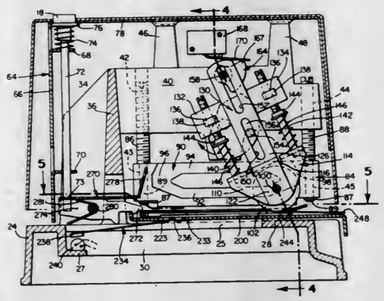
3,673,958
PROCESS AND MACHINE ACCORDING TO THIS PROCESS FOR PRINTING OR DYEING TEXTILES OR SHEET MATERIAL
Jan Maria G. R. Billiet, Beverlaai 55, Kortrijk, Belgium
Filed Sept. 19, 1969, Ser. No. 859,455
Int. Cl. B41l *13/08*
U.S. Cl. 101—122 **5 Claims**

Apparatus for printing or dyeing textiles or sheet material, whereby sheet material is printed and dyed by locally applying an endless screen on at least one face of said material by means of a pressure roll, color being continuously fed between said screen and said roll, in the immediate vicinity of the pressure line.

3,673,959
DAMPENING SYSTEM FOR LITHOGRAPHIC PRINTING PRESS
Leslie J. Jezuit, Lyons, and Harold R. Kollars, Elk Grove Village, both of Ill., assignors to North American Rockwell Corporation, Pittsburgh, Pa.
Filed April 22, 1970, Ser. No. 30,781
Int. Cl. B41l *25/00, 41/00*; **B41f** *35/00*
U.S. Cl. 101—148 **6 Claims**

A dampening system for a lithographic press which includes a resilient applicator roller in rolling engagement with a resilient intermediate roller which receives dampening fluid from a hard-surfaced hydrophilic roller. Riding on the applicator roller is a distributor roller. The applicator roller is arranged adjacent an ink form roller and the intermediate and distributor rollers are mounted on a subframe which is rockable about the axis of the applicator roller so that when the applicator roller is tripped away from the plate cylinder the intermediate roller may be disengaged from the hydrophilic roller while the distributor roller is swung into engagement with the ink form roller. All rollers on the downstream side of the hydrophilic roller are thus coupled to the ink system for convenient and simultaneous wash-up. The intermediate roller has means arranged approximately at right angles for adjusting the pressure applied by it to the applicator roller and to the hydrophilic roller. The intermediate roller is gear driven from the plate cylinder and serves to drive the applicator roller at press surface speed by frictional contact when the applicator roller is tripped away from the plate cylinder, with a slip clutch being interposed in the gear train so that the speed of the applicator roller is controlled by, and corresponds to, the surface speed of the plate when the applicator roller is in its working position.

3,673,960
TRAVELING CYLINDER PRINTER WITH PLATEN ROLLER DRIVEN IN CLOSED PATH
Vero Ricci, 106 E. Stiles Ave., Collingswood, N.J., and Edward P. Colalillo, 23 Colwick Road, Cherry Hill, N.J.
Filed Nov. 21, 1969, Ser. No. 878,814
Int. Cl. B41f *3/20*
U.S. Cl. 101—269 **16 Claims**



Credit card printing apparatus for printing information embossed in a credit card on a sales slip, comprising a floatingly mounted, resiliently biased roller platen, drive means to drive said platen through a closed travel path having a substantially planar printing section and a spaced section substantially parallel to the printing section. The roller drive includes a slide crank mechanism to impart the desired motion to the roller platen, which traverses a path which is preferably defined by suitable guide blocks. Switch means are provided to regulate the printing cycle in response to proper insertion of a credit card in the credit card tray, proper placement of the credit card tray, the position of the roller in the printing cycle, and optionally in response to the availability of credit. The credit card tray includes means to permit proper location of printed indicia from a credit card on a sales slip, irrespective of the direction in which the indicia face when inserted. Means may also be provided to automatically release the tray upon completion of the printing portion of the printing cycle.

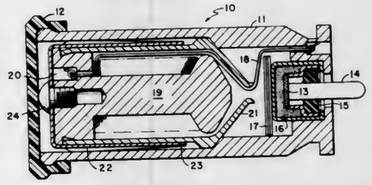
3,673,961
XEROTHERMOGRAPHIC PROCESS
James G. Jarvis, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed April 27, 1960, Ser. No. 25,108
Int. Cl. B41m *5/18*
U.S. Cl. 101—465 **22 Claims**

A reproduction method wherein a heat-sensitive layer, upon receiving a uniform electrostatic charge, is exposed to a thermal image of the document being copied, such exposure serving to selectively dissipate the uniform charge on the heat-sensitive layer to produce a latent electrostatic image thereon. The latent image is rendered visible by conventional xerographic development techniques.

3,673,962
LITHOGRAPHIC DUPLICATING METHOD AND LITHOPLATE MASTER THEREFORE
Burt K. Sagawa, Bloomington, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Sept. 23, 1970, Ser. No. 74,889
Int. Cl. G03f *7/02*
U.S. Cl. 101—467 **20 Claims**

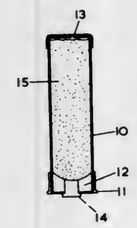
A high quality long run lithographic printing plate is produced by applying an alpha-naphthol first reactant at image areas to a lithoplate master containing as co-reactants for the alpha-naphthol both ionic iodide compound and ionic chromium compound, and heating the plate.

3,673,963
TRIP-LINE SYSTEM
Kenneth J. J. McGowan, Richmond, Ind., assignor to Avco Corporation, Richmond, Ind.
Filed March 5, 1968, Ser. No. 711,165
Int. Cl. F42b *9/02, 13/56*
U.S. Cl. 102—38 **2 Claims**



The invention is a method and an apparatus for laying trip lines for sensing disturbances which are used to detonate explosive devices such as land mines. A controlled charge is used to generate a force in excess of that required to throw the trip line a predetermined distance and a stainless steel wire capable of substantial elongation without rupture is simultaneously used to dissipate such excess force.

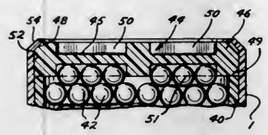
3,673,964
SHOTGUN POWDER PACKAGE
Charles Herbert Rigby, West Kilbride, Scotland, assignor to Imperial Chemical Industries Limited, London, England
Filed July 24, 1969, Ser. No. 844,484
Claims priority, application Great Britain, Aug. 28, 1968, 40,614/68
Int. Cl. F42b *9/26*
U.S. Cl. 102—39 **20 Claims**



A shotgun powder package comprising a reusable shotgun cartridge containing a plurality of powder charges, the mouth of the case being closed with a removable end-cap secured without distortion of the mouth.

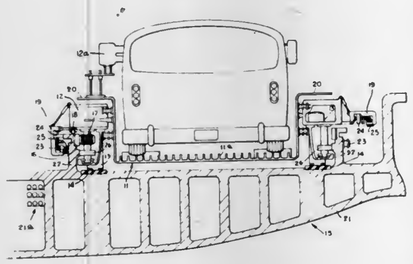
3,673,965
OVER-SHOT WAD FOR SHOTSHELLS
George L. Herter, Waseca, Minn., assignor to Herter's, Inc., Waseca, Minn.
Filed Sept. 8, 1969, Ser. No. 855,974
Int. Cl. F42b *7/08*
U.S. Cl. 102—95 **1 Claim**

An improved end closure for the mouth of a shotshell having a case formed from relatively hard plastic comprising an over-shot wad of relatively soft, yieldable plastic formed in the shape of a disc and having a beveled or angled peripheral edge against which the mouth end of the shell case is bent or crimped inwardly a very short distance in abutting and restraining engagement therewith. The disc-shaped closure wad includes an annular wall segment of extended length on



which said beveled surface is formed, said annular wall segment having a substantial thickness and being reinforced by a plurality of ribs extending radially of said closure wad.

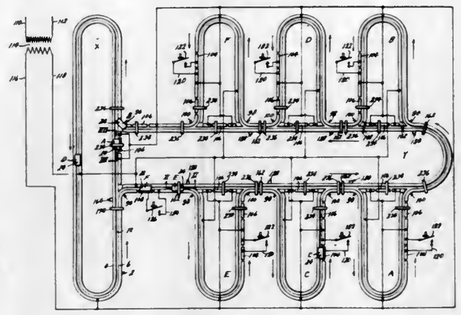
3,673,966
ELECTRIC GUIDEWAY TRANSPORTATION SYSTEM
David G. Wilson, Cambridge, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.
Filed Nov. 24, 1969, Ser. No. 879,318
Int. Cl. B60s *13/02;* **B61b** *13/02;* **B61l** *1/10*
U.S. Cl. 104—1 R **6 Claims**



A palletized automated transport vehicle is propelled and controlled along a guideway by means of a vertical rotary synchronous motor in combination with a vertical cog drive. The motor is fixed to the vehicle; the cog drive is supported by the guideway. The combination allows the vehicle to be driven at a constant or variable speed, and to be controlled with respect to headway or position, and therefore, with respect to other vehicles along the guideway.

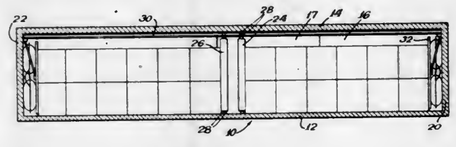
3,673,967
CONVEYOR SYSTEM FOR DRIVE-IN RESTAURANTS
Frederic F. Kropf, 2419 N. 72nd Place, Kansas City, Kans.
Filed Aug. 17, 1970, Ser. No. 64,378
Int. Cl. B61l *1/04*
U.S. Cl. 104—88 **3 Claims**

A conveyor system for drive-in restaurants consisting of a plurality of tray-supporting carriages which are electrically driven to move along a track system including rails from which they derive their power, said track system including a holding loop, a delivery loop branching from and returning to said holding loop, a series of station loops branching from and returning to said delivery loop, a switch operable to divert carriages from the holding loop to the delivery loop, said switch being operable to divert only a pre-selected carriage, a series of switches each operable to divert carriages from said delivery loop to one of said station loops, each of said latter switches being pre-set to divert only one of said carriages, and means operable to arrest the movement of each carriage in its



individual station loop and at other selected points of the track system.

3,673,968
PNEUMATIC SAFETY SYSTEM FOR VEHICLE LADING
Leroy W. Bertram, Wheaton, Ill., assignor to Unarco Industries, Inc.
Filed Dec. 30, 1969, Ser. No. 889,141
Int. Cl. B60p *7/14;* **B61d** *45/00*
U.S. Cl. 105—369 BA **10 Claims**

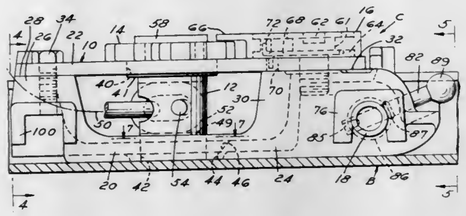


A system for protecting lading against endwise impacting in an ordinary side-loading vehicle body is achieved with movable panels positioned to engage the ends of the lading and with inflatable envelopes positioned to substantially simultaneously move the panels against the ends of the lading. The inflatable envelope means adjacent one end of the lading communicate with the envelope means adjacent the other end of the lading to provide that each envelope means serves as a pressure accumulator for the other envelope means when the lading tends to shift against the first envelope means. The panel is suspended from a fixed support by spaced elongated arms that provide for rocking and skewing of the panel at edge connections located at substantially mid-height of the panel. Bias means are provided which tend to deflate the envelopes and which are arranged to tend to exert oppositely-directed moments upon each panel about its mid-height pivot connections. One arrangement of inflatable envelopes operates to develop greater pressure against the portion of the lading below the mid-height pivot connections for the movable panel.

3,673,969
VEHICLE TIE-DOWN DEVICE
Israel E. Peimer, Huntington Woods; George H. Stol, Berkley, and Eugene D. Gotcher, Gibraltar, all of Mich., assignors to Whitehead & Kales Company, River Rouge, Mich.
Filed May 7, 1970, Ser. No. 35,498
Int. Cl. B60P *7/08;* **B61d** *45/00*
U.S. Cl. 105—369 A **14 Claims**

A vehicle tie-dow device comprising a carriage adapted to be locked in longitudinally adjusted position on a rail extend-

ing lengthwise of the deck of a transport, such as a rail car. The carriage has a rotatable shaft upon which is wound a chain adapted to engage ad hold a vehicle. The shaft has a lug normally preventing it from being withdraw from the carriage, but the shaft may be tilted to clear the lug ad permit the shaft



to be withdrawn or inserted. A ratchet gear ad pawl are provided for preventing shaft rotation in one direction. The pawl has a tab overlying the gear to prevent accidental withdrawal of the shaft when the gear is engaged by the pawl. A sprig pressed lock pin on the carriage secures the carriage to the rail.

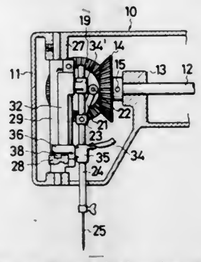
3,673,970
EARTHWORKING APPARATUS
John C. Hatcher, Charlotte, N.C., assignor to Cole Manufacturing Company, Charlotte, N.C.
Filed March 27, 1970, Ser. No. 23,155
Int. Cl. A01c 5/00; A01b 61/04
U.S. Cl. 111—85 **9 Claims**



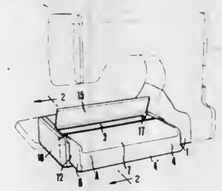
An earthworking apparatus which includes a supporting frame, a foot piece, preferably of bell crank configuration, pivotally suspended at one end thereof from the supporting frame, and having an earthworking tool operatively secured to the other end. A toggle mechanism interconnects the bell crank foot piece intermediate ends thereof with the supporting frame. Spring means are connected to the fulcrum of the toggle mechanism and restrainingly maintain the earthworking tool in an operative position and allows the toggle mechanism to trip upon encountering an excessive draft condition and move the earthworking tool to a non-earthworking inoperative position and urge the return of the earthworking tool to the operative position upon removal of the excessive draft condition.

3,673,971
ZIGZAG SEWING-MACHINE
Takeshi Ono, Kariya, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan
Filed Sept. 1, 1970, Ser. No. 68,604
Claims priority, application Japan, Sept. 4, 1969, 44/70139
Int. Cl. D05b 3/02
U.S. Cl. 112—158 R **1 Claim**

A zigzag sewing machine equipped with a timing mechanism for the needle bar and hook to equalize the related positions both when the latter is to take the loop at any oscillated position of the needle, said timing mechanism comprising a crank rod connected to the rotatable gear and to the needle bar for imparting the vertical reciprocation to the needle bar in accordance with the lateral oscillation thereof.

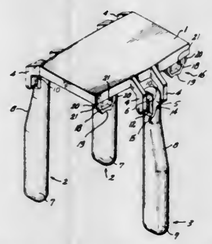


3,673,972
SEWING MACHINE WITH COMBINED ACCESSORY RECEPTACLE AND AUXILIARY BED
Kenneth H. Grange, London, England, assignor to Maruzen Sewing Machine Co., Ltd., Higashi-Mashi, Sata Moriguchi, Osaka, Japan
Filed July 16, 1970, Ser. No. 55,434
Claims priority, application Japan, Aug. 5, 1969, 44/661837
Int. Cl. D05b 75/00
U.S. Cl. 112—258 **7 Claims**



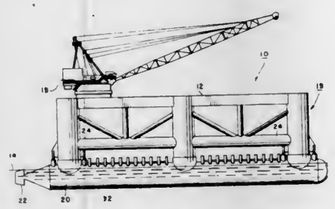
A sewing machine having a space in the base thereof in which is received a removable receptacle for containing machine accessories. The receptacle constitutes part of the bed of the machine and may be moved outwardly of the recess to provide an extension of the work surface area of the bed of the machine. A foldable member is mounted at one end of the machine to serve as an extension of the work surface area of the bed of the machine.

3,673,973
CONVERTIBLE-FLOAT FLOATING PLATFORM
Lawrence R. Glosten, 71 Columbia St., Seattle, Wash.
Continuation of Ser. No. 821,715, May 5, 1969, abandoned. This application March 29, 1971, Ser. No. 129,121
Int. Cl. B63b 35/00, 35/44
U.S. Cl. 114—0.5 D **1 Claim**



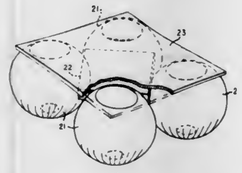
Elongated floats are connected adjacent to one end to opposite sides respectively of a floating platform with pivotal connections enabling the floats at opposite sides of the platform to jackknife from upright positions into recumbent generally parallel positions with portions of the upper sides of the floats remote from their respective pivotal connections engaging saddles on the underside of the platform.

3,673,974
METHOD AND MOBILE MARINE PLATFORM APPARATUS HAVING FLOATING SUBMERGED MAT STABILIZATION
James C. Harper, Houston, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.
Continuation-in-part of Ser. No. 872,314, Oct. 29, 1969, abandoned. This application March 17, 1970, Ser. No. 20,278
Int. Cl. B63b 35/00, 35/44
U.S. Cl. 114—0.5 D **20 Claims**



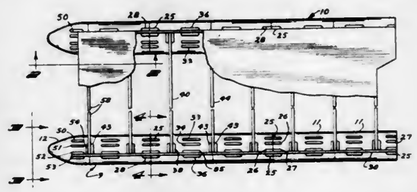
Three levels in a vertical plane, being an elevated work platform, a middle hull and a submersible lower hull are connected together by six telescoping vertical support columns. The lower catamaran hull consists of two pontoon-type tubes connected together by a mat having freeing holes therein to reduce the mat's resistance in the vertical plane when submerged. The middle hull is maintained above the water level when the lower hull is at the surface of the water, but settles down into the water to provide buoyant support when the lower hull is submerged. The lower hull, being buoyant and ballastable, is raised or lowered in the water by adding or removing water ballast. Action snubbers are provided to work in conjunction with the vertical columns to prevent any quick or fast relative movement between the lower hull and the combined middle hull and upper deck structure. An alternative embodiment utilizes the middle buoyant hull to floatably support a three column structure. Other alternative embodiments include non-telescoping columns, single column platform apparatus and means for varying the amount or number of freeing holes used to affect the mat resistance in the water.

3,673,975
FLOATING PLATFORM
Erwin S. Strauss, 1015 Laguna St., Suite 10, Santa Barbara, Calif.
Filed Jan. 26, 1970, Ser. No. 5,486
Int. Cl. B63b 35/44
U.S. Cl. 114—43.5 **9 Claims**



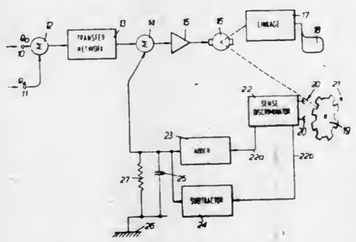
A floating platform including a plurality of air cells for supporting the platform is described. Each air cell is formed of a large, circular piece of a heavy gauge polyethylene type of material. The material is "pursed" and inverted so that the trapped air cannot escape through the opening remaining after the pursing operation. In addition, means are provided for adding air to the air cells when they contain an insufficient amount of air. The air cells are protected and maintained in position by a skirt that hangs downwardly from the outer edges from the platform. A building or other suitable structure is constructed on the platform. In addition, swingable stairs are provided for mounting the platform from the water level. Further a secondary polyethylene liner is located inside each of the air cells and is deployed if the primary air cell develops a leak.

3,673,976
SECTIONALIZED PONTOON APPARATUS
Richard W. Reynolds, 110 Mayo Drive, Burnsville, Minn.
Filed Nov. 21, 1969, Ser. No. 878,627
Int. Cl. B63b 35/38
U.S. Cl. 114—61 **16 Claims**



A pontoon boat, raft, dock or the like made from a plurality of pontoon sections having longitudinally extending tabs and transversely extending tabs, stringers bolted to longitudinally aligned longitudinal tabs, cross pieces bolted to the transverse tabs and a deck. Other than for the nose cone section for a boat, the pontoon sections have slotted end portions to receive a block to minimize twisting of adjacent pairs of pontoon sections. Further, the nose cone sections are interchangable and each of the other pontoon sections are of the same construction.

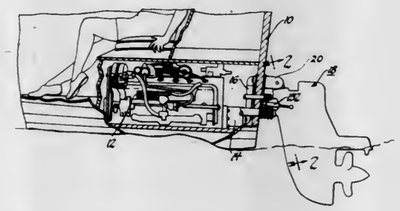
3,673,977
AUTOMATIC STEERING SYSTEMS
Dennis Alfred Hendley, London, England, assignor to Decca Limited, London, England
Filed Oct. 19, 1970, Ser. No. 81,669
Int. Cl. B63h 25/04
U.S. Cl. 114—144 **3 Claims**



A steering system for a seagoing vessel includes a motor which drives a rudder in accord with a command signal formed by combining a steering signal and a feedback signal representing an integration of the driving movements of the

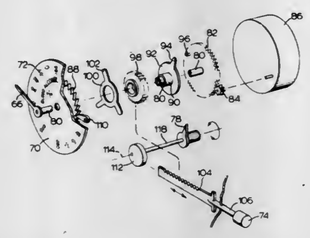
motor. The feedback signal is held in a capacitor which is associated with a leakage resistor so that the feedback signal automatically decreases independently of the movements of the rudder. The system permits a rapid response of the system for ordinary maneuvers and long term compensation for the effects of asymmetric loads or strong tides.

3,673,978
OUTBOARD DRIVE UNIT FOR BOATS
Robert W. Jeffery, Franklin; Robert A. Brown, Jr., Goodrich, and Allen F. Cullen, Grosse Pointe Farms, all of Mich., assignors to Sperry Rand Corporation, Troy, Mich.
Filed Aug. 12, 1970, Ser. No. 63,243
Int. Cl. B63h *25/42*
U.S. Cl. 115—35 **10 Claims**



An outboard propulsion drive unit for a boat with an inboard engine utilizes a hydraulic pump on the engine hydraulically connected with a universal swivel mounting which receives an outboard propulsion unit to provide steering about a generally vertical axis and up-tilt motion about a transverse horizontal axis. The swivel mounting has a pair of hydraulic conduits extending through the bearing journals of both axes. The propulsion unit has a hydraulic motor geared to drive the propeller. A reservoir and a charging pump are mounted in the propulsion unit, the latter driven by the hydraulic motor.

3,673,979
ALCOHOL LEVEL INDICATOR
Hans Kunov, Toronto, Ontario, Canada, assignor to said Gordon, by said Kunov, Toronto, Ontario, Canada
Continuation-in-part of Ser. No. 94,255, Dec. 2, 1970, abandoned. This application Oct. 27, 1971, Ser. No. 192,888
Int. Cl. G09f *9/00*
U.S. Cl. 116—129 **7 Claims**



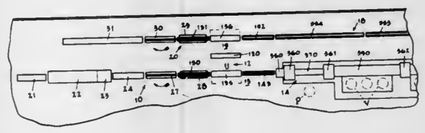
The device has two hands, one which points to a scale labelled "blood alcohol level" and the other which points to a scale labelled "body weight." A knob is provided for turning the "body weight" hand to the subject's weight and a second knob is provided for registering drinks consumed. Upon consumption of each drink, the subject presses the second knob. In one embodiment of the invention, pressing of the second knob causes the "blood alcohol level" hand to advance an increment and in the other embodiment the "blood alcohol level" scale incrementally advances. An adjustment means cooperates with the second knob to limit the advance of the hand or scale according to the subject's weight so that immediately following the advance, the "blood alcohol level" hand points to the approximately true alcohol level in the subject's blood stream. A watch-like mechanism regresses the hand or scale at a constant rate corresponding to the rate of disappearance of alcohol from the blood stream.

3,673,980
PROTECTIVE AND SUPPORTING MEANS FOR APPARATUS FOR CONTINUOUSLY COATING STEEL STRIP
Theodore H. Krengel, 637 Park Drive, Flossmoor, Ill., and Richard L. Pool, 3101 W. 173rd St., Hazelcrest, Ill.
Filed Oct. 30, 1970, Ser. No. 85,487
Int. Cl. B05c *11/00*
U.S. Cl. 118—6 **15 Claims**



In order to operate a continuous steel forming and coating line at high speeds, supports for the moving steel are provided at various points such as at a location where it has its surface prepared to receive the coating and at the coating station. In addition, means are provided to shut down the line in the event there is a jam or binding causing the steel to buckle or bend creating a hazard.

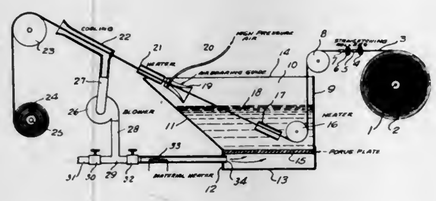
3,673,981
FILMING APPARATUS
Robert R. Beckham; Emmett L. Walters; Jack G. Brown; Kenneth M. De Rose, and Joseph D. Ryan, all of Toledo, Ohio, assignors to Libbey-Owens-Ford Company, Toledo, Ohio
Division of Ser. No. 664,440, Aug. 30, 1967, Pat. No. 3,495,724, which is a continuation-in-part of Ser. No. 568,514, July 29, 1966, abandoned. This application May 13, 1969, Ser. No. 862,998
Int. Cl. B05c *11/00*
U.S. Cl. 118—6 **68 Claims**



System for the vacuum deposition of thin films on sheet material including a plurality of vacuum chambers arranged in end-to-end relation to one another, one of the chambers constituting a filming chamber, valve compartments disposed between adjacent chambers for placing them in communication when open and separating them when closed together with similar compartments located at the respective entry and exit ends of the plurality of chambers, conveying means for moving sheet material through successive chambers and including carriers for clamping individual sheets along their upper edges and maintaining same in a substantially vertical position, means responsive to the positioning of the material in the chambers to permit opening and closing of the valve compartments in predetermined sequence, and means outwardly

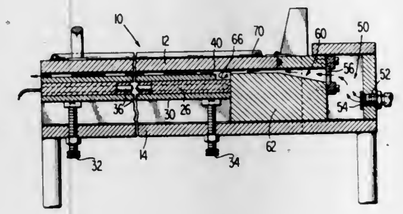
of the entry and exit valve compartments for aligning and positioning the sheet material for travel through the chambers and subsequent unloading thereof.

3,673,982
WIRE COATING PROCESS AND APPARATUS
Nolan W. Rutledge, Rt. 1, P.O. 700, Fort Lauderdale, Fla.; Ronald H. Mercer, 2900 Floral Road, Lake Worth, Fla., and Herbert Charles Hill, Jr., 213-12th Terrace, Indialantic, Fla.
Filed Dec. 30, 1969, Ser. No. 889,042
Int. Cl. B05b *1/24*
U.S. Cl. 118—641 **10 Claims**



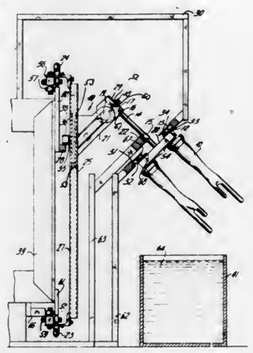
The present apparatus is for coating one or more strands with fusible particles, which strands are fed in a continuous manner into the open top of a chamber having a fluidized bed of coating particles therein and which strands are heated in their travel to said fluidized bed whereby said particles are fused on said strands building up a coating on the strands which are fed from the open top of said chamber each through an air bearing guide to a heater, cooler and then to a take-up roll therefor.

3,673,983
HIGH CAPACITY DEPOSITION REACTOR
Kurt Strater, Brookside; William Bernard Hall, Belle Meade; Eugene Michael Mihalick, Flemington, all of N.J., and William Charles Stever, Kellers Church, Pa., assignors to RCA Corporation
Filed April 27, 1970, Ser. No. 32,301
Int. Cl. C23c *13/08*
U.S. Cl. 118—48 **1 Claim**



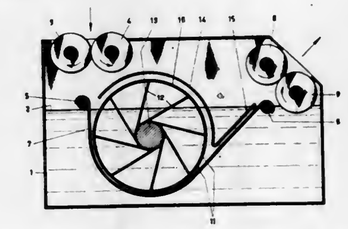
A deposition reactor including a housing having a gas passageway therein. A heater plate forms the bottom surface of the gas passageway and has a heated surface within the passageway upon which substrates may be placed. Means are provided for passing a flow of gas with a controlled turbulence in a laminar mode over the substrates, while the housing and passageway are cooled so that only the heater plate and the substrates are at the elevated temperature.

3,673,984
DIP COATING MACHINE
Raymond Francis Coulombe, Milford, Conn., assignor to Dart Industries Inc., Los Angeles, Calif.
Filed Aug. 28, 1970, Ser. No. 67,881
Int. Cl. B05c *3/00*
U.S. Cl. 118—416 **6 Claims**



A dip coating machine:
wherein quick release of dip forms is accomplished by means of a rapidly removable pin,
wherein the dip form may be oriented about its rotational axis by means of at least two pinions mounted to a single axle, one end of the axle being mounted to the form, at least one of the pinions having a toothless peripheral portion and a rack mounted to the frame for each pinion so that movement of the form along the rack causes the pinions to roll in their respective rack thus causing the form to rotate and so that a pinion having a toothless portion will stop rotating at a predetermined position when it has rotated so that its toothless portion faces its rack, provided the other racks have gaps at that point; and
wherein a plurality of forms may be lowered into and removed from a dipping solution by a single mechanism while permitting each form to be individually rotated by means of a separate axle for each form passing through a movable block, each axle being provided with an individual rotating device.

3,673,985
DEVELOPMENT APPARATUS FOR ELECTROPHOTOGRAPHIC COPIES
Wilhelmus Emilius Maria Dols, Venlo, Netherlands, assignor to Van Der Grinten N.V., Venlo, Netherlands
Filed June 18, 1970, Ser. No. 47,524
Claims priority, application Netherlands, June 24, 1969, 6909655
Int. Cl. G03g *13/00*
U.S. Cl. 118—637 **4 Claims**



An apparatus for liquid developing of electrophotographic copies has a passage for the copies through the liquid in the

reservoir, said passage being bordered on one side by a hollow rotating cylinder having internal blades for pumping the liquid through openings in the cylinder into said passage.

3,673,986
METHOD AND MATERIALS USED FOR HATCHING BRINE SHRIMP

Harold N. Braunhut, c/o Honey Toy Industries, Inc. 200 Fifth Ave., New York, N.Y.

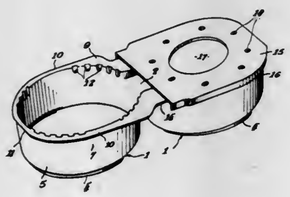
Filed Nov. 12, 1970, Ser. No. 89,034
Int. Cl. A01k *61/00*
U.S. Cl. 119—2 **10 Claims**

A method and materials used to provide an aquatic life habitat for hatching brine shrimp or similar crustaceans in tap water to give the appearance of instantaneous hatching. To a convenient amount of tap water a dry conditioning mixture comprising iodine-free sodium chloride, sodium sulfate, sodium carbonate, magnesium sulfate, magnesium chloride, potassium chloride is added. The conditioning mixture also contains a dehydrating agent such as calcium chloride, a chlorine removing agent such as sodium thiosulfate, and a quantity of dried eggs of Artemia salina type or the like. The aqueous medium is allowed to stand at room temperature for a period of 24 to 36 hours. To this treated, aged and purified aqueous habitat medium, a second mixture comprising magnesium sulfate, borax and sodium crystals, yeast, additional dried eggs, a dehydrating agent and a water-soluble dye is added.

3,673,987
LIVESTOCK CONTAINER

Clive R. Fletcher, Colchester, England, assignor to Bakelite Xylonite Limited

Filed July 15, 1970, Ser. No. 54,923
Claims priority, application Great Britain, July 18, 1969, 36,288/69
Int. Cl. A01k *1/02, 31/18*
U.S. Cl. 119—19 **10 Claims**

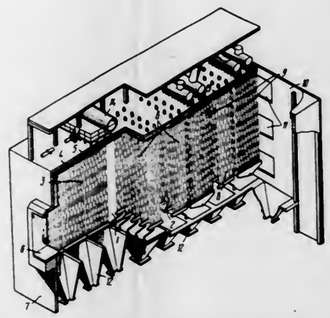


A container for transporting livestock which comprises at least two livestock containing chambers connected together in side-by-side relation each chamber being cup-shaped and of substantially circular cross-section and having a lid-retaining flange round its open end and a number of ventilation apertures arranged round the upper portion of its wall below the said flange, and a lid for each chamber, said lid having a dependent flange for engagement with the lid retaining flange of the chamber, the flange on the lid being of sufficient depth to cover the wall of the chamber to a level below the level of the bottom of the ventilation apertures and being so formed that when the chamber is covered with the lid a space through which air can flow into the chamber via the apertures is left between the wall of the chamber and the flange on the lid.

3,673,988
EXHAUST HEAT BOILER

Zalman Leivikovich Berlin; Oleg Nikolaevich Bagrov, both of Moscow; Gennady Vasilievich Maslovsky, Belgorod; Anatoly Gavrilovich Serkov, Belgorod, and Viktor Yakovlevich Yakimovich, Belgorod, all of U.S.S.R., assignors to Gosudarstvenny naucho-issledovatelsky institut tsvetnykh metallov, Moscow and Belgorodsky Kotlo-Stroitelny Zavod, Belgorod, U.S.S.R.

Filed Feb. 10, 1971, Ser. No. 114,318
Int. Cl. F22b *1/18*
U.S. Cl. 122—7 R **2 Claims**



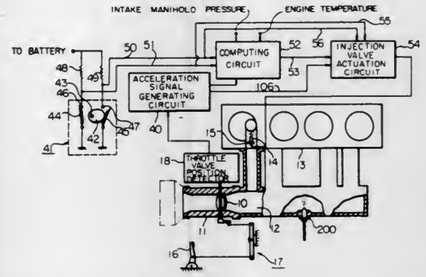
The invention relates to an exhaust heat boiler used in conjunction with the furnaces for sintering or melting sulphide ores and concentrates.

A characteristic feature of the boiler consists in making some of the evaporating and blowoff tubes of the evaporator platens from two coaxial tubes. Besides, the holes for the discharge of the cooled gas are arranged in at least one vertical row in the rear end wall of the boiler.

3,673,989
ACCELERATION ACTUATING DEVICE FOR FUEL INJECTION SYSTEM

Shigeo Aono; Nobuzi Manaka, both of Yokosuka; Tokuichi Inagaki, Yokohama; Yasuo Nakajima, Yokosuka, and Yukihiro Etoh, Yokohama, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Oct. 19, 1970, Ser. No. 81,864
Claims priority, application Japan, Oct. 22, 1969, 44/84428; Oct. 22, 1969, 44/84538; Oct. 22, 1969, 44/84539; Oct. 22, 1969, 44/84540
Int. Cl. F02b *3/00*; **F02m** *13/04*
U.S. Cl. 123—32 EA **7 Claims**

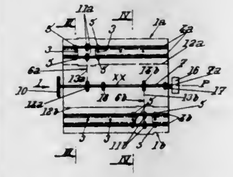


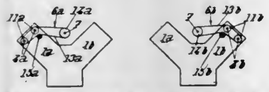
An acceleration device adapted for incorporation into an automobile fuel injection system so as to provide for an instantaneous increase in the quantity of injection fuel supplied to the individual cylinders. A throttle valve position detector or intake pressure sensor is adapted to detect the driver's effort to effect acceleration. An acceleration signal generating circuit is connected to the throttle valve position detector or intake pressure sensor, so that upon detection of the driver's effort the circuit generates a first and second acceleration signals. The first acceleration signal is supplied to an injection valve actuation circuit so as to energize the injection valve, thereby providing an enriched air-fuel mixture for acceleration. The second acceleration signal is applied to a computing circuit to increase the width of an injection pulse signal generated thereby. The increase in the width of the injection pulses also causes the increase in the quantity of injection fuel supplied to the cylinders. The acceleration signal generating circuit may include a low temperature compensating unit comprising a thermistor and adapted to further enrich the air-fuel mixture for acceleration during the warming-up process. A starting injection valve may be actuated for acceleration purposes in response to the first acceleration signal.

3,673,990
INTERNAL COMBUSTION ENGINES WITH AT LEAST TWO ROWS OF CYLINDERS WITH OVERHEAD CAMSHAFTS

Giulio Alfieri, Modena, Italy, assignor to Officine Alfieri Maserati, Modena, Italy

Filed Aug. 20, 1970, Ser. No. 65,431
Claims priority, application Italy, Aug. 25, 1969, 4752 A/69
Int. Cl. F01l *1/00*; **F02b** *75/22*
U.S. Cl. 123—52 R **3 Claims**





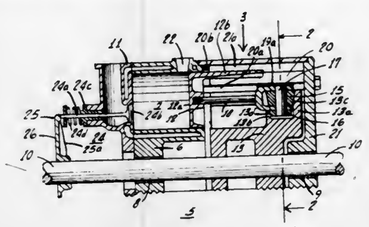
A V-form internal combustion engine includes two rows of cylinders with overhead camshafts driven by an intermediate shaft arranged between the two rows of cylinders parallel to the latter and itself rotated by the crankshaft of the engine through a generally reducing transmission device. The two transmission devices include two drive gears keyed on the intermediate shaft at positions selected so that the corresponding driven gears borne by the camshafts are situated between two cams relating to two successive cylinders of the corresponding row of cylinders, whereby reduction in the length of the camshafts and in the engine cylinder heads is effected.

3,673,991
INTERNAL COMBUSTION ENGINE

John Winn, 4423 N. Sheridan Road, Chicago, Ill.

Filed May 22, 1970, Ser. No. 39,930
Int. Cl. F02b *75/26*
U.S. Cl. 123—58 A **2 Claims**

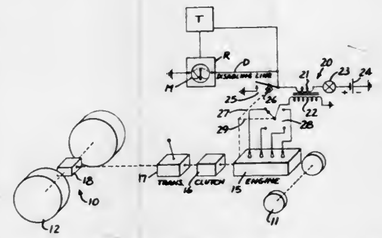
The detailed description and specification of this invention discloses a new four-stroke cycle internal combustion engine which is a new combination of previously used practices and a new method of inducting a charge into a cylinder in the course of an intake stroke. This method inducts a much greater charge, at a given high speed of the engine, than that inducted into any of today's engines of the same displacement, without the use of a supercharger, and eliminates the intake valves and the valve linkage used in conventional engines.



3,673,992
COMBINED TACHOMETER AND MAXIMUM SPEED LIMITING DEVICE

Vernon C. Westberg, 22 S. State, Elgin, Ill.

Filed Feb. 8, 1971, Ser. No. 113,170
Int. Cl. F02p *9/00*
U.S. Cl. 123—118 **17 Claims**



A combined tachometer and maximum speed limiting device for cutting off the engine of a hot rod vehicle for a predetermined short time interval upon reaching a predetermined limiting speed to signal to the driver that the transmission should be shifted to the next higher gear and to provide time to make the shift. A tachometer receiver in the form of a meter type relay provides contacts which are closed at a set maximum engine speed. The meter coil is energized by variable direct voltage from a tachometer transmitter which is coupled to the primary of the ignition coil of the vehicle. Closure of the meter contacts energizes an output relay having contacts which are connected to short out the ignition system. Capacitor discharge means are provided for insuring positive closure of the meter contacts and for delaying drop-out of the output relay for a predetermined but adjustable time interval. In an alternate embodiment means are provided for cutting out the engine until intentionally reset.

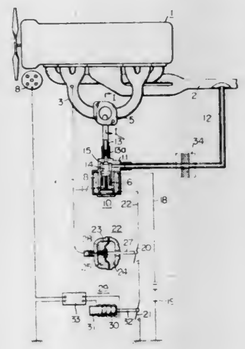
3,673,993
AIR-POLLUTION PREVENTIVE SYSTEM FOR MOTOR VEHICLES

Yasuo Nakajima, Yokosuka; Yoshimasa Hayashi, and Kunihiko Sugihara, both of Yokohama, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Jan. 19, 1970, Ser. No. 3,783
Claims priority, application Japan, Jan. 20, 1969, 44/3498; July 31, 1969, 44/60028
Int. Cl. F02m *25/06*
U.S. Cl. 123—119 A **4 Claims**

An air-pollution preventive system for use with an internal combustion engine of motor vehicles, which system is adapted

to reduce the concentration of nitrogen oxides in the exhaust gases emitted from the engine during the city-road driving of the motor vehicle, wherein the exhaust gases are recirculated from the exhaust manifold into the intake manifold and cooled therein when, and only when, the vacuum in the intake



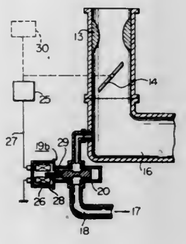
manifold is lower than a predetermined level and concurrently the engine is driven at a speed within a predetermined range, such predetermined level and range being determined as corresponding to the vehicle speed at which the motor vehicle is accelerated or climbs up a hill as frequently experienced during city-road driving.

3,673,994

CRANKCASE BLOW-BY GAS RECIRCULATING DEVICE

Shigeo Aono, Yokosuka City, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed June 30, 1970, Ser. No. 51,293
Claims priority, application Japan, July 4, 1969, 44/52472
Int. Cl. F02m 7/00
U.S. Cl. 123—119 B **5 Claims**



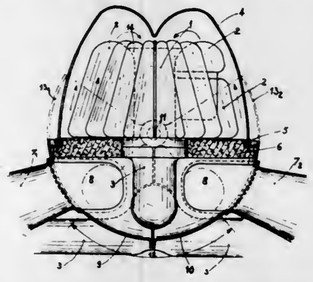
A crankcase blow-by gas recirculating device which is adapted to interrupt the recirculation of the blow-by gases from the engine crankcase to the combustion chambers during deceleration and idling when the quantity of unburned hydrocarbons in the engine exhaust gases significantly increases, which device is provided with flow regulating means comprising a valve element operatively interposed in the blow-by gas recirculating passage and means detecting the decelerating and idling conditions and actuating the valve element when the decelerating or idling condition is detected. Such decelerating and idling conditions may preferably represented by the angular position of the throttle valve, vacuum in the intake manifold, vehicle speed, or any combination of these. The device of the invention may be used in combination with an internal combustion engine having a carburettor or having, in lieu of the carburettor a fuel injection system.

3,673,995

INDUCTION AIR TEMPERATURE REGULATORS

Jean-Pierre Mangin, Billancourt, France, assignor to Regie Nationale Des Usines Renault, Billancourt and Automobiles Peugeot, Paris, France

Filed May 18, 1970, Ser. No. 38,363
Int. Cl. F02m 31/06, 15/00
U.S. Cl. 123—122 D **9 Claims**



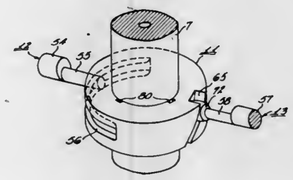
Induction air temperature regulator for internal combustion engines, wherein the carburetor is enclosed in a bell-shaped casing, the air sucked through the base of said casing flowing upwards through an annular filter element and along the outer surface of the carburetor, thus ensuring a heat exchange therewith before being sucked through the carburetor to form the combustion mixture. Spherical shutters surround the lower portion of the bell casing and are movable to control the ratio of heated/unheated air entering the carburetor.

3,673,996

FUEL INJECTION PUMP TIMING AND METERING ARRANGEMENT

Alexander Dreisin, Olympia Fields, Ill., assignor to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.

Filed Oct. 2, 1970, Ser. No. 77,407
Int. Cl. F02m 39/00
U.S. Cl. 123—139 AP **10 Claims**



A fuel injection pump for an internal combustion engine having a control sleeve operated by separate metering and timing control elements.

3,673,997

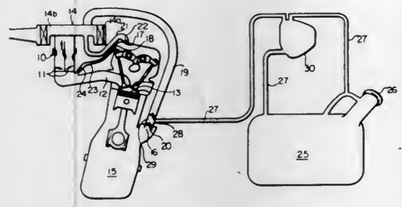
AIR-POLLUTION PREVENTING SYSTEM

Hiraki Sawada, Tokyo, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Feb. 8, 1971, Ser. No. 113,204
Claims priority, application Japan, Feb. 13, 1970, 45/12349
Int. Cl. F02m 59/00; F02b 33/00
U.S. Cl. 123—136 **4 Claims**

An air-pollution preventive system for an internal combustion engine of a motor vehicle, adapted to eliminate the

evaporative gases emitted from the fuel storage tank into the atmosphere for thereby reducing air pollution. The evaporative gases produced in the fuel storage tank are introduced to the crankcase of the engine and admitted to the combustion



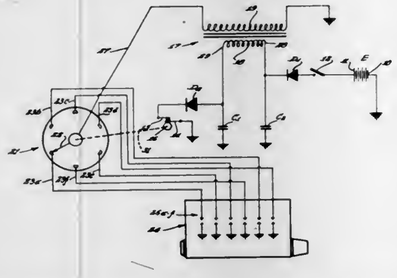
chamber of the engine through the carburetor of the engine together with the blow-by gases in the crankcase. The flow of the evaporative losses into the crankcase is controlled by valve means adapted to be responsive to pulsations in the pressure in the crankcase of the engine.

3,673,998

ELECTRONIC IGNITION

John P. Phillips, 625 Esther St., Michigan City, Ind.

Filed June 11, 1970, Ser. No. 45,300
Int. Cl. F02p 1/00
U.S. Cl. 123—148 E **4 Claims**



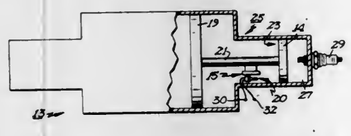
An ignition system for an internal combustion engine including a pair of unilateral current devices and a pair of condensers connected in circuit with the primary of the ignition coil so as to obtain an improved ignition system.

3,673,999

ELECTRICAL APPARATUS FOR INITIATING COMBUSTION IN FREE PISTON ENGINES

James G. Lacy, and John V. Byrne, both of Dublin, Ireland, assignors to Anton Braun, Minneapolis, Minn.

Filed Aug. 24, 1970, Ser. No. 66,215
Int. Cl. F02p 1/00
U.S. Cl. 123—149 H **11 Claims**



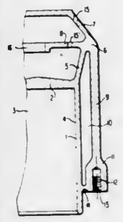
Electrical apparatus is disclosed for initiating and controlling combustion in free piston engines having a power piston freely reciprocating within a power cylinder of the engine and alternately expanding and compressing gases in a combustion chamber within the power cylinder. A velocity probe in the form of a magnet arranged to move with the power piston and a sensing coil fixed to the housing of the free piston engine provides an electrical signal indicating the instantaneous value of the velocity of the power piston of the free piston engine. This electrical signal from the velocity probe is applied to a Schmitt trigger through a suitable electrical connection such as a voltage divider network or preferably a resistor-capacitor and diode network, and the Schmitt trigger provides an electrical timing signal to conventional means for initiating successive combustion power strokes within the engine. Using the electrical apparatus of the present invention, combustion is initiated for each power stroke at a point in time related to the velocity of the power piston, and thus to the time at which the power piston reverses direction, without the necessity of regard to the physical position, i.e., linear location, of the power piston along its path of movement within the power cylinder. Specifically, the Schmitt trigger is set in one condition when the piston velocity increases to a predetermined level as the piston accelerates during the first part of its movement toward a firing position. Then, as the piston slows down while approaching its reversal for the start of the power stroke, the decrease in piston velocity to a predetermined level sets the Schmitt trigger in another condition to cause a spark igniting another combustion initiating action. Additional electrical circuitry is included which may be used to aid in starting free piston engines.

3,674,000

RECIPROCATING PISTON INTERNAL COMBUSTION ENGINE WITH A CYLINDER HEAD AND CYLINDER HOUSING CONSISTING OF ONE BLOCK

Josef Reisacher, Wendlingen (Neckar); Frederich Noltemeyer, Schmiden (Wurttemberg), Germany, and Reiner Dziggel, Esslingen-Weil, all of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart-Untertuerkheim, Germany

Filed July 21, 1970, Ser. No. 56,860
Claims priority, application Germany, July 26, 1969, P 19 38 133.0
Int. Cl. F02f 1/20
U.S. Cl. 123—193 CH **14 Claims**



A reciprocating piston internal combustion engine with a cylinder head and a cylinder housing consisting of one single block, in which the cylinder housing essentially consists of an inner wall defining together with a cylinder head bottom the cylinder space and of an outer wall separated from the inner wall by a cooling space; the cylinder housing is connected with the crankcase by way of bolts or the like whose center longitudinal axes are disposed in or very close to the center of the outer wall while the outer wall extends up to connecting places disposed above the cylinder head bottom; the cylinder head bottom is supported at these connecting places by way of support walls.

3,674,001
ARCHERY BOW IN COMBINATION WITH DRAW FORCE MULTIPLYING MEANS

Otis H. Hitt, Archbold, Ohio, assignor to Hit Archery Co., Inc., Archbold, Ohio

Filed Dec. 3, 1970, Ser. No. 94,723
Int. Cl. F41b 5/00
U.S. Cl. 124—24 4 Claims

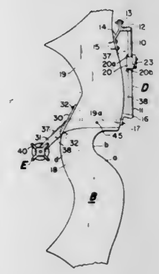


An archery bow having master limbs with auxiliary limbs extending from the belly side of the bow to a position rearwardly of the master limbs. The auxiliary limbs are positioned so as to resist the flexing of master limbs during the draw of a bow string, and thus increase the projectile propelling force of a bow.

3,674,002
ADJUSTABLE ARCHERY SIGHT

Clyde Diamond, Sr., R.D. #1, Box 234, Rices Landing, Pa.

Filed Oct. 19, 1970, Ser. No. 81,817
Int. Cl. F41b 5/00
U.S. Cl. 124—30 R 9 Claims

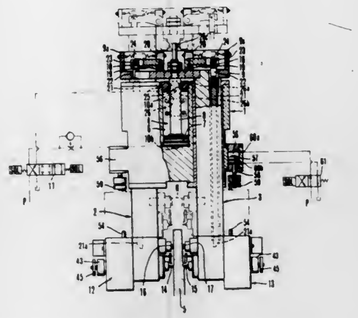


Sighting mechanism is provided that enables an archer to make a variable sight adjustment while holding the bow in one hand and gripping an arrow as tensioned by the bow string with the other hand. The sighting mechanism has a vertically movable sighting member mounted on the belly of a bow and a reel or drum mounted on the back of a bow. Connected between the sighting member and the reel are two filaments. One filament operates on the sighting member to move it upwardly when the reel or drum is rotated in one direction, and the other filament operates on the sight member to move it downwardly when the reel is rotated in the opposite direction.

3,674,003
APPARATUS FOR DRESSING GRINDING WHEELS

Ichizo Kakumu, and Susumu Oshima, both of Aichi, Japan, assignors to Toyoda Koki Kabushiki Kaisha, Aichi-ken, Japan

Filed Feb. 2, 1971, Ser. No. 111,843
Claims priority, application Japan, Feb. 21, 1970, 45/14696
Int. Cl. B24b 53/02
U.S. Cl. 125—11 H 11 Claims

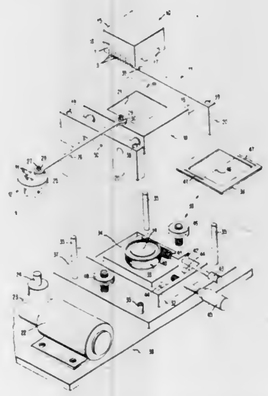


In apparatus for dressing the opposite surfaces of a grinding wheel comprising rams mounted to be slidable along the opposite side surfaces of the grinding wheel, feed means for feeding dressing tools mounted on the rams toward the side surfaces of the grinding wheel in an interlocked relationship with the movement of the rams, there is providing a sizing device for measuring the side surfaces of a grinding wheel to control the feed of dressing tools.

3,674,004
PRECISION CUTTING APPARATUS AND METHOD OF OPERATION THEREFOR

Johannes Grandia, Putnam Valley, and Robert Lewis Rohr, Scarsdale, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 30, 1969, Ser. No. 889,277
Int. Cl. B28d 5/04
U.S. Cl. 125—16 R 4 Claims

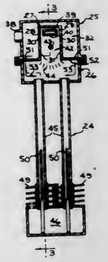


A precision cutting apparatus including a cutting tool which consists of at least a single flexible cutting element and means coacting with said cutting element for holding it in a rigid, unstressed condition is disclosed. The flexible cutting element is ordinary spring steel while the means for holding the cutting element in a rigid, unstressed condition is a block of dimensionally-stable pyrolytic graphite containing a groove in which the spring steel cutting element is receivable. Also disclosed, is translation means for applying rectilinear motion to the cutting tool, and a means for aligning the work piece relative to the cutting tool. The grooved graphite block, in addition to providing a dimensionally stable holder, also provides a porous material into which an adhesive may be introduced to retain the cutting element within the grooves. Heating the graphite block liquefies an appropriate adhesive and permits the removal of an old cutting element and its replacement with a new cutting element. A method of operating the cutting apparatus is also shown including an alignment step which permits extremely precise cutting. The apparatus and method taught have particular utility in the semiconductor area where the ability to dice with great precision, for example, greatly enhances the yield of usable semiconductor chips.

3,674,005
GAS-FIRED SPACE HEATER MEANS

Richard C. Barnett, Tyler; Joe W. Dark, Flint, both of Tex., and James L. Schulze, Sr., Louisville, Ky., assignors to General Electric Company, by said Barnett and Dark

Filed Sept. 30, 1970, Ser. No. 76,671
Int. Cl. F24h 3/02
U.S. Cl. 126—91 A 20 Claims



This invention provides improved gas-fired heater means for supplying heat to a space, such as a room, house, building or the like. The space heater means include highly efficient heat exchanger means for transferring heat generated by the combustion of a fuel gas-air mixture to an air stream circulated between the heat exchanger means and the space, in combination with pressurized combustor means for mixing fuel gas with pressurized combustion air and igniting that mixture to produce a highly intense heat source flame which is discharged into the heat exchanger means inlet through hollow interconnecting conduit means. The present invention provides novel means for directing a heat-insulating layer of pressurized fluid between the flame and interior surfaces of the interconnecting conduit means such that these conduit surfaces are protected by the fluid layer against adverse heat-fatiguing action by the intensely hot flame.

3,674,006
APPLIANCE FOR INTERSTITIAL RADIATION OF ORGANS IN THE BODY

Bernt Arne Gustaf Holmer, Nykoping, Sweden, assignor to Aktiebolaget Atomenergi, Stockholm, Sweden

Filed May 1, 1969, Ser. No. 820,740
Claims priority, application Sweden, May 2, 1968, 5953/68
Int. Cl. A61n 5/00
U.S. Cl. 128—1.2 2 Claims

An appliance for the interstitial radiation of organs in the body of man or animals comprises a cannular tube which contains a radioactive compound and which is attached to the end of a rod provided with a handle. A sheath can be adjustably displaced along the cannular tube and rod and is arranged to tightly surround the tube and rod. The sheath is radiation-absorbing at least at the outer part, which can be brought to cover, more or less, the radioactive compound in the cannular tube.



3,674,007
CULTURE COLLECTING APPARATUS

John H. Freis, 3111 Sunnyside Drive, Rockford, Ill.

Filed June 4, 1970, Ser. No. 43,361
Int. Cl. A61b 7/24, 17/42, 17/50
U.S. Cl. 128—2 3 Claims

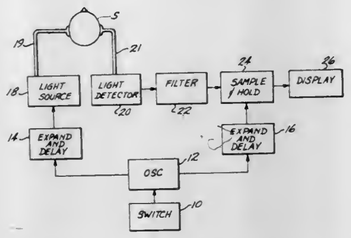


A tube contains a plug of absorbent material saturated with a culture-sustaining liquid. A swabbing unit includes an elongate member carrying a swabbing tip at one end and providing a handle at the other. Intermediate the ends is a sealing member designed to seal against the elongate member and against the inside of the tube. The swabbing unit can be withdrawn from the tube, a culture collected on the tip, and the tip replaced in the tube which is sealed by the sealing member. The liquid moistens the swabbing tip and keeps the collected culture in a live condition until laboratory tests have been performed on the culture.

3,674,008
QUANTITATIVE PULSED TRANSILLUMINATOR AND METHOD OF OPERATION

Curtis C. Johnson, Lynnwood, Wash., assignor to The Battelle Development Corporation, Columbus, Ohio

Filed July 13, 1970, Ser. No. 54,285
Int. Cl. A61b 5/00
U.S. Cl. 128—2 A 18 Claims

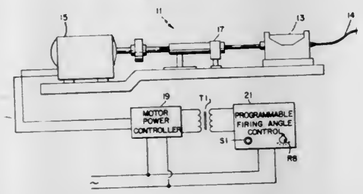


An instrument is described which quantitatively measures optical density of the transilluminated body portion. The instrument comprises a controllable, relatively low-frequency oscillator generating pulses which are applied to a light source through a first expand and delay circuit. A light-conducting means, such as a fiber optic device, optically couples the light source to one side of the body portion and a similar means optically couples another side of the body portion to a light detector. Alternatively, the light source and detector may be placed directly on the body portion. After compensation for ambient light, the output of the detector is coupled to a sample and hold circuit which is triggered by the controllable oscillator through a second expand and delay circuit. The stored signal in the sample and hold circuit is proportional to transmittance and is converted to a visual indication of optical density by a calibrated display means. Methods of using the instrument in diagnosis are discussed, as are further applications to spectrophotometric determinations.

3,674,009
ANGIOGRAPHIC INJECTOR WITH PUMP MOTOR STARTING CONTROL

Donald E. Williamson, Miami, Fla., assignor to Cordis Corporation, Miami, Fla.

Filed July 13, 1970, Ser. No. 54,430
Int. Cl. A61b 5/02
U.S. Cl. 128—2 A 2 Claims

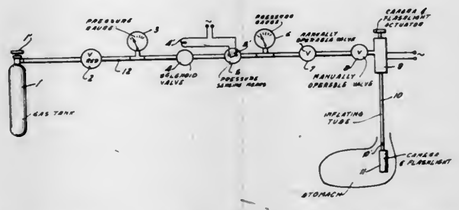


The angiographic injector disclosed herein employs a pump motor which is gradually and progressively energized to prevent whipping of the catheter tip. The energization of the motor is varied as a function of a control signal voltage which rises relatively gradually, the motor being energized from an a.c. source through a triggerable semiconductor current switching device whose firing angle is varied as a function of the amplitude of the control signal voltage.

3,674,010
APPARATUS FOR AUTOMATIC INFLATION OF CAVITIES OF THE BODY

John Falenks, Redhook, N.Y., assignor to Diversified Medical Corporation, Scarsdale, N.Y.

Filed July 15, 1970, Ser. No. 55,081
Int. Cl. A61b 1/00
U.S. Cl. 128—2 R 10 Claims

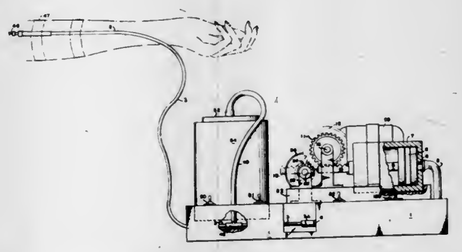


Apparatus for automatic inflation of cavities of the body, for instance the stomach, in which an inflating tube insertable with one end portion into the stomach is connected by a tube to a tank containing a gas under pressure and wherein sensing means cooperate with the tube for sensing the gas pressure in the stomach and automatically shut off further passage of gas under pressure into the stomach when the gas pressure in the latter has reached a predetermined value. The end of the inflating tube which is inserted into the stomach preferably carries a camera and illuminating means so that the interior of the body, after being inflated, may be photographed.

3,674,011
MEANS FOR AND METHOD OF TRANSFERING BLOOD FROM A PATIENT TO MULTIPLE TEST TUBES WITHIN A VACUUM

Raymond S. Michel, and Fred W. Podhora, both of Portland, Oreg., assignors to United Medical Laboratories Inc., Portland, Oreg.

Filed Jan. 12, 1971, Ser. No. 105,921
Int. Cl. A61b 05/00; A61m 01/00
U.S. Cl. 128—2 F 5 Claims

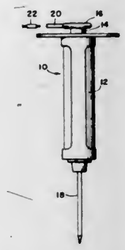


Apparatus for drawing and controlling blood flow from a single venipuncture through a flexible catheter into a sealed vacuumized container and simultaneous delivery to a number of test tubes within the container. The catheter is in open communication at one of its ends with a hypodermic needle and at its opposite end through a first flow control valve with the interior of the test tube container by means of a cap which directs blood flow equally and simultaneously to the test tubes within the container.

3,674,012
BLOOD COAGULATION DETECTION DEVICE

Stanley J. Sage, Lexington, Mass., assignor to American Optical Corporation, Southbridge, Mass.

Filed April 17, 1970, Ser. No. 29,563
Int. Cl. A61b 5/04
U.S. Cl. 128—2.1 R 16 Claims

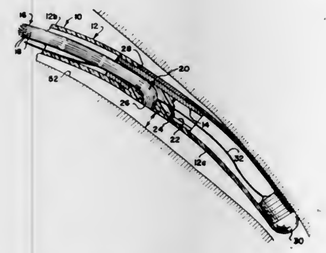


This apparatus for detecting the time of coagulation of liquid blood samples includes a hypodermic syringe having the necessary components mounted therein to perform this test. These components include a group of spatially separated electrodes which are disposed around the exterior surface of either the plunger or the base of the barrel where the cannula normally mounts to the hypodermic syringe. Means are provided for connecting the electrodes to an impedance monitoring circuit to ascertain the clotting time of the sample.

3,674,013
FIBEROPTIC CATHETER

Michael L. Polanyi, Webster, Mass., assignor to American Optical Corporation, Southbridge, Mass.

Filed Sept. 30, 1970, Ser. No. 76,714
Int. Cl. A61b 05/02
U.S. Cl. 128—2.05 D 5 Claims



A fiberoptic catheter for monitoring blood in vivo with avoidance of thrombus formation. A standard cardiac catheter having longitudinally extending afferent and efferent light-conducting fibers therewithin is terminated with a smoothly rounded tip. Some distance back from the tip, the fibers are directed right-angularly to one side of the catheter where ends thereof are optically finished to form an exposed light-emitting and light-receiving face at said side of the catheter. This face is spaced from walls of passages of the recipient by a fixed bend in the adjacent terminal portion of the catheter.

3,674,014
MAGNETICALLY GUIDABLE CATHETER-TIP AND METHOD

Hans Tillander, Goteborg, Sweden, assignor to Astra-Meditec AB, Goteborg, Sweden

Filed Oct. 21, 1970, Ser. No. 82,620
Claims priority, application Sweden, Oct. 28, 1969, 14694/69
Int. Cl. A61m 25/00; A61b 05/02
U.S. Cl. 128—2.05 R 8 Claims

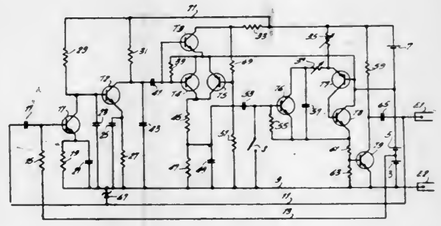


A flexible catheter-tip, guidable by a magnetic field into selected arteries of the body, includes a plurality of permanent magnetic tubular sections with ball-shaped ends arranged end-to-end. Each pair of adjacent ends is encased within a tubular link formed of non-magnetic material which provides a flexible, fluid-tight seal between the tubular sections. Each ball-shaped end has formed thereon a bevel to provide stability between adjacent sections, and therefore to the whole catheter-tip, at full bend.

3,674,015
RATE DISCRIMINATORY ELECTROCARDIOGRAPHIC MONITORING SYSTEM

Baroush V. Berkovits, Newton Highlands, Mass., assignor to American Optical Corporation, Southbridge, Mass.

Division of Ser. No. 727,129, April 11, 1968, Pat. No. 3,528,428. This application March 4, 1970, Ser. No. 16,478
Int. Cl. A61f 5/04
U.S. Cl. 128—2.06 F 4 Claims



A demand pacer which provides electrical heart-stimulating impulses in the absence of natural heartbeats. In a pacer of this type, if the natural heartbeat detector is erroneously triggered, it is possible for impulses to be inhibited when they are actually needed. Erroneous operation of the detector in the invention is partially prevented by tuning it to the dominant frequencies in the electrical signal which is generated as a result of a localized ventricular depolarization. These frequen-

cies, however, are relatively close to 60 Hz, and thus 60 Hz stray signals might erroneously cut off the generation of impulses. For this reason, a capacitor charging circuit is provided in the detecting circuit. All input signals are processed so that the capacitor is fed by unipolar pulses. Pulses occuring at a 120 Hz rate (from the processing of stray 60 Hz signals) occur so rapidly compared to the discharge time constant of the capacitor circuit that the voltage across the capacitor does not change appreciably. Heartbeat signals, on the other hand, occuring at the much slower rate of approximately 72 per minute, allow the capacitor to discharge sufficiently after each charging pulse such that a large pulsating signal is developed across the capacitor. It is each pulsating signal which shuts off the generation of an impulse. In the presence of 60 Hz stray signals, the pacer functions in its continuous mode.

3,674,016

SHIELD FOR ENDOSCOPIC INSTRUMENTS

Gino Leucci, 4740 Castor Ave., Philadelphia, Pa.

Filed June 25, 1970, Ser. No. 49,756
Int. Cl. A61b 1/00
U.S. Cl. 128—4 **4 Claims**



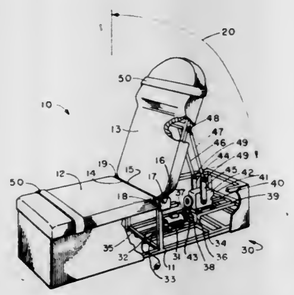
A shield for endoscopic instruments id described. Endoscopic instruments have an elongated, hollow member that has a front end adapted for insertion into the bladder through the urethra, and a back end having an opening that is adapted for receiving a viewing instrument. The shield is typically mounted at the back end of the endoscopic instrument such that it is in a non-interfering position when the viewing instrument is in place in the endoscopic instrument. When the viewing instrument is removed from the endoscopic instrument, the shield pivots to a protectively disposed position behind the opening at the back of the endoscopic instrument to deflect liquid that is ejected out through said opening.

3,674,017

APPARATUS FOR PASSIVELY EXERCISING A PERSON'S ABDOMINAL MUSCLES

Hugo Stefani, Jr., 917 La Veto N.E., Albuquerque, N. Mex.

Filed March 15, 1971, Ser. No. 124,194
Int. Cl. A61h 1/02
U.S. Cl. 128—25 R **5 Claims**



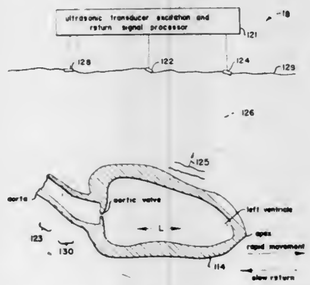
Apparatus for passively exercising a person's abdominal muscles including a stationary table and a reciprocating table, upon which the person to be exercised is disposed with a portion of his body on each table. The reciprocating table is then moved upward and downward to effectuate a 90° movement of the person to be exercised, from a prone position to a sitting position. The reciprocating table may be moved by an oscillating mechanism which includes a motor which drives a gear box, turning arms appropriately connected to the reciprocating table to change the rotary output from the gear box to reciprocate the table between the 0° and 90° positions.

3,674,018

ASSISTED CARDIOVASCULAR CIRCULATION

Herbert E. Goldberg, Concord, Mass., assignor to American Optical Corporation, Southbridge, Mass.

Filed Oct. 2, 1970, Ser. No. 77,662
Int. Cl. A61h 1/00
U.S. Cl. 128—33 **7 Claims**



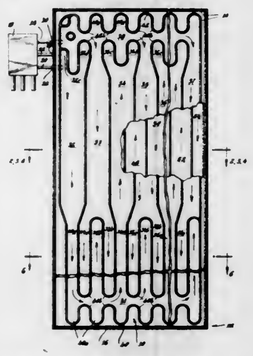
Apparatus arranged to aid a patient's cardiovascular circulation by moving the patient synchronously and in proper phase with the pumping action of his heart to reduce the pumping load on his heart. An improved cardiovascular circulation aid is disclosed utilizing apparatus for providing an accurate indication of the occurrence of onset of systole and where body movement is precisely synchronized thereto. Apparatus for phasing the onset of systole with the beginning of movement of the patient includes ultrasonic ranging and doppler devices, and/or an impedance plethysmograph.

3,674,019

DUAL LAYER CELLULAR INFLATABLE PAD

Benton H. Grant, Stamford, Conn., assignor to Grant Airmass Corporation, Stamford, Conn.

Filed Oct. 23, 1970, Ser. No. 83,269
Int. Cl. A61h 1/00
U.S. Cl. 128—33 **9 Claims**



A dual layer cellular inflatable pad having the cells of each interfitting with the cells of the adjacent layer. The cells of one

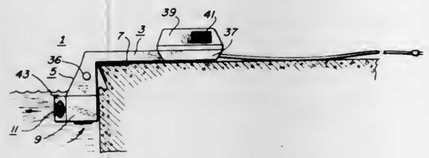
layer may be alternately inflated and deflated. The layers have a manifold across and adjacent the longitudinal cell ends with a small continuation of the cells on the end sealed side of the manifold to prevent arching or curling of the pad.

3,674,020

POOL HYDROMASSAGE ASSEMBLY

Roy A. Jacuzzi, Moraga, Calif., assignor to Jacuzzi Research, Inc.

Filed May 10, 1971, Ser. No. 141,836
Int. Cl. A61h 9/00
U.S. Cl. 128—66 **8 Claims**



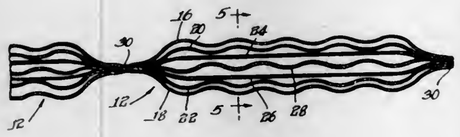
A hydromassage assembly for placement at pool side, and involves a housing including a horizontal section for placement on the deck of the pool and an angularly disposed or substantially vertical section of a length sufficient that its free end may be submerged in the water of the pool. A motor driven pump at the free end of the horizontal section is adapted to hydraulically drive a plurality of hydro-air jet head assemblies installed in the submersible end of the angularly disposed section, each of the hydro-air jet head assemblies being adapted to draw air through an air intake tube extending through a wall of the housing above the water level of the pool. The installation of a plurality of hydro-air jet head assemblies provides for substantially uniform hydro-air jet activity throughout a wide arc.

3,674,021

PLASTIC BANDAGE OR SPLINT

Harold I. Snyder, R.R. #3, P.O. Box 489, Dover, Ohio, and Richard R. Trexler, 9509 Lawndale Ave., Evanston, Ill.

Filed Dec. 28, 1970, Ser. No. 101,493
Int. Cl. A61f 5/04
U.S. Cl. 128—90 **10 Claims**



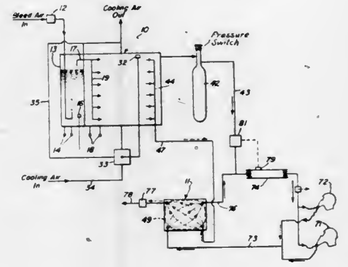
The disclosed structure comprises an elongated bandage of the wrap-around type. The bandage is composed of a plurality of superposed strips of cloth or the like, one of which carries plastic resin and another of which carries a hardener or catalyst. A barrier sheet is interposed between the strips to keep the resin and hardener separated, the barrier sheet being arranged to provide a multiplicity of openings over its surface upon manipulation of the package, whereby to bring the resin and hardener into contact uniformly over the surface of the bandage. Upon application of the bandage to a body part of the like, and upon setting of the resin, a rigid plastic bandage or splint is provided.

3,674,022

INTEGRATED SYSTEM FOR GENERATING OXYGEN AND CONTROLLING CARBON DIOXIDE CONCENTRATION IN CLOSED CIRCUIT BREATHING APPARATUS

Angelo Dounoucos, Schenectady, N.Y., assignor to General Electric Company

Filed Aug. 31, 1967, Ser. No. 664,875
Int. Cl. A62b 7/02
U.S. Cl. 128—142 **8 Claims**



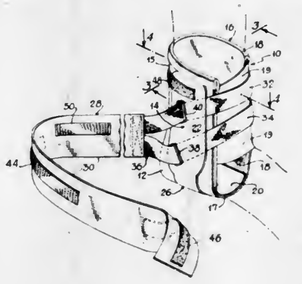
A particularly effective permselective membrane gas separation device employing an immobilized liquid film, which must be retained in damp condition, is coupled with a solid polymer electrolyte fuel cell apparatus to which electrical energy and moist air are supplied. The fuel cell preferentially transports essentially pure oxygen across the solid electrolyte for ultimate, or immediate, use in a closed circuit breathing system as the make-up oxygen gas for purified exhaled air, which has been circulated over one side of the permselective liquid membrane area of the gas separation device. Moist gaseous exhaust of controlled relative humidity from the cell is used to "scrub" and dampen the opposite side of this same permselective liquid membrane area optimizing the performance and, in the case of un-encased liquid membranes, extending the useful life thereof and thereby eliminating the need for a separate humidifying device.

3,674,023

ANKLE SUPPORT PROVIDING HIGH BRACING STRENGTH

Robert C. Mann, c/o Merikyle Co., Inc., 258 Irving St., Framingham, Mass.

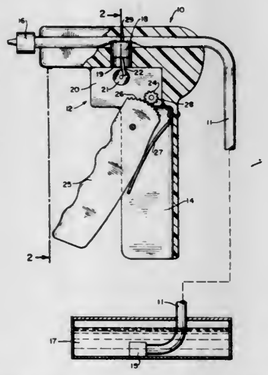
Filed July 2, 1969, Ser. No. 838,481
Int. Cl. A61f 13/06
U.S. Cl. 128—166 **20 Claims**



An ankle support has an open-fronted heel boot of relatively stiff construction to brace an ankle against sprains without

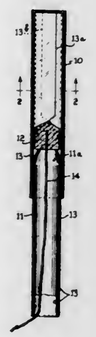
constricting the ankle. An elastic strap section spanning the wearer's instep and a nonelastic ankle-wrapping strap section hold the boot snugly on the wearer's foot without significantly restricting walking movements.

3,674,024
INCISION IRRIGATOR FOR USE DURING SURGICAL PROCEDURES
John Cirillo, Glen Ridge, N.J., assignor to Walter Kidde & Company, Inc., Belleville, N.J.
Filed July 15, 1970, Ser. No. 54,911
Int. Cl. A61m *1/00*
U.S. Cl. 128—234 **7 Claims**



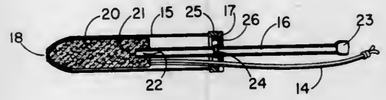
There is disclosed an incision irrigator which pumps a liquid by means of a deformable tube.

3,674,025
TAMPON ASSEMBLY
Keith T. Bleuer, 1663 Wiltshire Drive, N.E., Rochester, Minn.
Filed April 14, 1970, Ser. No. 28,381
Int. Cl. A61l *15/10*
U.S. Cl. 128—263 **10 Claims**



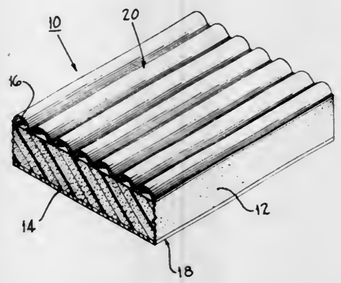
A tampon assembly including an outer tube and an inner tube telescoped into the outer tube, with a tampon body of elastomeric sponge material in the outer tube and expelled therefrom by means of the inner tube. A sheath of thin flexible low-friction material is disposed between the tampon body and the outer tube to facilitate the expulsion of the tampon body from the outer tube. The tampon body may be formed within a mold having inwardly extending spike-like projections on its inner surface to provide fluid passing openings on the exterior surface on the tampon body.

3,674,026
TAMPON INSERTION DEVICE
Edward E. Werner, and Edward G. Wollangk, both of Oshkosh, Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.
Filed Dec. 28, 1970, Ser. No. 101,913
Int. Cl. A61f *15/00*
U.S. Cl. 128—263 **20 Claims**



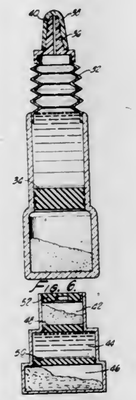
A tampon insertion device which comprises the combination of a tapered or round-nosed tampon having a detachable inserter rod seated in its base, and an outer protective tube having a tapered insertion-aiding forward end. The trailing end of the protective tube is closed off by a snap-in, pressure fit, or adhesively attached cap which functions as a closure, guide, and lock for the insertion rod.

3,674,027
DISPOSABLE WET COMPRESSES
Raul Fleischmajer, 121 Broome Lane, Merion, Pa.
Filed Aug. 6, 1969, Ser. No. 849,293
Int. Cl. A61f *7/10*
U.S. Cl. 128—268 **7 Claims**



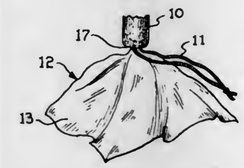
A disposable dermatological compress for the application of aqueous solutions to the skin to achieve evaporative cooling includes a body of water-permeable material constructed as a multi-layer device. An inner layer of smooth sheeting is directly applied to the skin. An intermediate layer of water-absorbing material functions as a reservoir to retain a large quantity of solution. An outer evaporation layer receives the solutions from the reservoir for evaporation. The evaporation layer has a surface area which is several times larger than the area defined by the outer boundaries of the unit to serve as an efficient evaporator.

3,674,028
MULTI-MIX
Robert W. Ogle, Newport Beach, Calif., assignor to IMS Limited
Filed June 4, 1969, Ser. No. 830,311
Int. Cl. A61j *01/00*; **B65d** *01/04*
U.S. Cl. 128—272 **4 Claims**



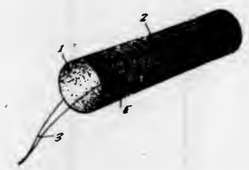
This patent describes a novel medicament container comprising a vial having an open end and a closed end, at least one slidable resilient stopper within said vial normally positioned intermediate said open end and said closed end and normally forming a fluid tight seal on the walls of said container, said stopper being slidable within said container away from said open end toward said closed end, said vial having a zone of a diameter larger than the largest lateral diameter of said stopper and into which said stopper is received as it is slid away from said open end to permit fluid communication from one side of said stopper to the other side of said stopper and thereby permit mixing of different materials positioned above and below said stopper, said container also having closure means at said open end to provide a multi-compartment medicament storage device.

3,674,029
CATAMENIAL TAMPON AND WRAPPER THEREFOR
John D. Bates, and Virginia A. Olson, both of Appleton, Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.
Filed March 26, 1968, Ser. No. 716,224
Int. Cl. A61f *13/20*
U.S. Cl. 128—285 **10 Claims**



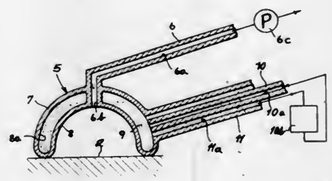
A compressed catamenial tampon designed for digital insertion. The tampon is centered on a protective wrapper which is gathered and folded around the tampon to completely enclose it. The gathered wrapper is closed near the top of the tampon with an easily removable closure means. A central portion of the wrapper is releasably fastened to the base of the tampon.

3,674,030
CATAMENIAL TAMPONS OR THE LIKE
David Thomas Jones; George Edward Jowett, both of Swansea, Glamorgan, Wales, and Edward Ernest Webster, Orpington, Kent, England, assignors to Sponcel Limited, Croydon, Surrey, England
Continuation of Ser. No. 744,551, July 12, 1968, abandoned. This application Dec. 11, 1970, Ser. No. 97,314
Claims priority, application Great Britain, July 19, 1967, 33,094/67
Int. Cl. A61f *13/20*
U.S. Cl. 128—285 **5 Claims**



A catamenial tampon comprising an elongated strip of regenerated cellulose sponge material bonded to an outer covering of reinforcing material and compressed and dried to a reduced diameter, said covering being adapted to permit expansion of said sponge material when moistened.

3,674,031
METHOD OF AND DEVICE FOR CRYOGENIC SURGERY
Hans-Joachim Weiche, Hannover, Germany, assignor to Linde Aktiengesellschaft, Wiesbaden, Germany
Filed March 25, 1970, Ser. No. 23,165
Claims priority, application Germany, March 29, 1969, P 19 16 343.0
Int. Cl. A61b *17/36*; **A61m** *1/00*; **F25d** *3/00*
U.S. Cl. 128—303.1 **6 Claims**

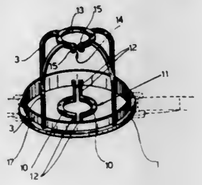


A system for performing cryogenic surgery, especially the removal or treatment of mammalian tissue such as tonsil tissue, wherein the tissue is drawn by suction into the cavity of an instrument the walls of which are chilled, e.g., by liquid nitrogen.

3,674,032
DEVICE FOR ANCHORING NEW-BORN BABIES UMBILICAL CORDS UNTIL ATROPHY THEREOF
Ernesto Minganti, 12, Via Roncati, 40134 Bologna, Italy
Filed April 17, 1970, Ser. No. 29,396
Claims priority, application Italy, April 17, 1969, 1606 A/69; Feb. 17, 1970, 3334 A/70
Int. Cl. A61b *17/08*; **A61f** *13/00*
U.S. Cl. 128—346 **2 Claims**

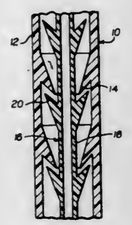
A device for anchoring the umbilical cords of new-born babies comprises a base ring supportable on a baby's body about the umbilical cord and an upper ring fixed out of the plane of

the base ring and able to support the lower part of the umbilical cord substantially normal to the body. The upper part of



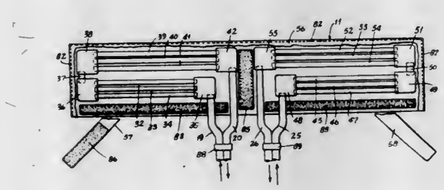
the umbilical cord can be supported and away from the body on a cage-like member.

3,674,033
DRAINAGE SYSTEM FOR BODY CAVITIES
John Powers, 178 Beach 129 St., Belle Harbor, N.Y.
Filed Aug. 13, 1970, Ser. No. 63,399
Int. Cl. A61m 27/00
U.S. Cl. 128—350 R **4 Claims**



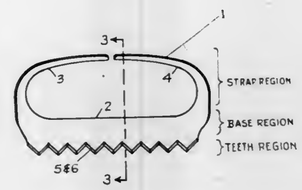
The invention comprises an inner and outer tube provided on their facing surfaces with canted projections which, in ratchet-like fashion, permit movement in one direction but not the other. The outer tube may be sutured to the skin and, in the event of distention of the abdomen due to gas, the outer tube will merely slide over the inner tube; in the absence of the outer tube, such distention would serve to pull the tube out of the organ to which it extends.

3,674,034
POUCH SYSTEM FOR HOSPITAL PATIENTS
John C. Hardy, Weatogue, Conn., assignor to Angelica Corporation, St. Louis, Mo.
Filed Feb. 8, 1971, Ser. No. 113,132
Int. Cl. A61f 7/00
U.S. Cl. 128—379 **10 Claims**



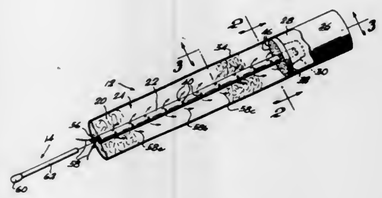
Heat-controlled exchange pouches for strapping to strategic areas of a patient's body where the main blood arteries are close to the skin surface. Each pouch is a flat, flexible tubing array within a removable bag, conformable to the body area which the pouch contacts. Separate fluid supply and return tubes for the pouches at each side of the body provide independent temperature control.

3,674,035
THRESHING IMPLEMENTS
Dorothy Byars Edmiston, P.O. Box 855, Santa Monica, Calif.
Filed Oct. 13, 1970, Ser. No. 80,292
Int. Cl. A01f 5/00
U.S. Cl. 130—10 **1 Claim**



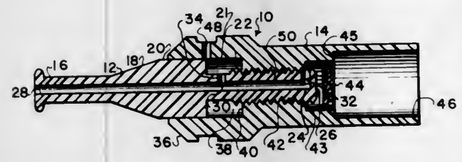
A hand-held corn-sheller, by which an unskilled operator can shell the kernals off a husked ear of corn (maize), in the dried, fresh, or cooked condition. A single piece of sheet metal is formed so that it fits around the palm and back of the user's hand and also presents two rows of teeth extending out from the palm. Rotating the ear against the teeth causes them to inter-act in a manner which shells the corn.

3,674,036
CIGARETTE SMOKING MEANS
Fidel Vega, 4787 S. W. 5 Terrace, Miami, Fla.
Filed July 13, 1970, Ser. No. 54,355
Int. Cl. A24d 01/04, 01/08
U.S. Cl. 131—7 **4 Claims**



A cigarette unit having a tobacco filled cigarette body portion including a tubular thin walled filter core portion embedded coaxially in the tobacco of the cigarette body, extending coextensive therewith, and formed of thin combustible paper material, burning away as the cigarette is smoked. The cigarette unit has a filter tip portion including a filter mass and a trap socket recess to catch liquid condensate and impurities of combustion of a burning cigarette. The invention preferably further includes a match detachably fitted in the forward interior of the tubular filter core of the cigarette body and a striking surface formed on the exterior surface of a cigarette package for igniting a match in lighting a cigarette.

3,674,037
SMOKING HABIT-BREAKING AID APPARATUS
William S. Fortune, 14250 Dearborn St., Panorama City, Calif.
Filed Nov. 9, 1970, Ser. No. 87,996
Int. Cl. A24f 05/04
U.S. Cl. 131—198 A **2 Claims**

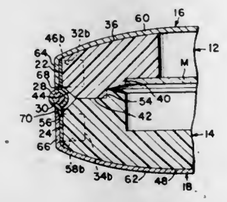


A cigarette holder or tobacco pipe having a transverse bore in the stem portion that is in communication with atmosphere. A port-type valve system is included in the stem portion and includes a pair of threaded portions connecting axially arranged members, the members having transverse or radial bores therein and having annular chambers communicating with selected bores whereby rotation of said members relative to each other will move one axially with respect to the other and place portions of said transverse bores in communication with said chambers whereby smoke passing through the device may be mixed with air in a ratio between zero and a maximum. The bores etc., are sized so that the effective draw may not be altered upon a change in said ratio. The valve system is connected with ducts leading thereto from the tobacco holding portion and from the mouthpiece end of the device.

3,674,038
TREATMENT OF HUMAN HAIR WITH ZINC AND CADMIUM DITHIOLATE DERIVATIVES
Pierre Bore, Montfermeil, France, assignor to Societe Anonyme dite L'Oreal
Filed Feb. 19, 1969, Ser. No. 800,721
Claims priority, application Luxembourg, Feb. 20, 1968, 55,515
Int. Cl. A61k 7/06, 7/10; A45d 7/04
U.S. Cl. 132—7 **9 Claims**

Compositions for setting hair containing a bivalent metal dithiolate derivative having at least one N-methylol group and the process of treating human hair with these compositions.

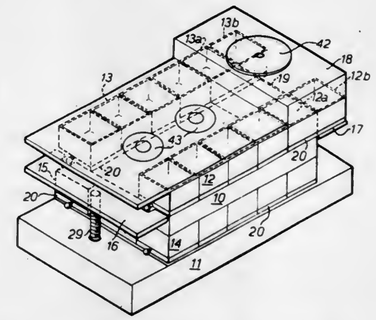
3,674,039
COSMETIC CONTAINER
Alphonso N. Vastano, East Brunswick, N.J., assignor to Volupte, Inc., Elizabeth, N.J.
Filed Sept. 21, 1970, Ser. No. 74,035
Int. Cl. A45d 33/00
U.S. Cl. 132—82 **8 Claims**



In a small container, such as a cosmetic compact or the like, a hinge is loosely coupled to top and bottom insert members without the use of fasteners or the like. Top and bottom cover plates serve to capture the hinge and prevent its inadvertent removal. In one embodiment, finger means formed integrally with the hinge are received in appropriate slots or recesses formed in the top and bottom insert members.

The aforementioned abstract is neither intended to define the invention of the application which of course, is measured by the claims, nor is it intended to be limiting as to the scope of the invention in any way.

3,674,040
SEQUENTIAL PROCESSING APPARATUS
Francis Thomas Howells, Tarporley, and Anthony Grenfell Ashe, Runcorn, both of England, assignors to Shandon-Elliott Limited, Runcorn Cheshire, England
Filed March 9, 1971, Ser. No. 122,335
Claims priority, application Great Britain, March 17, 1970, 12,666/70
Int. Cl. B05c 3/04, 3/09; B08b 3/04
U.S. Cl. 134—58 R **11 Claims**

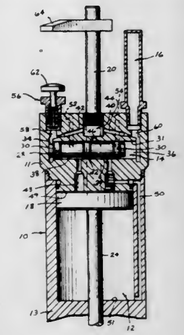


A sequential processing apparatus, particularly for use in pathology especially histology, comprises support means for supporting at least one row of baths above another row and mechanism for stepping said rows of baths in opposite directions. A transfer device at one end of the rows of baths transfers baths, one at a time, from the upper row to the lower row and a transfer device at the other end of the rows transfers baths, one at a time, from the lower row to the upper row. A specimen or slide carrier is positioned so as to be above the path of movement of at least one of the rows of baths, mechanism being provided for lowering and raising said carrier so as to immerse a specimen or slide in or withdraw it from a bath. In one preferred embodiment of the invention there are two side-by-side groups of baths, each group comprising upper and lower rows of baths and the specimen or slide carrier is moved periodically across the apparatus from a position over a row of baths of one group to a position over a row of baths of the other group.

3,674,041
PRESSURE RESPONSIVE ACTUATOR HAVING APPLICATION TO A VALVE SPOOL OR LIKE DEVICE
Robert N. Beals, 500 E. Adams St., Plymouth, Ind.
Filed May 7, 1970, Ser. No. 35,308
Int. Cl. F16k 11/02
U.S. Cl. 137—1 **3 Claims**

A pressure responsive actuator having application to a valve spool or similar reciprocable member. The actuator includes a housing having a first chamber therein. A reciprocable member is positioned within the chamber and is shiftable from one end to the other end of the chamber. A fluid inlet is provided in the housing and has one inlet port in communication with one end of the chamber and another inlet port in communication with the other end of the chamber. A valve, which is

normally closed, communicates with one end of the chamber for venting that end of the chamber when the valve is actuated. The housing defines a second chamber which is in communication with the first chamber at the opposite end of the chamber from the valve. The reciprocable member is shifted



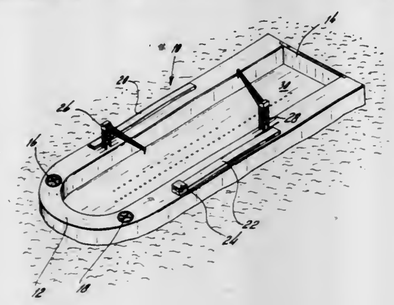
from one end to the other end of the chamber as pressurized fluid is introduced into the fluid inlet and passes simultaneously through the inlet ports into both ends of the first chamber and into the second chamber and as the valve is then actuated to vent one end of the first chamber.

3,674,042

METHOD OF MARITIME DELIVERY OF CRUDE OIL THROUGH ICE-CONGESTED REGIONS

Joseph D. Deal, Jr., and James C. Michie, III, both of Newport News, Va., assignors to Newport News Shipbuilding and Dry Dock Company, Newport News, Va.

Filed April 13, 1971, Ser. No. 133,578
Int. Cl. B63b *27/00*
U.S. Cl. 137—1 **17 Claims**



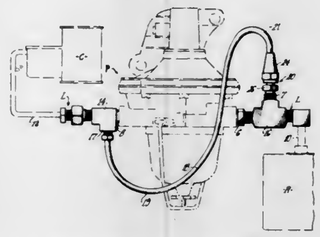
Method of maritime delivery of crude oil through ice-congested regions, for example, from the North Slope of Alaska through the Northwest Passage, including driving an icebreaker vessel with crude oil load through the ice-congested region, pumping crude oil from said icebreaker vessel into a floating oil storage terminal maintained at the far edge of the ice-congested region, offloading crude oil from within the storage terminal into a tanker, and driving the tanker to an ice-free oil terminal facility. A modification of invention includes loading of the crude oil at the North Slope into a submarine vessel which is driven beneath the ice pack to the floating oil storage terminal at the far edge of the ice pack.

3,674,043

METHOD OF PREVENTING VAPOR LOCK DURING ENGINE OPERATION AND OF FUEL LEAKAGE TO CARBURETOR AFTER ENGINE STOPPAGE

Neil C. Norton, P. O. Box 104, Gardena, Calif.

Continuation-in-part of Ser. No. 726,308, May 3, 1968, Pat. No. 3,559,680, which is a continuation-in-part of Ser. No. 616,594, Feb. 16, 1967, abandoned. This application June 26, 1970, Ser. No. 50,074
Int. Cl. F04b *23/00*
U.S. Cl. 137—12 **5 Claims**



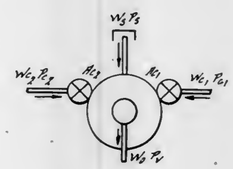
Vapor lock which might otherwise occur in its fuel supply pump during high temperature operation of a liquid-fuel engine, is minimized or eliminated by continuously withdrawing a small fraction of the flow liquid from the bottom level of the pump outlet conduit and reintroducing it at the top level of the pump inlet conduit. Also, after pump and engine stoppage, pressurized liquid remaining in the pump to carburetor (outlet) conduit, is prevented from dribbling into the carburetor and vaporizing into adjacent space (and creating a fire hazard and air pollution) by relieving the back-pressure in such conduit and then closing same without breaking the liquid column, by valve means in the (sigmoid) pump bypass. Such small capacity bypass may be left open during pump and engine function, without interfering with normal operation, and closes in response to decreased back-pressure in the line when the pump stops.

3,674,044

OPPOSING CONTROL VORTEX VALVE

Endre A. Mayer, Birmingham, Mich., assignor to The Bendix Corporation

Filed Jan. 8, 1970, Ser. No. 1,504
Int. Cl. F15c *1/16*
U.S. Cl. 137—81.5 **5 Claims**



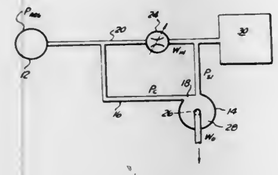
A vortex valve with tangentially opposed control and supply ports with the relative port sizes varied to control the output characteristics and produce a high or tailored gain at a desired pressure value and/or to introduce a pronounced negative resistance in an operating range of the valve. The valve is also combined with a fluid operated pressure regulating circuit, in which it is used as a flow controller.

3,674,045

VORTEX VALVE FLUID OSCILLATOR

William V. Milliman, Moline, Ill., and Endre A. Mayer, Birmingham, Mich., assignors to The Bendix Corporation

Filed July 14, 1970, Ser. No. 54,708
Int. Cl. F15c *1/16*
U.S. Cl. 137—81.5 **8 Claims**



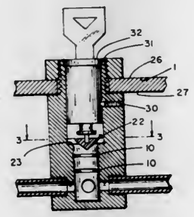
A vortex valve for use in a fluid oscillator circuit characterized by exhibiting a pronounced negative resistance characteristic in a portion of its operating range and by having a vortex chamber defined in part by a resiliently movable portion to provide a mechanical output in response to pressure variations in the chamber. This particular vortex valve is incorporated into a fluid oscillator arrangement to produce oscillatory pulses in the vortex chamber and responsive movements of the movable portion by adjusting the control and supply pressures and flows so as to be in the negative resistance range of the vortex valve while at the same time maintaining a constant supply flow.

3,674,046

VEHICULAR LOCKING DEVICE

James V. Micelli, 44 Bay 40th St., Brooklyn, N.Y.

Filed July 30, 1970, Ser. No. 59,378
Int. Cl. F16k *35/06*
U.S. Cl. 137—384.2 **6 Claims**



A vehicular locking device provided with a housing having inlet and outlet ports connected in the fuel feed line of a vehicle, includes a valve that can be rotated into open and closed positions for passing and blocking the fuel flow selectively. A lock is provided in the housing in operative association with the valve so that the valve may be locked as necessary by an authorized operator having a key therefor.

3,674,047

THROTTLE DIVIDER OF FLUID MEDIUM FLOW

Mikhail Borisovich Tauger, ulitsa Baumana, 27, kv. 20, Sverdlovsk, U.S.S.R.

Filed Sept. 4, 1970, Ser. No. 69,609
Int. Cl. G05d *11/03*
U.S. Cl. 137—101 **2 Claims**

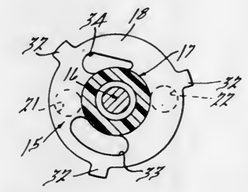
A throttle flow divider having a floating slide valve in a body whose outlet channels are interconnected by means of a permanent hydraulic resistor which assists in increasing the accuracy of the flow division due to redistribution of the fluid medium from one working branch with a higher pressure to the other working branch with a lower pressure.

3,674,048

MIXING VALVE

Alex Manoogian, Grosse Pointe Farms, and Eric V. Pullen, Northville, both of Mich., assignors to Masco Corporation, Taylor, Mich.

Filed April 9, 1970, Ser. No. 132,703
Int. Cl. F16k *11/08*
U.S. Cl. 137—270 **10 Claims**



A hot and cold water mixing valve having hot and cold water inlet ports controlled by a rotatable valve member to open and close the inlet ports in sequence suitable for use of the valve as a shower valve or the like. An adjustable stop associated with the valve permits the full hot position to be adjusted to prevent scalding. In installations such as apartments, hotels or the like wherein a single system of hot and cold water supply pipes services shower or tub facilities arranged back to back on opposite sides of a common wall containing the supply pipes, a fixed bushing part may be selectively oriented relative to the inlet ports so that in both such installations the valve is rotatable in the same direction of rotation and provides the proper sequence of operation without the necessity of additional cross over piping within the wall.

3,674,049

AIR-TO-AIR REFUELLING HOSE REELS

Peter Stevens Macgregor, Dorset, England, assignor to Flight Refuelling Limited, London, England

Filed Sept. 18, 1970, Ser. No. 73,445
Int. Cl. B65h *75/34, 75/30*
U.S. Cl. 137—355.2 **8 Claims**



An air-to-air refuelling system and hose reel mechanism therefor in which a constant tension spring motor is coupled to the hose reel to achieve substantially constant tension in the hose during reeling in or reeling out of the hose. Arresting means comprising a ratchet and pawl mechanism is associated with the hose reel and is actuatable in response to operation of

the spring motor to provide a full trail stop facility for the hose. A feature of the invention is that a fixed displacement fuel pump (a fueldraulic motor) is coupled to a main fuel pump of the refuelling system via a hose reel control valve and is coupled to the hose reel via gearing and a sprag clutch such that the displacement pump rotates only when the hose reel is reeling out in order to effect speed limitation during reeling out. The fixed displacement pump when acting as a pump only rotates when the hose reel is reeling out but operates as a motor during rewinding of the hose reel utilizing the main fuel supply to provide rewind power.

3,674,050

CHECK VALVE FOR DRAINAGE OF FLUID INTO THE VASCULAR SYSTEM OR INTO A BODY CAVITY FOR THE TREATMENT OF HYDROCEPHALUS INTERNUS AND EXTERNUS

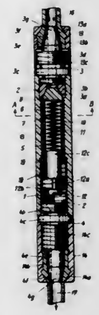
Francois Kuffer, Holligenstrasse 33, 3000 Bern, and Dietrich Strub, Schanzlistr. 38, 4500 Solothurn, both of Switzerland

Filed May 4, 1970, Ser. No. 34,389

Claims priority, application Switzerland, July 15, 1969, 10714/69

Int. Cl. A61m 27/00

U.S. Cl. 137—536 **3 Claims**



The check valve for drainage of fluid into the vascular system or into a body cavity for the treatment of hydrocephalus internus and externus is fabricated of synthetic material and has a body with screw thread on each side. On the proximal side of the valve is screwed a connector, which has a cone and a cylindrical part to receive a proximal catheter, in addition to a screw thread for the fixing of a screw cap. On the connector is a shoulder serving as a stop for the screw cap and preventing shearing of the proximal catheter. The connector has a longitudinal bore which drains the fluid into the catheter, the bore widens to a cone and this cone is obturated by a piston, which possesses four longitudinal slots. A spring lays in the bore and can be adjusted by a regulating screw for the purpose of pressure calibration of the fluid.

3,674,051

HYDRAULIC COUPLER

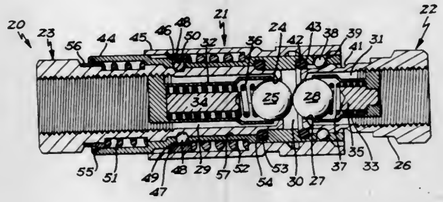
Paul E. Stratman, Golden Valley, Minn., assignor to Safe Way Hydraulics, Inc., Minneapolis, Minn.

Filed May 14, 1971, Ser. No. 143,323

Int. Cl. F16l 29/00, 37/28

U.S. Cl. 137—614.04 **12 Claims**

A conduit terminating in a female body at one end and a source of hydraulic power at the other, and a conduit terminating in a male tip at one end and an hydraulically actuated mechanism at the other, are connected together by inserting the tip into the body with hydraulic pressure existent in both conduits, in one or the other conduit, or in neither conduit. The body has a releasable latching mechanism for securing the tip in place.



3,674,052

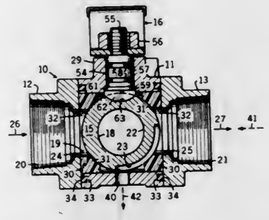
BALL VALVE

Leonard Hartman, Maplewood, and Joseph Sciuto, Jr., Crestwood, both of Mo., assignors to Stile-Craft Manufacturers, Inc., St. Louis, Mo.

Filed Jan. 12, 1970, Ser. No. 2,099

Int. Cl. F16k 11/02

U.S. Cl. 137—625.21 **1 Claim**



The valve includes a housing having aligned inlet and outlet ports intercommunicating by means of a central conduit passing through a rotatable ball mounted in the housing. The central conduit permits fluid flow through the valve when the valve is in the open position. When the ball is rotated to a closed position a second conduit, provided on the surface of the rotatable ball, communicates between the outlet port and an exit orifice in the interior of the housing. The second conduit permits bleeding of the downstream hydraulic system. The ball is seated on sealing washers and rotated by means of a key which is journaled through the housing and into engagement with the ball. The key includes a handle cooperating with stops on the housing to indicate open and closed valve positions.

3,674,053

REPLACEABLE BLADDER PULSATION DAMPENER

Fernando Murman, Palos Verdes Peninsula, and George E. Lewis, Arcadia, both of Calif., assignors to Hydril Company, Los Angeles, Calif.

Filed June 12, 1970, Ser. No. 45,647

Int. Cl. F16l 55/04

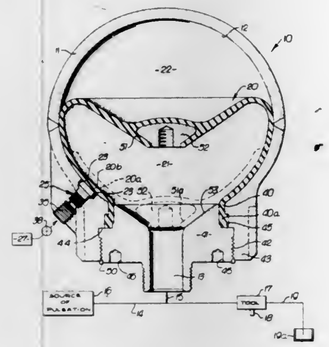
U.S. Cl. 138—30 **11 Claims**

A pulsation dampener comprises

a. a vessel having a hollow interior and a main inlet for first fluid subjected to pulsation,

b. a bladder extending within the vessel interior dividing same into a first zone adapted to receive said first fluid and a second zone adapted to contain second fluid under pressure, and

c. the vessel having an inlet for said second fluid and which is located to be overlapped by said bladder for sealing off communication between said inlet and said second zone in response to first fluid pressure exertion against the bladder.



3,674,054

PRESSURE VESSEL

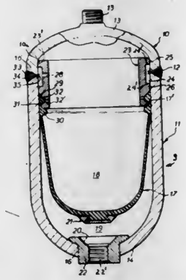
Jacques H. Mercier, 49 rue de Naples, Paris, France

Filed Feb. 16, 1971, Ser. No. 115,254

Claims priority, application France, March 6, 1970, 7008076

Int. Cl. F16l 55/04

U.S. Cl. 138—30 **10 Claims**



The invention relates to a pressure vessel or container comprising two substantially cup-shaped shells having their free edges located in juxtaposition by means of an internal annular retainer member which properly spaces such free edges to permit connection thereof by a weld and which also serves as the support for a deformable partition positioned in the container.

3,674,055

SEALING CONSTRUCTION FOR GAS MAINS AND THE LIKE

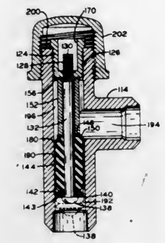
Charles W. Ray, 525 Stadium Drive, Fort Wayne, Ind.

Filed Dec. 28, 1970, Ser. No. 101,555

Int. Cl. F16l 55/10

U.S. Cl. 138—89 **8 Claims**

An improved plug for gas mains which consists of two resilient members carried by a threaded stem. A nut rotates on the end of the stem and draws the two resilient portions together, thus expanding them to make a sealing fit within an opening of the gas main.



3,674,056

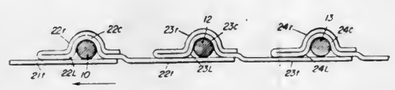
SCUFF STRIP FOR TOW-ELEMENT HELICALLY WOUND TUBING

Paul J. D'Aprile, Forestville, Conn., assignor to The Wiremold Company, Hartford, Conn.

Filed March 20, 1970, Ser. No. 21,243

Int. Cl. F16l 11/16

U.S. Cl. 138—134 **5 Claims**



Two element collapsible tubing comprising a helical wire wound upon one edge of a helically wound, treated fabric or other kind of strip (of one or more plies thickness), the other edge of the strip overlying the adjacent or nearby convolution of the wire and being reversely folded upon itself, preferably outwardly, so that the wire is covered exteriorly with a double thickness of the flexible strip with the inner surface of the strip facing outwardly where it overlies the wire, thus providing a protective strip for the tubing over the wire. If the overlying folded edge overlies a wire convolution that is beyond the next adjacent convolution the tubing wall will be of multi-ply thickness, even when wound from a single ply flexible strip.

3,674,057

METHOD AND APPARATUS FOR PREPARING FILLING IN SHUTTLELESS LOOM

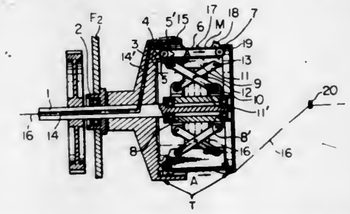
Shinichi Hosono, and Kazuyoshi Kida, both of Komatsu, Japan, assignors to Teijin Limited, Osaka, Japan

Filed Aug. 6, 1970, Ser. No. 61,746

Claims priority, application Japan, Aug. 9, 1969, 44/63209; Nov. 4, 1969, 44/88287

Int. Cl. D03d 47/36

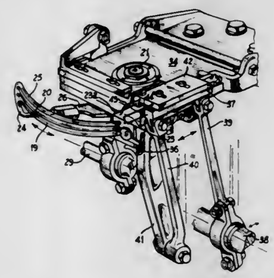
U.S. Cl. 139—122 R **9 Claims**



In a shuttleless loom, a length of at least more than one pick

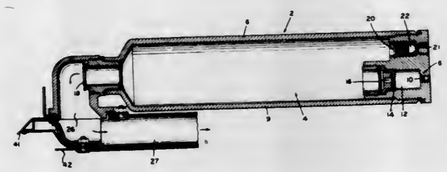
of filling is pulled from a supply package located outside the shed continuously and at constant speeds and is partitioned into picks in a coil and advanced continuously toward filling-inserting means, the coil being caused to maintain a given pitch and accumulated on a storage swift. In multi-filling, such storage swifts are disposed in numbers equal to the number of fillings to be selected, and each filling is continuously pulled from supply packages at constant speeds compensating for the use and accumulation of the fillings.

3,674,058
LOOM AND WOVEN TAPE MADE THEREFROM
John Sellers, "Branclyst" Burgh Lane, Chorley, Lancashire, England
Filed Jan. 18, 1971, Ser. No. 107,401
Claims priority, application Great Britain, Jan. 20, 1970, 2,653/70
Int. Cl. D03d *47/00*; D03c *13/00*
U.S. Cl. 139—124 A **6 Claims**



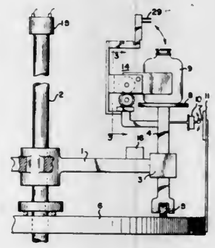
A loom having weft insertion means in the form of three pivotally mounted arcuate members which lay loops of weft in a weft shed, and also having selvedge knitting means reciprocable alongside the warp shed. Two of the arcuate inserting members lay loops of weft in a split shed which is used for producing body tape and the third arcuate inserter is used for laying weft in a shed created for the production of pockets on the body tape. The two wefts laid in the body are brought together at an edge remote from insertion for the knitting therethrough of a catch thread to form a knitting selvedge, while the pocket weft loops are themselves knitting together to form interdigitated loops with or without a catch thread.

3,674,059
METHOD AND APPARATUS FOR FILLING VEHICLE GAS BAGS
Robert L. Stephenson, Sterling Heights, Mich., assignor to Allied Chemical Corporation, New York, N.Y.
Filed Oct. 19, 1970, Ser. No. 81,947
Int. Cl. B65b *1/04, 3/04*
U.S. Cl. 141—4 **13 Claims**



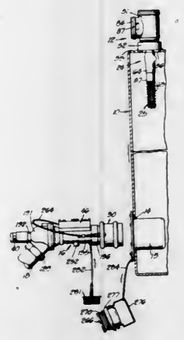
A method and apparatus for filling motor vehicle gas bags. A gas-filled cylinder is provided with an inlet pressure sensitive rupture disc and a dislodgeable outlet plug. The inlet disc is in communication with a combustible material. The material is fired, yielding a gaseous product. The outlet plug is dislodged before, concurrently or subsequent to the rupture of the inlet disc. The liberated gas flows to a diffuser, about which a motor vehicle gas bag is disposed, whereby the gas bag is filled.

3,674,060
APPARATUS FOR FILLING AND ADJUSTING THE CONTENTS LEVEL IN FLEXIBLE CONTAINERS
Herbert S. Ruekberg, Highland Park, Ill., assignor to Continental Can Company, Inc., New York, N.Y.
Division of Ser. No. 736,139, June 11, 1968, Pat. No. 3,577,698. This application Dec. 14, 1970, Ser. No. 97,863
Int. Cl. B65b *57/00, 61/00*
U.S. Cl. 141—83 **11 Claims**



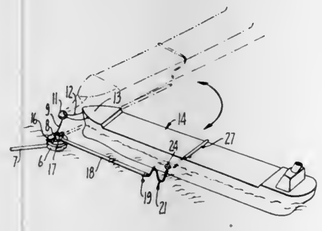
An apparatus for filling a plastic bottle with a premeasured amount of liquid, squeezing the plastic bottle until the level of liquid in the bottle comes to a predetermined height and then capping and sealing the bottle.

3,674,061
LIQUID TRANSFER APPARATUS WITH PRESSURE-SENSITIVE AUTOMATIC SHUT-OFF NOZZLE
Jay V. Calisher, Montebello, and Ross E. Burbick, Bellflower, both of Calif., assignors to E. B. Wiggins Inc., Los Angeles, Calif.
Filed Oct. 29, 1969, Ser. No. 872,148
Int. Cl. B67d *5/372*
U.S. Cl. 141—198 **14 Claims**



A vented tank has a receptacle fitting at its fill port that mates with a nozzle on the end of a supply hose. Both the receptacle fitting and the nozzle have normally closed valves which open in response to mating of the two parts. The nozzle fitting is equipped with a normally closed snap acting valve which is cocked open during the filling operation and snaps closed in response to abrupt rise in back pressure. During the filling operation a tank vent is open but closes in response to rise in the liquid level and thereby creates the back pressure. The tank vent also closes automatically if the tank is turned over.

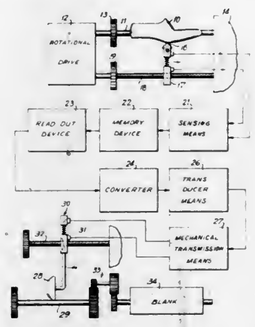
3,674,062
OFFSHORE LOADING AND UNLOADING OF TANKERS
Frederick S. Ellers, Menlo Park; Sam W. Small, Walnut Creek, and Luis B. Serpas, Belmont, all of Calif., assignors to Bechtel International Corporation
Filed Sept. 11, 1970, Ser. No. 71,588
Int. Cl. B65b *1/04, 3/04*
U.S. Cl. 141—387 **6 Claims**



The present invention provides an improved ship mooring device for ships and other vessels whereby fluids may be loaded or unloaded while the ship is moored offshore. In accordance with this invention, a monolithic anchor structure is secured to the sea bottom at a suitable location. Mounted upon the anchor is a swivel structure which is movable through 360°. Attached to the swivel structure is a tubular swing arm which, in accordance with this invention, has a neutral or nearly neutral buoyancy. The arm, however, is held by drag weight and buoyant hose in a generally horizontal position and, by means of the swivel, can swing over the sea bottom in a substantially horizontal plane through 360°. Attached to the end of the tubular swing arm is a flexible hose, one end of which is secured to the end of the swing arm and the other end is adapted to be connected to a suitable connection on the vessel so that a fluid may be transferred through the hose, the tubular swing line, the swivel and a submarine line extending to a shore location. When not in use, the hose is supported by encasing buoys so that the hose assumes an S configuration in a vertical plane. A second buoy is attached to the free end of the hose so that it may be readily picked up by the vessel.

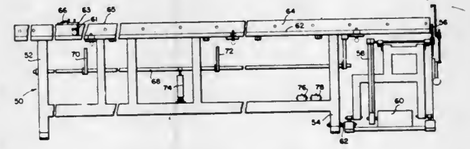
3,674,063
MEANS FOR MAKING SHOE LASTS
William G. Klingbeil, 8939 145th St., Jamaica, N.Y.
Filed Aug. 13, 1969, Ser. No. 849,832
Int. Cl. B23b *3/28*
U.S. Cl. 142—1 **1 Claim**

Apparatus for making shoe lasts. Electrical control signals which are proportional to the surface configuration of a shoe last model are derived and stored. Shoe last shaping machinery comprising a blank of suitable material and suitable



cutting surfaces are moved relative to each other responsive to the stored electrical control signals.

3,674,064
APPARATUS FOR CUTTING AND MARKING PLATE STOCK OF THE TYPE USED IN BUILDING WALL PANELS
James L. McRae, P.O. Box 4195, Meridian, Miss.
Filed Sept. 4, 1970, Ser. No. 69,631
Int. Cl. B27b *5/18*
U.S. Cl. 143—46 R **6 Claims**

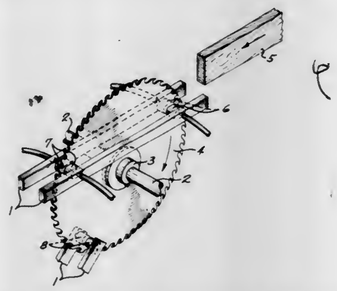


Apparatus for cutting and marking plate stock, such as the two by four type, used in building wall panels, particularly a longitudinally extending table for supporting the two by fours and a marking template in side by side relationship, and including a movable stop abutting the template and two by four at one end of the table and a circular saw pivotable across the stock for cutting the stock at the other end of the table.

3,674,065
SAW GUIDES
Louis R. Fairfield, Jr., Longview; Raymond A. Van Vliet, Mossyrock, both of Wash., and Thomas A. McLauchlan, Vancouver, British Columbia, Canada, assignors to Weyerhaeuser Company, Tacoma, Wash.
Continuation of Ser. No. 725,566, April 12, 1968, abandoned, Continuation-in-part of Ser. No. 695,740, Jan. 4, 1968, abandoned. This application July 6, 1970, Ser. No. 60,979
Int. Cl. B27b *5/28*
U.S. Cl. 143—160 R **20 Claims**

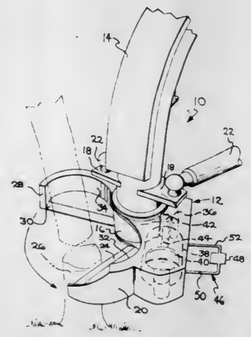
A method and apparatus for guiding a saw blade wherein the saw guides comprise opposed bearing shoes located on opposite sides of the saw blade, at least one of the bearing shoes urged toward each other and against the saw blade by an external force such as a compressed spring. Compressed air, water, water-air mixture or other fluid is supplied to the interior recesses of each of the bearing shoes and acts to form a

fluid bearing surface at the bearing shoe-saw blade interface. The external force exerted on the bearing shoes is transmitted



to the saw blade through the fluid medium with substantially no contact of the saw blade with the bearing shoes.

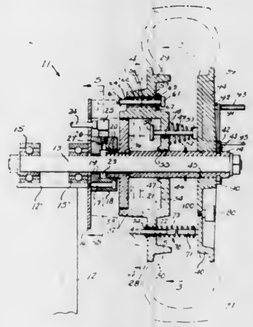
3,674,066
TREE SHEAR
Dean W. Shields, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio
Filed June 11, 1970, Ser. No. 45,313
Int. Cl. A01g *23/02*
U.S. Cl. 144—34 E **4 Claims**



A novel and improved tree shear adapted to sever a standing tree at ground level. The shear utilizes one stationary cutting blade and one movable cutting blade. The fixed cutting blade provides the reactionary force and cuts through one-half of the tree as the moving blade builds up force from its actuating cylinder to cut through the other half of the tree.

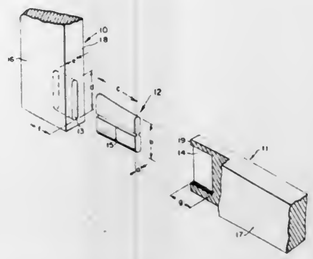
3,674,067
TIRE CHUCKING DEVICE
Donno W. Cooper, assignor to International Rubber Industries, Inc., Jeffersontown, Ky.,
Filed April 16, 1970, Ser. No. 29,043
Int. Cl. B29h *21/00*; **B60c** *25/00*
U.S. Cl. 144—288 A **12 Claims**

An air-operated tire chucking device consisting of a mandrel on which front and rear tire bead-engaging discs are slidably mounted. A removable stop key on the mandrel limits movement on the front disc. The rear disc has a cylinder which receives a stationary piston, defining an expansible primary chamber. With a tire between the discs, compressed air is admitted into this primary chamber, forcing the rear and front discs against the tire beads and thus forming a contact seal for inflation of the tire. As the rear disc reaches a predetermined position, a valve element carried thereby contacts the front disc and exposes a valve port in the rear disc, allowing air to exit from the primary chamber and fill the tire, the tire and discs now forming a secondary chamber. The tire continues to inflate until the air pressure in the tire forces the rear disc back and the valve element loses contact with the



front disc and closes the inflation valve. The tire is released by venting the primary chamber, whereby the pressure in the tire overcomes the pressure in the primary chamber, forcing the rear disc rearwardly and causing a tire vent valve carried thereby to open, thus releasing the air from the tire.

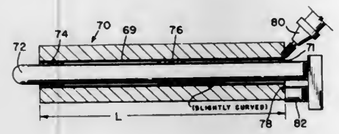
3,674,068
METHOD OF MAKING BLIND JOINTS FOR PRECISE POSITIONING OF MEMBERS
Donald E. Lucci, 152 Winter St., Aliquippa, Pa.
Division of Ser. No. 691,094, Nov. 24, 1967, abandoned. This application Dec. 16, 1969, Ser. No. 885,583
Int. Cl. B27f *1/08*
U.S. Cl. 144—309 L **4 Claims**



Oblong mortises having substantially parallel walls are cut into the confronting faces of elements to be joined. These mortises are precisely positioned relative to a particular face of the elements. A spline is then cut to conform to the dimensions of the cavity formed by the mortises and inserted therein in order to complete the joint.

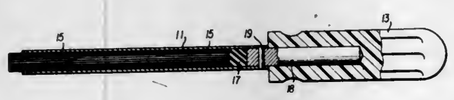
3,674,069
METHOD OF MAKING A BOBBIN BARREL
John B. Hawley, 410 Progress Ave., High Point, N.C.
Division of Ser. No. 584,046, Sept. 19, 1966, abandoned. This application March 20, 1969, Ser. No. 814,881
Int. Cl. B27c *9/00*; **B65h** *75/14*, *75/30*
U.S. Cl. 144—326 R **2 Claims**

A flanged bobbin in which the barrel has a cylindrical exterior concentric with the rotational axis of the barrel and a flange concentrically mounted on the end of the bobbin to which flange is secured concentrically a unitary drive lug engaging flange having a symmetrical butterfly recess and a



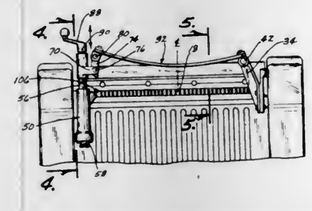
method of constructing a bobbin barrel with minimum eccentricity and vibration for operation at high rotational speeds.

3,674,070
UNIVERSAL SCREWDRIVER
Michael Mahoney, 4703 Marie St., Beltsville, Md.
Filed June 2, 1969, Ser. No. 829,290
Int. Cl. B25b *15/02*
U.S. Cl. 145—50 A **11 Claims**



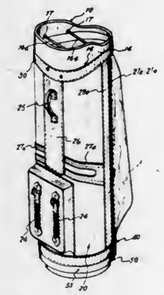
This disclosure describes a hand tool having the ability to engage various types and sizes of screw fastener heads. The hand tool comprises a bundle of wires held in a generally tubular housing with one end of the bundle projecting slightly beyond the end of the housing. The other end of the bundle presses against a deformable cell located in the housing. A handle is attached to the other end of the housing. When the projecting wires are pressed against the head of a screw fastener, the wires deform about the head thereby making a replica mold of the surface of the screw fastener head. Lateral torque thereafter applied to the handle causes the deformed wires to transmit this torque to the screw causing it to rotate.

3,674,071
FATTING ATTACHMENT FOR SKINNING MACHINES
Donald L. Beasley, Des Moines, Iowa, assignor to Townsend Engineering Company, Des Moines, Iowa
Filed July 20, 1970, Ser. No. 56,319
Int. Cl. A22c *17/12*
U.S. Cl. 146—130 **4 Claims**



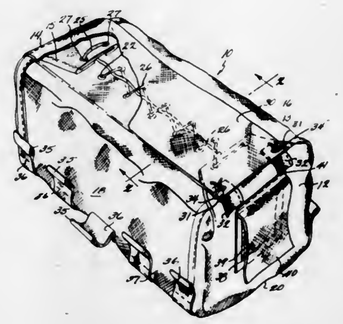
A fatting attachment for skinning machines comprising a curved fatting blade mounted above the skinning blade of the machine. Adjustment means is secured to one end of the fatting blade so that the fatting blade can be moved toward and away from the skinning blade to vary the depth of the fatting blade in the fat.

3,674,072
SECTIONAL GOLF BAG
Yoshitaka Shuto, Shichidojutakanai, 1-22, 3-cho, Kitahatagochonishi, Sakai, Osaka Prefecture, Japan
Filed June 2, 1970, Ser. No. 42,817
Int. Cl. A63b *55/00*
U.S. Cl. 150—1.5 R **6 Claims**



In a sectional golf bag which can be manually assembled without sewing machines, a top collar unit and a bottom unit with a respective tri-angular grooved cavity communicating integrally with a respective annular groove formed in and along each of the opposed peripheral walls of both units, and a body unit with an upper and lower flange means having a configuration corresponding to each of the triangular grooved cavities, respectively, such that they can be received forcibly into and engaged with each of the triangular grooved cavities for coupling the top collar unit, the bottom unit and the body unit together. The body unit can be held cylindrical by means of a pair of fastener elements along the vertical edges.

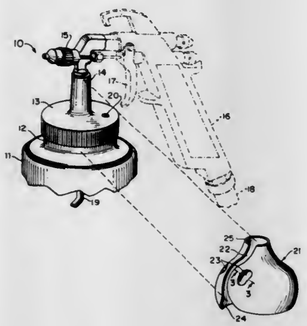
3,674,073
COTTON HARVESTING BAG
James D. Hendon, Indianola, Miss., assignor to John C. Hendon, Bolivar, Miss., a part interest
Filed Aug. 6, 1970, Ser. No. 61,779
Int. Cl. A45c *7/00*
U.S. Cl. 150—7 **4 Claims**



A bag construction is described which is adapted to receive harvested cotton or the like directly from the harvesting machinery in the field and to store same indefinitely until such time that the harvested material can be further processed. The bag is designed so that the sides and ends thereof have flaps capable of being extended upwardly therefrom, and these

flaps are adapted to be attached to a frame during the loading process. The operator of the harvesting machinery can simply drive up to the bag to unload the harvested cotton without the need for any special attachments or conveying mechanisms on the harvesting machinery. When the bag is filled, the top end of the side flaps are pulled together by lacing, and following this, the top portions of the sides, or where the flaps are attached to the sides, are laced together as well. The flap portions of the ends of the bag may then be laced together, and a flap member which is adapted to cover the entire top of the bag extends over it longitudinally and is tied down. The bag is provided with openings on each end thereof, which are loosely covered by a flap, and this opening serves as a means for circulating air through the stored harvested cotton or the like while it is awaiting transfer to further processing machinery. Straps are provided which extend across the width of the bottom of the bag and are sewn to the bag near the bottom portion of the bag side. Loops extend upwardly from the point at which the straps are sewn to the bag to allow the bag to be lifted in an upright position. The straps are loose from the bottom of the bag so that if picked up at that point the bag will be raised in an inverted position allowing the harvested material stored therein to be dumped from it.

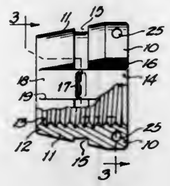
3,674,074
REMOVABLE COVER FOR SPRAY GUN
Walter J. Lavis, 138 W. 31st St., Bayonne, N.J.
Filed July 17, 1970, Ser. No. 55,778
Int. Cl. B65d *65/02*
U.S. Cl. 150—52 R **1 Claim**



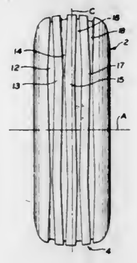
A flexible, removable cap or cover for the top of a pressure spray gun for applying lacquer, paints, and the like.

3,674,075
TAMPER-PROOF TWO-WAY LOCKING NUT
Robert A. Hoegee, Huntington Beach, Calif., assignor to Shur-Lok Corporation, Santa Ana, Calif.
Filed Nov. 14, 1969, Ser. No. 876,760
Int. Cl. F16b *23/00, 29/00, 37/00, 39/284*
U.S. Cl. 151—21 B **5 Claims**

An all-metal conical nut having coined locking depressions at the intersections of a pair of external wrenching grooves parallel to the nut axis and an annular groove midway between the ends of the nut, which can be threaded onto the end of a threaded rod end either base-first or tip-first, the latter facilitating its application to a control rod end bearing before insertion of the latter into a control rod.



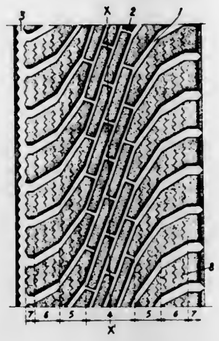
3,674,076
PNEUMATIC TIRE TREAD DESIGN
Charles R. Dailey, Jr., Cuyahoga Falls, Ohio, assignor to The General Tire & Rubber Company
Filed June 8, 1970, Ser. No. 44,294
Int. Cl. B60c *11/06*
U.S. Cl. 152—209 R **8 Claims**



A pneumatic tire tread is provided with a groove or series of grooves of continuously variable width around the circumference of the tire. The groove or grooves may be used in combination with rib elements which are uniform or variable in width. The respective pitches of the grooves are offset or different, such that the forward portion of the tread footprint area will present alternating opening and closing voids, thereby effecting a pulsating or pumping action just ahead of the tire footprint, such that water tending to accumulate ahead of the tire can be more quickly pumped through toward the rear to prevent the build-up of a layer of water. Prevention of this water accumulation or build-up reduces the tire's inclination toward hydroplaning.

3,674,077
TIRE TREAD
Henri Verdier, Beauregard-L'Eveque, France, assignor to Compagnie General Des Etablissements Michelin raison sociale Michelin & Cie, Clermont-Ferrand, Puy-de-Dome, France
Filed July 20, 1970, Ser. No. 56,346
Claims priority, application France, July 21, 1969, 6924850
Int. Cl. B60c *1/08*
U.S. Cl. 152—209 **9 Claims**

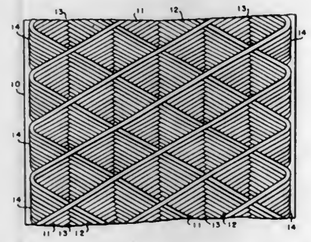
The tread of a pneumatic tire is formed with symmetrical grooves, preferably S-shaped, extending from one edge of the tread to the other. The grooves are generally longitudinal in the central portion of the tread and generally transverse near the edges of the tread.



3,674,078
PNEUMATIC TIRE WITH POLYESTER CASING, NYLON BREAKER AND STEREO REGULAR POLYBUTADIENE
Shiro Sasaki, and Narajiro Shibata, both of Osaka, Japan, assignors to The Toyo Rubber Industry Co., Ltd., Osaka, Japan
Filed Dec. 2, 1968, Ser. No. 780,586
Claims priority, application Japan, Dec. 1, 1967, 42/77228
Int. Cl. B60c *1/00;* **C08d** *9/16*
U.S. Cl. 152—330 **7 Claims**

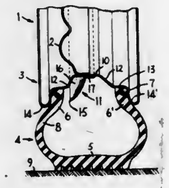
A tire comprising a polyester casing ply cord, a nylon breaker or cap ply cord, the breaker or cap ply consisting of at least two layers, the rubber used in the above plies being vulcanizable and comprising at least 20 percent stereo-regular polybutadiene or stereo-regular styrene-butadiene containing carbon black. The tread is formed of a vulcanizable rubber containing specific proportions of stereo-regular polybutadiene or stereo-regular styrene-butadiene rubber containing carbon black with a maximum particle size. High speed durability is greatly improved.

3,674,079
METHOD FOR PRODUCING ENDLESS REINFORCEMENTS FOR VULCANIZED PNEUMATIC TIRES
George C. Varner, Spartanburg, S.C., assignor to Deering Milliken Research Corporation, Spartanburg, S.C.
Division of Ser. No. 812,766, April 2, 1969, Pat. No. 3,589,426. This application Oct. 23, 1970, Ser. No. 83,294
Int. Cl. B29h *17/02, 17/08;* **B60c** *5/08*
U.S. Cl. 152—361 **5 Claims**



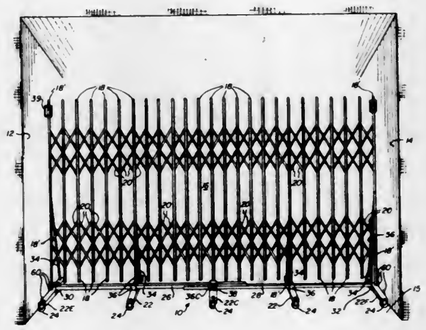
The endless reinforcement for a pneumatic tire of the present invention comprises continuous cord forming a generally zigzag pattern and being positioned across the width of the reinforcement from one side to the other at an angle to the edges of the reinforcement with reversals at the edges. Lengths of the cord between the reversals are interleaved with lengths disposed in an opposite direction along at least one line substantially parallel to and intermediate the edges thereof. Also, a method for producing a tire including such reinforcement and the resulting tire.

3,674,080
WHEEL FOR HIGH-SPEED CORNERING
Henri Verdier, Beauregard-l'Eveque, France, assignor to Compagnie Generale Des Etablissements Michelin raison Sociale Michelin & Cie, Clermont-Ferrand (Puy-de-Dome), France
Filed Feb. 11, 1970, Ser. No. 10,563
Claims priority, application France, Feb. 19, 1969, 6904236
Int. Cl. B60c *5/00;* **B60b** *21/10*
U.S. Cl. 152—375 **6 Claims**



A wheel rim for an automotive vehicle is formed with an annular element upstanding from it and surrounding it. The annular element has a maximum diameter at least as great as the diameter of the bead seat and no greater than the diameter of the rim flange and is positioned to engage the inner surface of the outer bead of a tubeless tire when the tire is deformed as in high-speed cornering. It thus supports the bead and prevents unwedging thereof and consequent loss of inflation air.

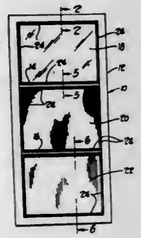
3,674,081
LOCKING MECHANISM FOR PORTABLE GATE
Herbert A. List, Flossmoor, Ill., assignor to List Industries Inc.
Filed Nov. 21, 1969, Ser. No. 878,866
Int. Cl. E06b *9/08*
U.S. Cl. 160—161 **3 Claims**



A portable gate of a conventional extensible and collapsible type is provided with facilities to enable the gate to be installed quickly and securely. Pivoted locking bars for holding the gate extended are provided with interference structure that interengages during final swinging movement of the bars

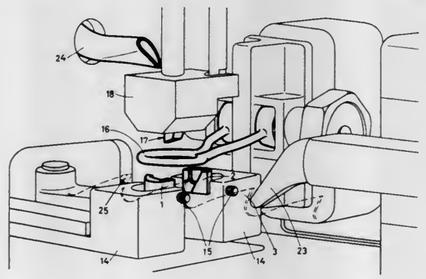
to force resilient bumpers into predetermined compression against the sidewalls that are bridged by the gate. Retainers on opposite ends of the gate engage floor anchors during final extension of the gate to provide vertical interlocks in accordance with an additional optional feature.

3,674,082
STORM DOOR GLAZING BEAD
Frank M. Letarte, 9094 Yager Road, Smith Creek, Mich.
Filed Feb. 17, 1969, Ser. No. 799,579
Int. Cl. E06b *3/54*
U.S. Cl. 160—371 **3 Claims**



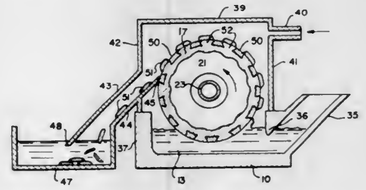
A panel and frame assembly and method for producing same in which the frame is provided with a longitudinally extending channel facing the area to be paneled. The panel is secured by a strip extending longitudinally of the frame and engaging the channel in snap-fitting relationship. In securing solid panels in the frame, the strip is secured in the channel by a cam-lock and has double spring action in which a portion of the strip acts in compression, while another portion acts in tension. In securing fabric panels into the frame, the spring and cam action is the same. Additionally, the portion of the strip which acts as the cam-lock engages a fabric.

3,674,083
APPARATUS FOR PROVIDING A CUTTING TOOL WITH A CUTTING PORTION OF A METAL HARDER THAN A BASE METAL OF THE CUTTING TOOL WHICH CARRIES THE CUTTING PORTION
Otto Stier; Heinz Kuhn, and Udo Vollmer, all of Biberach, Riss, Germany, assignors to Vollmer Werke Maschinenfabrik GmbH, Biberach/Riss, Germany
Filed April 29, 1968, Ser. No. 725,236
Claims priority, application Germany, April 27, 1967, V 33542; June 15, 1967, V 33870
Int. Cl. B22d *27/02*
U.S. Cl. 164—251 **6 Claims**



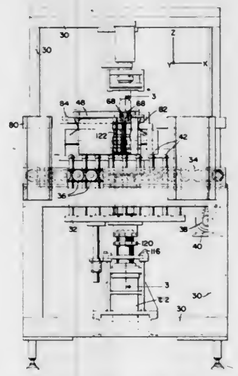
A method and apparatus for providing a cutting tool with a cutting portion of a metal harder than the base metal of the cutting tool which carries the cutting portion. The part of the base metal of the tool which is to carry the harder cutting portion is situated in a mold means made up of at least a pair of mold components movable toward and away from each other, and the harder metal initially is in the form of a powder which while it is in the mold means in engagement with the softer base metal is heated with the softer metal to an extent sufficient to cause the particles of the harder metal to melt and fuse to each other and to cause the harder metal to form an intimate bond with the softer metal, a suitable heating means being provided for this purpose to coact with the mold means. After the metal in the mold sets the mold components are moved apart from each other.

3,674,084
CHILL FOR DIRECT CASTING OF THIN PLATELETS
Eugene J. Paliwoda, Bethel Park, Pa., assignor to Jones & Laughlin Steel Corporation, Pittsburgh, Pa.
Filed June 18, 1970, Ser. No. 47,373
Int. Cl. B22d *15/04, 23/04*
U.S. Cl. 164—271 **5 Claims**



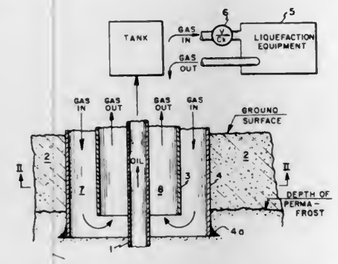
Apparatus for successively casting discrete thin platelets of metal includes a rotating internally fluid cooled cylindrical chill arranged so that the lower portion of its surface dips into molten metal. The chill surface is formed of successive circumferential areas of metal chill separated by circumferential areas of refractory material on which the molten metal does not solidify. A scraper is positioned to remove the solidified platelets from the chill and discharge them into a cooling medium.

3,674,085
MACHINE FOR CASTING BATTERY INTERCELL CONNECTORS
William R. Clingenpeel, Middleburg Heights; Charles L. Cain, Cleveland; Philip C. Hungerford, Jr., Cleveland Heights, and Robert R. Hayes, Euclid, all of Ohio, assignors to ESB Incorporated, Philadelphia, Pa.
Division of Ser. No. 643,574, June 5, 1967, Pat. No. 3,547,183.
This application Nov. 24, 1969, Ser. No. 870,415
Int. Cl. B22d *17/24*
U.S. Cl. 164—333 **2 Claims**



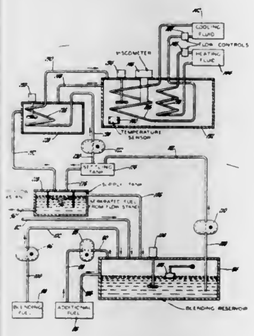
A machine for casting intercell connectors through the partition of open-top battery containers. The machine may also be used to cast intercell connectors which go over the tops of the partitions, and to cast battery terminal posts.

3,674,086
METHOD OF TRANSPORTING OIL OR GAS IN FROZEN TUNDRA
Alden W. Foster, 1207 Beaver St., Sewickley, Pa.
Filed Aug. 7, 1970, Ser. No. 61,982
Int. Cl. F25d *23/12*
U.S. Cl. 165—1 **6 Claims**



A method of preventing softening or thawing of the permafrost zone while producing or transporting hot oil or gas therethrough in which a liquefied hydrocarbon gas, preferably natural gas, is passed between the zone and the hot oil. The gas may be circulated in a suitable system.

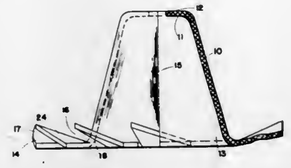
3,674,087
FLOW PROCESS
Tracy R. Ackerman, Honeoye Falls, and John F. Schickler, Rochester, both of N.Y., assignors to General Motors Corporation, Detroit, Mich.
Division of Ser. No. 722,653, April 19, 1968, Pat. No. 3,520,312. This application Nov. 28, 1969, Ser. No. 880,665
Int. Cl. F25b *13/00*
U.S. Cl. 165—2 **1 Claim**



A carburetor flow stand, located in an enclosure containing air at substantially constant temperature, pressure and humidity, contains a plurality of sonic outlet nozzles which create a pressure signal in the flow stand chamber indicative of the rate of air flow through the carburetor.

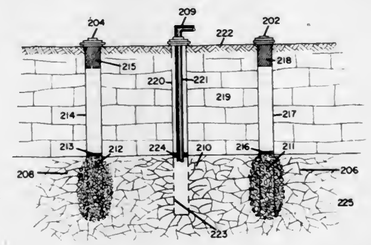
A blending process supplies a continuous stream of test fuel to the carburetor at substantially constant density and viscosity so that the rate of fuel flow may be accurately measured by the pressure drop across an orifice. The blending process includes a step in which the fuel is brought to a substantially constant temperature for accuracy in the viscosity measurement.

3,674,088
TEST HOLE PLUG
Kenneth Vernon Ovelson, 10678 - 63rd St., Edmonton, Alberta, Canada
Filed Jan. 21, 1971, Ser. No. 108,453
Int. Cl. E21b *33/12*
U.S. Cl. 166—192 **6 Claims**



A flexible plastic truncated cone shaped body is provided with an annular flange at the upper end which is radially slitted to permit a decrease in overall diameter of the rim when the device is inserted into a test hole to close it off.

3,674,089
METHOD FOR STIMULATING HYDROCARBON-BEARING FORMATIONS
Ted R. Moore, Ruston, La., assignor to Cities Service Oil Company, Tulsa, Okla.
Filed Sept. 10, 1970, Ser. No. 70,975
Int. Cl. E21b *43/26*
U.S. Cl. 166—245 **11 Claims**

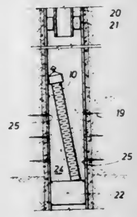


An approved method is disclosed for the stimulation of formations which exhibit a high oil content and porosity, but having a low permeability and therefore poor primary production. The method comprises the placement of explosives at predetermined points within a formation so as to effectively fracture a large portion of the formation subsequent to the explosive placement and detonation. A fracture network is created with interwell communication. A well is drilled into the fracture zone and oil produced therefrom.

3,674,090
METHODS FOR INHIBITING THE ENTRANCE OF LOOSE FORMATION MATERIALS INTO A WELL BORE
Harold J. Urbanosky, Pearland, Tex., assignor to Schlumberger Technology Corporation, New York, N.Y.
Filed Sept. 18, 1970, Ser. No. 73,278
Int. Cl. E21b *43/02*
U.S. Cl. 166—276 **9 Claims**

As a representative mode of practicing the methods of the invention disclosed herein, a tubular screen is lowered through a production string and packer and positioned in a well bore adjacent to a perforated formation interval containing loose formation materials. To inhibit the production of such materials as the well is produced, a mixture of loose

materials and a hardenable consolidating agent is then deposited around the tubular screen so as to fill the perforated well bore interval leaving only the upper portion of the screen projecting above the annular body of deposited materials. In



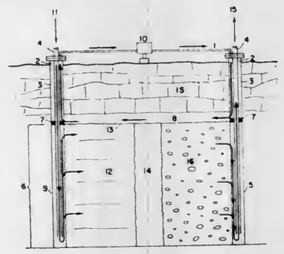
this manner, once the consolidating agent hardens, production can be commenced through the permeable plug of consolidated materials into the screen and out its exposed upper end.

3,674,091
METHODS AND APPARATUS FOR COMPLETING PRODUCTION WELLS
James W. Kisling, III, Houston, Tex., assignor to Schlumberger Technology Corporation, New York, N.Y.
Filed June 3, 1970, Ser. No. 43,064
Int. Cl. E21b *43/00*
U.S. Cl. 166—314 **18 Claims**



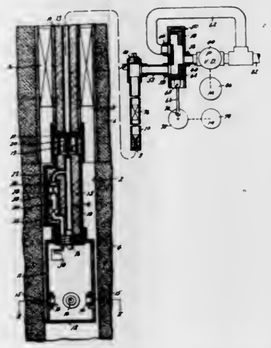
This application discloses new and improved methods and apparatus for completing production wells having perforations which either are to be cleaned or penetrate earth formations which are to be fractured, acidized, or treated such as, for example, to inhibit the subsequent production of unconsolidated formation materials. To practice the present invention, a new and improved production tool is arranged for coupling into a string of production tubing and includes a typical well packer having an elongated tubular member dependently coupled therebelow and capped at its lower end for defining an enclosed chamber of a substantial volume and which is initially maintained at a reduced pressure by new and improved normally-closed pressure-actuated valves serially arranged at the upper end of the tubular member and adapted to be selectively opened in succession. The production string and the tool are installed in a cased well bore with the packer being set above a previously-perforated interval traversing an earth formation which is to be subsequently produced. Once the customary wellhead equipment is installed to provide selective communication from the surface with the tubing and casing, the first of the two normally-closed valves is selectively opened by increasing the pressure of the well bore fluids in the production string above the packer. Upon opening of this first valve, formation fluids will be suddenly exhausted into the reduced-pressure chamber for removing contaminants that may have previously entered the formation following the perforation of the casing so as to leave only uncontaminated formation materials immediately surrounding the perforations. Thereafter, the second normally-closed valve is selectively opened by injecting selected fluids by way of the production string through the perforations and into the adjacent earth formations.

3,674,092
PROCESS FOR REDUCING HEAT LOSS DURING IN SITU THERMAL RECOVERY
Pratip Bandyopadhyay, Tulsa, Okla., assignor to Cities Service Oil Company, Tulsa, Okla.
Filed July 23, 1970, Ser. No. 57,633
Int. Cl. E21b *43/24, 43/26*
U.S. Cl. 166—271 **4 Claims**



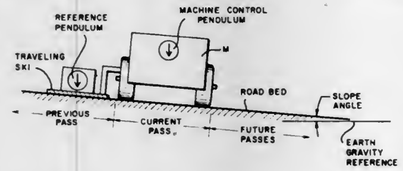
A continuous blanket of an inert gas is introduced between the hydrocarbon bearing reservoir and the overburden rock. The gas in injected in either a countercurrent or co-current direction with the progress of the thermal recovery front. By this injection an insulation medium is provided by the inert non-condensable gas such that heat losses to the overburden rock are reduced to a nominal amount and a more efficient thermal recovery process is achieved.

3,674,093
METHOD AND APPARATUS FOR STIMULATING THE FLOW OF OIL WELLS
Dale C. Reese, 2319 Meadow Lane, Salina, Kans.
Filed June 24, 1970, Ser. No. 49,266
Int. Cl. E21b *43/26*
U.S. Cl. 166—299 **8 Claims**



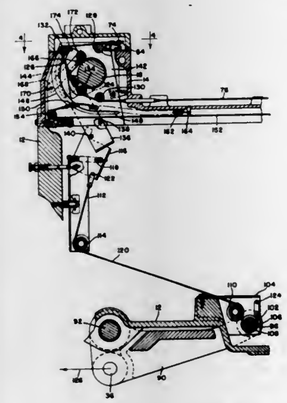
A method for stimulating the flow of oil wells consisting of sealing off a portion of the well shaft within the oil-bearing formation of the ground, introducing a combustible fuel not requiring additional oxygen for its combustion into the sealed-off portion of the well shaft and igniting said fuel; and an apparatus capable of performing said method. The combustion produces heat, which tends to melt or burn out sludges, tars, or the like which may be clogging the oil flow passages of the formation, and also produces sudden large quantities of gaseous products of combustion, in a manner similar to a low-order explosion, which fractures the formation to form new flow passages. The flow rate of the fuel may be gradually increased, and rendered intermittent to produce a series of "explosions," whereby the zone of the oil-bearing formation treated is gradually increased.

3,674,094
AUTOMATIC SLOPE CONTROLLER
Leland E. Kuntz, Arlington Heights, Ill., assignor to Honeywell Inc., Minneapolis, Minn.
Filed Aug. 31, 1970, Ser. No. 68,290
Int. Cl. E02f *3/76*
U.S. Cl. 172—4.5 **10 Claims**



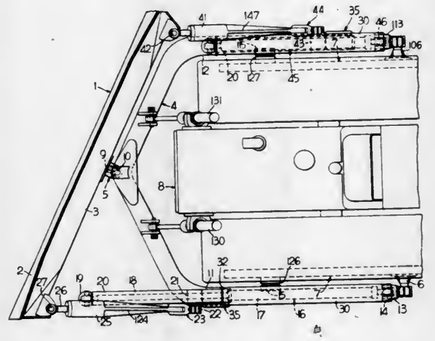
A controller for a road finishing machine which is adapted to match the slope of the surface presently being prepared to the slope of an adjacent surface previously prepared embodying a first means for sensing the slope of the previously prepared surface, a second means for sensing the slope of the surface currently being prepared and control means for comparing the outputs of the two sensors and for providing an error signal indicative of the difference of the two slopes.

3,674,095
SERVO-CONTROL FOR AN AGRICULTURAL TRACTOR HYDRAULIC LIFT
John Nelson Roger, Cedar Falls, Iowa, assignor to Deere & Company, Moline, Ill.
Filed Oct. 26, 1970, Ser. No. 83,940
Int. Cl. A01b *63/112*
U.S. Cl. 172—7 **21 Claims**



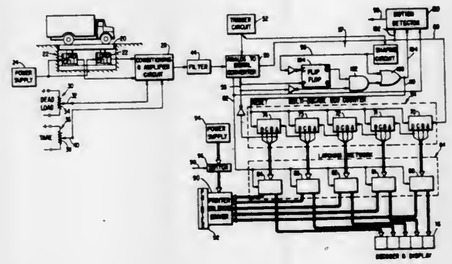
A cable and sheave (or equivalent) system for operating the valve means of a tractor hydraulic lift to regulate the position of the associated implement according to (a) load or draft, (b) depth or position and (c) a combination or "mixture" of (a) and (b).

3,674,096
BULLDOZER BLADE MOUNTING
David A. Berg, Milwaukee, Wis., assignor to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.
Filed June 8, 1970, Ser. No. 44,099
Int. Cl. E02f *3/76*
U.S. Cl. 172—805 **10 Claims**



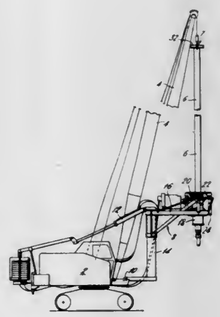
A bulldozer blade mounting for slidably supporting the ram assemblies for the bulldozer blade while shielding the hydraulic actuator as the actuator extends and retracts.

3,674,097
MOTION DETECTOR FOR WEIGHING APPARATUS
Richard H. Gile, Rutland, Vt., assignor to Howe Richardson Scale Company, Clifton, N.J.
Filed March 12, 1971, Ser. No. 123,764
Int. Cl. G01g *23/10, 23/365, 23/37*
U.S. Cl. 177—3 **25 Claims**



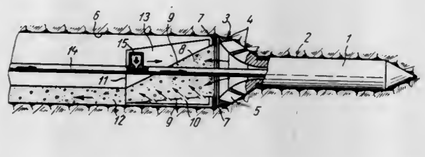
A detector for detecting the change in the number of pulses in serially applied pulse streams by memorizing a function representing the preceding one of the two pulse stream and by comparing the memorized function with a corresponding function of the subsequentially occurring one of the two pulse streams. This detector is, among other things, applicable to sense relatively small movements of a load-receiving structure (such as a weigh hopper or platform) in a weighing system.

3,674,098
DRILLING RIGS
James Russell Virgo, Belstead, England, assignor to The British Steel Piling Company Limited, Claydon, Ipswich, Suffolk, England
Filed Nov. 2, 1970, Ser. No. 86,251
Claims priority, application Great Britain, Nov. 3, 1969, 53,800/69
Int. Cl. E26c 5/10
U.S. Cl. 173—149 7 Claims



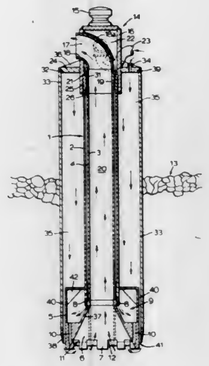
A drilling rig has a fluid pressure crowding device operated through a pressure accumulator so that no external energy input is required to maintain the crowding action during drilling. By use of differential piston crowding rams, the accumulator can be arranged in a closed circuit and the rams moved against its crowding action when it is required to reposition the drill shaft drive member through which the crowding action is transmitted.

3,674,099
DEVICE FOR MAKING HOLES IN THE GROUND
Alexandr Dmitrievich Kostylev; Konstantin Stepanovich Gurkov; Khaim Berkovich Tkach, and Lazar Moiseevich Lipovetsky, all of Novosibirsk, U.S.S.R., assignors to Institut Gornogo Dela Siberskogo otdelenia Akademii, Nauk SSSR, U.S.S.R.
Filed Dec. 30, 1970, Ser. No. 102,675
Int. Cl. E21b 11/02, 9/22
U.S. Cl. 175—20 4 Claims



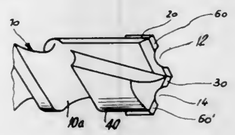
A device for making holes in the ground has a driving unit adapted to compact the ground and mounting an expansion reamer with an adjoining hopper adapted to receive the ground broken by the reamer, said hopper being provided with pneumatic means for the removal of the ground from the hopper outside the hole.

3,674,100
METHOD AND APPARATUS FOR DRILLING AND CASING A LARGE DIAMETER BOREHOLE
Norman D. Becker, 3208-25th St. S.W., Calgary, Alberta, Canada
Filed Aug. 12, 1970, Ser. No. 63,189
Int. Cl. E21b 1/00, 21/04
U.S. Cl. 175—69 7 Claims



A method and apparatus for impact drilling and casing a large diameter borehole is described utilizing a drill pipe having an outside diameter smaller than the diameter of the borehole. The apparatus includes a double walled drill pipe with an annular bit having a diameter at its radial cutting edge equal to the diameter of the borehole, an anvil cap assembly at the upper end of the drill pipe and a casing having an outside diameter equal to the diameter of the borehole mounted over the drill pipe and drill bit and coaxially therewith. While the anvil is subjected to impact energy, compressed air at relatively low pressure is passed down the annular passage of the drill pipe, through passages in the bit and into the axial bore of the bit while water at relatively high pressure is passed between the drill pipe and casing. The water passes into the axial bore of the bit through spaces between the bit teeth and passes upwardly through the central passage of the drill pipe together with the compressed air and borehole fragment.

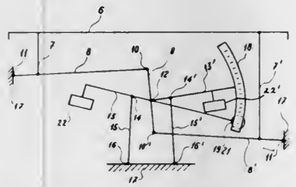
3,674,101
DRILL CONSTRUCTION
Franz Chromy, Vorarlberg, Austria, assignor to Hilti Aktiengesellschaft, Schaan, Liechtenstein
Filed April 8, 1970, Ser. No. 26,677
Claims priority, application Germany, April 28, 1969, P 19 21 677.4
Int. Cl. E21c 13/00
U.S. Cl. 175—389 6 Claims



A spiral or twist drill having a hard metal cutting edge and particularly useful for drilling concrete or artificial stone includes a cutting edge having a centering projection of a diameter which is smaller than the outside diameter of the drill. The cutting edge is formed by a hard metal plate which is secured such as by soldering within a cross groove of the drilling head. The centering tip is formed either by a separate hardened metal element which projects outwardly from the center of the cutting plate or is defined by notches which are formed on each side of a central centering tip portion of the hard plate.

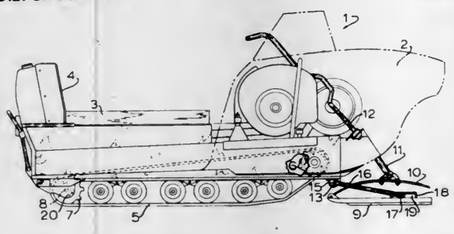
ERRATUM
For Class 177—3 see:
Patent No. 3,674,097

3,674,102
PLATFORM BALANCE
Peter Bommer, Zurich, and Hans Menzi, Stafa, both of Switzerland, assignors to Mettler Instruments AG, Zurich, Switzerland
Filed Aug. 30, 1971, Ser. No. 175,898
Claims priority, application Switzerland, Dec. 4, 1970, 17919/70
Int. Cl. G01g 21/18, 21/24, 1/28
U.S. Cl. 177—256 12 Claims



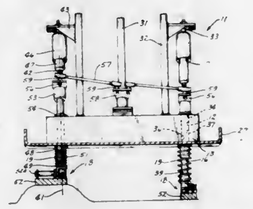
A platform balance including a housing, a weighing platform vertically movable relative to said housing, and at least one force indicating lever pivotally movable in accordance with the mass to be weighed by said balance, characterized in that the force indicating lever is pivotally supported in said housing beneath said platform at the upper end of a vertical support member the lower end of which is pivotally connected with the bottom wall of the housing, said force indicating lever being operable by the platform via load lever linkage means connected between the opposed side walls of the housing. In the illustrated embodiment, a pair of symmetrical force indicating levers are connected for pivotal movement in opposite directions to increase the sensitivity of measurement. Adjustable weight means are provided for varying the operating range of the balance, and tangent error is compensated for by appropriate selection of the dimensions and location of the center of gravity of the vertical support member.

3,674,103
SNOW VEHICLE ANTI-SWAY SUSPENSION SYSTEM
Elmer Carl Kiekhaefer, 2408 Cypress Gardens Road, Winter Haven, Fla.
Filed May 21, 1970, Ser. No. 39,434
Int. Cl. B62m 27/02
U.S. Cl. 180—5 R 3 Claims



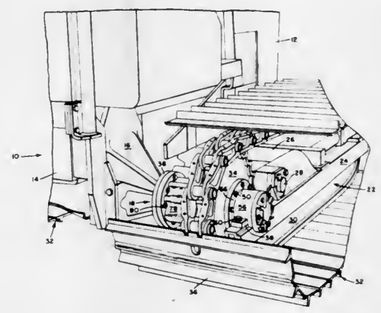
The spring mounted two front steering skis of a snowmobile are stabilized by a torsion bar having its ends universally and slidably connected to the corresponding skis and its central portion carried in bearings by the body of the vehicle. The suspension for the rear axle has end sprockets carrying the track or belt and is stabilized by employing a torsion bar at the pivotal axis for the suspension arms. The torsion bar is rigidly secured to the arms.

3,674,104
CUSHIONED SUPPORT MEANS
Frank T. Gostomski, 1053 N. Beech St., Wahoo, Nebr.
Filed Dec. 29, 1969, Ser. No. 888,420
Int. Cl. B62m 27/02
U.S. Cl. 180—5 R 9 Claims



A cushioned support means for use with snowmobiles is provided which comprises two laterally aligned sleeves formed through the bottom of the snowmobile which have support shafts extending therethrough. A shock absorber is affixed to the upper end of each of the support shafts and a means for attaching skis is affixed to the lower end of each of the support shafts. Coil springs encircle each of the support shafts and urge the shafts downwardly. The support shafts are preferably rotatable about their longitudinal axes and movable upwardly and downwardly along these axes and are utilized as a portion of the steering apparatus for the snowmobile.

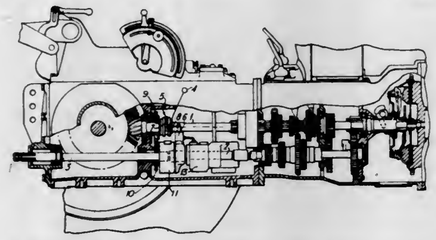
3,674,105
DRIVE AXLE FOR WIDE-TRACK CRAWLER VEHICLES
John Alfred Egli, Dubuque, Iowa, assignor to Deere & Company, Moline, Ill.
Filed Oct. 30, 1970, Ser. No. 85,376
Int. Cl. B62d 55/12
U.S. Cl. 180—9.48 7 Claims



A crawler vehicle has a pair of extra wide, high-flotation tracks respectively supported on a pair of fore-and-aft extending track frames on opposite sides of the vehicle, the track frames being rigidly connected to the main frame. A pair of drive axles respectively extend outwardly a relatively short distance from a pair of final drive housings at opposite sides of the rear end of the main frame and the drive axles are respectively connected to a pair of rearward drive sprockets, which

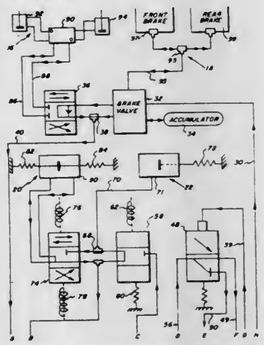
drivingly engage the rear end of the tracks and are spaced outwardly from the ends of the axles, by means of a pair of axle extension members, the inner ends of which are drivingly connected to the outer ends of the axles by means of flexible couplings, which permit a small amount of tilting of the axle extension members relative to the drive axles. The outer ends of the axle extension members are respectively journaled in the respective track frames by means of self-aligning bearings, which accommodate the tilting of the axle extension members.

3,674,106
CONTROL FOR POWER TAKE-OFF
Alfred W. Thomas, Earl Shilton, England, assignor to Massey-Ferguson Services N.V., Curacao, Netherlands Antilles
Filed Feb. 6, 1970, Ser. No. 9,297
Claims priority, application Great Britain, Feb. 13, 1969, 7,760/69
Int. Cl. B60k *17/28*
U.S. Cl. 180—53 **5 Claims**



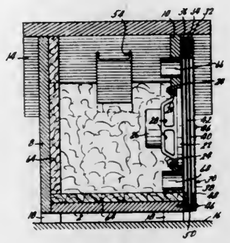
A vehicle has a P.T.O. transmission comprising a main drive shaft rotatable at a speed proportional to the ground speed of the vehicle, an auxiliary shaft rotatable at a speed proportional to the speed of the engine, and a P.T.O. shaft selectively connectible to each of said shafts through first and second clutches, respectively. Clutch operating means have a first-clutch operating position, a second-clutch operating position and a neutral position for selectively providing two P.T.O. speeds or neutral. A brake on said P.T.O. shaft is operable by the clutch operating means when the latter is the neutral position to immobilize the P.T.O. shaft and enable connection of implement drive shafts.

3,674,107
HYDRAULIC SYSTEM FOR A VEHICLE
Gerard R. Santos, Levittown, and James M. Herring, Jr., Merion Station, both of Pa., assignors to Boothe Airside Systems, Inc.
Filed Sept. 12, 1969, Ser. No. 857,427
Int. Cl. B62d *5/00*
U.S. Cl. 180—79.2 R **7 Claims**



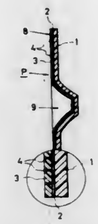
A hydraulic system provides steering, transmission shifting and braking for a vehicle. A first pump provides fluid power for steering and said braking. A second pump provides fluid power for the transmission shifting in the vehicle. Means responsive to the failure of the first pump causes the second pump to provide the power for the steering and braking of the vehicle as well as continuing to apply the power for transmission shifting.

3,674,108
OUTDOOR SPEAKER ENCLOSURE
David L. Beatty, 4832 Adams, Shawnee Mission, Kans.
Filed Oct. 29, 1970, Ser. No. 85,199
Int. Cl. G10k *13/00*; **H04r** *1/28*
U.S. Cl. 181—31 B **8 Claims**



An outdoor speaker enclosure comprising a box enclosing a loudspeaker, or a plurality thereof, opening outwardly of said box, and a cover for the speaker opening specially formed to resist the entry of moisture therethrough but being porous to permit the unobstructed egress of sound therethrough, said box having specially formed vents providing both for effective ventilation of the box interior and also for improving the sound reproduction quality of the speaker.

3,674,109
THERMO-PLASTIC LAMINATED STRUCTURE
Yoshihiko Murase, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu-shi, Japan
Filed Aug. 19, 1970, Ser. No. 65,204
Claims priority, application Japan, Aug. 27, 1969, 44/67154; Aug. 26, 1969, 44/66910; Aug. 26, 1969, 44/66911
Int. Cl. B32b *1/00, 3/10*; **G10k** *13/00*
U.S. Cl. 181—32 R **1 Claim**

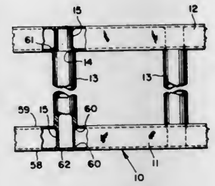


A thermo-plastic laminated structure, a production method, and an application thereof characterized in that a plurality of thermo-plastic sheets, inclusive of a foamed plastic sheet, are bonded together employing solvent evaporation type adhesive into a laminated structure which is thereafter provided with a plurality of minute holes bored mechanically in the direction of the thickness of the structure under the following limitations:

1. The holes thus bored reach the adhesive layer interposed between the component plastic sheets, whereby one or both sides of said adhesive layer are communicated with the outside atmosphere through said plurality of holes; and
2. The holes, however, do not penetrate the thermoplastic structure totally, whereby both sides of the thermoplastic structure are not communicated each other through these plurality of holes.

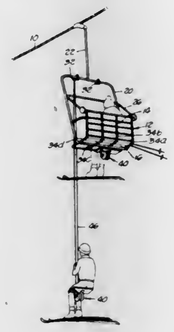
The structure is thereafter subjected to a curing process and vacuum formed into for instance a vibration plate of a loudspeaker.

3,674,110
WOUND FILAMENT LADDER
Robert F. Cooke, Candia, N.H., assignor to Unitec Industries, Inc., Cockeysville, Md.
Filed June 1, 1970, Ser. No. 41,895
Int. Cl. E06c *7/08*
U.S. Cl. 182—46 **4 Claims**



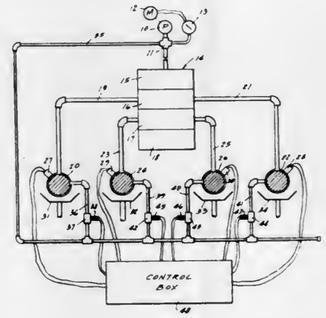
Several embodiments of ladder construction, fabricated by a filament winding process are shown, wherein a continuous glass filament is wound at a controlled helical angle on suitable mandrels and bonded with an epoxy or polyester resin system. Circular, elliptical or rectangular cross-section members can be developed for the rungs and rails and glass fabric or longitudinal fiber members may be combined therewith for additional strength. The rungs and rails are machined and joined with a resin bonding agent and the assembly cured in single section, extension ladder, or section ladder configurations. In the latter, reinforcement of the notched ends is made with plies of resin impregnated glass strips filling the rail cavity in conformity with the notch.

3,674,111
EMERGENCY EVACUATION MEANS FOR SKI CHAIRLIFTS
Ernest Weissberg, 11646 Chenault St., Los Angeles, Calif.
Filed March 8, 1971, Ser. No. 121,717
Int. Cl. A62b *1/02*
U.S. Cl. 182—72 **10 Claims**



An emergency means or system for evacuating or lowering persons from stalled ski chairlifts. A small, separable platform is attachable to the chair frame. It carries a reel of cable, one end of which is attached to the platform and the other end to the reel. The cable cam be looped over a hook on the chair; the platform can be separated or detached, and then a person can lower himself while sitting on the platform which has a braking device associated with the cable whereby the person can control the rate of descent. The reel includes a spring drive for automatically returning the platform to the chair and rewinding the cable on the reel.

3,674,112
CENTRALIZED LUBRICATION SYSTEM
Robert D. Roberts, Streetsboro, Ohio, assignor to Houdaille Industries, Inc., Buffalo, N.Y.
Filed June 30, 1970, Ser. No. 51,059
Int. Cl. F01m *11/10*; **F16n** *17/02*
U.S. Cl. 184—6.1 **8 Claims**

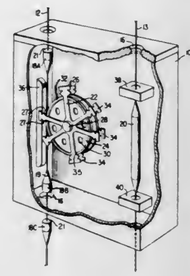


A centralized lubrication system of the type in which a distributor periodically injects a predetermined quantity of lubricant to each of a plurality of lubrication sites in a predetermined sequence, including sensor means associated with each of the sites, a control means which receives signals from each of the sensor means, and an auxiliary delivery means actuated by the control means to inject additional amounts of lubricant to flood the lubrication site when the sensor associated with that site indicates that an excessive temperature has been reached. The control means may also include means for resetting the sensors after the condition of excessive temperature is reached to determine whether the flooding of the site has been effective to reduce the temperature below the predetermined maximum. Additionally, the system may include a timer which cuts off the additional supply of lubricant and signals that the particular site is in such a condition that additional amounts of lubricant are ineffective to reduce the temperature to an acceptable value.

3,674,113
AUTOMATIC ELEVATOR STOPPING APPARATUS
Sidney Richmon, 1202 Peachtree Blvd., Richmond, Va.
Filed March 13, 1970, Ser. No. 19,318
Int. Cl. B66b *1/50*
U.S. Cl. 187—29 R **35 Claims**

Automatic elevator control signals are provided by a system of switches and wire mounted cams. A cable extends along the length of the elevator shaft and passes through a switch box mounted on the elevator. Mounted on the cable are a separate pair of bullet shaped cams for each floor serviced by the elevator. These cam-pairs cooperate with a star switch mounted in the switch box; and, depending upon the direction of the elevator motion, the first cam in each pair turns the star switch one increment as the elevator approaches a floor. And the star switch provides elevator control circuits with floor registration

and slowdown information. If the star switch gets out of step with the elevator's location, a specially modified rack and pinion correct the position of the star switch when the elevator reaches either end of the shaft. Cams which are tapered at

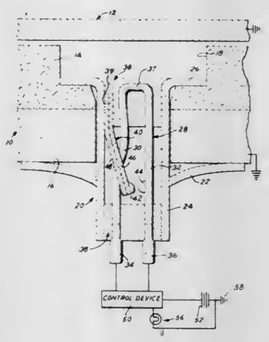


both ends are also mounted on either the bullet cam cable or a separate cable. These double-tapered cams cooperate with up and down leveling switches mounted in the switch box for providing leveling control.

ERRATUM

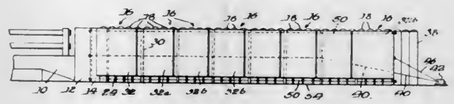
For Class 187—67 see:
Patent No. 3,674,117

3,674,114
BRAKE LINING TEMPERATURE PROBE
Donald W. Howard, South Bend, Ind., assignor to The Bendix Corporation
Filed Sept. 11, 1970, Ser. No. 71,529
Int. Cl. F16f *66/00*
U.S. Cl. 188—1 A **4 Claims**



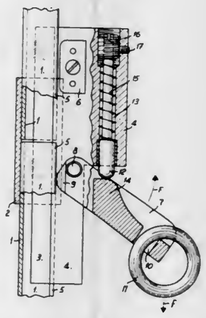
A probe carried in a brake shoe is responsive to the temperature of the lining material and is also responsive to wear of the lining material in excess of a predetermined amount. The probe includes a housing in thermal communication with the lining material and in electrical communication with the rounded brake shoe backing plate. A loop of wire is carried in the probe and is connected to an indicating device in the operator's compartment of the vehicle through an appropriate control device. When the friction material has worn a predetermined amount, the wire loop is brought into engagement with the member to be braked, thereby actuating the indicating device only while the brake is applied. Subsequent wear of the lining material severs the wire loop to actuate the indicating device at all times while the vehicle's ignition is on. One end of a bi-metallic metal strip is secured to the housing and the other end of the bi-metallic strip is spaced a predetermined distance from a terminal affixed to the wire loop. As the temperature of the brake lining increases, the other end of the bi-metallic strip is brought into engagement with the terminal, thereby providing an electrical circuit between the wire loop and the grounded brake shoe backing plate, thereby actuating the indicating device.

3,674,115
LIQUID SHOCK ABSORBING BUFFER
Bruce O. Young; Grant W. Walker, both of Sacramento; Duane B. Ford, Placerville, and Wan Seegmiller, El Dorado, all of Calif., assignors to Energy Absorption Systems, Inc., Chicago, Ill.
Filed Sept. 23, 1970, Ser. No. 74,736
Int. Cl. E02b *3/22*; **F16f** *5/00, 9/08*
U.S. Cl. 188—1 B **16 Claims**



A reuseable impact attenuation construction designed to protect fixed objects near highways or vehicular traffic routes from damage due to high velocity impact. The invention comprises a plurality of collapsible, incompressible fluid filled energy absorbing and dissipating buffer elements separated by collapsible panel and diaphragm means whereby the force of impact of a colliding vehicle compresses the aforesaid structure, causing a pressure build-up in the fluid filled buffer elements which are sandwiched between the panel and diaphragm means. The energy of impact is dissipated in said buffer elements by the controlled escape of fluid therefrom through a series of sharp edged orifices. The internal pressure in the buffer elements creates a resisting force which dissipates the kinetic energy of the impacting vehicle and brings it to a safe, controlled stop without damage to said fixed object and without injuring the occupants of the vehicle.

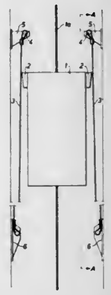
3,674,116
FALL-PREVENTION SAFETY DEVICE
Rudolf Vogeli, Wettingen, Switzerland, assignor to Lebag Leitungs-Und Elektrobau AG, Wettingen, Switzerland
Filed Sept. 28, 1970, Ser. No. 76,006
Claims priority, application Switzerland, Oct. 9, 1969, 15,146/69
Int. Cl. F16d *59/02*
U.S. Cl. 188—67 **6 Claims**



The invention concerns a fall-prevention safety device comprising a shaped member permanently fixed along the path to

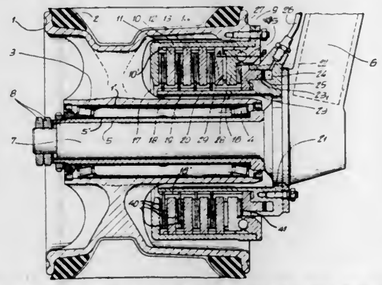
be covered; a slide member displaceable along the shaped member, and a locking device comprising an eccentric cam pivoted on a portion of the slide member and provided with a coupling member. The active portion of the cam is able to be displaced between an inoperative position in which the slide member is displaced freely along the shaped member, and a locking position in which a portion of the shaped member is gripped between said cam and a portion of the slide member such that any relative displacement between the shaped member and the slide member is prevented.

3,674,117
SYSTEM FOR ARRESTING THE MOVEMENT OF OBJECTS TRAVELING ALONG A DEFINED PATH
Gosta Sjostrom, deceased, late of Marknadsvagen 63, Taby, Sweden; Ruth Sjostrom; Kjell Sjostrom, and Bjorn Sjostrom, (heirs), all of Marknadsvagen 63, 183 Taby 34, Sweden
Filed Oct. 7, 1970, Ser. No. 78,855
Int. Cl. B66b *5/28*
U.S. Cl. 187—67 **3 Claims**



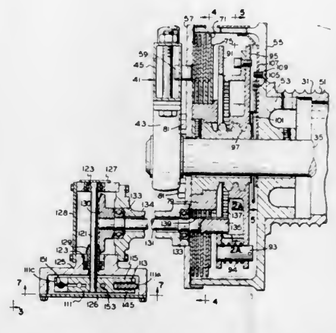
An emergency system for arresting the movement of a traveling object such as an elevator car wherein the momentum of the object is absorbed by the physical extension of elongated metal members engaged by the moving object. Two or more of the elongated metal members are provided on each side of the path of the object with one end of such members being restrained against movement in at least one direction and the other end being engaged by a projection provided for that purpose on the object and free to move with the object and impart extension to the metal members.

3,674,118
FULL DISC BRAKE WITH ROTATING BRAKE DISCS
Hermann Klaue, Tour D'Ivoire 24e,, Montreaux, Switzerland
Filed Aug. 1, 1969, Ser. No. 846,703
Claims priority, application Germany, March 27, 1969, P 19 15 651.5
Int. Cl. F16d *55/48*
U.S. Cl. 188—72.2 **10 Claims**



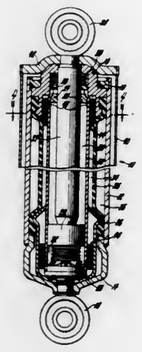
A disc brake having a plurality of braking discs which engage each other to brake a rotatable member. An actuating disc at one end of the brake cooperates with raised surfaces and rolling elements such that upon limited rotational movement of the actuating disc the brake discs are urged together to effect the braking. A fluid or manually operable piston engages a lateral surface of the actuating disc to cause the said limited relative rotation thereof to effect braking.

3,674,119
WINCH BRAKING MECHANISM
Wayne C. Worstell; Richard C. Cousins, and Eugene A. Cooley, all of Portland, Oreg., assignors to Dillingham Corporation, Honolulu, Hawaii
Continuation of Ser. No. 800,654, Feb. 19, 1969, abandoned. This application Dec. 9, 1970, Ser. No. 96,624
Int. Cl. B60f *7/12*
U.S. Cl. 188—134 **4 Claims**



A winch having an inertia responsive brake, and a velocity responsive actuator means also disposed in actuating relation to the said brake, wherein the actuator means is, at least to some extent, inertia responsive.

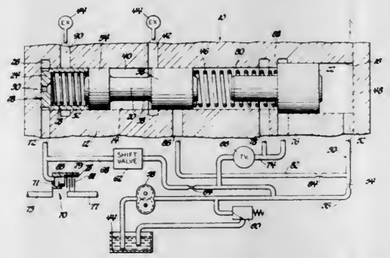
3,674,120
AUXILIARY SHOCK ABSORBER DAMPING VALVES
Ralph S. Johnson, Rochester, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Feb. 1, 1971, Ser. No. 111,282
Int. Cl. F16f *9/52*
U.S. Cl. 188—277 **3 Claims**



In preferred form, a direct acting hydraulic shock absorber with auxiliary passages between the working chambers of the shock absorber and the reservoir chamber controlled by a thermally responsive valve which blocks fluid flow upon

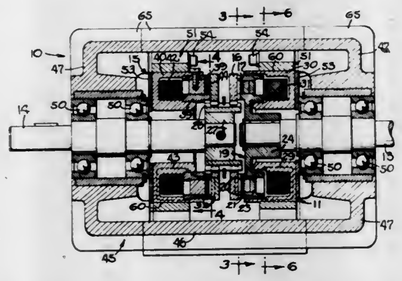
sensing a predetermined fluid temperature. An annular channel formed about the pressure cylinder of the shock absorber has a wall portion spaced radially outward from openings in the pressure cylinder and has openings to the reservoir chamber. A cylindrical ring valve in the annular channel is spaced inwardly from the wall portion when it is below the predetermined temperature. The ring valve expands outwardly against the wall portion to block the auxiliary passages to the reservoir chamber when above the predetermined temperature.

3,674,121
ENGAGEMENT CONTROL OF FRICTION DRIVES
Charles R. Copeland, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.
Filed Sept. 21, 1970, Ser. No. 73,757
Int. Cl. F16d *25/063*
U.S. Cl. 192—52 **8 Claims**



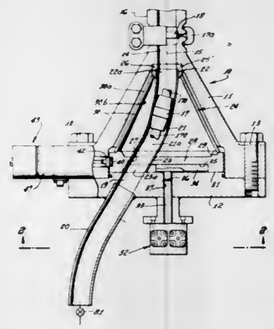
A friction drive establishing device having an engagement control valve for controlling the development of pressure therein. The control valve includes a regulator valve slidably disposed in a valve bore for controlling engagement pressure in the friction device and a bias member for imposing a bias force on the regulator valve during engagement. A control valve is in fluid communication with the bias member which control valve functions to decrease the bias pressure imposed on the bias member when the slip speed of the friction device approaches zero thereby reducing the engagement pressure to accommodate the increase in the coefficient of friction.

3,674,122
MAGNETIC FRICTION CLUTCH-BRAKE UNIT
Raymond A. Buisker, Rockford, Ill., assignor to Warner Electric Brake & Clutch Company, South Beloit, Ill.
Continuation-in-part of Ser. No. 808,089, March 18, 1969. This application Nov. 12, 1970, Ser. No. 88,758
Int. Cl. F16d *13/72*
U.S. Cl. 192—113 A **6 Claims**



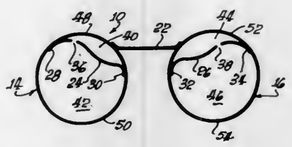
The magnet cores of a magnetically controlled friction clutch and brake are surrounded by and disposed in intimate heat-conducting contact with annular heat sinks which dissipate large quantities of heat from the clutch and brake by conducting the heat to and sinking the heat in a thermally conductive housing. The latter completely encases the operating elements of the clutch and brake and establishes a dust-tight enclosure around the elements so as to prevent both contamination from entering and wear particles from escaping the housing.

3,674,123
PIG DIVERTER
George E. Lewis, Arcadia, and Fernando Murman, Palos Verdes Peninsula, both of Calif., assignors to Hydril Company, Los Angeles, Calif.
Filed Aug. 20, 1970, Ser. No. 65,639
Int. Cl. B65g *11/00*; **E21b** *41/00*
U.S. Cl. 193—23 **15 Claims**



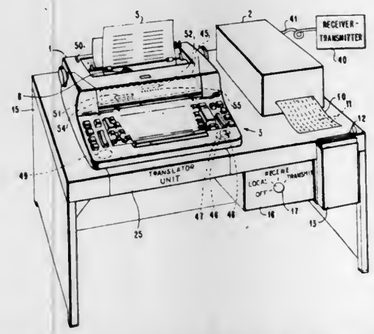
Apparatus enabling controllable diversion of tool passage between multiple pipes connectible with a single pipe comprises: a housing forming a primary port communicable with a primary pipe to pass the tool, the housing also forming a series of secondary ports respectively communicable with multiple secondary pipes selectively to pass the tool; and, means forming an elongated intermediate passage to pass the tool and having one end remaining in direct communication with the primary port and an opposite end selectively directly communicable with the secondary ports in response to controlled movement of the passage within the housing, the passage being protected.

3,674,124
FAIL-SAFE INFLATABLE SLIDE
James R. Summer, Brielle, N.J., assignor to The Garrett Corporation, Los Angeles, Calif.
Filed Aug. 21, 1970, Ser. No. 65,914
Int. Cl. B64d *25/14*
U.S. Cl. 193—25 B **11 Claims**



An inflatable slide member has a redundant wall. The inner wall defines a restricted passageway, or passageways, communicating from one surface of the inner wall to the other surface. Upon loss of pressure-holding-integrity of the outer wall, as by a puncture, the inner wall provides backup integrity to maintain sufficient pressure for a necessary length of time to which the slide is put to use.

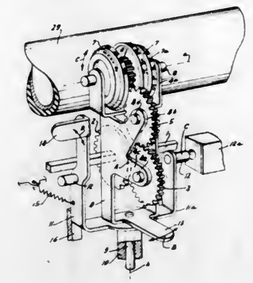
3,674,125
DATA SYSTEM WITH PRINTING, COMPOSING, COMMUNICATIONS, AND MAGNETIC CARD PROCESSING FACILITIES
Robert A. Kolpek, Lexington, Ky., assignor to International Business Machines Corporation, Armonk, N.Y.
Continuation of Ser. No. 802,700, Sept. 6, 1968, abandoned, which is a continuation of Ser. No. 623,053, March 14, 1967, abandoned. This application Dec. 19, 1969, Ser. No. 886,798
Int. Cl. B41j *5/30*
U.S. Cl. 197—19 **16 Claims**



The apparatus incorporates a printing composer interconnected with a magnetic card recording and reproducing unit, and having telecomunication facilities. Provision is made for composing operations, including justification of printed information according to predetermined line lengths, centering, flush left, and flush right. The composing capabilities are in addition to basic recording and playback functions of the apparatus. Several modes of operation are possible. In a Record mode, characters and functional information entered by a keyboard produce data signals that are supplied to the magnetic card unit for recording in individual tracks on a magnetic card record media, each track being associated with a printed line on a document that is concurrently printed. During a Playback mode, data signals previously recorded in the individual tracks on the magnetic record card are sensed and applied to the printer to produce a printed document automatically. Neither the Record nor the Playback modes contemplate justification procedures. In a Justify Record mode, provision is made for recording characters and recognizing spaces as they occur during the printing of a document, compiling justification information to produce lines of predetermined length, and recording the justification data in association with the individual lines. In a Justify Playback mode, the previously recorded justification data is recognized and used during subsequent sensing of data signals to effect proper interword spacing in order to produce justified lines of printed copy.

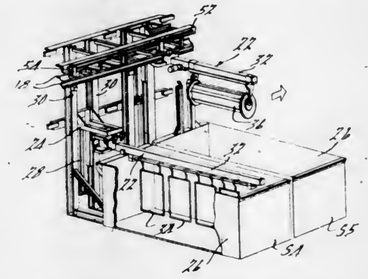
3,674,126
TYPE HEAD DRIVE
Herbert Decker, Lauf, and Hermann Waldenburger, Wolkersdorf, both of Germany, assignors to Triumph Werke Nurnberg AG, Nurnberg, Germany
Filed June 27, 1969, Ser. No. 837,040
Claims priority, application Germany, July 6, 1968, P 17 61 790.2
Int. Cl. B41j *1/40*
U.S. Cl. 197—55 **11 Claims**

A type head having circular rows of types forming curved columns, is rotated by a transmission about a first axis at the centers of the circular rows of types, and angularly displaced about a second axis for selecting a type of a curved column. The transmission includes a driving gear and a driven gear



having curved meshing teeth located at a point of the second axis, so that the gears remain in meshing engagement when the type head with the driven gear is angularly displaced.

3,674,127
WORK CARRIER ACCUMULATION MECHANISM
Robert J. Juve, Sterling Heights, Mich., assignor to The Udylite Corporation
Filed Jan. 11, 1971, Ser. No. 105,531
Int. Cl. B23q *5/22*
U.S. Cl. 198—19 **9 Claims**

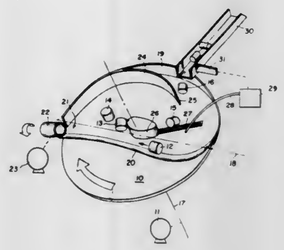


A processing machine including rails on which a plurality of work carriers are movably mounted and are advanced therealong by means of a pusher mechanism engageable with an abutment on each work carrier. The work carriers are provided with a linkage mechanism for coacting with adjacent work carriers and cams disposed along the path of travel of the work carriers for moving the abutment out of engagement with the pusher mechanism whereby certain work carriers are temporarily retained in a stationary condition along selected locations of the processing machine as may be desired or required from time to time.

3,674,128
FEEDER FOR CYLINDRICAL OBJECTS
Dennis E. Mead, Cazenovia, N.Y.
Filed Feb. 11, 1970, Ser. No. 10,529
Int. Cl. B65g *47/24*
U.S. Cl. 198—33 AA **16 Claims**

Cylindrical objects are fed from a rotating disk that is tilted 10° to 15° from the horizontal. The objects are dropped onto the upper part of the disk, and a fixed orienting surface close to the top surface of the disk curves inward from the periphery of the disk in the direction of rotation and extends across the

lower part of the disk to a discharge region where the orienting surface is approximately radial to the disk. Objects that are properly oriented for discharge roll against the disk in sliding contact with the orienting surface and pass through a



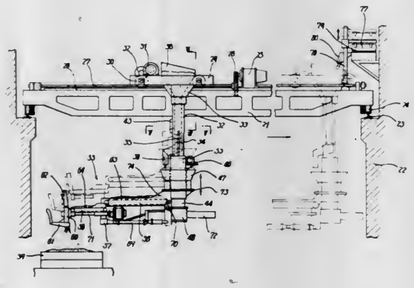
discharge tube. Objects in other orientations frictionally engage the disk to be carried away from the discharge tube, guided around the disk, and tumbled into a new approach to the orienting surface.

3,674,129

OVERHEAD TRAVELING SANDSLINGER

Yorio Ikuo; Minoru Okabayashi; Keisuke Ono; Yoshikazu Mizugaki, and Juntaro Hayashi, all of Osaka, Japan, assignors to Hitachi Shipbuilding and Engineering Co., Ltd.

Filed Nov. 6, 1970, Ser. No. 87,466
Int. Cl. B65g *37/00*
U.S. Cl. 198—44 **11 Claims**



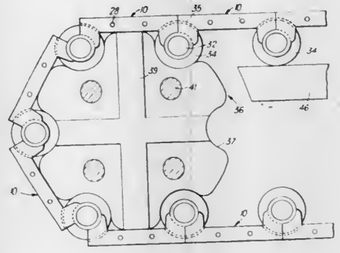
An overhead traveling sandslinger for the production of relatively large molds in foundries, comprising a transversely movable carriage on an overhead traveling frame structure, a slinger liftably and revolvably suspended from said transversely movable carriage, the arrangement being such that the traveling movement of said frame structure, the transverse movement of said carriage and the lifting and revolving movements of said slinger cooperate with each other so that flask molding can be effected with respect to a flask disposed at any place within an area in a foundry without moving the flask. Molding sand is supplied to the slinger through the components of the apparatus.

3,674,130

CONVEYORS

Alan Carmichael, Brookwood, England, assignor to Efco Limited, Woking, Surrey, England

Filed Sept. 8, 1970, Ser. No. 70,254
Claims priority, application Great Britain, Sept. 15, 1969, 45,448/69
Int. Cl. B65g *15/30*
U.S. Cl. 198—195 **6 Claims**



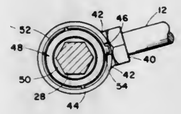
A panel type conveyor comprising a plurality of interconnected panels, one side of each panel being formed with a first set of hinge lugs, the opposite parallel side being formed with a second set of hinge lugs, interfitting with the first set of lugs of an adjacent panel. Tie rods pass through the hinge lugs and connect the panels pivotally. Rollers are rotatably mounted on the rods between certain of the hinge lugs, these rollers engaging in elongate sprockets and running on spaced apart rails between the sprockets to support the panels.

3,674,131

CONVEYOR CLEANER WITH ELASTOMER SPRING

Carl G. Matson, 401 E. Central Blvd., Kewanee, Ill.

Filed Jan. 22, 1971, Ser. No. 108,936
Int. Cl. B65g *45/00*
U.S. Cl. 198—230 **8 Claims**



An improved mount for a conveyor cleaner arm featuring a split tube about a torsionally elastic torus and wherein the arm is rigidly secured to the tube, as by welding, across the split or gap so as to fix the gap dimensionally whereby the gap provides a keyway to receive a key on the exterior of the torus.

3,674,132

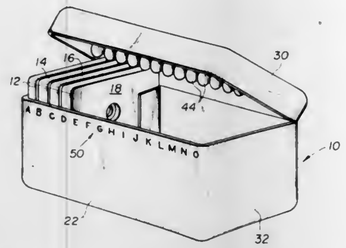
CASSETTE RECEPTACLE

Michael Loss, 1879 Manor Drive, Union, N.J.

Filed Sept. 2, 1970, Ser. No. 68,823
Int. Cl. B65d *85/67*
U.S. Cl. 206—1 R **10 Claims**

A receptacle or the like for tape cassettes adapted to receive cassettes in interleaved fashion. The receptacle comprises partitions each of a width equal to the thickness of the abutments which protrude from the sides of tape cassettes and define the head portions or housings thereof. The partitions

are positioned and shaped to fit in the voids defined by juxtaposed interleaved receptacles to maintain the juxtaposed



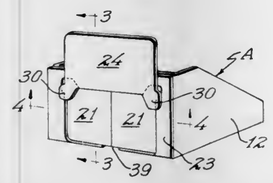
receptacles in a desired parallel relationship. The interleaving of the cassettes results in a substantial space savings.

3,674,133

DISPLAY TRAY

Frank W. Locke, Minneapolis, Minn., assignor to Hoerner Waldorf Corporation, Ramsey County, Minn.

Filed Jan. 18, 1971, Ser. No. 107,123
Int. Cl. B65d *5/52*
U.S. Cl. 206—44 **7 Claims**



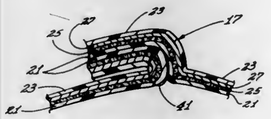
An open topped tray is provided having a double thickness rear wall. A portion of the outer layer of paperboard is cut to provide a display panel hinged to the remainder of this layer along a fold line spaced from the top of the rear wall. Ears are provided integral with the display panel and which, upon pivotal movement of the display panel, temporarily flex the layers apart. These ears hold the display panel either in the plane of the outer layer, or projecting above the top of the rear wall.

3,674,134

RUPTURABLE CONTAINER

Charles D. Turner, Laguna Beach, Calif., assignor to Kay Laboratories, Inc., Santa Ana, Calif.

Filed March 13, 1970, Ser. No. 19,202
Int. Cl. B65d *79/00*
U.S. Cl. 206—47 A **13 Claims**



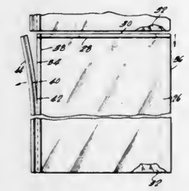
A rupturable container including first and second layers of flexible sheet material bonded together to form a laminated sheet material construction. Preselected confronting regions of the first and second layers are bonded together less securely than the remaining regions of the laminate. The laminated sheet material is appropriately joined together to form a closed container which is adapted to contain a substance. The preselected regions may also be mechanically weakened. When the container is struck, the weakened region ruptures to expose the substance within the container.

3,674,135

FLEXIBLE FILM BAG WITH TEAR STRIP FOR CLOSURE

Jean Ellen Simon, Edison, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

Filed Aug. 5, 1970, Ser. No. 61,319
Int. Cl. B65d *33/16;* **B65h** *55/00*
U.S. Cl. 206—58 **6 Claims**



A roll of separable bags for being sequentially dispensed from a carton comprising a two-ply strip of plastic film material having closed sides and heat seals and perforations for separating the strip into discrete bags. Extra heat seals and perforations are provided for conveniently packaging with the bags suitable ties or closure bands which may be colored and reinforced.

3,674,136

CARRIER FOR FLANGED ARTICLES

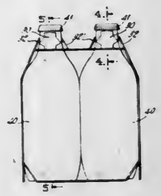
Homer W. Forrer, Jonesboro, Ga., assignor to The Mead Corporation, Dayton, Ohio

Filed June 1, 1971, Ser. No. 148,597
Int. Cl. B65d *71/00, 85/62*
U.S. Cl. 206—65 S **8 Claims**



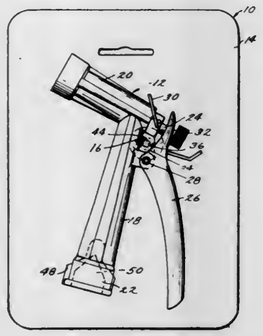
A carrier for flanged articles comprises a pair of main panels arranged in face contacting relation and disposed in overlying relation with respect to the articles and a pair of auxiliary panels are foldably joined to each of the main panels along opposite side edges thereof and apertures are formed in each of the auxiliary panels in close proximity to the upper ends of the adjacent articles. The auxiliary panels of the lower main panel are folded inwardly through angles substantially in excess of 90° so that the apertures therein at least partially envelop the upper ends of the adjacent articles. The auxiliary panels associated with the top main panel are folded downwardly through angles of 90° or less to positions wherein portions of the upper ends of adjacent articles are enveloped within the apertures formed therein so that each article is gripped below its flange from opposite sides by the auxiliary panels.

3,674,137
NECK THRU SAFETY LOCK
Earl J. Graser, Monroe, La., assignor to Olinkraft, Inc.
Filed March 23, 1970, Ser. No. 21,746
Int. Cl. B65d 71/00
U.S. Cl. 206—65 E 3 Claims



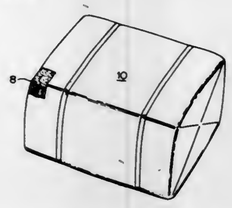
A multiple-article carrier of the "neck thru" variety comprising a top panel, side panels and overlapping end margins. The top panel comprises at least two terminal apertures through which the necks of packaged articles will extend. These apertures have associated therewith at least one retention tab hingedly attached near the periphery of the terminal aperture and extends into said apertures at the opposite end thereof. These tabs afford a secondary retention means and will prevent bottle fall-out when the carrier is used in a package.

3,674,138
CARDED NOZZLE PACKAGE
Robert A. Gilmour, Somerset, Pa., assignor to Gilmour Manufacturing Company, a division of R. M. Smith, Inc., Somerset, Pa.
Filed Jan. 21, 1971, Ser. No. 108,412
Int. Cl. B65d 73/00
U.S. Cl. 206—80 R 5 Claims



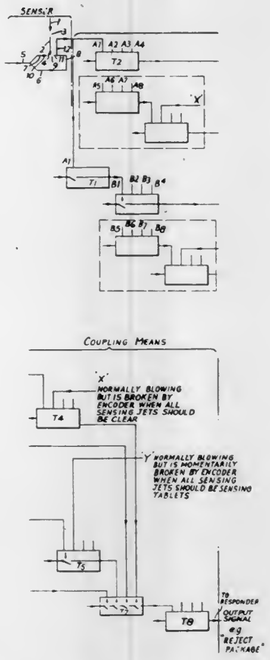
A package which comprises a hose nozzle including a handle portion and a barrel portion having an apertured web portion formed integrally therewith adjacent the juncture of the handle portion with the barrel portion, a card receiving the nozzle on one surface thereof, a fastener of nylon or the like extending through the card and through the apertured web portion with a press fit, the fastener including an enlarged head engaging the opposite side of the card and a tab formed in the card engaged within the socket formed in the free end of the handle portion.

3,674,139
COTTON BALE COVER
Arthur E. Manasian, Needham; Carl J. Papenfuss, Holliston, and William F. Piekarski, Dracut, all of Mass., assignors to Ludlow Corporation, Needham Heights, Mass.
Filed Sept. 12, 1969, Ser. No. 857,508
Int. Cl. B65d 71/00; B32b 3/10
U.S. Cl. 206—83.5 4 Claims



A nonwoven cotton bale cover formed of a bonded laminate of three layers of material. A grid-like layer of extruded or knitted filament net is sandwiched between two layers of cotton material, at least one of which is a nonwoven cotton fabric. The layers are adhesively bonded to the net to form a three-part laminar structure.

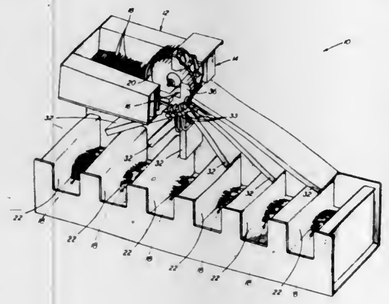
3,674,140
ARTICLE SENSING APPARATUS
Harold Thomas File, Gerrards Cross, England, assignor to Aspro-Nicholas Limited, Slough, England
Filed Dec. 21, 1970, Ser. No. 100,324
Claims priority, application Great Britain, Jan. 2, 1970, 163/70
Int. Cl. B07c 5/34
U.S. Cl. 209—73 10 Claims



Apparatus adapted to react to the presence or absence of articles at a location in a feed path, for example tablets in a

tablet-packaging machine, comprises a senser for sensing selectively the presence and absence of an article at the location, a responder adapted to respond to signals originated by the senser, and coupling means connecting the senser to the responder. The coupling means has repeatable first and second periods of operation separated in time, and is adapted to assume a state in which it can pass signals from the senser to the responder, said first and second periods being separated by mute periods during which the coupling means is incapable of passing a signal from the senser to the responder.

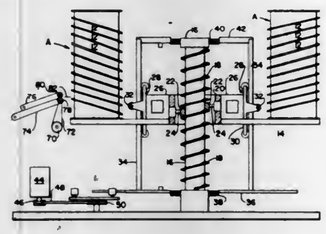
3,674,141
ARTICLE HANDLING WITH FLUID EJECTION
Bruce C. Abraham, Reading; Charles R. Fegley, and George B. Lougher, III, both of Laureldale, all of Pa., assignors to Western Electric Company, Incorporated, New York, N.Y.
Filed Dec. 21, 1970, Ser. No. 100,068
Int. Cl. B07c 3/04
U.S. Cl. 209—74 3 Claims



Articles are sorted into a plurality of categories in accordance with test results. The articles are picked up on the outer surface of a carrier drum at a loading station and are indexed past a testing station. Test results are stored in a memory.

One of a number of separately actuated air ejection nozzles propels an article away from the outer surface of a drum into a desired chute in accordance with test results stored in the memory.

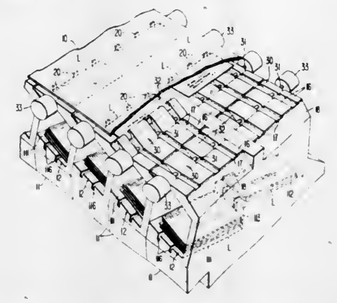
3,674,142
COLLATING AND COLLECTING APPARATUS
Thomas R. Bristol, Redwood City; Harold Lakin, Portola Valley, and Fred L. Renga, Sunnyvale, all of Calif., assignors to Kleer-Vu Industries, Inc., New York, N.Y.
Filed July 28, 1970, Ser. No. 58,938
Int. Cl. B07c 3/02
U.S. Cl. 209—74 6 Claims



Collating and collecting apparatus in which a plurality of receiving bins are arranged in a helical array on a vertically

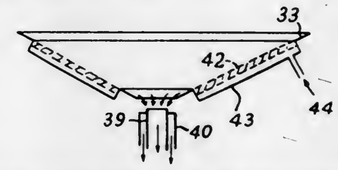
movable platform. The platform is connected to a threaded central column so that rotation of the platform will cause both vertical and circumferential movement.

3,674,143
TRANSPORT AND SORTING MECHANISMS FOR AN AUTOMATIC CONVEYOR SYSTEM
James R. Hunter, Chadds Ford; Sebastion James Lazzarotti, Broomall, and Abe Mann, Bala Cynwyd, all of Pa., assignors to Burroughs Corporation, Detroit, Mich.
Filed Dec. 28, 1970, Ser. No. 101,526
Int. Cl. B07c 3/06
U.S. Cl. 209—74 5 Claims



This disclosure relates to a transport and sorting mechanism for an automatic conveyor system for mail pieces and the like wherein the articles to be sorted are moved along a smooth surface by means of a transport belt or linkage having pairs of studs or arms to impart a horizontal motion to the articles. The smooth surface along which the articles are conveyed is formed of the top surfaces of partitions between various destination receptacles and rotatable gates over the respective receptacles which gates when closed are in alignment with the top surfaces of the partitions. Letters and other pieces of mail of various sizes are placed in the conveyor system by the operator who records the destination of each article so inserted and the article is conveyed along the smooth surface until it reaches its destination receptacle at which time the rotatable gate is opened to allow the article to be received by the corresponding receptacle. Two or more receptacles can be served by a single belt or linkage and means are provided to merge the contents of such pairs of receptacles and place them on a separate conveying transport for further processing.

3,674,144
GRAVITY SEPARATION OF GRANULAR MATERIALS
Leslie Dyne Muller; Charles Philip Sayles, both of Stevenage, Hertfordshire, and Richard Henry Mozley, Penzance, Cornwall, all of England, assignors to Warren Spring Laboratory, Gunnels Wood Road, Foundry House, Newlyn, England
Continuation-in-part of Ser. No. 555,383, June 6, 1966, abandoned. This application March 13, 1969, Ser. No. 811,278
Int. Cl. B07b 3/12
U.S. Cl. 209—468 2 Claims



Apparatus for gravity separating dry granular materials has an inclined surface of porous material. To facilitate the flow of

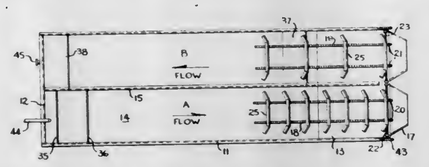
materials down the incline and the sinking of materials of higher specifice gravity or of larger size to the bottom of the stream, a gas is passed through the porous surface to fluidize the granular materials. The surface may take the form of a chute with tapering sidewalls and porous base or a circular funnel-shaped vessel of porous material.

3,674,145

METHOD AND APPARATUS FOR CLARIFYING LIQUIDS

David L. Schmutzler, Marinette, and John H. Schmutzler, Port Washington, both of Wis., assignors to Jadair, Incorporated, Port Washington, Wis.

Filed March 26, 1970, Ser. No. 22,929
Int. Cl. B01d *11/18*
U.S. Cl. 210—73 **13 Claims**



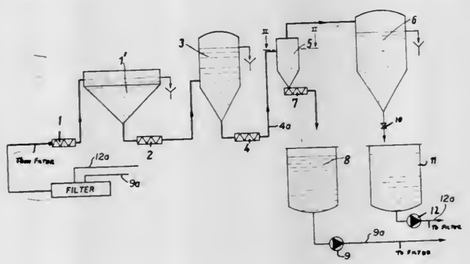
Liquids containing contaminating particles of various sizes are treated in a multi-stage system wherein the liquid is delivered into the rear end of a first stage of a tank divided longitudinally into two stages; passing the liquid into contact with and under a pair of baffles; forcing the liquid forward in the first stage to effect a settling of the coarser particles; slowly conveying the settled particles forward, up and out of the first stage of the tank; passing the liquid from the first stage to the second stage through a crossover weir which skims off the cleanest liquid; continuously forcing the liquid down to the bottom of the second stage and under a baffle, minimizing the settling distance for the finer particles; slowly conveying the settled particles forward, up and out of the second stage; and skimming the cleanest liquid at an outlet baffle located at the rear of the second stage adjacent the inlet of the first stage.

3,674,146

METHOD OF REGENERATING FILTER AIDS

Anton Hoegger, Rapperswil/St. Gallen, Switzerland, assignor to Hans Muller, Maennedorf/Zurich, Switzerland

Filed July 2, 1970, Ser. No. 51,769
Claims priority, application Switzerland, July 9, 1969, 10591/69
Int. Cl. B01d *37/02*
U.S. Cl. 210—73 **8 Claims**



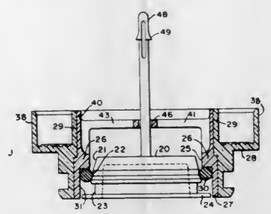
Spent particular alluvial filter aid is separated from entrapped impurities by wet classification, and subsequently gravitational segregation of the separated particles of filter aid is effected in a streaming liquid into two fractions one of which contains finer particles and the other of which contains coarser particles.

3,674,147

CHECK VALVE

Bernard Danti, Lexington, Mass., assignor to Millipore Corporation, Bedford, Mass.

Filed Feb. 8, 1971, Ser. No. 113,185
Int. Cl. B01d *35/18, 35/02*
U.S. Cl. 210—136 **6 Claims**



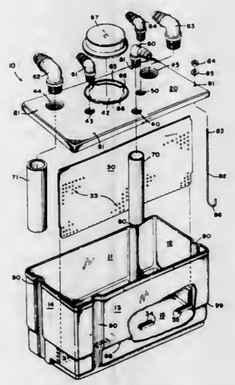
A check valve adapted for use in one end of a filter cartridge to permit steam sterilization downstream of the cartridge without disintegrating the filter material. The valve has a generally cylindrical housing, a cap adapted to fit within the housing and an O-ring adapted to fit around said cap under tension. The housing has a shoulder extending inwardly from its inside circumferential surface. The cap having an upper, generally cylindrical portion with a diameter less than the inside diameter of the housing at the shoulder, a circumferential recess adapted to house said O-ring out of contact with the inside surface of said housing and a lower generally cylindrical shelf with a diameter greater than the inside diameter of the housing at the shoulder, the recess being located between said upper and lower portions.

3,674,148

HEAD CONVERSION UNIT

Merlin S. Miller, Bradford, Ohio, and Ronald D. Russo, Wethersfield, Conn., assignors to Koehler-Dayton, Inc., Dayton, Ohio

Filed April 15, 1970, Ser. No. 28,602
Int. Cl. B01d *35/02*
U.S. Cl. 210—152 **6 Claims**



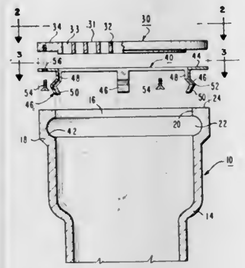
A tank for converting an overboard discharge type boat head to a recirculating sewage system includes a filter dividing the tank into receiving and recirculating chambers, a sump in the receiving chamber for facilitating tank discharge, a snap-on cover engaging the upper edges of the tank side walls, a rinsing nozzle for periodically cleaning the filter, and depressions formed in the tank side walls to accommodate tie-down bolts which extend from the cover to anchorages on the boat structure. The tank side walls are constructed from a translucent or transparent material so that the liquid level therein may be observed and a shoulder is formed in the side walls to indicate the correct level of priming materials in the tank.

3,674,149

PLUMBING GRATE FIXTURE

Alton E. Donalson, 7919 Twin Hills, Houston, Tex.

Filed Dec. 8, 1970, Ser. No. 96,156
Int. Cl. B01d *35/02*
U.S. Cl. 210—163 **1 Claim**



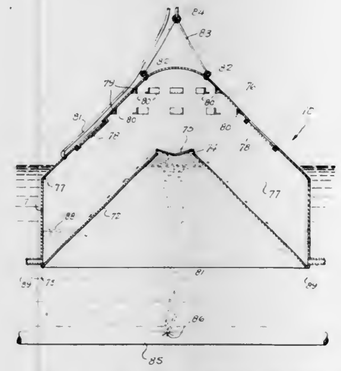
A grate fixture adapted to cover a drainpipe having a bell-mouthed flaring with a planar edge and a circular groove near the edge. The fixture provides a grate portion to cover the mouth of the pipe and to allow liquids to flow therethrough. Releasable securing means extend downwardly into the opening of the pipe and removably secure the fixture to the pipe.

3,674,150

APPARATUS FOR PREVENTING OFFSHORE OIL WELL POLLUTION

Lloyd M. Lejeune, P.O. Box 243, Belle Chasse, La.

Filed Sept. 25, 1970, Ser. No. 75,322
Int. Cl. B01d *23/00*
U.S. Cl. 210—245 **9 Claims**



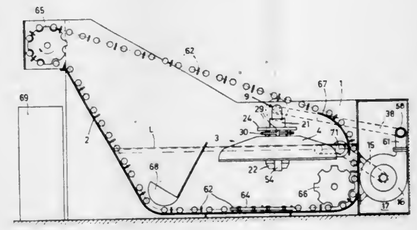
An apparatus for preventing offshore oil well pollution resulting from offshore oil well blowouts or pipe line ruptures. The apparatus includes a sloping cylindrical member having a conical bottom wall open at its upper end. The device is centered over the leak so that the oil passes up into the device through the open top of the conical bottom wall. In the case of a low pressure leak the oil flows down the upper face of the conical wall and is collected in a sump within the apparatus from which it can be pumped. In the case of high pressure blowouts valve plates are provided which can be hydraulically closed to contain the oil spout which then flows into a sump in the apparatus surrounding the conical bottom wall. This sump also may be emptied by pumping. In both instances fire extinguishing gases may be pumped into the device in case ignition of the gas and oil should occur.

3,674,151

BACKFLUSHING FILTER

William Freeland, deceased, late of Hinchley Wood, Surrey, England (by Iris Mary Freeland, executrix), assignor to U.S. Philips Corporation

Filed July 2, 1969, Ser. No. 840,600
Claims priority, application Great Britain, July 2, 1968, 31,560/68
Int. Cl. B01d *29/38*
U.S. Cl. 210—298 **13 Claims**



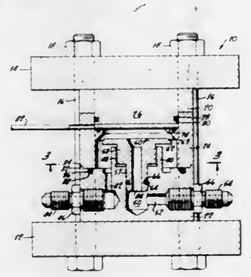
An apparatus for filtering contaminants from liquid and for cleaning the filter, the apparatus including a filtering screen through which the liquid is drawn in a first direction, and a backflushing nozzle that is moved to various positions adjacent the screen, with clean liquid directed from the nozzle in an opposite direction through the screen to flush off contaminants, and a shroud to aid in removal of contaminants.

3,674,152

REVERSE OSMOSIS TEST CELL

Serop Manjikian, Del Mar, Calif., assignor to Universal Water Corporation, Del Mar, Calif.

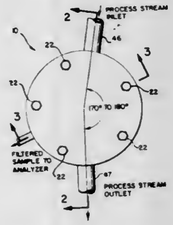
Filed Aug. 25, 1970, Ser. No. 66,813
Int. Cl. B01d *35/22, 31/00*
U.S. Cl. 210—321 **5 Claims**



A semipermeable membrane-containing cell, useful when connected to a pump and a pressure control to form a reverse osmosis system, has an adjustable gap through which the feed water flows over the membrane surface. The gap is formed between the membrane surface and the surface of a disk hav-

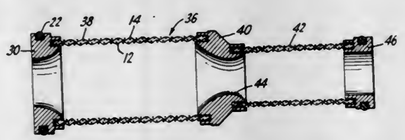
ing a stem screw-thread mounted inside the cell so that rotation of the stem will move the disk surface closer to or farther from the membrane surface. An O-ring seals the disk stem to the cell interior and provides friction to maintain the gap adjustment.

3,674,153
BYPASS FILTER ASSEMBLY AND METHOD OF OBTAINING A FILTERED SAMPLE
Ray J. Gomez, Arcadia, and Kenneth B. Sawa, Yorba Linda, both of Calif., assignors to Beckman Instruments, Inc.
Filed Sept. 25, 1970, Ser. No. 75,355
Int. Cl. B01d *35/22, 31/00*
U.S. Cl. 210—409 **5 Claims**



A bypass filter assembly and method of obtaining a filtered sample from a process stream or the like in which the process stream is introduced into a filter chamber so as to produce a symmetrical bifurcated flow pattern of fluid therein which promotes a counter-rotating scouring or cleaning action on the membrane filter in the chamber. The housing of the assembly is divided into two sections. The inlet and outlet ports for the process stream and the filtered sample port are all located in one section of the housing so that the other section, namely the filter cap, may be removed from the first section without disconnecting any flow lines from the cap, thus facilitating rapid removal of the cap and replacement of the filter element therein.

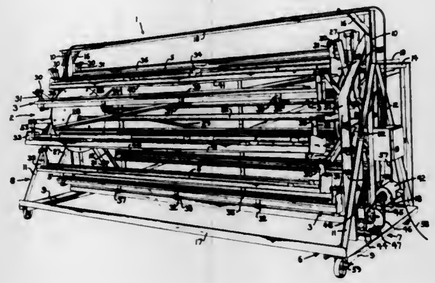
3,674,154
FILTRATION APPARATUS
Marcel Clarence Sicard, Cheshire, Conn., assignor to AMF Incorporated
Filed May 20, 1968, Ser. No. 730,494
Int. Cl. B01d *29/30*
U.S. Cl. 210—456 **1 Claim**



A fluid wash filter in which the stream of fluid is partially diverted transversely through a screen arranged along the axis of flow including means for reducing the concentration of contaminant along the screen.

3,674,155
TOOL STORAGE DEVICE
Lester A. Kessler, c/o Metcraft Inc., 1203 Main St., Grandview, Mo.
Filed Nov. 27, 1970, Ser. No. 93,247
Int. Cl. A47f *3/08*
U.S. Cl. 211—1.5 **9 Claims**

A tool storage device for storing and dispensing elongated heavy tools, such as forming dies, blades or the like, for metal working machines, includes a mobile supporting frame having a pair of spaced end frames with an axle extending therebetween and a reel mounted on the axle for supporting a plurality of circumferentially spaced tool supporting trays, holders or the like. Power means are operatively connected to the reel for rotating same to move the trays or holders through



a generally circular path in a clockwise or counterclockwise direction to accurately position any selected one of the trays or holders in alignment with a tool receiving portion of a tool using machine.

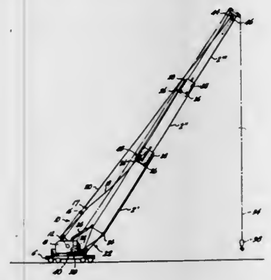
3,674,156
DISPLAY ASSEMBLY AND ELEMENT THEREFOR
Jimmie M. Krebs, Chicago, Ill., assignor to Chicago Show Printing Company, Chicago, Ill.
Filed Aug. 14, 1970, Ser. No. 63,693
Int. Cl. E05b *73/00*
U.S. Cl. 211—4 **26 Claims**

This invention is addressed to a display assembly and display elements therefor wherein a plurality of display elements defining recesses and slot means on opposing faces of the base portions thereof are stacked one on top of another to define a space receiving an item to be displayed which can be secured by a locking means adapted to maintain the display items in a stacked relationship.

3,674,157
CRANE WITH TELESCOPIC BOOM
Tyman H. Fikse, Enumclaw, Wash., assignor to Tyee Construction Company, Kirkland, Wash.
Filed March 25, 1970, Ser. No. 22,542
Int. Cl. B66c *23/06*
U.S. Cl. 212—55 **12 Claims**

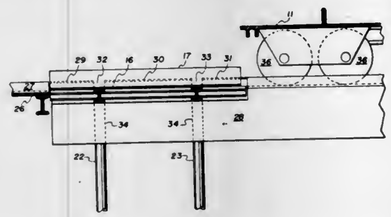
A means and technique are disclosed for latching and unlatching the telescoping boom sections of a crane boom or other outrigger device which is mounted on an anchorage to

be pivoted into an operatively inclined position relative to the horizontal. In the device, there are three elongated boom sections, the intermediate and the uppermost sections of which are relatively reciprocably engaged with one another, and conjointly reciprocably engaged with respect to the lowermost section, to be extended and retracted in relation to one another, and in relation to the lowermost section, along the length of the device while it is in the operatively inclined position thereof. The intermediate and uppermost sections are



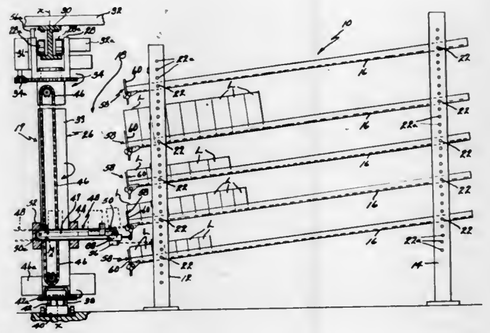
latched against relative reciprocation when they are in the relatively extended condition thereof, by latch means which are operatively interposed therebetween. In addition, the intermediate and uppermost sections are maintained in relatively extended condition with respect to the lowermost section, and released for relative retraction, by means including a latch release member which is mounted on the lowermost section and operative to release the latch means between the intermediate and uppermost sections when the latter sections have travelled a predetermined distance in relation to the lowermost section.

3,674,158
PALLET TYPE PARKING SYSTEM WITH A RETRACTABLE WALKWAY
Calvin P. Owen, 5820 Hazeltine 21, Van Nuys, Calif.
Filed Dec. 24, 1970, Ser. No. 101,205
Int. Cl. E04h *6/06*
U.S. Cl. 214—16.1 CE **3 Claims**



A retractable walkway for covering and uncovering roller channels between a drive-on pallet and an elevator in an elevator parking system during passenger loading and unloading which is carried on vertically driven support columns; the walkway having a pair of hinged panes for revealing roller tracks located beneath the walkway in its elevated position to allow a pallet to be transferred on and off an elevator when passengers are not loading and unloading and to cover the roller tracks when the walkway is in an elevated position giving passengers a smoothly surfaced walkway during their loading and unloading.

3,674,159
LOAD HANDLING MECHANISM AND AUTOMATIC STORAGE SYSTEM
Jerome H. Lemelson, Metuchen, N.J., assignor to The Triax Company, Cleveland, Ohio
Filed March 7, 1969, Ser. No. 805,315
Int. Cl. B65g *1/06*
U.S. Cl. 214—16.4 A **14 Claims**

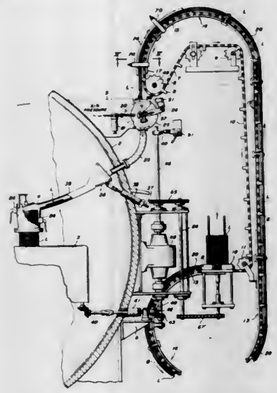


A warehousing system comprising a storage rack for storing loads thereon and a stacker crane movable alongside of the rack for depositing loads into and removing loads from selected storage locations in the storage rack. The stacker crane includes load handling portion comprising a conveyor including power means for operating the conveyor. The conveyor may move a load from a selected storage location in the storage rack onto one end thereof and then by powered operation of the conveyor, the load can be moved lengthwise of the load handling portion to a storage position on the latter, and then the conveyor can operate to pickup another load from a selected storage location and move it along the load handling portion and so on. In certain embodiments, transfer means coact between the load handling portion and the storage rack for aiding in transferring loads between the latter. Certain embodiments also include a powered load manipulator mechanism for transferring a load between the load handling portion and the storage rack.

3,674,160
APPARATUS FOR TRANSFERRING CAN LIDS THROUGH A PARTITION SUBJECT TO A PRESSURE DIFFERENTIAL
Chester L. Gutowski, Pittsburgh, Pa., assignor to H. J. Heinz Company, Pittsburgh, Pa.
Filed April 8, 1971, Ser. No. 132,509
Int. Cl. B65g *37/00*
U.S. Cl. 214—17 B **13 Claims**

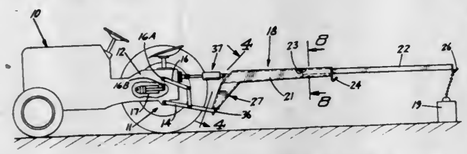
In a canning method where cans are filled with a product and a lid sealed thereto in an enclosure in which the pressure inside the enclosure is different from pressure outside, a mechanism is provided for feeding can lids one at a time from a magazine outside the enclosure to the magazine of a can lid-applying machine inside the enclosure wherein an endless chain removes the lids from the bottom of a magazine outside the holder, carries them around a looped guide, one after another, and drops them alternately into one of two pockets in an oscillating pressure lock, one of which pockets is open only at the top to receive a can lid when the other has moved to a position where it is open only at the bottom to discharge a lid into a gravity chute that passes through the enclosure wall to the magazine of the can lid-applying machine inside the enclosure. The trap then oscillates to open the now-empty pocket at the top to receive a lid and close the other pocket at the top and open it at the bottom to discharge the lid which it

received. The lid-feeding mechanism is driven from the can lid-applying machine inside the enclosure through a shaft that



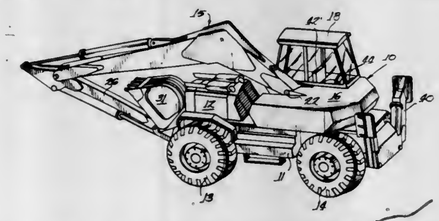
passes to the outside, with a clutch outside that feeds the lids only as required by the machine, and the oscillating pressure lock is synchronized with the operation of the endless chain.

3,674,161
LIFT BOOM ASSEMBLY
Jon W. Grinde, Moorhead, Minn., assignor to King Company, Inc., Fargo, N. Dak.
Filed April 6, 1970, Ser. No. 25,649
Int. Cl. B66c *23/00*
U.S. Cl. 214—130 R **7 Claims**



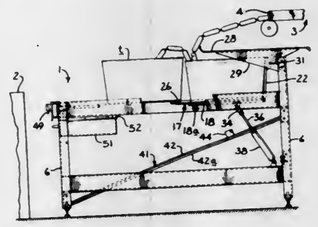
A lift boom assembly mounted on the draft links of a three-point hitch on a tractor. A power control cylinder, connected to the tractor and on an upper portion of the base of the boom, pivots the boom on the draft links of the hitch to raise and lower the boom. The boom has a first rearwardly directed member holding a second removable member.

3,674,162
ROUGH TERRAIN VEHICLE
Robert M. Smith, Grayslake, Ill., assignor to The Hy-Dynamic Co., Lake Bluff, Ill.
Filed Dec. 21, 1970, Ser. No. 100,210
Int. Cl. E02f *3/74*
U.S. Cl. 214—138 R **4 Claims**



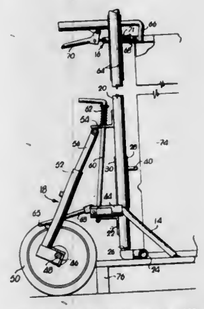
A rough terrain vehicle such as a crane or backhoe which has a turntable mounted boom, the turntable also carrying a cab on one side of the boom and hydraulic valving means on the other side of the boom, the cab being equipped with sets of controls at each end and a reversible seat in-between so that the operator can face the proper direction for driving or material handling, irrespective of the disposition of the boom.

3,674,163
LOADING TABLE FOR USE WITH CONTINUOUS PRODUCTION OF WIENERS
William H. Neubeck, Jr., Justice, Ill., assignor to Bloomer-Fiske, Inc.
Division of Ser. No. 845,734, July 29, 1969, Pat. No. 3,606,956. This application Sept. 8, 1970, Ser. No. 69,897
Int. Cl. B65b *69/00*
U.S. Cl. 214—309 **3 Claims**



In an apparatus for continuous production of wieners, a loading table supports tubs for delivering strands of uncooked wieners to the intake of the processor. The table has a top with a series of bays or sections each for supporting tubs containing strands of wieners, one of the tubs of each bay being supported on a trap door portion of the top and serving to supply the processor. The stands in the tubs are joined so that when the tub on the trap door portion of each bay has emptied, the delivery to the processor proceeds from the adjacent tub. However, the trap door portion in each bay can be operated to lower the empty tub thereon to a slide below the table that returns the empty tub to the front of the table for reuse. When the trap door is returned, it provides a support for receiving the aforesaid adjacent tub.

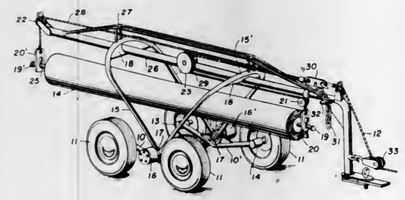
3,674,164
HAND TRUCK FOR OIL DRUMS AND THE LIKE
Jonas J. Kaufman, Section #12, VA Center, Wadsworth, Kans.
Filed Aug. 24, 1970, Ser. No. 66,473
Int. Cl. B62b *1/06*
U.S. Cl. 214—377 **6 Claims**



A hand truck for moving barrels or the like to and from an elevated platform utilizes a swingably mounted wheel and axle assembly which permits positioning of the barrel-supporting frame of the truck on the platform while the wheels remain on the ground. The wheel and axle assembly is also provided with an extensible connection with the frame which is operable

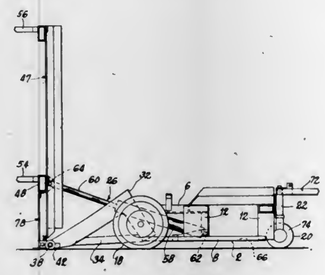
concurrently with swinging of the axle to assure that the wheels remain in engagement with the ground, regardless of the weight of the elevated platform. A pair of free-swinging arms which extend forwardly of the hand truck frame are positionable beneath a barrel to support the latter while a gripping hook spaced from the arms engages the upper end of the barrel to allow tilting thereof in the direction of the hand truck. A cradle support on the frame of the hand truck opposite the wheel and axle assembly is mounted for extensible movement from a retracted position to an extended position to facilitate placement thereof on the elevated platform forwardly of the assembly wheels. This extensible cradle is movable to its retracted position under the weight of the hand truck as the latter is raised to an upright position on the platform.

3,674,165
HOISTING AND TRANSPORTING DEVICE
Kearney D. Arrant, Florissant, Mo., assignor to Monsanto Company, St. Louis, Mo.
Filed Aug. 19, 1970, Ser. No. 65,065
Int. Cl. B60p *1/64*
U.S. Cl. 214—396 **1 Claim**



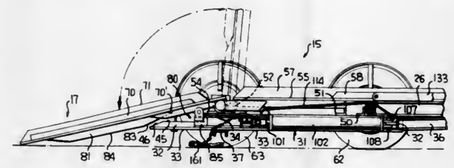
An apparatus is herein described for hoisting and transporting rolled carpet, especially long cylindrical rolls of substantial weight and size.

3,674,166
MATERIAL TRANSPORTING APPARATUS
Glenn G. Dunbar, Toledo, Ohio, assignor to Allied Tube and Conduit Corporation, Harvey, Ill.
Filed June 29, 1970, Ser. No. 50,423
Int. Cl. B60p *1/04*
U.S. Cl. 214—501 **5 Claims**



This application discloses a wheeled cart comprising a frame on which is mounted a motor connected by transmission means to wheels at one end of the cart to propel it. A frame extension is pivotally mounted at one end of the frame and has a bed pivotally mounted thereon at its end opposite from its pivotal connection to the frame. A piston and cylinder actuator is pivotally mounted between the bed and the frame to cause the frame extension to pivot toward a supporting surface and when it has reached the limit of its movement to cause the bed to move toward a vertical position.

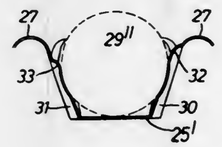
3,674,167
VEHICLE AMBULANCE
Bissett J. Roberts, Box 351, Waynesboro, Pa.
Filed Sept. 4, 1970, Ser. No. 69,779
Int. Cl. B60p *3/12, 1/30*
U.S. Cl. 214—505 **14 Claims**



This disclosure relates to a vehicle ambulance adapted to receive and transport disabled vehicles, i.e., automobiles, trucks, etc., and includes a main support having a rear end portion to which is pivotally mounted a pair of laterally spaced platform members, each of the platform members carrying on an underside thereof follower means, and a guide frame carrying a pair of actuators associated with each follower for moving the platform members between an outwardly and downwardly inclined first position relative to the main support and an outwardly and generally parallel second position relative to the main support.

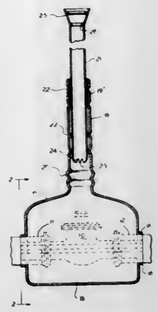
The vehicle ambulance further includes means for supporting the platform members in a third generally upright vertical position, and means are provided for mounting a light assembly to the platform members in both the first and third positions thereof. The actuator means are moved in unison by means of an extensible-retractable fluid motor with the latter being articulately mounted between the main vehicle support and the laterally supported guide frame carrying the actuator means.

3,674,168
CUPPED TRAYS MADE FROM A THIN SHEET OF PLASTICS MATERIAL FOR ROUND OR PEAR-SHAPED FRUITS OR HORTICULTURAL PRODUCTS
Pietro Padovani, Verona, Italy, assignor to I.S.A.P. SpA, Verona, Italy
Filed July 8, 1970, Ser. No. 53,264
Claims priority, application Italy, July 11, 1969, 61254 A/69
Int. Cl. B65d *85/34*
U.S. Cl. 217—26.5 **6 Claims**



Fruit tray made from thin plastics sheet has recesses with integral wall and floor. Part of the wall of each recess is bulged inwardly so that part of the bulge forms an anchoring element for the fruit. This element is located in the region of the mid-height of the fruit concerned and the lower part of the bulge is deformed outwardly by the fruit when inserted. The element then holds the fruit against the recess bottom.

3,674,169
VALVE BOXES
John H. Miller, 1031 N. 14th St., Manitowoc, Wis.
Filed Sept. 22, 1970, Ser. No. 74,375
Int. Cl. B65d *7/24, 11/18*
U.S. Cl. 220—4 R **4 Claims**



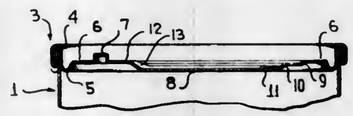
An underground valve housing made of waterproof and insulating material is sealed around a valve in a pipe. The housing has an air shaft which rises to the surface of the ground to vent any escaping gas and to give ready access to the valve in case it must be closed under emergency conditions.

3,674,170
STORAGE CONTAINERS FOR USE IN MARINE CRAFT
David C. Thorpe, London, England, and Richmond Marine Limited, London, England
Filed Dec. 22, 1969, Ser. No. 887,295
Claims priority, application Great Britain, Jan. 3, 1969, 4,209/69
Int. Cl. B65d *25/24*
U.S. Cl. 220—18 **5 Claims**

The invention deals generally with container structures and concerns containers or bins, each bin being insertable in a wall opening, such as an opening of a hull of a marine craft, and having a cover for the bin which seals the bin when in position in the hull opening, as well as when the bin is removed from the same.

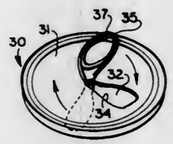
3,674,171
FULLY OPENING COVER OF SHEET METAL FOR CANS
Hans Joachim Fahlbusch, Vechelde, Germany, assignor to Schmalbach-Lubeca-Werke Aktiengesellschaft
Filed Dec. 7, 1970, Ser. No. 95,551
Claims priority, application Germany, Dec. 8, 1969, G 69 47 543.0
Int. Cl. B65d *17/24*
U.S. Cl. 220—54 **7 Claims**

This disclosure relates to a full opening easy opening closure which has an end panel with a graduated spring profile which facilitates expansion and contraction as may occur during the sterilization of a product within a closed container. In order that this spring profile may have no undesirable action which may cause premature opening of the container, the end



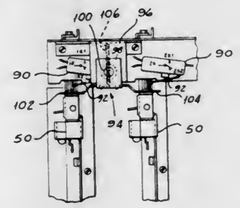
panel is provided with a shock absorbing bead adjacent the chuck wall and the pull tab is mounted on a platform which extends radially into the spring profile areas, but is not affected thereby.

3,674,172
EASY-OPENING CONTAINERS
Robert A. Wells, and Carl J. Strobe, both of Atlanta, Ga., assignors to SMW Atlanta, Inc., Atlanta, Ga.
Filed Nov. 2, 1971, Ser. No. 194,895
Int. Cl. B65d *17/24*
U.S. Cl. 220—54 **16 Claims**



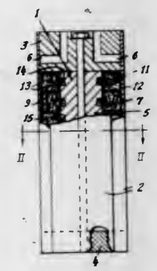
Improvements in easy-opening containers of the type frequently referred to as "pop-top" containers used for beverages and other substances. The portion of the easy-opening container which is removed upon opening of the container, and which typically includes a tab of material torn or otherwise removed from the container and a pull ring attached to the tab and having a finger pull therein, is provided with container engagement structure which enables the ring to be secured to the container with the torn-out tab inserted through the opening in the opened container. The finger pull in the ring partially or completely surrounds the opening in the container, thus shielding the sides of the container opening from possible damage to the lips or tongue of a person drinking from the container and also providing a convenient, nonlittering technique for disposal of the torn-out portion.

3,674,173
COLUMN SWITCHING PIVOTED SHELF MERCHANDISING MACHINE
Gregory Scarnecchia, Succasunna, and Frank T. Scalera, Maplewood, both of N.J., assignors to Rowe International Inc., Whippany, N.J.
Continuation of Ser. No. 841,514, July 14, 1969, abandoned.
This application June 22, 1971, Ser. No. 155,637
Int. Cl. B65h *7/04*
U.S. Cl. 221—6 **12 Claims**



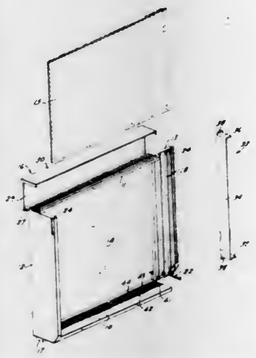
A column-switching, pivoted-shelf merchandising machine of the type in which respective travellers associated with columns of normally erected pivoted shelves sequentially release the shelves as they move upwardly in response to operation of their associated actuating mechanisms. We provide means for initially disabling one of the mechanisms and for enabling the other mechanism in response to actuation of a common push button or the like. This means is responsive to arrival of the one traveller at the top of its column for concomitantly disabling the one mechanism and enabling the other mechanism and responsive to the presence of both travellers at the top of the columns for disabling both mechanisms and for giving an empty signal.

3,674,174
AIRBORNE DISPENSER
John Mervyn Crewe, Horsham, England, assignor to Smith & Wesson Chemical Company, Inc.
Filed June 12, 1970, Ser. No. 45,843
Int. Cl. B65d *83/00*
U.S. Cl. 221—87 **1 Claim**



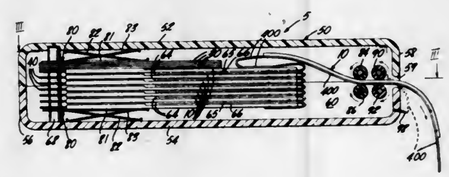
An improved airborne dispenser for releasing radar reflective material, pyrotechnic flares and the like includes a core member for storage of the material to be released and a protective casing which is removed in flight to allow for optimum dispersion of the material released.

3,674,175
MULTIPLE SIZE PACKAGE DISPLAY AND DISPENSER
John Jaquish, Brooklyn, N.Y., assignor to Trans-World Display Corporation
Filed Nov. 12, 1970, Ser. No. 88,843
Int. Cl. A47f *5/10*
U.S. Cl. 221—92 **11 Claims**



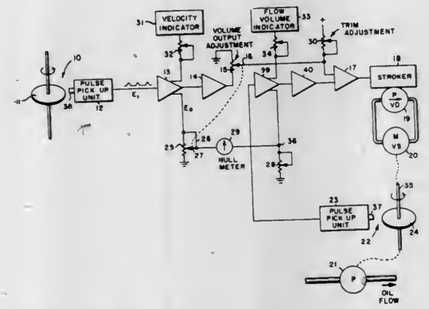
The display and dispenser includes a housing having two types of interior partitions. The first type are individually adjustable along the length of the top and bottom walls of the housing to vary the width of chambers within the housing which will accommodate stacks of merchandise packages. The second type are individually adjustable across the width of the top and bottom walls to vary the depth of the chambers. One partition of each type may be arranged as a unit having an L-shaped cross section, each such unit being slidable along any of a series of parallel guides carried by the housing top and bottom walls. The lower edge of the front wall of the housing is spaced above the bottom wall to permit the lowermost package in each stack to be removed, and each partition of the second type carries means for maintaining the lowermost package partially through the space so that it may readily be grasped and removed. One side wall of the housing is movable to permit insertion of the partitions, and the housing cover is movable to permit filling the chambers with merchandise.

3,674,176
DEVICE FOR HOLDING AND DISPENSING THERMOMETERS
Zsigmond Sagi, Parsippany, N.J., assignor to Bio-Medical Sciences, Inc., Fairfield, N.J.
Filed March 4, 1971, Ser. No. 120,997
Int. Cl. A24f *27/14*
U.S. Cl. 221—135 **22 Claims**



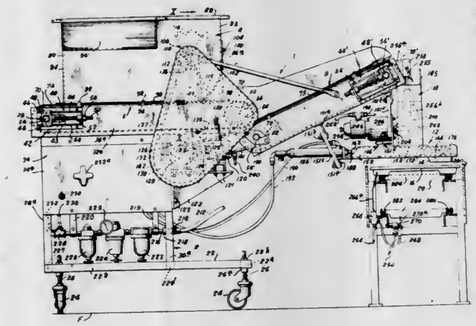
A package for use with disposable thermometers of the type having a thermally sensitive substance on a thermally conductive sheet and an overlying transparent film carrying indicator means which are superpositionably registrable with the thermally responsive substance to denote temperature change upon change of state in the substance, which thermometer normally is provided with a removable shield interposed between the substance and the indicator means to prevent communication between the two until the thermometer is ready for use. The thermometers are disposed along and removably attached to a carrier tape which together as a unit are received in a housing with the thermometers arranged in a superposed stack and the carrier tape folded in a series of accordion pleat-like folds with each accordion pleat-like fold interleaved between adjacent ones of the thermometers and an end of the tape extending through an opening in the housing. Pull tab means on the shield of each thermometer are arranged in a similar stack disposition and are secured to an anchorage within the housing. Dispensing of the thermometers is effected by drawing the carrier tape and attached thermometers through the housing opening, such withdrawal of the carrier tape and each thermometer attached thereto being effective to initiate peeling away of the shield from the thermometer within the housing. The housing also includes means therein adjacent the opening thereof which applies during dispensing a wiping or pressing force to the transparent film on which is carried the indicator means to reseal the thermometers and press the transparent film into contact with the carrier sheet positioning the indicator means in proper overlying communicating registration with the temperature responsive substance on the carrier sheet.

3,674,177
INDICATING MEANS FOR AN AUTOMATIC DISPENSER CONTROL SYSTEM
Royal R. Hawkins, Bloomington, Minn., assignor to Honeywell Inc., Minneapolis, Minn.
Filed Oct. 7, 1970, Ser. No. 78,701
Int. Cl. B67d *5/08*
U.S. Cl. 222—52 **18 Claims**



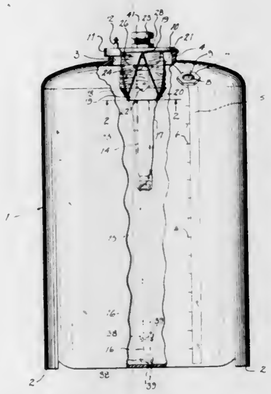
Apparatus for controlling the rate at which oil is dispensed from a moving vehicle embodying a control loop having a means for sensing the speed of the vehicle and for providing a signal representative of the desired amount of oil to be dispensed as a function of the speed of the vehicle, means for sensing the amount of oil actually being dispensed, and means for comparing the desired amount of oil to be dispensed to the amount of oil actually being dispensed for controlling the amount of oil being dispensed wherein a monitoring loop is connected to the control loop in such a manner as to be functionally independent of the control loop to indicate whether or not the actual amount of oil being dispensed equals the desired amount of oil to be dispensed.

3,674,178
APPARATUS FOR MEASURING AND DISPENSING PARTICULATE MATERIAL
Johnny B. Pomara, Jr., 1925 Valley View Lane, Dallas, Tex.
Filed Dec. 17, 1969, Ser. No. 885,872
Int. Cl. B67d *5/08*
U.S. Cl. 222—56 **25 Claims**



Apparatus for measuring and dispensing moistened or dry particulate material, such as rice or grated cheese, comprising a storage container having an agitator therein for dispensing and uniformly spreading particles of material on a conveyor which feeds the material into a measuring and dispensing device. The measuring and dispensing device comprises a container having an inclined bottom with an agitator disposed therein and a vibrator connected thereto to allow unpacked particles to be measured and dispensed into receptacles in food trays. The apparatus which measures and dispenses the material comprises a slide having a measuring compartment with a variable volume which moves under the container for filling and then over a hollow dispensing spout which is congruent with the receptacle in the tray to fill the receptacle.

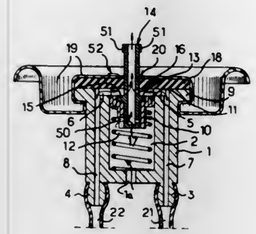
3,674,179
TELESCOPING DIP TUBE ASSEMBLY
Edwin J. Galloway, Menasha, Wis., assignor to Galloway Company, Neenah, Wis.
Filed April 1, 1971, Ser. No. 130,364
Int. Cl. B65d *35/22*
U.S. Cl. 222—94 **11 Claims**



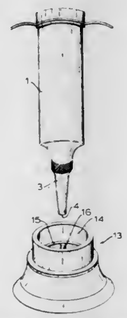
A dip tube assembly for a liquid storage tank includes a telescoping fill pipe and a flexible discharge tube. As delivered, the pipe is telescoped and a vacuumized liner bag is collapsed about it and held in place by a resiliently suspended collar. Liquid introduced through the pipe causes the bag to feed through the collar and the pipe extends, but a stop prevents the lowest section from extending fully until it is manipulated. The tube is fed through the pipe after filling and connected to the lowest section, the tube serving as a means to manipulate the lowest section, as a discharge conduit, and as a means to retract the pipe after emptying. A seal between the tube and a fitting nipple includes spaced O-rings on the nipple and a sleeve which fits over the tube and has an inner circumferential ridge which tightly engages the tube between the O-rings.

3,674,180
VALVE FOR SIMULTANEOUSLY DISPENSING A PLURALITY OF PRESSURIZED FLUIDS
Bruno P. Morane, Paris, France, assignor to L'Oreal, Paris, France
Filed June 29, 1970, Ser. No. 50,718
Claims priority, application France, Aug. 7, 1969, 6927143
Int. Cl. B65d *83/14*
U.S. Cl. 222—145 **3 Claims**

Valve for simultaneously dispensing a plurality of fluids under pressure is adapted to be set to a position permitting a purge of pressurizing gas to be passed therethrough without any fluid to be dispensed, another position in which gas is passed through the valve along with the fluids to be dispensed, and yet another position in which only fluids to be dispensed may pass through the valve.



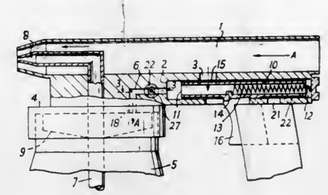
3,674,181
SYRINGE AND HOLDER
Joseph D. Marks, 4252 N. 74th St., Milwaukee, Wis.; Norman G. Le Beck, 7434 N. 52nd St., Milwaukee, Wis., and Glenn L. Allen, W283 N2191 Beach Road, Pewaukee, Wis.
Filed Jan. 23, 1970, Ser. No. 5,227
Int. Cl. A61m *5/22*
U.S. Cl. 222—179.5 **2 Claims**



A syringe is provided with a vertical support having a stem closing the nozzle of the syringe whereby the cylindrical barrel of the syringe may be partially filled with the impression material such as an epoxy resin formed by constituents added separately through the open upper end of the body and mixed within the syringe. The plunger for the syringe has a minute vent opening therethrough permitting the escape of air as the plunger is forced downwardly into the upper end of the syringe barrel to the level of the material therein. The syringe is thereafter applied to the object to receive the impression and the plunger actuated to force the material through the nozzle into the object.

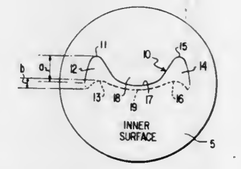
3,674,182
SPRAY-GUN CONTROL
Andre Roche, 35 Avenue St. Jerome, Aix en Provence, France
Filed Oct. 10, 1969, Ser. No. 865,414
Claims priority, application France, Oct. 14, 1968, 22408
Int. Cl. B05b *7/32*
U.S. Cl. 222—193 **1 Claim**

A spray gun has a barrel for connection to a supply of pressurized air and a duct communicating with a reservoir for the material to be sprayed, a flow control valve being provided between the barrel and the duct and including a sleeve valve which, in a first end position determined by a return spring,



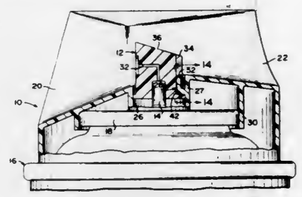
opens the reservoir to atmosphere, and in a second position determined by pull on a trigger provides a flow of air from the barrel into the reservoir.

3,674,183
DISPENSING DEVICE
Herny B. Venable, and Catherine M. Venable, both of Box 144, Chadds Ford, Pa.
Filed Feb. 1, 1971, Ser. No. 111,544
Int. Cl. B65d *37/00*
U.S. Cl. 222—212 **5 Claims**



A dispersing valve comprises a disc having a sinuous slit which is cut at an angle with respect to the face of the disc to form at least two, and preferably three, valve members, one of which is larger than the other one or two and is designed to permit passage of fluid when the container to which the valve is attached is compressed. The at least one other valve permits excess fluid and air to return to the interior of the container when it is released. The multiple valve arrangement is formed by the angular nature of the slit, permitting highly efficient dispensing and resealing action.

3,674,184
SELF-ALIGNING AEROSOL OVERCAP AND BUTTON
Ronald F. Ewald, 2700 Cardinal Drive, Rolling Meadows, Ill.
Continuation-in-part of Ser. No. 856,764, Sept. 10, 1969, abandoned. This application Sept. 16, 1970, Ser. No. 72,656
Int. Cl. B65d *83/00*
U.S. Cl. 222—402.13 **5 Claims**

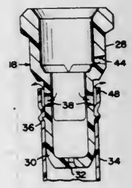


A self-aligning aerosol overcap and button and method of assembling them wherein the overcap includes a key project-

ing within its central button-receiving opening, and the button includes a smooth surfaces top having a downward slant from front to rear of approximately 10° to 20° and a vertical keyway in its side wall for receiving the key of the cap. The overcap and button are quickly and easily aligned simply by placing the overcap over the button such that the key rests on the top surface of the button. By gravity, the overcap will thereafter slide and rotate relative to the button until the key engages the keyway. The terminal orifice of the button is thereby automatically aligned with the front of the overcap.

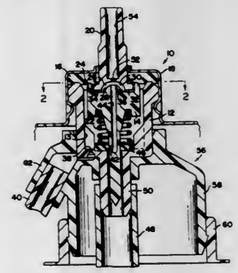
In a refined version of the key, it is slightly biased against the keyway, either in a radial or tangential direction to insure maximum alignment of the button and the overcap with no side twisting which often causes spray impingement under normal use.

3,674,185
AEROSOL VALVE WITH FILLING MEANS
Roger A. Evesque, Cary, Ill., assignor to Seaquist Valve Company, Division of Pittway Corporation, Cary, Ill.
Filed Aug. 24, 1970, Ser. No. 66,387
Int. Cl. B67d *3/18*
U.S. Cl. 222—402.16 **1 Claim**



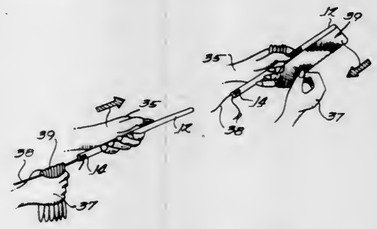
A valve for an aerosol container including a valve body having a number of fill orifices through which propellant and product may be more easily and more rapidly pressure filled. The fill orifices are arranged on the valve body in spaced relation to the customary dispensing on the valve body. Locking means may be fixedly or detachably mounted on the valve body in a predetermined spaced relation to the fill orifices in order to secure the customary dip tube thereto.

3,674,186
CO-DISPENSING VALVE
Ronald F. Ewald, Rolling Meadows, Ill., assignor to Seaquist Valve Company, Division of Pittway Corporation, Cary, Ill.
Filed Nov. 23, 1970, Ser. No. 91,825
Int. Cl. B65d *83/14*
U.S. Cl. 222—402.21 **9 Claims**



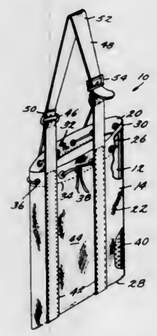
A co-dispensing valve capable of dispensing a blended product formed of two compositions, maintained in two separate compartments. Blending occurs immediately prior to dispensing within a blending chamber by means of a swirl chamber formed between the valve stem sealer and the lower end of the valve stem. Each composition flows to the blending chamber through separate metering orifices and then past sealing means for each compartment. Movement of the valve stem disengages both sealing means thereby allowing both compositions to flow into the blending chamber immediately prior dispensing of the blended product.

3,674,187
METHOD OF FORMING A RUFFLE OR THE LIKE
Dolores Cotugno, 3305 N. Ridgeway Ave., Chicago, Ill.
Filed Dec. 11, 1969, Ser. No. 884,273
Int. Cl. A41h *43/00*
U.S. Cl. 223—46 **2 Claims**



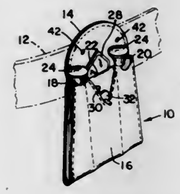
A device for making ruffles, tufts, pompons or the like from such materials as cloth net, crepe paper, or tissue. The device has means adapted to be grasped by hand, means for supporting said material on which the material may be gathered, and means for temporarily retaining a fastening means. The device is adapted to be used in a method including the steps of placing the material over the supporting means of the device, gathering together the material thereon, passing the device through the gathered material until the fastening means extends through the material, and manipulating the fastening means so that the gathered material is held in its gathered condition and may be formed into the desired ruffle or the like.

3,674,188
FISH AND GAME RECEPTACLE
Charles C. Anderson, Rte. #1, Quinton, Okla.
Filed April 14, 1971, Ser. No. 134,002
Int. Cl. A45f *3/02*
U.S. Cl. 224—5 G **12 Claims**



A fish and game receptacle including an outer water-pervious sack, such as a burlap sack, and, within the sack, a water-impervious liner bag, such as a plastic bag, in which approximately the bottom half portion of the liner bag on one side has perforations to permit water or blood to drain from the receptacle while minimizing dehydration of the contents of the receptacle.

3,674,189
GOLFING ACCESSORIES HOLDER
Maude E. Walbeck, 1206 Teneighth Way, Sacramento, Calif.
Filed Nov. 16, 1970, Ser. No. 89,558
Int. Cl. A45c *11/00*
U.S. Cl. 224—5 C **2 Claims**



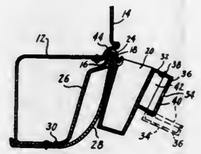
A kit comprised of accessories useable by a golfer and a holder adapted to be worn on clothing or shoes where it can be conveniently accessible as well as decorative. The holder, made from components of flexible, sheet material, is held together in such a manner as to form pockets for golf tees, a ball marker and a greens repair tool.

3,674,190
CARRIER FOR RODS WITH REELS ATTACHED
George R. Wright, 508 First National Bank Bldg., Lincoln, Nebr.
Filed Aug. 6, 1969, Ser. No. 847,949
Int. Cl. A45f *5/00*
U.S. Cl. 224—5 E **8 Claims**



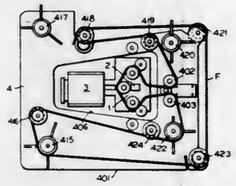
A carrier for fishing rods with reels attached having an elongated member, a reel protecting means extending transversely of and substantially beyond at least two sides of the elongated member and disposed adjacent one end of the elongated member so as to protect at least two rods held against the two sides, means holding the rods to the elongated member, and a removable covering means covering said handles and reels, means holding the rods in spaced positions on the elongated member, a handle attached to a side of said covering means, the handle being a flexible strap of sufficient length to extend over the shoulder of a man of average height while the elongated member is adjacent his hip, the strap being of adjustable length.

3,674,191
REFUSE AND TISSUE HOLDER
Harford E. Goings, 5428 Center Drive, Camp Springs, Md.
Filed Sept. 4, 1970, Ser. No. 69,784
Int. Cl. B60r *7/06*
U.S. Cl. 224—29 R **1 Claim**



A spring clip securing a refuse holder to the front of a vehicle glove compartment and a tissue holder secured and detachably mounted in the alternative to the front of the refuse holder.

3,674,192
FILM-DRIVING ROLLER WITH DEVICE FOR STOPPING THE DRIVE MECHANISM IF THE FILM IS BROKEN
Gernot Gottschall, Boblingen, Germany, assignor to Firma Franz Morat GmbH, Stuttgart-Vaihingen, Germany
Filed Dec. 2, 1970, Ser. No. 94,303
Claims priority, application Germany, Jan. 8, 1970, P 20 00 613.7
Int. Cl. B65h *25/32*
U.S. Cl. 226—11 **9 Claims**

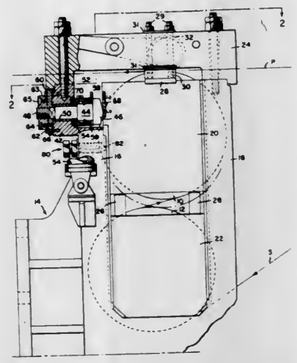


In an optical-electronic scanning device wherein a control film is passed by film driving means and a film cassette, a means for stopping the device when the film breaks.

3,674,193
STRIP TENSION SENSING DEVICE
Raymond E. Robinson, Baden, Pa., assignor to Blaw-Knox Foundry & Mill Machinery, Inc., Pittsburgh, Pa.
Filed April 29, 1971, Ser. No. 138,609
Int. Cl. B65h *23/00*
U.S. Cl. 226—100 **10 Claims**

A device for sensing the tension of a strip of material being fed to or from a rolling mill or the like through a bridle-type

roll assembly wherein a load cell is positioned adjacent the supporting chocks for one of the rolls of the bridle roll as-

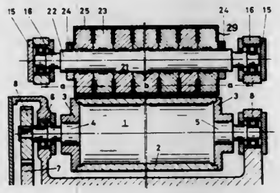


sembly so that the tension forces on the strip urge the chock against the load cell.

3,674,194
DRAWING PRESS

Wilhelm Moesser, Darmstadt, Germany, assignor to Otto C. Strecker K.C., Darmstadt-Eberstadt and Maschinenfabrik zum Bruderhaus G.m.b.H., Reutlinger, Wuerttemberg, Germany

Filed Nov. 13, 1969, Ser. No. 876,449
Claims priority, application Germany, Nov. 27, 1968, P 18 11 203.3
Int. Cl. B65h *17/20*
U.S. Cl. 226—187 **10 Claims**



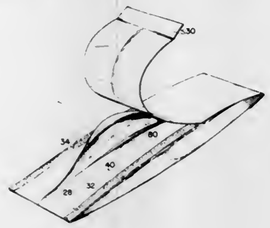
A drawing press adapted to feed a web of sheet material between a pair of rolls including a first relatively rigid roll extending generally transversely of the path of said web. A second relatively elastic roll urges the web against the first roll and comprises an elongated shaft of elastic material and a plurality of separate, generally cylindrical, disclike weight elements mounted on said shaft in side-by-side relation, each weight element acting by its own deadweight to press said web against said first roll.

3,674,195
FILLED AND SEALED EASILY OPENED BAG AND METHOD OF MAKING SAME

Ralph K. Stone, Longmeadow, Mass., assignor to United States Envelope Company, Springfield, Mass.

Filed Nov. 24, 1970, Ser. No. 92,397
Int. Cl. B65d *33/00*
U.S. Cl. 229—66 **10 Claims**

A filled and sealed bag made of paper or similar flexible sheet material, and particularly well adapted for containing a sterile article, includes a front panel defining one wall of a pocket for containing the article. This front panel contains a relatively long slit covered by a closure strip which may be peelably removed from the bag to expose the slit and to allow the article to be removed from the bag, the adhesive used to hold the closure strip to the front panel being spaced a considerable distance from the edges of the slit so as to avoid the

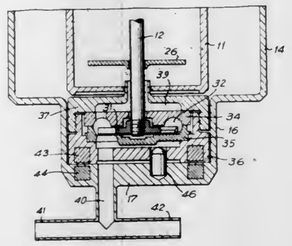


possibility of contaminating the enclosed object. The bag is made and filled by a process which includes slitting a web of sheet material along its length, applying and securing a closure strip to the slit web to rejoin the severed portions of the web and then forming bags from the web by folding and sealing individual pieces of the web which individual pieces are cut from the web to separate the individual bags.

3,674,196
CENTRIFUGAL MIXING AND EXTRACTION APPARATUS

Heinrich Gutter, Karisruhe, Germany, assignor to Gesellschaft Zur Wiederaufarbeitung von Kernbrennstoffen m.b.H., Leopoldschafen, Germany

Filed Feb. 3, 1970, Ser. No. 8,320
Claims priority, application Germany, Feb. 13, 1969, P 19 07 195.5
Int. Cl. B04b *1/00, 3/00, 9/02*
U.S. Cl. 233—4 **6 Claims**

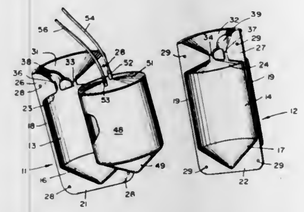


A centrifugal mixing and extraction device, suitable particularly for mixing and extracting radioactive fluids, is designed for rapid cleaning and/or replacement of the mixing chamber and separation bowl. The entire unit, including motor, drive shaft, separator bowl, mixing chamber and impeller, is literally hung from a frame in a casing enclosing the bowl, mixing chamber and impeller. In operative position, the mixing chamber is restrained from rotation with the impeller, the bowl and the shaft by means of magnets in the lower portion of the chamber and the casing, by one or more studs fixed in one of the walls thereof and axially engageable with corresponding recesses in the other, or both. The entire unit can simply be lifted out of the casing, e.g., by disengaging the magnets, without interrupting the extraction process.

3,674,197
WASHING MEANS FOR FLEXIBLE BAGS IN SPLIT ENCLOSURES

David F. Mitchell, Trumbull, and William A. Romanauskas, Southbury, both of Conn., assignors to Ivan Sorvall, Inc., Newton, Conn.

Filed Sept. 8, 1970, Ser. No. 70,273
Int. Cl. B04b *15/02*
U.S. Cl. 233—14 R **11 Claims**



Improved enclosure for supporting flexible bags within a centrifuge rotor for washing biological particles in a closed system. Each collapsible bag is enclosed and supported by a juxtaposed pair of half-shells forming a unitary cavity or chamber to which the filled bag conforms during centrifugation. The enclosure serves to prevent undue wear and stress upon the rotor receptacle and, at the same time, safeguards the integrity of the flexible bag during centrifugation.

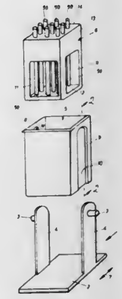
ERRATUM

For Class 233—19 A see:
Patent No. 3,674,206

3,674,198
RECEPTACLE HOLDER FOR CENTRIFUGES

Gunter Eberle, Gartenstrasse 100, D-7200 Tuttlingen, Germany

Filed June 22, 1970, Ser. No. 48,142
Int. Cl. B04b *9/12*
U.S. Cl. 233—26 **12 Claims**

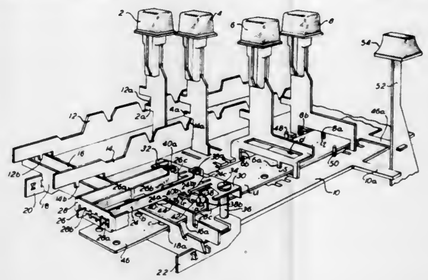


A holder for centrifuges, for receiving specimen containers such as test tubes holding substances to be centrifuged, comprising three major parts which are connected in a form-fitting manner, namely a stirrup member, a cup member therein, and a frame in the latter, with bores in the frame for the test tubes. The cup member is preferably transparent, and the frame has apertured side portions that allow inspection of the substances in the test tubes. Photo-electric means may be provided for automatically controlling the energization of the centrifuge, depending on the progress of the settling process.

3,674,199
KEYBOARD CONTROL MEANS

Mats Erik Mattsson, Sollentuna; Bjorn Sven Hilding Eriksson, Jakobsberg, and Claes-Goran Lindelow, Taby, all of Sweden, assignors to Svenska Dataregister AB, Solna, Sweden

Filed April 20, 1970, Ser. No. 30,200
Claims priority, application Sweden, April 29, 1969, 6052/69
Int. Cl. G06c *7/04, 25/00*
U.S. Cl. 235—26 **14 Claims**

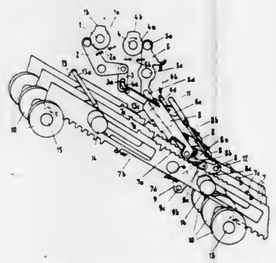


A cash register or other business machine keyboard having at least two key rows and including a device for preventing and permitting, respectively, depression of the keys, said device comprising a blocking slide arranged in a first of the key rows and at least one blocking link in the second row, both the slide and the link each being movable to two respective positions. The slide is provided with first and second sets of non-blocking parts which respectively permit the keys in the first and second rows to be depressed. When the blocking slide is in a given position, at least one of the keys in the key rows can be depressed by the non-blocking parts while the other keys are prevented from being depressed by the blocking parts of the blocking side.

3,674,200
SELECTOR AND SETTING DEVICE FOR THE SYNCHRONOUS OPERATION OF AT LEAST TWO MULTI-DENOMINATIONAL COUNTERS IN A MACHINE SUCH AS A CASH REGISTER CAPABLE OF EFFECTING PRINTING OPERATIONS

Rudolf Gruenig, Koeniz; Erwin Berger, Thoerishaus, and Charles Sieber, Fribourg, all of Switzerland, assignors to Hasler A.G., Berne, Switzerland

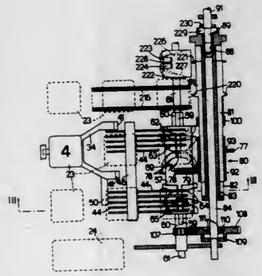
Filed Jan. 27, 1971, Ser. No. 110,208
Claims priority, application Switzerland, Jan. 29, 1970, 1235/70
Int. Cl. G06c *11/04, 23/00*
U.S. Cl. 235—60 R **8 Claims**



In a machine capable of effecting printing operations and including at least two multi-denominational counters the counters are formed by side-by-side coaxial rotatable wheels

each having a pinion rotatable therewith. The pinions of the wheels of like denomination of the counters are connected by lengthwise movable racks having teeth meshing with the pinions and longitudinal setting movements of the racks effect synchronous setting of the counters. The setting movements of the racks are made by a stepped setting pawl which is selectively engaged with setting teeth formed on the racks.

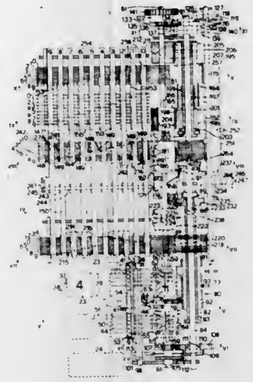
3,674,201
NUMERICAL DATA TRANSFER DEVICE
Nicolo Giolitti, Ivrea, Italy, assignor to Ing. C. Olivetti & C. S.p.A., Ivrea (Torino), Italy
Filed Feb. 18, 1970, Ser. No. 12,175
Claims priority, application Italy, Feb. 20, 1969, 50659 A/69
Int. Cl. G06c *3/00*; **G06g** *1/00*
U.S. Cl. 235—61 PC **24 Claims**



A numerical data transfer device including an input store, a variably positionable output member and a transfer member. The device also includes means for relatively displacing the transfer member and the input store in a first direction, and an actuating means cooperable with the input store during said relative displacement for shifting the transfer member in a second direction. The device further includes means for connecting the transfer member to the output member for positioning the output member in response to the shifting of the transfer member.

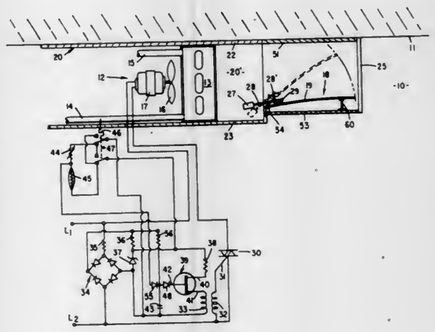
3,674,202
CALCULATING MACHINE
Nicolo Giolitti, and Dante Daly, both of Ivrea, Italy, assignors to Ing. C. Olivetti & C., S.p.A., Ivrea, Turin, Italy
Filed Feb. 19, 1970, Ser. No. 12,688
Claims priority, application Italy, Feb. 20, 1969, 50659 A/69
Int. Cl. G06c *9/00, 13/00*
U.S. Cl. 235—61 PB **19 Claims**

A calculating machine including at least one numerical data transfer device comprising an input store, a variably positionable output member and a transfer member. The transfer member and input store are relatively displaceable in a first direction and actuating means are provided for simultaneously shifting the transfer member in a second direction. In addition, means are provided for connecting the transfer member to the



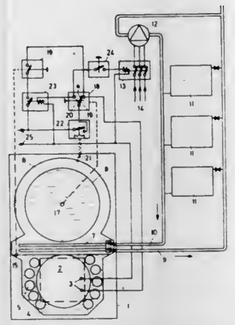
output member for positioning the latter in response to the shifting of the former.

3,674,203
AIR CONDITIONING SYSTEM
William L. McGrath, Syracuse, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.
Filed July 27, 1970, Ser. No. 58,314
Int. Cl. F24f *11/04*
U.S. Cl. 236—38 **1 Claim**



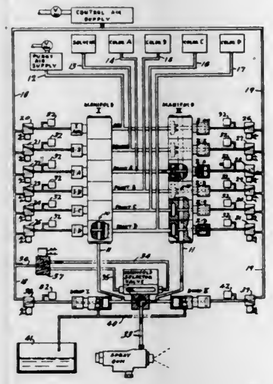
A system for supplying treated air to an enclosure, including a heat exchanger through which a heat exchange medium flows and a fan arranged to route air to be treated over the heat exchanger in heat transfer relation with the medium. A control operates to vary the speed of the fan in response to changes in room temperature. One or more damper assemblies operate to maintain the discharge of treated air from the system at a substantially constant velocity, irrespective of the speed of the fan.

3,674,204
CENTRAL HEATING AND WATER SERVICE SYSTEM
Willi Brandl, 12, Schurbungert, 8057 Zurich, Switzerland
Filed May 26, 1970, Ser. No. 40,612
Claims priority, application Switzerland, May 30, 1969, 8276/69
Int. Cl. F24d *3/08*
U.S. Cl. 237—8 **4 Claims**



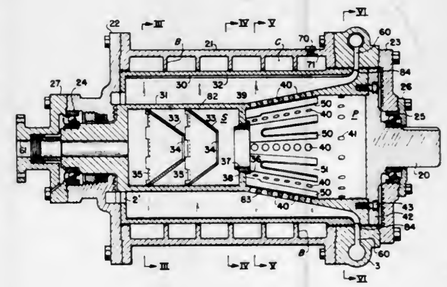
A system for supplying central-heating water and consumable (service) water in which the heating plant has an evacuated chamber including a storage vessel for the service water and a heating vessel for the central-heating water, both vessels having thermally conductive walls exposed to vapor within the chamber and heated by condensation of vapor thereon. The vapor (e.g. steam) is heated by electrically controlled means (e.g. an electrically operated oil burner) and the control system is designed such that circulation through the heating vessel of the central-heating water is precluded while the storage vessel of the service water is heated and only thereafter is circulation permitted to occur in the central heating network.

3,674,205
MULTIPLE COLOR PAINT SPRAY SYSTEM
Erhard Kock, Toledo, Ohio, assignor to Champion Spark Plug Company, Toledo, Ohio
Continuation-in-part of Ser. No. 7,465, Feb. 2, 1970, abandoned. This application May 14, 1971, Ser. No. 143,309
Int. Cl. E01b ; E05b *15/02*
U.S. Cl. 239—1 **23 Claims**



A multiple color paint spray system for sequentially supplying selected ones of a plurality of colors to a single spray outlet. A pair of parallel paint manifolds are each connected to the sources of a plurality of colored paints and a solvent. Both manifolds are connected to a single spray gun through a two position valve or to a group of guns each having its two position valve. While paint of one color is being supplied to the outlet from one manifold, the other manifold is conditioned by a solvent purge and filled with the next color to be supplied so that color change to the spray gun or guns may be rapidly effected by switching the two position valve or all the valves simultaneously from one manifold to the other. In a second embodiment, a four-way valve is used to simultaneously supply paint of one color to the gun from one manifold to carry the solvent purge from the second manifold to a disposal source.

3,674,206
CENTRIFUGAL SEPARATOR WITH MEANS CONTROLLING FLOW
John S. Wendt, Jr., 1013 River Oaks Drive, Pittsburgh, Pa.
Filed Nov. 20, 1970, Ser. No. 91,469
Int. Cl. B04b *11/00*
U.S. Cl. 233—19 A **12 Claims**

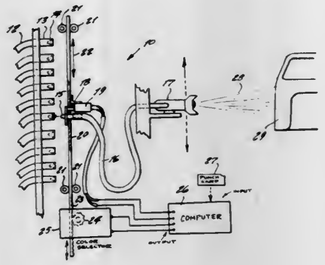


A centrifugal separator having a stationary casing and rotating means coaxial with and radially spaced from the casing, the rotating means including an outer shell having an annular inlet passageway, a barrel coaxial with the shell and radially spaced inwardly therefrom to form a primary separation chamber, vanes attaching the barrel to the shell, the barrel having an outwardly flared portion and a cylindrical portion and an end wall closing the large end of the flared portion, a plurality of openings providing communication between the space within the barrel and the space between the barrel and the shell, means within the barrel to enhance the separation of the mixture, first radial outlet means from one end of the barrel and second axial outlet means from the other end of the barrel, and an annular discharge passageway from the primary separation chamber.

3,674,207
AUTOMATED PAINT SPRAY SYSTEM
Emidio J. Carbonetti, Jr., 658 Ruskin Lane, Yeadon, Pa., and Lewis Conover, 1146 Taylor Drive, Folcroft, Pa.
Filed Nov. 6, 1970, Ser. No. 87,536
Int. Cl. B05b *13/00*
U.S. Cl. 239—69 **3 Claims**

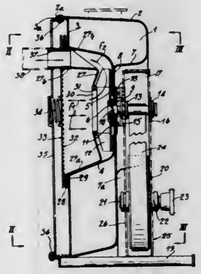
In a production line system, apparatus is disclosed whereby a succession of production work articles are painted by a spray

gun which is coupled selectively by automatic selection and coupling means to different paint supply lines of different



colors in accordance with data signals delivered from a computerized data input and storage system.

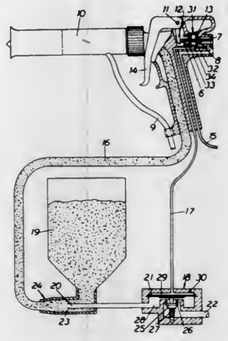
3,674,208
DEVICE FOR SPRAYING TREATMENT PRODUCTS USED PARTICULARLY FOR FARMING
Vincent Pierre Marie Ballu, Epernay, France, assignor to Tecnoma, Epernay (Marne), France
Filed April 26, 1971, Ser. No. 137,161
Claims priority, application France, April 29, 1970, 7015716
Int. Cl. A01n *17/08*
U.S. Cl. 239—77 **15 Claims**



The device to atomize and spray liquid and pulverulent treatment products comprises a tank partly in the shape of a truncated cone, a turbine is placed in the bottom of the truncated part under a complementary shaped baffle-plate covering said turbine and an outlet nozzle is provided. The shaft of the turbine is passing through a panel delimited by the tank and protruding into the portion of the tank which is opposite to the truncated part.

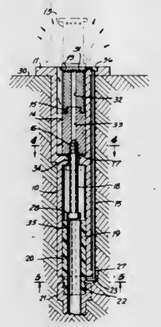
3,674,209
SPRAY GUN
Kurt Herman Liedberg, Skara, Sweden, assignor to Atlas Copco Aktiebolag, Nacka, Sweden
Filed Sept. 24, 1970, Ser. No. 74,970
Claims priority, application Sweden, Oct. 6, 1969, 13699/69
Int. Cl. B05b *7/12*
U.S. Cl. 239—143 **8 Claims**

A spray gun has a trigger actuated maneuvering pressure reduction valve therein. The maneuvering pressure upon depression of the trigger acts on a main pressure reduction valve thereby infinitely variably controlling the supply of com-



pressed air to a compressed air operated ejector feeding spraying material to the spray gun.

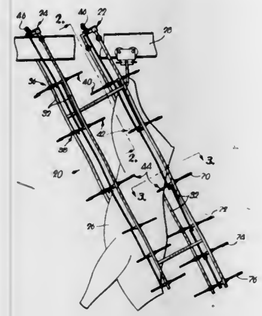
3,674,210
SPRINKLER HOUSING
Frank Faragasso, 3048 Waverly Ave., Oceanside, N.Y.
Filed Sept. 21, 1970, Ser. No. 74,086
Int. Cl. B05b *15/10*
U.S. Cl. 239—204 **2 Claims**



An improved sprinkler housing particularly adapted for mounting on flat terrain which permits the installer to easily adjust the level of the housing in order to suit the local terrain without changing the nipple at its bottom end. The sprinkler housing is adjusted by means of turning a rod which is pivotably coupled parallel to the sprinkler housing so that an eccentric lock connected to the end of the rod and engaged to the coupling or nipple, locks the coupling after the proper height adjustment has been completed.

3,674,211
WASHING APPARATUS
Frank H. Gage, Kansas City, Mo., and Marvin L. Zabel, Overland Park, Kans., assignors to The Dyna-Jet Corporation
Filed Aug. 12, 1970, Ser. No. 63,055
Int. Cl. B08b *3/02*
U.S. Cl. 239—247 **2 Claims**

Washing apparatus having a fluid delivery assembly, one form of the invention being intended for washing objects which are moved past the fluid delivery assembly, the other form having the fluid delivery assembly movably mounted whereby it may be moved with respect to the object to be washed. Any given number of the fluid delivery assemblies may be utilized, either fixed or movable, each of the fluid delivery assemblies including a first, generally horizontal



stretch of a pipe, and a second stretch of pipe extending downwardly from the first stretch, there being a plurality of nozzles shiftably carried by the pipes of the fluid delivery assembly and a single prime mover for each fluid delivery assembly for oscillating the nozzles whereby to obtain the maximum washing action upon the object to be washed.

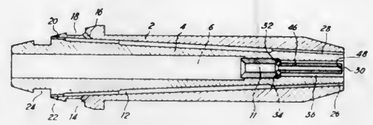
3,674,212
ONE PIECE COUPLER-ASPIRATOR-NOZZLE
Jean Marand, Norwalk, Conn., assignor to Ciba-Geigy Corporation
Filed July 29, 1970, Ser. No. 59,137
Int. Cl. B05b *7/04*
U.S. Cl. 239—308 **5 Claims**



A coupler-aspirator-nozzle is formed in one piece. Coupling means are provided for coupling to a propellant cartridge and a separate product container. The coupling means communicate with first and second flow passages which in turn communicate with a mixing chamber. The mixing chamber then communicates with a nozzle opening. Flow of the propellant through the mixing chamber aspirates the product through the second flow passage and into the mixing chamber. The product is mixed with the propellant in the mixing chamber and then is sprayed through the nozzle opening. An indexing guide is provided to prevent the coupler-aspirator-nozzle from becoming disoriented.

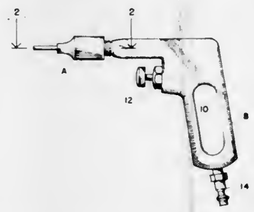
3,674,213
CUTTING HEAD FOR THERMOCHEMICAL MACHINING
Jean Le Mounier, Auxonne, France, assignor to L'Air Liquide, Societe Anonyme Pour L'Etude et L'Exploitation Des Procedes Georges Claude, Paris, France
Filed Oct. 14, 1970, Ser. No. 80,632
Claims priority, application France, Oct. 21, 1969, 6935976
Int. Cl. B05b *7/06*
U.S. Cl. 239—425 **10 Claims**

In this cutting head for thermochemical machining by an oxygen jet surrounded by heating flames, a curtain of oxygen is interposed between the flames and the jet. The curtain is supplied by the cutting oxygen and prevents the pollution of



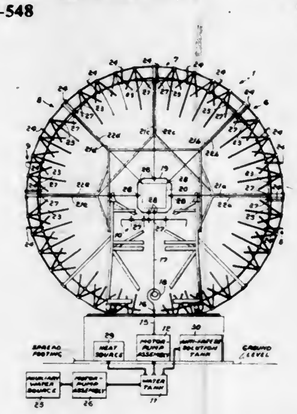
the oxygen jet by the flames. A cutting nozzle divides the oxygen stream into the central, cutting jet and the protective curtain.

3,674,214
AIR NOZZLES
Lowell N. Brown, 11612 Bowling Green Drive, St. Louis, Mo.
Filed Aug. 24, 1970, Ser. No. 66,347
Int. Cl. B05b *7/02*
U.S. Cl. 239—526 **3 Claims**



The invention relates to an air nozzle which is self-regulating in that it utilizes a spring-biased castellated piston within the nozzle in the direct flow of air to cut off the air escaping from the nozzle when the pressure exerted against the piston exceeds a predetermined value.

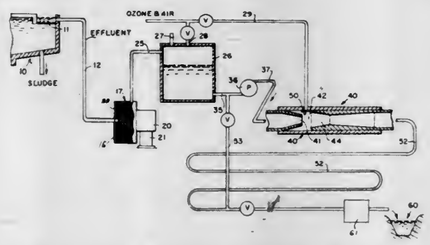
3,674,215
SNOW AND ICE REMOVAL SYSTEM FOR AN ANTENNA
M. Otto Erdmann, Denville, N.J., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.
Filed Nov. 25, 1970, Ser. No. 92,719
Int. Cl. A62c *31/10*
U.S. Cl. 239—548 **9 Claims**



Water is pumped for a predetermined time at a given rate from a water tank, burried below ground level to prevent freezing, to a plurality of spray nozzles appropriately posi-

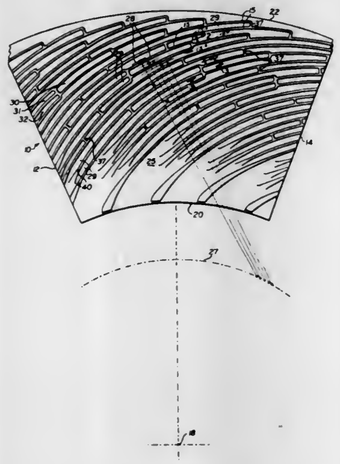
tioned about the reflecting surface of an antenna so that the water discharged from the plurality of nozzles completely covers the reflecting surface to remove accumulations of ice and/or snow thereon. Under extreme temperatures conditions, the water can be mixed with an appropriate amount of anti-freeze solution or preheated. The Water distribution system includes a flexible portion adjacent the bottom of the reflecting surface with sufficient slack to enable azimuth and elevation motion of the antenna.

3,674,216
TREATING LIQUID WASTE EFFLUENT
Richard L. Blair, 249 Mattson Ave., Los Gatos, Calif.
Filed July 2, 1970, Ser. No. 51,999
Int. Cl. B02c *13/10, 13/28*
U.S. Cl. 241—18 **7 Claims**



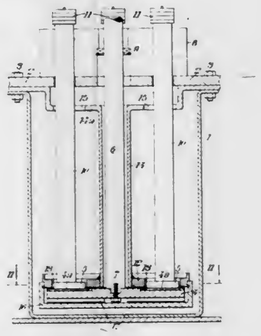
The liquid waste effluent from a sewage or plant waste treating plant is subjected to the shearing action of a wire brush wheel turning at high speed to break up minute particles of organic material present in said effluent before the latter is sterilized and aerated for discharge at a suitably low B.O.D. and bacteria count levels.

3,674,217
PULP FIBERIZING GRINDING PLATE
Rolf Bertil Reinhall, 16, Killingevagen, Lidingo, 3, Sweden
Filed July 30, 1970, Ser. No. 59,660
Int. Cl. B02c *7/12*
U.S. Cl. 241—21 **13 Claims**



A pulp fiberizing grinding plate or disc, known in the art as the "Asplund Defibrator," employed for breaking down wood chips, or the like fibrous material into fibers for use in various pulp employing processes, such for example, as in the paper industry, or the like. The defibrator plate or disc is formed of disc segments with a grinding face having a plurality of upstanding ribs extending across the working area of the plate, with the ribs at the beginning of the working area lying at an angle of between 0° and 60° to a radius intercepting the rib at the commencement of the rib in the working area, with the rib gradually transitioning across the working area at a progressively increasing angle to the plate radius, until at the circumference, the ridge is at an angle of between 65° and 90° to the radius. The ridges of this plate face similar ridges on an opposed grinding surface, with relative movement provided for between the grinding surfaces. As a result of the angulation of the ridges or ribs, the previously encountered problems of fiber breakage, occurring on previously evolved grinding plates is eliminated, since the angulation between the relatively moving ridges minimizes the shear forces exerted on the fibers, producing instead of the conventional fiber cutting action, a compressive fiber separating pushing force.

3,674,218
PROCESS AND MILL FOR GRINDING PULVERULENT MATERIALS, AND THE MATERIALS THUS GROUND
Anatol Globus; Paul Duplex, both of Paris, and Roger Vautier, Bourg-la-Reine, all of France, assignors to Agence Nationale De Valorisation De La Recherche (Anvar)
Filed Aug. 12, 1969, Ser. No. 849,324
Claims priority, application France, Aug. 13, 1968, 68162875
Int. Cl. B02c *7/00*
U.S. Cl. 241—46.06 **7 Claims**

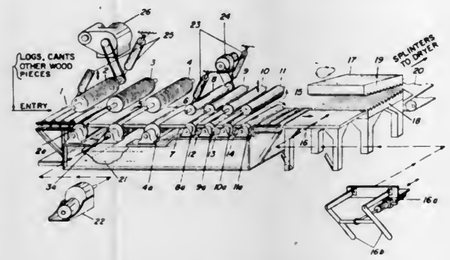


The material or materials to be ground are put in suspension in a liquid, and this liquid is made to pass in a continuous and repeated manner between two rubbing surfaces. The pressure of application of one surface against the other is comprised between a few tens of g/cm² and a few kg/cm². One of the rubbing surfaces forms part of a horizontal disc driven by a vertical shaft, and the other rubbing surface comprises a plurality of stationary shoes resting on the disc. At least one of the rubbing surfaces can be made of the same material as the material to be ground.

3,674,219
GREEN-WOOD FIBRATING MEANS AND METHOD
Herbert C. Harvey, Jr., Knoxville, Tenn., assignor to Tennessee Valley Authority
Filed July 24, 1970, Ser. No. 58,081
Int. Cl. B03c *21/00*; **B27l** *11/08*
U.S. Cl. 241—152 R **6 Claims**

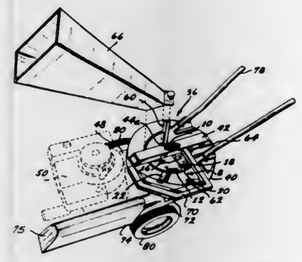
A process and apparatus for converting solid pieces of timber into slender, splinter-like strands of wood fiber of more

or less uniform thickness. Timber first passes through a series of rolls revolving at uniform or variable controlled speeds. The rolls have varying thread-like configurations and are vertically activated under controlled pressure of such magnitude as to



cause the solid wood to be separated into splinter-like strands along the grain. The spongy mass of loosely matted fiber strands are then passed through a scrubbing device to be pulled apart.

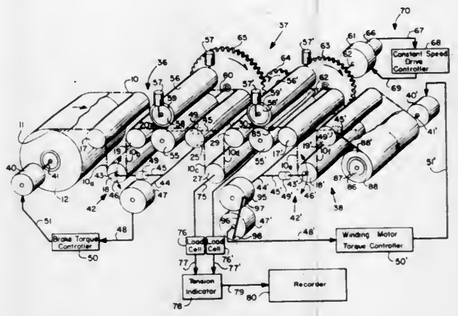
3,674,220
CHIPPER SHREDDER
Myron D. Tupper, Sandy, and Arvin A. Hille, Oswego, both of Oreg., assignors to Omark Industries, Inc., Portland, Oreg.
Filed Dec. 7, 1970, Ser. No. 95,432
Int. Cl. B02c *13/16*
U.S. Cl. 241—186 R **9 Claims**



A chipping knife and shredder flails are mounted for rotation about a common axis. The chipping knife is mounted in radial alignment with and adjacent the center of axis and a hopper directs branches, etc. to be chipped into that central portion dominated by the chipping knife. The flails extend outside of the chipping knife and a second hopper directs material to be shredded into that area dominated by the flails.

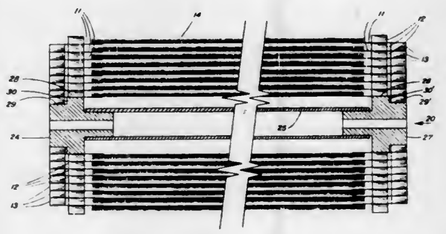
3,674,221
DYNAMIC STRESS-STRAIN TESTING OF RIBBONS OF FILM
Coenraad E. Riemersma, Springfield Township, Hamilton County, Ohio, assignor to The Proctor & Gamble Company, Cincinnati, Ohio
Filed May 13, 1970, Ser. No. 36,820
Int. Cl. B65h *23/08, 23/22*
U.S. Cl. 242—75.51 **14 Claims**

This disclosure refers to an improved method and apparatus for dynamically, non-destructively testing ribbons of film to determine the stress-strain characteristics of the film under conditions substantially identical to the conditions to be imposed on the same film during subsequent processing. Specifically, a moving ribbon of film is first subjected to constant tension and is thereafter looped through a pair of constant surface speed nips, the surface speeds of which are selected to cause the film to elongate a pre-determined constant amount as it passes from one to the other. Total tension parallel to the



machine direction of moving the film is continuously sensed in the looped film path intermediate the nips. Provision is made for continuously recording the total tension and for winding the tested film, under constant tension, into a roll of film.

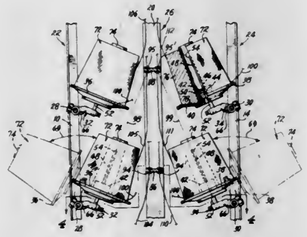
3,674,222
FABRIC PACKAGING
Yale H. Smiley, Waterloo, Ontario, Canada, assignor to Uniroyal Ltd., Montreal, Quebec, Canada
Filed May 25, 1970, Ser. No. 40,150
Int. Cl. B65h *75/02, 75/28*
U.S. Cl. 242—77.1 **15 Claims**



Pile and similar fabrics are prevented from matting when rolled up by attaching at each side of the fabric a strip having two shoulders, the first of which projects downwardly therefrom beneath the plane of the bottom of the fabric when the fabric is disposed horizontally, and the second of which projects upwardly therefrom above the plane of the top of the fabric. The inner face, i.e. the face toward the center of the fabric and away from the selvage, of the second, or downwardly projecting, shoulder is vertical as is the outer face of the first, or upwardly projecting, shoulder, and these vertical faces are aligned with each other, so when the fabric is rolled up about a horizontal axis the inner face of the downwardly projecting shoulder bears against the outer face of the upwardly projecting shoulder, and the downwardly projecting shoulder is held on the outer side of the upwardly projecting shoulder. The core on which the fabric is rolled has a flange at each end which projects radially away from the axis of the core, and these flanges each have axially outer faces which lie in radial planes. These flange faces are adapted to bear against the inner face of the downwardly projecting shoulder of the strip on the first wrap of the fabric about the core. The planes of the flange faces are spaced apart a sufficient distance axially of the core that the fabric is held taut

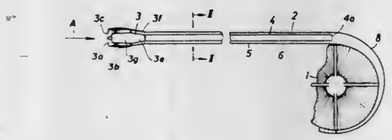
and lies along a helical, or substantially helical, path around the core axis. The thickness of at least one of the shoulders on each strip measured normal to the plane of the surface of the fabric is at least equal to, and preferably slightly greater than, the thickness of the fabric.

3,674,223
YARN CREEL AND METHOD OF POSITIONING YARN CONES
Morris Philip, 2519 Grand Ave., Bronx, N.Y.
Filed April 29, 1971, Ser. No. 138,581
Int. Cl. D02h *1/00*; D03j *5/08*; B65h *49/02*
U.S. Cl. 242—131 **21 Claims**



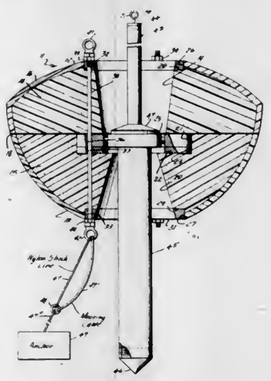
Spaced apart uprights interconnected by headers form a vertical longitudinally extending creel frame having an open front face, a laterally spaced apart open rear face, and an inner zone between the faces. A plurality of transversely spaced apart longitudinally extending bars are mounted adjacent each face, each bar supporting a plurality of longitudinally spaced apart hinges. Main yarn guides and auxiliary yarn guides are mounted in the inner zone. Each hinge pivotally supports a yarn holder for pivoting between an inner position wherein the post of the holder is upwardly inclined toward and aligned with a main guide and an outer position wherein the post is accessible from outside its corresponding open face. The yarn holders are arranged in pairs, and in the inner position, the posts of each pair of holders are inclined toward each other and aligned with the same main guide.

3,674,224
FAN-TYPE AIRCRAFT AND HOT-GAS STRUCTURE THEREFOR
Jan Konecny, Buxtehude; Jan T. Haas, and Hans E. Groenewald, both of Hamburg, all of Germany, assignors to Hamburger Flugzeugbau GmbH, Hamburg-Finkenwerder, Germany
Filed Feb. 17, 1970, Ser. No. 11,971
Claims priority, application Germany, March 21, 1969, P 19 14 474.2
Int. Cl. B64c *15/14*
U.S. Cl. 244—12 B **8 Claims**



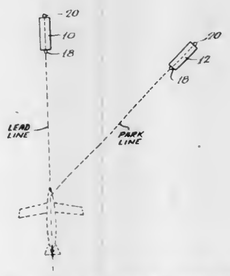
An aircraft is disclosed whose fixed airfoils and/or fuselage is provided with one or more fans for producing lift, forward thrust or both, wherein the motive power for the fans is derived from the formation of hot gases in an external-combustion system such as a gas-generating turbine. The gas generator is of the two-stage type having a high-temperature output which is communicated to the fans by an inner duct composed of a thin-wall refractory metal. The relatively low-temperature output of another stage of the gas generator (e.g. the compressor) is communicated to the fans by an outer duct coaxially surrounding the inner duct whereby the outer gas layer (generally of air) forms an insulating sheath for the higher-temperature gases traversing the inner duct.

3,674,225
BUOY
Henry V. Johnson, Panama City, Fla., assignor to The United States of America as represented by the Secretary of the Army
Filed July 9, 1970, Ser. No. 53,615
Int. Cl. B63b *21/00*; G01w *1/00*
U.S. Cl. 244—31 **19 Claims**



Disclosed is a buoy have a float, a gimbal ring assembly mounted in oppositely disposed and interconnected frusto-conical apertures extending through said float, an instrument package housing releasably latched to said gimbal ring assembly in such manner as to allow it to swing in pendulum like manner with 2° of freedom within said apertures with respect to said float.

3,674,226
AIRCRAFT PARKING METHOD AND MEANS
Richard Z. Wasson, Flossmoor, Ill., assignor to Federal Sign and Signal Corporation, Chicago, Ill.
Filed April 6, 1970, Ser. No. 25,859
Int. Cl. B64f *1/22*
U.S. Cl. 244—114 R **15 Claims**

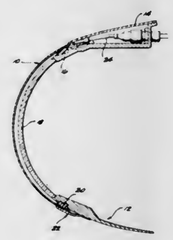


Method and means for parking aircraft in selected position for cooperation with jetway passenger ramps; the means being

characterized by a first pair of neon tubes having a position of visual alignment defining a lead line and a second pair of neon tubes having a position of visual alignment defining a park line intersecting said lead line, the point of intersection of the two lines being located at the selected parking position; the method being characterized by the steps of steering the craft to a position wherein the first pair of tubes are visually aligned whereby to locate the craft on said lead line, taxiing the craft along said lead line by maintaining visual alignment of said first pair of tubes until attaining a position wherein the second pair of tubes are visually aligned, and stopping the craft in the last named position, i.e., the position wherein the pilot of the aircraft sits at the point of intersection of said lines.

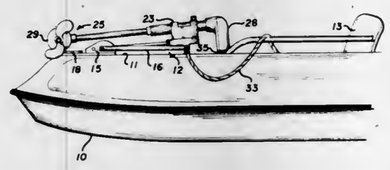
To facilitate spot parking of different types, styles, or sizes of aircraft in respective selected spots, the said second pair of tubes may include therewith additional tube means for cooperation with one of the tubes of the pair for defining additional park lines intersecting the lead line at different points.

3,674,227
FRAGMENTING COVER
Stanley I. Jacobson, Los Angeles, and John R. Sansbury, Chatsworth, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.
Filed March 23, 1970, Ser. No. 24,913
Int. Cl. B64d *7/00*
U.S. Cl. 244—121 **20 Claims**



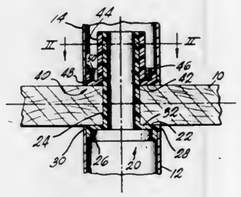
A protective cover for a window is made of fragmentable material, and is equipped with a fragmenting actuator so when it is desired to remove the cover, the fragmenting actuator fragments the cover. In the preferred embodiment, the cover is a dome over a window for a radiation detector, for example, in the nose of a missile.

3,674,228
BRACKET FOR MOUNTING BOAT ACCESSORY
George F. Horton, Rte. 2, Box 718, Fort Worth, Tex.
Filed July 14, 1970, Ser. No. 54,819
Int. Cl. F16m *1/02*
U.S. Cl. 248—4 **7 Claims**



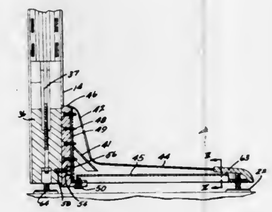
An extensible hinged bracket for mounting a boat accessory such as an auxiliary outboard electric motor on the forward deck, gunwale or transom of a small boat and comprised of a horizontal mounting plate, spaced generally parallel link arms pivotally connected at corresponding ends to the mounting plate for substantially 180° movement thereabove, the remaining ends of said link arms being spaced and pivotally connected to the ends of a movable support on which the accessory is mounted. A cushion is provided at one end of the mounting plate for supporting the accessory when the bracket is retracted.

3,674,229
SHELVING SUPPORTS
Miner S. Keeler, II, Grand Rapids, Mich., assignor to Keeler Brass Company, Grand Rapids, Mich.
Filed March 9, 1970, Ser. No. 17,524
Int. Cl. A47b *57/06*
U.S. Cl. 248—188 **11 Claims**



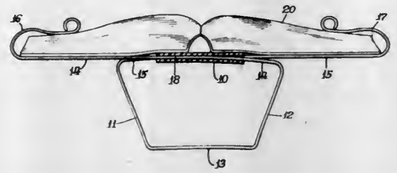
Supporting apparatus and method of assembly of the same for shelves, the apparatus featuring a cylindrical male bushing the neck of which mates with a circular hole in the shelf and with a cylindrical female bushing. Both bushings have a shoulder and a flange extending outwardly therefrom which allow the bushings to abut and support or be supported by steel tubes comprising the main legs of the shelving.

3,674,230
FURNITURE CONSTRUCTION
Robert L. Propst, 2285 S. State Road, Ann Arbor, Mich.
Division of Ser. No. 736,857, June 13, 1968, Pat. No. 3,572,263. This application June 12, 1970, Ser. No. 57,867
Int. Cl. F16m *11/20*
U.S. Cl. 248—188.8 **5 Claims**



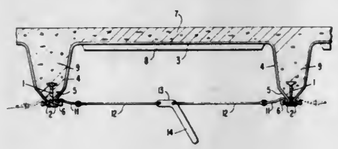
This disclosure relates to a furniture construction having a plurality of vertically disposed space divider components which are rigidly secured together by connector post structures. The divider has a stabilizer means in the form of brackets at the floor to counterbalance modular units which can be supported by the post structures. The bracket member is attached to the post structure through a supporting bar and a screw, the head of which screw is positioned in a slot in the supporting bar between the post structure and the bracket member. Means are provided on the radial edges of the screw for turning the screw to attach the bracket construction to the bottom portion of the connector post structure. The same bracket is interchangeably useable as a support for cantilevered furniture components mounted on the space divider.

3,674,231
BOOKHOLDER
Isabelle J. Lewis, Naperville Road, Bartlett, Ill.
Filed Sept. 24, 1970, Ser. No. 75,089
Int. Cl. A47b *97/04*
U.S. Cl. 248—451 **4 Claims**



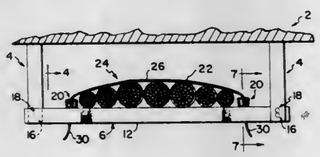
A length of wire is bent so that it defines a rectangle with two extending end portions. The end portions extend in opposite directions through a length of plastic tubing which frictionally engages the portions. At the distal ends of the end portions are page gripping devices which in one embodiment are "U" shaped clips, and in the other one are movable jaw clips spring loaded toward a gripping position.

3,674,232
METAL FORMS HAVING A PARTICULAR SHAPE FOR REALIZING SUSPENDED FLOORS
Giovanni Varlonga, Via B. Verro N. 90, Milan, Italy
Filed June 4, 1969, Ser. No. 830,258
Int. Cl. E04g *13/04*
U.S. Cl. 249—23 **5 Claims**



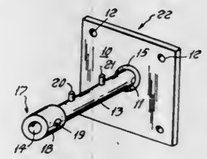
A concrete-suspended floor construction form arranged to rest on the main beams of the suspended floor and which is formed as an inverted U-shaped member with inclined side walls having lips at their free ends for resting on the beam. The form further includes a disassembly apparatus comprising tie rods and hooks to be hooked over the lips of the form when it is desirable to remove the form after the concrete has set.

3,674,233
HANGER SYSTEM
Harold S. Van Buren, Jr., Lexington, Mass., assignor to TRW Inc., Cleveland, Ohio
Filed July 2, 1970, Ser. No. 51,870
Int. Cl. F16l *3/22*
U.S. Cl. 248—68 **11 Claims**



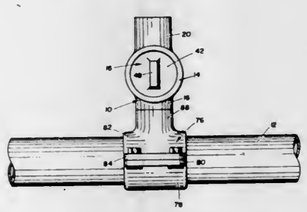
A hanger apparatus for supporting a cable run. The cables overlie a supporting channel extending transverse to the run and having a plurality of spaced slots formed therein. A pair of fastener clips are snap seated in selected of the spaced slots in the supporting channel and are generally located adjacent the outboard cables of the run. Each of the fastener clips carries an internally disposed latching element. A flexible strap of a selected length has a series of spaced slots formed therethrough and defining a series of spaced rungs therebetween. The medial portion of the strap is looped over the cable run and its end portions are threaded through the clips. The terminal ends of the strap are free. The latching element on each clip is seated in one of the slots in the strap and hooks over the adjacent rung thereby securing the strap to the clips. The strap may be tightened to provide an optimum clamping tension on the cables by axially pulling on either or both ends of the strap in that the latching element will automatically index to a seat in one of the succeeding slots in the strap in a ratchetlike manner responsive to the pull.

3,674,234
CONSTRUCTION SUPPORT MEANS
John Joseph Davin, R.D. 2, Box 214, Troy, N.Y.
Filed July 7, 1970, Ser. No. 52,917
Int. Cl. E04g *3/00*
U.S. Cl. 248—239 **2 Claims**



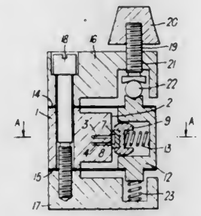
A structural aid for supporting a scaffold or bracket from a vertical wall which comprises a plate-like member having a central opening therethrough. Disposed in said opening rigidly affixed to said plate and extending outwardly thereof a main support member having a central aperture longitudinally therethrough and terminating in an enlarged reinforced end portion. Intermediate the ends of said main support, said support being provided with one or more vertical upstanding pins for engaging and mating with apertures carried by the structures to be supported. Where necessary, said enlarged end portion is formed with a lateral threaded opening therethrough for inserting a screw to lock said structural aid to a "snap tie" or other extending rod.

3,674,235
PLASTIC VALVE
Donald E. Porter, and Jack Burkholder, both of Tulsa, Okla., assignors to Water and Gas Plastics Products, Tulsa, Okla.
Filed Feb. 16, 1970, Ser. No. 11,465
Int. Cl. F16k *25/00, 1/22*
U.S. Cl. 251—162 **2 Claims**



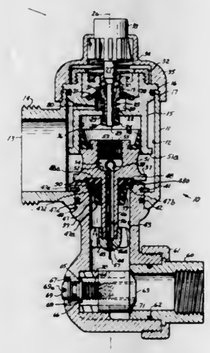
A plastic valve for use in connection with a tapping machine or tapping tool during a tapping operation on a plastic flow for connection of a by-pass line, or the like, thereto. The plastic valve comprises means for securing thereof to the flow line for receiving a tapping machine therethrough. During the tapping operation, the valve is in an open position for precluding interference with the tapping operation. Subsequent to removal of the tapping machine the valve may be closed for precluding leakage of fluid from the flow line during the connection of the by-pass, or the like, thereto. Upon completion of the work operation, the valve may be opened again to provide communication between the flow line and the by-pass line.

3,674,236
VALVE
Roger Commarmot, Lyon, France, assignor to Rhone-Poulenc S.A., Paris, France
Filed Feb. 6, 1970, Ser. No. 9,320
Claims priority, application France, Feb. 7, 1969, 6902908
Int. Cl. F16k *31/50*
U.S. Cl. 251—176 **2 Claims**



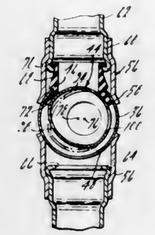
The valve for controlling the flow of a fluid, particularly very small flows, comprising a block having at least one smooth face and at least two ducts extending through the block and terminating in the smooth face in an orifice. A slide is guided for movement substantially parallel to the smooth face and is moved, e.g. by means of a screw or pneumatically. A valve element movable with the slide is urged into sliding contact with the smooth face and a recess in the valve element is dimensioned to overlie and connect at least two of the orifices in at least one position of the slide.

3,674,237
FLUSH VALVE
William T. Heyer, 225 Mohawk Road, and Dale F. Soukup, 318 Mohawk Road, both of Santa Barbara, Calif.
Filed Oct. 28, 1970, Ser. No. 84,789
Int. Cl. F16k *31/44*
U.S. Cl. 251—32 **18 Claims**



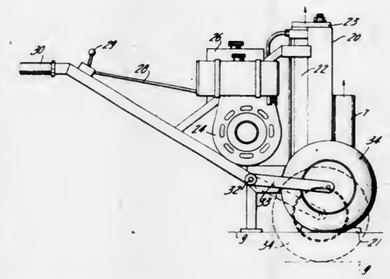
A differential pressure valve for operation over a wide range of system pressures, including relatively low domestic water supply pressures. A probe extends upstream to pick up relatively higher pressure to actuate the valve workings. A yieldable restrictor regulates the pressure drop across the workings of the valve to maintain a suitable pressure differential, and a ball-detent type mechanism provides a snap action from open to closed condition so that the valve does not dither. A shoulder laterally deflects the water passed by the valve in a folded pattern known as the "Coanda" effect, which lessens the forces needed to close the valve and protects the actuating member from sand and other deleterious solid material.

3,674,238
TUBULAR VALVE AND BODY STRUCTURE
Joseph Pickles, Birmingham, and Chester S. Fudala, Detroit, both of Mich., assignors to Ferro Manufacturing Corporation, Detroit, Mich.
Filed Aug. 24, 1970, Ser. No. 66,477
Int. Cl. F16k *3/26*
U.S. Cl. 251—309 **5 Claims**



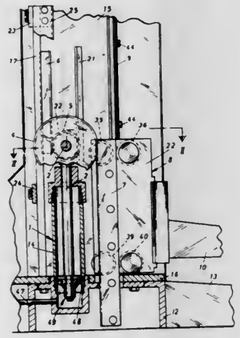
Valve structure in which a hollow generally tubular valve housing having opposed lateral ports is provided at its interior with a rotatable generally tubular valve body having opposed lateral openings and shaped such that upon rotation an imperforate wall portion of the valve body moves into closing relation with one of the ports of said valve housing.

3,674,239
POLE-PULLING DEVICE
Reinhard Wirtgen, Windhagen uber Linz/Rhine, Germany
Filed April 25, 1969, Ser. No. 819,273
Claims priority, application Germany, April 27, 1968, P 17 59 410.4
Int. Cl. E21b *19/00;* **B60p** *1/00*
U.S. Cl. 254—2 R **3 Claims**



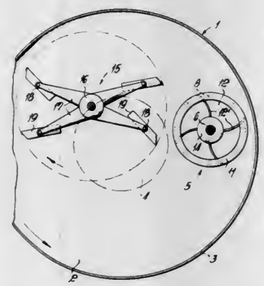
A pole pulling device comprising a frame mounted on wheels which can be raised so that a base support means can be lowered to the ground to surround the pole to be extracted. The frame supports a reciprocating lift means which engages the pole.

3,674,240
LIFTING DEVICE
Bertil Ivar Torsten Larsson, Norrgard S-330, 10 Bredaryd, Sweden
Filed Dec. 15, 1969, Ser. No. 884,991
Claims priority, application Sweden, Feb. 13, 1969, 1959/69
Int. Cl. B66f *3/02*
U.S. Cl. 254—95 **8 Claims**



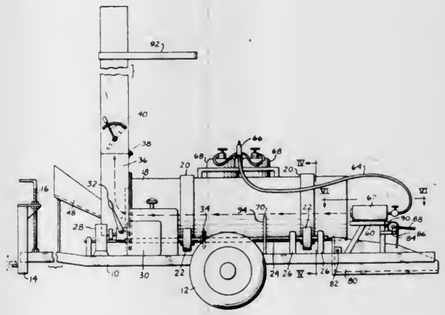
A lifting device provided with a hydraulic unit having a pressure cylinder and a piston rod and a transverse shaft rotatably mounted on the upper end of the piston rod and having affixed thereto two fixed cogwheels, one having a larger diameter than the other, wherein the one cog wheel engages in a fixed rack and the second cog wheel engages in a rack movable vertically with a carrier device. The carrier device is movable vertically along a vertical rail or the like.

3,674,241
MIXING MACHINE
Wilhelm Eirich, Walldurner Str. 41, and Gustav Eirich, 19 Bahnhofstrasse, both of Hardheim/Nordbaden, Germany
Filed Aug. 12, 1970, Ser. No. 63,147
Claims priority, application Germany, Aug. 16, 1969, P 19 41 831.6; Jan. 22, 1970, P 20 02 641.9
Int. Cl. B01f *9/10*
U.S. Cl. 259—15 **26 Claims**



Mixing machine with a plate- or dish-shaped container for the material to be mixed. A rotating mixing tool is accommodated in the container so as to rotate about an axis eccentric to the axis of the container. The axis of the tool is forcibly caused to perform a relative movement in relation to the mixing plate. The mixing tool comprises a flat disc-like rotary element which is arranged at the free end of its shaft. Rods are arranged in the rotary element which are substantially parallel or inclined in relation to the shaft. For higher speeds a ring is secured at the free ends of the rods which keeps the rods in place in spite of large centrifugal forces.

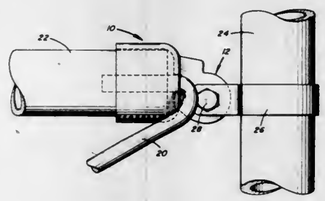
3,674,242
PREPARATION OF ASPHALT PAVING MATERIAL
Clarence K. Stewart, 3936 Spanish Trail, Fort Wayne, Ind.
Filed Jan. 4, 1971, Ser. No. 103,749
Int. Cl. B28c *5/46*
U.S. Cl. 259—158 **10 Claims**



The specification discloses a machine in which asphalt paving materials are treated by mixing and heating the materials, particularly for repair work and the like. The machine consists of an elongated drum rotatable on a horizontal axis and having fins therein for agitating the material as the drum rotates. The asphalt materials, preferably at least partially premixed with an aggregate such as crushed stone, are fed into one end of the drum and progress therethrough to the other end. At the discharge end of the drum, burners supply a hot blast which passes through the drum in counter flow to the asphalt material passing therethrough and is taken off through a stack at the opposite end of the drum.

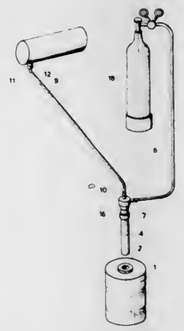
A tray at the discharge end of the drum receives the material as it drops out of the drum and is thus in position for a workman to remove the material from the tray by a shovel or by scraping it therefrom and placing it in the paving region to be repaired.

3,674,243
RAIL AND BRACE END COUPLING
Thomas W. Brown, 4104 S. Creek Road E., Chattanooga, Tenn.
Filed July 20, 1970, Ser. No. 56,256
Int. Cl. E04h *17/14*
U.S. Cl. 256—65 **2 Claims**



A rail end for securing the horizontal rail in a chain link fence to the vertical post. The rail end has a cup-shaped body with a shank projecting from a transverse wall of the body. The transverse wall has means to secure a diagonal brace or truss rod to it so that no special fitting is needed when such a diagonal brace is used.

3,674,244
DEVICE FOR MAKING AERATED SOFT DRINKS
Giancarlo Garavelli, Milan, Italy, assignor to Heron Establishment, Vaduz, Liechtenstein
Filed June 12, 1970, Ser. No. 45,723
Claims priority, application Switzerland, June 18, 1969, 9282/69
Int. Cl. B67d *5/56*
U.S. Cl. 261—18 B **11 Claims**

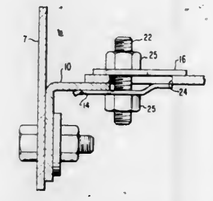


A method and apparatus are disclosed for making soft drinks wherein disposable air tight containers for the syrup are used, the container being placed under pressure by compressed gas, which thus causes the liquid to mix with the gas, and which causes the emulsion thus formed to be conveyed to apparatus for adding water to form the soft drink which is then refrigerated and dispensed.

3,674,245
CARBURETOR FOR INTERNAL-COMBUSTION ENGINE
Luigi Massarotti, Milano, Italy, assignor to Atomjuboil S.r.l., Milano, Italy
Filed March 25, 1970, Ser. No. 23,164
Claims priority, application Italy, March 26, 1969, 14626 A/69
Int. Cl. F02m *3/08, 7/06*
U.S. Cl. 261—28 **8 Claims**

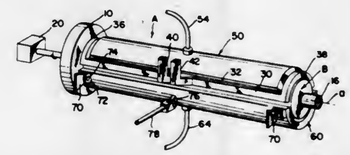
A carburetor for an internal-combustion engine, equipped with an accelerator-controlled butterfly valve in a mixing channel, has a first fuel-injection nozzle downstream and a second fuel-injection nozzle upstream of that valve, each of these nozzles opening into the channel in the immediate vicinity of a respective high-pressure duct serving to atomize the injected fuel. The atomizer duct for the first nozzle is unblocked under low-load conditions (idling) by a diaphragm-controlled valve responsive to the suction prevailing in the channel beyond the closed butterfly valve. The second nozzle, supplied by an ancillary fuel pump under the control of the accelerator under high-load conditions (kickdown), may have its atomizer duct connected to an air-pressure accumulator which is charged at low load by the pressure differential developed across the butterfly valve.

3,674,246
CLAMP ASSEMBLY
Darrell L. Freeman, Tulsa, Okla., assignor to Nutter Engineering Company, Division of Heat/Fluid Engineering Corporation, Tulsa, Okla.
Continuation-in-part of Ser. No. 839,437, July 7, 1969, abandoned. This application Jan. 28, 1970, Ser. No. 6,389
Int. Cl. B01d *3/20*
U.S. Cl. 261—114 R **9 Claims**



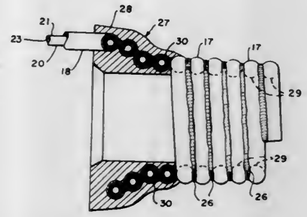
For use in a refining tower, a bubble tray having a plurality of spaced clamping assemblies operable from either above or below for releasably securing the trays to a marginal support in the tower or an inspection passage-way section within the tray area. Each clamping assembly includes one each of generally rectangular clamping and sealing members having rectangular apertures therethrough mounted on the opposite sides of the tray by means of a rectangular bolt, produced from threaded square shaped metal stock, extending through the apertures and also through an elongated slot in the tray. The bolt has a rectangular cross section slightly less in width than the elongated slot in the tray and the square apertures in the clamping and sealing members, to prevent their rotation relative to the tray while permitting longitudinal sliding movement of these members between an extended position projecting from the edge of the tray for receiving therebetween either the tray support or an adjacent section of tray and a retracted position for release from the securement position. The clamping assembly is maintained on the tray by a pair of nuts received on the opposite ends of the bolt and which also serve to secure the assembly in attached position upon advancement of the nuts on the bolt.

3,674,247
APPARATUS AND METHOD OF INDUCTIVELY HEATING AND QUENCH HARDENING AN ELONGATED WORKPIECE
Jack W. Gillick, Parma, Ohio, assignor to Park-Ohio Industries, Inc., Cleveland, Ohio
Filed March 27, 1970, Ser. No. 23,201
Int. Cl. C21d *1/66*
U.S. Cl. 266—4 E **3 Claims**



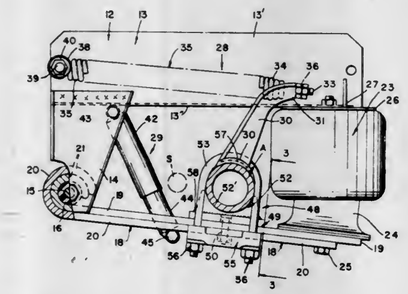
There is provided an apparatus and method for inductively heating and quench hardening a relatively long elongated workpiece wherein the workpiece is inductively heated by an inductor extending substantially the total length of the workpiece while the workpiece is rotated and a quenching head for quench hardening the rotating inductively heated workpiece over its complete length while the workpiece remains in the heating position.

3,674,248
CLOSED END TUYERE COIL
Donald J. Shellenberger, Bethel Park, Pa., assignor to Jones & Laughlin Steel Corporation, Pittsburgh, Pa.
Filed Oct. 9, 1970, Ser. No. 79,379
Int. Cl. C21b 7/16
U.S. Cl. 266—41 **4 Claims**



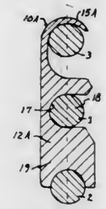
Tuyeres and like articles employed to deliver fluids in extremely hot environments include an arrangement for their cooling comprising a conduit in the form of a coil having a plurality of turns for passing a cooling fluid through the article at high velocities. The conduit consists of an outer tubular member closed at one end to fluid flow and an inner tubular member located within the outer tubular member so as to form an annular passageway between the members. The tubular members are in fluid communication adjacent the closed end of the outer member. Cooling fluid introduced into the conduit first passes through the conduit along the annular passageway, enters the inner tubular member adjacent the closed end of the outer member, and passes through the inner tubular member to exit from the conduit.

3,674,249
PNEUMATIC SUSPENSION AXLE RETURN DEVICE
Donald J. McGee, Troy, Mich., assignor to H & H Equipment Company, Detroit, Mich.
Filed July 13, 1970, Ser. No. 54,467
Int. Cl. F16f 1/26
U.S. Cl. 267—52 **23 Claims**



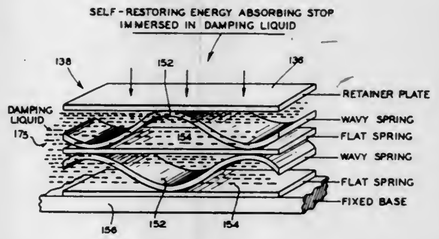
Simple two-part seat block and adjustment mounting plate units, as applied between a transverse wheel axle and each of a pair of parallel, leaf-type spring beams, enable an efficient and expeditious two-way adjustment of the positioning of the beams in relation to the axle, and vice versa, as well as air spring units and axle return devices and/or shock absorbers which are (or may be) associated with the beams and axle. Arcuate seats of the blocks matingly receive the axle adjacent opposite frame sides and, when properly positioned on the adjustment plate in a desired transverse and longitudinal relationship to the axle and beams, are tack welded to the top of the plates and to the bottom of the axle. U-bolts then clamp the axle and seat assemblies to the top of the beam.

3,674,250
SPACER AND STABILIZER FOR INSERTION BETWEEN ADJACENT CONVOLUTIONS OF AN AUTOMOBILE COIL SPRING
Louis Joseph, 225 St. Pauls Ave., Jersey City, N.J.
Filed Sept. 30, 1970, Ser. No. 74,385
Int. Cl. F16f 1/12
U.S. Cl. 267—61 **8 Claims**



An apparatus for stabilizing the sway of an auto body that is mounted on coil springs by stabilizing the resilient movement of the coil springs and providing, in addition, means to restore the degree of lift of each spring and permit a balanced setting of the auto body, in which spacer blocks are positioned between coils of the spring and further in which each spacer block is extended to be fitted about at least three coils of said spring to retain those coils in alignment.

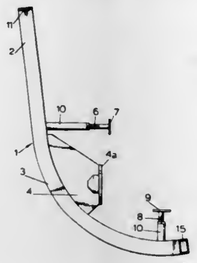
3,674,251
SELF-RESTORING ENERGY ABSORBING STOP
Benjamin John Tirabassi, Westwood, N.J., assignor to The Bendix Corporation
Division of Ser. No. 792,675, Jan. 21, 1969, Pat. No. 3,582,081. This application May 27, 1970, Ser. No. 41,234
Int. Cl. F16k 1/32
U.S. Cl. 267—162 **3 Claims**



A self-restoring energy absorbing stop in a free pendulous magnetic azimuth detector mechanism in which the resilient stop serves to limit the motion of the free pendulous mechanism and includes a novel means of providing a viscous damping and rapid spring return in a low volume, high energy absorbing package.

3,674,252
VEHICLE LIFTING DEVICE
Ronald Crabtree, 103 Brunswick House, Crosley Wood Road, and Peter Horacek, 56 Brunswick House, Crosley Wood Road, both of Bingley, Yorkshire, England
Filed Aug. 21, 1970, Ser. No. 65,993
Claims priority, application Great Britain, Sept. 8, 1969, 44,210/69
Int. Cl. B23g 3/18; B66f 7/22
U.S. Cl. 269—55 **6 Claims**

Vehicle lifting means comprising cradle means including a pair of single or double bearers curved for at least part of their length and furnished with means for attaching them to the same side of a vehicle, the arrangement being such that with



the bearers in position the vehicle can be rolled over and supported on its side.

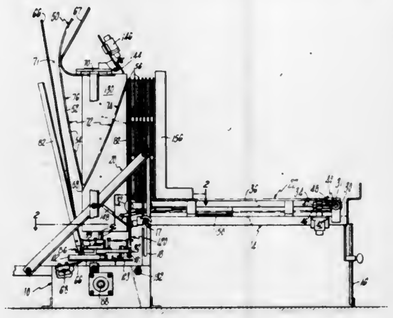
3,674,253
FOLLOWER APPLIANCE FOR FABRIC FOLDING MACHINES
Gunter Stumpf, Kreis Muensingen, 7421 Mehrstetten, Germany
Filed Dec. 31, 1969, Ser. No. 889,621
Claims priority, application Germany, Nov. 7, 1969, P 19 56 148.9
Int. Cl. B65h 29/46
U.S. Cl. 270—31 **8 Claims**

In a fabric folding machine, a service traveler is connected with the movable part of the machine which travels back and forth to perform the folding operation. The movable part is driven by a motor which, in addition to conventional controls that are possibly provided, is also controlled by switches actuated when an operator is standing on the service traveler and/or when the service traveler encounters objects or persons which would otherwise be run down.

3,674,254
METHOD AND APPARATUS FOR FAN-FOLDED STACKING
Archibald H. Welch, Branford, Conn., assignor to Converters Incorporated, Farmington, Conn.
Filed Nov. 25, 1969, Ser. No. 879,804
Int. Cl. B65h 45/20, 45/107
U.S. Cl. 270—79 **9 Claims**

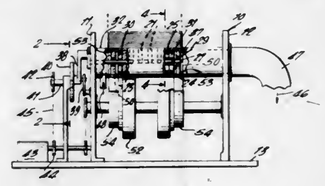
A method and apparatus for stacking continuous envelopes into a fan-folded stack by longitudinally feeding a precreased continuous envelope sheet downwardly and horizontally feeding successive double leaf sections of the continuous envelope sheet onto a belt conveyor support and with the leaves of the

continuous envelope sheet extending normal to the conveyor. A pair of laterally spaced rotary stacking mechanisms, each having two coaxial upstanding eccentrically mounted blades are connected to be driven together for actuating successive double leaf sections of the elongated continuous envelope sheet into folded generally compact association with the



preceding sections of the stack on the conveyor, and such that a pair of the blades are temporarily held at a forward "hold" position to maintain the last sheet section in folded compact association with the stack while the other pair of blades is driven to actuate the succeeding section of the continuous envelope sheet substantially into folded compact association with the stack.

3,674,255
SHEET FEEDING DEVICE
Alvin Arnell, Merrick, N.Y., assignor to Commercial Envelope Manufacturers, Inc., Bronx, N.Y.
Filed Oct. 28, 1970, Ser. No. 84,592
Int. Cl. B65h 3/10
U.S. Cl. 271—29 **2 Claims**

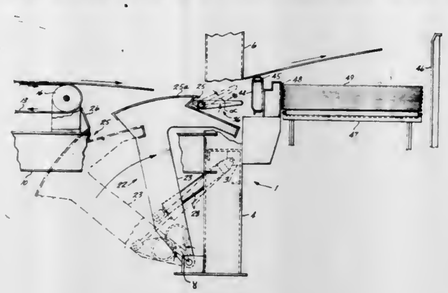


A high speed sheet feeding device which removes a single sheet of paper from the bottom of a stack by suction means and drives the sheet into transport rollers. Fully mechanical means are employed to substitute a blast of air for the suction means after the sheet has been grasped by the transport rollers. Freed of the influence of the suction means, the sheet is more positively and quickly drawn from the stack without danger of wrinkling, tearing, etc.

3,674,256
THIN SHEET THROWER
Byron B. Brookhyser, Milton, Wash., assignor to Weyerhaeuser Company, Tacoma, Wash.
Filed March 29, 1971, Ser. No. 128,778
Int. Cl. B65h 29/26
U.S. Cl. 271—63 **5 Claims**

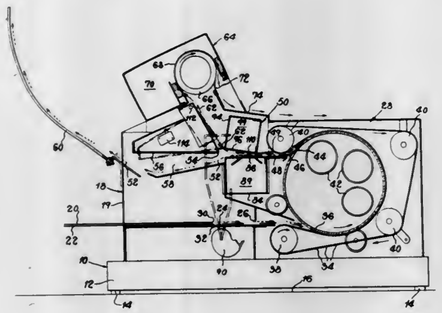
An apparatus particularly suited for the layup of plywood panels operates to position an individual sheet of veneer over an increasing stack of such veneer sheets. The positioning apparatus consists of a pivoting sheet thrower which is actuated

by a hydraulic cylinder to impart an amount of momentum to the veneer sheet sufficient to throw it outwardly over an upwardly inclined tipple. As the veneer sheets leave the end of



the tipple they will have a trajectory that is slightly inclined from the horizontal thus tending to prevent bending and which facilitates the placement of each sheet atop the veneer stack.

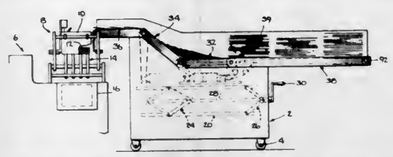
3,674,257
SHEET SEPARATOR FOR COPYING MACHINES
Robert P. Neeb, Wake Forest, and Henry W. Patrick, Raleigh, both of N.C., assignors to Diazit Company Inc., Youngsville, N.C.
Filed Feb. 3, 1971, Ser. No. 112,145
Int. Cl. B65h 29/64
U.S. Cl. 271—64 **10 Claims**



A sheet separator for separating an original sheet from a juxtaposed copy sheet as the sheets are advanced longitudinally through a copying machine, the sheet separator including means for establishing opposite areas of reduced air pressure, one such area adjacent each sheet, tending to pull the sheets from one another and a plurality of guides for deflecting the juxtaposed sheets from one such area toward the other area at spaced lateral locations such that the sheets are effectively separated.

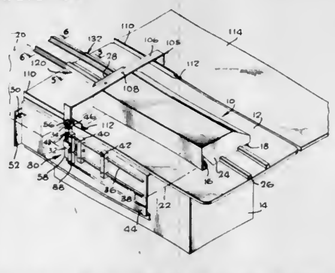
3,674,258
METHOD AND APPARATUS FOR FEEDING STACKED SHEET MATERIAL
Robert E. Maier, Jr., and James R. Moser, both of Easton, Pa., assignors to Harris-Intertype Corporation, Cleveland, Ohio
Filed Oct. 19, 1970, Ser. No. 81,742
Int. Cl. B65h 29/66
U.S. Cl. 271—77 **12 Claims**

An apparatus which is adapted to operate upon sheet material, such as signatures, arranged in a stack to remove the signatures from the stack and feed them successively into a hopper. A horizontal first conveyer feeds the stack of signatures to a second conveyer inclined upwardly from the first conveyer at a sufficient angle to topple the stack of signatures



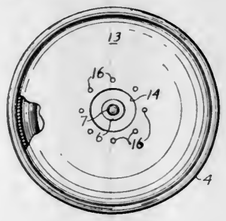
arriving at the second conveyer into an overlapped relation extending toward the first conveyer. The second conveyer successively extracts the bottommost signature in the stack of overlapped signatures from the remaining signatures. The extracted signatures are then fed into the hopper.

3,674,259
PUSHER ACCESSORY FOR ROLL FORMING MACHINE
Steve Budzak, Arleta, Calif., assignor to Marvin Shafer Co., Inc., Los Angeles, Calif.
Filed Dec. 19, 1969, Ser. No. 886,580
Int. Cl. B65h 29/26
U.S. Cl. 271—84 **9 Claims**



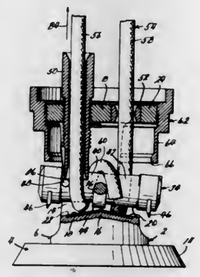
An accessory for a roll forming machine which permits an operator to feed sheets through the machine while standing at only one end of it, by eliminating the necessity for the operator to remove finished sheets at the opposite end. The apparatus includes a pusher head slidably mounted on the roll machine stand, so that the head can be pushed by the next sheet fed into the machine, whereby the head pushes a preceding sheet off the machine bed. The accessory also includes a deflecting member which moves down the pusher head at the end of its forward travel, so that it lies beneath the sheets and therefore a spring can return the head to its initial position.

3,674,260
RIDING CAPSULE AND THE LIKE
Doris V. Loseke, 85-933 Bayview St., Apt. 114, Waianae, Hawaii
Filed April 23, 1970, Ser. No. 31,221
Int. Cl. A63g 13/00
U.S. Cl. 272—1 R **1 Claim**



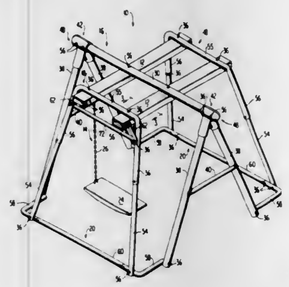
A semi-spherical plaything for children to ride in. It has a chamber to accommodate one or more persons and the bottom is curved so that it can be rollicked along a reasonably smooth surface. The bottom thereof is adapted to be placed into the saddle portion of a wheeled dolly and thus it can be pushed about by a playmate. A removable top is provided so that the plaything is made to appear like a space capsule.

3,674,261
PULL ROPE FRICTION TYPE EXERCISING DEVICE
Charles C. Krug, 607 E. Fifth St., Lee's Summit, Mo.
Filed Dec. 16, 1970, Ser. No. 98,744
Int. Cl. A63b 21/00
U.S. Cl. 272—79 A **9 Claims**



A pull rope exercising device including a rope extending in longitudinally running relation through a body member whereby a user may pull on either end thereof to effect said longitudinal movement, a pair of frictional clamping devices carried by said body member and operable by pulling tension on respectively opposite ends of said rope to clampingly engage said rope to resist yieldably the movement of the rope in the direction of pull, each of said clamping devices being independently adjustable, whereby the device may be set to provide different degrees of resistance to pull in respectively opposite directions.

3,674,262
PLAYGROUND APPARATUS
William R. Tomalinas, Jr., Wilkes-Barre, Pa., assignor to Roth-American, Inc., Wilkes-Barre, Pa.
Filed Dec. 3, 1971, Ser. No. 204,519
Int. Cl. A63f 7/06
U.S. Cl. 272—85 **11 Claims**



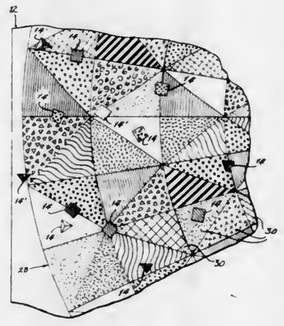
A swing frame assembly including a swing frame support assembly supporting elongate tracks. Trolleys are movably supported by the tracks and a swing is pivotally suspended by the trolleys. Included in the support assembly are an intermediate support assembly and end stabilizing assemblies, each of which is provided with direct ground engaging members. Braces interconnect these members. A lift bar is disposed in the path of travel of the mounting for the swing.

3,674,263
GAME STICK AND METHOD OF MANIPULATING IT
Antonio R. Villanueva, Oak Park, Mich., assignor to Holvy Wren, St. Clair Shores, Mich., a part interest
Filed Aug. 24, 1970, Ser. No. 66,286
Int. Cl. A63f 9/00
U.S. Cl. 273—1 R **10 Claims**



A game stick having an off-center handle member with slightly concave opposing surfaces and exhibiting an axial mass unbalance accomplished by the off-center location of the handle member. The stick is engaged with the outside surface of one's thumb and the thumb is moved in a closed looping trajectory to maintain the engagement without actually grasping the stick between one's fingers.

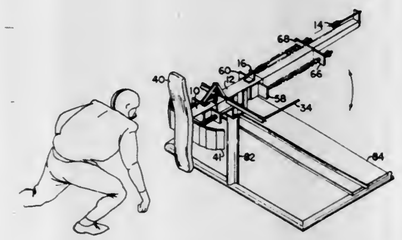
3,674,264
MATCHING GAME APPARATUS
Ethel Boercker, 10144 Cabot St., St. Louis, Mo.
Filed July 7, 1969, Ser. No. 839,258
Int. Cl. A63f 3/00
U.S. Cl. 273—1 R **6 Claims**



A game apparatus which is entertaining and has educational values for improving muscular and visual coordination and requires skill and dexterity including a game board having a plurality of different distinctive areas thereon, and a plurality of objects having distinctive surface characteristics matching certain of the distinctive areas of the game board for distributing randomly on the game board so that the player or players of the game can compete by attempting to pick up as fast as possible only those objects that are on areas of the game board having similar matching distinctive characteristics. A timer is provided to determine the time period during which a player's performance can be measured, and scoring members bearing

distinctive characteristics identical to the characteristics of the playing pieces are provided for award to the players removing the most playing pieces of each distinctive characteristic during each playing period.

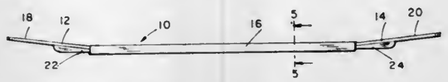
3,674,265
FOOTBALL BLOCKING AND TACKLING SLED
Harry L. Sheets, P.O. Box 607, and Robert W. Booth, P.O. Box 622, both of Farwell, Tex.
Continuation-in-part of Ser. No. 749,450, Aug. 1, 1968, abandoned. This application June 3, 1970, Ser. No. 42,931
Int. Cl. A63b 67/00
U.S. Cl. 273—55 R **16 Claims**



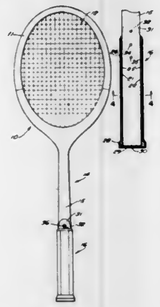
A mechanical training device which simulates the initial charge and retreat reactions of a football lineman. The lineman's body is simulated by a pad of resilient material which is coupled via a first set of compression springs to the forward end of a plunger which is slideable within a hollow guide sleeve between an extended and a retracted position. An expansion spring urges the plunger toward its extended position and opposes motion toward its retracted position. A latch mechanism holds the plunger in its retracted position until it is unlatched for forward motion toward its extended position. The forward motion of the plunger is resiliently limited by a second set of compression springs and the rearward motion is resiliently limited by a third set of compression springs. The expansion spring which drives the plunger forward is selected to simulate the initial charging force of a lineman and the compression springs on the forward end of the plunger simulate the lineman's natural shock-rebound properties. The compression springs which resiliently limit the plunger's rearward motion simulate the lineman's determined attempt to hold his ground after he switches from an offensive to a defensive posture. The angle of the plunger stroke and the force of the springs can be varied to simulate different types of linemen and different initial charge and retreat reactions. For training a plurality of linemen simultaneously, a plurality of devices are connected together so that a common release mechanism releases the latch mechanism of all devices simultaneously, but each device can be re-latched separately by its own lineman. A ball holding and "snap" simulating means is actuated simultaneously with the common latch release mechanism.

3,674,266
DOUBLE-ENDED BALL PADDLE
Sam Grosberg, Brooklyn, N.Y., assignor to Friedman and Goodman, Brooklyn, N.Y.
Filed March 5, 1970, Ser. No. 16,899
Int. Cl. A63b 59/00
U.S. Cl. 273—73 R **3 Claims**

A paddle for striking a ball having two striking members connected to opposite ends of a handle. Each striking member extends outwardly from the handle with a striking surface of each striking member being angularly disposed with respect to the longitudinal axis of the handle, so that each striking surface faces inwardly. The handle has a rectangular cross-section to indicate the orientation of the striking surfaces to the user of the paddle.

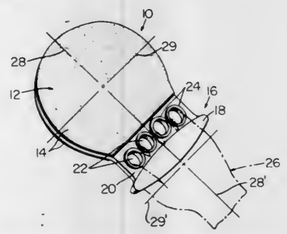


3,674,267
ADJUSTABLE GRIP FOR AN ELONGATED HANDLE OF A GAME DEVICE
James E. Hollis, Providence, R.I., assignor to Bancroft Racket Company
Filed July 8, 1970, Ser. No. 53,090
Int. Cl. A63b 49/08
U.S. Cl. 273—75 **2 Claims**



A grip for the elongated handle of a game device, such as a racket or golf club, which may be interchanged with other grips to provide different hand engaging diameters, all of the grips telescopingly fitting the shank of the handle on which it is assembled, the grip being positioned on the shank in various positions lengthwise of the shank to vary the effective length of the handle.

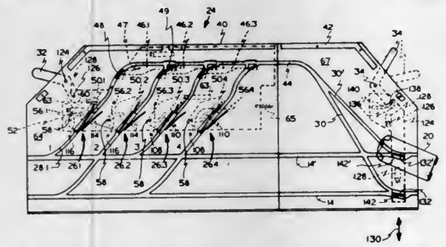
3,674,268
TABLE TENNIS PADDLE CONSTRUCTION WITH IMPROVED HANDLE MEANS THEREFOR
Kenneth S. Shellman, Sr., 55 Kesling Drive, Springboro, Ohio
Filed June 4, 1970, Ser. No. 43,386
Int. Cl. A63b 59/04
U.S. Cl. 273—76 **1 Claim**



A table tennis paddle having a hand graspable portion, a ball striking portion and a connecting portion extending between and integrally interconnecting the former two portions in coplanar relation. The longitudinal and lateral axes of the ball striking portion are substantially coplanar and parallel

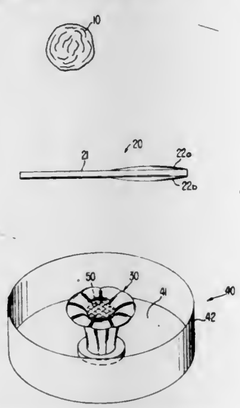
with the longitudinal and lateral axes of the hand graspable portion respectively. A plurality of apertures are formed in the connecting portion for receiving the fingers of a player. The hand graspable portion has mounted thereon thickening members to be readily graspable within the player's palm.

3,674,269
APPARATUS FOR STARTING AND TERMINATING A TOY VEHICLE RACE
Julius Cooper, New Hyde Park, and Edwin A. Nielsen, Oceanside, both of N.Y., assignors to Ideal Toy Corporation, Hollis, N.Y.
Filed Jan. 7, 1971, Ser. No. 104,697
Int. Cl. A63f 9/14
U.S. Cl. 273—86 R **4 Claims**



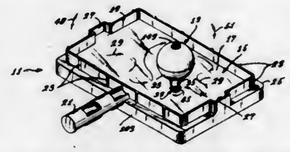
An apparatus is described for starting and terminating a race between toy vehicles traveling over a toy track. A start-finish track section is provided with vehicle stalls which are successively arranged to receive arriving vehicles at the end of a race. Stall selectors are employed which are operated in sequence at the end of the race to divert the arriving vehicles into successive stalls in the order of vehicle arrival at the start-finish track section. The vehicle stalls are provided with vehicle retaining devices which are controllable at the start of the race to release selected vehicles retained by the stalls.

3,674,270
BASKET GAME UTILIZING CONVEXLY SHAPED PADDLES AND AN IRREGULARLY SHAPED BALL
Thaer L. Benjamin, 723 Menlo Ave. Apt. 1, Menlo Park, Calif., and Carole A. Reynolds, 630 Masonic Way, Apt. J., Belmont, Calif.
Filed May 20, 1971, Ser. No. 145,423
Int. Cl. A63b 63/00
U.S. Cl. 273—101 **6 Claims**



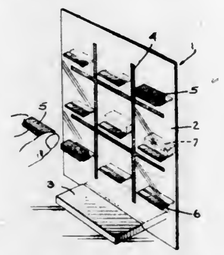
A game of chance uses a randomly-shaped ball, paddles with two surfaces possessing continuously varying radii of curvature and a petal-shaped basket. The object is to strike the ball so that it enters, and stays in, the basket. The random shapes of the ball and paddles lend great unpredictability to the game and guarantee that each participant obtains a great deal of exercise.

3,674,271
REVERSIBLE SURFACE TRAY ASSEMBLY FOR A TOY TOP
Jacob De Gelder; Albert R. Baginski, and Anthony D. Miller, all of Torrance, Calif., assignors to Mattel, Inc., Hawthorne, Calif.
Filed March 9, 1970, Ser. No. 17,546
Int. Cl. A63b 67/14
U.S. Cl. 273—115 **9 Claims**



A peripherally walled two-sided tray with accessory holding portions and an extending handle, is adapted to hold replaceable accessory inserts with different surface configurations requiring different degrees and types of skill and for amusement with spinning toy tops. The inserts may include a maze, a ramp-jump configuration, a magic slate arrangement, a plurality of spinning discs and others.

3,674,272
MAGNETIC BOARD GAME APPARATUS
Ferdinand J. Wszalek, 606 Nichols St., Utica, N.Y.
Filed Nov. 23, 1970, Ser. No. 91,929
Int. Cl. A63f 3/00
U.S. Cl. 273—130 A **4 Claims**

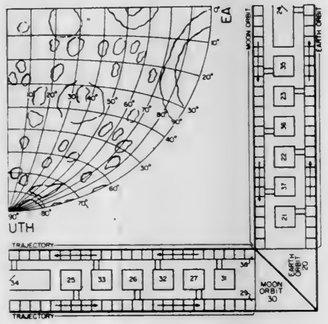


A game is disclosed including a transparent game board and magnetized playing pieces. The game board is mounted vertically for play with a tic-tac-toe design visible on the two opposite faces of the transparent board. Supports are provided on both board surfaces within the pattern to receive the magnetized pieces and winning and losing combinations of the pieces are arranged by the players on these supports with the players' skill plus a random choice of the magnetic polarity of the pieces as played determining the outcome of the game.

3,674,273
BOARD GAME APPARATUS
Bertram C. Sells, 339 Huntington Lane, Elmhurst, Ill.
Filed April 15, 1970, Ser. No. 28,884
Int. Cl. A63f 3/04
U.S. Cl. 273—134 AA **4 Claims**

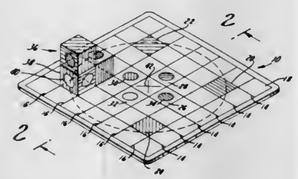
A game based on space flight and extraterrestrial exploration. A game board having a map of an extraterrestrial body featuring latitude and longitude markings thereon and paths

inscribed on the board represent a space flight from earth to the extraterrestrial body represented on the map. Specially marked cards and dice determine place and movement of playing pieces on and over the game board, while a spinner



device is utilized by each player to select by chance the latitude and longitude of an individual initial goal. A special slide device used by each player indicates the approximate time for placement of each player's playing piece into initial play on the board.

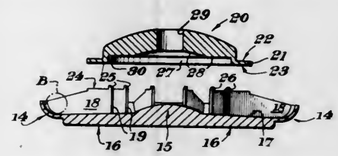
3,674,274
BOARD GAME APPARATUS
Barbara Ellen Schur, 70-31 108th St., Forest Hills, N.Y.
Filed Jan. 13, 1971, Ser. No. 106,058
Int. Cl. A63f *3/00*
U.S. Cl. 273—135 AC **1 Claim**



A game apparatus comprising a game board and game pieces. The game board has a flat top surface divided into a plurality of areas with some of the areas bearing distinctive colors. The game pieces are cubical and at least some of the game pieces have faces with colors thereon corresponding to those on the distinctive areas. Each of the remaining faces of the game pieces has a color corresponding to that on at least one other game piece face. The game is played by a number of players who alternately place game pieces on the board and try to register the colors on the faces of their game piece with those of previously placed game piece faces and/or board distinctive areas.

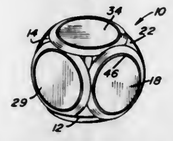
3,674,275
RANDOM NUMBER SELECTOR
Julie Marie Samson, Brighton, England, assignor to Subbuteo Sports Games Limited, Tunbridge Wells, Kent, England
Filed May 1, 1970, Ser. No. 33,628
Claims priority, application Great Britain, June 5, 1969, 28,550/69
Int. Cl. A63b *71/00*
U.S. Cl. 273—138 R **9 Claims**

A random number selector having a base which presents a plurality of compartments each of which is associated, permanently or alterably, with a number unique thereto and whose entrances face a deflector (domed or pyramidal) whose function is to deflect a ball dropped onto said deflector into one of the compartments in order to "select" the number associated with that compartment. In one form, the selector has a ball-aiming device which forms a part of a removable



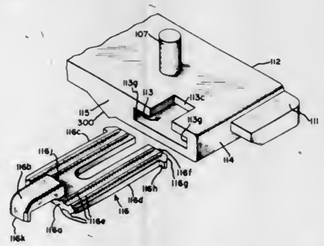
member carrying said compartment numbers and covering said compartments except for portions thereof which are left uncovered for access thereto and, in another form, the selector has a ball-aiming device which forms part of a lid which is rotatable by means of a knob in which said device is provided, the lid having an access aperture therein.

3,674,276
DISC PUZZLE
Frederick G. Street, 27 Jackson Ave., and Paul S. Buckwalter, 11 Homestead Ave., both of Bradford, Pa.
Filed May 19, 1970, Ser. No. 38,661
Int. Cl. A63f *9/06*
U.S. Cl. 273—157 R **4 Claims**



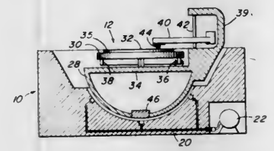
Six dish-shaped members have their marginal edges interleaved at spaced peripheral points to form the sides of a cube unit. A circular rib is formed in each member and engages the edges of underlying bounding members to resist slippage during assembly of the unit. In other embodiments an odd plurality of cutouts extend inwardly from the marginal edge. During construction of the cube unit, a coin or medal may be enclosed therein to make a rattle-like device. When the cube unit is dropped, the interleaved members fly apart with a clatter.

3,674,277
VELOCITY TRIP MECHANISM
Jack L. Kelly, Bethel Park, Pa., and Ronald K. Wiandt, Decatur, Ill., assignors to General Electric Company
Filed Jan. 6, 1969, Ser. No. 789,174
Int. Cl. G11b *17/06*
U.S. Cl. 274—1 L **3 Claims**



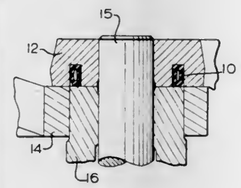
In a miniature record player for reproducing diminutive records, there is provided a bifurcated tone arm, on the underside of which is formed a transverse slot. A U-shaped element is snapped into removable cooperation with the slot and slides therein to provide a velocity trip mechanism for the player.

3,674,278
COMPENSATED PHONOGRAPH TURNTABLE
William R. Bowerman, 2457 Jasu Drive, Lawrence, Kans.
Filed Dec. 21, 1970, Ser. No. 99,995
Int. Cl. G11b *3/60*
U.S. Cl. 274—39 A **4 Claims**



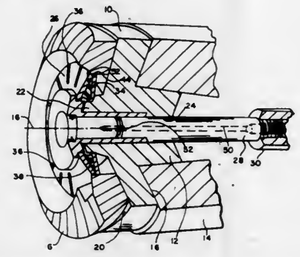
A self-compensating, balanced turntable is provided for record players to maintain the turntable in a true horizontal plane. A turntable-tone arm assembly is formed with a hemispherical lower portion disposed in a matching hemispherical cavity formed in a fixed base. Air under low pressure is delivered between the base cavity and the hemispherical portion to form an air bearing therebetween. The table-tone arm assembly is weighted in such a fashion that the turntable surface will assume a horizontal attitude regardless of the attitude of the base. In a modification an anti-skating control is provided to move the centering weight automatically to compensate for imperfections in record playback using a conventional tone arm.

3,674,279
CONSTANT PRESSURE SEAL
Mitchell McMurray, Peoria; Eugene A. Plouzek, Washington, and James R. Sturges, Metamora, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.
Continuation of Ser. No. 738,519, June 20, 1968, abandoned.
This application Oct. 26, 1970, Ser. No. 84,179
Int. Cl. F16j *15/34*
U.S. Cl. 277—95 **6 Claims**



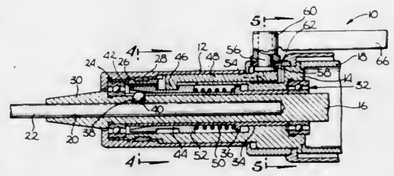
A seal between two relatively rotatable flat surfaces one of which has an annular groove, there being an annular resilient seal element in the groove having a part in contact with the other flat surface, the seal element having a more or less V-shaped cross section with two legs designed to be brought together upon being placed in the groove to produce a tubular resilient member to insure a light faceload at the area of sealing and a relatively constant spring rate.

3,674,280
SELF-CLEANING CHUCK
Harry Pedersen, Rochester, N.Y., assignor to The Gleason Works, Rochester, N.Y.
Filed Dec. 16, 1970, Ser. No. 98,511
Int. Cl. B23b *31/40*
U.S. Cl. 279—2 **15 Claims**



A self-cleaning chuck for ring gears or like workpieces having at least one resilient annular member which expands to grip the bore of the workpiece. An annular groove is formed in the working-gripping outer circumference of the arbor, and air under pressure is delivered to the annular groove and between the arbor and the chuck body to keep the chuck free of contaminators, such as lapping compound, applied to the workpiece as it is being lapped, cut or tested. In addition, in the particular embodiment disclosed herein the arbor comprises a pair of resilient and oppositely dished annular members, and the outer circumference of the arbor member is designed to grip the workpiece generally along two lines of contact substantially coincident with the respective outermost peripheries of the external surfaces of the two dished member. A safety device for detecting workpieces having over-sized bores is included in the chuck mechanism.

3,674,281
TOOL CHUCK ASSEMBLY
John R. Hedrick, La Crescenta, Calif., assignor to Pevrick Engineering Co., Inc., Sun Valley, Calif.
Filed Jan. 21, 1971, Ser. No. 108,466
Int. Cl. B23b *31/10*
U.S. Cl. 279—30 **8 Claims**

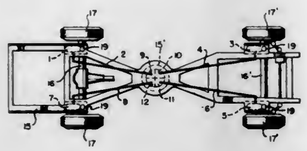


A tool chuck assembly to firmly retain the cylindrical stem of a tool wherein a plurality of ball elements are frictionally pressed against the stem by a wedge shaped sleeve, the sleeve being movable into and out of engagement with the balls by means of a manually actuatable lever.

3,674,282
PNEUMATIC STABILIZING SYSTEM FOR VEHICLES
Antonin Stoklasek, 82 First St., Perth Amboy, N.J.
Filed Sept. 4, 1970, Ser. No. 69,849
Int. Cl. B60g *7/00*
U.S. Cl. 280—124 F **5 Claims**

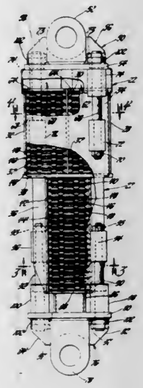
The stabilizing system comprises four resilient air filled bellows suspending the car body on the wheels and a stabilizing bellow unit containing four separate bellow sections mutually

connected on a common spring-loaded plate. Each bellow section is pneumatically connected to an assigned suspension bel-



low by a pipe. A tensioning spring for the common plate is seated on a base plate the position of which is adjusted by an adjustment screw.

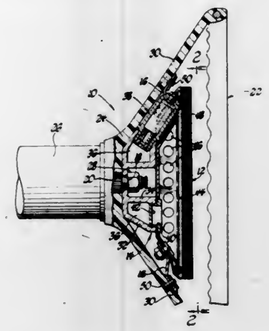
3,674,283
SUSPENSION STRUT
Frank R. Jellison, Canton; John B. Mason, Hudson, both of Ohio, and Terry K. McQueen, Princeton, Ind., assignors to General Motors Corporation, Detroit, Mich.
Filed Nov. 24, 1970, Ser. No. 92,420
Int. Cl. B60g 11/24
U.S. Cl. 280—124 R **3 Claims**



A suspension strut adapted to be connected between a vehicle frame and a wheeled axle. The suspension strut includes an elongated housing which is divided by a transverse wall into upper and lower sections, each of which contains a plurality of rubber pads. The opposite ends of the suspension strut are closed by end cap members which are independently adjustable for preloading the strut and are movable relative to the housing in a longitudinal direction for causing the rubber pads to be alternately compressed and expanded.

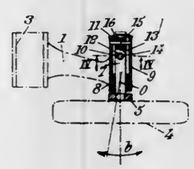
3,674,284
VEHICLE SAFETY ASSEMBLY
Thomas E. Lohr, Warren, Mich., assignor to Allied Chemical Corporation, New York, N.Y.
Filed Oct. 21, 1970, Ser. No. 82,563
Int. Cl. B60r 21/08
U.S. Cl. 280—150 AB **5 Claims**

A vehicle safety assembly including an inflatable bag which is attached to a cup-shaped member defining an annular chamber. A diffuser is disposed within the bag and a gas generator is in communication with the annular chamber in the cup-shaped member. The cup-shaped member has a hole centrally thereof for receiving the steering shaft and a pair of brackets interconnect the diffuser and the spokes of the steer-



ing wheel whereby the assembly may be associated with conventional steering assemblies.

3,674,285
VEHICLE SUSPENSION
Albert Gresseau, Chaville, France, assignor to Citroen S.A. (Automobiles Citroen, Berliet, Panhard), Paris, France
Filed July 8, 1969, Ser. No. 839,947
Claims priority, application France, July 9, 1969, 69158551
Int. Cl. B60g 3/14
U.S. Cl. 280—124 R **4 Claims**

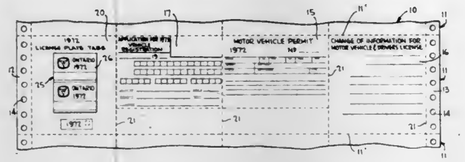


A suspension for a vehicle, which suspension includes a pendulum member upon which the wheel of the vehicle is mounted and which, in turn, is connected to a vertically oscillating suspension element on a pivot arranged transversely lower than the axis of the wheel. A stop is provided between the suspension element and the pendulum member to limit angular displacement of the pendulum member about its pivot, the stop being elastic in character and comprised of a material having elastic properties with the pivot of the suspension element being arranged on the inside of the bearing comprised by the elastic stop.

3,674,286
MULTIPLE FORM WITH REMOVABLE TABS
Hugh Dodgson, Weston, Ontario, Canada, assignor to Moore Business Forms, Inc., Niagara Falls, N.Y.
Filed Dec. 7, 1970, Ser. No. 95,724
Int. Cl. B42d 1/00, 11/00
U.S. Cl. 281—2 **1 Claim**

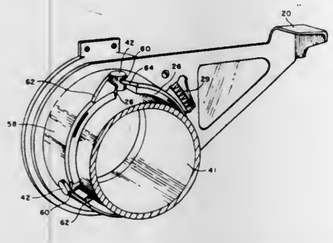
The invention in its illustrative or suggestive embodiment comprises a series of multiple forms connected in continuous web style with feed holes along at least one side margin. Each multiple form is divided longitudinally of the web, by tear perforations, into a plurality of separate unit form areas, adapted to bear a common identifying indicia. One of said areas, possibly an end one, carries a relatively small paper slip having one surface secured to the area by means of an adhesive of

sufficient tenacity to carry it through the treating or printing procedure but removable from the area by stripping the slip therefrom. To this paper slip is removable secured a label or tab of durable material and coated with a pressure-sensitive adhesive such as for securement to a licence plate of a motor car. The outer surface of the paper slip is treated so that the adhesive on the tab will not permanently adhere thereto and the tab can be removed from its temporary adhesion when



ready to be applied to the plate, but will adhere sufficiently to the web during the imprinted operation. The paper slip is preferably divided into two parts by a serrated line of division to facilitate the separation of the tab by bending, whereby one part can be removed and the corresponding area of the tab applied to the license plate, while the operator grasps the other part of the tab while it is still covered by the other part of the divided strip, so that the pressure-sensitive adhesive will not be damaged by contact by the fingers.

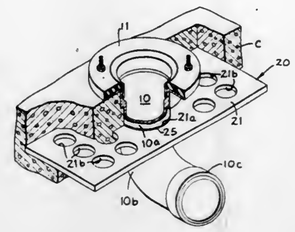
3,674,287
SIMPLIFIED MOUNTING ARRANGEMENT
Wilbur-Webb Selley, Maitland, Fla., assignor to Vactronics Incorporated, Olando, Fla.
Filed Dec. 23, 1969, Ser. No. 887,553
Int. Cl. A47l 9/24
U.S. Cl. 285—7 **7 Claims**



A simplified and highly effective mounting arrangement for the cleaning head or other component of a vacuum cleaner or the like, involving the use of interfitting, generally cylindrically shaped members, which arrangement enables the head to be quickly removed merely by the application of foot pressure on a lever, and thereafter easily reinstalled upon the vacuum cleaner with but single handed effort.

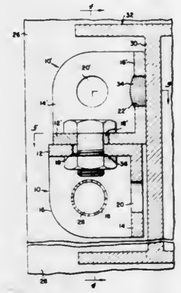
3,674,288
CLOSET BEND STABILIZER
Billy W. Babb, Campbell, Calif., assignor to Robert R. Walker, Jr., San Jose, Calif.
Filed April 20, 1970, Ser. No. 29,955
Int. Cl. F16l 35/00
U.S. Cl. 285—24 **4 Claims**

A closet bend stabilizer that receives the closet bend and is embedded into a cement slab surrounding the closet bend. The closet bend stabilizer serves to reduce the movement of the closet bend installed in the opening of the cement slab. Toward this end, the closet bend stabilizer comprises a horizontally disposed plate formed with a central opening of suitable dimension to receive the closet bend. In addition, the stabilizer includes a plurality of reduced diameter openings on each side of the central opening to improve its fixed relation



within the cement slab. Below the horizontal plate and surrounding the central opening is a tapered flange to facilitate the stabilizer receiving the closet bend. The stabilizer is sealed or caused to adhere to the closet bend by a suitable adhesive.

3,674,289
TRI-HEDRAL CLIP FOR STEEL CONSTRUCTION
Francis R. Geraci, Crofton, Md., assignor to Ger-Bro Corporation, Glen Burnie, Md.
Filed May 20, 1969, Ser. No. 826,247
Int. Cl. F16b 7/00
U.S. Cl. 287—189.36 B **2 Claims**

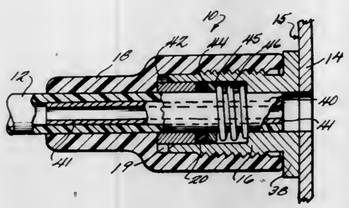


Tri-hedral clips having three symmetrical sides in right angular relationship to each other and having identically positioned openings through each side for ready attachment by plug welding or bolts to metallic building units and to each other to provide temporary support for one building component with respect to another for welding together. The clips also have utility as permanent structural units in a variety of applications.

3,674,290
COUPLING
Sellers B. McNally, Homewood, Ill., assignor to Maremont Corporation, Chicago, Ill.
Filed May 4, 1970, Ser. No. 34,099
Int. Cl. F16l 33/18
U.S. Cl. 285—248 **7 Claims**

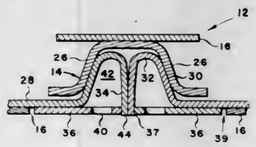
A coupling for use in attaching flexible tubing to suspension elements or other devices in which the tubing is reinforced by

a rigid member which prevents collapse of the tubing and in which a seal is resiliently compressed between two relatively



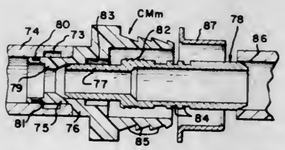
rigid members to improve the sealing ability of the coupling under extreme environmental operation conditions.

3,674,291
FLANGE FOR CONDUIT COUPLING
Leonard Z. Goldberg, Canoga Park, Calif., assignor to Lockheed Aircraft Corporation, Burbank, Calif.
Filed Nov. 30, 1970, Ser. No. 93,796
Int. Cl. F16l *19/00*
U.S. Cl. 285—367 **10 Claims**



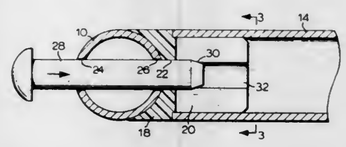
A flange is provided which includes a divergent-reentrant portion extending from a collar, the reentrant segment depending in an axially and outwardly distended spring relationship relative to the balance of the flange and being adapted to mate in a sealing relationship with a similar segment upon an adjacently oriented flange. A reinforcing ring fixed to an inner periphery of the collar extends toward and into close proximity with a rearward face of the reentrant segment for engagement therewith to prevent overstressing of the reentrant segment. Two such flanges are mated and secured in their relative positions by a clamp to facilitate a fluid seal.

3,674,292
TUBULAR CONNECTION DEVICES
Henry William Demler, Sr., Lebanon, Pa., assignor to AMP Incorporated, Harrisburg, Pa.
Continuation-in-part of Ser. Nos. 755,410, Aug. 26, 1968, abandoned, Ser. No. 710,946, March 6, 1968, abandoned, Ser. No. 676,583, Oct. 19, 1967, abandoned, Ser. No. 587,944, Oct. 18, 1966, abandoned, which is a continuation-in-part of Ser. No. 517,747, Dec. 30, 1965, Pat. No. 3,378,282. This application Oct. 15, 1969, Ser. No. 866,631
Int. Cl. F16l *33/22, 47/00*
U.S. Cl. 285—174 **7 Claims**



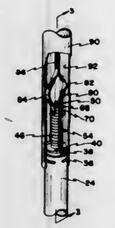
A tubular connection device for connection to an end of a tubular member comprises a tubular body member and into which the end of the tubular member is disposed, the tubular body member having an outer surface and a ferrule member being axially movable along the body member causing the body member under the ferrule member to be decreased in diameter into tight and sealing engagement with the tubular member. The outer surface and the ferrule member are provided with tool-engaging areas for moving the ferrule member into position on the body member.

3,674,293
EXPANSIBLE CONNECTOR FOR JOINING TUBES
Ronald W. Parsons, Newmarket, Ontario, Canada, assignor to Allcock, Laight & Westwood Limited, Bramalea, Ontario, Canada
Filed Oct. 28, 1970, Ser. No. 84,791
Int. Cl. F16b *7/00*
U.S. Cl. 287—56 **9 Claims**



A connector for joining a first elongated tube and a second tube having a hollow end portion at an angle to the first tube includes an integral body having a saddle to engage the outer surface of the first tube and a split pin portion resiliently deflectable relative to the saddle. The split pin has a passageway extending to the longitudinal length thereof in communication with an opening in the saddle portion. The split pin is forced apart to engage and grip the inside surface of the hollow end portion of the second tube upon receiving an elongated pin through the opening in the saddle into the passageway.

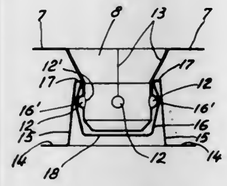
3,674,294
CLAMPING TELESCOPIC TUBES
Arthur J. Kirkham, 5534 Avalon Drive, Murray, Utah
Filed March 16, 1970, Ser. No. 19,581
Int. Cl. F16b *7/14*
U.S. Cl. 287—58 CT **8 Claims**



Clamping method and apparatus for an outer tube and an inner tube telescopically disposed within the outer tube, the apparatus being normally concealed from view and having a threaded coupling member mounted in one end of the inner tube, an anti-rotate loop carried by the coupling member and an expandable lock which opens against the inside surface of the outer tube and closes in response to axial displacement of the threaded coupling member. The anti-rotate loop firmly contacts the interior surface of the outer tube and is displaceable over the surface along the axis of the outer tube. Relative rotation of the inner and outer tubes causes the anti-rotate loop to bind against the inside surface of the outer tube to

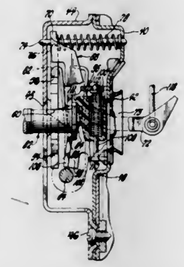
rotate the threaded coupling member relative to the inner tube thereby spreading the lock tightly against the inside surface of outer tube until further rotation of tubes as well as relative axial displacement are prevented.

3,674,295
PRESSURE OPERATED FASTENING MEANS FOR CONTAINERS
Pietro Padovani, Via A. Berardi 22, Chievo, Verona, Italy
Filed May 8, 1970, Ser. No. 35,664
Claims priority, application Italy, May 10, 1969, 61237 A/69
Int. Cl. E05c *19/02, 19/06*
U.S. Cl. 292—76 **9 Claims**



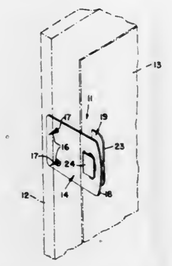
A pressure operated fastening means for container comprising hinged male and female halves, the male half comprising a cylindrical stub chamfered at its end portion and provided with hemispherical projections, which may be hollow or in the form of solid spherical pips, positioned generally midway between the head and the foot of the stub. The female half includes a circular ring of relatively greater thickness than the adjoining lateral wall, with insertion of the male half during fastening subjecting the projections to compression by the circular ring, with the projections upon further insertion forcing the relatively thinner lateral wall inwardly to effect the desired fastening.

3,674,296
CLOSURE DOVETAIL ARRANGEMENT
Bert R. Wanlass, and Alfonsas Velavicius, both of Warren, Mich., assignors to General Motors Corporation, Detroit, Mich.
Filed Sept. 16, 1970, Ser. No. 72,735
Int. Cl. E05c *3/26*
U.S. Cl. 292—216 **3 Claims**



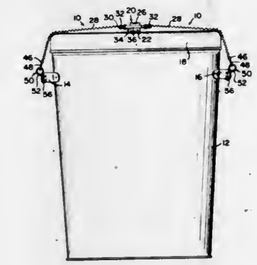
A dovetail arrangement for a closure panel movable in a generally vertical path between open and closed positions with respect to a vehicle body opening, the dovetail arrangement including, on the vehicle body, a retainer and a vertically sliding wedge member and further including, on the closure panel, an elongated striker having a shank with an enlarged tapered head on one end thereof. In the closed position of the closure panel the retainer engages the striker under the enlarged head and the wedge member engages the striker on the taper of the enlarged head thereby cooperating with the retainer to capture the striker and prevent substantially all bodily shiftable relative movement between the closure panel and the vehicle body longitudinally of the closure panel.

3,674,297
INTERIOR DOOR LOCK
Donald B. Hawkins, P.O. Box 221, San Leandro, Calif.
Filed Jan. 21, 1971, Ser. No. 108,319
Int. Cl. E05c *19/00*
U.S. Cl. 292—252 **5 Claims**



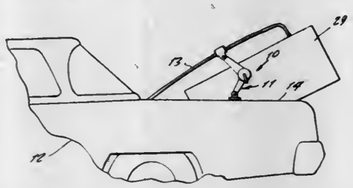
An extremely simple yet tamperproof lock including a plate member adapted for securance to a door jamb and a latch member movable away and towards the plate member. In the extended position of the latch member a door hinged to the jamb may not be swung inwardly since it will engage the latch member. The lock further includes a ball which must be raised and permitted to enter a ball receiving portion of the plate member in order to permit return of the latch member to its retracted inoperative position. When the latch member is moved outwardly into its locking or operative position, the ball gravitally falls downwardly and prevents return of the latch member until the ball is manually raised.

3,674,298
GARBAGE CAN LID LOCK
Balazs Vekony, Rte. 3, Box 4064 Signal Cove, Port Richey, Fla.
Filed Oct. 30, 1970, Ser. No. 85,467.
Int. Cl. B65d *45/30*
U.S. Cl. 292—258 **6 Claims**



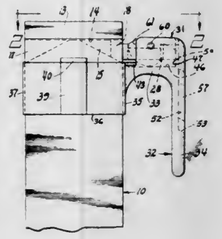
A garbage or trash can lid lock is disclosed wherein a pair of diametrically opposed hold-down springs each have upper ends which are attached to a conventional handle-equipped lid. The hold-down springs extend in opposite directions over the rim of the trash can lid and are releasably attached to the handle on the side of the trash can so that the lid is held tightly to the trash can even if the can is tipped over.

3,674,299
ADJUSTABLE TRUNK LID HOLDER
Raymond E. Kelley, 8021 N. W. 181st St., Hialeah, Fla.
Filed Dec. 4, 1970, Ser. No. 95,106
Int. Cl. E05c 17/04
U.S. Cl. 292—262 1 Claim



A device for stationarily securing a passenger car trunk lid at a partly opened position so to permit transportation of large objects that normally cannot be enclosed within the trunk compartment, the device comprising an adjustable arm assembly, comprised of a pair of arms attached pivotly together at their one ends and which can be rigidly secured at a desired angle, and the opposite ends of the arms each having an adjustable clamp one of which is secured to an edge of the trunk lid and the other of which is attached to the edge of the trunk compartment opening.

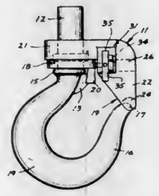
3,674,300
CAM OPERATED DETACHABLE CARTON HANDLE
James B. Simms, 8441 Birch Road, Taylor, Mich.
Filed May 4, 1970, Ser. No. 34,310
Int. Cl. A47j 45/10
U.S. Cl. 294—31.2 3 Claims



A cam operated detachable carton handle for use on milk cartons and the like, and which includes an integral rectangular housing adapted to be slidably mounted over the upper end of a carton. A handle is integrally formed on the housing. A plunger is slidably mounted on the handle and a pivotally mounted cam is provided for camming the plunger into a recess in the upper end of the carton for retaining the rectangular housing and handle in place on the carton.

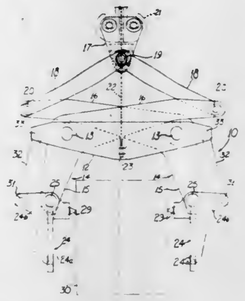
3,674,301
HOOK AND COLLAR WITH GATE
Edward J. Crook, Jr., Fort Wayne, Ind., assignor to America Hoist & Derrick Company, St. Paul, Minn.
Filed Jan. 7, 1971, Ser. No. 104,611
Int. Cl. B66c 1/36
U.S. Cl. 294—82 8 Claims

A load handling hook has a cylindrical shank and an integral hook body portion. This body portion includes an integral outward projection and an integral shoulder adjacent the shank. A collar is supported on the shoulder and around the shank and includes fingers which extend over the projection to prevent rotation of the collar. A safety gate includes a hub rotatably mounted around the shank and on the collar and also includes a bridging arm integral with the hub and situated to be rotatable with the hub between bridging and clearing relation with the throat of the hook. An outward extension of the hub provides a housing for a locking plunger which is



spring biased to slide through an opening in the hub and into an opening in the collar to affix the hub in latching, rotation preventing relationship to the collar when the arm is in bridging relationship to the hook throat. The plunger is manually slidable against the spring action to unlatched relationship with the collar to allow rotation of the hub and arm.

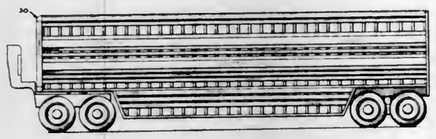
3,674,302
INGOT AND MOLD HANDLING TONGS
Robert Douglas Mutch, Niagara Falls, Ontario, Canada, assignor to Dominion Bridge Company Limited, Montreal, Quebec, Canada
Filed Feb. 23, 1971, Ser. No. 118,102
Claims priority, application Canada, Dec. 10, 1970, 100,341
Int. Cl. B66c 1/50
U.S. Cl. 294—118 8 Claims



A pair of bell cranks pivoted to a support member provide a pair of crossed upper arms for suspension from a crane hook, and a pair of transversely spaced lower arms equipped with opposing jaws. The jaws are provided with sockets and with bits to selectively engage lifting lugs of an ingot mold with the sockets, or to grip an ingot with the bits. An actuating line connected to the support member moves the arms toward or away from each other, and parallel motion links between the support member and the jaws maintain a constant angular attitude of the sockets and bits throughout the range of movement of the arms.

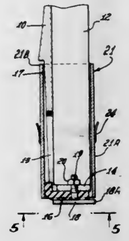
3,674,303
LIVESTOCK TRAILER
Wendell M. Doonan, and Ronald E. Knobloch, Great Bend, Kans., assignors to Doonan Truck & Equipment, Inc., Great Bend, Kans.
Filed April 10, 1970, Ser. No. 27,220
Int. Cl. B60r 5/00
U.S. Cl. 296—24 C 10 Claims

A drop-center livestock trailer having a plurality of top swinging gates between the rear and upper compartments. Each gate has a pair of plunger locks operated with a common bar and provided with lost motion linkage to insure positive latching of one plunger even if the other plunger is obstructed. A ramp swings downwardly from the rear edge of the upper deck of the trailer for loading from the rear deck into the upper deck. The ramp swings into an upright position behind



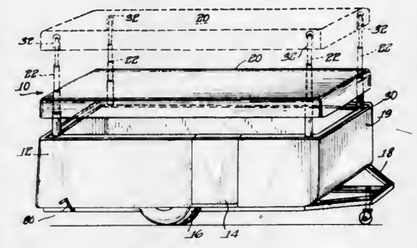
the gates for positively securing the latter and a chute covered with vertically swinging deck doors permits loading from the rear compartment to the lower compartment. Air operated power means swings a wall of the front compartment to lower a ramp for loading forwardly from the upper compartment and shock absorber means is provided for cushioning the impact of the swinging of gates between compartments.

3,674,304
RELEASABLE AUTOMATIC FASTENER FOR A TRUCK STAKE AND LIKE
Raymond W. Swanson, 14515 Cornishcrest Road, Whittier, Calif.
Filed Jan. 2, 1970, Ser. No. 211
Int. Cl. B60p 7/06
U.S. Cl. 296—43 7 Claims



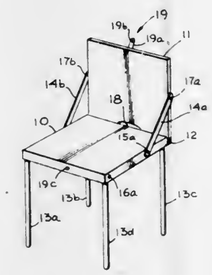
For a combination of a stake with an elongated exposed section and, as a pertinent member, a relatively shorter end section, and, as another pertinent member, a receptacle for said end section,—an automatic fastener for the stake end section in the receptacle which fastener requires a substantially instantaneous double and forceful action in two different directions for removing the automatically fastened stake from the receptacle and comprises a sidewise exposed edge in one of said two pertinent members, a sidewise protruding clutching means secured with the other of said two pertinent members for engaging against said edge when therebelow and pushed sidewise thereagainst, an outwardly resilient normally sidewise protruding compressible means secured with one of said two pertinent members for being resiliently compressed when within the receptacle for pushing said clutching means sidewise against said edge automatically when said end section is within said receptacle and the clutching means is below said edge while the compressible means remains substantially compressed, a means for removing the clutching means from the edge and, therewhile, the stake from the receptacle by farther compressing the compressible means with overcoming contra side pressure applied against the elongated exposed section of the stake and by therewhile pulling the latter from the receptacle.

3,674,305
CAMPER TYPE VEHICLE AND DRIVE ASSEMBLY FOR RAISING THE TOP THEREOF
Virgil H. Steury, 924 E. Lincoln Ave., Goshen, Ind.
Filed Aug. 13, 1970, Ser. No. 63,420
Int. Cl. B60p 3/34
U.S. Cl. 296—27 14 Claims



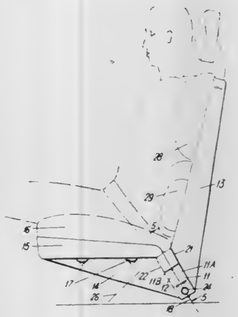
A mobile type housing such as a trailer or camper having a base and retractable top is disclosed herein. The housing includes a plurality of telescopically movable support members mounted to the base and supporting the top for movement between a retracted or lowered position while in transit and an extended or raised position while in use. A single drive assembly is mounted to the base and connected to all of the support members through a plurality of elongated flexible push-rods for moving the support members equal distances and in unison so as to raise the top in a smooth, even and reliable manner.

3,674,306
COMPACT FOLDING CHAIR
Richard H. Botney, 13343 Debby St., Van Nuys, Calif.
Filed Oct. 8, 1970, Ser. No. 79,137
Int. Cl. A47c 4/10
U.S. Cl. 297—17 1 Claim



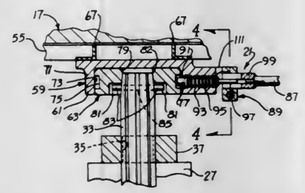
This invention provides a highly compact folding chair that can approximately be reduced to the size and form of an attache case. In essence, the seat resembles a card table whose legs can be folded into its underside and a hinged backrest is provided that also is used to cover or enclose the legs, thereby forming a box-like structure in the hollow of which the legs are contained. The hinge itself includes a handle for easy carrying.

3,674,307
SAFETY SEATS FOR AUTOMOBILES AND AIRCRAFT
Ernest Baker Dove, Basildon, England, assignor to Teleflex Products Limited, Basildon Essex, England
Filed Oct. 31, 1969, Ser. No. 872,899
Claims priority, application Great Britain, Oct. 31, 1968, 51,556/68
Int. Cl. A47c 3/00; B60r 21/10
U.S. Cl. 297—284 4 Claims



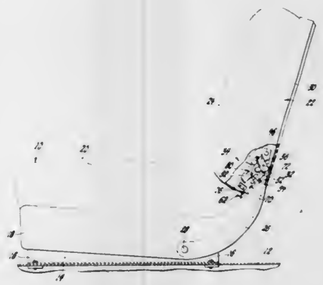
A vehicle seat, especially for automobiles or aircraft, is provided which has a seat frame possessing a configuration akin to the human spine and hip formation. At the rear of the seat base there is a hip frame having lateral wings and providing the main attachment point of the seat in the vehicle. Forward and upward from this hip frame there extend a base spine and a back spine respectively, the base spine carrying integral therewith a seat pan supporting a seat cushion while the back spine, which widens toward the top, supports a fixed shoulder cushion, an adjustable lumbar cushion, and, if desired an adjustable head rest. The seat frame structure is fabricated in pressed sheet steel, the hip frame being a box-type fabrication built up from two half-pressings one integral with the back spine and the other with the base spine. The ends of the hip frame wings provide anchorage points for the straps of a safety harness. A harness retraction reel, which may be an inertia reel, is mounted on the back spine to receive a diagonal or breast strap of the harness passing over the seat occupant's shoulder and down into the seat back.

3,674,308
CHAIR
Jason D. Radding, Irvine, Calif., assignor to Crown Imports Co., Inc., Newport Beach, Calif.
Filed Oct. 2, 1970, Ser. No. 77,667
Int. Cl. A47c 1/06
U.S. Cl. 297—345 8 Claims



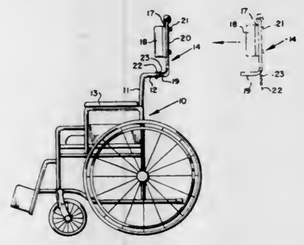
A chair comprising a base, a support shaft mounted on the base and a body supporting portion mounted on the support shaft. The support shaft is fixed against rotation relative to the base and can move generally vertically relative to the base. The body supporting portion moves vertically with the support shaft and is rotatable relative to the support shaft. A locking mechanism is carried by the body supporting portion for releasably locking the body supporting portion in a preselected angular position relative to the support shaft.

3,674,309
VEHICLE SEAT LATCH
Stanley B. Fowler, Flint, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Oct. 30, 1970, Ser. No. 85,381
Int. Cl. A47c 3/00
U.S. Cl. 297—379 2 Claims



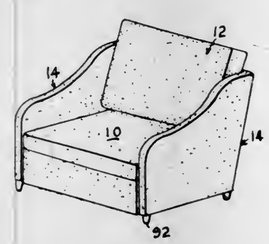
A latch for a vehicle seat structure having a cushion base member and a tiltable cushion back member, the latch including a striker rigidly mounted on the cushion base member, a bifurcated latch bolt pivotally mounted on the cushion back member, fixed abutment means on the cushion back member, and an inertially responsive detent lever pivotally supported on the latch bolt. When normal conditions prevail, the detent lever bypasses the abutment means to permit free movement of the latch bolt and the cushion back member. When abnormal conditions prevail, as when rapid deceleration of the vehicle induces inertially motivated tilting of the cushion back member, the detent lever engages the abutment means to retain the latch bolt in a latching position wherein the latter captures the striker to prevent tilting movement of the cushion back member.

3,674,310
HEAD REST ATTACHMENT FOR WHEEL CHAIRS
Anthony Montagano, 45 Eastview Ave., Pleasantville, N.Y.
Filed Sept. 28, 1970, Ser. No. 75,985
Int. Cl. A47c 7/38
U.S. Cl. 297—397 10 Claims



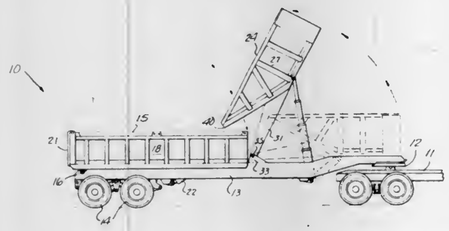
The attachment is composed of a tubular frame which includes two laterally spaced upstanding legs having a bridging portion or member joining their upper ends. A cushion is secured to said legs with its upper edge spaced below the bridging member whence the latter serves as a hand grip. The lower ends of the legs have mutually parallel extensions from the same side of the frame as that on which the cushion is mounted. Such extensions are insertible into the tubular handles of the chair. When the headrest is in use the frame extends upward from the common plan e of the chair handles. When not in use, the frame is mounted upside down in the same manner.

3,674,311
CHAIR CONSTRUCTION
Richard H. Miller, 4723 Crestwood Way, Sacramento, Calif.
Division of Ser. No. 711,259, March 7, 1968, Pat. No. 3,526,433. This application Feb. 26, 1970, Ser. No. 18,019
Int. Cl. A47c 7/00, 1/12, 7/02
U.S. Cl. 297—440 2 Claims



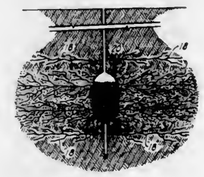
A seat, such as an upholstered chair, sofa or love seat, is so constructed that it can be shipped in a flat package, knocked down, and assembled by the purchaser in a very few minutes. The seat has a back, two arms and seat which are assembled by connecting the back to the seat and then by ingenious means connecting the two arms to the back and seat. The upper ends of the arms have hook engagement with cooperating means on the edges of the back, whereupon the seat is bolted to the arms to complete the assembly. The seat construction employs conventional sinuous springs extending from front to back and the seat deck construction is such that longer springs may be used, connected in close proximity to the front and back of the seat deck and at relatively low points to improve the comfort of the seat by spring action. Tension means connected to the springs prevents the "bucketing" of the springs, the tensioning means being variable to control such action.

3,674,312
DOUBLE BOX DUMP TRAILER
Cecil N. O'Rear, 1118 Claiborne Ave., Minden, La.
Filed July 17, 1970, Ser. No. 55,648
Int. Cl. B60p 1/16
U.S. Cl. 298—8 T 6 Claims



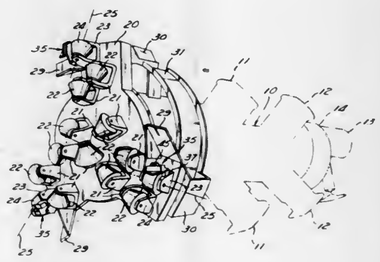
A double box dump trailer in which a relatively long rear box is mounted on the trailer for dumping with a hydraulic mechanism. A somewhat smaller forward box is mounted on the trailer for dumping into the rear box with a hydraulic mechanism. The forward box is provided with an upwardly sloping dumping chute which overlies the rear box when the front box is raised to its fullest extent.

3,674,313
METHOD FOR EFFECTING DIRECTIONAL NUCLEAR FRACTURING
Carroll F. Knutson, and Charles Robert Boardman, both of P.O. Box 15090, Las Vegas, Nev.
Filed April 17, 1970, Ser. No. 29,590
Int. Cl. E21b 43/26
U.S. Cl. 299—13 5 Claims



A method for localizing and directing energy from an underground nuclear explosion which includes the steps of providing an acoustical blocking zone on at least one side of the contemplated explosion situs to limit transmission of elastic waves to the earth on the opposite sides of the acoustical blocking zone, then detonating the nuclear explosive at the situs. The acoustical blocking zone is a zone of material which is at variance in its acoustical characteristics with respect to the adjacent earth in which it is located.

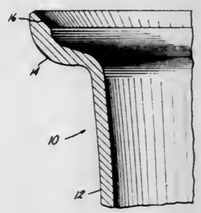
3,674,314
GAGE SCRAPER
Joseph V. Scaravilli, Cleveland Heights, Ohio, assignor to Jarva, Inc., Solon, Ohio
Filed Jan. 7, 1970, Ser. No. 1,079
Int. Cl. E01g 3/04
U.S. Cl. 299—86 17 Claims



A tunneling machine is disclosed which includes a support frame, a rotatable cutter head, and inside roller cutters and

gage roller cutters for cutting or crushing the end face of a tunnel. Each gage cutter is provided with a gage scraper which includes a first scraper portion for engaging the tunnel end face and a second scraper portion for engaging the cylindrical tunnel wall to clear protruding formation particles from the path of the gage cutter. A resilient mounting means resiliently biases the first and second scraper portions against their respective tunnel surfaces to provide substantially continuous contact therewith as the scraper portions become worn, and to permit retraction of the scraper portions if they encounter a formation particle which they cannot remove. A guide plate prevents movement of the resiliently mounted scraper portions toward the gage cutters in the direction of travel of the gage cutters around the tunnel end face to permit mounting the scraper portions on gage saddles immediately adjacent the gage cutters. Intersecting edge portions of the guide plate form fixed scrapers for further protection of the gage cutters.

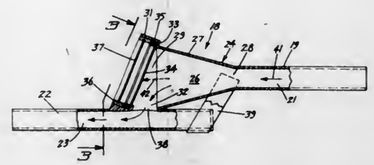
3,674,315
CAST STEEL WHEELS FOR HEAVY-DUTY VEHICLES
Daniel Lejeune, Clermont-Ferrand, France, assignor to Compagnie Generale Des Etablissements Michelin raison sociale Michelin & Cie, Clermont-Ferrand, Puy-de-Dome, France
Continuation-in-part of Ser. No. 648,397, June 23, 1967, Pat. No. 3,530,927. This application April 1, 1970, Ser. No. 24,601
Claims priority, application France, June 24, 1966, 66940
Int. Cl. B60b *3/06*
U.S. Cl. 301—65 **4 Claims**



A vehicle wheel is made of cast steel and has a thickness of steel small with respect to its diameter. The steel has a carbon content within the range of 0.16 to 0.70 percent, a manganese content within the range of 0 to 1.60 percent, and a silicon content within the range of 0 to 1.00 percent. The tensile strength of the steel is within the range of 40 kg/mm² to 80 kg/mm², and the steel is hardened through about 10 to 20 percent of its thickness. The thickness of the steel is increased in the rim flange as compared to the rim base, and the axially outer wall of the rim flange is inclined with respect to the rim axis. Any shrink marks that may appear in the cast steel are concentrated in the thickened portion of the rim flange.

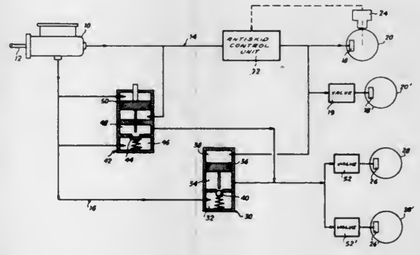
3,674,316
PARTICLE MONITOR
Robert J. De Brey, 1830 E. 42nd St., Minneapolis, Minn.
Filed May 14, 1970, Ser. No. 37,157
Int. Cl. B65g *53/66;* **B47l** *9/00*
U.S. Cl. 302—65 **13 Claims**

A particle monitoring device located in a line carrying a moving fluid, as air, containing particles. The device has a particle sensing member providing signals that are in direct proportion to the amount of particles in the moving fluid. The sensing member can be a flexible cover enclosing the large end of a housing having a side wall that increases in diameter as a function of distance from its inlet, as a funnel-shaped housing. Particles that hit the cover produce an audio signal



providing information feedback of the amount of particles in the moving fluid.

3,674,317
HYDRAULIC ANTISKID BRAKING SYSTEM
James Mangold, Tremblay-le-Gonesse, France, assignor to Societe Anonyme D.B.A.
Filed July 16, 1970, Ser. No. 55,504
Claims priority, application France, July 31, 1969, 6926216
Int. Cl. B60t *8/00*
U.S. Cl. 303—21 F **6 Claims**

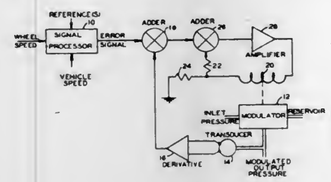


A vehicle antiskid braking system comprising a hydraulic pressure control source adapted to supply two independent braking circuits with two separate hydraulic braking pressures respectively, an antiskid control unit adapted to modulate the first braking pressure to the hydraulic brake actuators of a first set of wheels as a function of the skidding of at least one wheel of said first set, a modulator unit adapted to modulate the second braking pressure to the hydraulic brake actuators of a second set of wheels as a function of the braking pressure in said first set of wheel brake actuators and a normally closed by-pass valve unit to by-pass said modulator unit for directly connecting said control source to said second set of wheel brake actuators, upon a failure in said first braking circuit.

3,674,318
ANTI-SKID BRAKING SYSTEM UTILIZING PRESSURE FEEDBACK
George B. Hickner, Donald W. Howard, and Ward C. Suttle, South Bend, Ind., assignors to The Bendix Corporation
Filed Nov. 18, 1970, Ser. No. 90,536
Int. Cl. B60t *8/06*
U.S. Cl. 303—21 A **12 Claims**

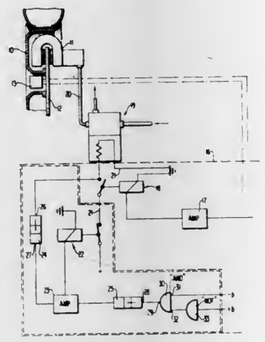
An adaptive braking system to prevent skidding of an automotive vehicle by reducing the brake pressure yet maintaining near maximum braking torque. A transducer measures the brake pressure to provide an additional input to control logic already including inputs from wheel speed

sensors and a vehicle acceleration sensor or vehicle speed sensor. The maximum pressure on each cycle is memorized and a percentage value used to insure that on the next cycle the pressure build will not be prematurely terminated. A derivative of the brake pressure is used to change a first set point in accordance with pressure appli-



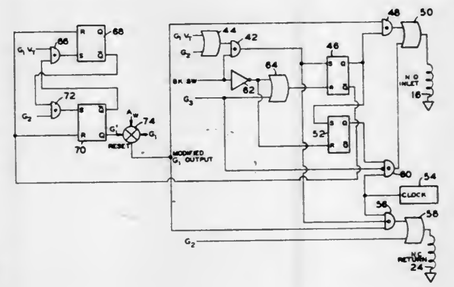
cation rates. The first set point activates the anti-skid system. A noise detector that senses changes in wheel acceleration will prevent a premature decay of braking pressure caused by rough road surfaces. A variable frequency clock is used to provide a signal of a frequency proportional to wheel acceleration to slowly approach the point of maximum torque.

3,674,319
SAFETY CIRCUIT FOR A BRAKE-FORCE CONTROL INSTALLATION INTENDED FOR VEHICLES, ESPECIALLY FOR MOTOR VEHICLES
Franz Brugger and Jurgen Paul, Stuttgart, Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany
Filed Dec. 11, 1970, Ser. No. 97,244
Claims priority, application Germany, Dec. 12, 1969, P 19 62 322.4
Int. Cl. B60t *8/06*
U.S. Cl. 303—21 CG **15 Claims**



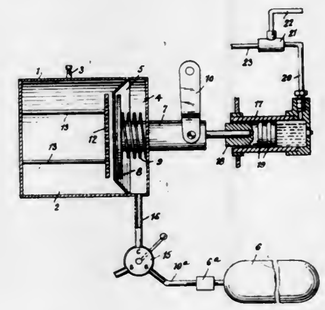
A safety circuit for a brake force control installation intended for vehicles, particularly motor vehicles, in which a pulse transmitter is associated with each wheel that produces at least one signal in case of excessive deceleration and predetermined reacceleration that are combined in an electronic circuit and serve for the control of the control elements associated with the wheel brakes; a safety relay is arranged in series with the control relay, controlled by the electronic circuit, for the control element, whereby the safety relay is normally closed when de-energized and opens up when energized; the control of the safety relay takes place by way of two timing elements, whereby the first timing element is controllable by way of the control of the corresponding control element itself while the second timing element is controlled by a pulse that results from the electronic combination of the deceleration and reacceleration signals, the response time of the two timing elements is greater than the longest normally occurring control period.

3,674,320
ADAPTIVE BRAKING CONTROL SYSTEM
Donald W. Howard and George B. Hickner, South Bend, Ind., assignors to The Bendix Corporation
Filed July 15, 1970, Ser. No. 54,941
Int. Cl. B60t *8/12*
U.S. Cl. 303—21 P **15 Claims**



An adaptive braking system on an automotive vehicle for controlling brake pressure. From a signal that represents angular velocity of the wheels, a control unit generates a signal that represents wheel acceleration or deceleration. If the deceleration exceeds certain values or the acceleration exceeds a given value, the control logic will vary the brake pressure to give multiple build and decay rates of pressure in the wheel cylinder.

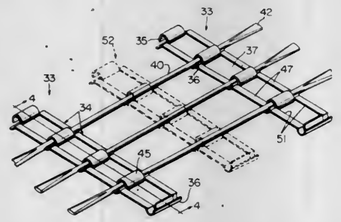
3,674,321
CAPTIVE AIR BRAKE FOR VEHICLES
John Garfield Fontaine, 2817 NE. 26th Court, Fort Lauderdale, Fla. 33306
Filed June 29, 1970, Ser. No. 50,538
Int. Cl. B60t *13/28, 15/20*
U.S. Cl. 303—28 **6 Claims**



A brake system consisting of an embodiment in which a brake-applying mechanism is normally maintained in a position of brake application by means of captive air pressure and in which brake release is attained by counter

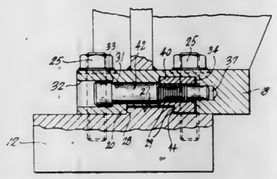
air pressure of greater force than the captive air pressure. Another embodiment involves the use of vacuum from the intake manifold of a vehicle motor or by the use of a vacuum tank and a one-way check valve, the vacuum creating a force greater than the force of the captive air, to thereby cause brake release.

3,674,322
ENDLESS TRACK
Walter E. Huber, Springfield, Mo., assignor to Dayco Corporation, Dayton, Ohio
Filed July 9, 1970, Ser. No. 53,608
Int. Cl. B62d *55/24*
U.S. Cl. 305—38 **12 Claims**



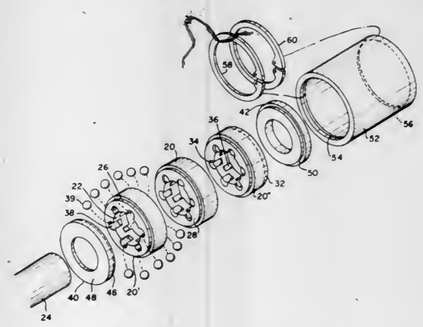
An endless track is provided which has a substantially uniform width and is adapted to be moved in an endless path. The track is comprised of an elastomeric material and has at least one endless chain embedded within a band-like body which has a ground engaging surface and each endless chain is defined by a plurality of links having opposed interlocking end portions with each link having an opening therein which is adapted to receive therethrough an associated tooth of a drive sprocket used to drive the track. A plurality of reinforcing members are provided and each reinforcing member is fixed to an associated link and extends across the full width of the track whereby the reinforcing members provide optimum lateral stability for the track yet assure flexibility during movement thereof in its endless path.

3,674,323
MACHINE TOOL GUIDE WAY RESTRAINT
Frank Zankl and Earl R. Lohnels, Milwaukee, Wis., assignor to Kearney & Trecker Corporation, West Allis, Wis.
Filed Dec. 4, 1970, Ser. No. 95,262
Int. Cl. F16c *25/02*
U.S. Cl. 308—3 A **4 Claims**



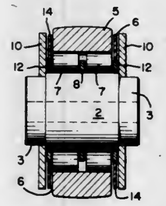
An assembly for adjusting and maintaining alignment of machine tool guide ways. The rear surface of the way is provided with a protruding strip which extends along the length of the way. The machine tool support is provided with a complementary channel for receiving the strip. One surface of the channel forms a locating surface and all positioning of the guide way is against this surface. The positioning of the guide way against the locating surface is effected by the use of a plurality of plugs located within the machine tool support, each plug having a hole for receiving a screw. When the screw is tightened against the machine tool support, it draws the plug against the edge of the strip to force its opposite end against the locating surface.

3,674,324
SELF-LUBRICATED SHAFT BEARING FOR LINEAR AND ROTARY MOTION
Max Norman Schweizer, 110 S. Clinton Ave., Bay Shore, N.Y. 11706, and Arthur Stone Moran, Parsens Lane, St. James, N.Y. 11780
Filed Oct. 28, 1970, Ser. No. 84,838
Int. Cl. F16c *31/04*
U.S. Cl. 308—6 R **11 Claims**



A ball bearing assembly for linear and rotatable motion having one or more flat annular bearing cages having a central passage to receive a shaft. Each bearing cage has a plurality of circumferentially spaced cylindrical cavities extending axially of the ring from opposite ends and each cavity has a lateral opening into the central passage. A spherical ball is rotatably disposed in each of the cavities and projects laterally through the opening into the passage. The cavities are axially longer than the diameters of balls to permit the balls to move therein axially of the ring. Spacer rings at opposite ends of the assembly hold the balls in the cavities. The bearing and spacer rings and balls may be made of smooth, self lubricating fiberous polymer material to minimize friction.

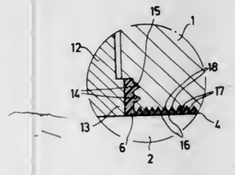
3,674,325
BEARING
John J. Moroney, Torrington, and Edwin B. Tharp, Prospect, Conn., assignors to The Torrington Company, Torrington, Conn.
Filed Nov. 27, 1970, Ser. No. 93,186
Int. Cl. F16c *21/00*
U.S. Cl. 308—35 **3 Claims**



A roller bearing including concentric inner and outer races with a series of rollers located therebetween and

end plates mounted on each end of the inner race and extending over the end faces of the outer race. A self-lubricating washer is disposed between each end plate, the adjacent end race of the outer race and the ends of the rollers and a spacer washer is provided to prevent the ends of the rollers from wearing away the self-lubricating washer.

3,674,326
SHAFT BEARING SEALED AGAINST PRESSURE
Rudolf Kaiser, Ettlingen, Baden, Germany, assignor to Neue Argus Gesellschaft m.b.H., Baden, Germany
Filed Feb. 17, 1970, Ser. No. 11,979
Claims priority, application Germany, Feb. 18, 1969, P 19 08 074.1
Int. Cl. F16c *33/74*
U.S. Cl. 308—36.1 **2 Claims**

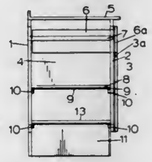


Pressure sealed shaft bearing for passing shafts through walls that separate areas which are under different pressures, where the wall passage for the shaft is knurled or its surface is treated in an equivalent manner and a bearing sleeve of thin walled suitable plastic is provided which is calibrated or grooved into the hole in the wall, and where the material of the grooved in sleeve (**4**) of plastic material penetrates into the recesses (**17**) in the inner surface of the hole while not completely filling them because capillary spaces (**18**) are formed in the deepest recesses, and where the plastic sleeve is provided with a sealing flange at the outside of the wall (**1**) that faces the low pressure which rests against a shoulder defined by an annular recess (**7**) in the wall.

ERRATA

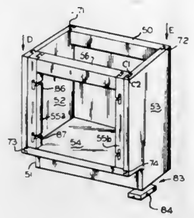
For Classes 308—122 to 308—233 see:
Patent Nos. 3,674,355 thru 3,674,357

3,674,327
FURNITURE CONSTRUCTION
George Henry Robinson, Liverpool, England, assignor to Hygena Limited, Liverpool, England
Filed Mar. 4, 1970, Ser. No. 16,329
Claims priority, application Great Britain, Apr. 4, 1969, 17,155/69
Int. Cl. A47b *43/00, 47/00, 87/00*
U.S. Cl. 312—257 **2 Claims**



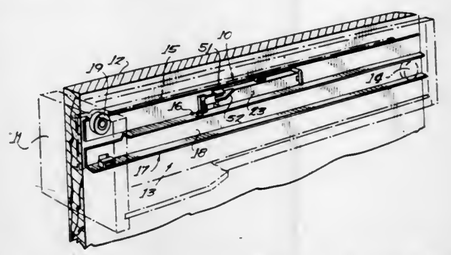
The invention resides in a set of parts for assembling into an article of furniture, and an article of furniture so constructed. The set of parts comprises a front component, a back component, tie bars for connecting said front and back components in spaced relationship, grooves in said front and back components, and end panels for being received and located in said grooves.

3,674,328
SLIPJOINTED KNOCKDOWN CABINET
Kenneth N. White, 12650 90th Ave., Palos Park, Ill. 60464, and Harold E. Meyer, 82nd Ave. and Forestview Drive, Orland Park, Ill. 60462
Filed Dec. 10, 1970, Ser. No. 96,682
Int. Cl. A47b *47/00*
U.S. Cl. 312—263 **5 Claims**



A number of precut panels are assembled into a completed cabinet without requiring any glue, fasteners, clamps, other strengtheners, or special tools. Interlocking tongue and groove slots in the panels enable them to slide together with a nearly perfect fit to form a cabinet.

3,674,329
TOUCH DEVICE FOR CABINET DRAWER OR CLOSURE
John M. Schill, Kitchener, Ontario, Canada, assignor to Keystone Consolidated Industries, Inc., Peoria, Ill.
Filed Dec. 16, 1970, Ser. No. 98,494
Int. Cl. A47b *88/00, 95/00*
U.S. Cl. 312—319 **11 Claims**

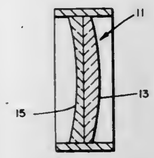


A touch device for cabinet drawers or closures which will act to automatically partially open the drawer, closure or door upon manual actuation and may latch the drawer or door in closed position, so that the drawer or door does not require a handle or pull on the exterior surface thereof. The device includes a housing mounted in the cabinet or enclosure with an elongated plunger projecting from one end, with the inner end of the plunger engaging a generally reciprocable actuating member having limited arcuate movement. A U-shaped pusher is spring-biased to engage the actuating member, and the actuating member is provided with a hook at one end cooperating with the inner enlarged and recessed end of the plunger and a laterally extending second hook at the opposite end of the member cooperating with an opening formed in the side wall of the housing. Movement of the drawer or closure inward retracts the plunger and causes the actuating member to engage the housing and plunger to prevent outward movement thereof, and pressure exerted on the closed drawer or closure causes release of the actuating member so that the spring biases the plunger outwardly to partially open the drawer or closure.

3,674,330
ACHROMATIC DOUBLET LENS FOR INFRARED RADIATION

John D. Strong, 5 Chadwick Court, Echo Hill, Amherst, Mass. 01002

Filed Jan. 22, 1971, Ser. No. 108,937
Int. Cl. G02b 1/02, 13/14
U.S. Cl. 350—2 11 Claims

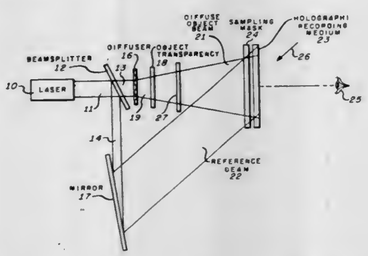


The achromatic doublet lens disclosed herein employs a pair of optical elements, each of which is constructed of a respective infrared transparent alkali halide. By appropriately selecting the two alkali halides in accordance with the teachings of the present invention, the resulting doublet is caused to be substantially achromatic over a useful range of wavelengths, rather than just at a pair of preselected wavelengths as would be the case if the two infrared transparent materials were arbitrarily selected.

3,674,331
SPACE DIVISION MULTIPLEXED HOLOGRAPHIC APPARATUS

Henry John Caulfield, Carlisle, Mass., assignor to Sperry Rand Corporation

Filed Oct. 9, 1970, Ser. No. 79,412
Int. Cl. G02b 27/00
U.S. Cl. 350—3.5 1 Claim



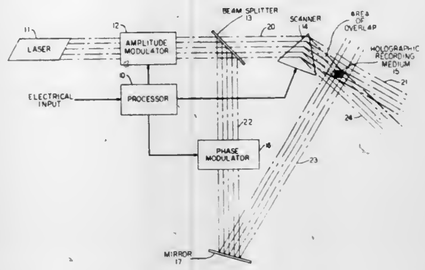
Holographic apparatus including a plurality of spatially complementary sampling masks for space division multiplexing respective object signals in such a way that each recording is distributed throughout substantially the full area of the holographic storage medium. Individual masks are used for successively recording the various objects and the mask corresponding to a particular recording is used in playback apparatus for producing respective images of said objects.

3,674,332
HOLOGRAM GENERATOR USING SUPERPOSITION OF PLANE WAVES

Herwig Werner Kogelnik, Fair Haven, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 23, 1970, Ser. No. 91,909
Int. Cl. G01d 9/42; G02b 27/00
U.S. Cl. 350—3.5 7 Claims

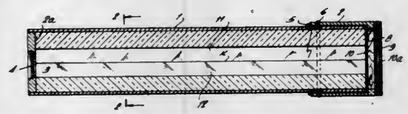
A system which generates holograms from electrical signals superimposes a series of light waves in a thick hologram recording medium. A processor determines the amplitude, phase, and angle of incidence of the series of light waves needed to generate the hologram from the electrical signal. These light waves are then generated with amplitude modulation, phase modulation, and deflection devices, and are made to interfere with reference light waves. This causes a series of interference patterns to be superimposed in the recording medium, thereby producing the hologram.



3,674,333
RAINBOW KALEIDOSCOPE

Mark Mandel, 890 West End Ave., New York, N.Y. 10025

Filed Aug. 19, 1970, Ser. No. 65,195
Int. Cl. G02b 27/08
U.S. Cl. 350—5 8 Claims

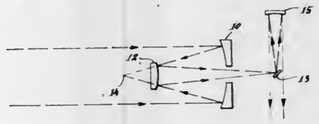


This novel kaleidoscope consists of an elongated tubular member having an eye piece opening at one end and open at the opposite end, a polarized sheet covering the eye piece opening, three or two elongated mirrors positioned at angles to each other, and a short tubular member rotatably connected to the elongated tubular member. The outer end of the short tubular member is covered by two parallel sheets, the inner sheet being clear and the outer sheet being polarized. A number of mica pieces, or other polarized pieces, are positioned between the parallel sheets.

3,674,334
CATOPTRIC ANASTIGMATIC AFOCAL OPTICAL SYSTEM

Abe Offner, Darien, Conn., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Jan. 4, 1971, Ser. No. 103,495
Int. Cl. G02b 17/06, 23/02
U.S. Cl. 350—55 6 Claims



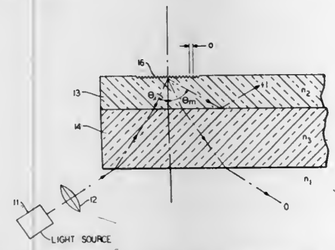
A catoptric anastigmatic afocal optical system is formed by two concave paraboloidal reflectors of different powers and a convex hyperboloidal reflector each adapted to receive and focus radiant energy. A paraboloidal reflector

and the hyperboloidal reflector have their axes optically coincident and are positioned with the real focus of this paraboloidal reflector at the virtual focus of the hyperboloidal reflector. The axis of the other paraboloidal reflector is optically coincident with the axis of the hyperboloidal reflector and its real focus is coincident with the real focus of the combination of the first paraboloidal reflector and the hyperboloidal reflector. By having the sum of the powers of all the reflectors equal zero; all third order aberrations except distortion are zero; if the sum is not zero, third order aberrations, other than field curvature and distortion, are zero.

3,674,335
LIGHT WAVE COUPLING INTO THIN FILM LIGHT GUIDES

Arthur Ashkin, Rumson, and Erich Peter Ippen, Middletown, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 25, 1970, Ser. No. 40,079
Int. Cl. G02b 5/14, 5/18; H01p 3/00
U.S. Cl. 350—96 WG 14 Claims

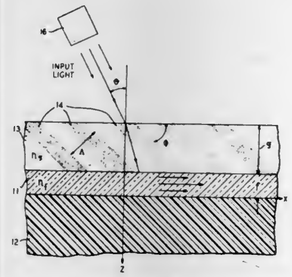


Light waves are coupled into an optical wave guide by means of an optical grating disposed along one surface of the guide. The coupling is varied by varying the angle of incidence of the light to be coupled.

3,674,336
LIGHT WAVE COUPLING INTO THIN FILM LIGHT GUIDES WITH BRAGG TYPE GRATINGS

Herwig Werner Kogelnik, Fair Haven, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Aug. 28, 1970, Ser. No. 67,857
Int. Cl. G02b 5/14, 5/18
U.S. Cl. 350—96 WG 5 Claims

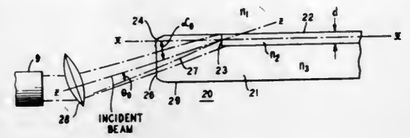


Light coupling into thin optical waveguiding films is achieved by means of a thick Bragg type diffraction grating extending along one surface of the film. When the light is incident at or near the Bragg angle, unwanted diffraction orders are suppressed and efficient coupling is realized.

3,674,337
BEAM COUPLING TO AND FROM THIN FILM WAVEGUIDE

Enrique Alfredo Jose Marcatili, Rumson, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 7, 1970, Ser. No. 95,690
Int. Cl. G02b 5/14; H01p 3/00
U.S. Cl. 350—96 WG 4 Claims

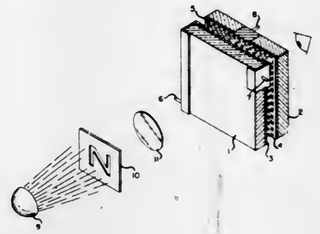


Harmful effects associated with imperfections at the end of a thin film optical waveguide are avoided in a coupling arrangement in which the dielectric waveguide strip is terminated inside the substrate. The exciting beam is directed towards the end of the guide from within the substrate at a preferred angle of incidence. The optimum beam angle is also specified. Excitation efficiencies of the order of 90–97 percent are predicted.

3,674,338
REAR PROJECTION SCREEN EMPLOYING LIQUID CRYSTALS

James V. Cartmell, Dayton, and Donald Churchill, Kettering, Ohio, assignors to The National Cash Register Company, Dayton, Ohio

Filed Aug. 5, 1970, Ser. No. 61,131
Int. Cl. G03b 21/56
U.S. Cl. 350—117 9 Claims



A rear projection screen is disclosed wherein organic nematic mesomorphic compounds, i.e., liquid crystals, are employed. The liquid crystals have a threshold electric field which when exceeded causes the liquid crystal to scatter light. A thin film of the liquid crystal in the light scattering mode can be used for a screen in a rear projection system.

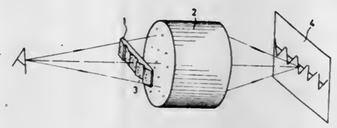
3,674,339
STEREOSCOPIC PHOTOGRAPH SYSTEM USING A STEREOSCOPIC ATTACHMENT TO A CAMERA

Kazuo Sayanagi, Kanagawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sept. 16, 1970, Ser. No. 72,640
Int. Cl. G02b 27/22, 5/04; G03b 35/08
U.S. Cl. 350—130 23 Claims

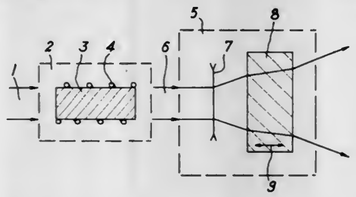
In the disclosed system for taking stereoscopic photographs, a plurality of prisms are formed from a single

sheet and arranged within the field of a single objective on a camera. Each prism makes a separate image on a



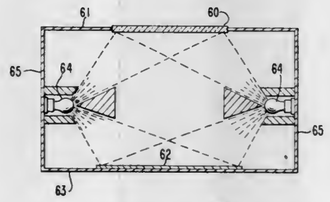
different portion of the film. The prisms are arranged to distribute the images throughout the film.

3,674,340
DEVICE FOR IMPROVING THE OPTICAL QUALITIES OF A LASER BEAM
Louis Jacob, Saint-Germain-les-Arpajon, France, assignor to Commissariat a l'Energie Atomique, Paris, France
Filed Jan. 26, 1971, Ser. No. 109,784
Claims priority, application France, Feb. 10, 1970, 7004668
Int. Cl. C02f 1/24
U.S. Cl. 350—157 4 Claims



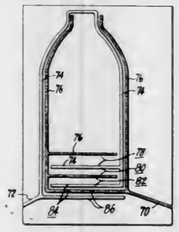
An optical system centered on a substantially parallel light beam produced by a laser is capable of transforming said beam into a beam of light rays having different angles of inclination to the optical axis. A birefringent optical element is centered on the output beam of the optical system and serves to produce between the two perpendicular components of a luminous vibration associated with one of the light rays a phase shift having a value which is a function of the angle of incidence of the light ray on the birefringent element.

3,674,341
LIQUID CRYSTAL DISPLAY DEVICE HAVING IMPROVED OPTICAL CONTRAST
Clarence L. Hedman, Jr., Campbell, and Karl-Dieter S. Myrenne, Sunnyvale, Calif., assignors to SCM Corporation
Filed Dec. 8, 1970, Ser. No. 96,146
Int. Cl. G02f 1/28
U.S. Cl. 350—160 6 Claims



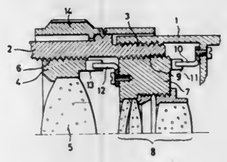
An electro-optical display device is disclosed having a light source and a liquid crystal display panel. The display panel comprises an organic nematic mesomorphic compound confined between two substantially planar parallel surfaces of two juxtaposed transparent plates, and means for establishing electric fields through selected portions of the organic nematic mesomorphic compound. The display device also includes means for directing a beam of light from the light source obliquely onto at least one of the substantially planar parallel surfaces of the transparent plates and onto the organic nematic mesomorphic compound.

3,674,342
LIQUID CRYSTAL DISPLAY DEVICE INCLUDING SIDE-BY-SIDE ELECTRODES ON A COMMON SUBSTRATE
Joseph Anthony Castellano, North Brunswick, and Ronald Norman Friel, Hamilton Square, N.J., assignors to RCA Corporation
Filed Dec. 29, 1970, Ser. No. 102,388
Int. Cl. G02f 1/00; G09f 11/00; G08b 23/00
U.S. Cl. 350—160 R 4 Claims



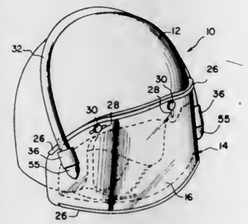
A pair of oppositely disposed substrates sandwich a film of liquid crystal material therebetween. Side by side electrodes, between which a voltage is applied to switch the light transmitting characteristics of the liquid crystal material, are disposed on a single one of the substrates.

3,674,343
LENS BARREL
Goro Hasegawa, Tokyo, and Masaharu Ito, Kawasaki, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Sept. 15, 1970, Ser. No. 72,364
Claims priority, application Japan, Sept. 22, 1969, 44/89,353; Feb. 13, 1970, 45/14,047
Int. Cl. G02b 7/02
U.S. Cl. 350—250 3 Claims



A lens barrel which has a focusing ring, a middle cylinder, an outer cylinder fixed to a camera body, a front lens group holder, and a rear lens group holder, wherein the middle cylinder and the outer cylinder are rotatably screwed to each other, the focusing ring is integrally connected to the middle cylinder in a rotatable manner, the middle cylinder has two screwed parts having different leads, and the front lens group holder and the rear lens group holder are screwed to each of said screwed parts, the front lens group holder being engaged, with key groove, to the rear lens group holder which is engaged, with key groove, to the outer cylinder, thus an aberration is compensated by varying the air spacing between the front lens group and the rear lens group at the time of focusing when the front lens group and the rear lens group make linear movements with different amounts by the rotation of the focusing ring.

3,674,344
LIGHT ENERGY ABSORBING AND FILTERING DEVICE FOR A MOTORCYCLE HELMET
Mount Lee Lacy, Daytona Beach, Fla., assignor to M. L. Lacy, Ltd., Kansas City, Mo.
Continuation of application Ser. No. 718,182, Apr. 2, 1968, which is a continuation-in-part of application Ser. No. 628,984, Apr. 6, 1967. This application Mar. 30, 1971, Ser. No. 129,612
Int. Cl. G02b 5/24
U.S. Cl. 350—312 9 Claims

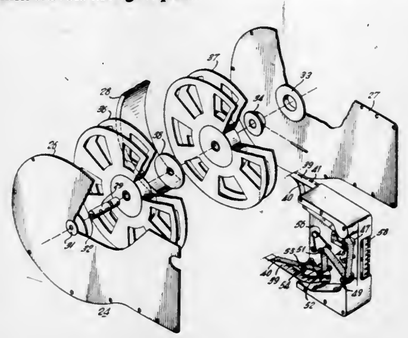


A device that adjusts the type and degree of shielding of the eyes from electromagnetic ray energy from the sun by presenting different degrees of screening and filtering of the ray energy, the device having a window-type shield that is formed from spaced layers of transparent material that are edge sealed to provide a thin light transmission cavity therebetween and a connecting storage container with valve means at the connection between the cavity and the container. The device holds two immiscible liquids of substantially equal volume that have different specific gravities so as to maintain separate liquid bodies within the device. By opening the valve means communication is established between the container and the cavity and tilting the device exchanges the liquids by gravity, at which time closing of the valve means maintains the exchanged liquid in the cavity to produce the desired change in shielding effect.

3,674,345
SOUND MOVIE PROJECTOR
Alan Chernotsky, 36 Lakeshore Drive, Rockaway, N.J. 07866, and Richard Satz, Succasunna, N.J.; said Satz assignor to said Chernotsky
Filed June 30, 1970, Ser. No. 51,217
Int. Cl. G03b 31/04, 23/02
U.S. Cl. 352—31 13 Claims

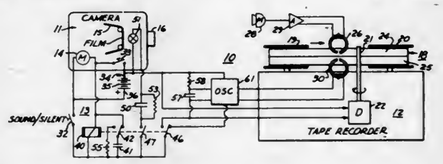
A projector for showing sound movies stored in a cartridge on silent motion picture film and magnetic recording tape is disclosed. The silent motion picture film and the magnetic recording tape are wound interleaved on a reel. The tape and the film on the reel each follow a path through the cassette in which portions thereof coincide and portions thereof separate to allow for projection of the film and playback or recording on the tape. A guide roller mechanism for the tape is also disclosed which includes a mechanism for maintaining a tension on the tape to take up any slack which develops in the tape and also helps in smoothing out the instantaneous tape velocity as it travels along its path.

A half silvered mirror is mounted in the cassette at an angle with respect to a line normal to the plane in which the film travels along its path.



A circuit is also disclosed for driving a motor in a constant current mode to produce a constant torque on the ends of the film and the tape as a pair of shutter fingers advance the film. In this way, motion is imparted to the ends of the tape thereby moving the tape at the same average velocity as the film. Inertial means are associated with the tape to smooth out the intermittent motion caused by the shutter fingers.

3,674,346
AUDIO-VISUAL RECORDING AND DISPLAY METHODS AND APPARATUS
Joseph H. Lancor, Jr., Arcadia, Calif., assignor to Bell & Howell Company, Chicago, Ill.
Original application Nov. 20, 1967, Ser. No. 684,254, now Patent No. 3,539,248, dated Nov. 10, 1970. Divided and this application Jan. 2, 1970, Ser. No. 5,396
Int. Cl. G03b 31/04
U.S. Cl. 352—12 8 Claims

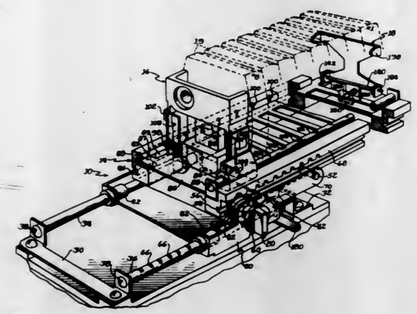


Audio-visual display methods and apparatus in which sound accompaniments are automatically started in response to indications on the image film, and in which sound sequences are automatically stopped in response to indications on the sound recording medium; and methods and apparatus for providing audio-visual display media in which start indications for sound sequences are provided on image film, while stop indications for sound sequences are provided on the sound recording medium.

3,674,347
FILM CARTRIDGE SUPPORT ASSEMBLY FOR PROJECTORS
Kiyoshi Iha, Elk Grove Village, Ill., assignor to Bell & Howell Company, Chicago, Ill.
Filed June 25, 1970, Ser. No. 49,799
Int. Cl. G03b 21/04
U.S. Cl. 352—73 10 Claims

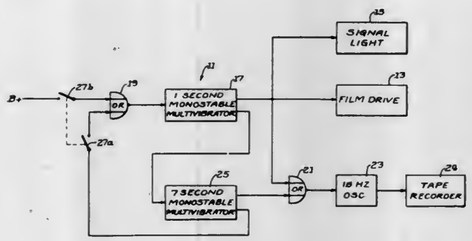
A support assembly operable for supporting any one of a plurality of film supply cartridges at a projection station

on a motion picture projector. The assembly includes a tray for positioning one of the cartridges at the projection station and includes an aligning member supported on



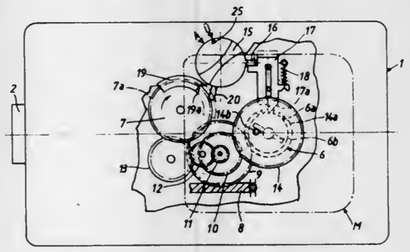
the projector independently of the tray for movement from a retracted position to a cartridge engaging position for aligning a cartridge at the projection station.

3,674,348
PHOTOGRAPHIC SYSTEM FOR STEP-MOTION PROJECTOR
Erwin E. Figge, Des Plaines, and Edward J. Ho, Chicago, Ill., assignors to Bell & Howell Company, Chicago, Ill.
Filed June 22, 1970, Ser. No. 48,399
Int. Cl. G03b *31/00*
U.S. Cl. 352—84 **9 Claims**



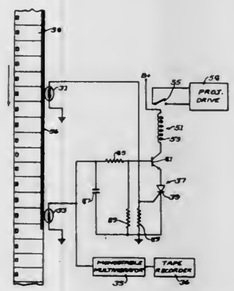
A motion picture recording and projection system adapted for use with audio tape accompaniment including a camera and a projector. The camera, in response to selective actuation, exposes a portion of the film for a predetermined time interval and simultaneously exposes an elongated continuous strip along a margin of the film, corresponding to scenes to be projected at slow speed. The tape recorder runs for a time period which is considerably greater than the operational interval of the camera. During projection, the exposed film margin is detected and utilized to switch the projector drive mechanism from normal to slow speed operation. During slow speed operation the tape accompaniment is driven at its normal play-back and recording speed.

3,674,349
MOTION PICTURE CAMERA WITH AUTOMATICALLY DEACTIVATABLE FADING MEANS
Anton Theer, Munich, Germany, assignor to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany
Filed Apr. 26, 1971, Ser. No. 137,410
Claims priority, application Germany, Apr. 24, 1970, P 20 19 918.2
Int. Cl. G03b *21/36*
U.S. Cl. 352—91 **12 Claims**



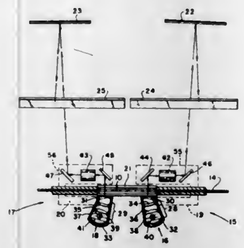
A motion picture camera for use with takeup reels which can be rotated only in a direction to collect the film has a fading mechanism which can temporarily arrest the takeup reel during the making of exposures with fade-out effect so that the length of film which was exposed with such effect is stored in the cassette close to the takeup reel in the form of one or more loose loops. The frame counter is provided or cooperates with a blocking device which deactivates the fading mechanism when the position of the frame counter indicates that the major part of motion picture film is already collected by the takeup reel so that the space around the takeup reel cannot properly store that length of film which is to be exposed with fade-out effect. The blocking device can open a switch in the fading mechanism or can disengage an arresting member of the fading mechanism from the takeup reel so that the latter is free to rotate in a direction to collect the film.

3,674,350
VIEWER
Ulrich Staiger, Stuttgart-Sillenbuch, Germany, assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Apr. 16, 1970, Ser. No. 29,212
Claims priority, application Germany, June 21, 1969, P 19 31 648.4
Int. Cl. G03b *23/08*
U.S. Cl. 353—27 **11 Claims**



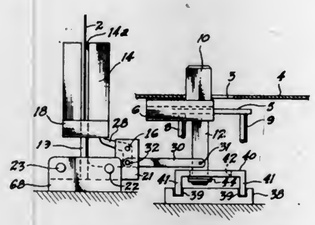
Apparatus is disclosed for simultaneously projecting any two separate images selected from a multiple-image-bearing medium. Two optical projecting devices are provided, each of which includes an illuminating source and an optical deviating element for redirecting light emanating from the illumination source so that it passes through the multiple-image-bearing medium in a direction substantially perpendicular to the surface of the medium. Projection lenses are provided on the opposite side of the

medium from the illuminating sources to form an image of the information contained on the medium. At least one of the projecting devices, including its cooperating lens, is movable and therefore effective to project different



images selected from the multiple-image-bearing medium. In a preferred embodiment, the projected image produced by each optical projecting device can be displayed upon separate display screens.

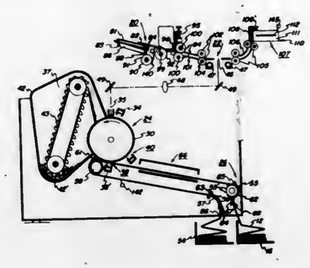
3,674,351
READER FOR INFORMATION CARRIERS IN SHEET FORM
Heinz Streicher, Echterdingen, Siegfried Riek, Esslingen-Weil, and Manfred Leutwein, Rommelshausen, Germany, assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Nov. 12, 1969, Ser. No. 875,815
Claims priority, application Germany, Nov. 26, 1968, P 18 10 959.6
Int. Cl. G03b *23/08*
U.S. Cl. 353—27 **5 Claims**



Apparatus is disclosed for projecting images from information bearing media such as microfiche cards having at least first and second image portions, the projection apparatus including first and second lens or projection assemblies disposed to project images from the first and second image bearing portions. At least one of the first and second lens assemblies being mounted to be movable with respect to the image bearing media to permit the one lens assembly to project the first image and the other lens assembly to project the second image. In a preferred embodiment, the first and second lens assemblies may project the first and second images from the microfiche onto adjacent display screens or surfaces.

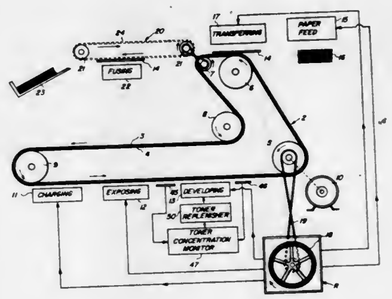
3,674,352
ELECTROSTATIC LABEL PRINTER
Raymond A. Wilmes, Genoa City, Wis., assignor to Xerox Corporation, Stamford, Conn.
Filed June 22, 1970, Ser. No. 49,208
Int. Cl. G03g *15/00, 15/20*
U.S. Cl. 355—3 **4 Claims**

Apparatus for electrostatically printing label information, normally addresses, taken from individual master address cards on a web material for use as an addressing form, the apparatus including a photoconductive member, a scanning station, transport means for feeding the cards forward; means for developing latent images of the card information on the member; a transfer station, means to advance the web material to the transfer station; fixing means to fix the transferred image on the web material;



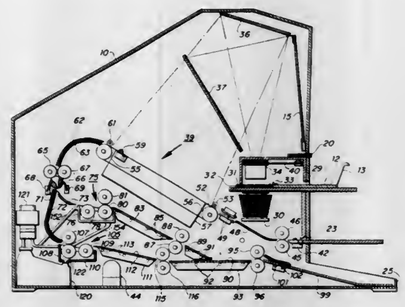
and control means for said apparatus adapted when operated to stop, in predetermined sequence, first the fixing means and then the web material advance means whereby to avoid burning or scorching of the form by the fixing means, the control means being operable in response to interruption in the feed of cards past the scanning station, or interruption in the feeding of said web material, or overfilling of the address card collecting tray.

3,674,353
TONER CONCENTRATION CONTROL APPARATUS
William Trachtenberg, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed July 1, 1971, Ser. No. 158,714
Int. Cl. G03g *15/08*
U.S. Cl. 355—3 **5 Claims**



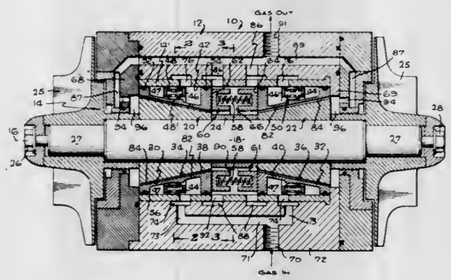
An apparatus and method for sensing the quantity of toner depleted from an electrographic developer each time an electrostatic charge pattern is developed and for activating a toner replenisher when the toner depletion exceeds a predetermined value. Toner depletion is sensed by a pair of induction plates arranged on the upstream and downstream sides of the developing station adjacent the path along which a charge pattern-bearing electrographic recording element travels. The difference in charge induced on such plates by the passage of the undeveloped and developed patterns close by is an accurate measure of the quantity of toner applied to the patterns.

3,674,354
MICROFILM VIEWER-PRINTER
Maurice H. Arstad, Spring Valley, Ronald W. Johnson, Chula Vista, and Prativadi I. Sampath, La Jolla, Calif., assignors to Stromberg Datagraphix, Inc., San Diego, Calif.
Filed July 2, 1970, Ser. No. 51,882
Int. Cl. G03g 15/00, 15/10
U.S. Cl. 355—5 5 Claims



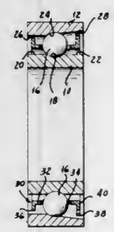
A combined microfilm viewing device and hard-copy printer is disclosed. Hard copies are made on paper from selected microfilm images by an electrostatic process. Two parallel image development devices are provided. Thus, the operator may conveniently select either a negative or a positive paper copy of the microfilm images. Alternatively, the development devices may be arranged to give the operator a choice of two image colors. In a preferred embodiment, a beam-splitter arrangement is provided to simultaneously direct part of the light passing through the microfilm to a viewing screen and part to the electrostatic paper exposure station.

3,674,355
GAS LUBRICATED BEARING
James D. Yearout, Rolling Hills, and Richard E. Tolbert, Torrance, Calif., assignors to Process Services Inc., Gardena, Calif.
Filed May 28, 1970, Ser. No. 41,270
Int. Cl. F16c 17/10
U.S. Cl. 308—122 15 Claims



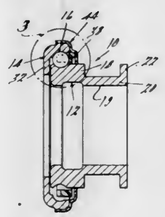
Gas lubricated bearing system comprising a rotating member having a pair of axially disposed journals formed of surfaces of revolution, e.g. conical journals, and a pair of resiliently supported non-rotating bearings formed of surfaces of revolution, e.g. conical surfaces, in juxtaposed position with respect to said journals, forming a gas receiving zone between said journal and bearing surfaces, and a lubricating gas film in said zone, the resilient support for each of the non-rotating bearings including a radial spring support system reacting against a rigid housing, means for hysteresis damping of the bearing system, e.g. elastomeric seal means between the bearings and rigid housing, and an axial spring support system reacting against the pair of non-rotating bearings, and permitting force interaction between the bearings, providing a rapidly responsive highly stable damping system.

3,674,356
CAGE FOR ANGULAR CONTACT BALL BEARING
Edmund A. Zeneski, Bethel, Conn., assignor to The Barden Corporation, Danbury, Conn.
Filed Oct. 30, 1970, Ser. No. 85,457
Int. Cl. F16c 33/66, 33/38
U.S. Cl. 308—187 9 Claims



A cage for the balls of an angular contact ball bearing having the shoulder bounding the raceway of one of its rings at least partially removed in which the cage has a central annular body with ball receiving openings and respective edge flanges extending radially toward said one ring to locations closely adjacent to the cut-away shoulder and adjacent to the remaining shoulder to permit the cage to be controlled by the one ring and to form a lubricant retaining channel into which lubricant can be injected through holes in the flange extending toward the cut-away shoulder.

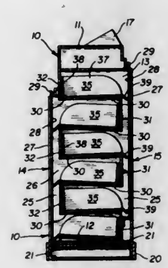
3,674,357
CLUTCH RELEASE BEARING
Eli M. Ladin, Ann Arbor, Harry L. Kegerise, Troy, and John S. Adams, Birmingham, Mich., assignors to Federal-Mogul Corporation, Southfield, Mich.
Filed Mar. 30, 1971, Ser. No. 129,520
Int. Cl. F16c 19/10
U.S. Cl. 308—233 6 Claims



A clutch release bearing assembly comprising a plurality of spherical anti-friction bearing elements adapted

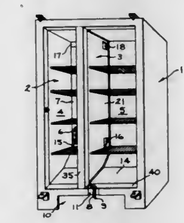
for engagement with semi-spherical raceways in cooperative inner and outer bearing race members, the dimensions of the raceways being of a predetermined relationship with respect to the dimension of the bearing elements.

3,674,358
CABINET FOR STORING MICROSCOPIC SLIDES
Dewey S. C. Sanderson, 4890 Troy St., Denver, Colo. 80239
Filed Sept. 23, 1970, Ser. No. 74,792
Int. Cl. A47f 3/14; A47b 53/00, 81/00
U.S. Cl. 312—126 6 Claims



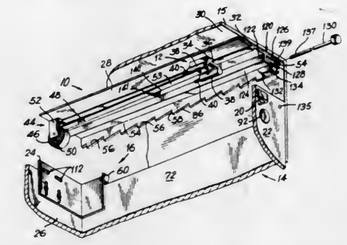
A compact, swivel mounted cabinet for storing microscopic slides, comprising a housing having opposite side walls each provided with drawer-receiving openings arranged in vertical and horizontal rows, said openings leading into recesses, the drawer-receiving openings and recesses of the horizontal rows of one of the side walls being located on different levels than the openings and recesses of the horizontal rows of the opposite side wall; vertical partitions and drawer supporting floors defining each recess. The slide containing drawers comprise bottom, side and inner end walls and have a downwardly inclined tab connected to the forward end of the bottom wall for use in identifying the contents and also for withdrawing the drawer from its recess.

3,674,359
REFRIGERATOR CABINET WITH REMOVABLE PARTITION
William P. Crowe, Louisville, Ky., assignor to General Electric Company
Filed Nov. 17, 1970, Ser. No. 90,349
Int. Cl. A47b 81/00; F25d 11/00; B65d 25/18
U.S. Cl. 312—214 3 Claims



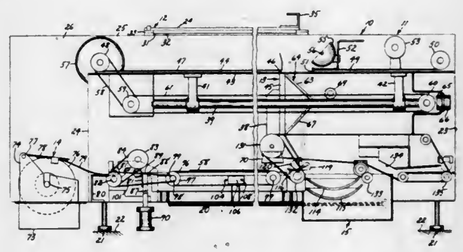
A resin foam insulated refrigerator cabinet comprising a single liner defining a storage space is provided with a vertical partition separating that space into side-by-side storage compartments. The partition is so designed that it can be foamed in place at the same time as the remaining cabinet walls and then easily removed for installation of the refrigeration system.

3,674,360
SECURITY LOCKING DEVICE
George I. Ratner, East Orange, N.J., assignor to Automatic Close & Lock Corporation, East Orange, N.J.
Filed Oct. 29, 1970, Ser. No. 84,986
Int. Cl. E05c 1/02
U.S. Cl. 312—222 15 Claims



In a receptacle including a security control device for protecting valuables in closure means which is adapted to be moved between open and closed positions with respect to the receptacle, the security control device has a spring biased traveler mounted on a track on the receptacle which traveler pushes the closure means towards its closed position, and locking ratchet and cooperating pawl elements, one of which is mounted on the receptacle and the other of which is secured to the closure means for movement therewith. The ratchet and pawl elements are urged into engagement with each other to hold the closure means against movement to its open position with respect to the receptacle while allowing movement of the closure means towards its closed position when released by the operator.

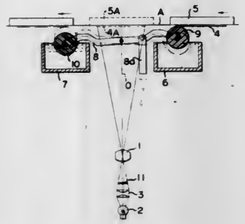
3,674,361
XEROGRAPHIC COPYING DEVICE
David L. Herman, 63 Catherine Road, Scarsdale, N.Y. 10583
Original application Mar. 20, 1968, Ser. No. 719,291, now Patent No. 3,523,726, dated Aug. 1, 1970. Divided and this application June 24, 1970, Ser. No. 49,236
Int. Cl. G03g 15/00
U.S. Cl. 355—8 1 Claim



A xerographic type copying device is disclosed which supports planar material to be copied and a carriage slidably disposed beneath the surface of the material to be copied for incrementally exposing portions of the surface

to reflect the same upon a sheet of sensitized material disposed beneath the carriage. Sensitized material is fed from a roll in accordance with preselected increments, the increments being severed when the carriage commences movement in a first direction to expose the increment, and transported to activating device during the period in which the carriage is returning to its initial position. The activating unit includes several chambers formed by septums disposed within a tank containing an activating fluid, and a device is provided for directing successive segments of exposed sensitized material to different chambers whereby several exposed segments or sheets may be simultaneously activated while the device is in operation.

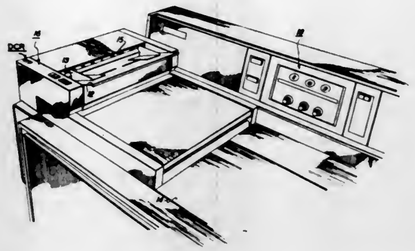
3,674,362
EXPOSURE AND DEVELOPMENT DEVICE FOR WET-TYPE ELECTROSTATIC PHOTOGRAPHY
Sadanao Ando, Tokyo, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan
Filed May 16, 1969, Ser. No. 825,222
Claims priority, application Japan, May 21, 1968, 43/34,206
Int. Cl. B05c *1/02*; G03g *13/10*
U.S. Cl. 355—10 **1 Claim**



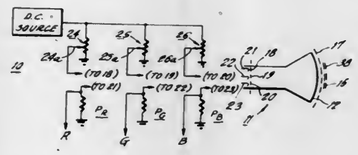
An exposure and developing device for wet-type electrostatic photography in which prior to exposure a light sensitized sheet is moistened with a pre-moistening liquid or agent. The pre-moistening liquid in tanks disposed on the opposite sides of the exposure device respectively is applied by application rollers to the sensitized sheet being advanced with its light sensitized layer being directed downwardly. By application of the pre-moistening liquid or agent, a soft tone image is obtained, thereby rendering visible the details of the image.

3,674,363
SHEET FEEDING APPARATUS
Ernst O. Baller, Penfield, Melvin G. Crandell, Walworth, Donald L. Pease, Marion, and Francis D. Witinski, Rochester, N.Y., assignors to Xerox Corporation, Rochester, N.Y.
Filed June 10, 1968, Ser. No. 735,677
Int. Cl. G03b *27/62*
U.S. Cl. 355—14 **4 Claims**

Document feeding apparatus for sequentially feeding single documents from a stack to a stationary scanning platen of a reproducing machine and then beyond for restacking after exposure. The apparatus includes sheet separating rollers to insure that only a single document is forwarded. The apparatus also includes an urging roller to advance the topmost document of the stack into the separating rollers. Beyond the separating rolls are a platen transport assembly over the platen and an intermediate transport belt assembly between the separating rollers and the transport belt assembly. Document sensing means are provided to slow down then stop the transport assemblies to position the document in registration on the platen. Control means are also provided to inactivate the feeding apparatus in response to a malfunction in the reproducing machine or to inactivate the reproducing machine in response to a malfunction in the feeding apparatus.



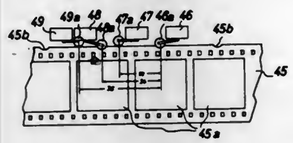
3,674,364
METHOD AND APPARATUS FOR EVALUATING COLOR TRANSPARENCIES AND THE LIKE
Nathaniel I. Korman, Princeton, N.J., assignor to Ventures Research & Development Group, Princeton, N.J.
Filed Mar. 16, 1970, Ser. No. 19,972
Int. Cl. G03b *27/76*
U.S. Cl. 355—38 **10 Claims**



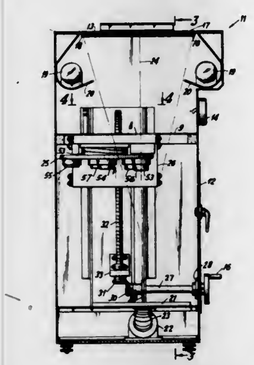
Equipment for evaluating color transparencies utilizing a color kinescope whose intensity and color mix are readily adjustable. The transparency being evaluated is compared against "standard" transparencies, whereby the grid bias voltages of the three-gun kinescope are adjusted to achieve favorable comparison between the transparency being evaluated and the "standard." The values of the three kinescope beam currents necessary to obtain the proper color balance and luminance are employed in mathematical relationships to determine the preparation of color separations (for example) from the transparency being evaluated, which calculations may be performed by computer means, which may either be analog or digital in nature.

3,674,365
PHOTOGRAPHIC PRINTING APPARATUS
Roland Köhler, Munich, Erich Nagel, Anzing, and Friedrich Hujer and Wolfgang Viehrig, Munich, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany
Filed Sept. 28, 1970, Ser. No. 76,069
Claims priority, application Germany, Oct. 22, 1969, P 19 53 015.5
Int. Cl. G03b *27/62*
U.S. Cl. 355—40 **25 Claims**

Each film strip has marginal notches that indicate format length of the frames of a film strip. These notches are sensed by feelers that, in one embodiment, actuate switches that control operation of a motor for positioning the masking elements for printing. In another embodiment, a digital circuit in conjunction with the feelers and a pulse generator automatically determine the average format length within a film strip and provides a signal for operating the motor to position the masking elements.



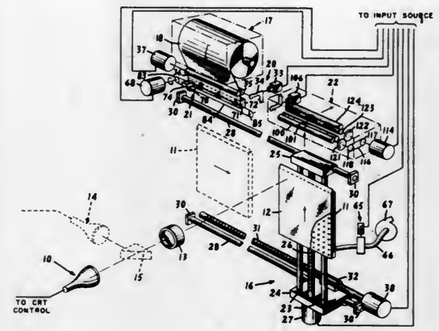
3,674,366
COPY CAMERA
Jack D. Callahan, 524 Ridgeland Terrace, Leonia, N.J. 07605
Filed Sept. 4, 1970, Ser. No. 69,583
Int. Cl. G03b *27/40*
U.S. Cl. 355—55 **11 Claims**



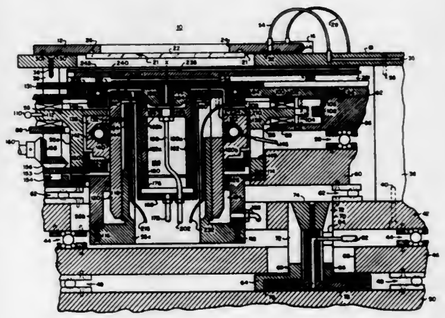
A portable copy camera for producing scaled reproductions in any one of a plurality of predetermined proportions. The object to be reproduced and the film are positioned in a fixed constant relationship with respect to each other to define an optical axis. A mechanism is provided for selectively advancing into alignment on the optical axis any one of a plurality of lenses, each lens having a single predetermined location on the axis corresponding to its scale of reproduction. The lenses are designed to provide a uniform effective aperture for constant light transmission when positioned at their respective operative locations.

3,674,367
METHOD FOR HANDLING AND POSITIONING FILM
Brian M. Chapman, Trumbull, Conn., assignor to Time Incorporated, New York, N.Y.
Filed June 15, 1970, Ser. No. 46,411
Int. Cl. G03b *27/58*; G03c *5/08*
U.S. Cl. 355—77 **14 Claims**

A film handling arrangement which repeatedly positions film for selective exposure in a photocomposition process. A film feed uses pulse motor driven pinch rolls to withdraw a precise film length from a supply. A rotary knife crosses and severs the film, applying forces only perpendicular to the film to avoid damaging the film. Movable in mutually perpendicular X and Y directions, a vacuum platen seizes the length of film just before it is severed and, following cutting, precisely positions the film for exposure by a cathode ray tube. For each exposure, the platen is positioned by mutually perpendicular precision lead screws driven by X and Y positioning pulse motors. When all desired information has been recorded by repeated exposures, the platen moves directly beneath a film export device. A pair of film export pinch rolls closes upon a free film edge and withdraws the film for storage or further processing.



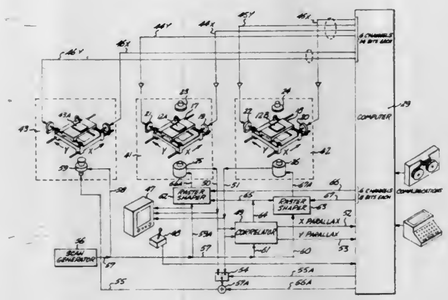
3,674,368
OUT OF CONTACT OPTICAL ALIGNMENT AND EXPOSURE APPARATUS
Karl-Heinz Johannsmeier, 555 W. Middlefield Road, Mountain View, Calif. 94040
Filed May 11, 1970, Ser. No. 36,174
Int. Cl. G03b *27/02*
U.S. Cl. 355—78 **35 Claims**



A calibrator is retractably positioned between a mask-bearing holder and a wafer-bearing chuck positioned beneath the holder and provided wtih a peripheral locking ring structure that may be retractably driven upward above the upper surface of the wafer and locked in place. The locking ring structure includes an expandable generally U-shaped locking ring with an inwardly curved bottom wall that is forced outward by an inflatable tube to expand

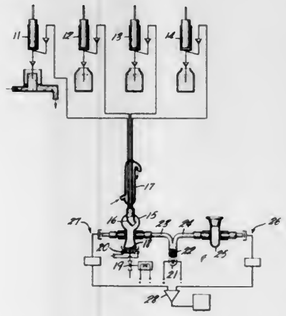
the side walls of the locking ring into locking engagement with a peripheral portion of the chuck. A first piston drives the chuck upward to position a peripheral portion of the upper surface of the wafer in abutment upon a first portion of the calibrator. The locking ring structure of the chuck is driven further upward into abutment upon a second portion of the calibrator, which is inwardly offset from the first portion by a selected distance, and locked in place. Next, the chuck is lowered and the calibrator retracted from between the chuck and the holder. The chuck is then driven upward again by the first piston to position the locking ring structure of the chuck in abutment upon a marginal portion of the lower surface of the mask and thereby establish parallel plane alignment between the upper surface of the wafer and the lower surface of the mask without bringing the wafer into contact with the mask. At this point, the first piston is locked in place and the locking ring structure of the chuck released and returned to its initial position to permit out of contact alignment of a pattern on the wafer with a pattern on the mask. After this alignment operation, the chuck is either retained in the alignment position or driven upward by a second piston to a position closer to the mask. A photosensitive film on the upper surface of the wafer may therefore be exposed through the mask while the wafer is in the alignment position or an elevated position closer to the mask. Following this exposure operation, the first piston is released and the chuck returned to its initial position. These out of contact alignment and exposure operations may also be accomplished without a calibrator or a chuck having a peripheral locking ring structure by employing a chuck having a peripheral spacing ring that may be driven upward a selected distance above the upper surface of a wafer positioned on the chuck.

3,674,369
AUTOMATIC ORTHOPHOTO PRINTER
Gilbert L. Hobrough, Vancouver, British Columbia, Canada, assignor to Hobrough Limited, Vancouver, British Columbia, Canada
Continuation-in-part of applications Ser. No. 760,435, Sept. 18, 1968, Ser. No. 827,428, May 23, 1969, and Ser. No. 67,493, Aug. 27, 1970. This application Oct. 21, 1970, Ser. No. 82,777
Int. Cl. G01c *11/12*
U.S. Cl. 356—2 **18 Claims**



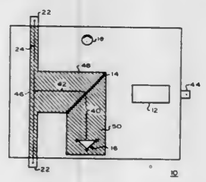
This application discloses an improved system which operates automatically to provide an orthophotograph from one or more pairs of stereo aerial photographs. The system disclosed includes first and second television type photo-scanning devices such as vidicons which are operated in synchronism to provide data signals for each spot of the two photographs making up a stereo pair. Correlation networks operate on the data signals to determine the amount of X and Y parallax. Slope limiting circuits in the X parallax system provide smoothing of the height signal and eliminate discontinuities which may exist in the signals being processed. Image transformation circuitry and raster shaping circuits controlled thereby alter the scan patterns of the two vidicons. The problems associated with changes in the elevation of the terrain being mapped are overcome to an extent such that patch printing of a large area is accomplished without the usual discrepancies in alignment of detail in adjacent patches.

3,674,370
CHEMICAL OXYGEN DEMAND WATER ANALYZER
Per Hjalmar Jonsson, Nynaeshamn, Sweden, assignor to Rederiaktiebolaget Nordstjernan, Nynaeshamn, Sweden
Filed May 11, 1970, Ser. No. 36,316
Claims priority, application Sweden, Jan. 30, 1970, 1,211/70
Int. Cl. G01n *1/00, 21/20, 21/22*
U.S. Cl. 356—36 **7 Claims**



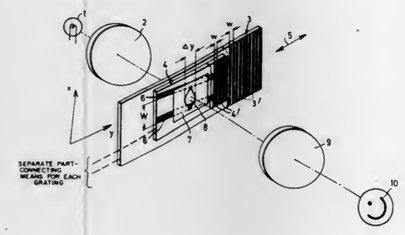
In the representative embodiments of the invention described herein, a chemical oxygen demand water analyzer includes a reaction vessel to receive a water sample and dosage devices to supply measured quantities of dichromate and acid. A heater controls the temperature of the mixture in the vessel and a spectrophotometer determines the concentration of trivalent chromium in the vessel.

3,674,371
TEMPERATURE COMPENSATION OF A LASER INTERFEROMETER
John N. Dukes, Los Altos Hills, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.
Filed Apr. 13, 1970, Ser. No. 27,954
Int. Cl. G01b *9/02*
U.S. Cl. 356—106 **2 Claims**



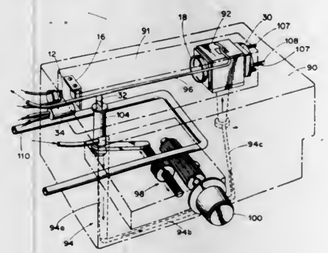
A laser interferometer is temperature compensated by selecting the distance between the beam splitter and internal reflector, and the distance between the beam splitter and interferometer clamping plane such that each distance changes by the same amount due to changes in the temperature of the interferometer.

3,674,372
MEANS FOR MEASURING POSITION CHANGES OF TWO RELATIVELY MOVABLE MEMBERS
Adolf Weyrauch, Aalen, Germany, assignor to Carl Zeiss-Stiftung, doing business as Carl Zeiss, Wurttemberg, Germany
Filed Aug. 5, 1970, Ser. No. 61,175
Claims priority, application Germany, Aug. 16, 1969, P 19 41 731.3–52
Int. Cl. G01b *11/04*
U.S. Cl. 356—169 **10 Claims**



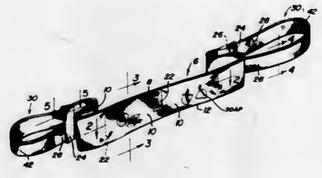
The invention contemplates means using a photoelectric scanning-grating optical system to measure relative displacement, as tracked by relative movement of the respective grating members, and utilizing movement of fringe lines as occasioned by grating-member movement. The invention so combines filter diaphragm means with the grating system, in the region of said fringe lines thereof, that the photocell output signal, as a function of grating displacement, contains only the fundamental wave of the distance period or a single harmonic.

3,674,373
DIFFERENTIAL REFRACTOMETER
James L. Waters, Framingham, Louis Abrahams, Worcester, and Burleigh M. Hutchins, Jr., Framingham, Mass., assignors to Waters Associates, Inc., Framingham, Mass.
Filed Feb. 2, 1970, Ser. No. 7,959
Int. Cl. G01r *21/46*
U.S. Cl. 356—130 **17 Claims**



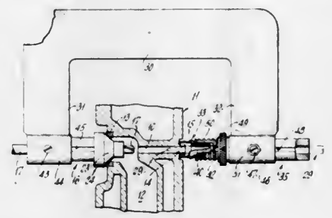
A differential refractometer characterized by the use of a massive metallic optical bench comprising a recessed compartment for holding and thermally shielding the optical components thereof. The optical bench comprises a novel heat exchanger whereby improved peak-resolution and temperature control of sample liquid are attained simultaneously. This improvement is achieved by keeping successive segments of a sample inlet tube buried within the block and thermally insulated one from another. An improved and simplified light source contributes to the low cost and overall thermal stability of the instrument.

3,674,374
BACK SCRUBBER
Doris E. Jennings, 4754 W. Evans Creek Road, Rogue River, Oreg. 97537
Filed Oct. 23, 1970, Ser. No. 83,449
Int. Cl. A47k *7/03*
U.S. Cl. 401—8 **2 Claims**



For use while taking a shower or tub bath and in lieu of a soap-laden wash cloth or sponge, a back soaping and scrubbing appliance comprising a scrubber made of open-meshed tulle-like nylon of a prescribed length and width, and having flexible loop-shaped handles at its respective ends. The median body portion of the scrubber is provided with one or more accessible pockets containing soap. By catching hold of and properly manipulating the handles the scrubber can be swished and swashed back and forth in a manner to effectually wash the upper part of the back and shoulders.

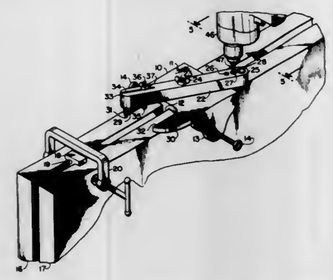
3,674,375
VALVE-GUIDE CORING TOOL
Everett E. Reed, Libby, Mont., and James S. Boynton, Monroe, Conn., assignors to United Tool Processes Corporation, New Canaan, Conn.
Filed Apr. 7, 1971, Ser. No. 132,135
Int. Cl. B25b *47/28*
U.S. Cl. 408—103 **9 Claims**



The invention contemplates a portable jig having means for establishing a reboring, reaming or coring axis for the valve-stem guide bore of a worn valve structure, by prime reliance on separate centering techniques at both the seat and actuating ends of the axis of the valve, to re-establish the axis of the valve through the center of the seat, even though the worn-seat axis at the time may be slightly offset from its original orientation. Once the axis to be cored has been thus established, clamp means of the invention retains the reference and also positions guide

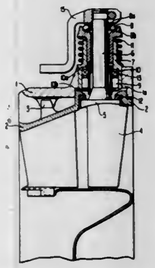
means for the coring tool. After finishing the expanded valve-stem guide bore, based on the new reference axis, a valve-stem guide insert is installed, and the seat is finish-machined in the customary manner, with minimum removal of seat material.

3,674,376
DOWELING JIG
Howard Silken, % Home and Industry Tool Distributors Inc., 2867 Long Beach Road, Oceanside, N.Y. 11572
Filed Feb. 18, 1971, Ser. No. 116,563
Int. Cl. B23b *47/28*
U.S. Cl. 408—115 **9 Claims**



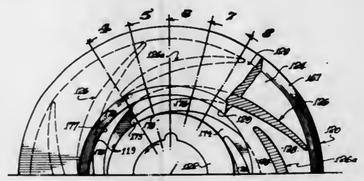
A doweling jig body clamps over the edges of two boards to be doweled together, the doweling jig body having a central positioning member extending downward between the boards and an arm pivotally mounted above it, the arm having at least one drill bushing in its front end and a longitudinally movable stop fixed in its back end, the stop extending downward to engage two inward facing surfaces of the jig body so that the stop allows the arm to pivot the same distance right and left to position at least one drill bushing over each board to drill a dowel receiving hole.

3,674,377
GUIDE BLADING FOR TURBO MACHINES WITH ADJUSTABLE GUIDE VANES
Klaus Trappmann, Karlsfeld, Germany, assignor to Motoren- und Turbinen-Union Muenchen GmbH, Munich, Germany
Filed June 17, 1970, Ser. No. 46,977
Claims priority, application Germany, June 19, 1969, P 19 31 044.2
Int. Cl. F04d *23/00;* **F01d** *9/00*
U.S. Cl. 415—147 **17 Claims**



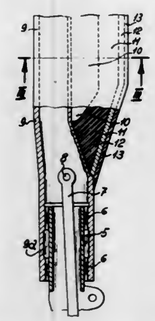
A guide blade assembly in which a guide blade is supported by its blade shaft in the relatively fixed part by means of two bearings, of which the bearing nearer the guide blade is a roller bearing with an inner race in the form of a bush securely mounted over the blade shaft and in contact therewith only by way of two relatively narrow annular surfaces.

3,674,378
CENTRIFUGAL PUMP FOR OPERATING AT LOW SUCTION HEAD
John W. Erickson, 17072 Westport Drive, Huntington Beach, Calif. 92646
Continuation-in-part of application Ser. No. 761,769, Sept. 23, 1968. This application Aug. 13, 1970, Ser. No. 63,549
Int. Cl. F04d *29/18, 13/02, 11/06*
U.S. Cl. 416—177 **6 Claims**



A centrifugal pump is described having an axial ramp structure at the inlet which allows hot liquids to be pumped at very low inlet pressures without loss of flow or capacity due to cavitation.

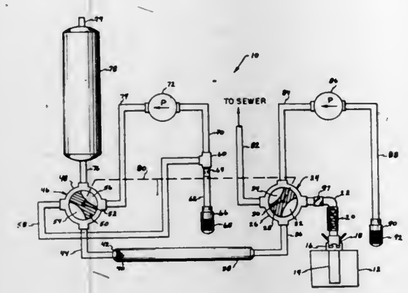
3,674,379
HELICOPTER ROTOR BLADE
Giancarlo Monti, Varese, Italy, assignor to Siai-Marchetti S.p.A., Varese, Italy
Filed Jan. 26, 1970, Ser. No. 5,886
Claims priority, application Italy, Jan. 30, 1969, 12,171/69
Int. Cl. B64c *27/48*
U.S. Cl. 416—226 **4 Claims**



A helicopter blade comprising a plurality of bonded components forming a unitary structure having a longitudinally extending portion, a gradual transitional portion and a hollow tube-like portion. The hollow root portion of the blade is secured to a rotor.

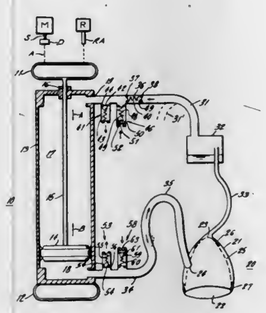
3,674,380
MARINE SEWAGE PUMP
Russell E. Bauer, Warren, Mich., assignor to KDI-Bauer Corporation, Warren, Mich.
Filed May 8, 1970, Ser. No. 35,607
Int. Cl. F04f *11/00*
U.S. Cl. 417—92 **8 Claims**

A marine sewage pump system for emptying a boat sewage tank of human sewage and refilling it with fresh water. The sewage pump system includes a pump, appropriate piping and a surge tank normally filled with fresh water and arranged for connection between the pump and the boat sewage tank. The pump draws the fresh water from the surge tank, which in turn draws the sewage from



the boat sewage tank. Once the boat sewage tank has been emptied, appropriate valving means are actuated such that the pump refills the surge tank with fresh water, pumping the sewage contained therein to a sewer or other disposal system. Simultaneously, a second pump refills the boat sewage tank with fresh water.

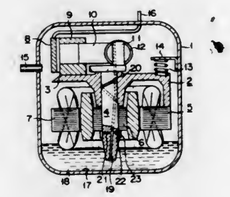
3,674,381
PORTABLE MECHANICAL VENTRICULAR ASSISTANCE DEVICE
Peter Schiff, R.D. 2, Lambertville, N.J. 08530
Filed July 30, 1970, Ser. No. 64,906
Int. Cl. F04b *21/00, 43/00, 45/02, 21/02, 39/10*
U.S. Cl. 417—234 **6 Claims**



Sustained negative pressure and positive and negative pressure pulses are respectively generated by a hand pump assembly which includes a manually operable handle connected through a piston rod to a single reciprocating piston mounted within the cylinder of the pump. The piston effectively divides the cylinder into two chambers, one of which is coupled through a conduit to provide sustained negative pressure. The remaining chamber is coupled through a second conduit to provide for the alternating positive and negative pressure pulses. Suitable adjustable relief valves are provided in each of the conduits to regulate the pressure levels and the positive or negative pressure directed to the cup.

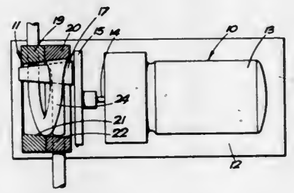
The present invention relates to circulatory sustaining devices, and more particularly to a novel portable mechanical pump device for sustaining both negative and positive and negative pumping actions at separate outlets.

3,674,382
HERMETICALLY SEALED ELECTRIC COMPRESSOR
Tadao Kubota and Keisuke Ida, Fuji-shi, Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan
Filed Feb. 4, 1971, Ser. No. 112,631
Claims priority, application Japan, June 25, 1970, 45/62,620
Int. Cl. F04b *17/00, 35/00, 39/02;* **F01m** *1/00*
U.S. Cl. 417—372 **4 Claims**



A hermetically sealed electric compressor comprising a longitudinal lubricant passage for conducting a lubricant to the rotating and sliding parts and a revolving shaft provided with a receptacle passage crosswise passing through said lubricant passage and revolving shaft, wherein the revolving shaft is fitted with a ring sleeve and the receptacle is disposed between the sleeve and the opening of the receptacle passage penetrating the outer surface of the shaft thereby to receive solid foreign matter in the receptacle.

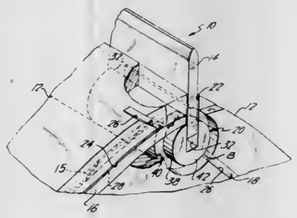
3,674,383
PUMPS
Frank Iles, Loscombe, Four Lanes, Redruth, Cornwall, England
Filed Sept. 1, 1970, Ser. No. 68,749
Claims priority, application Great Britain, Sept. 5, 1969, 44,040/69; Apr. 16, 1970, 18,296/70
Int. Cl. F04b *43/08, 43/12, 45/06*
U.S. Cl. 417—476 **4 Claims**



A peristaltic pump comprises a flexible tube in the form of a coil having a single complete convolution encircled by

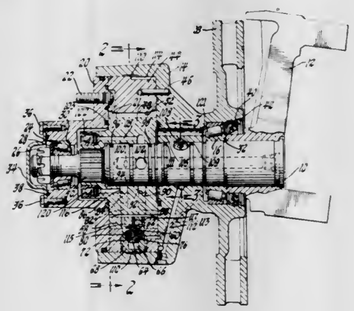
a fixed support, and a member disposed to compress a part of the tube against said support and rotatable about the central axis of the coil. The length of the member in the direction of said axis is such that the member successively compresses all parts of the convolution of the tube during each rotation of the member. The internal surface of the support is conical, and the member is conical or inclined so that the pressure of the member on the tube may be adjusted by axial movement of the member.

3,674,384
FLUID SEAL FOR PISTON OF ROTARY PISTON MECHANISM
John Larrinaga and Charles Jones, Hillsdale, N.J., assignors to Curtis-Wright Corporation
Filed Mar. 30, 1971, Ser. No. 129,327
Int. Cl. F01c *19/00;* **F03c** *3/00;* **F04c** *27/00*
U.S. Cl. 418—120 **11 Claims**



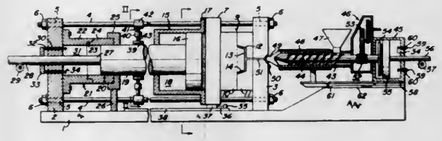
The apex fluid seal assembly for a rotary piston mechanism comprises, in combination with an apex seal blade and at least one side seal strip, an apex seal pin formed to provide a reduced diameter portion dimensioned to intersect the inner surface of the side seal strip groove in the rotary piston in substantially tangential relationship on one side of the apex seal blade so that the side seal strip overlaps the pin and engages the said reduced diameter portion in a sealing line contact and abuts the shoulder formed by the reduced diameter portion.

3,674,385
FLUID VANE MOTOR
Robert P. Rohde, Saginaw, Clarence E. Welsh, Merrill, and Hans Engelhardt, Saginaw, Mich., assignors to General Motors Corporation, Detroit, Mich.
Filed Aug. 28, 1970, Ser. No. 67,752
Int. Cl. F01c *1/00;* **F03c** *3/00*
U.S. Cl. 418—177 **4 Claims**



A fluid motor having a rotatable outer ring and a stationary inner cam member. A plurality of vanes are slidably disposed in the ring member and extend inwardly therefrom into fluid chambers formed between the ring and cam. A fluid operated piston with differential areas on the ends is associated with each vane member such that the presence of fluid pressure to drive the motor operates on the piston to move the vanes inwardly to engage the surface of the cam thus forming closed fluid chambers between the ring and the cam.

3,674,386
INJECTION MOLDING MACHINE FOR PROCESSING THERMOPLASTIC SYNTHETIC MATERIAL HAVING EXPLOSIVE CHARGING AND CLAMPING UNITS
Hans Orth, Washingtonstrasse 14, Munich 19, Germany
Filed Jan. 29, 1971, Ser. No. 111,006
Int. Cl. B29f *1/06*
U.S. Cl. 425—1 **14 Claims**



The specification discloses an injection molding machine having an injection unit and a mold closing and clamping unit, each of which has an actuating piston reciprocable in a respective cylinder. The cylinders are arranged for receiving explosive charges which can be ignited or detonated to actuate the mechanism connected thereto. Control of the detonation of the explosive charges is coordinated with the operation of the injection machine.

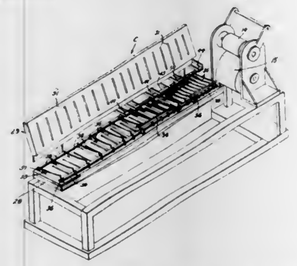
3,674,387
APPARATUS FOR THE PRODUCTION OF CONTINUOUS LENGTHS OF FOAMED POLYSTYRENE
Eugen Gonon, Schleitheim, Switzerland, assignor to Badische Anilin- and Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany
Filed Sept. 3, 1969, Ser. No. 854,859
Claims priority, application Germany, Sept. 6, 1968, P 17 79 647.3
Int. Cl. B29d *27/00*
U.S. Cl. 425—4 **10 Claims**



Apparatus for the production of continuous lengths of foamed plastics material, particularly foamed polystyrene, comprising a chamber for the temporary accommodation of the material, which chamber is formed on at least two

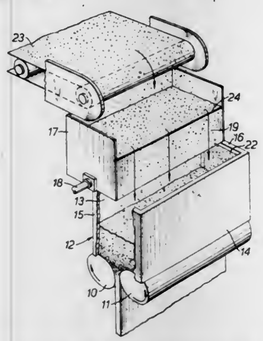
opposite sides by panels guided on rails and movable by means of a pushing device in the direction of feed of the material.

3,674,388
MANUFACTURE OF PLASTIC SIDING
Peter F. Hellmayr, Sol B. Kimbrell, and Joseph C. Giuffre, McPherson, Kans., assignors to Certain-Teed Products Corporation, Ardmore, Pa.
Filed Jan. 14, 1970, Ser. No. 2,723
Int. Cl. B29f *3/00*
U.S. Cl. 425—72 **4 Claims**



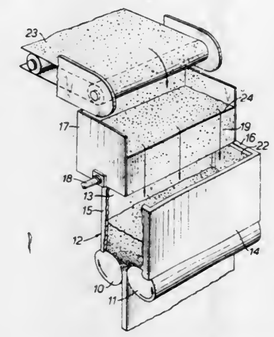
Plasticated polyvinyl resin material is extruded in a shape approximating the cross sectional shape of the siding and equipment is provided for air sizing and air cooling the extruded shape, so as to accurately dimension the siding as it is being hardened.

3,674,389
APPARATUS FOR PRODUCTION OF METAL STRIP FROM METAL POWDER
George McHardy Sturgeon, Sheffield, and George Jackson, Dronfield Woodhouse, near Sheffield, England, assignors to The British Iron and Steel Research Association, London, England
Filed July 27, 1970, Ser. No. 58,586
Claims priority, application Great Britain, Aug. 6, 1969, 39,328/69
Int. Cl. B29d *7/00;* **B30b** *3/00*
U.S. Cl. 425—79 **8 Claims**



In apparatus for the roll compaction of metal powder to form metal strip including compacting rolls and a hopper for supplying the powder to the roll nip, the distribution of powder along the length of the roll nip is controlled by the provision of a weir forming part of a container situated above the hopper and arranged so that powder flows over the weir directly into the hopper. By shaping the weir edge so that each end of the edge is below the middle portion of the edge, a strip can be produced with improved uniformity of weight per unit area across the strip width.

3,674,390
PRODUCTION OF METAL STRIP FROM METAL POWDER
George McHardy Sturgeon, Sheffield, and George Jackson, Dronfield Woodhouse, near Sheffield, England, assignors to The British Iron and Steel Research Association, London, England
Filed July 27, 1970, Ser. No. 58,587
Claims priority, application Great Britain, Aug. 6, 1969, 39,328/69
Int. Cl. B29d *7/14*
U.S. Cl. 425—79 **4 Claims**

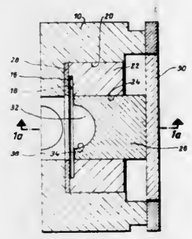


In the roll compaction of metal powder to form metal strip the powder is supplied to the roll nip by means of a hopper. The end walls of the hopper have a central porous area through which gas can be passed. This prevents the powder sticking to the end walls. Thus, powder can be fed uniformly to the roll nip so that strip of constant weight per unit area across its width can be produced.

ERRATUM

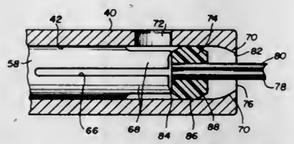
For Class 425—80 see:
Patent No. 3,674,599

3,674,391
APPARATUS FOR PRODUCING AND DECORATING HOLLOW BODIES MADE OF THERMOPLASTIC MATERIAL
Dieter Welle, Esslingen (Neckar), Germany, assignor to Etimex Interplastic G.m.b.H., Rapperswil-Jona, Switzerland
Filed Jan. 13, 1970, Ser. No. 7,301
Int. Cl. B29d *23/03*
U.S. Cl. 425—109 **7 Claims**



Apparatus for producing and decorating hollow bodies in which a tubular blank is expanded in soft condition in a mould, while a punch reciprocable in a mould part cuts a label from a strip and applies it to the hollow body.

3,674,392
EXTRUSION TOOL
Daniel Eppler, Nutley, N.J., assignor to Thomas & Betts Corporation, Elizabeth, N.J.
Filed Oct. 20, 1969, Ser. No. 867,652
Int. Cl. B29f 3/00
U.S. Cl. 425—109 11 Claims



An extrusion tool consists of a housing having therethrough a longitudinal passage in which is placed, at one end, one or more protrusions or protruding surfaces. A transverse passage extends through the housing into the longitudinal passage for the introduction of articles within the longitudinal passage and an end opening and/or slot permits the insertion of additional articles into the longitudinal passage and within the first mentioned article to permit coupling to take place therebetween. Fitted within the longitudinal passage is a plunger activated from a manual, movable handle mounted to both the plunger and the housing for movement of the plunger toward and away from the protrusions within the longitudinal passage.

Movement of the plunger towards the protrusions extrudes the first mentioned article about second articles also inserted within the longitudinal passage. Varying extrusion shapes may be accomplished by shaping the cross-section of the longitudinal passage or by the shape and number of the protrusions placed therein.

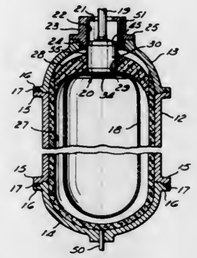
3,674,393
DEVICE FOR APPLYING LINERS OF THERMOPLASTIC MATERIAL TO CLOSURE CAPS OR THE LIKE
Ettore Busi, 191 Via Selice, Imola, Italy
Filed July 23, 1970, Ser. No. 57,449
Claims priority, application Italy, July 29, 1969, 7,210/69
Int. Cl. B29c 3/00
U.S. Cl 425—110 10 Claims



A device for forming inner coatings of thermoplastic material in sealing caps has a shaft mounted for rotation about a vertical axis, a platform secured to the shaft, bearers for the sealing caps coaxial with the shaft and slidably mounted in the platform, a plate fixed to the shaft above the platform, and compression plungers mounted in the plate in register with the bearers, a sealing cap being placed on a bearer concave side upwards and containing a metered, warm and consequently plastically deformable plastic composition which is formed into an inner coating in the sealing cap by relative displacement between the compression plunger and the sealing cap bearer.

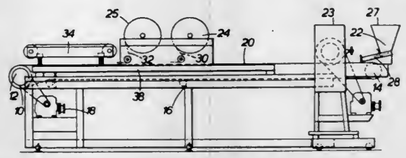
3,674,394
SLIDING CORE MEANS FOR THE MANUFACTURE OF FIBER-REINFORCED PLASTIC TANKS
Arthur J. Wiltshire, Cleveland, Ohio, assignor to Structural Fibers, Inc., Chardon, Ohio
Filed Jan. 18, 1971, Ser. No. 107,075
Int. Cl. B29c 11/00
U.S. Cl. 425—112 5 Claims

Apparatus for forming fiber-reinforced plastic articles by fluid pressure, in which a hollow blank of fibrous matting material is positioned within a mold and an inflatable bag is expanded within the blank to force the blank into firm contact with the inner surface of the mold and to compress the blank against the mold. The blank, while in its compressed state, is injected with a predetermined amount of settable resin and the resin is then cured to provide a hollow, fiber-reinforced plastic article. The apparatus according to this invention includes a core having one end slidably received within an access opening in the mold and the other end of the core carries the fibrous blank. An inflatable bag is positioned within the mold and has an inflating stem which extends through the core so



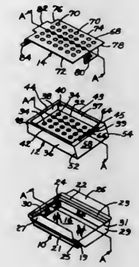
that the fibrous blank is between the bag and the inner mold surface. A sealing ring surrounds the core and positions the blank on the core between the bag and the ring. The core is freely slidable within the access opening, at least for an axial distance which corresponds to the desired compression of the blank so that areas of the blank adjacent the core are firmly compressed against the mold surface by the inflatable bag. As the blank is compressed in this manner, the sealing ring forms a seal between the inner surface of the mold and the access opening to prevent resin from flowing into and fouling the access opening.

3,674,395
MOULDING APPARATUS
Maxwell Alvin Earl Rhiando, "Stonecroft" Friary Road, South Ascot, Berkshire, England
Filed Aug. 12, 1970, Ser. No. 63,222
Int. Cl. B29c 3/02, 3/04
U.S. Cl. 425—115 9 Claims



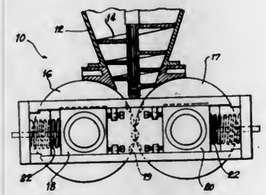
The invention relates to the production of moulded articles and more particularly to moulded articles for use as prefabricated surface coverings or veneers. The invention is concerned with a method of making a moulded article comprising introducing a granular or particulate filler material into a mould, applying a foraminous backing layer to the filler material and applying a settable binding material to the filler material before or after the application of the backing layer so as to coat sufficient of the surface of the granules to effect a bond between the granules and between the granules and the backing layer when the settable binding material is cured and hardens. Apparatus for putting the method into effect is also of interest and various alternative embodiments are disclosed.

3,674,396
BIOLOGICAL SPECIMEN PROCESSING AND EMBEDDING APPARATUS
James Benjamin McCormick, Hinsdale, Ill., assignor to Miles Laboratories, Inc., Elkhart, Ind.
Continuation of application Ser. No. 725,722, May 1, 1968. This application Sept. 21, 1970, Ser. No. 74,159
Int. Cl. B29c 1/00, 1/02, 1/14
U.S. Cl. 425—117 1 Claim



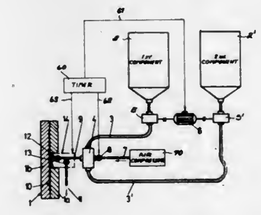
A combination capsule and mold apparatus and treatment of a biological specimen by the use thereof is described wherein a biological specimen can be placed inside a capsule comprising an open-topped box-like open mold having a perforated bottom wall and a removable perforated cover. After the specimen has been processed inside the capsule with desired fluids, the cover is removed from the capsule to form an open mold, the specimen is transferred from the open mold to an open-topped box-like base mold, and the open mold is placed in coupled relation over the base mold. Molten paraffin is then poured through the open mold into the base mold. After the paraffin hardens, the open mold and the rigidly attached paraffin body containing the specimen are separated from the base mold, and the open mold is mounted in the holder of a microtome for subsequent slicing of the paraffin-embedded specimen.

3,674,397
MATERIAL COMPACTING APPARATUS
Leroy S. Harris, Rolling Meadows, Ill., assignor to K-G Industries, Inc., Rosemont, Ill.
Filed Dec. 7, 1970, Ser. No. 95,456
Int. Cl. B29c 3/02, 3/04, 3/06
U.S. Cl. 425—145 10 Claims



A material compacting apparatus including opposed compacting rolls mounted for lateral displacement to vary the spacing between the rolls depending upon the pressure exerted during compacting. A hopper is positioned above the rolls for holding the materal, and a feed screw is located within the hopper for feeding the material to the rolls. Control means are provided for varying the driving action of the feed screw with the variations depending upon any tendency of the pressure applied by the rolls to vary. The feed screw is hydraulically driven and signals are applied to the fluid delivery means for varying the feed screw pressure. Variations in the driving force of the feed screw are designed to offset the forces tending to vary the spacing between the rolls whereby a constant roll spacing, and therefore a product of constant thickness can be achieved.

3,674,398
SCAVENGING SYSTEM FOR INJECTION-MOLDING MACHINE
Siegfried Baumgartner, Sirnitgern, Hubert Kindler and Rolf Lidl, Munich, and Heinrich Boden, Opladen, Germany, assignors to Krauss-Maffei Aktiengesellschaft, Munich, and Farbenfabriken Bayer Aktiengesellschaft, Leverkusen-Bayerwerk, Germany, fractional part interest to each
Filed June 23, 1970, Ser. No. 49,026
Claims priority, application Germany, June 24, 1969, P 19 31 921.2
Int. Cl. B29f 1/00
U.S. Cl. 425—159 21 Claims

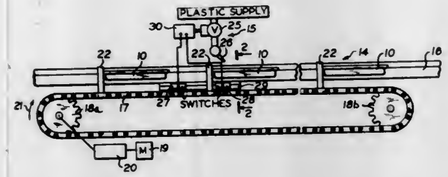


An injection-molding machine for producing articles of foam plastic or the like has a mold cavity provided with an access opening at the end of a supply conduit for the admission of a combination of interacting components from a mixing chamber. A source of compressed air is connected to the mixing chamber via an inlet valve which is opened when the delivery of components to the mixing chamber is stopped; another valve unit at the end of the supply conduit then cuts off the access opening, after a delay sufficient to allow for the discharge of residual material from the mixing chamber into the cavity, and connects that conduit with an exhaust line directing the flow of scavenging air into the atmosphere.

3,674,399
APPARATUS FOR MAKING PLASTIC BOOK COVERS
Mortimer S. Sendor, Queens Village, N.Y., assignor to Bookwrights, Inc., New York, N.Y.
Filed Aug. 13, 1970, Ser. No. 63,395
Int. Cl. B29c 5/00
U.S. Cl. 425—166 11 Claims

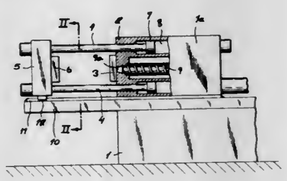
Individually plastic book covers are molded in novel sheet metal molds of simple and inexpensive construction shaped to cast a book cover with stiff front and back panels and with a thin portion for flexibility where the front and back panels have to hinge to open and close the book. The bottoms of the mold cavities may be given

contours for molding decorations and/or legends, as desired, into the outside surfaces of the covers. The molds are shaped to stay in line as successive molds are pushed



along a guide track by lug on an endless chain, and there are automatic controls for stopping and starting the flow of plastic at a mold filling station.

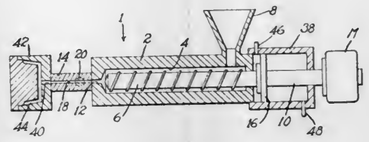
3,674,400
INJECTION-MOLDING MACHINE WITH OVERHANGING PLATEN SUPPORT
Ernst Sauerbruch, Stein am Rhine, Donat Scherrer, Buch, and Willy Vogt, Zurich, Switzerland, assignors to Fahr Bucher G.m.b.H. Gottmadingen, Gottmadingen, Kreis Konstanz, Germany
Filed Mar. 23, 1970, Ser. No. 21,768
Claims priority, application Germany, Mar. 26, 1969, P 19 15 394.7; June 20, 1969, P 19 31 432.0
Int. Cl. B29f *1/00*
U.S. Cl. 425—225 **8 Claims**



The movable platen of an injection-molding machine, secured to a set of horizontal piston rods, is rested on a track projecting endwise beyond the machine bed, thereby simplifying the collection of molded articles ejected in the open-mold position. The track may be simply cantilevered or braced, preferably adjustably, against the machine frame. To compensate for possible deflection of the cantilevered track under the weight of the platen, its working surface may be slightly inclined so as to rise with increasing distance from the bed; alternatively, an expanding brace may be interposed between the track and the platen to help maintain the latter on a horizontal guide path.

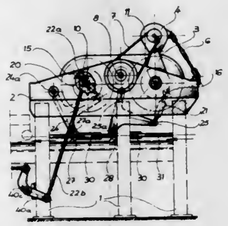
3,674,401
APPARATUS FOR INJECTION MOLDING ARTICLES OF FOAM MATERIAL
Rupert E. Annis, Jr., Salem, and William T. Kyritsis, Beverly Farms, Mass., assignors to USM Corporation, Boston, Mass.
Continuation-in-part of application Ser. No. 644,886, June 9, 1967. This application Dec. 22, 1969, Ser. No. 886,846
Int. Cl. B29f *1/03, 1/08*
U.S. Cl. 425—244 **1 Claim**

Apparatus for molding articles of foamed material comprising a chamber in which a mixture of organic polymeric material and blowing agent is formed at a temperature below the foaming temperature of the blowing agent, mold means having a mold cavity, and means for resisting flow of the mixture from the chamber to



the mold means to impart heat to the mixture. The heat imparted is of a magnitude sufficient to raise the temperature of the mixture to the foaming temperature of the blowing agent.

3,674,402
DEVICE FOR FEEDING PALLETES TO A COMPRESSION STATION OF A ROOFING TILE FORMING MACHINE
Kurt Schade, 31 Visbeker Str., 2878 Wildeshausen, Germany
Filed June 9, 1970, Ser. No. 44,764
Int. Cl. A44b *1/30;* **B65g** *25/08*
U.S. Cl. 425—306 **5 Claims**

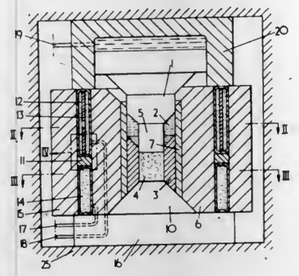


A device for feeding palletes to a compression station of a roofing tile forming machine. Horizontally guided feed fingers, driven by guide arms push forward palletes to a compression station of the machine. Guide arms are driven by connecting rods hinged to two or more crankshafts arranged parallel to one another. The guide arms are also hinged to a fixed point to the feed fingers via transition pieces.

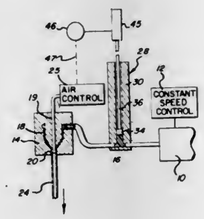
3,674,403
HIGH-PRESSURE APPARATUS
Finn Lennart Jonsson, Sten Trolle, and Baltzar Carl von Platen, Ystad, Sweden, assignors to Etablissement Radiator, Vaduz, Liechtenstein
Filed Dec. 4, 1970, Ser. No. 95,213
Claims priority, application Sweden, Dec. 12, 1969, 17,172
Int. Cl. B29c *1/00;* **B30b** *11/32*
U.S. Cl. 425—330 **5 Claims**

A high-pressure apparatus, consisting of a high-pressure chamber and a container which contains the high-pressure chamber, the high-pressure chamber being bounded by two pressure generating means acting against each other, as well as of a body composed of separate parts and having a substantially convex outside surface, and a central cavity, the said body surrounding the high-pressure chamber, characterised in that the composite body is surrounded by at least two hollow bodies which

are inwardly bounded by a surface that conforms to the outside surface of the composite body, and that the hollow bodies are adapted to be filled with a fluid which can be brought under pressure.



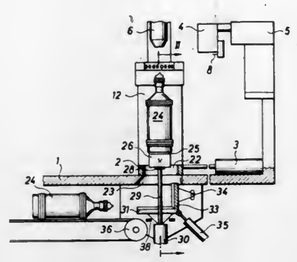
3,674,404
EXTRUDER APPARATUS AND ACCUMULATOR
Norbert W. Burlis and Daniel A. Talonn, University City, Mo., assignors to Sherwood Medical Industries Inc.
Filed Aug. 6, 1970, Ser. No. 61,715
Int. Cl. B29d *23/04*
U.S. Cl. 425—326 **6 Claims**



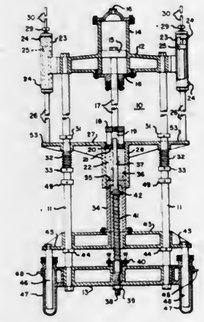
A die and extruder apparatus for producing a wide variety of contoured extrudate such as rod or tubing sections through the provision of a piston and cylinder device interconnected in the molten plastic passage between the extruder and the die with the piston of the piston and cylinder device being driven in a withdrawal stroke to reduce the flow of extrudate from the extrusion die in a programmed manner and being driven in an inject stroke to increase the flow of extrudate through the extrusion die in a programmed manner, to vary the contour of the extrudate at predetermined intervals.

3,674,405
APPARATUS FOR PRODUCING, FILLING AND CLOSING PLASTIC CONTAINERS
Gerhard Hansen, 47 Hofener Strasse, D7013 Oeffingen, Germany
Filed May 7, 1970, Ser. No. 35,439
Claims priority, application Germany, May 7, 1969, P 19 23 236.1
Int. Cl. B29d *23/03;* **B29f** *1/14*
U.S. Cl. 425—308 **4 Claims**

Apparatus for producing, filling and closing plastic containers in which the container is molded between two lower mold halves and two upper mold halves arranged above the lower mold halves so that the upper mold halves will mold the head of the container.



3,674,406
SOLID PRESS MOLDING APPARATUS
Benjamin Lassman, Pittsburgh, Pa., assignor to Benjamin Lassman & Son, Inc.
Filed Apr. 27, 1970, Ser. No. 31,971
Int. Cl. B28b *3/10*
U.S. Cl. 425—353 **1 Claim**

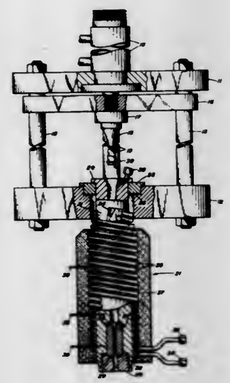


An improved means for obtaining a uniform densification of compressible particulate material wherein a free-floating tapered mold box and forming head are after application of an initial compression removed as a compressive force in order to release internal pressure of the initially formed article. A second force is applied to said article to obtain final form.

3,674,407
EXTRUSION PRESS AND BARREL
Herbert M. Neuhaus, China Lake, Calif., assignor to the United States of America as represented by the Secretary of the Navy
Filed Nov. 16, 1970, Ser. No. 89,739
Int. Cl. B29f *3/00*
U.S. Cl. 425—378 **6 Claims**

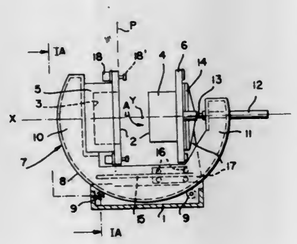
A press and interchangeable barrel for extruding explosive and plastic materials in continuous strands of

predetermined cross-section. The barrel, which contains the raw material to be worked upon, is held at a uniform temperature by a coil. A counter flow of heating or cooling fluid is provided in the coil by wrapping it



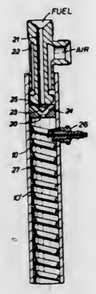
around the barrel such that it turns back upon itself. This provision of counter flow, in the coil, permits precise temperature to be held. The mass of the barrel wall also aids in maintaining a uniform barrel temperature.

3,674,408
MOLDING MACHINE FOR FOAM-PLASTIC ARTICLES
Siegfried Baumgärtner, Sixtnitgern, Bernd Fries, Volkach, and Rolf Lidl and Günter Zippe, Munich, Germany, assignors to Krauss-Maffei Aktiengesellschaft, Munich, Germany
Filed June 5, 1970, Ser. No. 43,801
Claims priority, application Germany, June 6, 1969, P 19 28 780.0
Int. Cl. B29s *3/02*
U.S. Cl. 425—406 **10 Claims**



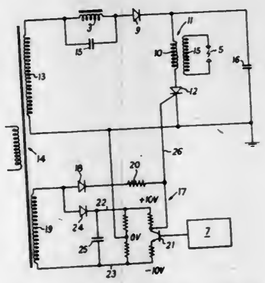
The halves of a split mold to be filled with foamable polymeric material are supported on a frame carrying a hydraulic or pneumatic jack for opening and closing the mold, the frame being swingable through at least 90° about an axis transverse to the direction of mold movement to allow for a positioning of portions of the parting line of the mold halves at different levels facilitating the escape of gases trapped in pockets of the mold cavity or cavities. For the same purpose, the mold halves are also adjustably positioned on the frame in a manner enabling their rotation—continuous or in steps—through a similar angle about an axis extending in the direction of mold movement.

3,674,409
BURNERS HAVING A PULSATING MODE OF OPERATION
Denis Henry Desty, Weybridge, and Barry Herbert Francis Whyman, Teddington, England, assignors to The British Petroleum Company Limited, London, England
Filed Aug. 26, 1969, Ser. No. 853,043
Claims priority, application Great Britain, Sept. 16, 1968, 43,938/68
Int. Cl. F23c *3/02*
U.S. Cl. 431—1 **3 Claims**



A burner having a pulsating mode of combustion and which can be used to carry out free radical reactions comprises (a) a combustion chamber (preferably cylindrical with an actual length of at least ten times the average diameter) which has grossly rough walls, and (b) an oxygen/fuel inlet system which has a low resistance to gaseous flow. During use the continuously flowing fuel mixture is periodically ignited. One combustion wave travels downstream until the mixture is exhausted and the other travels up-stream until it reaches the point at which the fuel and oxygen inlet systems separate.

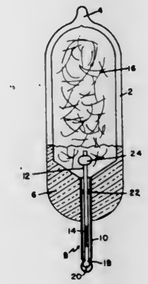
3,674,410
APPARATUS FOR CONTROLLING THE OPERATION OF FUEL BURNERS
Kenneth R. Wade, Burscough, near Ormskirk, England, assignor to United Gas Industries Limited, London, England
Filed July 21, 1970, Ser. No. 56,917
Claims priority, application Great Britain, Aug. 28, 1969, 42,830/69
Int. Cl. F23n *5/00*
U.S. Cl. 431—74 **5 Claims**



The invention provides a burner control apparatus in which operation of a valve supplying a main fuel burner,

and operation of a spark ignition circuit for the burner or a pilot burner, adjacent to the main burner, are both controlled by a single gate-controlled switching device, preferably a thyristor, under control of a flame detector device arranged to detect the presence of a flame at the respective main or pilot burner.

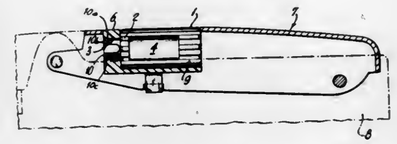
3,674,411
PHOTOFLASH LAMP
John W. Shaffer, Williamsport, Pa., assignor to Sylvania Electric Products Inc.
Filed Dec. 29, 1969, Ser. No. 888,599
Int. Cl. F21k *5/02*
U.S. Cl. 431—93 **9 Claims**



A percussive-type photoflash lamp in which the powdered metallic combustible component of the filminating material thereof is titanium.

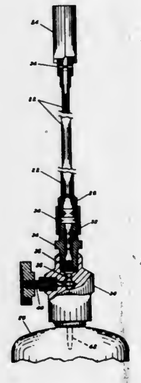
3,674,412
ATTACHMENT FOR STORING FLINTS
Pierre Troisoeufs, Bellegarde-sur-Valserine, France, assignor to Ronson Corporation, Woodbridge, N.J.
Filed Dec. 3, 1969, Ser. No. 881,813
Claims priority, appplication France, July 22, 1969, 6924874
Int. Cl. F23q *2/38*
U.S. Cl. 431—124 **3 Claims**

The present invention relates to a cigarette lighter with a new type of attachment for storing and dispensing spare



lighter flints, and which can be located in the fingerpiece of the lighter.

3,674,413
PORTABLE LIGHTER FOR FIRING OIL FIELD HEATERS AND EMULSION TREATERS
G. Frank Fraser, Bentley, Alberta, Canada, assignor to Chevron Research Company, San Francisco, Calif.
Filed Dec. 17, 1970, Ser. No. 99,028
Int. Cl. F23d *13/04*
U.S. Cl. 431—344 **1 Claim**



A portable lighter for use in lighting field heaters and including a burner tip connected to a portable fuel source by means of a telescopic fuel conduit.

CHEMICAL

3,674,414
DYEING HUMAN HAIR AND COMPOSITION FOR INCLUDING AN OXIDATION DYE AND COUPLER THEREOF
Gregoire Kalopissis and Jean Gascon, Paris, Jacqueline Gallien, La Garenne Colombe, Andree Bugaut, Boulogne-sur-Seine, and Hubert Gaston-Breton, Paris, France, assignors to L'Oreal, Paris, France
No Drawing. Filed Dec. 12, 1968, Ser. No. 783,414
Claims priority, application Luxembourg, Dec. 15, 1967, 55,116/67; Aug. 23, 1968, 56,759/68
Int. Cl. D06p *1/32*
U.S. Cl. 8—11 **4 Claims**

A group of coupling agents, of which the following are representative: 3-dimethylamino-phenylurea, 3-dimethylamino-phenylthiourea, (3-hydroxy-6-methoxy) - phenylurea, (3-hydroxy - 6 - methoxy)-phenylthiourea, (2,4-dimethyl - 3 - hydroxy) - phenylurea, (2,4-dimethyl-3-hydroxy)-phenylthiourea, and (4 - methyl - 3 - hydroxy)-phenylthiourea. The invention also includes these couplers in association with oxidation dyes, and a method of dyeing hair using said compositions.

3,674,415
PROCESS OF TREATING LEATHER WITH ALKOXYLATED MANNICH COMPOSITIONS, AND OPTIONALLY TANNING AGENTS, AND PRODUCTS THEREOF
Lucien Sellet, W. Saddle River Road, Saddle River, N.J. 07458
No Drawing. Original application Aug. 22, 1966, Ser. No. 573,789. Divided and this application Jan. 29, 1969, Ser. No. 807,158
Int. Cl. C14c *9/04, 3/18, 3/28*
U.S. Cl. 8—94.21 **6 Claims**

Leather treating agents which are (a) reaction products of hydroxyl containing nitrogen compounds and isocyanate terminated urethane prepolymers or (b) reaction products of hydroxyl containing nitrogen compounds and

isocyanate terminated urethane prepolymers further reacted with acids or quaternizing reagents to produce an acid addition salt or a quaternary ammonium salt.

3,674,416
TREATMENT OF CELLULOSIC FABRICS
Yoshihisa Shichijo, Ibaragi-shi, and Mamoru Tsujihara, Toyonaka-shi, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan
No Drawing. Continuation-in-part of application Ser. No. 818,199, Apr. 21, 1969, which is a continuation of application Ser. No. 405,230, Oct. 24, 1964. This application Jan. 9, 1970, Ser. No. 1,880
Claims priority, application Japan, Oct. 21, 1963, 38/55,846; Dec. 18, 1963, 38/67,868; Dec. 20, 1963, 38/68,332
Int. Cl. D06m *13/40, 15/54*
U.S. Cl. 8—116.3 **8 Claims**

Cellulosic fabrics are provided with crease resistance and high wash and wear ratings by padding the fabric in a solution containing 5–15 wt. percent of a cellulose reactant type cross-linking agent and 5–20 wt. percent of NH_4Cl or NH_4NO_3 and curing the padded fabric at 110°–140° C. for 1–8 minutes.

3,674,417
PROCESS OF ANNEALING RESIN MODIFIED TEXTILE FABRICS
Wolfgang Karl Ferdinand Otto, Spartanburg, S.C., assignor to Deering Milliken Research Corporation, Spartanburg, S.C.
No Drawing. Filed Apr. 25, 1968, Ser. No. 724,223
Int. Cl. D06m *15/58, 15/72*
U.S. Cl. 8—115.5 **12 Claims**

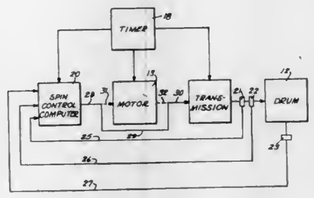
The flat dry properties of textile fabrics containing synthetic fibers are improved by maintaining the fabric in a smooth state at a temperature of at least about 80° C. for a period of at least about 1 hour. The process also is suitable for treating fabrics which have been subjected to a textile resin treatment.

3,674,418
TEXTILE SPRAY COMPOSITION
Richard J. Lyons, Taylors, and Jan Dabrowski, North Augusta, S.C., assignors to United Merchants and Manufacturers, Inc., New York, N.Y.
No Drawing. Filed June 30, 1969, Ser. No. 837,945
Int. Cl. D06m *15/56, 15/58*
U.S. Cl. 8—116.3 **15 Claims**

A storage stable, sprayable, flash-curing, durable press aqueous composition comprising (A) an aminoplast; and (B) a catalyst system comprising (1) (a) magnesium fluoborate; (b) paratoluene sulfonic acid; or (c) sulfamic acid, (2) a salt of a metal of Group II of the Periodic Table, (e.g. $MgCl_2 \cdot 6H_2O$; $ZnCl_2 \cdot 6H_2O$) and (3) a hydroxy carboxylic acid, e.g. tartaric acid). In use the composition is sprayed on a fabric or garment to be treated and the fabric or garment thereafter air dried and creased and cured by household ironing.

3,674,419
SPIN CONTROL FOR A WASHER-DRYER
Oscar A. W. Tichy, St. Joseph, Mich., assignor to Whirlpool Corporation, Benton Harbor, Mich.
Filed Nov. 25, 1970, Ser. No. 92,716
Int. Cl. D06f *33/02, 37/36*
U.S. Cl. 8—158 **13 Claims**

An automatic combination washer-dryer includes a spin control computer which is responsive to simple digital input signals indicative of drum speed and drum unbalance to effect repeated retumbling operation for laundry



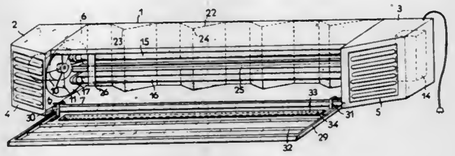
redistribution in response to a predetermined drum unbalance at speeds below a predetermined speed.

3,674,420
CYCLOALKANONE OR ALKYL ARYL KETONE ASSISTING CATIONIC DYE AND AROMATIC POLYAMIDE DYEING THEREWITH
Ira Sapers, Maplewood, N.J., assignor to Arkansas Company, Inc., Newark, N.J.
No Drawing. Filed Oct. 22, 1969, Ser. No. 868,566
Int. Cl. D06p *5/04*
U.S. Cl. 8—173 **5 Claims**

A dye assistant for aromatic polyamide fibrous material is shown. The dye assistant comprises either a cyclic aliphatic ketone such as cyclohexanone or an aryl ketone such as acetophenone.

A method of dyeing such aromatic polyamide material which includes the dye assistant set forth hereinabove is also shown. The method includes the steps of immersing the fiber in a dye bath including water, a surfactant, and the dye assistant of this invention and thence pressurizing the bath and raising the temperature thereof until the dyeing is completed.

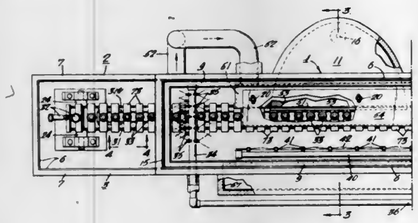
3,674,421
APPARATUS FOR PURIFYING AND STERILIZING PREMISES
Jean A. Decupper, Neuilly, France, assignor to Detec S.A., Geneva, Switzerland
Filed Dec. 19, 1969, Ser. No. 886,514
Claims priority, application France, Dec. 31, 1968, 182,587
Int. Cl. A61l *9/00*
U.S. Cl. 21—74 R **3 Claims**



Apparatus which can be used alternatively to purify or to both purify and sterilize premises such as an operating theatre. A casing in which forced circulation of the atmosphere of the premises can be produced by a fan contains a hot-cathode ultra-violet ray tube and a cold-cathode ultra-violet ray tube. When the premises are to be purified, only the hot cathode tube is operated but

when the premises are to be sterilized also both the hot-cathode tube and the cold cathode tube are operated. Means such as dihedral reflector are provided to delay the passage of the atmosphere over the tubes. A reflector to provide direct irradiation when desired is incorporated in a door of the casing.

3,674,422
MICROWAVE TREATING APPARATUS
Oscar S. Gray, Fort Lauderdale, Fla., assignor to Gray Industries, Inc., Fort Lauderdale, Fla.
Filed May 12, 1970, Ser. No. 36,591
Int. Cl. A61l *3/00;* **H05b** *9/06;* **A23c** *3/06*
U.S. Cl. 21—102 R **28 Claims**



Apparatus for treating continuously-moving supported articles with microwaves involving an elongated chamber or tunnel having an opening in at least one end thereof adapted to permit the passage therethrough of said moving articles and their supports and means adjacent said opening for providing a mass of droplets of lossy liquid, like water, effective to permit the passage therethrough of said moving articles and their supports while essentially preventing the passage therethrough of microwaves from inside said chamber. Means for supporting and moving the articles through the chamber comprising individual turntables in series in the direction of travel of an endless conveyor system with means for individually rotating each turntable for a predetermined distance are also provided.

3,674,423
CATALYST FOR NITROGEN OXIDE REDUCTION
Richard L. Klimisch, Mount Clemens, Mich., assignor to General Motors Corporation, Detroit, Mich.
No Drawing. Filed Feb. 9, 1970, Ser. No. 9,979
Int. Cl. B01d *53/34*
U.S. Cl. 23—2 E **3 Claims**

A catalyst for reducing nitrogen oxides in an automobile exhaust gas stream comprising activated alumina pellets containing up to about 10 mole percent zinc oxide.

3,674,424
PROCESS FOR PURIFYING MOLYBDENITE CONCENTRATES
Robert W. Stanley, Pierrefonds, Quebec, Horace L. Ames, Port Credit, Ontario, and Peter H. Jennings, Pointe Claire, Quebec, Canada, assignors to Brenda Mines, Ltd., Peachland, British Columbia, Canada
No Drawing. Filed Oct. 3, 1969, Ser. No. 863,699
Claims priority, application Canada, May 13, 1969, 51,345
Int. Cl. C22b *59/00*
U.S. Cl. 23—15 W **9 Claims**

Impurities are removed from molybdenite concentrates by leaching the concentrates at a temperature of at least 70° C. with an aqueous solution containing at least one alkali metal or alkaline earth metal chloride and at least one oxidising chloride selected from cupric and ferric chlorides.

3,674,425
PROCESS FOR PREPARING A SYNTHETIC CRYSTALLINE ZEOLITE
Harry Edwin Robson, Baton Rouge, La., assignor to Esso Research and Engineering Company
No Drawing. Continuation of application Ser. No. 553,287, May 27, 1966. This application Apr. 2, 1969, Ser. No. 812,929
Int. Cl. C01b *33/28*
U.S. Cl. 23—113 **3 Claims**

A crystalline zeolite having the formula

$$1.0 \pm 0.1[xNa_2O: (1-x)Rb_2O]:Al_2O_3:6.5 \pm 1.0SiO_2:yH_2O$$

wherein x has a value of about 0.25 to 0.75 and y has a value of from 0 to about 10, and an X-ray diffraction pattern similar to that of the mineral erionite, is prepared by digesting a reaction mixture containing SiO_2, Al_2O_3, Na_2O, Rb_2O, and H_2O from suitable source materials in specified proportions at a temperature of from about 80° C. to about 150° C. The zeolite product is useful as a selective adsorbent, for example, in the separation of n-hexane or n-octane from their isomers.

3,674,426
PROCESS FOR PRODUCING CRYSTALLINE ZEOLITE A
Tadao Ueda, Kenji Sato, and Yasusi Nakamura, Tokyo, Japan, assignors to Asahidenka Kogyo Kabushiki Kaisha, Tokyo, Japan
No Drawing. Original application Sept. 25, 1967, Ser. No. 670,429, now Patent No. 3,535,075. Divided and this application June 8, 1970, Ser. No. 56,998
Claims priority, application Japan, Sept. 28, 1966, 41/63,892 Sept. 29, 1966, 41/64,255; Dec. 14, 1966, 41/81,553
Int. Cl. C01b *33/28*
U.S. Cl. 23—113 **7 Claims**

A process for preparing sodium zeolite A which comprises preparing an aqueous sodium-alumino-silicate reactant mixture consisting essentially of (1) oxides of silicon, aluminum and sodium and (2) water, in the proportion, expressed in terms of oxide mol ratios, falling within the following ranges:

	Range 1	Range 2	Range 3	Range 4
Na_2O/SiO_2	0.4–0.7	0.4–0.7	0.7–1	1–4
SiO_2/Al_2O_3	1–2	1–2.5	1–2.5	1–2.5
H_2O/Na_2O	40–100	120–300	220–300	210–300

wherein the major source of silica in the reactant mixture is Allophane, maintaining the reactant mixture at a temperature within the range of 40° C. to 180° C. for a sufficient period to crystallize sodium zeolite A, and separating the crystals from the mother liquor.

A process for preparing sodium zeolite A which comprises preparing an aqueous sodium-alumino-silicate reactant mixture consisting essentially of (1) oxides of silicon, aluminum and sodium and (2) water, in the proportion, expressed in terms of oxide mol ratios, falling within the following ranges:

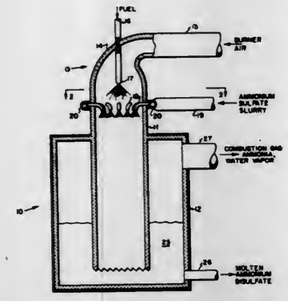
	Range 1	Range 2	Range 3
Na_2O/SiO_2	0.4–0.7	0.7–1	1–4
SiO_2/Al_2O_3	1–2.5	1–2.5	1–2.5
H_2O/Na_2O	120–300	220–300	210–300

wherein the major source of silica in the reactant mixture is soluble sodium silicate, maintaining the reactant mixture at a temperature within the range of 40° C. to 180° C. for a sufficient period to crystallize sodium zeolite A, and separating the crystals from the mother liquor.

3,674,427
PROCESS FOR DECOMPOSING AMMONIUM SULFATE INTO AMMONIUM BISULFATE AND AMMONIA

Albert B. Welty, Jr., Westfield, N.J., assignor to Esso Research and Engineering Company

Filed Jan. 30, 1970, Ser. No. 7,108
Int. Cl. C01c *1/24, 1/02, 1/12*
U.S. Cl. 23—119 6 Claims



Ammonium bisulfate and ammonia are produced by thermal decomposition of ammonium sulfate. An aqueous slurry of ammonium sulfate is introduced into a flowing stream of hot combustion gases in a decomposition zone. The water is evaporated and the ammonium sulfate is decomposed into gaseous ammonia and molten ammonium bisulfate, which is in the form of droplets suspended in the gas stream. The ammonium bisulfate is separated from the gas stream, and a gas mixture comprising ammonia and hot combustion gases is withdrawn from the decomposition zone.

3,674,428
MERCURY REMOVAL

Warren E. Dean and Charles M. Dorsett, New Martinsville, W. Va., assignors to PPG Industries, Inc., Pittsburgh, Pa.

No Drawing. Filed Dec. 22, 1970, Ser. No. 100,833
Int. Cl. C01g *1/12, 13/00*
U.S. Cl. 23—134 7 Claims

A process for removing mercury from an alkaline solution having a pH of at least 7 is provided comprising intermixing with said solution a sulfur compound in an amount sufficient to provide sulfide ion in an amount greater than the stoichiometric equivalent of mercury, oxidizing the soluble mercury polysulfide and recovering the insoluble mercury sulfide.

3,674,429
ADSORPTION PROCESS FOR WATER AND NITROGEN OXIDES

John Joseph Collins, Katonah, N.Y., assignor to Union Carbide Corporation, New York, N.Y.

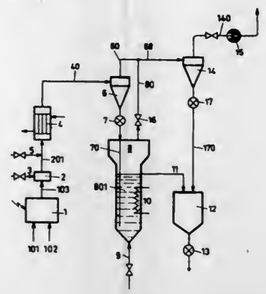
Filed Jan. 6, 1971, Ser. No. 104,262
Int. Cl. C01b *21/70;* B01d *53/16*
U.S. Cl. 23—159 3 Claims

In the process wherein nitrogen oxides are recovered from stack gas streams containing water vapor by selective adsorption using a dual bed of silica gel and molecular sieves, the formation of corrosive aqueous nitric acid in the adsorbent bed during regeneration thereof is prevented by the use of a heat sink interposed between the silica gel and the molecular sieve. The heat sink serves to prevent premature desorption of water from the silica gel bed and the contact of liquid water with desorbed NO_2.

3,674,430
PROCESS FOR THE PYROGENIC MAKING OF HIGHLY DISPERSED SILICON DIOXIDE

Alfred Illigen, Lochau, Austria, and Walter Neugebauer, Konstanz, Germany, assignors to Deutsche Gold- Und Silber-Scheideanstalt vormals Roessler, Frankfurt am Main, Germany

Filed June 30, 1970, Ser. No. 51,180
Claims priority, application Germany, July 1, 1969, P 19 33 291.3
Int. Cl. C01b *33/18, 33/12, 33/00*
U.S. Cl. 23—182 V 13 Claims



Silicon dioxide or a material containing the same are reacted with a reducing agent at an elevated temperature. The hot gas containing the silicon monoxide thus formed is then treated with steam whereby a finely dispersed silane groups- and silanol groups-containing solid intermediate product is formed in the gas stream which is then subjected to chilling whereupon the major portion of the solid product is separated from the residual gas and is finally subjected to a thermal aftertreatment at about 100–1000° C.

3,674,431
GENERATION OF SILICON TETRAFLUORIDE

Richard E. Driscoll and George L. De Cuir, Monroe, La., assignors to Cities Service Company, New York, N.Y.

No Drawing. Filed July 1, 1970, Ser. No. 51,699
Int. Cl. C01b *33/08, 33/02*
U.S. Cl. 23—205 12 Claims

Silicon tetrafluoride is generated by passing a mixture of HF and water through a pervious bed of crystalline silica. A reaction mixture of SiF_4, HF and water is formed in the silica bed and is maintained in a vapor-liquid phase at about the dew point until the HF therein has substantially reacted with the silica. At the same time, the liquid of the reaction mixture undergoes vaporization by absorbing the heat of the reaction, and conditions are established and maintained to effect vaporization of the liquid at about the same rate that it is introduced into the bed. The reaction thus proceeds in both a liquid-solid phase and a vapor-solid phase at the same time to effect conversion of HF to SiF_4 at high efficiencies.

3,674,432
SUPERSTOICHIOMETRIC CARBON MONOFLUORIDE AND METHODS FOR PREPARING STABLE CARBON MONOFLUORIDES OF VARIOUS STOICHIOMETRIES

John L. Margrave, Houston, and Ramachandra B. Badachhape, Hempstead, Tex., James L. Wood, Nashville, Tenn., and Richard J. Lagow, Houston, Tex., assignors to R. I. Patents, Inc., Houston, Tex.

Filed Oct. 20, 1969, Ser. No. 867,678
Int. Cl. C01b *7/00*
U.S. Cl. 23—205 36 Claims

Stable carbon monofluoride having a maximum superstoichiometric fluorine-to-carbon ratio and controlled, reproducible methods for preparing stable carbon monofluorides including carbon monofluoride films on various shapes of solid carbon, both at atmospheric pressure and at superatmospheric pressures. The prior method of preparing carbon monofluorides at atmospheric pressure by reacting fluorine and graphite at a temperature in the range from about 400° C. to about 600° C. is made reproducible by controlling the reaction temperature so that it does not vary more than ±3° C. Stable superstoichiometric carbon monofluorides can be prepared at atmospheric pressure by reacting carbon and fluorine at a temperature in the range from about 620° C. to about 635° C. and maintaining the temperature for such a period of time as to allow the reaction to go substantially to completion. Approximately one to three hours is needed at temperatures in this range to form stable carbon monofluoride films. At temperatures between about 624° C. and about 630° C. a carbon monofluoride having a maximum superstoichiometric fluorine-to-carbon ratio of approximately 1.12/1.00 can be produced. Stable carbon monofluorides having superstoichiometric proportions of fluorine and carbon can also be prepared at superatmospheric pressures, with the addition of heat at pressures up to about 225 p.s.i.a. and without the addition of heat at pressures between about 225 p.s.i.a. and about 250 p.s.i.a.

3,674,433
MODIFICATION OF FEEDSTOCK OIL WITH RUBBER IN CARBON BLACK PROCESS

Glenn O. Wyatt, Collinston, La., assignor to Cities Service Company, New York, N.Y.

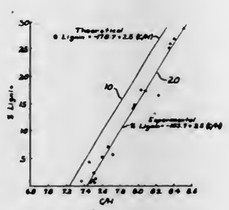
No Drawing. Filed Sept. 21, 1970, Ser. No. 74,143
Int. Cl. C09c *1/48, 1/50*
U.S. Cl. 23—209.4 7 Claims

Old tire rubber is digested in a carbon black feedstock oil. The resulting modified oil is then thermally decomposed to produce carbon black which is recovered and incorporated into end-use products, e.g. new automobile tires. Disposal of old tires is thus accomplished without pollution of the atmosphere. The amount of rubber digested in the oil is in excess of about 10 weight percent and can range up to about 30 weight percent. The resulting modified feedstock oil can be effectively utilized to make carbon black while employing conventional pumping, metering, spraying and thermal decomposition means.

3,674,434
METHOD AND APPARATUS FOR DETERMINING LIGNIN CONTENT

Charles R. Pottenger, Cloquet, Minn., assignor to Potlatch Forests, Inc., San Francisco, Calif.

Filed July 28, 1970, Ser. No. 58,858
Int. Cl. G01m *33/46*
U.S. Cl. 23—230 R 6 Claims

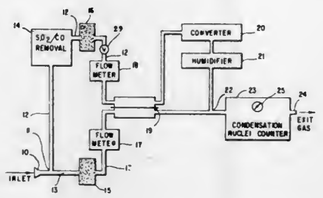


A method and apparatus for determining lignin content of wood or wood pulp by direct measurement. The process is based upon a theoretical relationship between lignin content and the ratio of elemental carbon to elemental hydrogen in a sample of wood material. It involves reduction of particle size as necessary for elemental analysis, washing of a sample, drying the sample to a predetermined moisture content and analysis of the sample to determine the elemental ratio of carbon to hydrogen. The lignin content of the sample is then determined according to a linear relationship. The apparatus comprises components chosen to carry out the method steps.

3,674,435
LOW CONCENTRATION CONSTITUENT OF GASEOUS MIXTURE SELECTIVE CONVERTER AND DETECTOR

Frank W. Van Luik, Jr., and Peter E. Coffey, Schenectady, N.Y., assignors to Environment/One Corporation, Schenectady, N.Y.

Filed June 5, 1970, Ser. No. 43,793
Int. Cl. G01n *31/02*
U.S. Cl. 23—232 R 18 Claims

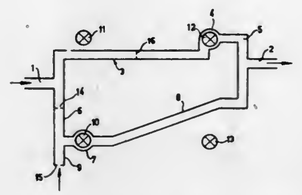


Accurate measurement of the concentration level of a first selected gaseous material in a sample atmosphere having present therein a second interfering gaseous material is obtained by selectively reducing the concentration of the second interfering gaseous material while maintaining the proportionate concentration level of the selected gaseous material at a measurable level. The selected gaseous material is then converted into condensation nuclei which in turn are measured to yield an accurate indication of the concentration of the selected gaseous material in the sample atmosphere.

3,674,436
EXHAUST GAS ANALYZER FOR INTERNAL COMBUSTION ENGINES

Herman R. Geul, Roosinistraat 12, Leiden, Netherlands

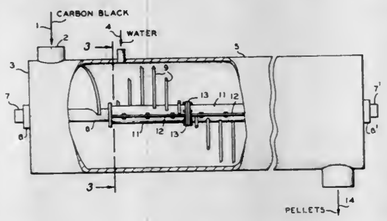
Filed Aug. 22, 1969, Ser. No. 852,300
Int. Cl. G01n *25/20, 25/36, 33/22*
U.S. Cl. 23—232 E 6 Claims



An exhaust gas analyzer which combines the known measure of exhaust gases based upon the thermal conductivity of the exhaust gases and the known measure based upon the catalytical burning of the exhaust gases

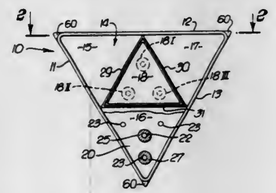
into a novel system, according to which the output signals obtained by these two measurements, made simultaneously, are subtracted from each other. This results in an analyzer which has an unequivocal indication in the region below and above the stoichiometrical point.

3,674,437
CARBON BLACK PELLET MIXER WITH SECTIONAL HELICAL-PIN MIXER
Oliver K. Austin, Bartlesville, Okla., and Bruno F. Loewen, Salvador, Brazil, assignors to Phillips Petroleum Company
Filed July 14, 1970, Ser. No. 54,696
Int. Cl. C01b 31/14; C09c 1/58
U.S. Cl. 23—252 R **4 Claims**



Agitating pins of a carbon black pellet mixer are affixed in a helical pattern on longitudinally divided sectional holders, two sections of which holders forming at least one half of a complete helix when installed in opposition to each other onto and around the drive shaft of the pellet mixer. Such sectional holders are quickly replaceable so as to minimize mixer downtime due to pin wear and necessary replacement.

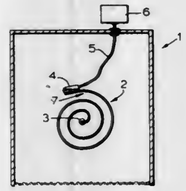
3,674,438
OUCHTERLONY TECHNIQUE APPARATUS
James T. Shen, 940 Cornell Road, Pasadena, Calif. 91106
Filed May 20, 1970, Ser. No. 38,978
Int. Cl. B22c 9/22; G01n 33/16
U.S. Cl. 23—253 R **16 Claims**



Ouchterlony technique apparatus comprises a generally triangular tray, and a layer of diffusing material in the tray forming at least three groups of wells arranged in a triangular pattern generally conforming with the tray triangular shape.

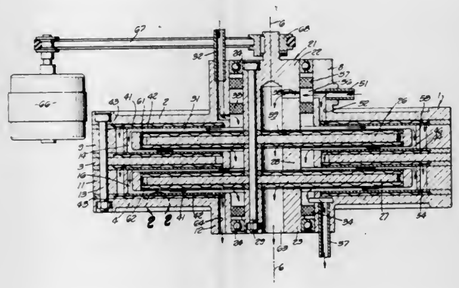
3,674,439
DETECTION DEVICE FOR GAS MIXTURES
Leo E. Hakka and George L. Bata, Montreal, Quebec, and John E. Hazell, Rosemere, Quebec, Canada, assignors to Union Carbide Canada Limited, Toronto, Ontario, Canada
Filed July 10, 1970, Ser. No. 53,763
Int. Cl. G01n 31/06; G08b 21/00
U.S. Cl. 23—254 R **14 Claims**

A device for detecting a component in a gas mixture consists of a strip of two layers laminated together, one layer being a better solvent for the gas component than the other and each being effectively a non-solvent for the other components in the mixture, a support means for securing one end of the strip and a recording means at the free end of the strip for recording a deflection in the strip due to the lateral expansion of the solvent layer with



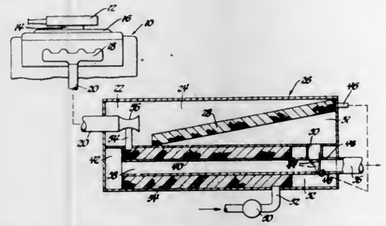
respect to the non-solvent layer. Also described in the embodiment wherein the ratio of two components in the gas mixture may be determined by means of a device wherein the strip consists of two layers one of which is a solvent for one component and the other layer is a solvent for the second component.

3,674,440
OXYGENATOR
Sotiris S. Kitrilakis, Newton, Mass., assignor to Tecna Corporation
Filed May 7, 1970, Ser. No. 35,401
Int. Cl. A61m 1/03
U.S. Cl. 23—258.5 **8 Claims**



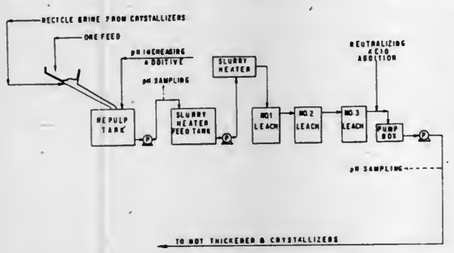
An oxygenator primarily for human blood has a first stationary unit with a first substantially flat wall and a second movable unit with a second substantially flat wall facing the first wall. On their facing sides both walls have supports highly permeable to gas. The supports are covered by gas permeable, hydrophobic membranes between them defining a passage for liquid. Several of the first units and second units are sandwiched to make the passage long and tortuous or sinuous. Blood flowing through the passage is perfused by oxygen flowing in through the permeable supports and the membranes and gives up carbon dioxide flowing out through the membranes and supports. The gas transport into and out of the blood is enhanced by rotating the units relative to each other. This produces fairly regular vortical motion of the blood and reduces the thickness of the boundary layer of the blood.

3,674,441
EXHAUST EMISSION CONTROL
Edward N. Cole, Bloomfield Hills, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Nov. 9, 1970, Ser. No. 87,743
Int. Cl. F01n 3/14; B01j 9/04
U.S. Cl. 23—288 F **7 Claims**



Internal combustion engine exhaust gases, passing unconverted through an exhaust gas catalytic converter during the warm-up period of the catalyst bed, are directed to a bed of storage material which separates and retains undesirable constituents of the exhaust gases. After warm-up of the catalyst bed, the retained constituents are purged from the storage bed and recirculated to and converted in the catalyst bed. The storage bed supplements the emission control of the catalyst bed by reducing emission of undesirable exhaust gas constituents during starting of the engine and warm-up of the catalyst bed.

3,674,442
CONTROL OF ORGANIC DEPOSITION IN SLURRY HEATERS IN POTASH CRYSTALLIZER CIRCUIT
Stephen M. Nielson, Provo, Utah, assignor to Texas Gulf Sulphur Company, New York, N.Y.
Filed May 20, 1969, Ser. No. 826,195
Int. Cl. B01d 9/02; C01d 3/08; C23f
U.S. Cl. 23—299 **4 Claims**



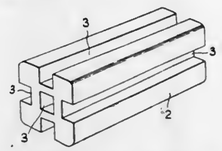
In the production of potash from aqueous slurries of ores such as sylvite in their transit through a potash crystallization circuit including slurry heaters which receive the slurry from a feed tank connected to the repulp tanks, a deposition of undesirable deposits from material existing in the ore occurs as a coating in these slurry heaters which materially decreases heat transfer therein so that it is necessary very frequently to remove the slurry heaters for cleaning and to substitute spare heaters, resulting in economic loss by virtue of downtime, labor and duplication of equipment with resultant increased production cost. This is avoided by adjusting or elevating the pH value of the crystallizer liquor slurry feed stream in the repulp tank that feeds the slurry heater feed tank to range from about 9.0 to 10.0, which results in suppressing formation of undesirable deposits in the slurry heaters and elsewhere. Subsequently, the returning brine stream flowing to a hot thickener is acidified to reduce its pH value to normal value of approximately 7.5 prior to recycling.

3,674,443
TITANIUM CARBIDE-NICKEL COMPOSITIONS
Alma U. Daniels, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
No Drawing. Filed May 28, 1969, Ser. No. 828,699
Int. Cl. B22f 3/14
U.S. Cl. 29—182.8 **4 Claims**

Dense, homogeneous compositions having (a) a density in excess of 95% of theoretical and (b) an average grain size less than 10 microns and consisting of:

(1) 80–97 percent by volume of titanium carbide and
(2) 3–20 percent by volume of nickel, the nickel being present mainly as a binder phase uniformly distributed at the grain boundaries, are useful as cutting edges for cutting tools.

3,674,444
IRON SCRAP BUNDLES
Akemasa Otani, 4, 2-chome, Asakusa Hashiba-cho, Taito-ku, Tokyo, Japan
Filed Sept. 22, 1966, Ser. No. 581,288
Claims priority, application Japan, Mar. 7, 1966, 41/13,687; Mar. 28, 1966, 41/18,709
Int. Cl. B21c 37/00
U.S. Cl. 29—186 **7 Claims**



A scrap iron bundle adapted to be introduced into a melting furnace. The bundle comprises a body formed from a plurality of iron scraps compacted together, the body having hollows therein which increase the area of heat transfer and promote melting of the bundle.

3,674,445
VAPOR DEPOSITED ZINC COATED METALLIC SUBSTRATES HAVING ORGANIC COATINGS
Stanley Thaddeus Wlodek, Bethel Park, Pa., assignor to Jones & Laughlin Steel Corporation, Pittsburgh, Pa.
Filed May 13, 1968, Ser. No. 728,631
Int. Cl. B23p 3/00
U.S. Cl. 29—195 **8 Claims**

Metallic substrates are provided with adherent surface finishes of paints, lacquers, plastics and the like by the use of intermediate adherence-promoting vacuum vapor deposited zinc coatings.

3,674,446
ELECTRICAL CONTACT MATERIAL
Fredrik O. Haarbye and Peter C. Murphy, Indianapolis, Ind., assignors to P. R. Mallory & Co., Inc., Indianapolis, Ind.
Application Dec. 9, 1966, Ser. No. 600,621, now Patent No. 3,545,067, which is a continuation-in-part of application Ser. No. 445,038, now Reissue Patent No. 27,075. Divided and this application Oct. 13, 1969, Ser. No. 870,837
Int. Cl. B32b 15/04; H01h 1/02
U.S. Cl. 29—195 **22 Claims**

Electrical contact material consisting essentially of silver and cadmium oxide is disclosed wherein the material is characterized by having a pre-oxidized microstructure wherein there is a fine cadmium oxide particle size and a substantially uniform distribution of cadmium oxide throughout the material including the core. The material has a lower arc erosion rate than post oxidized material of the same composition when tested under similar conditions. A backing, for example of fine silver may be provided for the contact material.

3,674,447
NICKEL OR COBALT WEAR-RESISTANT COMPOSITIONS AND COATINGS

Harold Edward Bellis, Hockessin, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
No Drawing. Filed Aug. 4, 1969, Ser. No. 847,457
Int. Cl. B23p 3/00; C23c 3/02
U.S. Cl. 29—196.6 18 Claims

Metallic compositions and substrates coated therewith having improved wear resistance and other properties are provided. In a preferred embodiment, the coating comprises an intimate dispersion of hard nickel-boride (Ni_2B) or nickel phosphide (Ni_2P) in a soft matrix of nickel and thallium. The coating is prepared by chemical reduction of nickel and thallium salts using borohydrides such as sodium borohydride and dimethylamine borane (DMAB) or sodium hypophosphite. The proportions of the metals in the preferred coating are about 99.4 to 82 percent by weight nickel, about 0.1 to 12 percent by weight boron or phosphorus and about 0.5 to 6 percent by weight thallium. Cobalt can be used as well as the preferred nickel. In the metallic compositions, abrasion-resistant particles such as metal carbides can be present in the soft matrix of nickel and thallium. The coating can be heat-treated at 300 to 500° C. to achieve optimum metallurgical structure. Shaped structures subject to wear, such as piston rings and bearings, and structures subjected to cutting action, such as twist drills, are particularly benefited by the coatings.

3,674,448
ANODIC ALUMINUM MATERIAL AND ARTICLES AND COMPOSITE ARTICLES COMPRISING THE MATERIAL

Robert H. Brown, Natrona Heights, William A. Anderson, Pittsburgh, and William King, Lower Burrell, Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.
No Drawing. Filed Apr. 21, 1969, Ser. No. 818,145
Int. Cl. B23p 3/02
U.S. Cl. 29—197.5 9 Claims

An article comprising an anode material composed of a solution heat treatable and precipitation hardenable aluminum base alloy consisting essentially of 2 to 8% zinc, 0.5 to 2% magnesium, 0.3 to 2% silicon, the silicon content amounting to at least 0.45 times the magnesium content, the balance being aluminum and incidental elements and a maximum of 0.25% copper and a maximum of 0.25% chromium, as impurities, the member exhibiting a stable solution potential upon exposure to varying thermal conditions. Also contemplated is a composite having a cladding composed of the material and a heat treatable aluminum alloy core.

3,674,449
PROCESS OF BRIQUETTING FINE-GRAINED COKES WITH CAKING COAL IN A PLASTIC STATE

Paul Schmalfeld, Bad Homburg, Heinrich Janssen, Wachebuchen-Hohe Tunne, Burkhard Bock, Duisburg, Werner Peters, Wattenscheid, and Erwin Ahland, Essen, Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, and Bergwerks-Verban, Essen-Kray, Germany
Filed May 21, 1970, Ser. No. 39,205
Claims priority, application Germany, Aug. 23, 1969, P 19 42 957.3
Int. Cl. B30b 1/00; C10l 5/00
U.S. Cl. 44—10 R 13 Claims

In the briquetting of coke, including mixing coke with plastic-form caking coal to form a mixture at a temperature sufficiently high to maintain the plastic state of the caking coal, and forming the mixture into briquettes; the improvement obtained by holding the mixture at the preselected high temperature for 20 to 300 seconds under conditions such that the mixture is maintained in a stirred layer 50 to 200 centimeters thick.

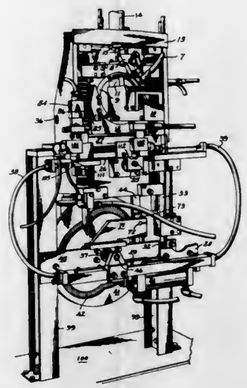
3,674,450
ANTISTATIC ADDITIVE FOR HYDROCARBON FUELS

Lawrence A. Filachek, Cranbury, and Marvin S. Rakow, East Brunswick, N.J., assignors to Cities Service Oil Company, Cranbury, N.J.
No Drawing. Filed Apr. 23, 1971, Ser. No. 136,993
Int. Cl. C10l 1/26
U.S. Cl. 44—66 12 Claims

An antistatic additive for hydrocarbon fuels comprising a synergistic mixture of (a) a hydrocarbyl acid phosphate salt of a polyamide having at least one amino group and (b) metal salts of a mixture of a naphthenic acid and an alkanoic acid wherein the metal is a mixture of a Group IIa metal and a transition metal selected from the group consisting of iron, cobalt, nickel, copper, and zinc and, preferably, a monohydrocarbyl ether of a glycol; and hydrocarbon fuel compositions containing said antistatic additive. The hydrocarbon fuel compositions of this invention comprise a major proportion of the hydrocarbon fuel and a minor proportion of the antistatic additive. The preferred hydrocarbon fuels are distillate fuels such as No. 1 fuel, No. 2 fuel, diesel fuel, and turbine fuel.

3,674,451
PROFILE SHAPING MACHINE FOR FIREARM RECOIL PADS AND BUTT PLATES

Harold L. Hameister, Richfield Springs, and Andrew R. Baszczuk, Newport, N.Y., assignors to Remington Arms Company, Bridgeport, Conn.
Filed Jan. 25, 1971, Ser. No. 109,264
Int. Cl. B24b 5/26, 17/08, 21/02
U.S. Cl. 51—127 17 Claims

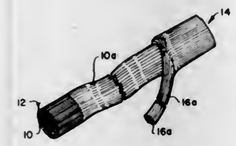


This disclosure relates to a profile shaping machine for firearm recoil pads and butt plates wherein the surface periphery of a recoil pad or butt plate is sized and shaped to conform to the peripheral surface of the butt end of the finished firearm. An oversized and unshaped recoil pad or butt plate is secured to the butt end of the finished stock to form an assembly, and placed in the machine. The machine rotates this assembly through approximately 360 degrees to cut the basic profile. In

timed relationship to the rotational aspect, the workpiece is tilted with respect to the shaper to accommodate for the changes in the longitudinal angles of the stock. Each stock is positioned upon a limiting tracer plate which controls the depth of the cut of the recoil pad or butt plate with respect to the stock.

3,674,452
METHOD OF FABRICATING ILLUMINATED FIBER OPTICS

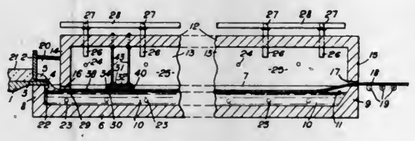
Richard R. Strack, Sturbridge, Mass., assignor to American Optical Corporation, Southbridge, Mass.
Filed June 25, 1970, Ser. No. 49,876
Int. Cl. C03c 23/20, 15/00
U.S. Cl. 65—4 9 Claims



Illuminated image transporting fiber optics are fabricated by first forming a coherent bundle of optical fibers, the ends of the bundle being arranged in identical geometrical patterns and bound together with an acid leachable silica-free glass. A thickness of fibers is removed from one end of the coherent bundle whereupon remaining fibers at that end and the entire opposite end of the bundle are sealed with an acid resistant cover. The intermediate uncovered parts of the bundle are leached to simultaneously free corresponding intermediate lengths of the fibers and ends of the fibers of said partially removed thickness thereof. The resulting free ends of the partially removed thickness of fibers are gathered into a bundle whereby light applied thereto provides illumination at the opposite end of the coherent bundle.

3,674,453
PRODUCTION OF FLOAT GLASS HAVING AN OXIDIZED METAL-MODIFIED SURFACE

David Gordon Loukes, Eccleston Park, and Alan Edwards, Widnes, England, assignors to Pilkington Brothers Limited, Liverpool, England
Filed Aug. 5, 1969, Ser. No. 847,629
Claims priority, application Great Britain, Aug. 16, 1968, 39,367/68
Int. Cl. C03c 17/00; C03b 19/00
U.S. Cl. 65—30 10 Claims



Desired characteristics, for example a desired colour, are imparted to float glass by the dissolving of a metal oxide as a uniform and continuous surface stratum in a face of the glass by directing a metal compound in vapour form on to the hot glass surface under oxidising conditions such that oxidation is promoted only at the glass surface resulting in solution of metal oxide into a surface layer of the glass.

3,674,454
ION EXCHANGE OF GLASS WITH USE OF CARBON DIOXIDE

Elime Plumat, Gilly, and Francois Toussaint, Lodelinsart, Belgium, assignors to Glaverbel S.A., Watermael-Boitsfort, Belgium
No Drawing. Filed Sept. 12, 1969, Ser. No. 857,567
Claims priority, application Luxembourg, Sept. 12, 1968, 56,873/68
Int. Cl. C03c 21/00
U.S. Cl. 65—30 9 Claims

In order to improve the repeatability and reaction speed of processes for modifying a property of a glass, vitrocrystalline, ceramic, or stone body by diffusing at least one substance into the body from a contacting treatment medium containing a molten nitrate salt, CO_2 is brought into contact with such medium during the diffusion operation.

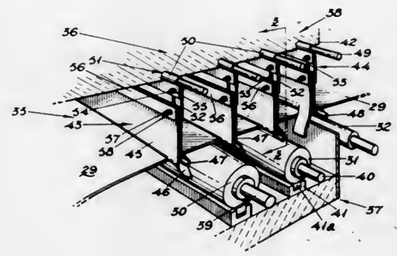
3,674,455
PROCESS FOR THE SYNTHESIS OF GLASS AND SINGLE CRYSTAL GERMANATES OF IDENTICAL COMPOSITION

Cortland O. Dugger, Cambridge, Mass., assignor to the United States of America as represented by the Secretary of the Air Force
No Drawing. Filed July 31, 1970, Ser. No. 60,140
Int. Cl. C03c 3/22
U.S. Cl. 65—134 2 Claims

A process for forming germanate compositions from a starting mixture in which the concentration ratio limits of the oxygen ions to germanium ions is from 2.0:1 to 3.0:1; that is, $2.0{:}1 \leq O{:}Ge \leq 3.0{:}1$. The germanate compositions within the above limits include germanate glasses and germanate single crystals of identical composition. Specifically, the process involves the steps of intimately mixing appropriate quantities of sodium oxide and germanium oxide followed by the steps of heating the mixture to a temperature within the range of from about 1050° to 1525° C. with subsequent controlled cooling to room temperature.

3,674,456
EXIT SEALING DRAPE FOR FLOAT GLASS BATH

Francis L. Swillinger, Perrysburg, Ohio, assignor to Libbey-Owens-Ford Company, Toledo, Ohio
Filed Feb. 25, 1970, Ser. No. 14,002
The portion of the term of the patent subsequent to Sept. 21, 1988, has been disclaimed
Int. Cl. C03b 18/02
U.S. Cl. 65—182 R 6 Claims



Sealing the exit passageway of the plenum chamber enclosing the special atmosphere of a float glass apparatus

for the production of glass having exceptional surface quality such as mirror glass, including a special closure drape swingably mounted in the passageway and having a first layer of a flexible, lubricating fibrous carbon material, harmless to the mirror finish of the glass ribbon and of sufficient length that the continuous passage of the glass ribbon below causes a segment of the free end thereof to be dragged in a horizontal direction thereon. A second layer which inhibits the passage of gas is suspended behind the first layer with its lower end supported on the horizontal segment of the first layer.

3,674,457

CONTROL OF MICROORGANISMS IN INDUSTRIAL PROCESS WATERS

Leonard L. Wolfson, Milwaukee, Wis., assignor to Nalco Chemical Company, Chicago, Ill.

No Drawing. Continuation-in-part of abandoned applications Ser. No. 454,986, May 11, 1965, and Ser. No. 770,785. This application Nov. 2, 1970, Ser. No. 86,368

Int. Cl. A01n *9/00, 9/18, 23/00*

U.S. Cl. 71—67 **1 Claim**

Method of inhibiting the growth and reproduction of microbiological organisms in industrial process water systems by treating said system with a microbiocidal composition consisting of methylenebisthiocyanate and formaldehyde combined in a weight ratio of from 1:5 to 1:10.

3,674,458

METHOD FOR REGULATING PLANT GROWTH

Robert I. Schattner, 4000 Massachusetts Ave. NW., Washington, D.C. 20016

No Drawing. Filed Jan. 28, 1969, Ser. No. 794,800

Int. Cl. A01n *21/02*

U.S. Cl. 71—77 **6 Claims**

A method of regulating the growth of plants involving the treating of the seeds with an aqueous solution comprising sodium phenolate, sodium tetraborate, phenol and a humectant, before planting.

3,674,459

PHYTOTOXIC COMPOSITIONS

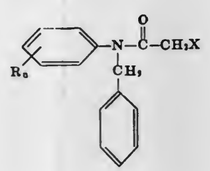
Gerhard H. Alt, St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Filed June 30, 1969, Ser. No. 837,893

Int. Cl. A01n *9/20*

U.S. Cl. 71—18 **15 Claims**

Herbicidal use, especially for barnyard grass in the presence of rice, of a compound of the formula



wherein R is selected from the group consisting of alkyl having a maximum of four carbon atoms, alkoxy having a maximum of four carbon atoms, chlorine, bromine, nitro and carboxyalkyl, said alkyl moiety having a maximum of four carbon atoms; X is selected from the group consisting of chlorine and bromine; and *n* is one of the integers 1 to 3.

3,674,460

HERBICIDAL USE OF SUBSTITUTED o-PHENYLENEDIAMINES

Robert K. Howe, Bridgeton, Mo., assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Nov. 5, 1969, Ser. No. 874,385

Int. Cl. A01n *9/20*

U.S. Cl. 71—121 **9 Claims**

Herbicidal use of substituted alkyl o-phenylenediamines which are produced by reacting a substituted benzimidazole with an alkylating agent.

3,674,461

HOLLOW SPHERICAL ARTICLES

Joseph Redmond Farnand and Ira Edwin Puddington, Ottawa, Ontario, Canada, assignors to Canadian Patents and Development Limited, Ottawa, Ontario, Canada

No Drawing. Original application Apr. 7, 1966, Ser. No. 540,807, now Patent No. 3,528,809, dated Sept. 15, 1970. Divided and this application May 21, 1970, Ser. No. 39,901

Claims priority, application Canada, Apr. 15, 1965, 928,412

Int. Cl. B22f *5/00*

U.S. Cl. 75—.5 R **3 Claims**

Hollow articles free of holes or seams of a metal selected from aluminum, magnesium, boron, and beryllium are provided by coating a shaped core of a material transformable directly into gas with flakes or particles of the metal, slowly removing the core material through the particulate coating in gaseous form, and consolidating the coating (e.g. by fusing or sintering). Coatings of these metals cannot be satisfactorily prepared by reduction of their salts in solution. Small spheres of a diameter less than 0.2 inch (especially 0.005 to 0.06 inch) are of particular interest.

3,674,462

PROCESS FOR LOW TEMPERATURE CHLORINATION OF ROASTED PRODUCTS FROM AN IRON SULPHIDE ROASTING PROCESS PRIOR TO LEACHING OUT THE NONFERROUS METAL PRESENT THEREIN

Karl Goran Gorling, Lidingo, Sweden, assignor to Boliden Aktiebolag, Stockholm, Sweden

Filed Nov. 21, 1969, Ser. No. 878,851

Claims priority, application Sweden, Dec. 31, 1968, 18,068/68

Int. Cl. C22b *1/10*

U.S. Cl. 75—9 **5 Claims**

A process for roasting sulphidic iron material or mixtures of sulphidic and oxidic iron material and chlorinating nonferrous metals present in said materials at low temperatures, whereafter the chlorinated nonferrous metals are leached out and recovered, in which the material is first roasted in a fluidized bed reactor at a temperature between 700 and 1100° C., while introducing oxygen or a gas containing free oxygen in a limited amount, whereafter the material, subsequent to desulphurizing and cooling is treated with chlorine, hydrogen chloride or iron chloride or a gas containing chlorine or hydrogen chloride, in a fluidized bed reactor at a temperature of 300–600° C., while maintaining fluidization by introducing a gas from beneath the reactor, said gas being optionally mixed with the chlorinating substance.

3,674,463

CONTINUOUS GAS-ATOMIZED COPPER SMELTING AND CONVERTING

John C. Yannopoulos, Danbury, Conn., assignor to Newmont Exploration Limited, Danbury, Conn.

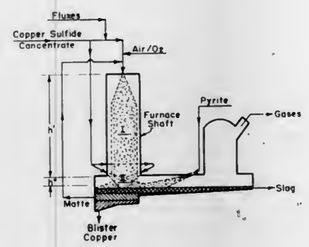
Filed Aug. 4, 1970, Ser. No. 60,793

Int. Cl. C22b *9/10, 15/06*

U.S. Cl. 75—72 **4 Claims**

A process for smelting copper sulfide concentrates and simultaneously converting the thus-produced matte to

form blister copper, slag and an effluent gas unusually rich in sulfur dioxide is characterized by continuous operation in which both smelting and converting are carried out in



suspension over a common furnace hearth body of molten blister copper, matte and slag from which the matte to be converted is supplied.

3,674,464

PROCESS FOR REMOVING COPPER FROM MOLYBDENUM

Vincent Chiola, Towanda, and Phyllis R. Dodds, Wysox, Pa., assignors to GTE Sylvania Incorporated

No Drawing. Filed Mar. 27, 1970, Ser. No. 23,446

Int. Cl. C22b *49/00*

U.S. Cl. 75—101 R **5 Claims**

A process for removing copper from molybdenum is disclosed that comprises forming an aqueous solution containing molybdenum and copper having a pH of above about 5.7. contacting the solution with an α-hydroxy oxime organic solution to extract the copper into the organic phase without the extraction of molybdenum and recovering the molybdenum. Additionally the copper can also be recovered as a copper salt of a mineral acid.

3,674,465

RECOVERY OF NICKEL FROM NICKEL AMMONIUM CARBONATE SYSTEMS

David J. I. Evans, North Edmonton, Alberta, and Donald Robert Weir, North Saskatchewan, Alberta, Canada, assignors to Sherritt Gordon Mines Limited, Toronto, Ontario, Canada

No Drawing. Filed May 6, 1970, Ser. No. 35,273

Claims priority, application Canada, Oct. 16, 1969, 65,004

Int. Cl. C22b *23/04*

U.S. Cl. 75—108 **7 Claims**

Contamination of product nickel produced by direct hydrogen reduction from nickel bearing aqueous ammonium carbonate systems by zinc and other undesirable metal impurities is avoided by adjusting the sulphate ion content of the system subjected to the hydrogen reduction treatment such that it is at least equal to the stoichiometric amount required to combine with the contaminant metals in the system to form sulphates. The sulphate ion adjustment is effected by the addition to the system prior to reduction of a sulphate compound, for example, ammonium sulphate, which will dissolve in the system and form soluble sulphates with the contaminate metals but which will not add cations to the system which will precipitate with and contaminate the nickel powder produced in the subsequent hydrogen reduction step. The sulphate ion content may also be adjusted by providing oxidizable sulphur values in the system and reacting the system with oxygen at elevated temperature and pressure to convert the added sulphur values to sulphate form.

3,674,466

REMOVAL OF COPPER FROM AQUEOUS SOLUTIONS WITH HIGHLY STRESSED, ACTIVATED FERROUS METALS

John Ray Anderson, Cranbury, N.J., and Richard Peck Hollingworth, Yardley, Pa., assignors to Sybron Corporation, Rochester, N.Y.

Filed May 18, 1970, Ser. No. 38,018

Int. Cl. C22b *15/12*

U.S. Cl. 75—109 **15 Claims**

The removal of copper from aqueous copper-containing solutions is accomplished by passing an aqueous copper-containing solution at a pH of about 6.5 to 10.5 through a column containing a highly stressed form of ferrous metal which has been activated by treatment first with a degreasing agent and then with an inorganic acid. A ferrous metal complexing agent added to the aqueous copper-containing solution prior to passage through the column of metal prevents ferrous ion precipitation in the treated solution.

3,674,467

NON-RIDGING CHROMIUM STAINLESS STEEL

David L. Chalk, Monroe, Ohio, assignor to Armco Steel Corporation, Middletown, Ohio

No Drawing. Filed July 23, 1969, Ser. No. 844,213

Int. Cl. C22c *39/16;* **C21d** *9/48*

U.S. Cl. 75—126 R **5 Claims**

Non-ridging ferritic chromium stainless steel, such as A.I.S.I. Type 430, produced by steps which comprise selecting a chemistry containing a maximum of 0.01% carbon, and processing the selected steel into finished strip form by a procedure which may include a normalizing treatment above the critical transformation temperature.

3,674,468

HIGH-STRENGTH SILICON STEEL

Keiichi Ota, 54 Nakagawara-cho, Sakyo-ku, Kyoto, Japan

No Drawing. Continuation-in-part of application Ser. No. 708,530, Feb. 27, 1968. This application Nov. 23, 1970, Ser. No. 92,144

Int. Cl. C22c *39/20, 39/44*

U.S. Cl. 75—128 A **4 Claims**

A high-strength silicon steel consisting of less than 0.03% C, 4–6% Si, 5–10% Ni, 6–18% Cr, less than 4% each of Mn, Mo and Cu, less than 2% V and residue essentially Fe, in which the total amount of Ni and Mn is varied so as to approach 2 times the Si content and the Cr varied about 2.5 times of the Si content, so that the Ac_3 transformation point is lowered to less than 1400° F.

3,674,469

WELDING ELECTRODE

Richard C. Stewart, Edwardsville, Ill., and Edward L. Creamer, St. Louis, Mo., assignors to Shell Oil Company, New York, N.Y.

No Drawing. Continuation of abandoned application Ser. No. 733,294, May 31, 1968. This application Dec. 30, 1970, Ser. No. 102,995

Int. Cl. C22c *37/10*

U.S. Cl. 75—124 **4 Claims**

The present invention relates to an improved method of welding 10–20% chromium stainless steels with a new and novel matching welding electrode containing from about 0.1% to about 5% titanium.

3,674,470
VANADIUM BASE ALLOYS CONTAINING NIOBIUM AND TITANIUM

Hans-Jurgen Rainer Laue and Horst Otto Bohm, Karlsruhe, and Bernhard Hermann Reddemann, Werdohl-Barenstein, Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Germany

Filed Aug. 8, 1968, Ser. No. 751,242
Int. Cl. C22c 27/00
U.S. Cl. 75—134 V 7 Claims

Alloys composed of 12–25%, preferably, 14–16% of niobium, 1 to less than 3%, preferably, 2.6–2.9%, of titanium, up to ½ of the titanium being replaceable with zirconium and/or hafnium, not more than 1% of carbon, nitrogen and oxygen, up to 1.5% of silicon and the remainder vanadium, said alloys having high corrosion resistance remaining stable over long periods of time at temperatures between 500 and 800° C. and having utility as construction materials in nuclear reactors, especially those having cooling systems using molten alkali metals, space vehicles and chemical apparatus.

3,674,471
ALLOY

A. David Joseph, New Canaan, Conn., assignor to Eutectic Corporation, Flushing, N.Y.

No Drawing. Filed Apr. 9, 1970, Ser. No. 27,138
Int. Cl. C22c 9/02, 9/06
U.S. Cl. 75—153 1 Claim

A copper base alloy with silver, phosphorus and tin additions that has self wetting properties that permit deposition by welding upon aluminum bronze and manganese bronze type base metals.

3,674,472
METHOD FOR PRODUCING IRON BASE SINTERED ALLOYS CONTAINING COPPER

Takashi Kimura, Nagoya-shi, Azusa Majima, Showa-ku, and Hiroshi Hamamoto and Yoji Awano, Nagoya-shi, Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Nogoya-shi, Japan

Filed June 6, 1969, Ser. No. 831,088
Claims priority, application Japan, June 18, 1968, 43/42,089
Int. Cl. B22f 3/16
U.S. Cl. 75—221 3 Claims

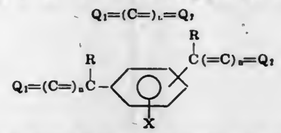
This invention relates to sintered metal alloys such as iron base alloys containing copper having significantly improved toughness characteristics, and a method for making such alloys. A novel structure is produced characterized by a non-homogeneous concentration of copper solid solution within the individual base metal particles comprising said sintered structure. Such a structure is obtained by controlling the time-temperature parameters during the sintering and diffusing steps thereof. For example, sintering is performed at a temperature less than the melting point of copper; the diffusion at a temperature ranging from the melting point of copper to less than the melting point of the iron base material.

3,674,473
CUMULENE CONTAINING PHOTOCONDUCTIVE BINDER ELEMENTS FOR USE IN ELECTROPHOTOGRAPHY

Robert G. Blanchette, Elk Grove, Ill., assignor to Addressograph-Multigraph Corporation, Cleveland, Ohio

No Drawing. Continuation-in-part of application Ser. No. 771,352, Oct. 28, 1968. This application Oct. 6, 1970, Ser. No. 78,628
Int. Cl. G03g 5/06
U.S. Cl. 96—1.5 9 Claims

A photoelectrostatic member is prepared by applying a photoconductive layer containing a compound selected from the general class of cumulenes dispersed in a resin binder. The cumulene compounds useful in the instant invention have one of the following general formulas:



where X represents an alkyl, hydrogen, halogen, or nitro substituent; Q_1 and Q_2 can be:



indene, or fluorene; *n* can be an integer from 1 through 6; R is lower alkyl, aryl or hydrogen; R_1 and R_2 can be aryl, substituted aryl, heterocyclic ring structures; and wherein Q_1, Q_2, or R_1, and R_2 can be the same or different.

3,674,474
LIGHT-SENSITIVE SHEET FOR USE IN ELECTROPHOTOGRAPHY

Junji Kurokawa, Fumiaki Arai, and Noriyuki Usui, Kanagawa-ken, Japan, assignors to Ricoh Co., Ltd., Tokyo, Japan

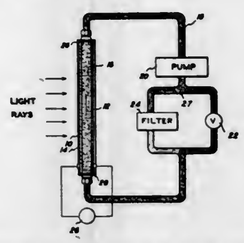
No Drawing. Filed Sept. 29, 1970, Ser. No. 76,642
Claims priority, application Japan, Sept. 30, 1969, 44/77,917; Oct. 6, 1969, 44/79,191
Int. Cl. G03g 5/10
U.S. Cl. 96—1.5 4 Claims

A light-sensitive sheet for use in electrophotography comprising a support one side of which is provided with an electroconductive layer while the opposite side is provided with a precoat layer and a superposed photoconductive layer. The precoat layer contains a water soluble high molecular weight substance having at least one hydroxyl or carboxyl functional group; a water dispersible resin; and a polymer which is at least one of N-methylol acrylamide polymers, a copolymer of N-methylol acrylamide and a vinyl monomer or a copolymer of polyethylene tetramine, adipic acid, urea and formaldehyde.

3,674,475
ENCLOSED MIGRATION IMAGING SYSTEM

Morton Silverberg, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Original application July 19, 1968, Ser. No. 746,177. Divided and this application Mar. 16, 1971, Ser. No. 124,840
Int. Cl. G03g 13/00
U.S. Cl. 96—1.3 2 Claims



A display system which responds to a light image to form a viewable image. The system is sealed and is filled with a fluid carrying a dilute suspension of electrically photosensitive particles between two conductive plates. If an image is focused onto the space between the plates and a voltage established therebetween, the particles in contact with the inner surface of the conductive plate will migrate from light struck areas of the plates. After the fluid has been circulated for an appropriate time after imaging, the fluid circulation is directed through a filter, which replaces the fluid between the plates with fluid having the undeposited particles removed. Various provisions for viewing the images formed within the display system are described.

3,674,476
PROCESS FOR PRODUCING PHOTOCONDUCTIVE LAYER FOR ELECTROPHOTOGRAPHY

Yasuo Tamai and Hajime Miyazuka, Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

No Drawing. Filed June 16, 1970, Ser. No. 46,826
Claims priority, application Japan, June 18, 1969, 44/47,624
Int. Cl. G03g 5/08
U.S. Cl. 96—1.8 6 Claims

A process of producing a photoconductive element for electrophotography which comprises heating zinc hydroxide or basic zinc carbonate in the presence of water and under elevated pressure to obtain zinc oxide, dispersing the zinc oxide into an appropriate insulating resin and applying the dispersion onto an electroconductive support material.

3,674,477
ELECTROPHOTOGRAPHIC REPRODUCTION SHEET AND COMPOSITION CONTAINING PHOTOCONDUCTIVE MATERIAL AND COARSE FILLER PARTICLES

Lee Allen Carlson, Southboro, Mass., assignor to Dennison Manufacturing Company, Framingham, Mass.

No Drawing. Filed July 29, 1970, Ser. No. 59,365
Int. Cl. G03g 5/04, 7/00
U.S. Cl. 96—1.8 25 Claims

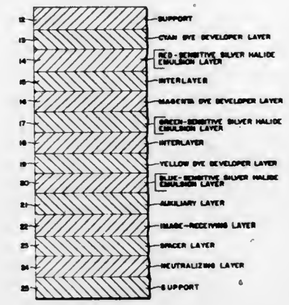
An electrophotographic paper made to simulate a good grade of bond paper by embedding in the electrophotographic layer, discrete solid, water-insoluble, relatively non-photoconductive (compared to photoconductive zinc oxide), relatively coarse (compared to the particles of zinc oxide photoconductor) filter particles of irregular shape, preferably a mineral or mixture of minerals, having at least one cross-sectional dimension not substantially less than 5, more preferably not substantially less than 10, microns but having a maximum particle size of 50 or 60 microns. These filler particles protrude from the electrophotographic surface to sharply decrease the smoothness of texture thereof (increase roughness and friction) and the slimy, leaden quality of the paper to provide for the first time an electrophotographic paper similating a good bond paper. Also, since the filler replaces part of the zinc oxide photoconductor per unit volume of electrophotographic layer and is only a fraction of the cost of the zinc oxide, the cost of the paper is substantially reduced. Furthermore, since the filler is less dense than the zinc oxide and is irregular in shape, it has a fluffing effect and decreases the weight per unit volume of the electrophotoconductive layer and increases the bulk of such layer. Furthermore, the filler increases the stiffness of the sheet, i.e., decreases the limpness thereof, to further similate a good grade bond paper. Accordingly, the sheet is easier to handle and to file.

3,674,478
NOVEL PRODUCTS AND PROCESSES

J. Michael Grasshoff, Hudson, and Lloyd D. Taylor, Lexington, Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Dec. 17, 1970, Ser. No. 99,067
Int. Cl. G03c 1/48, 5/54, 7/00
U.S. Cl. 96—3 44 Claims

Integral negative-positive film units adapted for forming color transfer images, which film units include a novel compound which releases a "development restrainer" in the presence of alkali and which may be defined as a



quinone- or naphthoquinone-methide precursor containing a development restrainer moiety.

3,674,479
PHOTOGRAPHIC DRY COPYING PROCESS

Helmut Kampfer, Cologne, Anita von Konig, Erwin Ranz, Harald von Rintelen, and Dietmar Mayer, Leverkusen, and Klaus Sasse, Cologne, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Mar. 26, 1970, Ser. No. 23,035
Claims priority, application Germany, Apr. 14, 1969, P 19 18 751.0
Int. Cl. G03c 5/04
U.S. Cl. 96—27 13 Claims

Photographic prints can be produced by imagewise exposure of a light-sensitive layer containing a transferable image producing compound and a light-sensitive compound capable of reacting upon exposure with an image producing compound to yield a non-transferable reaction product. The exposed layer is heated and contacted with an image receiving layer containing compounds capable of reacting with the heat transferred image producing compound to form the image dye.

The light-sensitive compound is an organic azido compound and the image producing transferable compound, a compound of the phenol- or naphthol series.

3,674,480
PHOTOGRAPHIC DRY COPYING PROCESS

Helmut Kampfer, Cologne, Anita von Konig, Erwin Ranz, Harald von Rintelen, and Dietmar Mayer, Leverkusen, and Klaus Sasse, Cologne, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Apr. 28, 1970, Ser. No. 32,726
Claims priority, application Germany, May 24, 1969, P 19 26 655.8
Int. Cl. G03c 5/54, 1/52
U.S. Cl. 96—29 20 Claims

Photographic prints can be produced by imagewise exposure of a light-sensitive layer containing a transferable image producing compound and a light-sensitive compound capable of reacting upon exposure with an image producing compound to yield a non-transferable reaction product. The exposed layer is heated and contacted with an image receiving layer containing compounds capable of reacting with the heat transferred image producing compound to form the image dye.

The light-sensitive compound is an organic azide compound and the image producing transferable compound a compound of the pyrazolidone-3-series.

3,674,481
IMAGE RECEIVING MATERIAL FOR THE SILVER SALT DIFFUSION PROCESS

Anita von Konig and Werner Liebe, Leverkusen, and Helmut Timmler, Wuppertal-Vohwinkel, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed May 27, 1970, Ser. No. 41,085

Claims priority, application Germany, June 14, 1970, P 19 30 339.0

Int. Cl. G03c *5/54*

U.S. Cl. 96—29 **2 Claims**

A light-insensitive image receiving material for the silver salt diffusion process comprising an image receiving layer which contains a compound of the mercapto triazole series.

3,674,482
NOVEL PHOTOGRAPHIC PRODUCTS AND PROCESSES

Richard J. Haberlin, Weston, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed July 13, 1970, Ser. No. 54,372

Int. Cl. G03c *5/54*

U.S. Cl. 96—29 **13 Claims**

A composite film structure comprising a laminate including a common support carrying on one surface, in order, a layer containing silver precipitating nuclei, an inert non-nucleated polymeric layer and a layer containing photosensitive silver halide crystals. Subsequent to exposure and processing, the layer containing photosensitive silver halide crystals may be removed thereby providing a film unit wherein a protective layer is located over the layer in which the image is formed, i.e., the layer containing the silver precipitating nuclei. In a particularly preferred embodiment, an additive color screen is employed between the support and the layer containing silver precipitating nuclei. The disclosed film structure is particularly suitable for use as motion picture film.

3,674,483
REPRODUCTION METHOD

Marcel Nicolas Vrancken, Hove, Eric Maria Brinckman, Mortsel, and Frans Clement Heugebaert, Kontich, Belgium, assignors to Agfa-Gevaert, Mortsel, Belgium

No Drawing. Filed Apr. 24, 1969, Ser. No. 819,100

Claims priority, application Great Britain, June 17, 1968, 28,778/68

Int. Cl. G03f *7/02*

U.S. Cl. 96—33 **18 Claims**

A method of recording information using a recording material having a water-permeable recording layer consisting essentially of a continuous phase of at least one proteinaceous hydrophilic colloid binder having distributed therethrough finely divided particles of a hydrophilic inorganic photoconductive compound in one embodiment and finely divided particles of a non-photoconductive hydrophilic pigment, plus an organic photoconductive dye, in another embodiment, wherein the recording layer is image-wise exposed to active electromagnetic radiation and then developed by contacting the same with an aqueous liquid to produce a visible change in the recording layer by penetration or removal of the water-permeable unexposed regions of the layer by the aqueous liquid. The ratio by weight of hydrophilic particles to hydrophilic colloid is about 1:1 to 5:1 and the proportion of the organic photoconductive dye is at least about 0.05% by weight of the hydrophilic non-photoconductive particles.

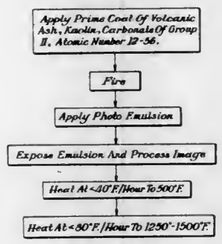
3,674,484
PHOTOGRAPHS ON CERAMIC OR CERAMIC-LIKE SURFACES

Victor Spinski, Newark, Del., assignor to University of Delaware

Filed Jan. 28, 1971, Ser. No. 110,506

Int. Cl. G03c *7/00*

U.S. Cl. 96—34 **8 Claims**



Ceramic objects are conveniently decorated using photographic techniques by first preparing the surface of the object in any conventional manner, for example, by first firing the green object to bisque temperature, allowing the object to cool, washing it with an alkaline solvent, and drying it. To the prepared surface is then applied a priming coat which is generally a mixture of volcanic ash, kaolin, and a water-insoluble carbonate of a Group II element of atomic number 12 to 56 all uniformly dispersed in water. The priming coat is allowed to dry and the object is then fired to bisque temperature around cone 08. Upon cooling, a photographic emulsion containing an image forming component is applied to the coated object under conditions conventional to the photographic art. The object with the now photosensitive surface is then exposed by conventional photographic techniques and processed to develop the image. The entire object is thereafter placed in a furnace and heated at a rate not to exceed 40° F. per hour to 500° F., then at a rate not to exceed 80° F. per hour to from 1250° F. to 1500° F. and then allowed to cool slowly to ambient temperature. The object thus obtained has a glazed black and white silver image of lasting durability.

3,674,485
METHOD OF MANUFACTURING ELECTRICALLY CONDUCTING METAL LAYERS

Hendrik Jonker, Casper Johannes Gerardus Ferdinand Janssen, and Lambertus Postma, Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

No Drawing. Filed Sept. 18, 1968, Ser. No. 760,711

Claims priority, application Netherlands, Sept. 22, 1967, 6712933

Int. Cl. G03c *5/00*

U.S. Cl. 96—35 **8 Claims**

Electrically conductive metal patterns are produced by exposing a homogeneous mixture of a hydrophobic resinous binding agent and a light-sensitive semiconductive oxide such as titanium dioxide to light, treating the exposed areas with a copper solution or a solution of a metal at least as high as copper in the E.M.F. series to form a metal nuclei image, and then intensifying the nuclei image by the use of a stabilized physical developer or by the use of an electroless copper, cobalt or nickel-plating bath.

3,674,486
PHOTORESIST MATERIAL AND METHOD OF FORMING PRINTING PLATES AND RESULTING PRODUCT

Jack Milgrom, Concord, Mass., assignor to Arthur D. Little, Inc., Cambridge, Mass.

Filed Feb. 2, 1970, Ser. No. 7,603

Int. Cl. G03c *1/68*

U.S. Cl. 96—35.1 **15 Claims**

A photoresist material suitable for exposure through a process transparency to actinic light to produce a letterpress printing plate and a method of producing such a printing plate. Exposure may be accomplished while the plate is mounted on a cylinder to eliminate the need for possible distortion compensation.

3,674,487
MASK OVERLAY CHECKING MEANS

William O. Druschel, Granite Springs, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed June 18, 1970, Ser. No. 47,497

Int. Cl. G03c *5/04, 5/06*

U.S. Cl. 96—41 **24 Claims**

A method for comparing the pattern in a pair of light masks, e.g., masks having regions transparent to light and regions opaque to light. A light masking copy, either positive or negative, of each of the masks is made. The opaque region in one of said copies is rendered semitransparent, after which a light sensitive substrate is exposed through both of said copies superimposed in registration with each other to produce a three-tone composite image in the light sensitive substrate of the pair of masks in registration.

Where one of the masks has smaller regions which should be positioned within limits of larger regions on the other mask when said masks are used in registration with each other, the type of copy, either positive or negative, made of each mask as well as the selection of the mask in which the opaque regions are rendered semitransparent is governed by the requirement that said smaller regions in said copies are at least as opaque as said larger regions.

3,674,488
METHOD OF MAKING MATCHING PHOTOPRINTING MASTERS

John Alton Dodd, Jr., Haddonfield, and George Harry Line, Cherry Hill, N.J., assignors to RCA Corporation

Filed May 21, 1970, Ser. No. 39,477

Int. Cl. G03c *5/06;* **G03f** *5/00*

U.S. Cl. 96—44 **9 Claims**

Two matched photoprinting masters, one comprising an array of uniform opaque dots of a given size and the other comprising an array of opaque dots of a different size, on a transparent background, with exactly the same pattern, are made by first making an accurate original master, having an array of elemental areas, each containing the outlines of the two different size dots in the two desired matching masters, positioned in the desired pattern on a transparent background, and at least one intermediate original master comprising an array of opaque dots having a diameter intermediate the diameters of the two different size dots, arranged in a pattern closely matching the desired pattern on a transparent background. Then, these two masters are combined by photoprinting techniques, using the intermediate master to mask portions of the outlines of the accurate master, to produce the desired two matching small and large dot masters. These two matching masters may be used in the making of shadow masks for color picture tubes.

3,674,489
PHOTOGRAPHIC IMAGE AMPLIFYING WITH COPPER IONS

John E. Wyman, Lexington, Mass., assignor to Itek Corporation, Lexington, Mass.

No Drawing. Filed July 11, 1968, Ser. No. 743,981

Int. Cl. G03c *5/24*

U.S. Cl. 96—48 **27 Claims**

This disclosure relates to photographic amplifying systems comprised of a solution of copper ions and certain reducing agents which selectively deposit copper metal on latent metal photographic images to increase the density of the images. The amplifying systems are particularly effective with latent metal images of photographic media comprising a radiation activated photoconductor. Also described are processes for amplifying photographic images.

3,674,490
PROCESS FOR THE PRODUCTION OF PHOTOGRAPHIC IMAGES

Reinhart Matejec, Leverkusen, Germany, assignor to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Dec. 2, 1969, Ser. No. 881,610

Claims priority, application Germany, Dec. 11, 1968, P 18 13 920.3

Int. Cl. G03c *5/24, 7/00, 1/00*

U.S. Cl. 96—48 R **14 Claims**

Photographic images are produced by imagewise production of nuclei for the decomposition of peroxy compounds in the presence of reaction components for a color-forming oxidizing reaction.

The image dye consists at least in part of the dye obtained by the oxidizing reaction.

3,674,491
DEVELOPING PROCESS

Yoo Iijima, Isao Shimamura, Tokiharu Kondo, and Haruhike Iwano, Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

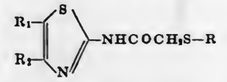
Filed Nov. 30, 1970, Ser. No. 93,672

Claims priority, application Japan, Nov. 29, 1969, 44/95,485

Int. Cl. G03c *5/30*

U.S. Cl. 96—66.3 **16 Claims**

A process for developing a silver halide photographic light-sensitive material which comprises developing the light-sensitive material in the presence of a compound represented by the following general formula:



wherein R represents an unsubstituted or substituted alkyl group of 1–5 carbon atoms, aralkyl group of 1–5 carbon atoms, or aryl group, and R_1 and R_2 each represents a hydrogen atom or an alkyl group of 1–5 carbon atoms, said R_1 and R_2 also capable of forming an unsaturated condensed ring of 5–6 carbon atoms, which may be further substituted by an alkyl group of 1–5 carbon atoms.

3,674,492
LAMINAR PHOTOMASK

Michael Richard Goldrick, Maplewood, Robert Eugene Kerwin, Westfield, and John George Skinner, Basking Ridge, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

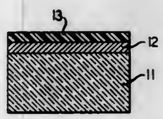
Filed Dec. 9, 1970, Ser. No. 96,452

Int. Cl. G03c *1/76*

U.S. Cl. 96—68 **5 Claims**

A high speed, high resolution laminar photomask is obtained by coating a transparent substrate member with

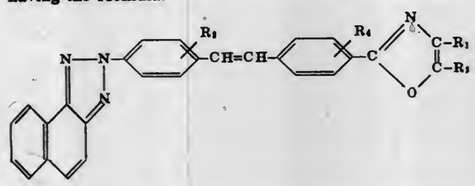
chromium or iron oxide, a photoresist and a thin film of a high resolution photographic emulsion having a thickness of the order of 2.0 micrometers. The resultant photo-



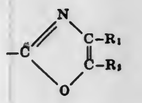
mask is found to enhance the speed of conventional photoresists and to increase the effective field of view of projection systems by reducing the required image modulation.

3,674,493
PHOTOGRAPHIC ELEMENTS CONTAINING FLUORESCENT BRIGHTENING AGENTS
Roy A. Jeffreys and David A. Thomas, Hatch End, England, assignors to Eastman Kodak Company, Rochester, N.Y.
No Drawing. Filed Apr. 3, 1970, Ser. No. 25,567
Int. Cl. G03c *1/92*
U.S. Cl. 96—72 **15 Claims**

Photographic elements comprising a white reflecting support provided with a fluorescent brightening agent having the formula:



wherein R_1 and R_2 are selected from the group consisting of hydrogen, alkyl and aryl



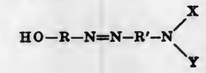
collectively, represents a benzoxazolyl nucleus and R_3 and R_4 each represents hydrogen, hydroxy or acyloxy.

3,674,494
REFLECTIVE METAL PLATE WITH PHOTOPOLYMERIZABLE LAYER CONTAINING METAL COMPLEX DYE
Horst Hoffmann, Ludwigshafen, Carl Heinrich Krauch, Heidelberg, and Hans-Werner Otto and Otto Volkert, Ludwigshafen, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany
No Drawing. Filed Jan. 27, 1970, Ser. No. 6,301
Claims priority, application Germany, Feb. 1, 1969, P 19 05 012.5
Int. Cl. G03c *1/68, 1/70*
U.S. Cl. 96—86 P **6 Claims**

Improved relief plates, particularly printing plates, prepared by exposing under an image-bearing transparency a layer, which can be crosslinked by exposure and has been applied to a light-reflecting substrate of a substantially homogeneous mixture of solid polymers, monomers, photoinitiators and, if desired, polymerization inhibitors, which mixture also contains finely dispersed therein a soluble metal complex dye, and washing out the unexposed areas.

3,674,495
SENSITIZING LAYER
Teruo Esaka, Tokyo, Japan, assignor to Okamoto Chemical Industry Company Limited, Saitama Prefecture, Japan
No Drawing. Filed Sept. 5, 1969, Ser. No. 855,773
Claims priority, application Japan, May 30, 1969, 44/42,322
Int. Cl. G03c *5/18, 7/30*
U.S. Cl. 96—91 R **10 Claims**

A sensitizing layer containing an ester of a compound of the general formula



(wherein R represents a benzene or naphthalene nucleus with a radical selected from the group consisting of hydroxyl, halogen, nitro, alkyl and alkoxy; R' represents a benzene nucleus which may contain a radical selected from the group consisting of hydroxyl (—OH), halogen (—Cl, F, Br, I), nitro (—NO_2), alkyl (—C_nH_{2n+1}) and alkoxy (—OC_nH_{2n+1}); and X and Y individually represent a radical of alkyl, alkylalcohol (—C_nH_{2n}·OH) or alkoxy) with a diazonaphtholsulfonic acid.

3,674,496
NEGATIVE LIGHT-SENSITIVE MATERIAL
Jury Sergeevich Bokov, K-482, korpus 338a, kv. 61; Nina Vladimirovna Vikulina, K-482, korpus 505, kv. 57; Boris Aristarkhovich Dogadkin, Ulitsa Schukina 8/1, kv. 25; Boris Vasilievich Erofeev, Khlebny pereulok 9, kv. 26; Anastasia Vasilievna Larina, K-460, korpus 229, kv. 4; Vadim Petrovich Lavrischev, Ploschad Junosti 4, kv. 22; and Vladimir Vladimirovich Markov, Bolotnikovskaya ulitsa 42, korpus 3, kv. 88, all of Moscow, U.S.S.R.; Sofia Fadeevna Naumova, Tipografskaya ulitsa 3, kv. 69; and Olga Demidovna Jurina, Ulitsa V. Khoruzhaya 33, kv. 80, both of Minsk, U.S.S.R.; and Galina Dmitrievna Yarovaya, K-460, korpus 216, kv. 14, Moscow, U.S.S.R.
No Drawing. Filed Jan. 16, 1970, Ser. No. 3,481
Claims priority, application U.S.S.R., Apr. 11, 1968, 1,231,856
Int. Cl. G03c *1/52*
U.S. Cl. 96—91 N **5 Claims**

A negative light-sensitive material comprising a polymer base which is polycyclohexadiene-1,3 or a copolymer of cyclohexadiene-1,3 with diene hydrocarbons, an organic solvent and a light-sensitive additive of the type of bisazides.

3,674,497
PHOTOGRAPHIC EMULSIONS CONTAINING NONPOLYMERIC AMINES
Ramsis Gobran, Roseville, and Ronald F. Ofstead, Maplewood, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
No Drawing. Continuation-in-part of application Ser. No. 542,448, Apr. 14, 1966. This application Oct. 7, 1970, Ser. No. 78,934
Int. Cl. G03c *1/02*
U.S. Cl. 96—94 **8 Claims**

Improved, novel photographic emulsions comprising a photosensitive silver halide and a synthetic peptizing hydrophilic colloid therefor, containing incorporated therein about one to 200 mole percent based on silver present therein of the acidic salt of a nonpolymeric amine of the group consisting of alkylamines, aromatic amines, alkaryl amines, cycloalkyl amines, and heterocyclic amines or mixtures thereof, said amines having one to 18 carbon atoms for each amino nitrogen atom contained therein. Also provided is a process for making the novel emulsions. 1,8-menthane diamine, a preferred nonpolymeric amine, also forms a useful complex with silver halide.

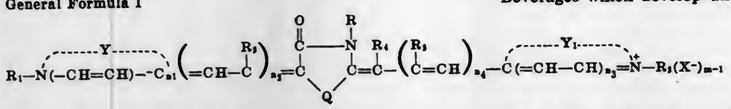
3,674,498
METHOD FOR APPLYING METAL CONTACTS ONTO DIODE ARRAY
John R. Rushton, Temple, Pa., assignor to Bell Telephone Laboratories, Inc., Murray Hill, N.J.
Filed Dec. 22, 1969, Ser. No. 887,206
Int. Cl. G03c; G03b
U.S. Cl. 96—119 **3 Claims**

A process is disclosed for applying metal contacts over a diode type storage device. An X–Y array of square metal contacts is formed on the diode-containing surface. The diode array and the square array require no registration other than a preselected relative orientation.

3,674,499
SILVER HALIDE PHOTOGRAPHIC SUPERSENSITIZED EMULSION
Keisuke Shiba, Masanao Hinata, Nobuo Tusji, Takushi Miyazaki, and Akira Sato, Kanagawa, Japan, assignors to Fuji Photo Film, Ltd., Nakanuma, Minami Ashigara Machi, Ashigara-Kamigun, Kanagawa, Japan
No Drawing. Filed May 27, 1970, Ser. No. 41,092
Claims priority, application Japan, May 27, 1969, 44/41,169
Int. Cl. G03 *1/10*
U.S. Cl. 96—123 **27 Claims**

A supersensitizing combination for use in a photographic emulsion comprising (1) a sensitizing dye having the general formula

General Formula I



wherein the symbols R, R_1, R_2, R_3, R_4, R_5, X, Y, Y_1, Q, n_1, n_2, n_3, n_4 and m are described hereinafter, and (2) a condensate of formalin with a halogenated polyhydroxy benzene or a halogenated cresol, is disclosed.

3,674,500
PROCESS OF PRODUCING A MEAT-LIKE TEXTURIZED FOOD PRODUCT
Taro Nagasawa, Mamoru Tomita, and Tomokazu Obayashi, Tokyo, Yoshitaka Tamura, Yokohama, and Yoko Kenmotsu, Odawara, Japan, assignors to Morinaga Milk Industry Co. Ltd.
Filed May 12, 1969, Ser. No. 823,783
Claims priority, application Japan, Dec. 23, 1968, 43/93,762
Int. Cl. A23j *1/14, 3/00*
U.S. Cl. 99—17 **24 Claims**

A foodstuff material having a meat-like texture is prepared by mixing a protein solution with a solution containing free divalent cations in the concentration of more than 0.06 mole so that the ratio is more than 0.25 millimole of the free divalent cations per 1 g. of the protein, reacting them in a highly alkaline region of pH 9 or higher at a temperature of above 40° C. to produce a coagulated protein and, after neutralizing the excess of alkali, filtering the coagulated protein, and washing with water and dehydrating it.

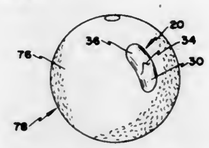
3,674,501
PREPARATION OF SOYBEAN DERIVATIVES USEFUL AS EGG WHITE EXTENDERS AND WHIPPING AGENTS
Norman L. Betz, Creve Coeur, and Nickolas J. Stepaniuk, Florissant, Mo. (both of 3600 N. 2nd St., St. Louis, Mo. 63160)
Filed Jan. 29, 1970, Ser. No. 6,792
Int. Cl. A23j *1/14*
U.S. Cl. 99—17 **6 Claims**

Substantially oil-free soybean grits are first extracted with an acid-water solution having a pH of 4–6 and containing a trace of proteolytic enzyme, the purpose of the latter being to remove or deactivate the enzyme inhibitor naturally present in soybeans. After separating the aqueous extract from the residual grits, preferably by continuous centrifugal separation, the former may be concentrated and purified by ultrafiltration and then spray-dried to recover a soya derivative that is a useful egg white extender. The extracted grits are subjected to enzymatic hydrolysis under conventional conditions, but the hydrolysis proceeds much more rapidly because of the previous enzyme treatment. The resulting aqueous hydrolysis solution is advantageously separated from the spent grits, then concentrated and purified as before. Improved soya-derived whipping agents are thereby obtained. Combining the acid-water and hydrolysis extracts yields an even broader range of novel soya-derivatives useful as egg white extenders and whipping agents.

3,674,502
NONRINGING BEVERAGES CONTAINING POLY(OXYETHYLENE) - POLY(OXYPROPYLENE) - POLY(OXYETHYLENE) COPOLYMERS
Raymond Honey, Mount Kisco, N.Y., and James Frank Perkins, Ramsey, N.J., assignors to Firmenich Incorporated, New York, N.Y.
No Drawing. Filed Sept. 5, 1969, Ser. No. 855,782
Int. Cl. A23l *1/26*
U.S. Cl. 99—28 **5 Claims**

Beverages which develop undesirable surface layers or rings during storage due to being flavored with normally difficultly dispersible flavor oils, such as citrus oils, mint oils and extracts of roots and herbs, are rendered clear and nonringing by use of poly(oxyethylene)-poly(oxypropylene)-poly(oxyethylene) copolymers therein.

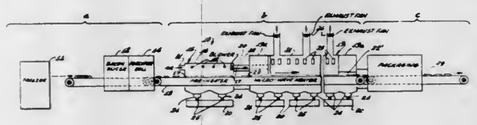
3,674,503
PEELING CITRUS FRUIT
Lyle J. Martinsen, Murray, Utah, assignor to Practical Innovations, Inc., Murray, Utah
Filed Feb. 9, 1970, Ser. No. 9,804
Int. Cl. A23l *1/00*
U.S. Cl. 99—100 **8 Claims**



Peelers for cutting and peeling citrus fruit and the like and related methods. Each peeler is formed in one piece and has a holding flange adapted to be gripped between the fingers of the user, a cutting portion having a cutting edge, and a depth gauge flange which regulates the depth of the cut made by the cutting edge. The holding flange and the depth gauge flange are joined to one another by a weakened or structurally less resistant bend line so that in one position the two flanges are linearly continuous with the cutting edge being closely juxtaposed the opposed flanges whereby the user of the citrus fruit is not advertently cut, and in another position the two flanges are angular with respect to each other, the cutting edge being situated in an exposed cutting position. Each peeler may be conveniently releasably attached, as by bonding, to the citrus fruit so that the peeler and citrus fruit may be conveniently

shipped, stored or carried by a person. The configuration of each peeler is adapted to match the exterior configuration of the fruit so as to be flush therewith when attached thereto.

3,674,504
PROCESS FOR COOKING BACON AND OTHER MEAT PRODUCTS USING INFRA-RED AND MICROWAVE ENERGY
Alan B. Lane, Northridge, Calif., assignor to Hunt-Wesson Foods, Inc., Fullerton, Calif.
Continuation of application Ser. No. 737,074, June 14, 1968, which is a continuation-in-part of application Ser. No. 646,008, June 14, 1967. This application June 5, 1970, Ser. No. 41,778
Int. Cl. A22c *18/00*
U.S. Cl. 99—107 **5 Claims**



A process for cooking cold or refrigerated bacon and other meat products comprising preheating the sliced and shingled bacon or other meat products by conventional means, e.g. infra-red heating, to a temperature above about 50° F. and preferably below 150° F. and thereafter further heating the meat product by microwave energy until it is properly precooked to a desired degree.

3,674,505
PROCESS FOR MANUFACTURING INSTANT HAMBURGER STEAK
Yuichi Shinkawa, 21–8, 3-chome, Tsukishima, Chuo-ku, Tokyo, Japan
No Drawing. Continuation-in-part of application Ser. No. 687,483, Dec. 4, 1967. This application Jan. 11, 1971, Ser. No. 105,624
Int. Cl. A22c *18/00*
U.S. Cl. 99—108 **3 Claims**

A process for manufacturing an instant hamburger steak which comprises kneading meats and vegetables with starch, flavoring the kneaded hamburger material with seasoning and spices, immersing the flavored material in hot edible oil for a suitable period to effectuate a preliminary cooking, taking the material out of the edible oil to permit cooling and instantaneously dipping the cooled material into molten fat so as to form a film of fat in solid state around the whole surface of the hamburger steak. Alternatively, the preliminary cooking can be effected by steaming, or by steaming followed by immersion in hot cooking oil.

3,674,506
FORMING A FILLED EDIBLE CASING
Eugene D. Schilling and Phyllis I. Burchill, Minnneapolis, Minn., assignors to General Mills, Inc.
No Drawing. Filed Mar. 18, 1970, Ser. No. 20,799
Int. Cl. A22c *11/00, 13/00*
U.S. Cl. 99—109 **16 Claims**

Preparation of filled edible casing by extruding edible plastic mass of non-heat coagulable simple protein and water in the form of a casing and introducing an edible flowable material into the casing as said casing is being formed.

3,674,507
VOLUME-INFLATED FREEZABLE PRODUCT PRESERVABLE IN THE FRESH STATE AND A PROCESS FOR MANUFACTURING SAME
Daniel Carasso, Paris, France, assignor to Societe Anonyme dite: Compagnie Gervais-Danone, Courbevoie, France
Filed Oct. 24, 1969, Ser. No. 869,185
Int. Cl. A23g *5/00*
U.S. Cl. 99—136 **11 Claims**

A milk based insufflated product having a volume increase factor of 1.4 to 2.0 and containing milk, cream, sugar, coloring matter and essences in combination with a 0.1–1% of a stabilizer against syneresis, about 0.2–1% of a stabilizer for insuring an insufflated structure and about 0.2–3% of at least one starchy substance.

3,674,508
PRODUCTION OF CHEESE FLAVOR
Robert L. Kasik, Oak Lawn, and Anthony J. Luksas, Chicago, Ill., assignors to Beatrice Foods Co., Chicago, Ill.
No Drawing. Filed May 13, 1969, Ser. No. 824,250
Int. Cl. A23c *19/02, 19/12*; A23l *1/26*
U.S. Cl. 99—140 R **34 Claims**

A basic cheese flavor or a cheddar cheese flavor is produced in a short time by growing a combination of one member of the genus Bacillus and one member of the genus Streptococcus in an aqueous medium containing a protein and a carbohydrate.

3,674,509
PROTEIN CROSS-LINKED WITH PHOSPHONITRILIC HALIDE
Robert E. Miller, Ballwin, Mo., assignor to Monsanto Company, St. Louis, Mo.
No Drawing. Filed Oct. 27, 1970, Ser. No. 84,479
Int. Cl. A23j *3/00*; A23k *1/18*
U.S. Cl. 99—2 N **8 Claims**

Improved protein feed material for ruminants which is resistant to digestive breakdown in the rumen but not in the abomasum and/or intestines which comprises the reaction product of a protein-containing feed material and a phosphonitrilic halide. Exemplary of such phosphonitrilic halides is phosphonitrilic chloride trimer.

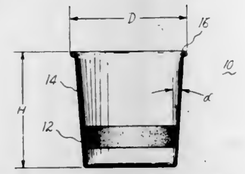
3,674,510
METHOD AND COMPOSITION FOR PREVENTING DECAY OF FRUIT AND INHIBITING SPORULATION THEREON
John R. Bice and Philip J. Lewis, Corona, Calif., assignors to Brogdex Company, Pomona, Calif.
No Drawing. Filed July 10, 1970, Ser. No. 53,996
Int. Cl. A23b *7/14*
U.S. Cl. 99—154 **6 Claims**

A method for simultaneously controlling molds and fungi, which cause decay of fruit, and inhibiting sporulation of said molds and fungi on said fruit, by directly contacting the surface of such fruits with 2-(4-thiazolyl) benzimidazole and an alkali metal salt of ortho-phenyl phenol tetrahydrate, the amount of 2-(4-thiazolyl)benzimidazole applied to said fruit being sufficient to leave a residue on the surface of said fruit of 1 to 2 parts per million, by weight based on the weight of the fruit, and the amount of the alkali metal salt of ortho-phenyl phenol tetrahydrate applied to said fruit being sufficient to leave a residue on the surface of said fruit of from 5 parts per million to 10 parts per million, by weight expressed as ortho-phenyl phenol, based on the weight of the fruit.

3,674,511
TREATMENT OF SAUSAGE CASING FOR EASY PEELING
Henry J. Rose, Albin F. Turbak, and Thomas E. Leahy, Jr., Danville, Ill., assignors to Tee-Pak, Inc., Chicago, Ill.
No Drawing. Filed Sept. 22, 1969, Ser. No. 860,087
Int. Cl. A22c *13/00*
U.S. Cl. 99—176 **6 Claims**

Sausages, such as frankfurters and bolognas, formed in synthetic casings are more easily peeled by soaking the casings, either prior to or after stuffing with a sausage emulsion, with a soluble non-toxic food grade salt, complex, or coordination compound of iron, aluminum, calcium or magnesium which will interact with components of the sausage emulsion to modify the surface characteristics of the sausage. The soluble metal compound in some cases may be applied to casings, e.g. frankfurter casings, at the time of manufacture just prior to drying the casing. The soluble metal compounds however may be applied more generally to all types of casings either just prior to or at some point after the stuffing of the casing with sausage emulsion. In the case of larger casings of the type used for bolognas the soluble metal compounds may be applied to the soak water. These soluble metal compounds may also be applied as an external soak bath for the stuffed sausages, both of the frankfurter and bologna types, or in the shower applied to soak the casings prior to peeling, to saturate the casing and provide a uniform application of the metal compound to interact with the sausage emulsion components at the surface contacting the casing. The use of casings soaked or impregnated with these metal compounds facilitates removal of the casing from the smoked and/or cooked sausages at a time when the untreated casing could not be peeled from the sausage.

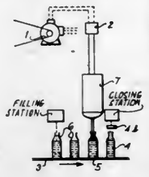
3,674,512
PLASTIC CONTAINERS
Arthur A. Andros, Brussels, Belgium, assignor to Monsanto Europe S.A., Brussels, Belgium
Filed Nov. 21, 1969, Ser. No. 878,791
Claims priority, application Great Britain, Nov. 22, 1968, 55,539/68
Int. Cl. B65d *85/76, 1/26*
U.S. Cl. 99—178 **5 Claims**



A plastic container the inside of which has an area of roughness so that when the container is filled with yogurt or other similarly viscous product, the tendency of the product to separate into its components or more independently of the container wall is lessened.

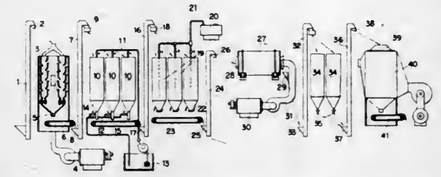
3,674,513
METHOD FOR PACKING CARBONATED BEVERAGES INTO CONTAINERS USING ELECTROMAGNETIC ENERGY
Nils Ake Elsner, Hagersten, and Hans Erik Nilson, Stockholm, Sweden, assignors to Infrarodteknik AB, Vanersborg, Sweden
Filed Dec. 18, 1969, Ser. No. 886,106
Claims priority, application Sweden, Dec. 20, 1968, 17,558/68
Int. Cl. B65b *55/16*
U.S. Cl. 99—217 **1 Claim**

A method for packing carbonated beverages into containers is disclosed. A container is almost but not completely filled through an inlet opening thereof with a carbonated beverage, an unfilled space remaining between the level of the beverage and the inlet opening. Infrared electromagnetic waves or microwaves are directed through the inlet opening into the beverage, thereby liberating the



carbon dioxide in the carbonated beverage so that the carbon dioxide forms gas bubbles which form a layer of foam above the level of the liquid, filling the empty space in the container and expelling residual air from this empty space. Immediately thereafter the inlet opening is fluid-tightly sealed.

3,674,514
SYSTEM FOR PREPARING PARBOILED ROUGH RICE
Toshihiko Satake, 2–38 Nishihon-machi, Saijo-cho, Kamo-gun, Hiroshima-ken, Japan
Filed Aug. 28, 1970, Ser. No. 67,935
Int. Cl. A23b *9/00*
U.S. Cl. 99—237 R **7 Claims**



A system for preparing parboiled rough rice, in which apparatus is provided for providing brown rice enwrapped in chaffs with cracks, in advance of subjecting it to moistening, steaming and drying steps, whereby the time required for properly moistening the rough rice is remarkably shortened and parboiled rough rice thus prepared become enriched because of nutritious substances which are penetrated inwardly into endosperm thereof by means of water absorbed thereinto through the cracks.

3,674,515
METALIZING COMPOSITION INCLUDING DEGASSED PLATINUM POWDERS
Denis G. Kelemen, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
No Drawing. Original application Mar. 27, 1968, Ser. No. 716,357, now Patent No. 3,511,640, dated May 12, 1970. Divided and this application Jan. 30, 1970, Ser. No. 7,230
Int. Cl. H01b *1/02*; C09d *5/24*
U.S. Cl. 106—1 **3 Claims**

A process of preparing degassed platinum powders comprising mixing finely divided platinum powder with at least an equal volume of a diluent metal oxide powder, heating the powder mixture for a sufficient time to dissipate substantially all gases from the platinum powder, cooling the powder mixture and separating the platinum powder from the diluent. The degassed platinum powders are particularly suitable for application to "green" ceramic sheets employed in the production of monolithic multilayer ceramic circuit components.

3,674,516
ELECTROLESS CODEPOSITION OF NICKEL ALLOYS
Zlata Kovac, 5 Bayard Road, Apt. 913, Pittsburgh, Pa. 15213
No Drawing. Filed Nov. 27, 1970, Ser. No. 93,444
Int. Cl. C23c 3/02
U.S. Cl. 106—1 14 Claims

The invention relates to a method for electrolessly depositing a nickel-tin alloy layer and for depositing a nickel-molybdenum alloy layer and to baths therefor. The electroless plating bath for Ni-Sn comprises an aqueous solution containing nickel ions, stannate ions, sodium tartrate, sodium hypophosphite, glycine and sufficient KOH to bring the bath to a pH of about 13.5. The electroless plating bath for Ni-Mo comprises an aqueous solution containing Ni ions, glycine, sodium hypophosphite, molybdate ions, and KOH to bring the pH to about 13.5.

3,674,517
SOLUTION FOR DEPOSITING TRANSPARENT METAL FILMS
Richard G. Miller, Pittsburgh, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.
No Drawing. Continuation-in-part of application Ser. No. 829,755, June 2, 1969. This application July 23, 1970, Ser. No. 57,754
Int. Cl. C23c 3/02
U.S. Cl. 106—1 10 Claims

An aqueous chemical filming composition that deposits a transparent coating having a metallic luster at a rate which is relatively rapid and then relatively slower; and which effectively ceases to produce coating while the coating remains transparent is disclosed.

3,674,518
REFRACTORY DRESSING METHOD
Jean-Claude Vuaroqueaux, La Celle-Saint-Cloud-Jonchere, France, assignor to Toseco International Limited, Birmingham, England
No Drawing. Filed Jan. 19, 1970, Ser. No. 4,094
Int. Cl. B28b 7/38
U.S. Cl. 106—38.27 5 Claims

The base and walls of ingot moulds may be protected against molten metal erosion in use by applying a refractory dressing of a magnesium aluminate, e.g. a crushed aluminous slag, together with an inorganic binding agent therefor, in a liquid medium.

3,674,519
METHOD OF MANUFACTURING PORCELAIN FOR ELECTRIC INSULATORS BY CONTROLLING GRAIN SIZE
Noboru Higuchi and Yutaka Ogawa, Nagoya, and Akihiro Watanabe, Hiashima, Japan, assignors to NGK Insulators, Ltd., Nagoya, Japan
Filed Aug. 29, 1969, Ser. No. 855,465
Claims priority, application Japan, Nov. 21, 1968, 43/84,820
Int. Cl. C04b 33/26
U.S. Cl. 106—46 10 Claims

The toughness of porcelain materials, or the crack-propagation-resistance thereof, can be improved by using quartz or calcined bauxite with a controlled grain size distribution. A method for producing porcelains with improved toughness, by firing at a temperature of 1,180° C. to 1,350° C., a body containing less than 30.0% by weight of quartz having a grain size distribution consisting of less than 2.0% by weight of particles with an effective diameter smaller than 10 microns and more than 97.0% by weight of particles with an effective diameter smaller than 50 microns, or a body containing 10.0 to 60.0% by weight of calcined bauxite grains having a grain size distribution consisting of less than on the order of about 3% by weight of particles with an effective diameter smaller than 1 micron and less than 60.0% by weight of particles with an effective diameter smaller than 10 microns and more than 97.0% by weight of particles with an effective diameter smaller than 60 microns.

3,674,520
SOLDER GLASS FOR ADHERING, SEALING OR COATING
Yoshiro Suzuki and Shigehiro Nagahara, Tokyo, and Nobuyoshi Ichimura, Yokohama, Japan, assignors to Asahi Glass Company Limited, Tokyo, Japan
No Drawing. Filed Sept. 17, 1970, Ser. No. 73,212
Claims priority, application Japan, Sept. 27, 1969, 44/76,701
Int. Cl. C03c 3/04, 3/08, 5/00
U.S. Cl. 106—54 1 Claim

A solder glass suitable for adhering, sealing and coating a shaped refractory or semiconductor device, which contains by weight, ZnO 60–68%; B_2O_3 20–30%, SiO_2 8–11%, and SnO_2 0.1–3.0%; and which preferably further contains one or more of PbO 0–6%, Sb_2O_3 0–0.8%, As_2O_3 0–0.5%, CeO_2 0–1.5%, Ta_2O_5 0–1.0%, and/or Nb_2O_5 0–1.0%.

The solder glass of this invention is characterized by a remarkably low coefficient of thermal expansion and which is capable of protecting a semiconductor device.

3,674,521
CLAY
Frank Raymond Noble, Cornwall, England, assignor to English Clays Lovering Pochin & Company Limited, Cornwall, England
No Drawing. Filed May 5, 1970, Ser. No. 34,881
Claims priority, application Great Britain, May 12, 1969, 24,165/69
Int. Cl. C04b 33/12
U.S. Cl. 106—72 15 Claims

The invention concerns a method of treating a raw kaolinitic clay in order to improve the rheological properties thereof. The raw kaolinitic clay is saturated or substantially saturated with cations selected from the group consisting of lithium ions, magnesium ions and sodium ions, and is then heated to a temperature in the range of from 200° C. to 450° C. The clay is washed with an aqueous washing medium after it has been saturated or substantially saturated with said cations and either before or after said heating.

3,674,522
MASONRY MATERIALS THAT RESIST EFFLORESCENCE AND ARE COLORED WITH INCREASED INTENSITY AND PERMANENCE, AND METHODS OF PRODUCING SUCH MATERIALS
Johannes Petrus Brants, Apeldoorn, and Johan van der Meulen, Amsterdam, Netherlands, assignors to Akzo N.V., Arnhem, Netherlands
No Drawing. Filed Feb. 22, 1971, Ser. No. 117,695
Claims priority, application Netherlands, Feb. 25, 1970, 7002633, 7002634
Int. Cl. C04b 7/56
U.S. Cl. 106—90 25 Claims

Efflorescence of masonry structures composed of cold-hardened masonry materials, such as, concrete, sand-lime bricks, asbestos cement and cement plasterwork, or of stone or fired bricks, is suppressed by the condensation product of at least one alkylene polyamine and/or polyalkylene polyamine, and epichlorhydrin. The condensation product in the form of an aqueous or more volatile solution thereof may be applied to the surfaces of the masonry structure or, in the case of such structures composed of cold-hardened materials, is preferably incorporated in such material prior to the hardening or setting thereof. The condensation product is further found to increase the coloring power and permanence of pigments when added with the latter to cold-hardening materials prior to the hardening or setting thereof.

3,674,523
OIL MODIFIED CELLULOSIC SAUSAGE CASINGS
Henry J. Rose and Albin F. Turbak, Danville, Ill., assignors to Tee-Pak, Inc., Chicago, Ill.
No Drawing. Continuation-in-part of applications Ser. No. 431,181, Feb. 8, 1965, and Ser. No. 763,942, Sept. 30, 1968, now Patent No. 3,607,328. This application Dec. 30, 1970, Ser. No. 102,986
Int. Cl. C08b 21/20
U.S. Cl. 106—168 4 Claims

Tubular regenerated cellulose films suitable for use as sausage casings are prepared by incorporating a single vegetable or animal fatty oil or mineral oil in viscose and extruding the resulting mixture into conventional coagulation and regeneration and wash baths. The oil is added in an amount ranging from about 0.1–12% based on the weight of cellulose and is emulsified into the viscose to produce oil droplets in the cellulosic casing having individual particle sizes less than 0.1 mm. in diameter. Cellulosic sausage casings having an oil content and particle size in the range specified are soft and flexible and may be shirred at moisture contents ranging from about 5% to about 20% without the necessity of adding additional moisture to the shirred product, or using shirring lubricant during shirring.

3,674,524
WOOD COATING COMPOSITION COMPRISING CHOLESTEROL, GLYCERIDE OIL OR SQUALENE AND A LIQUID FATTY ACID
Gertrude S. Littlepage, 3410 38th St., Washington, D.C. 20016
No Drawing. Filed July 22, 1970, Ser. No. 57,346
Int. Cl. C08h 9/00
U.S. Cl. 106—243 11 Claims

Compositions which consist essentially of cholestrol or an oil selected from a glyceride oil squalene in a normally fatty acid such as oleic acid as a solvent are found to provide novel wood processing and finishing formulations. The compositions are characterized by extraordinarily deep wood-penetrating power and an ability to endow wood with unusual protective properties. Other advantages of the compositions reside in their ability to (1) restore usual sheen, add desired sheen and enhance or improve color, (2) bring out the natural beauty and true color of wood, (3) remove spots and conceal marks or scratches.

3,674,525
PLASTICIZED SULFUR COMPOSITIONS
Rector P. Louthan, Bartlesville, Okla., assignor to Phillips Petroleum Company
No Drawing. Filed Feb. 25, 1970, Ser. No. 14,195
Int. Cl. C07g; C08h; C09k
U.S. Cl. 106—287 SC 6 Claims

The viscosity of plasticized sulfur compositions comprising elemental sulfur plasticized with an organic sulfur-plasticizing agent is reduced by the addition of a modifying amount of an unsaturated acid or unsaturated acid anhydride to the plasticizing agent prior to its use for plasticizing sulfur.

3,674,526
MOLDABLE METAL POWDER COMPOSITIONS
James M. Self, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
No Drawing. Continuation-in-part of application Ser. No. 739,627, June 25, 1968. This application Mar. 10, 1970, Ser. No. 18,345
Int. Cl. C08h 17/24
U.S. Cl. 106—286 9 Claims

This invention is generally directed toward compositions of metal powder aggregate or mixtures of a metal powder aggregate and a refractory, and a siliceous binder which when formed and cured are useful as strong, heat conductive shapes, e.g. tooling compounds; and cured articles of the above composition.

3,674,527
PIGMENT COMPOSITIONS
Alfons Anzelm Komander, Manchester, England, assignor to Imperial Chemical Industries Limited, London, England
No Drawing. Filed Jan. 9, 1970, Ser. No. 1,849
Claims priority, application Great Britain, Jan. 14, 1969, 2,097/69
Int. Cl. C08h 17/66
U.S. Cl. 106—289 8 Claims

Manufacture of pigment compositions by simultaneously precipitating heavy metal lake of a water soluble acid dye heavy metal salt of a rosin, at pH 7–8 in presence of a non-ionic surface active agent which has a cloud point at or below the temperature at which the precipitation is carried out.

3,674,528
TITANIUM DIOXIDE PIGMENT COMPOSITIONS OF MATTER USEFUL IN PRINTING INK COMPOSITIONS
George E. Bronson, Englishtown, N.J., assignor to NL Industries, Inc.
No Drawing. Filed Oct. 22, 1970, Ser. No. 83,166
Int. Cl. C09c 1/36
U.S. Cl. 106—300 2 Claims

The present invention relates to a titanium dioxide pigment composition having improved properties when used in polyamide printing inks. The composition of the instant invention comprises titanium dioxide pigment particles coated with small but effective amounts of the nonanoic acid salt of triethanolamine and the propionic acid salt of triethanolamine.

3,674,529
PIGMENTS
Gerald Lance Toms, Cornwall, England, assignor to English Clays Lovering Pochin & Company Limited, Cornwall, England
Filed Sept. 8, 1970, Ser. No. 70,114
Claims priority, application Great Britain, Sept. 9, 1969, 44,561/69
Int. Cl. C09c 1/02, 1/28
U.S. Cl. 106—306 14 Claims

A method of preparing a mixed pigment which comprises blending together (a) an aqueous suspension of a deflocculated calcium carbonate pigment, and (b) an aqueous suspension of a flocculated clay pigment, and dewatering the blended aqueous suspensions to obtain a cake of the desired mixed pigment.

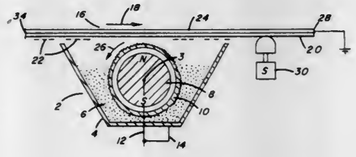
3,674,530
OPTICAL GLASSES HAVING IMPROVED SPECTRAL TRANSMISSION PRODUCED FROM MERCURY NITRATE CONTAINING GLASS BATCHES
Emil W. Deeg, Woodstock, Conn., and Robert E. Graf, Southbridge, Mass., assignors to American Optical Corporation, Southbridge, Mass.
Continuation of abandoned application Ser. No. 848,216, Aug. 7, 1969. This application Mar. 18, 1971, Ser. No. 125,885
Int. Cl. C03c 3/00
U.S. Cl. 106—47 Q 5 Claims

The invention relates to a series of new glasses of the low crown and low flint type but with refractive indices lower than those previously obtainable and with improved spectral transmission. The crux of the invention provides for the controlled inclusion of an effective amount of mercury nitrate in glass batch compositions.

3,674,531
SYNTHETIC POLYESTER FILM ASSEMBLIES
Basil Robert Shephard, Margaret Loudon Clachan, and David Rankine Kennedy, Manningtree, Essex, and Terence Arnold Abbott, Norwich, England, assignors to Bexford Limited, Manningtree, England
No Drawing. Continuation of abandoned application Ser. No. 809,377, Mar. 21, 1969. This application June 1, 1971, Ser. No. 148,974
Claims priority, application Great Britain, Mar. 25, 1968, 14,283/68
Int. Cl. G03c 1/80
U.S. Cl. 117—7 25 Claims

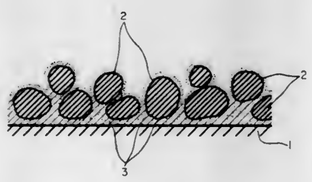
A film assembly suitable for use as a base for photographic film comprises synthetic linear polyester film base carrying a layer of a copolymer of a vinyl halogeno ester such as vinyl chloroacetate with at least one other monomer copolymerisable therewith, the said monomer and at least one of said monomers being selected so that the final copolymer has a softening point lower than that of the product obtained by polymerisation in the absence of the said selected monomer or monomers.

3,674,532
CONTROL FOR BIAS OF MAGNETIC BRUSH AND METHOD
Theodore H. Morse, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed July 23, 1970, Ser. No. 57,653
Int. Cl. G03g 13/08, 15/08
U.S. Cl. 117—17.5 6 Claims



Improved development of electrostatic charge patterns is achieved by the use of the development control device disclosed which electrically biases a magnetic brush during development to a voltage initially sensed by the brush.

3,674,533
METHOD OF MAKING A MATERIAL FOR FORMING A WALL SURFACE
Mitio Matsubara, Marugame, Shigeyuki Yagyu, Oazahiga, and Satoru Takeuchi, Marugame, Japan, assignors to Shikoku Kasei Kogyo Company Limited, Marugame, Japan
Filed May 21, 1970, Ser. No. 39,242
Int. Cl. B28b 19/00; E04f 21/02
U.S. Cl. 117—27 4 Claims



Material for forming a wall surface with an embossed appearance and a method for making the same. The material comprises aggregate particles, colored clay, short fibers, and a water-soluble adhesive. The short fibers hold the aggregate particles to the wall surface. The material can be plastered on the wall surface by spraying or by trowelling.

3,674,534
PREPARATION OF TWO-SIDE COATED PHOTOSENSITIVE PAPERS
Michael John Connair, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
No Drawing. Filed Nov. 30, 1970, Ser. No. 93,891
Int. Cl. B44d 1/02, 1/14
U.S. Cl. 117—34 5 Claims

Photosensitive papers such as proofing paper, imageable on both sides, are produced by (a) first coating one side with a composition comprising a volatile organic solvent and a film-forming polymeric binder, and photosensitive ingredients, followed by drying to evaporate the solvent at a controlled rate, thereby forming a film, then (b) sequentially coating the second side with the composition in two or more coating and drying stages. Careful control of the multi-stage coating conditions, drying steps, volatile organic solvents, polymeric binders, photosensitive composition, and paper substrates yield blister-free, two-side coated, photosensitive papers.

3,674,535
HEAT-SENSITIVE RECORD MATERIAL
James H. Blose, Dayton, and Shashikant G. Talvalkar, Xenia, Ohio, assignors to The National Cash Register Company, Dayton, Ohio
No Drawing. Filed July 15, 1970, Ser. No. 55,233
Int. Cl. B41m 5/18
U.S. Cl. 117—36.8 2 Claims

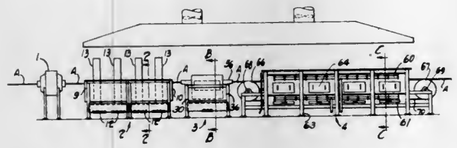
A heat sensitive record material which comprises (1) a base sheet such as paper, and (2) a coating of a colorless chromogenic material and a bisphenol distributed in a polyvinyl alcohol in combination with a filler such as clay, a lubricant such as zinc stearate and a nontacky wax. Conventional wetting agents and defoamers also are present in the record material. This material is resistant to pick-off of the record sheet surface and freeze-sticking of the record sheet to the printing head when the record material is used in conjunction with a rapidly heated and cooled printing head.

3,674,536
METALLIZED POLYOLEFIN COMPOSITIONS CONTAINING COUMARONE-INDENE RESINS AND METHOD OF PREPARING
Habet M. Khelghatian and Wassily Poppe, Springfield, Pa., assignors to Arisum Corporation, Philadelphia, Pa.
No Drawing. Filed Jan. 6, 1969, Ser. No. 789,423
Int. Cl. B44d 1/092; C23c 3/02
U.S. Cl. 117—47 A 7 Claims

Solid, substantially crystalline polyolefin compositions are provided from blends of a polyolefin and from about 1% to about 55% by weight of a compatible thermoplastic adhesion-promoting coumarone-indene resin modifier. The modified compositions may be metallized by conventional electroplating or other metallizing processes to form metallized shaped articles.

3,674,537
PROCESS FOR COATING WIRE
Rudolph S. Bratko, 10712 Harvard Ave., Cleveland, Ohio 44105
Filed Oct. 30, 1969, Ser. No. 872,501
Int. Cl. B44d 5/10
U.S. Cl. 117—49 9 Claims

The disclosure herein is of a method and apparatus for applying a coating to wire or the like in a continuous manner, which coating acts as both a lubricant and protective covering for the wire, to facilitate either storage of the wire or subsequent drawing operations to be performed thereon. The term "wire" is intended to note various diameters of the material and also shapes of cross section thereof, and includes rod or the like where it is desired to apply a coating thereto.



The coating is effected by preliminarily cleaning the wire as by shotblasting or the like, subsequently raising the temperature of the wire by a preheating operation, thereafter applying the coating whether the same be calcium hydroxide, borax or the like, and subsequently drying the coating, all of the foregoing being effected while the wire or rod or material is moving so that a continuous coating operation is performed and the usual coiling and recoiling may be obviated.

3,674,538
HEAT-SENSITIVE SHEET
Takashi Suzuki, Ikeda-shi, Japan, assignor to Matsushita Electric Industrial Co. Ltd., Osaka, Japan
No Drawing. Continuation-in-part of application Ser. No. 514,800, Dec. 20, 1965. This application Apr. 8, 1969, Ser. No. 814,433
Int. Cl. B41m 5/26
U.S. Cl. 117—36.7 6 Claims

A heat-sensitive sheet using a mixture of p-cresyl phosphate and other organic phosphoric acid esters such as triphenyl phosphate, tributyl phosphate, 2 - ethylhexyl phosphate and mixtures of tricresyl phosphate isomers.

3,674,539
METHOD FOR PROCESSING CELLULOSIC FIBRE MATERIAL
Andre Parisot, Saint-Cloud, and Daniel Meimoun, Rueil-Malmaison, France, assignors to Institut Textile de France, Boulogne-sur-Seine, France
No Drawing. Filed Aug. 12, 1969, Ser. No. 849,490
Claims priority, application France, Aug. 14, 1968, 163,110
Int. Cl. B44d 1/092
U.S. Cl. 117—56 16 Claims

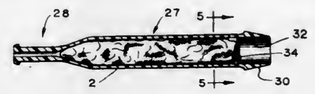
Textile articles composed partially or totally of cellulose fibres are improved by

(a) swelling the fibres by means of an aqueous solution of a compound which interrupts hydrogen bonding such as an organic or inorganic base the concentration of such solution being such as to limit the swelling to a determined level;

(b) replacing the aqueous swelling solution within the swollen fibre progressively by a series of liquids, the first of which is miscible in all proportions with water such as an alcohol, acetone, dioxan, and the like, and the last of which is miscible in all proportions with that which precedes it such as an aromatic hydrocarbon, and without variation of the initial state of swelling;

(c) including into the fibre a relatively elastic substance which has an initial modulus of elasticity lower than of cellulose such as isoprene, butadiene, and the like.

3,674,540
METHOD OF MAKING A FILTER FOR TOBACCO SMOKE
Stavros Pergaminos, 5 Pythias St., Athens (809), Greece
Filed Aug. 26, 1969, Ser. No. 853,087
Int. Cl. A24c 5/50
U.S. Cl. 117—56 9 Claims



A highly porous filter for tobacco smoke made up of a demineralized, defatted, gas-fluffed and bleached woven cotton fabric gauze impregnated with a mixture of water soluble chlorophyll, tannic acid and glycerine.

The bleached fabric is defatted by dipping in an aqueous caustic soda solution followed by rinsing and drying. Defatting increases the porosity and surface area of the fabric, of the threads thereof and of the fibers themselves, thereby increasing the amount of the chlorophyll-tannic acid-glycerine mixture which can be subsequently absorbed and/or adsorbed by the fabric and increasing the capacity of the fabric to retain, and thereby remove from the tobacco smoke, the toxic materials in such smoke. The defatted fabric is demineralized by dipping in an aqueous hydrochloric acid solution. Demineralizing further increases the porosity and surface area of the fabric, the threads and the fibers, thereby further increasing the amount of the aforesaid mixture which can be absorbed and/or adsorbed by the fabric and the capacity of the fabric to remove the toxic materials in the tobacco smoke. The defatted, demineralized fabric is gas-fluffed by dipping the fabric, while it still contains hydrochloric acid from the demineralizing step, into a solution of sodium bicarbonate to neutralize the hydrochloric acid and generate in the interstices of the fabric and threads CO_2 gas which thins or spreads or disperses and thereby fluffs the fabric and threads to further increase the surface area and porosity thereof, followed by drying.

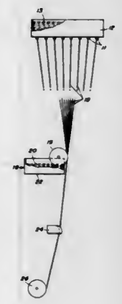
The mixture of chlorophyll, tannic acid and glycerine is applied to the defatted, demineralized and gas-fluffed fabric by dipping in a solution of such mixture in water and ethyl alcohol followed by drying.

The treated fabric is loosely packed within a confined volume to provide a highly efficient filter, which is effective to remove as high as 85% of the tars present in cigarette or cigar smoke without deleteriously affecting draw. The filter may take the form of a cigarette or cigar filter which may be manufactured and sold as part of the cigarette or cigar or it may be packed in a capsule for insertion in a cigarette or cigar holder or it may be packed directly in a dispensable cigarette or cigar holder.

3,674,541
ALUMINUM PLATING PROCESS
Eiichi Ichiki, Kazuo Iida, Yasuhiko Inoue, and Yoshihiro Kondo, Niihama, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan
No Drawing. Filed Oct. 26, 1970, Ser. No. 84,188
Claims priority, application Japan, Oct. 29, 1969, 44/87,115; Oct. 31, 1969, 44/87,740
Int. Cl. B44d 1/44, 1/48; C23c 11/00
U.S. Cl. 117—62 18 Claims

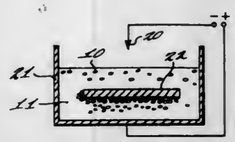
Aluminum plating according to which aluminum film formed has no cracks and pin-holes, a uniform thickness and excellent surface luster can be attained by contacting a substrate covered with aluminum with a small amount of a surface treating agent selected from active hydrogen-containing compounds, oxygen and halogens and thereafter taking out thus treated substrate into the air.

3,674,542
GLASS FIBERS SIZED WITH A COMPOSITION COMPRISING A VINYLIC AROMATIC-DIOLEFIN COPOLYMER AND A HYDROLYZABLE SILANE
Byron M. Vanderbilt, Westfield, N.J., and James J. Fasnacht, Shaler Township, Allegheny County, Pa.; said Vanderbilt assignor to Esso Research and Engineering Company, and said Fasnacht assignor to PPG Industries, Inc.
Original application Sept. 8, 1965, Ser. No. 485,857, now Patent No. 3,484,223, dated Dec. 16, 1969. Divided and this application June 17, 1969, Ser. No. 854,001
Int. Cl. C03c *25/02*
U.S. Cl. 117—72 31 Claims



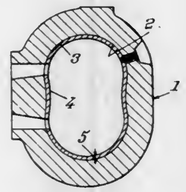
The disclosed invention relates to a method of coating glass fibers with a carrier medium having 1–10% of solid, non-blocking, unsaturated copolymer of a vinyl aromatic, a C_4 to C_8 diolefin in which at least 50% of the unsaturation is of the 1,2 or 3,4 type, the average molecular weight being about 1,000 to 30,000, additionally the carrier contains 0.2 to 2% of a hydrolyzable silane.

3,674,543
ELECTRODEPOSITION
Masamichi Sato, 105 Ohaza, Mizonuma, Asaka-shi, Saitama, Japan
Filed Aug. 18, 1970, Ser. No. 64,687
Claims priority, application Japan, Aug. 18, 1969, 44/64,832
Int. Cl. B01k *5/02*
U.S. Cl. 117—93 7 Claims



A method of electrodepositing a coating onto a substrate from a bath of coating particles suspended in an electrically insulating liquid by immersing the substrate either wholly or partially into the bath. A pair of electrodes are provided on either side of the substrate but insulated from it. One electrode may contact the bath, for instance it may lie inside the container or be the container. The other electrode is supported outside of the bath. A potential is applied to the electrodes sufficient to cause a corona discharge through the bath whereby the particles are electrophoretically moved to and deposited on the substrate.

3,674,544
METHODS OF COATING SURFACES AND IN ELEMENTS COMPRISING SUCH SURFACES
Albert Grosseau, Chaville, France, assignor to Societe Anonyme Automobiles Citroen, Paris, France
Filed Dec. 24, 1969, Ser. No. 887,828
Claims priority, application France, Dec. 31, 1968, 182,896
Int. Cl. B05b *5/00, 7/08, 7/14*
U.S. Cl. 117—93.1 PF 9 Claims

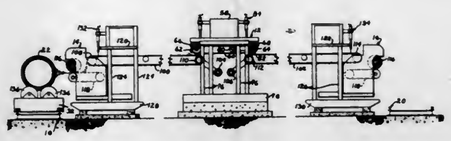


The inner surface of a light alloy crank-case envelope of a rotary piston engine is coated by spraying a wear-resistant layer thereon. Carbon steel and nickel aluminide are sprayed on simultaneously by at least two oxy-acetylene flame or plasma flame guns. Spherical grain particles such as SiC, TiB or BC can be incorporated.

3,674,545
RADIATION CURABLE EPOXY COATING COMPOSITION AND METHOD OF COATING
Clifford Hugh Strolle, Springfield, Pa., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
No Drawing. Filed Apr. 7, 1970, Ser. No. 26,436
Int. Cl. B44d *1/50;* C08f *1/16*
U.S. Cl. 117—93.31 9 Claims

A radiation curable coating composition comprised of an epoxy ester syrup, Epon phosphate syrup, silicone-wax dispersion and a polyfunctional unsaturated monomer.

3,674,546
METHOD FOR COATING PIPE
Robert J. Harris, Marrero, and Irvin J. Lee, Gretna, La., assignors to H. C. Price Co., Bartlesville, Okla.
Filed Jan. 6, 1971, Ser. No. 104,428
Int. Cl. B44d *1/02, 1/08*
U.S. Cl. 117—94 7 Claims



A method and apparatus for coating a pair of pipe sections utilizes spaced, parallel, track vehicles for moving the sections on opposite sides of a central coating station. Coating material is alternately supplied from the station to two applicators, which are located adjacent and perpendicular to the respective tracks, by a reversible feeder belt. Movement of the sections is forward to the coating station and then backward away from the station. The pipe sections are spaced apart in their directions of travel so that their paths are 180° out of phase and one of the sections is at the forward end of its path of travel while the other is at the backward end of its path of travel. Thus, one section can be subjected to the coating step while the other section is being removed from the track vehicle.

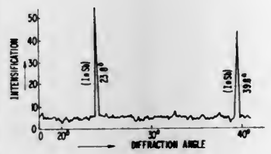
3,674,547
COMPOSITE MATERIAL AND PROCESS FOR PREPARING SAME
Thomas M. Noone, Oak Park, Ill., assignor to The Richardson Company, Melrose Park, Ill.
No Drawing. Filed Feb. 18, 1970, Ser. No. 12,467
Int. Cl. B32b *27/40*
U.S. Cl. 117—135.5 12 Claims

Breathable synthetic composites for articles of clothing including shoe uppers are provided by laminates composed of open-cell synthetic foams and a polyurethane film which is resistant to water transfer. A particularly useful composite comprises a polyvinylchloride open-cell foam and a thermoplastic polyurethane film containing a plasticizer such as tri-butoxyethyl phosphate to improve moisture-vapor transmission properties of the composite.

3,674,548
PROCESS FOR IMPARTING SOIL-RELEASING AND ANTI SOIL-REDEPOSITION PROPERTIES TO TEXTILE MATERIALS
Dmitry M. Gagarine, Spartanburg, S.C., assignor to Deering Milliken Research Corporation, Spartanburg, S.C.
No Drawing. Filed Apr. 9, 1969, Ser. No. 814,843
Int. Cl. C08j *1/44*
U.S. Cl. 117—139.5 A 7 Claims

A process is disclosed for imparting improved durable soil-releasing and anti-soil-redeposition properties to textile materials containing natural fibers. The process comprises applying to said material, a textile resin, a pigment and a hydrophobic film-forming polymer binder, and curing said textile resin on said textile material. The textile materials treated in this manner exhibit improved soil-releasing and anti-soil-redeposition characteristics upon repeated cleanings in either aqueous detergent solutions or dry cleaning solvents.

3,674,549
MANUFACTURING PROCESS FOR AN InSb THIN FILM SEMICONDUCTOR ELEMENT
Masahide Ohshita, Kanagawa, and Tsunehiro Tsukagoshi, Saitama, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan
Filed Feb. 25, 1969, Ser. No. 802,079
Claims priority, application Japan, Feb. 28, 1968, 43/12,276; May 23, 1968, 43/34,316
Int. Cl. H01l *3/20, 7/32*
U.S. Cl. 117—201 2 Claims

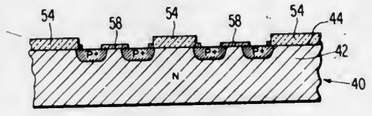


A process for producing a thin film semiconductor element of InSb having electron mobility and Hall coefficient values similar to bulk InSb is provided, wherein InSb and Sb are evaporated simultaneously from separate sources in a high vacuum to deposit a film, wherein InSb and Sb are evaporated simultaneously upon conjugating InSb and Sb on a single common vapor source in a high vacuum, or wherein InSb, produced by the zone melting method with a ratio of In to Sb of 1.5 to 2 in weight, is evaporated.

3,674,550
METHOD OF ELECTROLESS DEPOSITION OF A SUBSTRATE AND SENSITIZING SOLUTION THEREFOR
Glenn O. Mallory, Inglewood, Calif., assignor to Allied Research Products, Inc., Baltimore, Md.
No Drawing. Filed Mar. 4, 1970, Ser. No. 16,548
Int. Cl. C23c *3/02*
U.S. Cl. 117—212 11 Claims

Prior to electrolessly depositing a metal on a substrate, the substrate is treated with an aqueous solution of a complex of a metal of the platinum family and thereafter with an aqueous solution of a reducing agent for the platinum family metal. The complex can be a nitrito salt of the platinum metal or a salt of the metal with a keto-carboxylic acid or diglycollic acid.

3,674,551
FORMATION OF OPENINGS IN INSULATING LAYERS IN MOS SEMICONDUCTOR DEVICES
Terry George Athanas, Lebanon, N.J., assignor to RCA Corporation
Filed Oct. 12, 1970, Ser. No. 79,982
Int. Cl. C23f *1/02*
U.S. Cl. 117—212 9 Claims

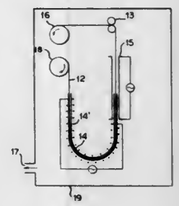


Small openings in insulating coatings on MOS semiconductor devices are defined by (1) forming, on the surface of a semiconductor wafer at the desired locations for the openings, masking bodies of a material which is soluble in a given solvent; (2) depositing over the entire wafer a coating of a material which is not soluble in that solvent; (3) etching this coating in a suitable solvent to expose the masking bodies formed in step (1) and portions of the surface of the wafer; (4) oxidizing the exposed portions of the surface of the wafer; and, finally (5) removing the masking bodies in the given solvent.

3,674,552
METHOD OF PRODUCING SEMICONDUCTOR COMPONENTS ON A MAGNETIC SUBSTRATE
Walter Heywang and Erhard Sirtl, Munich, Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany
Filed Feb. 10, 1967, Ser. No. 615,110
Claims priority, application Germany, Feb. 11, 1966, S 101,950
Int. Cl. B44d *1/18*
U.S. Cl. 117—217 23 Claims

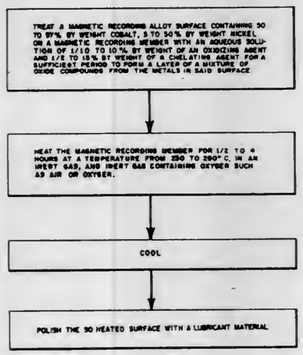
Relates to a method of epitactic precipitation of monocrystalline semiconducting material, crystallizing according to the diamond lattice or the zincblende lattice, using a monocrystalline substrate, which crystallizes according to the spinel type. The substrate has magnetic characteristics.

3,674,553
SUPERCONDUCTOR AND ITS MANUFACTURING METHOD
Kyoji Tachikawa, Yoshiaki Tanaka, and Satoshi Fukuda, Tokyo, Japan, assignors to Director of National Research Institute for Metals, Tokyo, Japan
Original application June 19, 1967, Ser. No. 646,820. Divided and this application June 1, 1970, Ser. No. 54,049
Claims priority, application Japan, June 25, 1966, 41/41,040
Int. Cl. B44d *1/18*
U.S. Cl. 117—217 5 Claims



A superconductor consisting of a vanadium substrate of wire or tape form and an overlying layer of superconductive V_3Ga intermetallic compound. A method for manufacturing such superconductor, comprising the steps of forming a layer of intermediate compounds richer in gallium on the surface of a vanadium substrate having said form through a reaction between the vanadium substrate and the surrounding molten gallium at a temperature between 500° C. and 800° C., and of converting said phase to V_3Ga at a temperature between 600° C. and 850° C. An apparatus best suited for practicing said method in the manufacture of such superconductor.

3,674,554
FORMATION OF OXIDE COATING ON SURFACE OF A MAGNETIC COBALT NICKEL ALLOY
Pravin K. Patel and Eliot Stone, Los Angeles, Calif., assignors to The National Cash Register Company, Dayton, Ohio
Filed July 23, 1970, Ser. No. 57,671
Int. Cl. H01f *10/00*
U.S. Cl. 117—237 9 Claims



A protective oxide film may be located on the surface of a cobalt nickel magnetic alloy by treating the surface of such an alloy with an aqueous solution of an inorganic oxidizing agent and an organic chelating agent capable of buffering the solution so as to oxidize the surface. Such treatment is preferably carried on for sufficiently long periods to form an adherent, substantially continuous oxide layer from metal in the alloy. The concentration of the ingredients in the treatment solution can be varied depending upon the specific ingredients used, the reactivity of the particular alloy being treated, the temperature of the treatment solution and the thickness of the oxide film desired. After such treatment the alloy surface is preferably washed so as to remove entrained ingredients and then is preferably heated at a temperature of from 230 to 280° C. for a period of from one-half to four hours in either an inert atmosphere, an oxygen atmosphere or an atmosphere containing oxygen and one or more inert or substantially inert gases.

3,674,555
LOW DENSITY STARCH HYDROLYSATES
Gilbert R. Meyer, Overland Park, Kans., and Rollo J. Everett, Worth, Ill., assignors to CPC International Inc.
No Drawing. Filed June 24, 1970, Ser. No. 49,583
Int. Cl. A23l *1/26;* C13l *1/08*
U.S. Cl. 127—29 8 Claims

Process for producing spray dried starch hydrolysates having a bulk density below about 20 pounds per cubic foot which comprises: (a) heating an aqueous slurry containing from about 20% to about 45% by weight of a starch hydrolysate having a D.E. of from about 2 to about 30 in a first, confined zone under pressure of a temperature of from about 210° F. to about 300° F.; (b) injecting the slurry into a second, large volume zone into contact with heated air having a temperature of from about 320° F. to about 450° F. with a sudden release of the pressure on the slurry upon injection; (c) maintaining conditions in the second zone such that drying to a moisture content below about 3% is achieved before the resultant dry solids engage against a collection surface; and (d) recovering the dried solids in particulate form.

3,674,556
METHOD FOR DRYING GLUCOSE SOLUTIONS
Roland H. Gray, Jr., Baltimore, Md., assignor to W. R. Grace & Co., New York, N.Y.
No Drawing. Filed May 3, 1971, Ser. No. 139,960
Int. Cl. C13k *1/10*
U.S. Cl. 127—62 8 Claims

In a process for preparing dried, solid, glucose-containing products from glucose-containing solutions by drying droplets of the solution in a current of heated air and in the presence of separately introduced recycled dried product solids, the improvement which comprises maintaining the inlet temperature of the heated air in the range of from 400° to 500° Fahrenheit and the average air residence time in the drying zone in the range of 2 to 60 seconds.

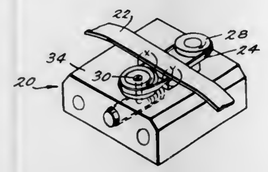
3,674,557
METHOD FOR DRYING SUGAR SOLUTIONS
Roland H. Gray, Jr., Baltimore, Md., assignor to W. R. Grace & Co., New York, N.Y.
No Drawing. Continuation-in-part of application Ser. No. 36,738, May 13, 1970. This application May 3, 1971, Ser. No. 139,961
Int. Cl. C13f *1/02*
U.S. Cl. 127—62 11 Claims

In a process for preparing dried, solid, sucrose-containing products from sucrose-containing solutions by drying droplets of the said solution in a current of heated air and in the presence of separately introduced recycled dried product solids, the improvement comprising maintaining the inlet temperature of the heated air in the range of from 400° to 500° Fahrenheit and the average air residence time in the drying zone in the range of 2 to 60 seconds.

3,674,558
BLEACHING OF CLAYS
Peter James Malden, Cornwall, England, assignor to English Clays Lovering Pochin & Company Limited, Cornwall, England
No Drawing. Filed May 7, 1970, Ser. No. 35,592
Claims priority, application Great Britain, May 16, 1969, 25,216/69
Int. Cl. B03b *7/00;* B08b *5/00;* C09c *1/42*
U.S. Cl. 134—2 10 Claims

A method of bleaching a clay which comprises contacting a dry, or substantially dry, particulate mass of the clay with a gas comprising ozone.

3,674,559
METHOD OF CLEANING MAGNETIC TAPE
Dale C. Whysong, Falls Church, Dale E. Leininger, Fairfax, and Herbert D. Young, Haymarket, Va., assignors to General Kinetics Incorporated, Reston, Va.
Filed Jan. 28, 1971, Ser. No. 110,574
Int. Cl. B08b *7/00*
U.S. Cl. 134—9 2 Claims



A method and apparatus for cleaning magnetic tape wherein a continuous loop of material having a cutting edge is rotated while a flat surface of the tape is moved past and in contact with the cutting edge at two locations so that the surface is cleaned. In the embodiment set forth below, the loop is inclined at one location at an acute angle to the path of travel of the tape in one direction and at an acute angle in the other direction at the other location so that passage of the tape hones the cutting edge. The loop is preferably rotated about two capstans and one capstan can be moved toward the other at the same time that the guide members which define slots at the two locations separate for loading the loop.

3,674,560
PROCESS FOR PREPARING COPPER SULFIDE VOLTAIC CELL CATHODES
Hanspeter Alder, Newark, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
No Drawing. Filed Apr. 8, 1970, Ser. No. 26,761
Int. Cl. H01m *35/02*
U.S. Cl. 136—23 10 Claims

Copper sulfide cathodes having improved discharge characteristics and increased electrochemical utilization of copper sulfide can be prepared by reducing, in a copper sulfide having a chemically bound sulfur to copper ratio of at least 0.94:1, to less than 2% the portion of the copper sulfide substance that is extractable by hot 0.5 N. aqueous hydrochloric acid. Highly efficient voltaic cells can be produced using this cathode structure.

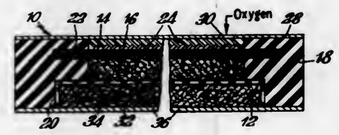
3,674,561
PROCESS FOR PRODUCING ELECTRODES FOR RECHARGEABLE ALKALINE CELLS
Takashi Tsuchida, Yoshiaki Hayase, and Yoshirou Fujisawa, Shizuoka-ken, Japan, assignors to Fuji Denki Kagaku Kabushiki Kaisha, Tokyo, Japan
Filed July 17, 1970, Ser. No. 55,631
Claims priority, application Japan, July 30, 1969, 44/59,652
Int. Cl. H01m *43/04*
U.S. Cl. 136—29 14 Claims

Electrodes for rechargeable alkaline cells and a process for producing same are provided. The electrode comprises a substratum, metallic nickel dendrite electrolytically cohered on said substratum, and nickel oxy-hydroxide exposed on said nickel dendrite. The process comprises the steps of preparing an electro-bath containing NO_3 ion in the range of about 0.16% to about 3.52%, SO_4 ion in the range of about 1.4% to about 18.1%, and Cl ion in the range of about 2.2% to about 11.5%, keeping said electro-bath weakly acidic, keeping the temperature of said electro-bath over 40° C., electrolytically cohering nickel dendrite layers to a substratum, and immediately electrolytically oxidizing said layers in an alkaline aqueous solution.

3,674,562
PRIMARY CELLS AND IODINE CONTAINING CATHODES THEREFOR
Alan A. Schneider, Baltimore, Md., and James R. Moser, Shrewsbury, Pa., assignors to Catalyst Research Corporation, Baltimore, Md.
Filed Jan. 15, 1971, Ser. No. 106,657
Int. Cl. H01m *21/00*
U.S. Cl. 136—83 R 12 Claims

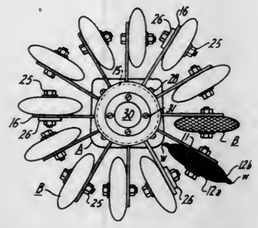
A mixture of iodine with a poly-2-vinylpyridine·I_2 or a poly-2-vinylquinoline·I_2 charge transfer complex is an improved cathode material of a plastic state and in conjunction with a metal anode, for example lithium, provides primary cells with improved capacity and performance characteristics.

3,674,563
OXYGEN-DEPOLARIZED GALVANIC CELL
Roswell J. Bennett, Lakewood, Ohio, assignor to Union Carbide Corporation, New York, N.Y.
Filed Apr. 6, 1970, Ser. No. 25,867
Int. Cl. H01m *29/04*
U.S. Cl. 136—86 A 17 Claims



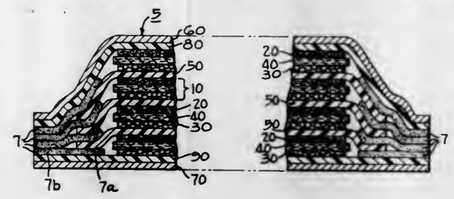
Disclosed is a high performance oxygen-depolarized galvanic cell which is capable of supplying electric power at extremely high electrode current densities. The cell basically includes a porous, electrolyte absorbent, extended area anode made from an electrochemically active metal, a thin, porous fixed zone oxygen-depolarizable cathode and a porous ionically permeable separator interposed between the anode and cathode and containing an alkaline electrolyte, the alkaline electrolyte being an aqueous solution of potassium hydroxide having a concentration of between about 10 and 14 normal.

3,674,564
SEA WATER BATTERY WITH FIBER-LIKE METAL CATHODE
Albert E. Ketler, Jr., 318 N. 6th St., Indiana, Pa. 15701
Filed Aug. 24, 1970, Ser. No. 66,422
Int. Cl. H01m 17/02
U.S. Cl. 136—100 R 19 Claims



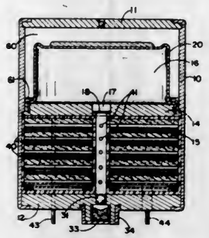
A galvanic battery or cell is disclosed for use in a salt water environment that constitutes the electrolyte for generation of electrical energy between cathode and anode electrodes of electro-reactive dissimilar metals, such as nickel, iron or steel and magnesium. The cathode is constructed of relatively coarse fiberlike metal such as steel wool or shavings, iron or steel scrap compactly-positioned as a core that is held in place by a perforated metal or grid enclosure of relatively flat or winglike shape. A group of such cathode electrode bodies is positioned in a spaced-apart relation with respect to each other and, as an optimum, in an endwise spaced relationship with respect to a solid metal anode electrode, such as of magnesium. Anode electrode means is shown having a portion of its metal surface area masked or covered by an insulating resin that may be progressively unmasked or exposed during the operating life of the battery.

3,674,565
MULTICELL BATTERY HAVING DOUBLE ADHESIVE, LIQUID SEALING WINDOW
Bernard C. Bergum, Monona, and Kenneth H. Kenyon, Madison, Wis., assignors to ESB Incorporated
Filed Dec. 21, 1970, Ser. No. 99,984
Int. Cl. H01m 21/00
U.S. Cl. 136—111 9 Claims



Around each cell of a multicell battery is a window, both sides of which are adhesive. The inside perimeter of each window, which overlaps a portion of the intercell connector between two adjacent cells, provides a first seal around a cell to prevent liquid from one cell from migrating either to another cell or to the exterior of the battery. The outside perimeter of each window extends beyond the edges of the intercell connector to provide a second seal which also prevents liquids from migrating from the interior to the exterior of the battery. The windows may be electrical insulators which serve the additional function of keeping electrically conductive intercell connectors and/or liquid impervious layers from coming into electrical contact with each other.

3,674,566
RESERVE BATTERY HAVING THE ELECTROLYTE COMPARTMENT MOVED BY GAS PRESSURE
Gerald P. Powers, North Wales, Pa., assignor to Honeywell Inc., Minneapolis, Minn.
Filed Nov. 19, 1970, Ser. No. 90,950
Int. Cl. H01m 21/00
U.S. Cl. 136—114 10 Claims



An improved activator mechanism for a reserve electrochemical battery. The battery is comprised of an electrolyte compartment and a battery compartment separated from the electrolyte compartment by a frangible diaphragm. To activate the battery, the diaphragm, separating the two compartments, is perforated, allowing electrolyte liquid to flow from the electrolyte compartment into the battery compartment. The electrolyte compartment is divided into two parts by a movable partition. The portion of the compartment between the movable partition and the frangible diaphragm is filled with a liquid electrolyte. The other portion of the compartment on the other side of the movable partition is filled with a gas under pressure. A small amount of electrolyte liquid is also placed on the gas pressure side of the movable partition to equalize and cancel the effect of the vapor pressure of the electrolyte solvent on battery activation.

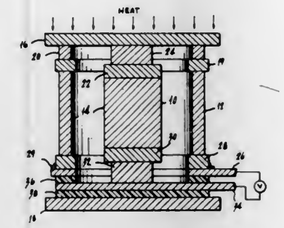
3,674,567
ELECTROLYSIS CELL AND PROCESS USING A WICK ELECTRODE
Thompson G. Bradley and Dominicus A. J. Swinkels, Indianapolis, Ind., assignors to General Motors Corporation, Detroit, Mich.
Original application Oct. 27, 1966, Ser. No. 590,038. Divided and this application Jan. 30, 1970, Ser. No. 871,120
Int. Cl. H01m 33/00; C22d 3/06, 3/02
U.S. Cl. 136—164 4 Claims



A combined electrode and liquid reactant transporting means for at least one liquid reactant of an electrolysis

cell. A wick extends from within the cell into a liquid reactant collection reservoir. The wick is preferentially wet by the liquid reactant providing a plurality of capillary flow paths between the storage and cell regions of the system. An electrolysis process using the wick electrode is described.

3,674,568
HYBRID THERMOELECTRIC GENERATOR
Leroy J. Caprarola, Morristown, N.J., assignor to RCA Corporation
Filed Apr. 1, 1968, Ser. No. 717,526
Int. Cl. H01v 1/02
U.S. Cl. 136—205 4 Claims



A cylindrical thermoelectric generator having two concentric thermoelectric elements is disclosed. The outer element is used together with the heat receiving and heat rejecting means and appropriate bonding and stress alleviation members, to hermetically seal under compression the inner element from the environment surrounding the generator.

3,674,569
METHOD OF MAKING A COMPOSITE CABLE SHEATHING HAVING AN ALUMINUM-SILICON LAYER
Michael J. Pryor, Woodbridge, and William H. Anthony, Guilford, Conn., assignors to Olin Mathieson Chemical Corporation
Application Sept. 11, 1968, Ser. No. 759,117, which is a continuation-in-part of application Ser. No. 677,955, Oct. 25, 1967, now Patent No. 3,579,313. Divided and this application Aug. 28, 1970, Ser. No. 67,978
Int. Cl. C22f 1/04; B23p 11/00
U.S. Cl. 148—11.5 A 6 Claims

This invention relates to a high strength aluminum alloy containing Zn, B, Mg and Si metallurgically bonded to a thin layer of an aluminum alloy containing at least .050% Si, which thin layer is also bonded to steel for use in both aerial and underground cable sheathing.

3,674,570
HIGH-STRENGTH LOW ALLOY FERRITIC STEEL SMALL-GAUGE WIRE
Ingemar Gustaf Terje Hallstrom, Martin Holger Jarleborg, and Stig-Goran Harry Tarnblom, Fagersta, Sweden, assignors to Fagersta Bruks AB, Fagersta, Sweden
No Drawing. Filed Jan. 21, 1971, Ser. No. 108,592
Claims priority, application Sweden, Feb. 11, 1970, 1,272/70
Int. Cl. C21d 9/52
U.S. Cl. 148—12 9 Claims

The process for producing high-strength ferritic steel small-gauge wire having a diameter up to 1 millimeter comprising reducing the diameter of a killed low alloy steel rolled starting wire, said steel containing between about 0.01 and 0.06 carbon, between about 0.05 and 1% silicon, between about 0.25 and 6% manganese, between about 0.01 and 0.30% niobium, up to 0.03% nitrogen, up to 0.2% aluminum, up to 0.5% zirconium, up to 0.30% vanadium, and up to 0.5% titanium, by sequential passes through drawing dies constituting a drawing cycle, followed by tempering at a temperature between about 400° C. and 670° C., and further reduction with at least one additional drawing cycle, with tempering at a temperature between about 400° C. and 670° C. between each said drawing cycle, until the product wire dimension is obtained. The invention also includes the tough high-strength killed low alloy ferritic steel wire produced by said process.

3,674,571
NITRIDED ZIRCONIUM ALLOYS
Ray J. Van Thyne, Oak Lawn, and John J. Rausch, Antioch, Ill., assignors to Surface Technology Corporation, Stone Park, Ill.
No Drawing. Filed Mar. 4, 1970, Ser. No. 16,593
The portion of the term of the patent subsequent to Dec. 22, 1987, has been disclaimed
Int. Cl. C22c 27/00; C23c 11/14
U.S. Cl. 148—31.5 7 Claims

A novel group of nitrided alloys having excellent wear and abrasion resistance containing (a) zirconium, (b) one or more metals of the group vanadium, columbium, or tantalum, and (c) molybdenum or tungsten. The alloys can be readily fabricated to shape and then hardened by nitriding to produce high surface hardness.

3,674,572
NITRIDED TANTALUM, COLUMBIUM AND VANADIUM-RICH ALLOYS
Ray J. Van Thyne, Oak Lawn, and John J. Rausch, Antioch, Ill., assignors to Surface Technology Corporation, Stone Park, Ill.
No Drawing. Filed Mar. 4, 1970, Ser. No. 16,596
The portion of the term of the patent subsequent to Dec. 22, 1987, has been disclaimed
Int. Cl. C22c 27/00; C23c 11/14
U.S. Cl. 148—31.5 2 Claims

A novel group of nitrided alloys having excellent wear and abrasion resistance containing (a) one or more metals of the group tantalum, columbium, and vanadium, (b) one or more metals of the group titanium and zirconium, and (c) one or more metals of the group molybdenum or tungsten. The alloys can be readily fabricated to shape and then hardened by nitriding to produce a continuous high hardness surface layer supported on a graded nitrided layer.

3,674,573
NITRIDED SURFACE TREATED ALLOYS
Ray J. Van Thyne, Oak Lawn, and John J. Rausch, Antioch, Ill., assignors to Surface Technology Corporation, Stone Park, Ill.
No Drawing. Continuation-in-part of application Ser. No. 755,662, July 27, 1968, now Patent No. 3,549,429. This application Mar. 4, 1970, Ser. No. 16,594
Int. Cl. C22c 27/00; C23c 11/14
U.S. Cl. 148—31.5 1 Claim

Graded nitrided articles, surface modified in alloy composition wherein the surface zone consists of nitrided alloys consisting essentially of (a) one or more metals of the group columbium, tantalum, and vanadium; (b) zirconium and zirconium-titanium mixtures, and (c) one or both metals of the group molybdenum and tungsten. A minor portion of the nitrogen may be replaced by oxygen or boron. Nitrided materials prepared from homogeneous alloys are also included. The materials are characterized by excellent wear and abrasion resistance.

3,674,574
NITRIDED SURFACE MODIFIED ALLOYS

Ray J. Van Thyne, Oak Lawn, and John J. Rausch, Antioch, Ill., assignors to Surface Technology Corporation, Stone Park, Ill.

No Drawing. Continuation-in-part of application Ser. No. 755,658, Aug. 27, 1968, now Patent No. 3,549,427. This application Mar. 4, 1970, Ser. No. 16,595
Int. Cl. C22c 27/00; C23c 11/14
U.S. Cl. 148—31.5 2 Claims

Graded nitrided articles, surface modified in alloy composition wherein the surface zone consists of nitrided alloys consisting essentially of (A) one or more metals of the group columbium, tantalum, and vanadium; (B) titanium; and (C) one or both metals of the group molybdenum and tungsten. A minor portion of the nitrogen may be replaced by oxygen or boron. Nitrided materials prepared from homogeneous alloys are also included. The materials are characterized by excellent wear and abrasion resistance.

3,674,575
TUNGSTEN CARBIDE DISPERSION IN AGE-HARDENABLE CUPRO-NICKEL

Arnold L. Prill, Edmond, Okla., and Stuart E. Tarkan, Munsey, N.Y., assignors to Chromalloy American Corporation, West Nyack, N.Y.

Filed Oct. 21, 1970, Ser. No. 82,769
Int. Cl. C22c 29/00, 31/04
U.S. Cl. 148—32.5 14 Claims

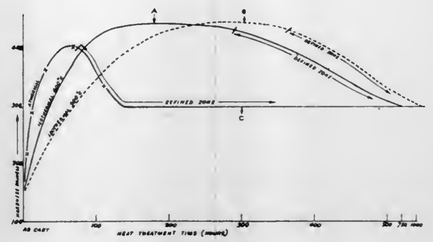
A sintered refractory metal carbide composition is provided comprising about 35 v/o to 70 v/o of at least one refractory metal carbide selected from the group consisting of WC, CbC, VC and TaC dispersed substantially uniformly through a cupro-nickel matrix making up essentially the balance, the cupro-nickel matrix consisting essentially by weight of about 55% to 90% copper and the balance essentially about 45% to 10% by weight of nickel. The cupro-nickel alloy matrix is preferably age-hardenable. The composition is particularly adapted to the manufacture of non-magnetic wear and corrosion resistant elements for use in saline environments, such as a mating ring in rotating mechanical seal applications in torpedoes and the like.

3,674,576
ALLOY CAST IRON

Charles Robert van-der Ben, Ashton-under-Lune, and Joseph Albert Pope, Bramhall, England, assignors to Mirrlees Blackstone Limited

Continuation of application Ser. No. 619,743, Mar. 1, 1967, which is a continuation-in-part of application Ser. No. 582,161, Sept. 26, 1966, which in turn is a continuation of application Ser. No. 311,224, Sept. 24, 1963. This application Oct. 2, 1969, Ser. No. 869,440
Claims priority, application Great Britain, Sept. 25, 1962, 36,321/62
Int. Cl. C22c 37/00, 37/04
U.S. Cl. 148—35 11 Claims

A heat-treated alloy cast iron consisting essentially of 10 to 15% of a nickel equivalent component consisting of a metal selected from the group consisting of nickel, nickel equivalent metals and mixtures thereof, at least about 8% of said alloy being nickel, said nickel equivalent metals being present in an amount not over about 8% of said alloy and being selected from the group consisting of copper and manganese, the amount of copper not exceeding about 3% of said alloy, the amount of manganese, when present as an intended alloy addition, not exceeding about 2% of said alloy, the balance of the alloy consisting essentially of iron and carbon, and any manganese present as an incidental constituent, up to 1% of said alloy, not being included in said nickel equivalent metal amount, the presence of chromium being limited to a residual amount not exceeding about 0.07% of said alloy, all percentages being by weight, said alloy having been cast into an unstable austenitic structure which may contain martensite, then heat-treated to transform said



austenitic cast iron into a baino-martensitic state of maximum hardness, said heat-treatment being continued for a sufficient length of time to cause a decrease in hardness into the range below said maximum, to increase mechanical strength, thermo-stability and toughness to the alloy.

3,674,577
FABRICATION OF STEEL STRUCTURES BY WELDING

Joachim Degenkolbe, Mulheim, and Bruno Musgen, Oberhausen, Germany, assignors to Huttenwerk Oberhausen AG, Oberhausen, Germany

Filed Sept. 18, 1969, Ser. No. 859,022
Claims priority, application Germany, Sept. 20, 1968, P 17 83 028.3
Int. Cl. C21d 1/00; B23p 11/00
U.S. Cl. 148—143 3 Claims

A welded steel structure, especially for low temperature or cryogenic installations, consisting of water-quenched or oil-quenched (tempered or hardened) steel bodies of the following composition by weight:

0.06 to 0.24% carbon;
up to 0.60% silicon;
0.40 to 1.60% manganese;
up to 3.5% nickel;
up to 1.0% chromium;
up to 0.20% vanadium;
up to 0.5% molybdenum; and
balance iron.

Upon welding the body is found to be free from a ductility or toughness minimum, as measured by the notched-body impact technique or drop-weight test at a location from about 3–10 mm. from the weld seam.

3,674,578
WATER-IN-OIL EMULSION TYPE BLASTING AGENT

George R. Cattermole, Cedar Rapids, Iowa, Austin M. Cummings, Martinsburg, W. Va., and William M. Lyerly, Hagerstown, Md., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

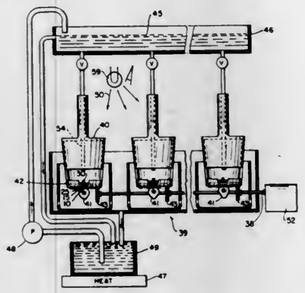
No Drawing. Filed Feb. 17, 1970, Ser. No. 12,126
Int. Cl. C06b 19/00
U.S. Cl. 149—2 10 Claims

A water-in-oil emulsion type blasting agent containing inorganic oxidizing salt, nitrogen-base salt, water, water-insoluble organic fuel that forms a continuous oil phase, lipophilic emulsifier and gas bubbles.

3,674,579
METHOD OF FORMING ELECTRICAL CONDUCTORS

Richard M. Clinehens, Dayton, John K. Stewart, Jr., Kettering, and Robert W. Ditmer, Englewood, Ohio, assignors to The National Cash Register Company, Dayton, Ohio

Filed July 2, 1970, Ser. No. 51,808
Int. Cl. C23f 1/00
U.S. Cl. 156—5 4 Claims

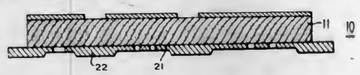


The present invention relates to a method of forming electrical conductors to selected regions of a semiconductor wafer. An aluminum film of approximately 10,000 angstroms is evaporated upon a silicon dioxide insulative evaporation mask which has been formed on a silicon wafer. A conductor mask is formed upon selected areas of the aluminum film. The masked aluminum film is placed upon a spinner. Phosphoric acid is continuously poured near the center of the masked metal film. The masked aluminum film is spun for a period of approximately four minutes, to remove the portions of the aluminum film which are not coated by the conductor mask, in order to form electrical conductors in contact with selected regions of the silicon wafer.

3,674,580
ZIRCONIUM MASK FOR SEMICONDUCTOR FABRICATED USING ALKALINE ETCHANTS

William Charles Erdman, Bethlehem, Pa., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 8, 1970, Ser. No. 35,746
Int. Cl. C23f 1/04
U.S. Cl. 156—13 4 Claims



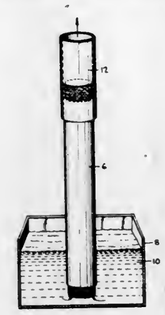
A mask comprising a thin film of zirconium metal is applied directly to a semiconductor surface for use with strong alkaline etchants, such as potassium hydroxide, of the type used for antisotropic etching. Typically, a zirconium film of several hundred angstrons thickness is applied using high energy means including sputtering and an electron gun.

3,674,581
PRODUCTION OF FIBER REINFORCED COMPOSITES

Ilmar L. Kalnin, Millington, and George J. Breckenridge, Roselle, N.J., assignors to Celanese Corporation, New York, N.Y.

Filed Apr. 1, 1969, Ser. No. 812,192
Int. Cl. B29c 27/00
U.S. Cl. 156—84 9 Claims

An improved process is provided for the formation of essentially solid fiber reinforced composite bodies. The process is particularly suited for the formation of composite bodies having a high volume of fibrous reinforcing medium (e.g. carbonaceous filaments) distributed in a matrix (e.g. an epoxy resin) in a highly oriented relationship. In the production of composite bodies the fibrous reinforcing medium while present within a heat-shrinkable

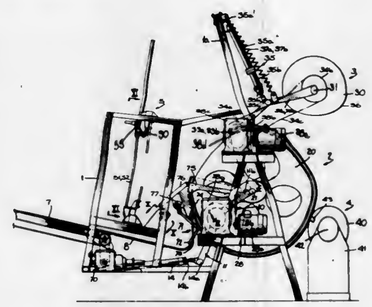


mold is compacted by the application of heat and a flowable matrix-forming material subsequently is introduced into the mold and solidified to a moldable B-stage or rigid C-stage consistency. The essentially solid composite bodies formed according to the invention are useful in the formation of high performance structural elements or as high performance structural elements.

3,674,582
METHOD OF BUILDING AN ANNULAR BREAKER

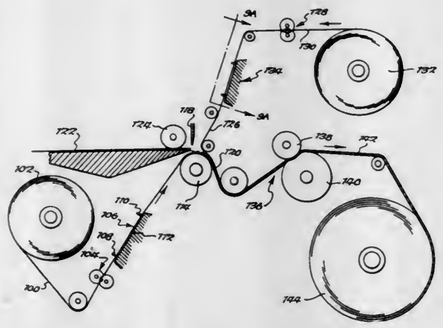
Jean Leblond, Compiegne, Oise, France, assignor to Uniroyal Englebert France S.A., Paris, France

Original application Aug. 2, 1968, Ser. No. 749,810, now Patent No. 3,547,732, dated Dec. 5, 1970. Divided and this application Apr. 8, 1970, Ser. No. 32,492
Claims priority, application France, Aug. 11, 1967, 117,824
Int. Cl. B29h 17/20
U.S. Cl. 156—133 6 Claims



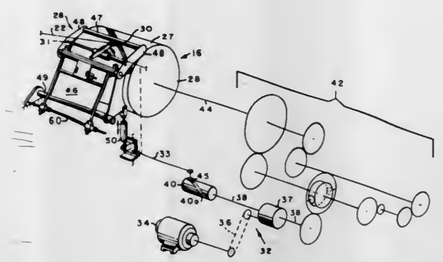
A breaker building method and apparatus in which a continuous strip of breaker material, coming from a single source, is severed into strip portions on a main drum. Alternate ones of these strip portions are transferred directly from the main drum to a breaker building drum while the remaining ones of the strip portions are transferred first to an intermediate member and from there to the breaker building drum in such a manner that the cords of successive breaker plies on the breaker building drum form a crossing angle with each other.

3,674,583
METHOD FOR THE PREPARATION OF INTEGRATED NETTINGS AND LAMINATES
Walter F. Allport, Stamford, Conn., assignor to International Paper Company, New York, N.Y.
Application Oct. 4, 1968, Ser. No. 777,944, now Patent No. 3,575,777, dated Apr. 20, 1971, which is a continuation-in-part of application Ser. No. 600,899, Dec. 12, 1966. Divided and this application Oct. 26, 1970, Ser. No. 84,162
Int. Cl. B32b 5/08, 5/12
U.S. Cl. 156—167 24 Claims



An integrated netting made from sets of paper or plastic warp and weft strands adhered together between the intersections of the warp and weft strands to form a tough, flexible tear-resistant netting. The netting may be rendered moisture or vapor-proof through the additional lamination of paper or plastic sheet material. Processes and equipment for forming multiple strands and various combinations of warp and weft strands so as to vary the charcateristics and properties of the netting are shown.

3,674,584
METHOD AND APPARATUS FOR POSITIONING A CONTINUOUS THREAD OR CORD ON A SUPPORT SURFACE
Norman E. Klein, Inman, S.C., assignor to Deering Milliken Research Corporation, Spartanburg, S.C.
Filed May 22, 1969, Ser. No. 826,889
Int. Cl. B29h 17/28
U.S. Cl. 156—173 21 Claims



A method and apparatus for positioning a continuous length of thread or cord on a support surface in a desired pattern wherein the cord is positioned on the support surface with means including a cord guide mechanism moving relative to the support surface while applying rolling pressure against the cord to minimize movement of the cord on the surface due to tension forces acting on the cord and to prevent dislocation of the cord with respect to the support surface.

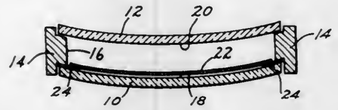
3,674,585
METHOD OF MAKING AN AIRCRAFT WING STRUCTURE
Leo J. Windecker, Midland, Tex., assignor to Windecker Research, Inc., Midland, Tex.
Filed Oct. 7, 1969, Ser. No. 864,425
Int. Cl. B32b 31/00
U.S. Cl. 156—182 5 Claims

A generally hollow aircraft wing structure is provided, the wall of which includes an outer skin, an intermediate layer including foam material, and a strengthening layer of glass fibrous material impregnated with synthetic resinous material. A method of constructing the wing structure is provided which includes providing a suitably shaped mold for half the wing structure, forming the skin in the mold, bonding foam strips to the skin, and thence bonding to the foam strips strengthening glass fibrous sheets.

3,674,586
METHOD FOR PRODUCING METAL-TO-CERAMIC JUNCTIONS
Hans Rimkus, deceased, late of Berlin, Germany, by Elsa Rimkus, sole heir, Berlin-Dahlem, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany
Continuation-in-part of application Ser. No. 501,846, Oct. 22, 1965. This application Sept. 15, 1969, Ser. No. 864,568
Claims priority, application Germany, Dec. 8, 1964, S 94,504
Int. Cl. B21d 21/06
U.S. Cl. 156—196 5 Claims

Method for producing a metal-to-ceramic junction includes the steps of depositing an adhesive layer on a ceramic body on a surface portion thereof where the junction is to be made, and deforming the metal against the body at the location of the surface portion at a relatively high speed and with a relatively strong force.

3,674,587
PRODUCING POLARIZING OPTICAL DEVICES AND PRODUCT THEREOF
Norman U. La Liberte, Woodstock, Conn., assignor to American Optical Corporation, Southbridge, Mass.
Filed May 6, 1970, Ser. No. 35,132
Int. Cl. B29f 1/10; B32b 27/04; B29c 6/00
U.S. Cl. 156—245 7 Claims



A laminated optical element is produced by prepositioning a polarizing sheet, which has been coated on both sides with adhesive compatible with the encasing material, in a mold so as to accurately space the polarizing sheet from the inner mold surfaces, injecting a monomer of allyl diglycol carbonate into the mold so as to completely encase the polarizing sheet, and then curing the laminate. The process includes producing stress free castings capable of being subjected to subsequent color accepting treatment and various finishing processes. The laminated product provides a fully encased polarizing sheet with a thin layer of uniform thickness of the polymer on the front side of the polarizing sheet which may be readily finished for optical devices.

3,674,588
METHOD OF RECORDING AND TRANSFERRING DESIGN INDICIA
Jan Bernard Lambrechts, Antwerp, Belgium, assignor to Agfa-Gevaert, Mortsel, Belgium
No Drawing. Filed Oct. 2, 1968, Ser. No. 764,631
Claims priority, application Great Britain, Oct. 2, 1967, 44,794/67
Int. Cl. B41m 5/26
U.S. Cl. 156—230 9 Claims

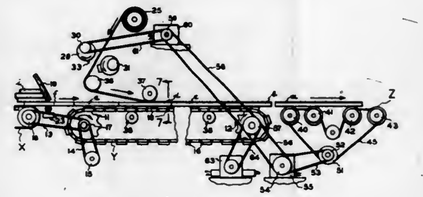
A heat-sensitive recording layer of the type disclosed in USP 3,476,937 and formed essentially of a dispersion of solid hydrophobic thermoplastic polymer particles in a hydrophilic binder, after exposure to a heat pattern to reduce the water permeability in the heated areas of the layer and after washing to remove from the layer the areas thereof of unchanged water-solubility, leaving the heated area thereof in relief, is contacted with a receiving material and substantial mechanical pressure is applied to such remaining portions to cause them to adhere to the receiving material so that when the recording layer and the receiving material are separated by peeling, a stratum of the remaining portions of the recording layer remains adhered to the receiving material forming thereon a reproduction of the original heat pattern applied to the heat-sensitive recording layer. Either or both of the surfaces of the recording layer and receiving material can be provided with a weakly adhesive layer to facilitate transfer of the stratum of the recording layer to the receiving material.

3,674,589
METHOD OF FABRICATION AND REINFORCING HIGH SOLIDS-CONTAINING MATERIALS
Carl K. Schaab, Dayton, George T. Weyrauch, Miamisburg, and Terry R. Davis, Spring Valley, Ohio, assignors to The National Cash Register Company, Dayton, Ohio
No Drawing. Filed Feb. 28, 1969, Ser. No. 803,478
Int. Cl. B29c 31/00
U.S. Cl. 156—245 18 Claims

This disclosure is directed to an improved method for preparing fabric-reinforced molded plastic articles and involves the utilization of at least one prebonded composite of a fabric reinforcing material and a coherent layer of mold release material which is substantially impervious to non-solvent liquids, the two being adhered by an adhesive whose bond strength is diminished significantly subsequent to molding. The diminution in the adhesive bond which occurs during the molding and/or curing allows the mold release sheet to be removed readily from the fabric (surface) reinforced molded article without any significant surface deformation thereto. Both woven and non-woven fabrics can be employed; but for most molded articles, the use of woven cloth or woven fabric is preferred. In the case of molded circuit boards, a preferred fabric reinforcement is "Dacron" cloth; a preferred solid mold release sheet material is "Mylar" (polyethylene glycol terephthalate) a preferred adhesive to prebond the reinforcing cloth to the mold release sheet is a compatible polyester adhesive and a preferred class of molding plastics is epoxy resins.

3,674,590
MEANS AND METHOD FOR APPLYING FACING STRIPS TO CORES
John G. Holman, Fort Lauderdale, Fla., assignor to Roberts Consolidated Industries, Inc., Industry, Calif.
Filed Aug. 31, 1970, Ser. No. 68,380
Int. Cl. B32b 31/00
U.S. Cl. 156—252 6 Claims

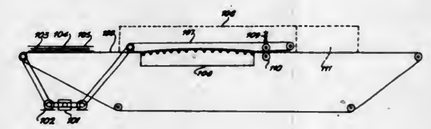
A means and method for the continuous application of a flexible facing strip of indefinite length to one face of each of a succession of cores while all are advancing in end to end engagement through a fixed path. The method involves (1) drawing the strip from a supply roll to overlie the top face of a plurality of cores for adhesion thereto while advancing end to end in a procession, (2) forming lines of future rupture across the strip, while advancing toward the cores, at points which are coincident with the trailing ends thereof, and (3) thereafter tensioning the advancing strip, as each core nears the end of its movement through a fixed path therefor, at points on opposite sides of each line of rupture, transversely of the strip to produce thereat a clean severance thereof whereby to free each core, in turn, for removal from those to the rear thereof.



3,674,591
SURFACE DEFORMATION IMAGING PROCESS
Sherman H. Boyd, Jr., La Mesa, Calif., assignor to Stromberg DatagraphiX, Inc., San Diego, Calif.
No Drawing. Filed Nov. 28, 1969, Ser. No. 880,970
Int. Cl. G03c 9/08
U.S. Cl. 156—272 14 Claims

An improved imaging process for electron beam recording is disclosed. In this process, a layer of a highly viscous photopolymer is exposed to an electron beam in a vacuum. It has been found that the electron beam simultaneously causes the formation of a surface deformation image while polymerizing the material in exposed areas. Thus, an instantaneous visible image is formed with no post processing of the material required. Background areas of the material may be polymerized by exposure to suitable radiation, such as ultra violet light, in the substantial absence of oxygen. This produces a strong, easily handled imaged sheet.

3,674,592
METHOD OF BONDING AN INTERLINING TO A GARMENT USING STRAY FIELD DIELECTRIC HEATING
Sydney Jacobson, Woodlands, Oakdale, Harrogate, Denis Knowles, Barwick-in-Elmet, near Leeds, and Derek Parker, Farsley, Pudsey, England, assignors to Montague Burton Limited, Leeds, England
Filed May 13, 1969, Ser. No. 824,184
Claims priority, application Great Britain, May 20, 1968, 23,909/68
Int. Cl. H05b 9/00
U.S. Cl. 156—274 7 Claims



In the manufacture of garment parts the interlining is bonded to the top cloth by pressing the two components

together and exposing heat-activated material associated with one or both components to the action of an electric current of frequency at least one megacycle per second.

3,674,593
METHOD OF MAKING A PROTECTIVE LAMINATE HAVING AN INTERPOSED POWERED LAYER
William Michael Pearson, Northowram, Halifax, and Anthony Pearson, Wibsey, Bradford, England, assignors to Bondina Limited, Greetland, Halifax, Yorkshire, England
No Drawing. Filed Jan. 6, 1969, Ser. No. 789,406
Claims priority, application Great Britain, Jan. 19, 1968, 3,099/68; Sept. 18, 1968, 44,405/68
Int. Cl. B32b *31/00*
U.S. Cl. 156—276 10 Claims

A protective material, suitable for making up into protective garments, is formed by interposing powdered activated charcoal and powdered thermoplastic adhesive between two substrates and heat-sealing the assembly together. A microfine thermoplastic powder may also be interposed, and this has the effect of counteracting undesirable effects due to any dust which may be present in the charcoal.

3,674,594
METHOD OF MANUFACTURING A MATERIAL SIMILAR TO TEXTILE, CONTAINING PAPER
Leif R. Persson, Billingsfors, Sweden, assignor to AB Billingsfors-Langed, Billingsfors, Sweden
No Drawing. Filed May 8, 1969, Ser. No. 823,151
Claims priority, application Sweden, May 29, 1968, 7,219/68
Int. Cl. B32b *31/00*
U.S. Cl. 156—299 7 Claims

This invention relates to production of a substitute for textile material. The invention comprises the steps of impregnating and/or coating porous fibre material preferably selected from the group consisting of (1) soft crepe tissue paper having a surface weight of 10–50 g./m.² and a crepe degree of 10–50%, and (2) nonwoven fabric, for example having a surface weight of 10–50 g./m.², with an adhesive resinous elastomer in molten state, preferably comprising a plasticized mixture of hydrocarbon resin, for example low molecular styrene resin and resins of low molecular polythene or ethylene vinyl acetate copolymer type, forming an adhesive layer of said resinous elastomer on the surface of said porous fibre material and subsequently covering said adhesive layer on one or both sides by pressing said layer together with stretchable, porous tissue paper, preferably crepe tissue paper, having a surface weight of 10–50 g./m.² and a crepe degree of 10–50%, or fibres or cellulose or of synthetic character which are blown onto or applied in some other manner. The composite material thus produced is a very good substitute for textile material. It is strong and durable and relatively easy to manufacture.

3,674,595
METHOD FOR APPLYING PRESSURE SENSITIVE ADHESIVE TO SANITARY NAPKINS
Robert J. Roeder, Appleton, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.
No Drawing. Filed May 8, 1970, Ser. No. 35,903
Int. Cl. C09j *5/00*
U.S. Cl. 156—306 4 Claims

An improved method for applying pressure sensitive adhesive to the bottom surface of sanitary napkins. A pressure sensitive adhesive mass carried on one side of conventional protective release paper is first adhered to the napkin surface. Heat and pressure are then applied to the other side of the release paper. This operation attaches the adhesive more firmly to the porous napkin surface, while reducing the force needed to strip the smooth protective paper from the adhesive when preparing the napkin for use.

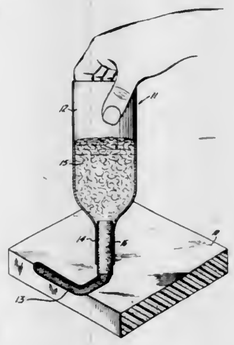
3,674,596
METHOD OF LAMINATING UNTREATED WOOD TO WOOD TREATED WITH FIRE RETARDANT MATERIAL
Lawrence O. McMinimy, Lewiston, Idaho, assignor to Potlatch Forests, Inc., San Francisco, Calif.
No Drawing. Filed Mar. 23, 1970, Ser. No. 22,045
Int. Cl. C09j *5/06*
U.S. Cl. 156—321 4 Claims

A method of laminating lumber wherein an outer layer in the laminated assembly is treated with a fire retardant salt solution. The laminating process involves pre-heating of the surfaces to be bonded, the application of a thermosetting adhesive to the untreated surface, and immediate application of pressure to hold the surfaces in intimate contact during substantial curing of the adhesive. The resulting product has particular structural and practical features which are attributed to the method.

3,674,597
CHLORINATED POLYETHYLENE-ORGANIC POLYISOCYANATE ADHESIVE FOR LAMINATING CHLORINATED POLYOLEFIN FILM OR SHEET MATERIALS TO FABRIC
Joseph Drasner, Rockaway, N.J., assignor to The Dow Chemical Company, Midland, Mich.
No Drawing. Filed July 20, 1970, Ser. No. 56,738
Int. Cl. B32b *27/28, 31/00*
U.S. Cl. 156—331 7 Claims

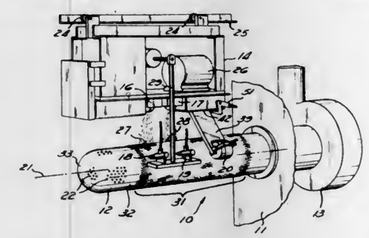
An improved adhesive for laminating preformed, chlorinated polyolefin film or sheet material to a fabric substrate, wherein such adhesive consists essentially of an admixture of (1) a substantially amorphous chlorinated polyethylene and (2) from about 25 to 50 parts by weight per 100 parts of (1) of an organic polyisocyanate.

3,674,598
APPARATUS FOR PRODUCING A THREE-DIMENSIONAL WORK OF ART
Richard J. Mayer, 790 Smith Road, Parsippany, N.J. 07054, and Benjamin Kinberg, 425 Riverside Drive, New York, N.Y. 10027
Filed July 23, 1970, Ser. No. 57,615
Int. Cl. B44b *1/00;* B44c *1/22*
U.S. Cl. 156—345 4 Claims



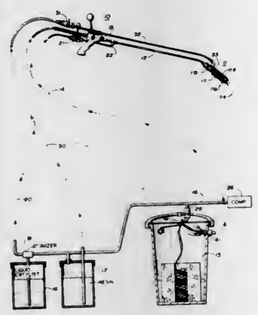
Three-dimensional pictures and the like are formed by applying a mix of ink and solvent to selected portions of the surface of a body of expanded polystyrene to simultaneously etch and color the body at the point of application. The ink and solvent mix is applied with a hand held applicator having a liquid reservoir containing the mix and a porous fiber tip through which the mix is applied to the body of expanded polystyrene.

3,674,599
PREFORM ROLLER
Arthur J. Wiltshire, Cleveland, Ohio, assignor to Structural Fibers, Inc., Chardon, Ohio
Filed June 5, 1970, Ser. No. 43,736
Int. Cl. B32b *31/20*
U.S. Cl. 425—80 11 Claims



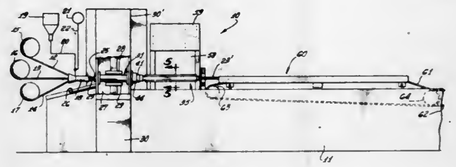
A method and apparatus for manufacturing an improved fiber preform which may be used in the subsequent bag molding of fiber reinforced plastic articles such as tanks or the like. The method comprises the steps of randomly depositing short reinforcing fibers on a form, binding the fibers together with a settable resin binder, and rolling the resin coated fibers on the form into a dimensionally uniform porous mat. The apparatus includes a rotatable lay-up form, means for randomly depositing the reinforcing fibers in a porous layer on the form, means to coat the fibers with a settable resin binder, and means to progressively press the fibers along the length of the form into a uniform wall thickness.

3,674,600
APPARATUS FOR DISPENSING CATALYST COATED FIBERS AND CEMENTITIOUS MATERIAL ONTO A SURFACE
James B. Winn, Jr., Wimberley, Tex., assignor to The Archilithic Co., Dallas, Tex.
Filed Mar. 12, 1969, Ser. No. 806,355
Int. Cl. B29j *5/00*
U.S. Cl. 156—166 4 Claims



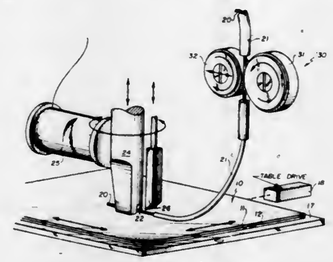
Glass fiber strands coated with a cementitious material are forcefully projecting from a source by centrally entraining continuous fiber strands enshrouded by a liquid catalyst in the cementitious material for deposit onto a receiving surface as the catalyst mixes with the cementitious material.

3,674,601
AUGMENTED CURING OF REINFORCED PLASTIC STOCK
William Brandt Goldsworthy, Palos Verdes Estates, Calif., assignor to Glastrusions, Inc., Torrance, Calif.
Continuation-in-part of application Ser. No. 648,347, June 23, 1967, now Patent No. 3,556,888. This application Aug. 7, 1970, Ser. No. 61,934
Int. Cl. B29c *19/02;* B29h *9/00*
U.S. Cl. 156—380 8 Claims



A pultrusion machine and process wherein a composite fibre strand is pulled through successive stages of impregnation, curing, and forming. At the impregnation stage liquid thermosetting resin is mixed with hardener and the fiber strand saturated with the mixture and rough formed. During the initial curing stage a cure is started throughout the resin mixture by use of electrical wave energy. Before final curing, the saturated strand is pulled through the finish die where it is externally heated and wherein the saturated strand is given its final cross-sectional shape and external finish, and cured to completion immediately prior to final emergence at the exit end of the finish die.

3,674,602
APPARATUS FOR MAKING WIRE SCRIBED CIRCUIT BOARDS
Raymond J. Keogh, Huntington, and Frank J. Wilczek, Glen Oaks, N.Y., assignors to Photocircuits Corporation, Glen Cove, N.Y.
Filed Oct. 9, 1969, Ser. No. 865,008
Int. Cl. B29c *19/02*
U.S. Cl. 156—380 11 Claims

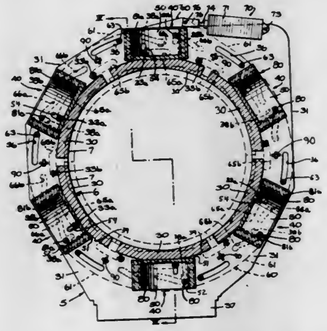


A technique and apparatus for making wired interconnection boards for electrical components. The insulated wire pattern is formed by tacking the wire on an adhesive coated dielectric base using a tacking head having a bifurcated end arranged to heat and partially cure the adhesive and to mold the adhesive so it physically captures the wire. The tacking head is associated with a cutter and initial wire feed mechanism. The tacking head and associated apparatus can be oriented in any one of four directions while the dielectric base is moved on a table which has two degrees of freedom.

After the conductor pattern is formed on the dielectric base, the conductor pattern is permanently secured by

lamination encapsulation or the like so that the conductors are interior of the board. Holes are drilled so that the conductor ends form part of the hole walls and the holes are then metallized to bring the conductor terminations to the surface.

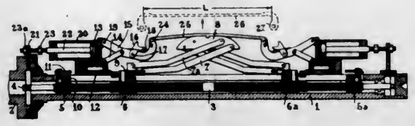
3,674,603
EXPANSIBLE AND CONTRACTIBLE TRANSFER RING
Jean Leblond, Compiegne, France, assignor to Uniroyal Engelbert France S.A., Neuilly-sur-Seine, France
Filed June 3, 1970, Ser. No. 42,986
Claims priority, application France, June 30, 1969, 6922084
Int. Cl. B29h *17/02*
U.S. Cl. 156—394 **10 Claims**



An expansible and contractible transfer ring for transferring a breaker-tread assembly from a building drum in a tire building machine to a tire carcass mounted on a shaping mechanism. The transfer ring includes a generally cylindrical frame structure, a plurality of radially movable arcuate segments arranged in a circumferential sequence within the frame structure, annular camming means movably supported by the frame structure about the segments, means supported by the frame structure and connected to the camming means for moving the camming means relative to the frame structure, and respective cam follower means carried by each of the segments and in engagement with the camming means for radially moving the segments in response to movement of the camming means relative to the frame structure.

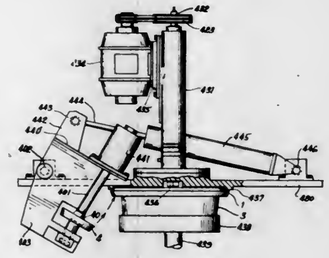
3,674,604
TIRE BUILDING DRUM
Georges Gazuit, Montlucon, France, assignor to NRM Corporation, Akron, Ohio
Filed Nov. 17, 1969, Ser. No. 877,400
Claims priority, application France, Nov. 27, 1968, 175,508
Int. Cl. B29h *17/16, 17/26*
U.S. Cl. 156—415 **13 Claims**

In this Rind-type drum for making tires described in my co-pending application Ser. No. 617,658 now abandoned in favor of applicant's continuation application Ser. No. 28,281, filed Apr. 22, 1970, entitled "Tire Building Machine," the bead clamping means consist for each flange supporting same of an annular set of pivoted arms each formed with an outer end bent radially away from the drum axis, this end carrying a pivoted finger formed with a forked outer end and radially urged away from the drum axis by a spring reacting against said arm, and a link connecting said arm to the movable end of a double-acting cylinder mounted in said flange at a point nearer to the drum axis than the fulcrum of said arm, the movement of the operative end of said cylinder towards the transverse plane of symmetry of the drum



causing the arm to move away from the drum axis so that the outer end of said arm, by co-acting with said pivoted finger, engages the bead of the tire carcass somewhat like a pair of tongs.

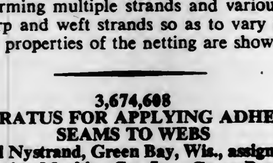
3,674,605
PROCESS FOR THE ASSEMBLY OF SHEETS AND APPARATUS FOR SAME
Bernard Baumann, Paris, France, assignor to L'Aluminium Francais
Application Mar. 10, 1969, Ser. No. 816,143, which is a continuation-in-part of application Ser. No. 503,842, Oct. 23, 1965. Divided and this application Nov. 28, 1969, Ser. No. 882,378
Int. Cl. B32b *3/04*
U.S. Cl. 156—479 **10 Claims**



A system for joining flat portions of sheets with a joint blank formed of thermoplastic material. The joint blank initially defines first and second flat sides extending substantially perpendicularly one from the other. One flat side is disposed in overlying relationship with the flat edge portions of the sheets and the other side in overhanging relationship with respect to the flat edge portions. A rotating roller die is provided for engagement with the overhanging portion of the joint blank, and the roller die is gradually displaced for deforming the overhanging portion for molding this portion into engagement with the flat edge portions of the sheets.

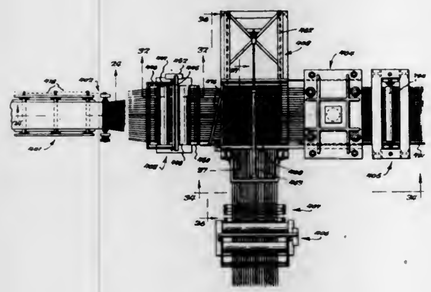
3,674,606
CONTAINER LABELING APPARATUS WITH GASEOUS AIRJET MEANS
William G. Kinslow, Jr., Kansas City, Mo., assignor to Phillips Petroleum Company
Filed Oct. 23, 1969, Ser. No. 868,799
Int. Cl. C09j *5/09*
U.S. Cl. 156—497 **9 Claims**

A method and apparatus are disclosed in which an end of a continuous label is affixed to a container and the container is advanced from a first position at a point at which the label on the container is severed from the continuous label. The severed end of the continuous label is



made to assume the first position by means of a gaseous jet.

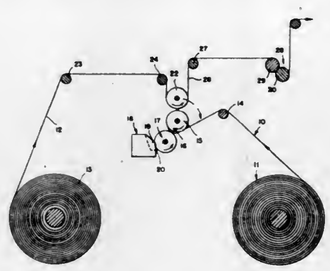
3,674,607
APPARATUS FOR THE PREPARATION OF INTEGRATED NETTINGS AND LAMINATES
Walter F. Allport, Stamford, Conn., assignor to International Paper Company, New York, N.Y.
Application Oct. 4, 1968, Ser. No. 777,944, now Patent No. 3,575,777, dated Apr. 20, 1971, which is a continuation-in-part of application Ser. No. 600,899, Dec. 12, 1966. Divided and this application Oct. 26, 1970, Ser. No. 84,203
Int. Cl. B05c *1/16;* **B32b** *31/12*
U.S. Cl. 156—511 **3 Claims**



An integrated netting made from sets of paper or plastic warp and weft strands adhered together between the intersections of the warp and weft strands to form a tough, flexible tear-resistant netting. The netting may be rendered moisture or vapor-proof through the additional lamination of paper or plastic sheet material. Processes and equipment for forming multiple strands and various combinations of warp and weft strands so as to vary the characteristics and properties of the netting are shown.

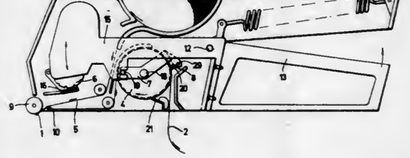
3,674,608
APPARATUS FOR APPLYING ADHESIVE SEAMS TO WEBS
Ernst Daniel Nystrand, Green Bay, Wis., assignor to Paper Converting Machine Co., Inc., Green Bay, Wis.
Filed July 6, 1970, Ser. No. 52,344
Int. Cl. B32b *31/12, 31/04*
U.S. Cl. 156—553 **3 Claims**

Apparatus is disclosed for applying adhesive seams to high speed webs for securing them together. An even coating of the adhesive, heated, if necessary is applied to a rotating gravure roll; and one web is fed in partial wrapping engagement about a rotating plate cylinder having a raised transfer bar fixed to its periphery. As the rolls rotate, the transfer bar engages the traveling web and elevates it above the surface of the plate cylinder and into contact with the gravure roll to deposit a seam of adhesive to the outer convex surface of the web according to the



pattern defined by the transfer bar. The two webs are then pressed together and secured by the adhesive. Adhesive seams may also be applied to both webs, if desired, with the applied seams being in register with each other, then pressed together.

3,674,609
LABELING DEVICES
Kurt Schrotz, Brentanostr. 29B, and Werner Becker, Hauptstr. 25, both of Hirschhorn (Neckar), Germany
Filed Aug. 28, 1970, Ser. No. 67,708
Claims priority, application Germany, Sept. 4, 1969, P 19 44 857.8
Int. Cl. B65c *11/00*
U.S. Cl. 156—577 **6 Claims**



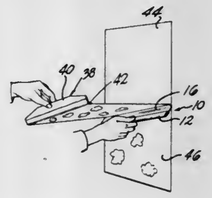
A labeling device for labels which adhere to a support or carrying tape, which is provided with recesses or cut-away marginal portions which are arranged with a spacing corresponding to the spacings between the front edges of the label, and the device is equipped with a transport roller drawing off the support tape step-by-step for the advance of a label, the transport roller being arranged to bring the label in a dispensing position which is to be held precisely and on its periphery is provided with projections which fit into the recesses or cut-away marginal portions of the carrier tape and can be driven in steps at a constant angle and is provided with a non-reversing ratchet, characterised in that a transport part is arranged so as to swing about the axis of rotation of the transport roller and a gripping piece which lies resiliently against the periphery of the transport roller is so pivotally mounted that on movement of the part a driving abutment, of the gripping piece, which is located adjacent to the projections located on a periphery of the transport roller, strikes against the projection and thus presses the gripping piece against the

support tape lying on the periphery of the transport roller and drives the transport roller with the support tape through a distance determined by the pivoting angle of the part and in that on movement of the part against the transport direction of the driving abutment slides over the projections and raises the gripping piece from the support tape.

3,674,610
TOOLS FOR APPLYING SELF-ADHESIVE SURFACE COVERING MATERIAL

Donald L. Bennett, 5501 Granville, Flint, Mich. 48505

Filed Apr. 14, 1969, Ser. No. 815,860
Int. Cl. A47l *17/06*; B32b *31/20*
U.S. Cl. 156—579 7 Claims

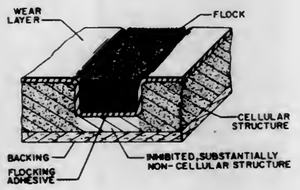


A pair of manually operated tools for holding and pressing self-adhesive surface covering material into adhesive contact with a flat surface. One tool includes a blade having a long, straight, thin edge, slightly curved about its longitudinal axis, and is employed to press self-adhesive surface covering material into adhesive contact with a flat surface. The corners of the blade at the ends of the edge may be rounded for ordinary use, or square for use in corners. An extendable sharp point is provided for puncturing the covering material to permit the escape of air trapped thereunder. The other tool includes a long, straight edge bent not more than 90° and disposed to be adhered to by the free end of the surface covering material, so that the unapplied portion of such material may be supported in near-perpendicular extension from such flat surface while the material is being pressed into contact with the surface by the first tool.

3,674,611
DECORATIVE SURFACE COVERINGS

Robert K. Petry, Morris Plains, and Harry A. Shortway, Glen Rock, N.J., assignors to Congoleum Industries, Inc., Kearny, N.J.

Filed Apr. 10, 1970, Ser. No. 27,374
Int. Cl. B32b *5/14, 5/16, 5/18*
U.S. Cl. 161—63 23 Claims

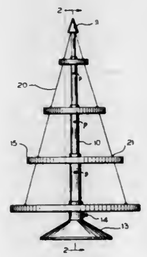


A resinous surface covering having on the surface thereof a plurality of raised cellular areas and a plurality of non-elevated areas adjacent to said raised areas, the non-elevated areas having flocked textile fibers adhesively embedded therein; the height differential between the elevated and non-elevated areas being achieved by either a mechanical or chemical embossing technique.

3,674,612
FOLDING CHRISTMAS TREE TYPE OF DISPLAY STAND

Gerry J. W. Gehl, Jr., 4512 W. Burleigh St., Milwaukee, Wis. 53210

Filed July 29, 1970, Ser. No. 59,071
Int. Cl. A47g *33/04, 33/16*
U.S. Cl. 161—23 5 Claims

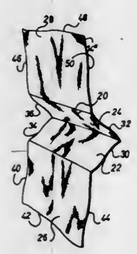


A folding tree-like display stand includes a plurality of axially aligned rings or disks of graduated diameters, mounted vertically to form a generally conical shape which stylistically suggests a Christmas tree. Either direct or indirect lighting may be included.

3,674,613
COMPOSITE MOISTURE-TIGHT STRUCTURE OF ABSORBENT TISSUE BONDED TO AN IMPERMEABLE THERMOPLASTIC MATERIAL

Pierre Lavigne, 527 Gilbert Ave., Fabreville, Quebec, Canada

Filed Mar. 4, 1971, Ser. No. 121,081
Int. Cl. B32b *3/04*; A41b *15/00*
U.S. Cl. 161—37 8 Claims

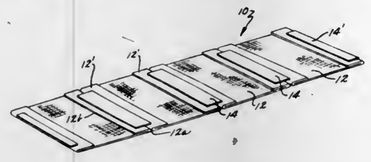


The disclosure herein describes a moisture-tight handkerchief consisting of a first layer of soft absorbent tissue material, such as paper or cloth, and of a second layer of impermeable flexible material, preferably a thermoplastic material, such as polyethylene or polyvinylchloride; both layers are bonded together and, in one embodiment of the invention, the layers are then folded to form an impermeable moisture-containing pocket.

3,674,614
UNITARY LABEL ASSEMBLY OF INTERLINKED LABELS

John Glenn Templeton, Grand Rapids, Mich., assignor to Rospatch Corporation, Grand Rapids, Mich.

Filed Mar. 2, 1970, Ser. No. 15,617
Int. Cl. B37b *7/06*; G09f *3/10*
U.S. Cl. 161—39 6 Claims



A unitary label assemblage formed of labels interlinked by an adhesive forming frangible nexuses between the label edges, allowing selective individual label separation by breakage of the nexus.

3,674,615
INSULATING TAPE AND METHOD OF FABRICATION THEREOF

Jean Dardenne, 16 Allee des Aubepines, Lovernal, Belgium

Continuation-in-part of application Ser. No. 742,766, July 5, 1968. This application Dec. 30, 1970, Ser. No. 102,812
Claims priority, application Belgium, July 20, 1967, 46,433; Apr. 2, 1968, 56,604
Int. Cl. B32b *3/06*
U.S. Cl. 161—49 9 Claims



This invention relates to an insulating tape comprising at least one inner tape surrounded by a porous or perforated sheath. The inner tape slides easily on a supporting sheath and is not secured thereto. The inner tape may consist of chips of mica bonded to each other or of agglomerated mica flakes without the use of glue or varnish. The supporting sheath may consist of synthetic felt, polyester felt, paper, fabric, or film.

3,674,616
ORNAMENTAL ARTICLE

Laurence M. Howard, 370 E. 76th St., New York, N.Y. 10021

Filed Dec. 4, 1970, Ser. No. 95,041
Int. Cl. D03d *27/00*
U.S. Cl. 161—62 7 Claims

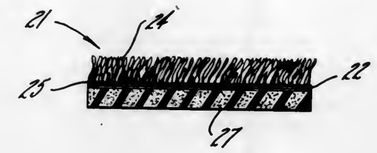
A sheet and pile projecting from the sheet, the pile being decorated to present a pictorial representation with the pile projecting in predetermined directions from the sheet and another pictorial representation when the pile projects in other predetermined directions from the sheet.

3,674,617
COSMETIC WIPE

William J. Mattes, Neenah, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Filed Dec. 11, 1969, Ser. No. 884,225
Int. Cl. B32b *5/12*
U.S. Cl. 161—62 6 Claims

A cosmetic wipe comprising a top layer of high-loft, nonwoven fabric having a substantially continuous backing of flexible adhesive. The high-loft fabric includes a multiplicity of fibers individually looped outwardly from the backing layer, with the ends of each loop embedded



in the backing layer, and with the loops lined in substantially parallel planes. The adhesive backing is laminated to a base layer of fluid absorbent elastic foam material, such as polyurethane foam for example.

3,674,618
IMITATION SLIVER KNIT PILE FABRIC

Donald C. Spann, Greenville, S.C., assignor to Phillips Petroleum Company

Filed Nov. 16, 1970, Ser. No. 89,898
Int. Cl. B32b *5/06, 7/08*; D04h *11/00*
U.S. Cl. 161—64 9 Claims

A layer of nonwoven staple fibers is needle punched into a thermoplastic film. The fibers on one side of the film are thermally bonded to the film. The fibers on the opposite side of the film are then subjected to napping and shearing operations. The film is preferably an oriented polypropylene film which fibrillates during the needling operation. The fabric is useful as a lining in coats.

3,674,619
EMBOSSING SEPARATOR

Herbert I. Scher and Israel S. Ungar, Randallstown, Md., assignors to Esso Research and Engineering Company

Filed Oct. 13, 1969, Ser. No. 865,894
Int. Cl. B32b *3/00*
U.S. Cl. 161—119 8 Claims



An embossing separator is made by impregnating a fibrous material, such as paper, with a solution of a crystalline material having a sharp melting point, and bonding the so-impregnated paper to a suitable release layer such as aluminum foil with a hot embossing roll. This separator is then used to impart a three dimensional surface sculpture to a decorative laminate during the curing cycle thereof.

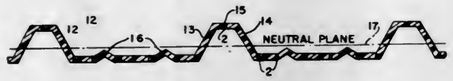
3,674,620
REINFORCED PLASTIC PANEL AND METHOD OF MAKING THE SAME

Robert P. McCarthy, Overland Park, Kans., and Charles W. Matlock, Grandview, Mo., assignors to Butler Manufacturing Company, Kansas City, Mo.

Continuation of application Ser. No. 22,153, Mar. 24, 1970. This application May 25, 1970, Ser. No. 40,332
Int. Cl. B32b *3/28*; B32h *17/28*
U.S. Cl. 161—133 14 Claims

A corrugated panel having a neutral plane, continuous elongated longitudinally disposed spaced apart reinforc-

ing means positioned at least at the apices of the corrugations in said panel and spaced from the neutral plane



of the panel to impart maximum strength thereto, and the method of making such panel.

3,674,621

PROCESS OF MAKING A SHEET PAPER

Haruo Miyamoto, Hideho Uchida, and Masaru Uehara, Nagoya, Japan, assignors to Mitsubishi Rayon Company Limited, Tokyo, Japan

Filed Feb. 17, 1970, Ser. No. 12,074
Claims priority, application Japan, Feb. 25, 1969, 44/13,639, 44/13,640
Int. Cl. D21f *11/00*; D21h *5/12*
U.S. Cl. 162—146 **24 Claims**

A process of making a sheet paper in which an aqueous dispersion containing synthetic fiber, a hot water soluble fiber binder and carboxymethyl cellulose is prepared and subsequently, a sheet paper is formed from the aqueous dispersion. The aqueous dispersion may contain a fibrous material having a lower melting point than that of the synthetic fiber in addition to the above ingredients. A sheet paper from the latter aqueous dispersion is subjected to heat treatment.

3,674,622

NOVEL LAMINATING MEDIA

Paul A. Plasse, Lexington, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed July 14, 1969, Ser. No. 841,258
Int. Cl. B32b *3/26, 5/18*; G09f *3/02*
U.S. Cl. 161—160 **7 Claims**

Novel laminating media especially useful in combination with data storage media to provide laminated articles such as credit cards, identification cards or the like of improved performance characteristics as well as improved overall aesthetics. The novel laminating media essentially comprise a substrate coated with a layer of a compressible material having an adherent capability.

3,674,623

SURFACE CRYSTALLIZED POLY(2,2,4,4 - TETRAMETHYLCYCLOBUTANEDIOL-1,3) CARBONATES

Walter D. Niegisch, Watchung, N.J., assignor to Union Carbide Corporation

No Drawing. Original application Dec. 26, 1967, Ser. No. 693,120, now Patent No. 3,541,200. Divided and this application Apr. 24, 1970, Ser. No. 31,739
Int. Cl. B29c *25/00*
U.S. Cl. 161—164 **5 Claims**

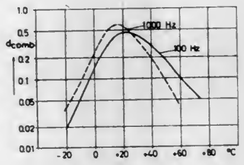
A shaped (transparent, non-oriented carbonate polymer containing the esterification residue of 2,2,4,4-tetramethylcyclobutanediol-1,3 wherein either the shaped article has a plurality of surfaces or a single surface, with the proviso that where the shaped article has a plurality of surfaces at least two surfaces thereof are crystalline and any portion of the article which is free of crystallinity is amorphous and that where the shaped article has a single surface the single surface is crystalline and any portion of the article which is free of crystallinity is amorphous, and which crystalline surfaces are resistant to attack by solvating organic liquids, such as conventional solvents for the amorphous polymer, and body oils, without adversely affecting its transparency.

3,674,624

VIBRATION DAMPED SANDWICH SYSTEMS HAVING INTERLAYERS OF VINYL ACETATE/2-ETHYLHEXYL ACRYLATE/DIBUTYL MALEATE/CROTONIC ACID COPOLYMERS

Hermann Oberst, Hofheim, Taunus, Joachim Ebigt and Gunther Duve, Frankfurt am Main, and Alfred Schommer, Bad Soden, Taunus, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

Continuation-in-part of application Ser. No. 684,739, Nov. 21, 1967. This application Dec. 14, 1970, Ser. No. 98,033
Claims priority, application Germany, Nov. 25, 1966, F 50,757
Int. Cl. B32b *15/08*; C08f *15/20*; E04b *1/86*
U.S. Cl. 161—165 **4 Claims**



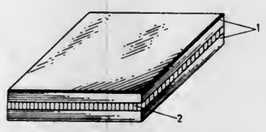
A vibration damped sandwich system comprising two hard plates and interposed between the plates a vibration damping interlayer comprising a copolymer of 30 to 40% by weight of vinyl acetate, 30 to 40% by weight of 2-ethyl-hexyl acrylate, 30 to 10% by weight of dibutyl maleate and 5 to 15% by weight of crotonic acid.

3,674,625

VIBRATION DAMPED SANDWICH SYSTEMS HAVING INTERLAYERS OF VINYL ACETATE/N-BUTYL ACRYLATE/DIBUTYL MALEATE/CROTONIC ACID COPOLYMERS

Hermann Oberst, Hofheim, Taunus, Joachim Ebigt and Gunther Duve, Frankfurt am Main, and Alfred Schommer, Bad Soden, Taunus, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

Continuation-in-part of abandoned application Ser. No. 684,740, Nov. 21, 1967. This application Dec. 14, 1970, Ser. No. 98,012
Claims priority, application Germany, Nov. 25, 1966, F 50,758
Int. Cl. B32b *15/08*; C08f *15/20*; E04b *1/86*
U.S. Cl. 161—165 **4 Claims**



A vibration damped sandwich system comprising two hard plates and interposed between the plates a vibration damping interlayer comprising a copolymer of 30 to 40% by weight of vinyl acetate, 30–40% by weight of n-butyl acrylate, 30 to 10% by weight of dibutyl maleate and 5 to 15% by weight of crotonic acid.

3,674,626

THERMO-FORMABLE PLASTIC MATERIAL FOR MAKING SEMI-RIGID PLASTIC PACKAGES

James I. Mergy, New London, Wis., assignor to Curwood, Inc.

Filed July 24, 1969, Ser. No. 844,572
Int. Cl. B32b *7/02, 27/30*
U.S. Cl. 161—165 **6 Claims**

A novel thermo-formable plastic material characterized by its ability to take shallow or deep draws and be substantially wrinkle free after being subjected to heat for the forming process, the material being a laminate of rigid plastic material with an oriented thermo-plastic material adhered thereto, whereby the shrink energy of the latter material is used to prevent wrinkle formation during the heating of the laminate preliminary to forming, and whereby after a product has been placed in the cup-shaped depression formed by the draw, a cover sheet may be sealed to the flanges thereof to produce a hermetically sealed package free of weak spots normally caused by wrinkling or buckling of the sheet. The invention also includes a novel method for making such packages.

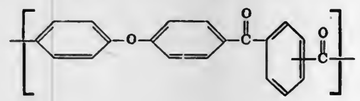
3,674,627

INSULATED ELECTRICAL CONDUCTOR

Rudolph John Angelo, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed June 10, 1970, Ser. No. 45,233
Int. Cl. H01b *7/00*
U.S. Cl. 161—175 **5 Claims**

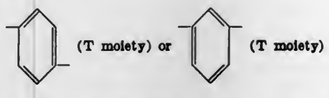
An insulated electrical conductor is provided having an insulation wrapping of a crystalline copolyketone film structure having the following repeating structural unit



wherein the



moiety is either



and the T:I ratio varies from 90:10 to 50:50. A process is also provided whereby a copolyketone film structure having the above repeating structural unit is wrapped around an electrical conductor and thereafter subjected to two distinct heating steps to first seal the copolyketone wrapping covering and then to crystallize the copolyketone wrapping covering.

3,674,628

TUBULAR AND POROUS FIBRES

Albert Fabre, Lyon, France, assignor to Rhone-Poulenc S.A., Paris, France

No Drawing. Filed Oct. 27, 1969, Ser. No. 869,897
Claims priority, application France, Oct. 29, 1968, 171,845
Int. Cl. D01d *5/24*
U.S. Cl. 161—178 **4 Claims**

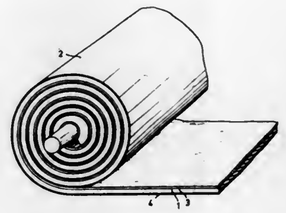
Tubular fibres suitable for use in ultrafiltration, reverse osmosis and for separation processes, containing a continuous axial channel and having a skin over a peripheral external or internal open microporous zone, are prepared by extruding a polymer solution through an annular spinnerette and coagulating one or both peripheral zones of the fibre.

3,674,629

THIN TAPE OR FOIL MADE OF AN ELECTRICALLY INSULATING SYNTHETIC MATERIAL

Jan Roos, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 7, 1969, Ser. No. 789,512
Claims priority, application Netherlands, Jan. 17, 1968, 6800694
Int. Cl. B32b *15/08*; H01b *13/00*; H01g *1/00*
U.S. Cl. 161—214 **7 Claims**



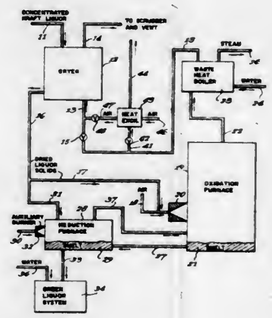
A thin tape of foil of an insulating material for wound capacitors having on one side a layer of metal and on the other side an insulating oxide of the metal.

3,674,630

KRAFT LIQUOR RECOVERY SYSTEM INCLUDING PHYSICALLY ISOLATED OXIDATION AND REDUCTION STAGES

George G. Copeland, Western Springs, Ill., assignor to Copeland Systems, Inc., Oak Brook, Ill.

Filed Nov. 14, 1969, Ser. No. 876,727
Int. Cl. D21c *11/12*
U.S. Cl. 162—30 **8 Claims**



Kraft black liquor is treated for recovery of its heat and chemical content by drying to produce solid material, burning the solid material in an oxidation furnace to

produce hot gases and a molten smelt containing the inorganic constituents. Heat is recovered from the hot gases by heat exchange, while the molten smelt is transferred to a separate reduction furnace, where chemical reduction is accomplished by reaction with carbon. The reduced smelt is then further regenerated for use by conventional means. The invention eliminates the explosion and odor problems associated with conventional recovery systems, at a lower equipment cost.

3,674,631

ARTIFICIAL HAIR

Milton H. Schwarz, Westport, Conn., and Marvin E. Goldberg, Monsey, N.Y., assignors to Revlon, Inc.

No Drawing. Filed Jan. 11, 1971, Ser. No. 105,654
Int. Cl. A41g 5/00
U.S. Cl. 162—149 6 Claims

Artificial fibers for wigs and hairpieces comprising mixtures of fibers of different denier have the soft, natural feel and the bulk, body and appearance of natural hair.

3,674,632

PROCESS FOR MOISTURE STABILIZING CELLULOSIC SHEET MATERIAL USING A POLYOXYALKYLENE GLYCOL AND A POLYOXYETHYLENE-OXYPROPYLENE GLYCOL BLOCK POLYMER

Johan Jakob Wennergren, Bagegatan 29, Ornskoldsvik, Sweden, and Lars-Gunnar Samuelsson, Satervagen 3, Alfredshem, Sweden

No Drawing. Filed Sept. 8, 1969, Ser. No. 856,201
Claims priority, application Sweden, Sept. 10, 1968, 12,172/68
Int. Cl. D21h 3/44
U.S. Cl. 162—168 12 Claims

A moisture-stabilizing composition is provided for cellulosic sheet material, such as paper, comprising a polyoxyalkylene glycol as a moisture-stabilizer, and a polyoxyethylene-oxypropylene glycol block polymer, to enhance the rate of absorption of the polyoxyalkylene glycol in the sheet material. A process for moisture-stabilizing cellulosic sheet material also is provided, which comprises incorporating such a composition in the cellulosic material.

3,674,633

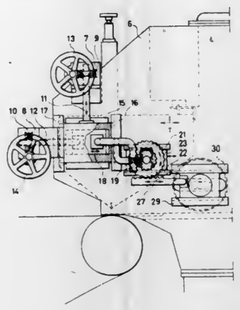
HEADBOX FOR A PAPER MACHINE PROVIDING FOR SIMULTANEOUS ADJUSTMENT OF THE FRONT WALL AND MIXING ROLL THEREIN

Osmo Rainer Evalahti, Kotka, Finland, assignor to A. Ahlstrom Osakeyhtio Karhulan Tehtaat, Karhula, Finland

Filed Apr. 13, 1970, Ser. No. 27,499
Claims priority, application Finland, Apr. 15, 1969, 1,094/69
Int. Cl. D21f 1/02
U.S. Cl. 162—342 7 Claims

In the headbox of a paper machine there is a vertically and horizontally adjustable front wall, which together with the bottom plate of the headbox constitutes a slice portion, the angle of which, α, is less than 90 degrees, and in which the mixing roller has been placed close to the slice portion. In the event of the front wall being displaced for the purpose of changing the slice gap the mixing roller is so displaced that the distances of the mixing roller from the front wall and from the bottom plate remain unchanged.

The mixing roller has been arranged in the event of displacement of the adjustable front wall in the direction parallel to the bottom plate to be displaced parallel to the bottom plate through the same distance and the mixing roller has been arranged in the event of the adjustable front wall being displaced through the distance (a) in the



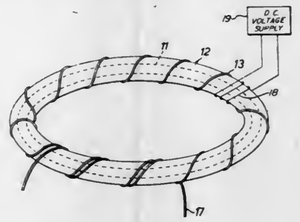
direction perpendicular to the bottom plate to be displaced parallel to the bottom plate through the distance $a/\tan \alpha$.

3,674,634

PLASMA CONFINEMENT APPARATUS

Christopher John Hamilton Watson, Merton College, Oxford, England, assignor to United Kingdom Atomic Energy Authority, London, England

Filed Jan. 21, 1969, Ser. No. 792,553
Claims priority, application Great Britain, May 22, 1968, 24,547/68
Int. Cl. G21b 1/00
U.S. Cl. 176—3 4 Claims



Plasma is principally confined in a toroidal configuration by a static magnetic field. For stabilising the plasma, a radiofrequency electromagnetic field moving faster than the ions in the plasma and of frequency in the region of 1 megahertz is applied. Power for generating the radiofrequency field is coupled into an endless path for conducting electromagnetic power, the path having a distributed inductance and capacitance such that it is a circuit which resonates at the frequency of the electromagnetic field.

3,674,635

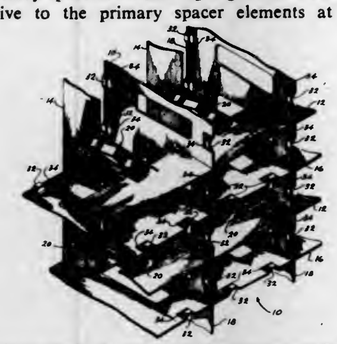
BIMETALLIC SPACER GRID

Andrew J. Anthony, Tariffville, Albert L. Gaines, West Simsbury, and Donald M. Krawiec, Thompsonville, Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Mar. 27, 1970, Ser. No. 23,231
Int. Cl. G21c 3/34
U.S. Cl. 176—78 5 Claims

An improved bimetallic spacer grid arrangement for fuel element support in nuclear reactors. A plurality of

primary spacer elements are nested with a plurality of secondary spacer elements, the primary spacer elements extending less than one-half the full depth of the secondary spacer elements. Spring ferrules are positioned relative to the primary spacer elements at particular



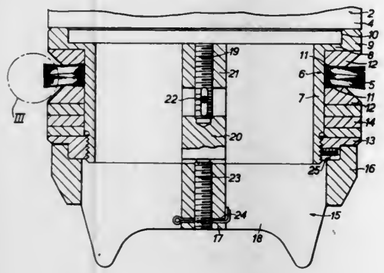
locations within the spacer grid arrangement for retention therebetween. The primary and secondary spacer elements are formed from a first material having characteristic low neutron capture cross section while the spring ferrules are formed from a second material having better stress relaxation properties than the first material.

3,674,636

NUCLEAR REACTOR MEANS FOR MINIMIZING LATERAL VIBRATIONS

Philip Michael Jones, Preston, and Raymond Herbert Walsh, Blackpool, England, assignors to United Kingdom Atomic Energy Authority, London, England

Filed Oct. 28, 1968, Ser. No. 771,190
Claims priority, application Great Britain, Nov. 23, 1967, 53,447/67
Int. Cl. G21c 3/14
U.S. Cl. 176—77 5 Claims



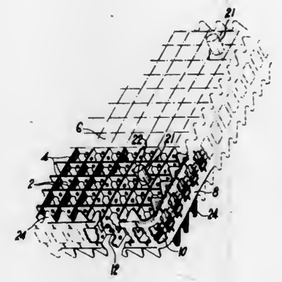
Lateral vibrations of a component when subjected to coolant flow in a channel of a nuclear reactor core structure during lifting and lowering of the component from and into the channel are minimised by the provision of radially projecting spring bristles at the lower end of the component, the bristles being of a length so as to locate the lower end of the component by engagement with the channel wall.

3,674,637

SPACER GRID FOR NUCLEAR REACTOR FUEL ELEMENT ASSEMBLY

Jacques Delafosse, Gif-sur-Yvette, and Jean-Luc Viaud, Bures-sur-Yvette, France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed June 20, 1969, Ser. No. 835,117
Claims priority, application France, July 2, 1968, 157,536
Int. Cl. G21c 3/34
U.S. Cl. 176—78 4 Claims



The invention concerns a spacer grid which maintains each rod of a nuclear reactor fuel elements assembly in a relatively large number of points and has however a low resistance to coolant flow.

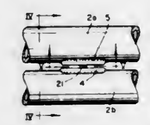
This grid is formed by interassembled cut-out sheet metal members, each comprising two parallel rectilinear ribbon elements which delimits with narrow corrugated strips quadrangular openings, one of said ribbon being interrupted by a slot along the center line of each opening to permit insertion of another member.

3,674,638

NUCLEAR REACTOR FUEL ELEMENT ASSEMBLY

John Cameron McGregor, Port Hope, Ontario, Canada, assignor to Atomic Energy of Canada Limited, Ottawa, Ontario, Canada

Filed Apr. 15, 1969, Ser. No. 816,271
Int. Cl. G21c 3/08, 3/34
U.S. Cl. 176—81 7 Claims



A nuclear reactor fuel element assembly wherein a plurality of fuel elements are disposed side-by-side and are joined together at an intermediate position along their lengths by pairs of pads each one of a pair being brazed

to a fuel element cladding and joined to the other pad of that pair by a weld or braze having a weaker breaking strength than the fuel element claddings. Each pair of pads provides a robust joint between two fuel elements, which will break before rupture of a fuel element cladding occurs.

3,674,639

METHOD OF PRODUCING L-GLUTAMIC ACID BY FERMENTATION

Shigeho Ikeda, Tokyo, and Ayaaki Ishizaki, Yoshio Hirose, and Teruo Shiro, Kanagawa-ken, Japan, assignors to Ajinomoto Co., Inc., and Sanraku Ocean Co., Ltd., Tokyo, Japan

No Drawing. Filed May 18, 1970, Ser. No. 38,534

Claims priority, application Japan, May 27, 1969, 44/41,117

Int. Cl. C12d *1/00*

U.S. Cl. 195—28 R **9 Claims**

Artificially induced mutants of the glutamic acid producing microorganisms *Brevibacterium ketoglutamicum*, *Corynebacterium hydrocarboclastus*, and *Arthrobacter paraffineus* which are capable of growing on an agar medium containing substances having penicillin activity in an amount corresponding to more than 5 international or U.S.P. penicillin units per milliliter have been found capable of assimilating hydrocarbons and their oxidation products as the principal source of carbon from a nutrient medium containing penicillin-active substances in high concentrations, and to convert the assimilated material to L-glutamic acid relatively rapidly until concentrations of more than 7 g./dl. are reached in the medium.

3,674,640

CULTIVATION OF HYDROCARBON-CONSUMING YEASTS

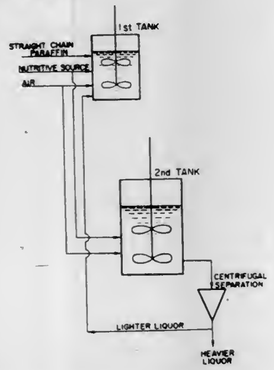
Isao Takeda, Ohi-machi, Iruma-gun, Takashi Iguchi, Tokyo, Katsuaki Tsuzuki, Nobeoka-shi, and Tooru Nakano, Tokyo, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Jan. 14, 1970, Ser. No. 2,820

Claims priority, application Japan, Jan. 30, 1969, 44/6,293; Feb. 26, 1969, 44/13,946

Int. Cl. A23l *1/28*

U.S. Cl. 195—28 R **4 Claims**



Method for the cultivation of hydrocarbon-consuming yeasts by a continuous fermentation process which comprises (a) cultivating *Torulopsis petrophilum*, *Candida petrophilium* or *Brettanomyces petrophilum*, a species of yeast capable of consuming hydrocarbons as the carbon source in a medium containing a hydrocarbon fraction boiling at temperatures in a range of 200 to 360° C.; (b) aerobically conducting said cultivation in an apparatus consisting of (1) an emulsification tank mainly for forming emulsion of said hydrocarbon and an aqueous solution and (2) a main fermentation tank for effecting cell formation or fermentative production of useful substances, said tanks being connected in series; (c) using as the medium in said emulsification tank a medium containing said hydrocarbon at a high concentration, the fermentation waste liquor from the main fermentation tank and an alcohol at a concentration of 0.5 percent by volume or lower based on the entire volume of said medium; and (d) feeding into said main fermentation tank the emulsified fermentation liquor obtained in said emulsification tank.

3,674,641

PROCESS FOR PRODUCING 5'-PURINE NUCLEOTIDES

Katsunobu Tanaka, Machida-shi, Takashi Nara, Tokyo, Masanaru Misawa, Kawasaki-shi, and Toshio Komuro, Tokyo, Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

No Drawing. Continuation of application Ser. No. 536,317, Mar. 22, 1966. This application July 15, 1968, Ser. No. 744,641

Claims priority, application Japan, Mar. 31, 1965, 40/18,243

Int. Cl. C12d *13/06*

U.S. Cl. 195—28 N **12 Claims**

A process of producing 5'-purine nucleotides, such as 5'-inosinic acid, 5'-guanylic acid, 5'-adenylic acid and 5'-xanthylic acid, by fermentation. A microorganism, e.g., *Arthrobacter simplex* ATCC 15799, is cultured in an aqueous medium containing, as a carbon source, at least one hydrocarbon. The hydrocarbon is, for example, kerosene, paraffin, cycloparaffin, olefin, cycloolefin, benzene, a lower alkyl-substituted benzene, light oil or heavy oil.

3,674,642

NOVEL MICROBIAL ACIDIC HETEROPOLYSACCHARIDE AND PRODUCTION THEREOF

Saburo Yamatodani, Minoo, and Tsuneo Kanamaru, Toyonaka, Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed May 19, 1970, Ser. No. 38,780

Claims priority, application Japan, May 19, 1969, 44/38,551

Int. Cl. C12d *13/04*

U.S. Cl. 195—28 R **4 Claims**

Method for producing microbial acidic heteropolysaccharide, of which the saccharide units consist substantially of glucose and mannose and the acid units consist substantialy of succinic acid, lactic acid and acetic acid, which comprises incubating *Corynebacterium equi* var. *mucilaginosus* in a culture medium containing hydrocarbon as the main carbon source together with digestible nitrogen source and other nutrients necessary for the growth of the microorganism until a substantial amount of the acidic heteropolysaccharide is accumulated in the culture broth, and recovering the accumulated acidic heteropolysaccharide therefrom.

3,674,643

PREPARATION OF PROTEOLYTIC ENZYMES HAVING MAXIMUM ACTIVITY AT HIGH ALKALINITY

Knud Aunstrup, Farum; Otto Andresen, Copenhagen, and Helle Outtrup, Vaerlose, all of Denmark, assignors to Novo Terapeutisk Laboratorium A/S, Copenhagen, Denmark

Filed Nov. 1, 1968, Ser. No. 772,830

Claims priority, application Great Britain, Nov. 10, 1967, 51,307/67

Int. Cl. C12d *11/00, 13/10*

U.S. Cl. 195—62 **3 Claims**

A method of making proteolytic enzyme preparations having maximum activity at high alkalinity by submerged aerobic cultivation of strains of *Bacillus alcalophilus* in a nutrient medium containing assimilable carbon and nitrogen sources, while maintaining the pH-value of the nutrient medium between 7.5 and 11.

3,674,644

PRODUCTION OF NOVEL ACIDSTABLE AND THERMOSTABLE PROTEASE

Tamotsu Yokotsuka, Nagareyama-shi; Hikotaka Hashimoto, Noda-shi, and Takashi Iwasaa, Noda-shi, all of Japan, assignors to Kikkoman Shoyu Co., Ltd., Noda-shi, Japan

Filed Dec. 12, 1969, Ser. No. 884,740

Claims priority, application Japan, Dec. 26, 1968, 43/95002; Oct. 7, 1969, 44/79624

Int. Cl. C12d *13/10*

U.S. Cl. 195—62 **19 Claims**

New acidstable and thermostable protease which is active at pH 1.5–6.5; an optimum pH being 2.0–3.0; an optimum temperature being 60° C. at pH 2.5, 75° C. at 3.5 and 75°–80° C. at 4.5.

The protease has a strong liquefaction power and makes free a very small amount of amino acids, e.g., amino state N: total N is less than 18, when a substrate of defatted soybean is decomposed.

The protease is useful for the food industry, fermentation industry and animal feed industry. The protease is produced by culturing *Penicillium duponti* ATCC 20186 in a solid or liquid medium at a temperature of, preferably, 40°–50° C. and at a pH of 4.0–7.0.

3,674,645

KERATINOLYTIC ENZYME ISOLATED FROM TRICHOPHYTON MENTAGORPHYTES AND PROCESS THEREFOR

Fritz Blank, Merion Station, Pa.; William C. Day, Edmonton, Alberta, Canada; Sandra R. Harmon, Norristown, Pa.; Pauline F. Toncic, Philadelphia, Pa., and Ruey J. Yu, Philadelphia, Pa., assignors to Temple University, Philadelphia, Pa.

Filed Aug. 14, 1969, Ser. No. 850,260

Int. Cl. C12d *13/10*

U.S. Cl. 195—66 R **5 Claims**

Keratinase is produced by incubating *T. Mentagrophytes* for several days in growth medium, at a pH of 6–9, containing animal hair, magnesium salt, thiamine, pyridoxine and inositol. Preferably, glucose is also included and the pH is about 7.8. This keratinase is separated by filtering the growth media, partially purifying the enzyme by contact with diethylaminoethyl cellulose and adsorbing the keratinase on carboxymethyl cellulose. The crude keratinase is eluted from the cellulose and purified by molecular sieves, ion exchange resins or other means.

3,674,646

METHOD FOR MANUFACTURING PROTEASE

Isamu Tani, Tokushima-shi; Masatomi Otsuka, Naruto-shi; Yoshiyasu Osaki, Tokushima-ken, and Takuo Hagino, Naruto-shi, all of Japan, assignors to Otsuka Kagaku Yakuhin Kabushiki Kaisha, Osaka-shi, Japan

Filed Oct. 22, 1969, Ser. No. 868,613

Int. Cl. C12d *13/10*

U.S. Cl. 195—66 **4 Claims**

A method for manufacturing protease which comprises culturing Bacillus sp. 0–20 belonging to the genus Bacillus in a culture medium to produce protease and collecting the protease from the medium.

3,674,647

PREPARATION OF LINCOMYCIN ANALOGUES

Jeronimo Visser, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 68,002, Aug. 28, 1970, abandoned. This application Oct. 7, 1970, Ser. No. 78,935

Int. Cl. C12d *9/00*

U.S. Cl. 195—80 R **9 Claims.**

Microbiological processes for preparing lincomycin analogues selected from the group consisting of 4'(S)-lincomycin, 4'-depropyl-4'-alkylidenelincomycin, 4'-depropyl-4'-alkyllincomycin, 1'-demethyl-4'(S)-lincomycin, 1'-demethyl-4'-depropyl-4'-alkylidenelincomycin and 1'-demethyl-4'-depropyl-4'-alkyllincomycin. These compounds have antibacterial properties and, accordingly, can be used in various environments to control the growth of susceptible micro-organisms.

3,674,648

BACTERIAL LAMP

Giorgio Soli, China Lake, Calif., assignor to The United States of America as represented by the Secretary of the Navy

Filed Feb. 1, 1971, Ser. No. 111,507

Int. Cl. C12b *1/00*

U.S. Cl. 195—127 **4 Claims**

A bacterial lamp which produces a blue-green light which is particularly useful to divers to illuminate the immediate environment around them. The lamp comprises two vessels connected by valve means. One vessel is substantially filled with a bacteria culture medium and the other with a suspension of luminous bacteria in a non-nutrient medium. An oxygen bottle is connected by suitable means to the vessel containing the bacterial suspension and in operation gas pressure forces a predetermined amount of the bacterial suspension into the vessel containing the nutrient medium, whereupon the bacteria start to grow and a light output of considerable intensity is produced.

3,674,649

METHOD FOR THE PRODUCTION OF HUMIC ACIDS, HUMATES, AND OF COMPOSITIONS WHEREIN THEY ARE CONTAINED

Mario Formisano, Portici, (Napoli), and Salvatore Coppola, Napoli, both of Italy, assignors to I.C.B.S.P.A. Industria Chimica e Biologica, Napoli, Italy

Filed May 19, 1969, Ser. No. 825,944

Claims priority, application Italy, May 18, 1968, 31329 A/68

Int. Cl. C12b *1/00*

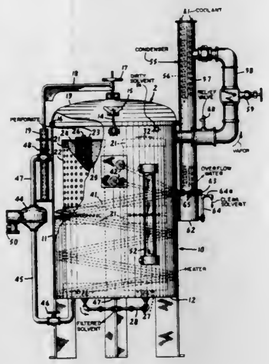
U.S. Cl. 195—104 **19 Claims**

Process for the preparation of humic acids and salts thereof by successive steps of fermentation of garbage and agricultural byproducts, under selected, controlled, temperature, time, and aeration conditions.

3,674,650
LIQUID PURIFYING SYSTEM

Max M. Fine, 135-17 Jewell Avenue, Kew Garden Hills, N.Y.

Filed March 18, 1970, Ser. No. 20,751
Int. Cl. B01d 3/00, ; F28b ; C02c ; B01d 23/00; C02b
U.S. Cl. 202—176 8 Claims

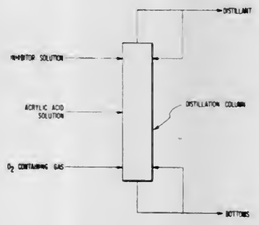


A liquid-purifying system particularly for purifying the solvent used in a dry-cleaning machine comprises a combined filter and still. Filter cartridges are arranged in a closed vessel which also is provided with a heating coil for vaporizing liquid in the vessel. The level of liquid in the vessel is automatically controlled during distillation operation to provide a vapor space above the liquid. A condenser connected with the vapor space condenses the vapor produced by vaporization of the liquid and also separates any water that may be present.

3,674,651
POLYMERIZATION INHIBITION OF ACRYLIC ACID

Susumu Otsuki; Kyoichi Hori, and Isao Miyanohara, all of 4560, Oaza-Tonda, Nanyo-cho, Tsuno-gun, Yamaguchi, Japan

Filed June 10, 1970, Ser. No. 45,213
Claims priority, application Japan, June 10, 1969, 44/45613; June 24, 1969, 44/49888
Int. Cl. C07c 57/04; B01d 3/34
U.S. Cl. 203—8 11 Claims

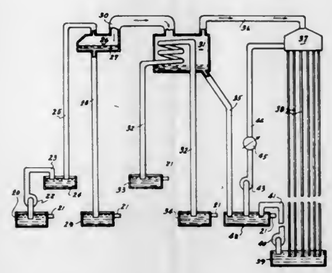


The inhibition of the polymerization of acrylic acid and a process for stabilizing the distillation of acrylic acid using a combination of a polymerization inhibitor, such as diphenylamine or its derivatives, and an oxygen-containing gas, or mixtures of polymerization inhibitors, such as diphenylamine or its derivatives, with benzoquinone and/or hydroquinone mono-methyl-ether, and an oxygen-containing gas are disclosed.

3,674,652
METHOD OF WATER PURIFICATION

Melvin Henry Brown, Leechburg, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 571,514, Aug. 10, 1966. This application Aug. 14, 1969, Ser. No. 850,160. The portion of the term of this patent subsequent to Sept. 15, 1987, has been disclaimed.
Int. Cl. B01d 3/00
U.S. Cl. 203—11 5 Claims

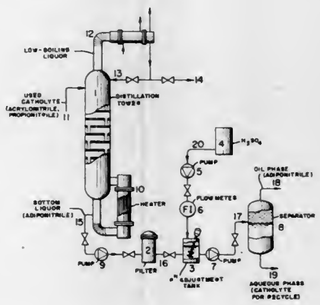


Method of purifying water, such as sea water, by low temperature evaporation thereof under conditions of reduced pressure to produce a gaseous mixture of water vapor and non-condensible gas and, subsequent to substantial condensation of the water vapor, encapsulation of the remaining uncondensed water vapor and the non-condensible gases in a downwardly flowing vertical column of foamed encapsulating liquid.

3,674,653
METHOD OF THE PURIFICATION OF CATHOLYTES

Maomi Seko, Tokyo; Shinsaku Ogawa, Nobeoka; Ryozo Komori, Nobeoka; Masaro Asuma, Nobeoka; Toshiro Isoya, Nobeoka, and Takamasa Sakai, Nobeoka, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed April 22, 1970, Ser. No. 30,853
Claims priority, application Japan, May 1, 1969, 44/33244
Int. Cl. B01d 3/34
U.S. Cl. 203—34 6 Claims



A method of the purification of a catholyte in the electrolytic hydrodimerization of acrylonitrile for the production of adiponitrile which comprises subjecting acrylonitrile and low-boiling byproducts such as propionitrile contained in the catholyte to distillation to remove the same, then adjusting the pH of the aqueous phase in the remaining emulsified liquor to 3.0 or below to distribute the major portion of carboxylates contained in the aqueous phase into the oil phase mainly consisting of adiponitrile, and eliminating the carboxylates out of the system through the medium of the oil phase to effect reduction of the carboxylate concentration in the catholyte.

3,674,654
DETERMINATION OF OXYGEN IN MOLTEN STEEL

Paul Louis Jackson, Dearborn, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Dec. 11, 1970, Ser. No. 97,350
Int. Cl. G01n 27/46
U.S. Cl. 204—1 T 5 Claims

This invention is concerned with a process of very accurately and rapidly measuring the oxygen content of molten steel as the steel is being processed. This invention is dependent for its viability upon the use of a solid electrolyte comprising stabilized zirconia and beryllia reacted at a high temperature to form such solid electrolyte. Controlled porosity of the solid electrolyte forms a part of this invention.

3,674,655
SURFACE PREPARATION OF URANIUM PARTS

Louis de Vaulchier du Deschaux, Paris; Alain de Fouchier, Bourg-La-Reine; Emmanuel de Vaucelles, Paris, and Louis Facquet, Vaucresson, all of France, assignors to Commissariat A L'Energie Atomique, Paris, France

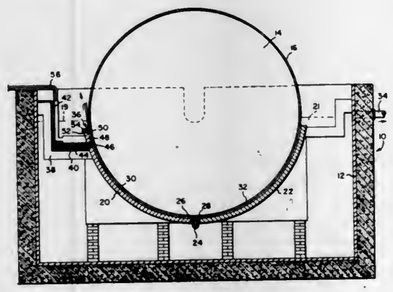
Filed Jan. 13, 1969, Ser. No. 790,869
Claims priority, application France, Jan. 24, 1968, 68137312
Int. Cl. B01k 3/12
U.S. Cl. 204—1.5 8 Claims

Prior to electroplating parts of uranium or uranium base alloys, the parts are subjected to a surface preparation which comprises preliminary steps of chemical degreasing, electrolytic degreasing and if necessary of chemical etching and further comprises an anodic electrolytic treatment in an aqueous solution of an organic salt or a sulphate of lithium and/or magnesium.

3,674,656
BONDING TREATMENT AND PRODUCTS PRODUCED THEREBY

Charles B. Yates, Willingboro, N.J., assignor to Circuit Foil Corporation, Bordentown, N.J.

Filed June 19, 1969, Ser. No. 839,777
Int. Cl. C23b 7/02, 5/48, 5/58
U.S. Cl. 204—13 18 Claims

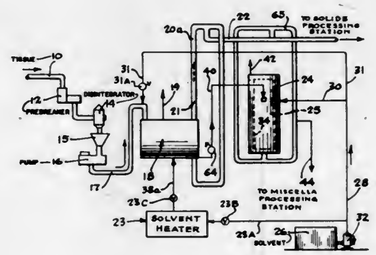


A method of producing metal foil having enhanced bond strength comprising forming said metal foil in a body of electrolyte at a first cathode current density and forming a nonpowdery series of spaced projections on said foil by making the latter while subjecting it in said body of electrolyte to a cathode current density significantly in excess of the former current density. Apparatus for producing metal foil having the characteristics described. Metal foil having the characteristics described. A laminate including a substrate bonded to said metal foil and having the characteristics described.

3,674,657
METHOD OF PRODUCING FAT AND EDIBLE SOLIDS FROM BIOLOGICAL MATERIAL USING VAPOR HEATED SOLVENT

Ezra Levin, Champaign, Ill., assignor to VioBin Corporation, Champaign, Ill.

Division of Ser. No. 640,523, May 23, 1967, Pat. No. 3,509,933, which is a continuation-in-part of Ser. No. 408,231, Nov. 2, 1964, Pat. No. 3,538,973. This application April 8, 1970, Ser. No. 26,632
Int. Cl. B01d 1/14, 1/00; F26b 7/100; B01d 3/34; A23b 1/04, 3/04; C09f 5/00
U.S. Cl. 203—49 4 Claims



An improved method of processing nutritious biological material for obtaining fat and a dehydrated and defatted solids residue of palatable nutritious character, using a fat solvent which forms with water from the biological material an azeotrope having a boiling temperature materially lower than that of the solvent itself. Heating of a slurry of solvent and biological material is effected by introducing hot solvent vapor into the slurry below its upper surface so that the incoming vapor is condensed and captured in the slurry which is kept well below the condensation temperature of the solvent vapor by the evaporation from the slurry of azeotrope at the lower boiling temperature of the latter. In condensing and cooling the incoming vapor, the slurry gains heat and boils at the boiling temperature of the azeotrope to distill off azeotrope with attendant defatting and dehydration of the biological material, obviating the input of heat through heat transfer surfaces and the caking of solids on such surfaces.

3,674,658
FILLERS FOR METALLIZED POLYAMIDES

Pieter J. van Asperen, Geleen, and Jozef L. M. van der Loos, Sittard, both of Netherlands, assignors to Stamicarbon N.V., Heerlen, Netherlands

Filed June 3, 1970, Ser. No. 43,184
Claims priority, application Netherlands, June 3, 1969, 6908381
Int. Cl. C23g 5/60; C08g 20/00; B44d 1/52
U.S. Cl. 204—30 4 Claims

Objects composed of a metal-coated polyamide plastic, and a process for making same are disclosed in which a polyamide plastic substrate material is made by the hydrolytic polymerization of an omego lactam carried out at a temperature at least at the melting point of the polyamide material in the presence of one or more compounds soluble in the molten lactams, such as polyethers, alcohols of fatty acids having a

boiling point above the lactam, organic sulphones, alkali metal halides, paraffins and silicone oils. After appropriate surface treatment of this plastic material, metal coating is deposited by precipitation and by further treatment as by electro deposition, to obtain the metal-coated polyamide plastic object.

3,674,659
THIN-FILM RESISTOR ANODIZATION

Frederick C. Livermore, Hazeldean, and Graham Albert Neathway, Ottawa, Ontario, both of Canada, assignors to Northern Electric Company Limited, Montreal, Quebec, Canada

Filed Aug. 17, 1970, Ser. No. 64,446
Int. Cl. C23b 9/00; B01k 3/00
U.S. Cl. 204—56 R **1 Claim**

A method for adjusting the electrical resistance of thin-film metallic resistors by anodization is disclosed. The method includes the steps of: (1) supplying an electrolyte between a thin-film resistor and a cathode spaced therefrom; (2) applying a measuring voltage across the resistor for a period of time sufficient to determine the resistance of the resistor; (3) removing the measuring voltage, and if the resistance is below a desired value, passing an anodizing direct current between the resistor and the cathode for a time sufficient to anodize a surface of the resistor and thereby increase its resistance, the magnitude of the anodizing current and period of time being selected so as to produce an increase in resistance by an increment proportional to the difference between the desired value and the measured value of the resistance; (4) repeating step (2); and (5) terminating the anodizing of the resistor when the measured electrical resistance reaches a desired value.

3,674,660
ELECTRODEPOSITION OF COPPER

Derek Martin Lyde, Stourbridge, England, assignor to Albright & Wilson Limited, Oldbury near Birmingham, England

Continuation-in-part of Ser. No. 724,225, April 25, 1968. This application Aug. 14, 1970, Ser. No. 63,954
Claims priority, application Great Britain, May 1, 1967, 19,989/67
Int. Cl. C23b 5/18, 5/46
U.S. Cl. 204—52 R **13 Claims**

A copper pyrophosphate electroplating bath contains a known heterocyclic additive in conjunction with an auxiliary brightener selected from iminodiacetic acid, cinammic acid, aliphatic acid, di- and poly- carboxylic acids having at least seven carbon atoms, salts of the aforesaid acids and hydroxyethylcellulose. The auxiliary brightener prevents step plating which is normally caused by the presence of the heterocyclic brightener.

3,674,661
ELECTROCHEMICAL PRODUCTION OF NICKEL (I) COMPLEXES

William B. Hughes, Bartlesville, Okla., assignor to Phillips Petroleum Company

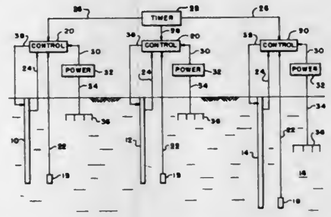
Filed March 1, 1971, Ser. No. 119,942
Int. Cl. C07b 29/06; C07f 9/02, 15/04
U.S. Cl. 204—73 R **8 Claims**

The treatment of nickel(II) halide compounds by controlled potential electrolysis is disclosed for the production of nickel(I) halide phosphine compounds.

3,674,662
CATHODIC PROTECTION OF CLOSELY SPACED OIL WELL CASINGS

Ernest W. Haycock, El Cerrito, Calif., assignor to Shell Oil Company, New York, N.Y.

Filed Nov. 10, 1970, Ser. No. 91,340
Int. Cl. C23f 13/00
U.S. Cl. 204—147 **3 Claims**



A method of cathodically protecting a plurality of closely spaced oil well casings by maintaining the casings at a predetermined negative potential with short current pulses and so timing said pulses that they do not overlap and thereby create mutual interference.

3,674,663
PHOTOCHEMICAL PROCESS FOR PREPARING A BICYCLIC LACTONE

John B. Siddall, Palo Alto, Calif., assignor to Zoecon Corporation, Palo Alto, Calif.

Filed Nov. 28, 1969, Ser. No. 880,966
Int. Cl. B01j 1/10
U.S. Cl. 204—158 R **4 Claims**

Synthesis of cis 2-(1'-methyl-2'-isopropenylcyclobutyl)ethanol, a component of the boll weevil sex attractant, and intermediates therefor, in which 5-hydroxy-pent-2-ynoic acid or ethers thereof is methylated followed by cyclization to yield 3-methylpent-2-eno-5-lactone which is irradiated in presence of ethylene to yield 2,3-cycloethylene-3-methylpentano-5-lactone which is cleaved and converted into 2-(1'-methyl-2'-isopropenylcyclobutyl)ethanol.

3,674,664
METHOD OF PREPARING CHLOROACETYL CHLORIDE

Eric R. Larsen, Midland, Mich.; Albert Kent Keller, Punta Gorda, British Honduras, and Raymond A. Plepys, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 804,689, March 5, 1969, abandoned. This application March 6, 1970, Ser. No. 17,292
Int. Cl. B01j 1/10; C07c 51/58
U.S. Cl. 204—158 R **11 Claims**

A method of preparing chloroacetyl chloride which comprises reacting by contacting in the vapor phase, at a temperature of about 20° to 350° C., vinylidene chloride with O_2 in the presence of a free radical initiator.

3,674,665
PHOTOSYNTHESIS OF CYCLOPROPYL COMPOUNDS FROM ALLYLIC COMPOUNDS

Stanley J. Cristol, and George A. Lee, both of Boulder, Colo., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

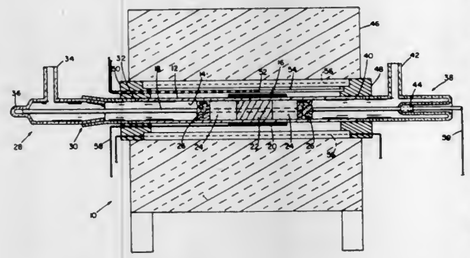
Filed May 28, 1970, Ser. No. 41,539
Int. Cl. B01j 1/10; C07c 17/00, 23/04
U.S. Cl. 204—163 R **16 Claims**

Disclosed is a novel photochemical process for rearranging a variety of allyl compounds to isomeric cyclopropyl compounds, e.g., crotyl chloride to cis- and trans-1-methyl-2-chlorocyclopropane.

3,674,666
ENHANCING REACTION RATES

Richard N. Foster, Boston, Mass., and John B. Butt, Wilmet, Ill., assignors to said Foster, by said Butt

Filed Aug. 19, 1970, Ser. No. 64,998
Int. Cl. B01k 1/00
U.S. Cl. 204—164 **10 Claims**

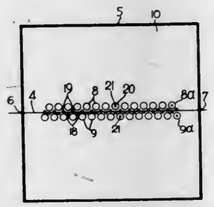


Process and apparatus for effecting a chemical reaction in an electrically uncharged reactant to produce a product by introducing reactant into a chemical reactor having walls defining a chamber, a reaction zone within the chamber, and an inlet to admit reactant to the chamber, a first electrode and a second electrode spaced therefrom, the electrodes being opposed across the reaction zone, a supporting structure of electrically non-conductive material supported between the electrodes and in the reaction zone, the structure having channels for passage of reactant and product material, a plurality of electrically conductive particles separately supported on the structure, the particles being electrically insulated one from another and having surface portions exposed to direct contact with reactant in the channels, the surface portions having catalytic effect which is enhanced by changing the electric charge on the surface portions, and means connected to the electrodes for establishing an electrical potential difference between said electrodes. Reactant is brought into contact with said surface portions of said particles while simultaneously applying an electric potential difference across the electrodes to produce an electric field which changes the charge on said exposed surface portions of the electrically conductive particles and thereby enhances the catalytic effect of said exposed surface portions in producing the product.

3,674,667
PROCESS FOR INCREASING WATER REPELLENCY OF COTTON CLOTH

Jean P. Manion, Milwaukee, and Daniel J. Davies, Mukwonago, both of Wis., assignors to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.

Filed Aug. 1, 1969, Ser. No. 846,767
Int. Cl. B01k 1/00; D06m 13/08
U.S. Cl. 204—165 **3 Claims**

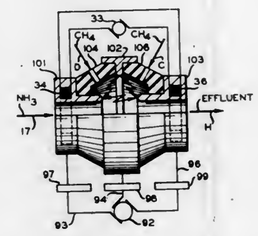


A manufactured material and a process for making the material is disclosed. The manufactured material is a hydrogen containing substance having a fluorinated surface and in which hydrogen atoms, which may be present in hydroxyl radicals attached to a carbon atom chain, have been replaced in the surface of the material by fluorine atoms or radicals, and with such fluorinated surface of the material containing at least about 2 micrograms of such fluorine per cm^2 of surface area. The process for making such a material includes the steps of selecting a substrate containing hydrogen atoms which may be present in hydroxyl radicals attached to a carbon atom chain, selecting a gas containing fluorine atoms or radicals, placing the selected substrate between electrodes in a flowing atmosphere of the selected gas at subatmospheric pressure, and subjecting the substrate to an electrodeless discharge of at least about 0.2 KWH/$yard^2$ to chemically activate both the surface of the substrate and the gas, and exchange the fluorine atoms or radicals for surface hydrogen atoms or radicals to produce a material with a surface, which compared to the substrate before this process treatment, is more water repellent (without sealing pores), is more corrosion and soil resistant, more chemically inert, and more like the relatively expensive polytetrafluoro-ethylene. When the substrate is a material having a relatively inert surface, such as polyethylene, the process is disclosed as including an initial treatment step that involves ion bombardment of the substrate in helium gas to activate the surface before the surface is treated in the fluorine containing gas.

3,674,668
ELECTRIC ARC PROCESS FOR MAKING HYDROGEN CYANIDE, ACETYLENE AND ACRYLONITRILE

Geir Bjornson, and Homer M. Fox, both of Bartlesville, Okla., assignors to Phillips Petroleum Company

Filed Feb. 24, 1969, Ser. No. 801,364
Int. Cl. B01k 1/00; C22d 7/08
U.S. Cl. 204—171 **6 Claims**



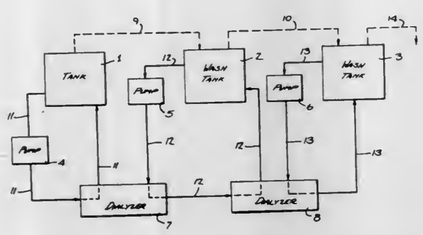
A lower hydrocarbon having from one to eight carbon atoms is passed through an electric arc, heated therein above about 1,000° F., and immediately mixed with nitrogen or a nitrogen-containing compound, which mixture immediately reacts to form acetylene, hydrogen cyanide and other products, which products are quenched below about 1,000° F. If desired, the resulting products are further reacted to form acrylonitrile from the further reaction of the acetylene with the hydrogen cyanide present. By not passing the nitrogen-containing compound through the arc during the process, severe errosion of the electrodes is avoided. By passing only the lower hydrocarbon through the arc during the process, it is not necessary to employ any inert arc gas, which would increase the cost of operation and the difficulty of separation of products. Because of lower cost and availability, methane and ammonia are preferred as the two reactants. Nitrogen and other nitrogen-containing compounds are disclosed as suitable nitrogen sources to replace the ammonia.

Apparatus features are the combination of a rotating arc heater with a fluidized bed arc effluent quench and feed preheater and, if desired, fluidized bed acrylonitrile from hydrogen and acetylene reactor followed, if desired, by a suitable series of fractionators.

3,674,669
CONCENTRATION OF ELECTROLYTE FROM DILUTE WASHINGS BY ELECTRODIALYSIS IN A CLOSED SYSTEM

Sidney B. Tuwiner, Baldwin, N.Y., assignor to RAI Research Corporation, Long Island City, N.Y.

Filed April 1, 1970, Ser. No. 24,602
Int. Cl. B01d 13/02
U.S. Cl. 204—180 P 13 Claims



Work from electroplating or metal finishing is washed by immersion in a series of solutions. The dragout of electrolyte which remains in the wash solutions is balanced by the transfer of electrolyte from each wash solution to a previous solution of the sequence or to a solution of the original bath concentration. This transfer of electrolyte is by electrodialysis in which a circulating stream of each wash solution acts as a diluting stream in relation to a circulating stream of a previous solution and as a concentrating stream in relation to a subsequent solution.

Extremely high ratios of concentration are achieved between wash stages by operation of the electrodialysis stack under conditions of membrane polarization.

3,674,670
COATING METHOD

J. Alden Erikson, Gibsonia, and Gerald R. Gacesa, Tarentum, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Dec. 4, 1964, Ser. No. 416,140
Int. Cl. B01k 5/02; C23b 13/00
U.S. Cl. 204—181 23 Claims

Application of resinous organic coatings onto non-conductive surfaces by electrodeposition is accomplished by first applying on the surface a layer of conductive particles in a carrier and then employing the surface as an electrode in an electrodeposition coating process to deposit a resinous coating on the surface. Carbon or metal particles can be used in the conductive layer and any electrodepositable resinous film-forming coating composition can be utilized in the process.

3,674,671
ELECTRODEPOSITION METHOD AND PRODUCT

Sanford E. Stromberg, Tonawanda, N.Y., assignor to Textron, Inc.

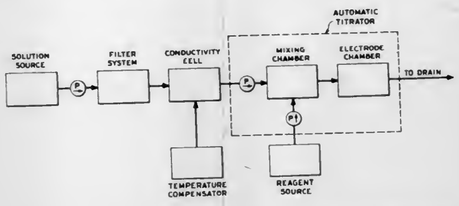
Filed Feb. 26, 1969, Ser. No. 802,633
Int. Cl. B01k 5/02; C23b 13/00
U.S. Cl. 204—181 9 Claims

Black iron oxide-containing coatings when deposited on solid substrates and cured exhibit sufficient electrical conductivity to permit application of a topcoat by electrodeposition. The black iron oxide-containing coatings can be formed on electrically conductive, solid substrates by electrodeposition. The coatings exhibit outstanding properties.

3,674,672
MULTIPARAMETER PROCESS SOLUTION ANALYZER-CONTROLLER

George Whitesell, Northville, Mich., assignor to Hooker Chemical Corporation, Niagara Falls, N.Y.

Filed March 25, 1970, Ser. No. 22,652
Int. Cl. G01n 27/46
U.S. Cl. 204—195 R 16 Claims

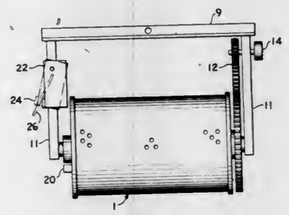


A multiparameter analysis system for the continuous on-stream real-time measurement, surveillance and correction of a process solution. Electrometric methods are employed to measure conductivity and ion concentration of the process solution. An accurate measurement of actual ion concentration is made by continuous automatic titration of a sample of the process solution. This electrometric analysis produces a signal reflecting the results of said analysis that is fed to controller-analyzer means which generate error signals when said solution deviates from a preselected state, which error signal controls means to automatically restore the process solution to the preselected state. The electrometric analysis means are protected by an automatically self-cleaning filter, the cleaning cycle of which is controlled in response to sensed system dynamics. While this system has particular utility in the analysis and control of nitrite in the surface conversion coating of ferriferous metallic objects, it possesses broad spectrum analytical capability including control of pollutants discharged into surface waters and for the quality control of surface waters.

3,674,673
APPARATUS FOR ELECTROPLATING WORKPIECES

Richard J. Jessup, Bloomfield Hills, Mich., assignor to Udylite Corporation, Warren, Mich.

Filed Feb. 9, 1970, Ser. No. 9,777
Int. Cl. C23b 5/78
U.S. Cl. 204—213 13 Claims

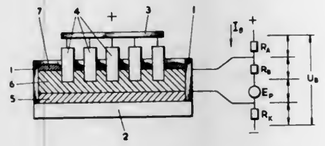


A treating barrel comprising a pair of spaced end members, a perforate body member extending between said end members and defining there between an internal, substantially cylindrical shaped zone for receiving articles to be treated. The body member is formed to define an opening therethrough which extends longitudinally between the end members and which has a width which is less than about one-sixteenth of the circumference of the cylindrically shaped zone. At least one tumbling rib, which extends along the interior surface of the body member between the end members is disposed substantially dimetrically opposite to the opening, the tumbling rib projecting radially inwardly of the interior surface of the body member into the zone and being designed to impart a cascading action to the articles in the barrel during oscillatory motion thereof. Means are provided on the end member for supporting the barrel for oscillatory movement about an axis which extends substantially longitudinally of the zone. The overall apparatus assembly includes a work carrier for supporting the treating barrel at a treating receptiacle, drive means for oscillating the barrel when the work carrier is operatively positioned at the treating receptacle and coacting stop means which are oriented relative to the opening in the barrel to normally limit the rotary movement of the barrel in both directions beyond an angularity at which the articles are discharged through the opening of the barrel.

3,674,674
APPARATUS FOR CONTROLLING ELECTRODE ADJUSTMENT DURING ALUMINUM OXIDE REDUCTION

Mathieu Gerardus Henricus Arts; Jan Anna Antonius Lucker, both of Delfzijl, and Maarten Groenenboom, Escharen, all of Netherlands, assignors to Aluminium Delfzijl N.V., The Hague, Netherlands

Filed Dec. 22, 1969, Ser. No. 887,299
Claims priority, application Netherlands, Dec. 27, 1968, 6818752
Int. Cl. B01k 3/00; C22d 3/02, 3/22
U.S. Cl. 204—225 4 Claims



An apparatus for controlling the electrolytic reduction of aluminum oxide by adjusting the depth of immersion of anode blocks suspended on an anode bridge in an electrolysis melt containing Al_2O_3, said apparatus being of the type comprising an electric voltage supply for generating a reference voltage which is proportionate with the momentary bath current, an adjusting device for the anode bridge, which adjusting device is controlled by the difference in voltage over the bath and the reference voltage, and a system for deriving, according to a chosen program, a command signal for the adjusting device from the aforementioned differential voltage and the periodic, short excitation of the adjusting device by means of this possible command signal, said apparatus characterized by the improvement that the apparatus comprises an integrator having an input and an output, a set of relays each preceded by a trigger circuit connectable to said output, and means for feeding the differential voltage of the bath voltage and the reference voltage to the integrator and for disconnecting the integrator from the set of relays in the non-excited condition of the adjusting device, and for disconnecting the feeding of said differential voltage to said integrator and connecting said integrator to said set of relays in the excited condition of the adjusting device, and means for feeding back to the input of the integrator the integrated signal from said output when the differential voltage is fed to said integrator.

3,674,675
PLATINIZED PLASTIC ELECTRODES

Frank H. Leaman, 1613 N. Harrison Street, York, Pa.

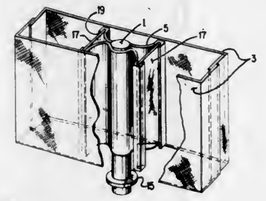
Filed July 9, 1970, Ser. No. 53,638
Int. Cl. B01r 3/04; C23b 5/60
U.S. Cl. 204—290 R 4 Claims

A platinum coated electrode is provided with a platinum layer applied directly over a relative inert material such as polysulfone or materials similar thereto. This electrode can be advantageously used for plating metals from corrosive solutions and for other applications wherein a platinum inert electrode would be used.

3,674,676
EXPANDABLE ELECTRODES

Edward I. Fogelman, Mentor, Ohio, assignor to Diamond Shamrock Corporation, Cleveland, Ohio

Filed Feb. 26, 1970, Ser. No. 14,333
Int. Cl. B01k 3/04
U.S. Cl. 204—286 10 Claims

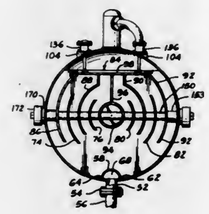


An electrode is provided which, after insertion in an electrolytic cell, may be caused to expand thereby reducing the electrode-electrode gap and, hence, increasing the power efficiency of the electrolysis. Particularly, an anode for use in a diaphragm-type electrolytic cell for the production of chlorine and caustic is described together with a method for assembling the cell.

3,674,677
ELECTRICALLY ENERGIZED PETROLEUM DE-EMULSIFIER

Robert J. Roberts, 9833 Moyers, Houston, Tex.

Filed June 2, 1970, Ser. No. 42,624
Int. Cl. B03c 5/02
U.S. Cl. 204—302 12 Claims



An electrically energized deemulsifier for separating the constituents of water-petroleum emulsions and the like includes an elongated generally horizontally disposed vessel having an emulsion inlet at one extremity and having a clean fluid discharge at the other extremity thereof. A drain is disposed at the lower portion of the vessel for draining separated fluid such as water.

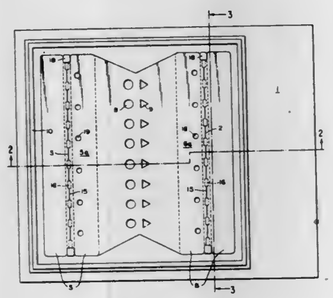
Inflowing emulsion is distorted and deflected downwardly by a scrubber plate that is provided with a plurality of apertures adjacent the lower end thereof that evenly distribute the flow of emulsion and prevent channeling. As the incoming emulsion is turned downwardly by the scrubber plate, free droplets of water will gravitate to the bottom of the vessel. Coalescence of the emulsion is effected as the emulsion flows evenly in a horizontal direction through an electric field developed between spaced high voltage and ground electrodes within the vessel. The high voltage electrode is positively supported during transportation of the vessel and is adjustable to any desired position within the vessel by manipulation of external adjustments. Flashing of volatile products within the vessel is effectively prevented since the unique design of the vessel eliminates any vapor pockets that would present a flash hazard.

3,674,678

ELECTROPHORETIC APPARATUS

Arthur H. Post, Jr., Belmont, Mass.; Ronald L. Polinsky, Hanover, N.H., and James L. Dwyer, Concord, Mass., assignors to Millipore Corporation, Bedford, Mass.

Filed Oct. 28, 1970, Ser. No. 84,587
Int. Cl. B01k *5/00*
U.S. Cl. 204—299 **8 Claims**



An apparatus for conducting electrophoretic analysis comprising a container filled with a conductive gel, two electrodes in the container and means for effecting a voltage across the gel. The container is shaped with deep reservoirs at opposing ends and a relatively shallow mid-section having wells to accommodate a sample to be analyzed. The electrodes extend the width of the reservoirs at about the reservoir midpoint. This apparatus eliminates the need for wicks in gel electrophoresis.

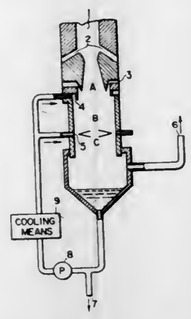
3,674,679

PROCESS AND APPARATUS FOR THE THERMAL CRACKING OF HEAVY HYDROCARBON OILS

Koichi Washimi; Masaaki Kanbayashi, both of Fukushima; Toshio Kanai, and Akihiro Fujimori, both of Kanagawa, all of Japan, assignors to Kureka Kagaku Kogyo Kabushiki Kaisha, Tokyo and Chiyoda Kako Kensetsu Kabushiki Kaisha, Kanagawa, Japan

Filed Feb. 24, 1970, Ser. No. 13,240
Claims priority, application Japan, Feb. 21, 1969, 44/12543
Int. Cl. C10g *9/16, 9/18*
U.S. Cl. 208—48 **11 Claims**

Improvement in thermal cracking of heavy hydrocarbon oils comprising the introduction of a moving film of falling oil on the surfaces of the reaction zone. Apparatus to accomplish this effect is also disclosed The moving oil film prevents the formation of coke otherwise resulting from contact between



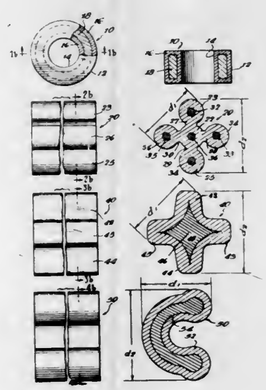
the heated reactor walls and normally liquid reaction products.

3,674,680

PROCESS AND CATALYST FOR HYDROPROCESSING A RESID HYDROCARBON

Gerald B. Hoekstra, South Holland, and Robert B. Jacobs, Homewood, both of Ill., assignors to Standard Oil Company, Chicago, Ill.

Continuation-in-part of Ser. No. 598,046, Nov. 30, 1966, abandoned. This application March 9, 1970, Ser. No. 17,454
Int. Cl. C10g *13/02, 23/00*
U.S. Cl. 208—111 **14 Claims**



A resid hydrocarbon is converted to lower boiling hydrocarbons and/or desulfurized by contacting, in the presence of hydrogen, said resid with a bed of catalyst particles, substantially all of said particles having a surface-to-volume ratio ranging between about 100 and about 250 1/inches, and wherein substantially all points within each of said particles are less than about 0.015 inch from the particle's surface. When one of these particles is circumscribed by a right circular cylinder having an altitude equal to that of the particle, the particle contacts the sidewall of the cylinder at at least three elements and occupies from about 70 to about 90 percent of the cylinder's volume. Preferred particle shapes are cloverleaf, cross, ring and C-shape.

3,674,681

PROCESS FOR ISOMERIZING HYDROCARBONS BY USE OF HIGH PRESSURES

Richard K. Lyon, Fanwood, N.J., assignor to Esso Research and Engineering Company

Filed May 25, 1970, Ser. No. 40,459
Int. Cl. C07c *5/28*
U.S. Cl. 208—141 **7 Claims**

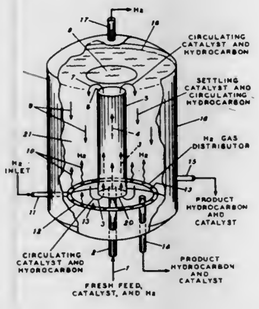
The propensity of hydrocarbons to crack, during isomerization, is minimized by use of high pressure. This process is shown to be especially useful when isomerizing high molecular weight hydrocarbons, such as those found in the residues from petroleum and also highly branched hydrocarbons, both of which cannot be isomerized efficiently by use of prior art methods. In a preferred embodiment the hydrocarbon which is a slack wax is isomerized in a substantially inert solvent, at a pressure of at least 10,000 psi, and in the presence of a Lewis acid catalyst to produce lubricants characterized by their high viscosity index and low pour point.

3,674,682

HEAVY OIL CONVERSION USING FINE PARTICLES

David S. Mitchell, San Rafael; Alan G. Bridge, El Cerrito, and John W. Scott, Ross, all of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed Jan. 16, 1970, Ser. No. 3,304
Int. Cl. C10g *13/18, 23/06*
U.S. Cl. 208—157 **8 Claims**



A process for catalytically hydroconverting a feed heavy hydrocarbon oil to more valuable hydrocarbon liquid, using finely divided catalyst, which process comprises feeding the heavy oil upward in a vertically extending conduit in a reactor vessel, flowing fine catalyst particles upward in said conduit, allowing the heavy oil feed and the fine catalyst particles to flow out from the conduit at an upper end of the conduit, introducing hydrogen gas to the reactor vessel at a first lower part of the reactor vessel and allowing the hydrogen gas to rise upward in the reactor vessel; allowing the fine catalyst particles to settle downward in the reactor vessel outside the conduit and countercurrent to the upward rising hydrogen, and withdrawing valuable hydrocarbon liquid from a second lower part of the reactor vessel.

3,674,683

PROCESS FOR THE REMOVAL OF OIL FROM THE SURFACE OF A BODY OF WATER

Norman B. Rainer, Richmond, Va., assignor to Philip Morris Incorporated, New York, N.Y.

Filed Jan. 2, 1970, Ser. No. 420
Int. Cl. E02b *15/04*
U.S. Cl. 210—40 **2 Claims**

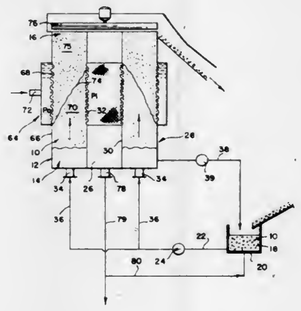
This disclosure relates to a process for removal of oil from the surface of a body of water, wherein a material comprising a particulate microporous hydrophobic vinyl chloride polymer, such as polyvinyl chloride, is applied to the oil.

3,674,684

CONTINUOUS FLUID-SOLID CONTACT METHOD AND APPARATUS

Ayre Gollan, Silver Spring, Md., assignor to Hydronautics Incorporated, Laurel, Md.

Filed July 13, 1970, Ser. No. 54,226
Int. Cl. B01d *15/06, 33/18*
U.S. Cl. 210—33 **28 Claims**



A method and apparatus for removing a first component from a fluid stream comprises contacting the fluid stream with a continuously moving bed of filter material, contained within a separation column, recovering the contaminated filter material, and regenerating it for reuse. The continuously moving bed of filter material is moved through a contact zone in the separation column by creating a hydraulic force on the material from the flow of a carrier liquid through the material. The fluid stream can be an oil-water mixture from which oil is removed by an absorbent filter material.

3,674,685

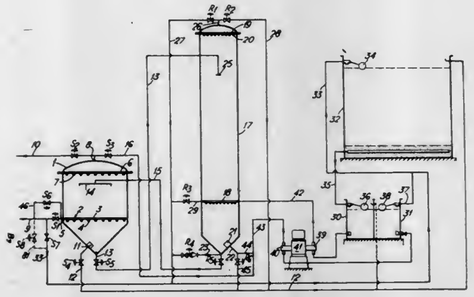
PROCESS OF AND APPARATUS FOR THE ION-EXCHANGE TREATMENT OF LIQUIDS

Thomas Victor Arden, Cobham; Albert George Borra, Isleworth, and Rolf Crowther Clayton, London, all of England, assignors to The Permutit Company Limited, London, England

Filed Aug. 15, 1969, Ser. No. 850,457
Claims priority, application Great Britain, Aug. 22, 1968, 40,239/68; March 17, 1969, 13,926/69
Int. Cl. B01d *15/06*
U.S. Cl. 210—33 **11 Claims**

In a continuous ion-exchange process in which resin moves intermittently through a circuit including an absorber and a regenerator, the absorber is spanned by a liquid-distributing system, and at each intermittent movement a slug of resin wholly occupying the space in the absorber between this system and one end of the absorber is discharged while service

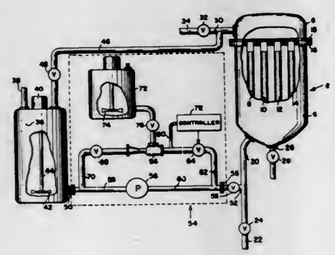
flow continues. The remainder of the bed in the absorber is moved in the direction of the space thus emptied so as to fill it again and a slug of regenerated resin of identical volume is introduced into the other end of the absorber.



3,674,686
FILTER PRECOATING METHOD

Donald B. Brimmer; James Stuart Brown, both of Willingboro, N.J., and Charles H. Becker, Yardley, all of Pa., assignors to De Laval Turbine, Inc., Trenton, N.J.

Filed Feb. 24, 1970, Ser. No. 13,268
Int. Cl. B01d *15/04, 37/02*
U.S. Cl. 210—37 **6 Claims**



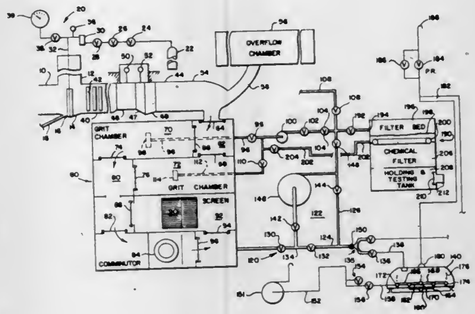
To control the flocculation of a mixture of fine anion and cation ion exchange resins in order to form an even coating on a filter septum, the resins are first mixed in a heavy slurry, and are then added at a controlled rate to the recirculation liquid entering the filter vessel.

3,674,687
STORM SEWAGE TREATMENT

Harold G. Quase, Rock Creek Hills, Kensington, Md., assignor to Underwater Storage, Inc., Washington, D.C.

Filed Sept. 19, 1969, Ser. No. 859,390
Int. Cl. B01d *21/24*
U.S. Cl. 210—86 **2 Claims**

Street runoff or storm sewage is measured and solids are separated from the liquid first by a grit chamber and screen. Remaining solids are ground by a comminutor, and the fluid is pumped into large temporary storage tanks. The elongated low profile and wide storage tanks are preferably submerged in a body of water, and while sewage is in the tanks, air is continually bubbled upward through the tanks. When excess runoff has ceased, the storm sewage is pumped from the temporary storage tanks and purified before releasing it into a permanent dispersion media, such as a volume of water.



3,674,688
WRINKLE REMOVING PRODUCT AND PROCESS

Leonard Schwartz, St. Louis; Harold K. Purcell, Pasadena Hills, and Jerome J. Wieselman, Olivette, all of Mo., assignors to RLR Chemical Company, Inc., St. Louis, Mo.

Filed Oct. 20, 1969, Ser. No. 867,920
Int. Cl. D06m *13/46*
U.S. Cl. 252—8.8 **2 Claims**

A product and process of removing wrinkles and surface effect blemishes from fabric textile materials such as upholstery, drapery and clothing is disclosed. The product is an alcohol-aqueous solution of a surfactant or surface tension reducing material which is a liquid at room temperature and which will evaporate to dryness in a short time. The surfactant material is preferably a quartenary ammonium compound with a dialkyl dimethyl ammonium chloride compound being most satisfactory. The process of using the wrinkle removing material involves spraying the aqueous-alcoholic solution on the wrinkled fabric and allowing the fabric to dry. The wrinkle removing material will usually evaporate to dryness in from 15 minutes to 1 hour.

3,674,689
CARBON FIBER FILLED COMPOSITE MATERIALS

Jeremy Peter Giltrow, Bordon; George Henry Kinner, Fleet, and John Keith Lancaster, Reading, all of England, assignors to National Research Development Corporation, London, England

Filed June 23, 1970, Ser. No. 49,153
Claims priority, application Great Britain, June 25, 1969, 31,999/69
Int. Cl. C10m *0/52*
U.S. Cl. 252—12.4 **17 Claims**

At least the contacting surface of a bearing component is a composite material wherein metal coated carbon fibers are incorporated as reinforcement in a matrix of synthetic resin. Such bearing components have low wear rates and show low friction.

3,674,690
AIR DRYING SILICONE RESIN BONDED DRY FILM LUBRICANT

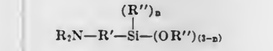
William L. Clow, Fairborn; Robert J. Benzing, Xenia, and Bobby D. McConnell, Dayton, all of Ohio, assignors to The United States of America as represented by the Secretary of the Air Force

Filed July 8, 1969, Ser. No. 840,022
Int. Cl. C10m *7/50, 7/06*
U.S. Cl. 252—25 **24 Claims**

The process described herein comprises an air drying solid film lubricant and the process for the preparation thereof and for applying the same to substrate metals. The air drying solid film lubricant comprises a binder and a lubricant, which binder consists essentially of a siloxane prepolymer having at least 10 repeating units of the formula



mixed in an inert solvent with an aminoalkyl-silane having the formula



and the lubricant consisting essentially of a mixture of molybdenum sulfide (MoS_x) and antimony oxide (Sb_2O_3), wherein

R is hydrogen, alkyl, cycloalkyl or aminoalkyl of no more than ten carbon atoms;

R′ is a divalent hydrocarbon radical having at least three carbon atoms and having the valence bonds which are attached to the N and Si of the formula separated by at least three carbon atoms;

R″ is a monovalent hydrocarbon radical having one to six carbon atoms; and

n is an integer having a value of 0–2;

said aminoalkyl-silane being used in a proportion of 3–25 parts per 100 parts of said siloxane prepolymer; said solvent being used in a proportion to give 20–40 parts solvent per part of binder; said molybdenum sulfide and antimony oxide per part of molybdenum sulfide; and said mixture being used in the range of from 30 volumes of lubricant mixture per 70 volumes of binder up to 85 volumes of lubricant per 15 volumes of binder, preferably 50–85 volumes of lubricant per 100 volumes of lubricant-binder mixture.

Other solid lubricant mixtures which may be used include replacement of the molybdenum sulfide by molybdenum diselenide, tungsten disulfide, tungsten diselenide and the like, and/or replacement of the antimony trioxide by zinc oxide (ZnO) or bismuth oxide (Bi_2O_3) and the like.

3,674,691
MINERAL LUBRICATING OIL CONTAINING HIGH MOLECULAR WEIGHT ALKYL SUBSTITUTED PHENOLIC SULFONAMIDE

Robert E. Karll, Munster, Ind., and Richard J. Lee, Park Forest, Ill., assignors to Standard Oil Company, Chicago, Ill.

Filed April 1, 1970, Ser. No. 24,807
Int. Cl. C10m *1/40, 1/36*
U.S. Cl. 252—47.5 **5 Claims**

Polymethylene polyamine sulfonamides of alkyl-substituted phenolic sulfonic acids wherein the alkyl-substituent has a molecular weight within the range of 400 to 3000 are novel compounds soluble in mineral hydrocarbon oils of the lubricating oil range and as solutes therein are ashless addition agents imparting to the solution a combination of anti-oxidant and detergency-dispersancy properties useful in the lubrication of internal combustion engines. Illustrative of such sulfonamides are mono- and disulfonamides of hexamethylene diamine, tetraethylene pentamine, 2,6-di(aminoethyl) pyridine and N,N′-di(aminopropyl) piperazine with 4-alkylphenolic sulfonic acids such as 4-alkyl-1-hydroxyphenyl, 4,4′-dialkyl-1,1′-dihydroxy-2,2′-biphenyl, 4-alkyl-1-alkoxyphenyl or 2-tri- and tetra-(4′-alkyl-1-hydroxybenzyl)-substituted 4-alkyl-1-hydroxyphenyl sulfonic acid chlorides.

3,674,692
LUBRICANTS AND POWER TRANSMISSION FLUIDS ON THE BASIS OF CARBOXYLIC ACID ESTERS

Herbert Gothel, Oberhausen-Holten, and Hans Feichtinger, Dinslaken, both of Germany, assignors to Ruhrchemie AG, Oberhausen-Holten, Germany

Filed May 13, 1970, Ser. No. 37,043
Claims priority, application Germany, May 16, 1969, P 19 25 048.7
Int. Cl. C10m *1/26*
U.S. Cl. 252—56 S **3 Claims**

A MIL 7808 lubricant and power transmission fluid comprising:

55 to 70 weight percent hexane-1, 6-diol-isononanoate-ethylhexanoate;

15 to 30 weight percent 2,2-dimethylpropanediol-pelargonate-nonanoate; and

10 to 20 weight percent octyl-nonyl-trimethyladipate.

3,674,693
REVERSAL ELECTROSTATIC TONER COMPOSITION

Alexander U. Averbach, Skokie, Ill., assignor to A. B. Dick Company, Chicago, Ill.

Filed May 25, 1970, Ser. No. 41,157
Int. Cl. G03g *9/04*
U.S. Cl. 252—62.1 **9 Claims**

A liquid developer composition for reversal toning of a latent electrostatic image which comprises a tone concentrate formed of finely divided pigment particles dispersed in a mixture of a polymeric binder, a high dielectric diluent and a phospholipid charge stabilizing material which is admixed with an aliphatic carrier liquid to provide the developer composition.

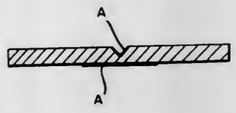
3,674,694
MANGANESE ZINC-FERRITE CORE

Georg Stadler, Balanstrasse 103, 8000 Munich 90, and Erwin Vogg, Mittenwaldstrasse, 8000 Munich 55, both of Germany, assignors to Siemens Aktiengesellschaft Berlin and Munich

Continuation-in-part of Ser. No. 819,034, April 24, 1969, abandoned. This application April 5, 1971, Ser. No. 131,555
Claims priority, application Germany, May 17, 1968, P 17 71 398.3
Int. Cl. C04b *35/38*
U.S. Cl. 252—62.59 **3 Claims**

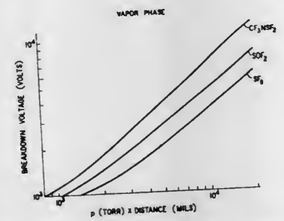
A manganese-zinc ferrite core having an essentially linear relation between permeability and temperature over the temperature zone ranging from about −40° C. to about +60° C. and being composed of starting material of about 50 to 55 mol percent of Fe_2O_3, about 23 to 35 mol percent of MnO, about 10 to 25 mol percent of ZnO, up to 3 mol percent of TiO_2, about 0.02 to 0.2 percent by weight of CaO and about 0.05 to 1 percent by weight NiO.

3,674,695
ELECTRICAL INSULATING COMPOSITIONS BASED ON OLEFIN POLYMERS
Franz Wuerstlin, and Franz Feichtmayr, both of Ludwigshafen, Germany, assignors to Badische Anilin & Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rheinland, Rheinland-Pfalz, Germany
Filed May 11, 1970, Ser. No. 35,963
Claims priority, application Germany, May 9, 1969, P 19 23 708.2
Int. Cl. C07c 119/00; C08f 45/60; H01b 3/18
U.S. Cl. 252—63.2 **3 Claims**



Electrical insulating materials based on olefin polymers and containing agents for increasing their electric strength. The electrical insulating materials according to the invention contain special azomethines as the agents for increasing electric strength. Insulations prepared from these materials do not fail even under prolonged influence of a high voltage.

3,674,696
GASEOUS DIELECTRIC MATERIALS
James Edward Griffiths, Murray Hill, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Dec. 30, 1970, Ser. No. 102,706
Int. Cl. H01b 3/18
U.S. Cl. 252—63.7 **9 Claims**



Materials are described which are useful as gaseous dielectric insulators in electrical devices. These materials are a group of sulfur compounds which have two fluorine atoms and at least one perfluoroalkylimino group attached to the sulfur atom. It has been discovered that the substitution of a perfluoroalkylimino group for an oxygen atom attached to a sulfur atom increases the dielectric breakdown voltage of the molecule. These gaseous materials can be used both in substantially pure form or mixed with inert gaseous material. They exhibit high breakdown voltages and in addition do not yield undesirable reaction products when exposed to dielectric breakdown.

3,674,697
STYRENATED TRIARYL PHOSPHATE FUNCTIONAL FLUIDS
Silvio Louis Giolito, Whitestone, N.Y., assignor to Stauffer Chemical Company, New York, N.Y.
Filed Feb. 24, 1970, Ser. No. 13,781
Int. Cl. C09k 3/00
U.S. Cl. 252—78 **2 Claims**

The transmission of pressure in a closed hydraulic system is accomplished by using an effective amount of styrenated phenyl bis(isopropylphenyl) phosphate.

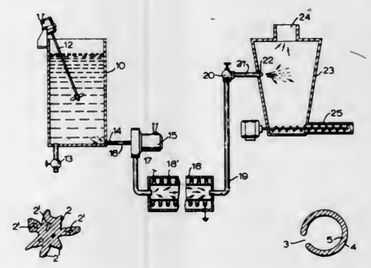
3,674,698
TRANSMITTING PRESSURE IN A HYDRAULIC SYSTEM
Edward D. Weil, Hastings-on-Hudson, N.Y., assignor to Stauffer Chemical Company, New York, N.Y.
Filed Feb. 24, 1970, Ser. No. 13,782
Int. Cl. C09k 3/00
U.S. Cl. 252—78 **4 Claims**

The transmission of pressure in a closed hydraulic system is accomplished by using an effective amount of benzylated and/or styrenated triaryl phosphate.

3,674,699
NONCORROSIVE CLEANING COMPOSITION AND PROCESS
Friedrich Dittel, Mainz-Kostheim, and Peter Jorns, Frankfurt am Main, both of Germany, assignors to Hooker Chemical Corporation, Niagara Falls, N.Y.
Filed Feb. 11, 1970, Ser. No. 10,626
Int. Cl. C23f 11/08; C23g 1/16, 1/18
U.S. Cl. 252—135 **10 Claims**

An improved composition and process for cleaning metal surfaces, and particularly aluminum and aluminum alloy surfaces wherein the cleaning is effected by using an aqueous alkaline solution which contains borates as the main alkaline component and, additionally, contain one or more vanadium compounds. Additionally, if desired, the cleaning compositions may also contain one or more non-ionic surface active agents and/or an ionic wetting agents.

3,674,700
DETERGENT TABLET OF AMORPHOUS SODIUM SILICATE HAVING INHERENT BINDING PROPERTIES, CONTAINING A SURFACTANT, AND METHOD OF MAKING SUCH TABLET
Conrad J. Gaiser, 24 66th Place, Long Beach, Calif.
Continuation-in-part of Ser. No. 654,230, July 18, 1967, Pat. No. 3,450,494, which is a continuation-in-part of Ser. No. 352,142, March 16, 1964, abandoned. This application April 14, 1969, Ser. No. 815,990. The postion of the term of this patent subsequent to June 17, 1986, has been disclaimed.
Int. Cl. C11d 7/14, 7/48, 17/00
U.S. Cl. 252—135 **8 Claims**



Amorphous sodium silicate having a burr-like structure imparting inherent binding properties thereto, is compressed into detergent tablets which contain a surfactant.

3,674,701
ACCELERATOR COMPOSITION
Daniel William Yochum, Merchantville, N.J.; Paul Gordon Haines, Lafayette Hill, and Ivan C. Popoff, Ambler, both of Pa., assignors to Pennwalt Corporation, Philadelphia, Pa.
Filed Feb. 17, 1971, Ser. No. 116,250
Int. Cl. C08c 11/48
U.S. Cl. 252—182 **5 Claims**

Accelerator compositions having high activity which inhibit

surface bloom in vulcanizates are comprised of a mixture of a thiourea of the structure

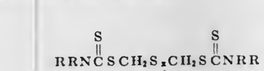
(I).



$$RRNCSCH_2NHCNHCH_2SCNRR$$

with

II. a polysulfide of the structure

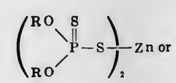


$$RRNCSCH_2S_xCH_2SCNRR$$

or

III. tetramethyl thiuram disulfide or a mixture thereof with bis-(oxydiethylene)thiuram disulfide, or

(IV).



$$\left(\begin{matrix}RO & S\\ & \| \\ RO & P-S\end{matrix}\right)_2 Zn$$ or

V. the zinc salt of the reaction product of ethanolamine, formaldehyde and carbon disulfide.

3,674,702
HYDROGEN GAS GENERATING COMPOSITION AND METHOD FOR THE SAME
Gerald L. MacKenzie, Port Tobacco, and Paul R. Mosher, Indian Head, both of Md., assignors to The United States of America as represented by the Secretary of the Navy
Filed Feb. 25, 1970, Ser. No. 17,994
Int. Cl. C01b 6/04, 1/05
U.S. Cl. 252—188 **10 Claims**

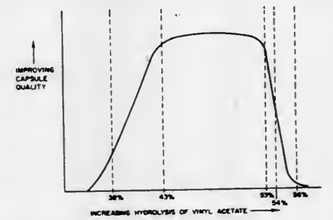
Compositions of a metal hydride, such as lithium hydride, aluminum metal and an elastomer binder, such as butyl rubber, which generate hydrogen gas upon being dispersed in water.

3,674,703
PREPARATION OF SILVER DISPERSIONS FOR USE IN FILTER AND ANTIHALATION LAYERS
Franz Moll, Leverkusen; Rolf-Fred Posse, and Werner Ringe, both of Cologne, all of Germany, assignors to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Germany
Filed March 26, 1970, Ser. No. 23,033
Claims priority, application Germany, April 5, 1969, P 19 17 745.8
Int. Cl. B01j 13/00; G03c 1/84
U.S. Cl. 252—313 R **1 Claim**

Silver dispersions for photographic filter and antihalation layers are produced by reduction of an aqueous silver salt solution containing a protective colloid with a compound of the oxytetronic acid series, such as ascorbic acid. Reduction is carried out in the presence of cadmium ions. This causes the silver to be precipitated in very fine grains in the dispersion so that neutral gray silver dispersions with a high covering power are obtained.

3,674,704
PROCESS OF FORMING MINUTE CAPSULES AND THREE-PHASE CAPSULE-FORMING SYSTEM USEFUL IN SAID PROCESS
Robert G. Bayless; Charles P. Shank; Ruth A. Botham, and Dennis W. Werkmeister, all of Dayton, Ohio, assignors to The National Cash Register Company, Dayton, Ohio
Filed March 29, 1971, Ser. No. 128,670
Int. Cl. B01j 13/02; B44d 1/02
U.S. Cl. 252—316 **8 Claims**

A process is disclosed for manufacturing minute capsules, en masse, in a liquid manufacturing vehicle wherein the capsules contain water or aqueous solutions. The capsules have seamless walls of a specific kind of hydrophobic polymeric material which polymeric material has been found particularly impervious to permeation and diffusion by the aqueous contents. The hydrophobic polymeric material used is poly(ethylene-co-vinyl acetate) having the vinyl acetate groups hydrolyzed to vinyl alcohol groups in the amount of 38 to 55 percent.



3,674,705
NON-MASSING DIARYL-P-PHENYLENE DIAMINES
Frederick Paul Hytrek, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed July 30, 1969, Ser. No. 846,275
Int. Cl. C08d 11/04; C08g 51/60
U.S. Cl. 252—400 **10 Claims**

A non-massing antiozonant for chloroprene polymer rubbers prepared by mixing a finely divided inorganic material having a high surface area and a high oil absorption capacity with a diaryl-p-phenylene diamine composition. The diaryl-p-phenylene diamine is molten during the mixing operation. The antiozonant is highly resistant to caking and maintains its free-flowing particulate form during normal conditions of storage and use.

3,674,706
TIN IMPREGNATION REGENERATION OF GROUP VIII REFORMING-DEHYDROGENATION CATALYSTS
E. O. Box, Jr.; Lewis E. Drehman, and Floyd E. Farha, Jr., all of Bartlesville, Okla., assignors to Phillips Petroleum Company
Filed June 3, 1970, Ser. No. 43,202
Int. Cl. B01j 11/18, 11/02
U.S. Cl. 252—412 **7 Claims**

Deactivated catalysts containing Group VIII metal contact agents are regenerated by a process comprising impregnating the deactivated composite material with tin or a tin compound. Preferably, the tin-impregnated composite is thereafter calcined. The process is particularly suitable for the regeneration of deactivated reforming and dehydrogenation catalysts.

3,674,707
REGENERATION OF SULFUR-POISONED RANEY NICKEL CATALYST
William Johan Meindert Pieters, Denville, N.J.; John Freel, Oakmont, Pa., and Robert Bernard Anderson, Ancaster, Ontario, Canada, assignors to W. R. Grace & Co., New York, N.Y.
Filed Oct. 21, 1970, Ser. No. 82,863
Int. Cl. B01j 11/76, 11/30, 11/02
U.S. Cl. 252—413 **10 Claims**

Raney nickel catalysts which have been sulfur poisoned are regenerated by successive treatment first in an aqueous organic acid solution containing metal ions that form an insoluble sulfide in acid solutions, but which are soluble or decompose to soluble products and in an aqueous base solution. The catalyst is then separated and washed to remove traces of treating substances. The regenerated catalyst has an activity comparable to the freshly prepared catalyst.

3,674,708
IMPROVED BORON PHOSPHATE CATALYST

Robert T. Somich, Lake Jackson, Tex., assignor to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 736,299, June 12, 1968, Pat. No. 3,574,700. This application Dec. 2, 1970, Ser. No. 94,560

Int. Cl. B01j *11/82*

U.S. Cl. 252—432 **5 Claims**

Boron phosphate containing minor amounts of sulfate- and/or sodium-containing salts provides an improved dehydration catalyst for the synthesis of nitriles from carboxylic compounds or derivatives thereof and ammonia.

3,674,709
ALUMINOSILICATES CONTAINING SODALITE AND/OR CANCRINITE CAGES ENCAPSULATING SALTS

Richard M. Barrer, Bromley, England, and John F. Cole, Amsterdam, Netherlands, assignors to Air Products and Chemicals, Inc., Wayne, Pa.

Filed Oct. 8, 1969, Ser. No. 864,909

Claims priority, application Great Britain, Oct. 11, 1968, 48,308/69

Int. Cl. B01j *11/58, 11/40*

U.S. Cl. 252—454 **9 Claims**

Kaolinite and a salt are subjected to hot aqueous alkali for at least 2 days to prepare a crystalline zeolite (e.g., cancrinite and/or sodalite) having the salt encapsulated in the cages of the crystalline zeolite.

3,674,710
RANEY MIXED CATALYST

Gerhard Richter; Magdalena Kroes, and Angelika Frietzsche, all of Erlangen, Germany, assignors to Siemens Aktiengesellschaft, Berlin, Germany

Filed May 11, 1970, Ser. No. 35,950

Claims priority, application Germany, May 10, 1969, P 19 23 920.4

Int. Cl. B01j *11/32*

U.S. Cl. 252—465 **21 Claims**

A Raney mixed catalyst for use as a fuel cell electrode. The catalyst contains nickel, molybdenum and one of the metals titanium or zirconium. The catalyst is prepared from a Raney alloy, which contains aluminum as the inactive component. The alloy is in at least partially homogeneous quarternary phase.

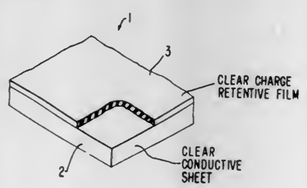
3,674,711
ELECTRICALLY CONDUCTIVE TRANSPARENT PLASTIC MATERIAL

Bert Growald, Los Altos; John A. Dahlquist, Palo Alto, and Guy A. Marlor, Santa Clara, all of Calif., assignors to Varian Associates, Palo Alto, Calif.

Filed Dec. 10, 1969, Ser. No. 883,732

Int. Cl. H01b *1/00;* **C08d** *9/06;* **C08f** *29/12*

U.S. Cl. 252—500 **2 Claims**



An electrically conductive clear transparent self-supporting plastic sheet consisting of a homogeneous solid molecular mixture of a clear transparent conductive polymer and a film forming clear transparent polymer is obtained by combining a quaternary ammonium polyelectrolyte, such as polydimethyl diallyl ammonium chloride, with a film forming polymer, such as polyvinyl alcohol, and a mutual solvent, such as water. The mixture is then cast onto a smooth surface, the mutual solvent evaporated, and the resultant sheet material stripped from the casting surface to obtain a sheet of electrically conductive clear transparent plastic material useful as a conductive plastic or, after coating with a charge retentive film, as an electrographic recording medium.

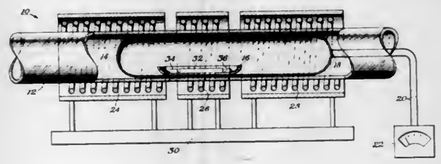
3,674,712
PHOTOCONDUCTIVE DETECTOR MATERIAL

Oran W. Wilson, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 672,399, Oct. 2, 1968, abandoned, which is a continuation of Ser. No. 347,905, Feb. 27, 1964, abandoned. This application Oct. 23, 1968, Ser. No. 770,897

Int. Cl. H01b *1/02;* **H01l** *3/00, 13/00*

U.S. Cl. 252—501 **14 Claims**



A photoconductive infrared detector for operation at liquid neon temperatures is disclosed which comprises a semiconductor material consisting essentially of a single crystal of germanium having copper and Group III shallow acceptor impurities which are compensated with arsenic or antimony at a level about one order of magnitude greater than the level of said shallow acceptor impurities, said single crystal of germanium being doped with mercury, the mercury atoms being present to a level in excess of the arsenic or antimony atoms.

3,674,713
ELECTRIC CERAMIC RESISTORS HAVING POSITIVE TEMPERATURE COEFFICIENTS AND METHOD OF MANUFACTURING SAME

Jean Michel Baudry Ghislain Yperman, Sint-Stevens-Welune, and Charles Belhomme, 88 Avenue des Anciens Combattens, Evere, both of Belgium, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 601,343, Dec. 13, 1966, abandoned. This application Jan. 26, 1970, Ser. No. 6,052

Claims priority, application Netherlands, Dec. 18, 1965, 6516534

Int. Cl. H01c *7/02*

U.S. Cl. 252—520 **8 Claims**

A barium titanate semiconductive resistor having a high positive temperature coefficient of electrical resistance and containing a small amount of a fluoride.

3,674,714
FLUORESCENT 1-(PYRAZOLINYLPHENYLSULPHONYL)PIPERAZINES

Eduard Troxler, Basel, and Heinrich Hausermann, Riehen, both of Switzerland, assignors to Geigy Chemical Corporation, Ardsley, N.Y.

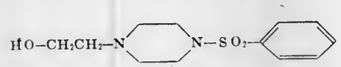
Division of Ser. No. 765,964, Oct. 8, 1968, Pat. No. 3,598,810. This application July 24, 1970, Ser. No. 64,857

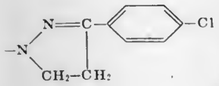
Claims priority, application Switzerland, Oct. 13, 1967, 14364/67

Int. Cl. G11d *3/26*

U.S. Cl. 252—543 **4 Claims**

Fluorescent 4-substituted 1-(pyrazolinylphenylsulphonyl)-piperazines which are soluble in aqueous acid media, are disclosed as optical brighteners for detergent compositions. A typical novel compound is that of the formula





3,674,715
SOLID SOLUBLE POLYMERS FROM 4-VINYLCYCLOHEXENE DIEPOXIDE

Gary L. Statton, Wallingford, Pa., and Richard W. Sauer, Cherry Hill, N.J., assignors to Atlantic Richfield Company, New York, N.Y.

Filed Oct. 1, 1970, Ser. No. 77,351

Int. Cl. C08g *43/00*

U.S. Cl. 260—2 EP **10 Claims**

Soluble solid easily handled polyepoxide polymers can be formed from 4-vinylcyclohexene diepoxide in a catalytic process using a tertiary amine and an active hydrogen containing compound. The powdery polymers of the invention can be easily cured to thermoset resins using coreagents to form castings, laminates, and coatings having exceptional toughness and good strength.

3,674,716
MANUFACTURE OF POLYURETHANES USING ORGANIC VANADIUM COMPOUNDS AS CATALYSTS

Willem Dijkhuizen, Zuidlaren, Netherlands; Erich Termin, Niederkassel, Germany; Otto Bleh, Bergeheim/Sieg, Germany, and Dieter Morgenstern, Rosrath, Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Germany

Filed April 27, 1970, Ser. No. 32,340

Claims priority, application Germany, April 30, 1969, P 19 21 952.4

Int. Cl. C08g *22/04, 22/44*

U.S. Cl. 260—2.5 AB **9 Claims**

In the manufacture of a polyurethane by the reaction of a polyol with a polyisocyanate in the presence of a catalyst and in the absence of water, the catalyst used is an organic vanadium compound, preferably a vanadium or vanadyl alcoholate or phenolate, having the formula $(Y)_mV(YR)_a—2m$

wherein:

V is a vanadium atom

Y is an oxygen or sulfur atom

R is an organic radical, which can be alike or different if the molecule contains more than one

a is 4 or 5

m is 0 or 1 when *a* is 4, and 1 when *a* is 5.

3,674,717
POLYURETHANE FOAMS PREPARED FROM OXYETHYLATED STARCH-PHOSPHORUS-CONTAINING POLYETHERS

Stephen Fuzesi, Hamden, and Milton Lapkin, Barrington, both of R.I., assignors to Olin Corporation

Continuation-in-part of Ser. No. 735,930, Feb. 20, 1968, abandoned, which is a division of Ser. No. 457,814, May 21, 1965, Pat. No. 3,399,190. This application Oct. 5, 1970, Ser. No. 78,193

Int. Cl. C08g *22/14, 22/46*

U.S. Cl. 260—2.5 AS **6 Claims**

Flame-retardant polyurethane foams having open cells are prepared from a polyether polyol, an organic polyisocyanate, a foaming agent and a catalyst, wherein the polyether polyol is oxyethylated starch-phosphorus-containing polyether.

3,674,718
DIELECTRICALLY HEAT SEALABLE POLYURETHANE FOAM

Robert M. Early, North Branford, and Maurice C. Raes, Branford, both of Conn., assignors to Olin Corporation

Filed Oct. 22, 1970, Ser. No. 38,121

Int. Cl. C08g *22/44, 22/08, 22/14*

U.S. Cl. 260—2.5 AQ **10 Claims**

Highly polar, reactive-hydrogen-containing compounds are incorporated in a polyether polyurethane foam-forming reaction mixture to obtain a foam having dielectrically heat sealable properties.

3,674,719
PROCESS FOR PREPARING MICROPOROUS, OPEN-CELLED CELLULAR POLYAMIDE, POLYESTER AND POLYACETAL STRUCTURES

Francis Edward Jenkins, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 23, 1970, Ser. No. 101,172

Int. Cl. C08j *1/26, 1/28*

U.S. Cl. 260—2.5 M **17 Claims**

A process for preparing microporous, open-celled cellular polyamide, polyacetal and polyester structures which comprises (a) dissolving the starting polymer in formic acid, hexafluoroisopropyl alcohol, hexafluoroacetone hydrate or mixtures thereof; (b) dispersing in the resulting solution a liquid chlorofluorocarbon; (c) cooling the dispersion to at least the solidification temperature of the chlorofluorocarbon; and (d) removing the chlorofluorocarbon from the dispersion at a temperature of from about 0° C. to the solidification temperature of said chlorofluorocarbon.

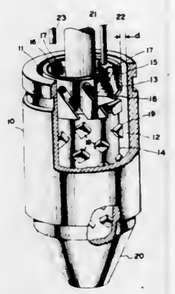
3,674,720
PROCESS FOR MIXING COREACTIVE LIQUIDS WHICH FORM POLYURETHANES

Donald Dunn, Cincinnati, Ohio, assignor to The Cincinnati Milling Machine Company, Cincinnati, Ohio

Filed Nov. 19, 1969, Ser. No. 878,081

Int. Cl. C08g *22/04, 22/44;* **B01f** *7/32*

U.S. Cl. 260—2.5 BC **12 Claims**



A process and apparatus for intimately mixing two or more mutually coreactive liquids such as polyols and polyisocyanates comprising:

A. passing the liquids, while in a substantially unmixed state, through a plurality of very small holes such as that provided by a screen, and immediately thereafter

B. subjecting the liquids to a high shear.

The present process and apparatus find particular utility in the production of high density, foamed polyurethane moldings.

3,674,721
PROCESS FOR PREPARING FLEXIBLE POLYURETHANE FOAMS AND COATINGS

Carl Albert Aufdermarsh, Jr., and Adolf Wojciech Fogiel, both of Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 821,085, May 1, 1969, abandoned, which is a continuation-in-part of Ser. No. 765,012, Oct. 4, 1968, abandoned. This application Feb. 3, 1970, Ser. No. 8,421

Int. Cl. C08g *22/34, 22/44*

U.S. Cl. 260—2.5 AC **13 Claims**

Polyurethane foams and coatings. The foams are prepared from organic polyisocyanates, polyols and water in quasi-prepolymer, full prepolymer or one-shot systems using a substituted amidine catalyst. The coatings are conventional isocyanato-terminated polyurethane prepolymers cured with moisture in the presence of a substituted amidine.

3,674,722
MICROPOROUS STRUCTURE AND METHOD OF MAKING THE SAME

Norman B. Rainer, Richmond, and Peter A. Wilson, Midlothian, both of Va., assignors to Philip Morris Incorporated, New York, N.Y.

Filed Aug. 10, 1970, Ser. No. 62,647

Int. Cl. C08f *47/08*

U.S. Cl. 260—2.5 M **11 Claims**

This disclosure relates to a novel process and to a novel product produced thereby. The product comprises a vinyl chloride polymer having an improved microporous structure and is made by a process which involves dispersing a vinyl chloride polymer latex, i.e., an aqueous suspension of a vinyl chloride polymer, in an organic liquid which is a non-solvent for the polymer, preferably removing most of the water, and heating the resulting dispersion to sinter the vinyl chloride polymer particles to form a microreticulated microporous structure. The vinyl chloride polymer latex may, for example, be a colloidal suspension of polyvinyl chloride particles in water. Such a latex may be obtained commercially or may be prepared by conventional methods. The non-solvent organic liquids should be water-miscible and should have a boiling point above 130° C. and exhibit substantially no solvating or swelling effect on the vinyl chloride polymer. The improved microporous structure of this invention is particularly useful as a filter material. The process of the invention is especially suited for the formation of shaped porous articles which are useful as filters.

3,674,723
ALKYLPHENOL-ALDEHYDE RESINS

Walter A. Vredenburgh, and Samuel D. Hollis, both of Pleasant Hills, Pa., assignors to Pennsylvania Industrial Chemical Corporation

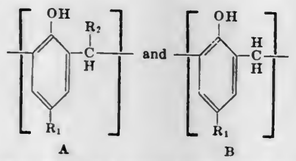
Filed Feb. 3, 1970, Ser. No. 8,442

Int. Cl. C08c *9/04, 9/16*

U.S. Cl. 260—3 **3 Claims**

A rubber composition is provided having a high degree of tack in the uncured state and incorporating a para-tertiary-butylphenol-aldehyde novolak resin consisting essentially of recurring groups A and B of the

formulae



wherein R_1 is a alkyl; and R_2 is a hydrocarbon radical having 1 to 4 carbon atoms; and wherein the molar ratio of B:A has a value in the range of 0.1 to 0.3.

3,674,724
POLYESTER REINFORCED ELASTOMERS

Alfred Marzocchi, Cumberland, R.I., assignor to Owens-Corning Fiberglas Corporation

Filed April 27, 1970, Ser. No. 32,431

Int. Cl. C08d *9/10*

U.S. Cl. 260—3 **9 Claims**

A new and improved polyester prepared by the reaction of a polycarboxylic acid, its acid halides or anhydrides, a polyol, and an organo silane, an amino silane or an organic titanate, and elastomeric products reinforced by fibers formed of same.

3,674,725
CATIONIZATION OF STARCH FOR FILLER RETENTION UTILIZING A CATIONIC POLYEPIHALOHYDRIN-TERTIARY AMINE POLYMER

Thomas Aitken, Chicago; Donald R. Anderson, Oswego, and Myron J. Jursich, Chicago, all of Ill., assignors to Nalco Chemical Company, Chicago, Ill.

Filed Dec. 18, 1970, Ser. No. 99,686

Int. Cl. C08b *25/02;* **D21h** *3/28*

U.S. Cl. 260—9 **18 Claims**

A method of cationization of starch is disclosed which involves reacting starch at alkaline conditions with a polymer formed from polyepichlorohydrin and an amine.

3,674,726
PAPER COATING COMPOSITION COAGULATABLE BY HEATING

Mahlon Randall Kirk, South Windham, Maine, assignor to Scott Paper Company, Delaware County, Pa.

Continuation-in-part of Ser. No. 634,909, May 1, 1967, abandoned. This application Sept. 4, 1970, Ser. No. 69,951

Int. Cl. C08d *7/18, 13/16*

U.S. Cl. 260—17.4 ST **7 Claims**

A paper coating composition which is fluid at 25° C. but coagulates or flocculates when heated to an elevated temperature comprising an aqueous slurry of a conventional mineral pigment and adhesive binder which slurry contains an ionic dispersant for the pigment, the efficiency of which does not change appreciably with heating, and a counteracting agent for the dispersant that is relatively insoluble at 25° C. but solubilizes at an elevated temperature in the range of 35° to 100° C. sufficiently to counteract the dispersant and cause the composition to coagulate or flocculate.

3,674,727
UNSATURATED POLYESTERS

Frank Fekete, 4403 McKenzie Drive, Monroeville, Pa., and John S. McNally, 457 Glenview Drive, Lower Burrell, Pa.

Filed Oct. 20, 1970, Ser. No. 82,544

Int. Cl. C08f *21/02;* **C08g** *17/12*

U.S. Cl. 260—22 D **17 Claims**

An unsaturated polyester prepared by reacting under esterification conditions the following reactants;

a. an ethylenically unsaturated dicarboxylic acid;

b. tetrahydrophthalic anhydride or endomethylene tetrahydrophthalic anhydride;

c. an aliphatic saturated dicarboxylic acid or a dimer or trimer of an ethylenically unsaturated aliphatic monocarboxylic acid; and

d. cyclohexanedimethanol or a mixture of neopentyl glycol and a second dihydric alcohol.

Upon crosslinking or curing the unsaturated polyester with a vinyl monomeric crosslinking agent, there can be obtained products having improved thermal stability properties.

3,674,728
ION EXCHANGE RESINS

Jack V. Carbonnel; Paul D. Grammont, both of Chauny, France, and Louis E. Werotte, Bruxelles, Belgium, assignors to Diamond Shamrock Corporation, Cleveland, Ohio

Continuation-in-part of Ser. No. 698,692, Jan. 18, 1968, abandoned. This application April 30, 1970, Ser. No. 33,512

Claims priority, application France, Jan. 30, 1967, 6792937

Int. Cl. C08f *15/40*

U.S. Cl. 260—2.2 R **1 Claim**

Through the use of a combination of cross-linking agents it is possible to obtain a polymer structure capable of being converted into an ion-exchange resin having improved properties. This combination of cross-linking agents comprises two compounds, one aliphatic and one aromatic, each of which has at least two double bonds.

3,674,729
CORRECTION FLUID COMPOSITION

William M. Mirick, Worthington, Ohio, assignor to The Battelle Development Corporation, Columbus, Ohio

Filed July 7, 1970, Ser. No. 53,004

Int. Cl. C08f *29/38*

U.S. Cl. 260—23 AR **10 Claims**

A significantly nonflammable correction fluid composition of a liquid vehicle and solid constituents with the liquid vehicle consisting essentially of nonflammable polychloro hydrocarbon solvent and with the solid constituents consisting essentially of a small amount of a film-forming acrylate resin and a major amount of an organic optical brightener/silica-modified rutile titanium dioxide pigment accompanied by a small amount of a flatting or extender pigment; the correction fluid composition of utility in photo reproduction of copies by a process wherein erroneous matter of an original is overcoated and corrective matter imprinted on the dried overcoating prior to photo reproducing of correct copies.

3,674,730
POLYVINYL CHLORIDE COMPOSITION

Laurence F. King, Mooretown, Ontario, Canada, assignor to Esso Research and Engineering Company

Filed Oct. 21, 1970, Ser. No. 82,727

Int. Cl. C08f *29/18, 45/62*

U.S. Cl. 260—23 XA **4 Claims**

Polyvinyl halide extrusion-blow molding compositions containing calcium-magnesium-zinc stabilizers are improved by the addition of long chain alcohols and esters of long chain hydroxy acids. Clear rigid film and containers of improved clarity and freedom from yellowness, when extruded and blow molded at normal temperatures, are produced.

3,674,731
METHOD FOR PRODUCING WATER-DILUTABLE EPOXY ESTER RESINS CONTAINING COPOLYMERS OF VINYL AND/OR VINYLIDENE COMPOUNDS

Rolf Guldenpfennig, Dossenheim, Germany, assignor to Reichhold-Albert-Chemie Aktiengesellschaft, Hamburg, Postfach, Germany

Continuation-in-part of Ser. No. 673,997, Oct. 9, 1967. This application Oct. 26, 1970, Ser. No. 84,112

Claims priority, application Germany, Nov. 2, 1966, 4450239The portion of the term of this patent subsequent to Feb. 16, 1988, has been disclaimed.

Int. Cl. C08g *45/00*

U.S. Cl. 260—23 EP **1 Claim**

The invention relates to a process for the production of improved water-dilutable epoxy resin esters which are prepared as follows:

a. partial esters with hydroxyl groups and epoxy groups are first formed by partial esterification of compounds containing epoxy or hydroxyl groups with mixtures of monocarboxylic acids consisting mainly of unsaturated aliphatic straight chain monocarboxylic acids;

b. the resulting partial esters are then reacted with polybasic carboxylic acids in such a manner that the epoxy resin esters with free carboxyl and free hydroxyl groups are rendered water-dilutable by neutralization with aqueous ammonia or strong organic nitrogen bases;

c. epoxy resin esters are then reacted with aqueous ammonia and/or strong organic nitrogen bases in the presence of water, until they are converted into sufficiently water-dilutable synthetic resins, the improvement comprising:

1. the epoxy resin esters in step (a) and/or
2. in step (b), and/or
3. the unsaturated aliphatic monocarboxylic acids added in step (a), and/or
4. adducts of $\alpha\beta$-unsaturated dicarboxylic acids on unsaturated monocarboxylic acids, preferably added in step (b), and/or
5. the monocarboxylic acids that are used for the production of these adducts,

are copolymerized with at least one polymerizable vinyl and/or vinylidene compound by heating in the presence of polymerization catalysts.

3,674,732
ROSIN MODIFIED PHENOLIC RESINS AND METHOD OF PREPARING SAME

Mario Pitzalis, Arcore; Silvio Vargiu, and Ugo Nistri, both of Milan, all of Italy, assignors to Societa' Italiana Resine S.p.A., Milan, Italy

Filed Dec. 10, 1969, Ser. No. 884,005

Claims priority, application Italy, Dec. 31, 1968, 25743 A/68

Int. Cl. C08g *5/22*

U.S. Cl. 260—25 **5 Claims**

A method of preparing phenolic resins suitable for the production of inks, characterized in that p-cumyl phenol, formaldehyde, a polyhydroxy alcohol and rosin are polymerized at a temperature of from 130° C. to 270° C. in the presence of a catalyst selected from salts of zinc, calcium, magnesium or manganese with organic or inorganic acids having a dissociation constant (or initial dissociation constant) of less than 1.8×10^{-5}, the molar ratio of p-cumyl phenol to formaldehyde being between 1:2.5 and 1:4 and the quantity of rosin from 150 to 200 parts by weight per 100 parts by weight of the phenol.

3,674,733
COLORED HEAT SHRINKABLE ELASTOMERIC TUBING

Edmond R. Ayella, Philadelphia, Pa., assignor to Penntube Plastics Company, Clifton Heights, Pa.

Filed Feb. 2, 1970, Ser. No. 8,021

Int. Cl. C08d *11/02;* **B29c** *17/07, 13/00*

U.S. Cl. 260—30.6 **8 Claims**

This invention relates to polychloroprene based colored heat shrinkable elastomeric tubing having excellent electrical properties and to the method of manufacture.

3,674,734
THERMOSETTING ACRYLIC ENAMEL

Fred W. Parker, Flint, Mich., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 728,904, May 14, 1968, abandoned, and a continuation-in-part of Ser. No. 81,629, Oct. 16, 1970, abandoned. This application March 12, 1971, Ser. No. 123,897

Int. Cl. C08f *45/36;* **B01k** *5/02*

U.S. Cl. 260—31.2 N **12 Claims**

The thermosetting acrylic enamel has as the film-forming constituents a blend of:

1. Interpolymer A which consists essentially of styrene; methyl methacrylate; a soft constituent which is either an alkyl acrylate, or an alkyl methacrylate; hydroxy alkyl acrylate or methacrylate and an α,β-ethylenically unsaturated monocarboxylic acid;

2. Interpolymer B which consists essentially of styrene or methyl methacrylate, a soft constituent described above, hydroxy alkyl acrylate or methacrylate and an α,β-ethylenically unsaturated monocarboxylic acid; and
3. a heat reactive condensate.

The thermosetting acrylic enamel is useful as a finish for automobiles and trucks and can be used as a finish for plastics.

3,674,735

SEMI-VULCANIZED BUTYL RUBBER FOR SEALANT APPLICATIONS

John E. Callan, Trenton, N.J., assignor to Cities Service Company, New York, N.Y.

Filed Dec. 22, 1969, Ser. No. 887,401
Int. Cl. C08c *9/00*
U.S. Cl. 260—33.6 **20 Claims**

Semi-vulcanized butyl rubber compounds having a Mooney viscosity (ML-3 at 260° F) of about 30 to about 80 are produced by curing a mixture of butyl rubber, a plasticizer and a vulcanizing agent, the latter being employed in an amount that is insufficient for complete vulcanization of the rubber. The resultant semi-vulcanized compounds are readily processible during the formulation of sealant caulks and tapes and are further characterized by good dimensional stability which results from reduced flow of the compound.

3,674,736

PROCESS FOR THE PREPARATION OF PIGMENTED POLYMER POWDERS OF CONTROLLED PARTICLE SHAPE AND SIZE AND SIZE DISTRIBUTION AND PRODUCT

Frank Lerman, and Raymond C. Bartsch, both of Cincinnati, Ohio, assignors to National Distillers and Chemical Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 557,641, June 15, 1966, Pat. No. 3,449,291. This application April 15, 1969, Ser. No. 816,403
Int. Cl. G03g *9/02*; **C08f** *45/08, 45/14*
U.S. Cl. 260—41 R **30 Claims**

Pigmented polymer powders of average particle size less than 30 microns, which can be of uniform shape and in a narrow size distribution, are prepared by controlled heating, melting and agitation of a liquid dispersion of pigmented polymer in bulk or particle form in the presence of a surfactant or by controlled heating and agitating a liquid containing surfactant to which molten polymer is added. Pigmented powders can thus be obtained having spherical particles of very narrow size distribution approaching uniformity.

3,674,737

REACTION PRODUCTS OF DIALKYLTIN OXIDES AND HIGHER DIALKYLTIN MONOHYDRIC ALIPHATIC SATURATED ALCOHOL ESTERS OF THIOMALIC AND THIOLACTIC ACIDS

Lawrence R. Brecker, Brooklyn, and Alfred Thee, Long Beach, both of N.Y., assignors to Argus Chemical Corporation, Brooklyn, N.Y.

Division of Ser. No. 788,916, Jan. 3, 1969, Pat. No. 3,642,848. This application Jan. 22, 1971, Ser. No. 109,049
Int. Cl. C08f *45/62*
U.S. Cl. 260—45.75 K **9 Claims**

Reaction products of higher dialkyltin oxides and higher dialkyltin monohydric saturated alcohol esters of thiomalic and thiolactic acid are provided, that are excellent stabilizers for polyvinyl chloride resins.

3,674,738

ROOM TEMPERATURE VULCANIZABLE SILICONE RUBBER STOCKS

Siegfried Nitzsche; Wolfgang Kaiser; Ernst Wohlfarth, and Paul Hittmair, all of Burghausen/Upper Bavaria, Germany, assignors to Wacker-Chemie G.m.b.H., Munich, Bavaria, Germany

Filed Aug. 13, 1970, Ser. No. 63,608
Claims priority, application Germany, Aug. 13, 1969, P 19 41 285.2
Int. Cl. C08f *11/04*
U.S. Cl. 260—46.5 G **6 Claims**

A room-temperature vulcanizable silicone rubber stock is prepared by admixing an essentially linear diorganopolysiloxane having reactive end groups, preferably hydroxyl and groups, and as a crosslinker an organosilicon compound containing both oxime groups bonded to silicon through oxygen atoms and amino groups bonded to silicon through Si—N bonding. These materials can be stored in the absence of moisture and will cure to form elastomeric products upon exposure to moisture. Particularly useful as crosslinking agents are silanes of the general formula $R_aSi(ON=X)_b(NR'R)_c$ wherein R is a monovalent hydrocarbon radical, R' is a monovalent hydrocarbon radical or H, X is RR'C = or R^2C = where R^2 is a divalent hydrocarbon radical, a is 0 or 1, b and c have an average value of at least 0.5, $b+c$ is 3 or 4 and $a+b+c$ is 4.

3,674,739

ORGANOSILYLAMINES REACTION BETWEEN ORGANOSILYLAMINE AND A SILANOL-CONTAINING ORGANOSILICON MATERIAL

John C. Goossens, Scotia, N.Y., assignor to General Electric Company

Division of Ser. No. 603,115, Dec. 20, 1966, Pat. No. 3,497,539. This application Feb. 9, 1970, Ser. No. 14,690
Int. Cl. C08f *11/04*
U.S. Cl. 260—46.5 G **3 Claims**

Bis-organoaminosilalkylenes and bis-organoaminosilarylenes are used to couple silanol stopped fluids to form gums. The process is fast and the molecular weights of the gums formed are very high with no deleterious byproduct formed during the gum formation. The gums which contain recurring silarylene units are used to make silicone rubber. The rubbers formed have the radiation resistance, hydrolytic stability and high temperature properties which are known characteristics of polysiloxanes containing silarylene groups.

3,674,740

PROCESS OF PRODUCING POLYCARBONATE

Hugo Vernaleken, Krefeld; Otto Court, Neuss, and Kurt Weirauch, Krefeld-Bockum, all of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed April 8, 1970, Ser. No. 26,642
Claims priority, application Germany, April 22, 1969, P 19 20 302.2
Int. Cl. C08g *17/13*
U.S. Cl. 260—47 XA **4 Claims**

For carrying out phase boundary surface reactions of components, e.g., production of polycarbonates from phosgene, Bisphenol A, sodium hydroxide and water a reaction tube is used, which comprises a series of residence time sections of relatively large internal tube diameter and alternately positions with respect to mixing sections of smaller internal tube diameter, the mixing sections providing Reynolds numbers greater than 2,000 for the reactants.

3,674,741

COPOLYMER OF POLY(QUINOZOLONE AND IMIDE) AND PROCESS FOR PRODUCING THE SAME

Nishizaki Shunichiro, and Fukami Akira, both of Amagasaki, Japan, assignors to Mitsubishi Electric Corporation

Filed July 24, 1970, Ser. No. 58,148
Claims priority, application Japan, Aug. 1, 1969, 44/60854; Aug. 1, 1969, 44/60855
Int. Cl. C08g *20/32, 33/02*
U.S. Cl. 260—47 CP **12 Claims**

A copolymer of poly (quinazolone and imide) containing at least 2 quinazolone rings for each repeating unit of the copolymer, is produced by reacting a primary aromatic diamine, bisbenzoxazinone and an aromatic tetracarboxylic dianhydride or its diester. The copolymer of this invention is characterized by good solubility in various organic solvents and excellent viscosity stability and film formability. It is also characterized by excellent electrical and mechanical properties and good heat stability.

3,674,742

PHOSPHORANE POLYESTERS AND POLYAMIDES

Roger A. Baldwin, La Mirada, and Ming T. Cheng, Buena Park, both of Calif., assignors to Kerr McGee Chemical Corp.

Division of Ser. No. 793,630, Nov. 12, 1968, Pat. No. 3,629,296. This application Sept. 24, 1970, Ser. No. 75,283
Int. Cl. C08g *17/133*
U.S. Cl. 260—47 P **1 Claim**

Bis(halophosphoranes) react with diamines or dihydroxy compounds to give phosphorane polyamides or polyesters respectively.

3,674,743

ELASTOMERS FROM POLYHYDROXY POLYDIENES

Joseph A. Verdol, White Plains, N.Y., and Patrick W. Ryan, Glen Mills, Pa., assignors to Atlantic Richfield Company, New York, N.Y.

Continuation of Ser. No. 525,369, Feb. 7, 1966, and a continuation-in-part of Ser. No. 797,347, Jan. 23, 1969, which is a continuation of Ser. No. 536,301, March 22, 1966, abandoned, which is a continuation-in-part of Ser. No. 465,161, June 18, 1965, abandoned. This application May 15, 1970, Ser. No. 37,884
Claims priority, application Canada, Aug. 9, 1965, 937,689
Int. Cl. C08q *22/08, 22/16*
U.S. Cl. 260—73 L **26 Claims**

A self-curing solid elastomer is made by reaction of a polyfunctional compound with a polyhydroxyl polymer having at least 2.1 predominantly primary, terminal, allylic hydroxyl groups per molecule, the polymer being made from 1,3-diene and 0 to 75 percent of alpha-monoolefin. The polyhydroxyl polymer has a Brookfield viscosity at 30° C. of about 5 to 20,000 poises and a number average molecular weight of about 400 to 25,000. The polyhydroxyl polymer can have about 40 to 70 percent trans-1,4-unsaturation and about 10 to 30 percent cis-1,4-unsaturation. Suitable polyfunctional compounds reactive with the polyhydroxyl polymer include the polyisocyanates whose reaction results in the formation of urethane linkages.

3,674,744

POLYCONDENSATION IN POLY(TETRAFLUORETHYLENE) REACTOR

Kenneth Porter, and Brian Richardson, both of Harrogate, England, assignors to Imperial Chemical Industries Limited, London, England

Filed Feb. 24, 1970, Ser. No. 13,727
Claims priority, application Great Britain, March 3, 1969, 11,140/69
Int. Cl. C08g *17/01, 20/24*
U.S. Cl. 260—75 M **4 Claims**

A process for the preparation of a high molecular weight polymer by a condensation process of a liquid reaction mixture wherein at least one volatile by-product is eliminated, characterized in that said condensation process is carried out in apparatus of such form and so operated that said reaction mixture being subjected to the condensation process has no free surface and removal of volatile product or products from said reaction mixture is effected by diffusion through at least a proportion of the wall of said apparatus which is permeable to said volatile product or products but not permeable to said reaction mixture or said polymer, said proportion of the wall which is permeable serving to separate said reaction mixture from a chemically inert gaseous fluid in which the partial pressure of the volatile by-product, or of the volatile by-products, is continually maintained below the equilibrium partial pressure for the reaction mixture under the conditions of reaction.

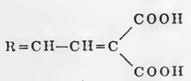
3,674,745

NOVEL LIGHT-SENSITIVE COPOLYESTERS

Georges A. Philipot; Marie-Jose-Suzanne Michiels, and Yolande-Paule Marie-Josephe De Villeneuve, all of Vincennes, France, assignors to Eastman Kodak Company, Rochester, N.Y.

Filed March 12, 1970, Ser. No. 19,063
Int. Cl. C08g *17/10*
U.S. Cl. 260—75 VA **6 Claims**

There is described a novel group of light-sensitive copolyesters prepared by condensing at least one dihydroxy compound with a mixture of diacids comprising more than 70 and less than 95 mole percent of a diacid having the formula:



where R is an alkylidene, aralkylidene or heterocyclic group and less than 30 but more than 5 mole percent of a non-light-sensitive aromatic diacid.

3,674,746

HIGH CRYSTALLINE TRANSITION TEMPERATURE ELASTOMERS FROM POLYESTER POLYURETHANES

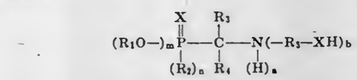
Friedrich Lohse, Allschwil; Rolf Schmid, Reinach/Bl; Willy Fisch, Binningen, and Hans Batzer, Ariesheim, all of Switzerland, assignors to Ciba Limited, Basel, Switzerland

Filed Dec. 2, 1969, Ser. No. 881,628
Claims priority, application Switzerland, Dec. 9, 1968, 18354/68
Int. Cl. C08g *22/10, 22/16, 41/04*
U.S. Cl. 260—75 NP **11 Claims**

Manufacture of high molecular, crosslinked crystalline polyadducts possessing urethane groups, from (a) linear succinic acid butane-1,4-diol polyesters possessing terminal hydroxyl groups and having an average molecular size of about 750 to about 5300, (b) as crosslinking agents, polyhydroxyl compounds containing at least 3 hydroxyl groups, preferably those having a hydroxyl equivalent weight of at most 300, e.g., 3-hydroxymethyl-2,4-dihydroxypentane, and (c) diisocyanates, for example hexamethylene-diisocyanate 3,5,5-trimethyl-3-(isocyanato-methyl)-cyclohexane-isocyanate-(1), 2,4-toluylene-diisocyanate or 2,6-toluylene-diisocyanate, with 0.9 to 1.1 equivalents of isocyanate groups of the isocyanate being employed in each case per 1 equivalent of the total amount of hydroxyl groups of the two components (a) and (b).

3,674,747
PROCESS FOR THE PRODUCTION OF HIGH MOLECULAR WEIGHT LINEAR POLYESTERS
Robert Schnegg; Herbert Pelousek, both of Dormagen; Robert Dippolhofer, Leverkusen; Wolfgang Wiegreffe, Krefeld; Hans-Georg Voelz, Krefeld, and Gerhard Kienast, Krefeld, all of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany
Filed Dec. 17, 1969, Ser. No. 885,973
Claims priority, application Germany, Jan. 17, 1969, P 19 02 175.1
Int. Cl. C08g 17/015
U.S. Cl. 260—75 R 6 Claims
A process for the production of high molecular linear polyesters by polycondensing a glycol with terephthalic acid or a terephthalic acid ester in the presence of a polycondensation catalyst. The condensation catalyst is a titanium-dioxide containing 0.01 to 20% by weight of a metal compound, preferably germanium dioxide and antimonium oxide is used as a metal compound. The catalyst can be prepared by calcinating titanium dioxide together with the metal compound.

3,674,748
POLYESTERS CONTAINING AMINOALKYLPHOSPHONATES
Miltiadis I. Iliopulos, Vienna, W. Va., and Raymond R. Hindersinn, Lewiston, N.Y., assignors to Borg-Warner Corporation, Chicago, Ill.
Division of Ser. No. 714,370, Nov. 9, 1967, abandoned, which is a division of Ser. No. 158,877, Dec. 12, 1961, Pat. No. 3,385,914. This application Dec. 22, 1969, Ser. No. 887,361
Int. Cl. C08g 17/133, 22/10, 22/14
U.S. Cl. 260—75 P 4 Claims
Selected phosphorus compounds, carbonyl compounds and alkanolamines are reacted to produce compounds of the formula:



wherein m and n are zero to two and $m+n$ equals two; a is zero to 1, b is 1 to 2 and $a+b$ equals 2; X is oxygen or sulfur; R_1, R_2, R_3, and R_4 are organic radicals and R_3 and R_4 can also be hydrogen, and R_5 is an alkyl group. Such compounds can be reacted with carboxylic compounds to produce polyesters, or with epoxides to form polyethers. Such polyesters and polyethers, as well as the compounds themselves, can be reacted with isocyanates to produce polyurethane compositions. When the reaction is carried out in the presence of a foaming agent, cellular products are produced.

3,674,749
POLYIMINOQUINAZOLINEDIONES
James M. Craven, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed Aug. 26, 1970, Ser. No. 71,285
Int. Cl. C08g 22/04
U.S. Cl. 260—77.5 CH 9 Claims
A novel polyiminoquinazolinedione composition which is the reaction product of a multifunctional isocyanate and a multifunctional o-aminonitrile.

3,674,750
QUARTERNARY PHOSPHONIUM SALT CATALYZED SYNTHESIS OF URETHANES AND POLYURETHANES
Donnie G. Brady, Bartlesville, Okla., assignor to Phillips Petroleum Company
Filed Jan. 14, 1971, Ser. No. 106,545
Int. Cl. C08g 22/34
U.S. Cl. 260—77.5 R 8 Claims
A process for producing urethanes by reacting an alkyl halide and an alkali metal cyanate in the presence of an organo hydroxy compound employing a phosphonium salt as a catalyst in which process the isolation of the intermediate isocyanate is unnecessary.

3,674,751
METHOD OF MANUFACTURING POLYAMIDES BY ALKALINE POLYMERIZATION OF CYCLIC LACTAMS
Jaroslav Kralicek, Praha; Vladimir Kubanek, Kralupy; Jitka Solcova, and Jaroslava Kondelikova, both of Praha, all of Czechoslovakia, assignors to Zavody Antoniza Zapotockeho, narodni podnik, Jaromer, Czechoslovakia
Filed Dec. 22, 1969, Ser. No. 887,399
Int. Cl. C08g 20/18
U.S. Cl. 260—78 L 7 Claims
An improved process for manufacturing polyamides by alkaline polymerization of cyclic lactams which consists of reacting alkali metal hydroxides or alcoholates with the lactams, with water or the corresponding alcohol being removed and putting the reaction mixture into contact with molecular sieves.

3,674,752
COPOLYAMIDES FROM 1,6-OR 2,6-NAPHTHALENE DICARBOXYLIC ACID
James S. Ridgway, Pensacola, Fla.; Henry L. King, Cary, N.C., and Oscar A. Pickett, Jr., Pensacola, Fla., assignors to Monsanto Company, Saint Louis, Mo.
Continuation-in-part of Ser. No. 633,719, April 26, 1967, abandoned. This application Sept. 23, 1969, Ser. No. 860,427
Int. Cl. C08g 20/20
U.S. Cl. 260—78 R 3 Claims
Synthetic fibers prepared from copolymers of hexamethylene diamine-adipic acid and hexamethylene diamine-1-6- or 2,6-naphthalene dicarboxylic acid are produced which are particularly useful in providing textile and reinforcing fibers.

3,674,753
STABILIZATION OF POLYMER-ALKALI METAL MERCAPTIDES
Carl A. Uraneck, and William J. Trepka, both of Bartlesville, Okla., assignors to Phillips Petroleum Company
Filed July 2, 1970, Ser. No. 52,140
Int. Cl. C08g 23/00
U.S. Cl. 260—79 6 Claims
Polymers having at least one terminal alkali metal mercaptide end group per molecule are converted to products having improved oxidative stability by reaction with metal halides of Group 4a of the Periodic Table.

3,674,754
VULCANIZABLE ETHYLENE/PROPYLENE COPOLYMERS AND PROCESS FOR THEIR PREPARATION
Nazzareno Cameli; Paolo Longi, and Alberto Valvassori, all of Milan, Italy, assignors to The B. F. Goodrich Company, Akron, Ohio
Filed Sept. 4, 1970, Ser. No. 69,987
Claims priority, application Italy, Sept. 5, 1969, 21674 A/69
Int. Cl. C08f 15/40
U.S. Cl. 260—79.5 B 8 Claims
There are disclosed new vulcanizable copolymers of ethylene and propylene containing unsaturations resulting from the presence therein of units deriving from the mixture obtained by the catalytic isomerization of vinylnorbornene said copolymers containing ethylene, propylene, ethylidene norbornene and at least one other diene selected from the group consisting of vinyl norbornene and vinyl norbornene and dicyclopentadiene. The copolymers have vulcanization rates comparable to those of ethylene/propylene/ethylidenenorbornene copolymers and yield elastomers having characteristics comparable to those of the vulcanized ethylene/propylene/ethylidenenorbornene copolymers, but are substantially more economical.

The new modified ethylene/propylene copolymers are obtained by copolymerizing a mixture of the starting monomers in contact with catalysts prepared from hydrocarbon-soluble vanadium compounds and hydrides or organometallic compounds of beryllium, aluminum, or lithium-aluminum compounds.

3,674,755
PROCESS FOR COPOLYMERIZING ALPHA-MONOOLEFINS WITH OR WITHOUT A POLYENE, USING CATALYST COMPRISING ORGANOALUMINUM COMPOUND AND VANADYL COMPOUND CONTAINING CYCLIC HYDROCARBON GROUP
Keisaku Yamamoto, Ibaraki; Hiroyoshi Takao, Takatsuki; Masaaki Hirooka, Ibaraki, and Teruo Oshima, Nishinomiya, all of Japan, assignors to Sumitomo Chemical Company Limited, Osaka, Japan
Filed July 23, 1969, Ser. No. 844,187
Claims priority, application Japan, July 30, 1968, 43/53815
Int. Cl. C08f 15/40, 19/00, 15/04
U.S. Cl. 260—80.78 28 Claims
Ethylene, propylene and similar olefins, with or without a conjugated or non-conjugated polyene (e.g., isoprene, 1,4-hexadiene, 5-ethylidene-2-norbornene) are copolymerized in solution with a catalyst based on organoaluminum compound (e.g., ethylaluminum sesquichloride) and vanadyl compound of the type $VO(OR_m)X_{3-m}$ where R is cyclic hydrocarbon, X is halogen and m is 1 to 3 (e.g., vanadyl tricyclohexoide, monovanadyl dicyclohexoxide, dichlorovanadyl bornyloxide, monochlorovanadyl dinorbornyloxide). Use of a vanadyl compound having a cyclic hydrocarbon substituent provides a catalyst having enhanced ability to incorporate diene, including conjugated diene, into the copolymer.

3,674,756
COPOLYMERIZATION OF ALLYL FLUORIDE
Jacques Abraham Waterman; Ilan Shaham, and Leonard M. Shorr, all of Haifa, Israel, assignors to Israel Mining Industries-Institute for Research and Development, Haifa Bay (near Ir Ganim) Haifa, Israel
Filed Dec. 20, 1968, Ser. No. 786,549
Claims priority, application Israel, Feb. 1, 1968, 29406
Int. Cl. C08f 1/60, 15/06, 15/24
U.S. Cl. 260—80.81 3 Claims
Copolymerization of allyl fluoride at a temperature not exceeding 55° C in the presence of a catalyst of the free radical donor type.

3,674,757
OLEFIN EXTRUSION COMPOSITIONS AND METHOD OF PREPARING SAME
Melville W. Uffner, Media, Pa., assignor to Air Products and Chemicals, Inc., Philadelphia, Pa.
Filed July 17, 1970, Ser. No. 55,990
Int. Cl. C08f 29/04
U.S. Cl. 260—86.7 9 Claims
A fluorochemical, perfluorocyclohexanoyl glycine, is blended at low concentrations with olefin polymers to obtain an extrudable composition having advantageous repellency characteristics.

3,674,758
STABILIZED TETRAFLUOROETHYLENE-FLUOROOLEFIN COPOLYMERS HAVING METHYL ESTER END-GROUPS AND PROCESS FOR PRODUCING SAME
Dana Peter Carlson, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed April 1, 1968, Ser. No. 717,926
Int. Cl. C08f 15/06
U.S. Cl. 260—87.5 A 5 Claims
Stabilized tetrafluoroethylene-fluoroolefin copolymers having methyl ester end-groups are produced from tetrafluoroethylene-fluoroolefin copolymers having carboxylic acid end-groups and acid fluoride end-groups by contacting the polymer with methanol at from about 65–200° C. for the carboxylic acid end-groups and from about 0–200° C. for the acid fluoride end-groups and then drying the stabilized polymer.

3,674,759
PROCESS OF POLYMERIZING CONJUGATED DIENES AND CATALYST
Takeshi Yamawaki; Masakatsu Usami; Tetsumi Suzuki, and Takao Uematsu, all of Tokyo-to, Japan, assignors to Mitsubishi Kasei Kogyo Kabushiki Kaisha, Tokyo-to, Japan
Filed March 10, 1970, Ser. No. 18,338
Claims priority, application Japan, March 20, 1969, 44/21390
Int. Cl. C08d 1/14, 3/04, 3/06
U.S. Cl. 260—82.1 19 Claims
In polymerizing a conjugated diene use is made of a catalyst consisting of tetrafluoroborate of nickel or cobalt or a complex compound of the tetrafluoroborate and an organometallic compound of a metal of group 2 or 3 of the periodic table.

3,674,760
METHOD OF PRODUCING BUTADIENE-STYRENE COPOLYMER
Adel F. Halasa, Bath, Ohio, assignor to The Firestone Tire & Rubber Company, Akron, Ohio
Filed Sept. 2, 1970, Ser. No. 69,173
Int. Cl. C08f 19/08, 1/28; C08d 1/32
U.S. Cl. 260—83.7 5 Claims
Random butadiene-styrene copolymer is formed in solution with alkyllithium as catalyst and at least 4 parts of lithium alkoxide per part of alkyllithium as modifier. The copolymer is free of block styrene and has a vinyl content of 10–25 percent by weight.

3,674,761
METHOD FOR THE PREPARATION OF ETHYLENE-CARBOXYLIC ACID COPOLYMERS
Harry D. Anspon, Sewickley, Pa.; Bert H. Clampitt, and Ronald E. Gilbert, both of Overland Park, Kans., assignors to Gulf Research & Development Company, Pittsburgh, Pa.
Continuation-in-part of Ser. No. 694,046, Dec. 28, 1967, abandoned. This application Sept. 9, 1970, Ser. No. 70,899
Int. Cl. C08f 15/02
U.S. Cl. 260—87.3 6 Claims
An ethylene-carboxylic acid copolymer is prepared by the thermal decomposition of an ethylene-isopropyl ester of acrylic or methacrylic acid in the presence of controlled concentrations of water vapor or ammonia.

3,674,762
METHOD FOR PREPARING POLYTETRAFLUOROETHYLENE MOLDING POWDER

Masanori Izumo, and Tatsushiro Yoshimura, both of Osaka-fu, Japan, assignors to Daikin Kogyo Co., Ltd., Osaka, Japan

Filed July 17, 1970, Ser. No. 55,962
Claims priority, application Japan, July 18, 1969, 44/57254
Int. Cl. C08f *3/24*, *15/06*
U.S. Cl. 260—87.5 6 Claims

Preparation of a free-flowing polytetrafluoroethylene molding powder by mechanically agitating polytetrafluoroethylene powder under a reduced pressure less than 500 mmHg (absolute). The obtained granular powder has good flowability, extremely little aggregates and high bulk density.

3,674,763
PROCESS FOR CURING FLUOROELASTOMER

Naoya Nakamura, and Miyata Yasuo, both of Osaka, Japan, assignors to Daikin Kogyo Co., Ltd., Osaka, Japan

Filed Dec. 28, 1970, Ser. No. 102,189
Claims priority, application Japan, Dec. 30, 1969, 44/1836
Int. Cl. C08f *15/06*, *15/40*, *27/08*
U.S. Cl. 260—87.7 11 Claims

A process for curing fluoroelastomer by curing a fluoroelastomer on heating in the presence of both N,N'-dicinnamylidene-1,6-hexylenediamine and para-phenylenediamine as a curing agent. By the use of both N,N'-cinnamylidene-1,6-hexylenediamine and para-phenylenediamine can give an extremely faster curing velocity than that in case of using each alone.

3,674,764
PROCESS FOR THE POLYMERIZATION OF OLEFINS

Koichiro Iwasaki; Kazuo Yamaguchi; Harutaka Kimura; Masayoshi Hasuo, all of Tokyo, and Toru Tanaka, Kawaski, all of Japan, assignors to Mitsubishi Chemical Industries Limited

Continuation of Ser. No. 824,264, May 13, 1969, abandoned. This application June 4, 1971, Ser. No. 150,243
Claims priority, application Japan, May 16, 1968, 43/32761
Int. Cl. C08f *1/42*, *1/56*, *15/04*
U.S. Cl. 260—88.2 R 14 Claims

The catalyst used in the process of the present invention is prepared by reacting a heat-resistant metal oxide with a titanium halide to form a reaction product. The reaction product is hydrolized, dried and then reacted with an organoaluminum compound. The unreacted organoaluminum compound is then removed.

3,674,765
PROCESS FOR POLYMERIZING ALPHA-OLEFINS

Edward H. Carter, Jr.; Vernon K. Park, and Horst K. Seeger, all of Longview, Tex., assignors to Eastman Kodak Company, Rochester, N.J.

Filed Nov. 20, 1970, Ser. No. 91,592
Int. Cl. C08f *1/56*, *3/10*
U.S. Cl. 260—88.2 7 Claims

This invention relates to an improved catalyst composition, method of making same, and a process for polymerizing α-olefins using the catalyst composition. A transition metal halide catalyst, such as titanium chloride, wherein said transition metal has a valance at least one less than maximum, is pretreated with free lithium metal at elevated temperatures. The treated transition metal halide is then combined with a co-catalyst, such as lithium aluminum hydride, to prepare the catalyst mixture which can then be utilized to polymerize α-monoolefins.

3,674,766
POLYMERIZATION OF ETHYLENE AND CATALYSTS THEREFOR

Edward H. Mottus, Ballwin, Mo., and Morris R. Ort, Seabrook, Tex., assignors to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 671,952, Oct. 2, 1967, abandoned. This application Sept. 16, 1968, Ser. No. 763,485
Int. Cl. C08f *1/32*, *3/06*
U.S. Cl. 260—88.2 23 Claims

Catalysts useful for making ethylene polymers by polymerizing ethylene alone or with a comonomer in the presence of hydrogen are described. They consist essentially of a mixture of (1) a bromo and/or ioda aluminum compound, preferably of the formula

$$X_2AlCH_2(A'lCH_2)_pAlX_2$$

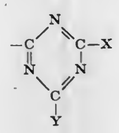
wherein X is a halogen atom with at least one X being a bromine or iodine atom or a mixture of such compounds with each other and *p* is O or 1 and (2) a compound of a transition metal of Groups III–B, IV–B, V–B, VI–B, VII–B, VIII or 1–B of the Periodic Table, preferably vanadium. The combined bromine or iodine renders the catalyst composition more sensitive to hydrogen employed for molecular weight control so that the ethylene polymers which are obtained at a given hydrogen partial pressure have a higher melt index than those which are obtained with the same type of organo-aluminum compound which does not contain the specified bromine or iodine constituent. The polymerization can be carried out in the presence of an inert solvent such as hexane, or a halogenated compound such as dichloromethane or dibromomethane, at a pressure from about 2 to about 10 atmospheres and employing an electron-donating compound such as t-butanol or water to modify the catalyst.

3,674,767
NOVEL POLYMERIC MATERIALS CONTAINING TRIAZINYL GROUPS

Malcolm Douglas Lilly; Garth Kay; Richard John Hugh Wilson, and Allister Kimball Sharp, all of London, England, assignors to National Research Development Corporation, London, England

Filed July 5, 1968, Ser. No. 742,612
Claims priority, application Great Britain, July 14, 1967, 32,541/67; Feb. 12, 1968, 6,869/68; April 10, 1968, 17,322/68
Int. Cl. C08f *27/08*
U.S. Cl. 260—89.1 18 Claims

A polymer that is substituted by pendant triazinyl groups of the formula:



where X represents a radical capable of reacting with a biologically active substance, and Y represents a halogen atom, or a nucleophilic group that is an amino group, or an aliphatic or aromatic group, and also by a further substituent group which has a positive charge when the polymer is in contact with a solution having a pH in the normal biological range.

3,674,768
MODIFIED POLYALCOHOL

Keith George Allum, 28 Coppice Green, Bracknell, and Ronald David Hancock, 19 Netherby Park, Weybridge, both of England

Filed Jan. 12, 1970, Ser. No. 2,398
Claims priority, application Great Britain, Dec. 30, 1969, 5,193/69
Int. Cl. C08f *27/04*
U.S. Cl. 260—91.3 VA 10 Claims

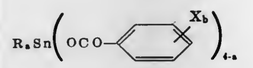
Transition metal-containing catalysts are prepared by reacting a transition metal compound with a polymer containing trivalent phosphorus and hydroxyl groups. The phosphorus-containing polymer is prepared by reacting a polymer containing hydroxyl groups such as polyvinyl alcohol with a trivalent phosphorus compound such as phenyl dichlorophosphine. Preferred transition metals are the Group VIII metals. The catalysts are useful for hydroformylation, hydrogenation, oligomerization and carboxylation.

3,674,769
CRYSTALLINE PROPYLENE POLYMER COMPOSITIONS OF IMPROVED WORKABILITY

Reiichi Suzuki, Nishinomiya; Tadasu Tahara, Suita, and Hideo Mototani, Amagasaki, all of Japan, assignors to Nitto Kasei Co., Ltd., Osaka, Japan

Filed June 10, 1970, Ser. No. 45,260
Claims priority, application Japan, June 17, 1969, 44/48203
Int. Cl. C08f *29/02*, *45/34*, *45/40*
U.S. Cl. 260—93.7 26 Claims

A plastic composition of improved workability comprises substantially crystalline propylene polymer, and an additive combination consisting of (a) an organotin benzoate derivative having the formula



wherein R is a saturated or unsaturated hydrocarbon radical of one to 12 carbon atoms, X is hydrogen, halogen, lower alkyl, hydroxyl or alkoxyl, and *a* and *b* are 1–3, and (b) a phenolic compound.

3,674,770
HIGH POTENCY THYROIDALLY ACTIVE MATERIALS PREPARED BY PARTIAL ACID HYDROLYSIS OF IODINATED PROTEIN

Richard D. Hoover, Lee's Summit, Mo., and George O. Kohler, El Cerrito, Calif., assignors to Agri-Tech, Inc., Kansas City, Mo.

Continuation-in-part of Ser. No. 584,119, Oct. 4, 1966, abandoned. This application March 24, 1971, Ser. No. 127,789
Int. Cl. A61k *17/10*; C07g *7/00*, *15/00*
U.S. Cl. 260—119 8 Claims

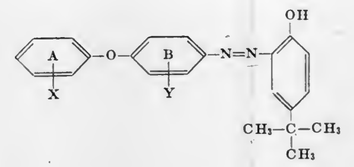
A process for obtaining thyroidally active material of increased biological activity wherein thyroactive iodinated protein is subjected to partial hydrolysis with acid until about 70 to 95% of the NH_2-nitrogen obtainable on complete acid hydrolysis is liberated.

3,674,771
PHENYL-AZO-PHENOL DYESTUFFS

Edgar Siegel, Leverkusen, Germany, assignor to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed March 13, 1970, Ser. No. 19,460
Claims priority, application Germany, March 20, 1969, P 19 14 060.4
Int. Cl. C07c *107/06*; C09b *29/12*
U.S. Cl. 260—206 1 Claim

Water-soluble monoazo dyestuffs of general formula



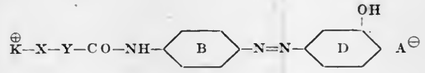
wherein one of the residues X or Y in each case denotes a sulpho group and the other denotes hydrogen, and wherein the benzene nuclei A and B can be substituted by chlorine or alkyl groups with one to four C atoms as well as their preparation and their use for dyeing polyamide fibers in a neutral to weakly acid medium.

3,674,772
BASIC PHENYLAZOPHENYL DYES CONTAINING A QUATERNIZED AMINOALKYLENECARBOXAMIDE

Roland Entschel, and Willy Steinemann, both of Basel, Switzerland, assignors to Sandoz Ltd. (a/k/a Sandoz A.G.), Basle, Switzerland

Filed July 8, 1968, Ser. No. 743,037
Claims priority, application Switzerland, July 25, 1967, 10548/67; Aug. 29, 1967, 12125/67
Int. Cl. C09b *29/26*, *43/12*; D06p *3/26*
U.S. Cl. 260—207 11 Claims

Basic monoazo dyes of the formula



wherein X stands for an alkylene radical,
Y for the direct linkage or an arylene radical,
$\overset{\oplus}{K}$ for an ammonium or a hydrazinium group
and $A^{\ominus}$ for an anion and wherein the aromatic ring
B contains at least one substituent and the aromatic ring D may bear further substituents, are useful for dyeing polyacrylonitrile and acrylonitrile copolymer fibers. Very level and pH-stable dyeings with very good light and wet fastness are thus obtained.

3,674,773
ERYTHROMYCIN DERIVATIVES

Paul Kurath, Waukegan, Ill., assignor to Abbott Laboratories, North Chicago, Ill.

Filed Oct. 6, 1970, Ser. No. 78,633
Int. Cl. C07c *47/18*
U.S. Cl. 260—210 E 5 Claims

The 8,9-anhydro-8,9-epoxyerythromycin 6,9-hemiketal, the 8,9-seco-8-oxoerythromycin-9-oic acid 6,9-lactone, and the 8-hydroxyerythromycin derivatives of both erythromycin A and B have antimicrobial activity, and the N-oxide intermediates thereof.

3,674,774
PYRAZOMYCIN AND PROCESS FOR PRODUCTION THEREOF

Robert H. Williams, and Marvin M. Hoehn, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed April 23, 1969, Ser. No. 818,676
Int. Cl. C07d *51/52*
U.S. Cl. 260—210 AB **1 Claim**

Pyrazomycin is a new antibiotic produced by the fermentation of Streptomyces candidus NRRL 3601, having antiviral and antifungal activity.

3,674,775
CEPHALOSPORINS VIA PENICILLIN SULFOXIDE CONVERSION

Douglas O. Spry, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed March 5, 1970, Ser. No. 16,929
Int. Cl. C07d *99/24, 99/16*
U.S. Cl. 260—239.1 **8 Claims**

6-phthalimidopenicillanic acid ester sulfoxides and a C_1-C_5 acid anhydride heated in acidic medium afford 2β-alkanoyloxymethyl-2α-methyl- and 2α-alkanoyloxymethyl-2α-methyl- and 20α-alkanoyloxymethyl-2α-methyl-6-phthalimidopenicillanic acid esters, which on oxidation form separable α-sulfoxides. 2β-Alkanoyloxymethyl-2α-methyl-6-phthalimidopenicillanic acid ester α-sulfoxides heated in acidic medium provide 3-alkanoyloxymethyl-7-phthalimido-Δ^3-cephem-4-carboxylates and 3-alkanoyloxymethyl-3-hydroxy-7-phthalimidocepham-4-carboxylates readily converted to known cephalosporin antibiotics.

3,674,776
P-HYDROXYAMPICILLIN AND SALTS THEREOF

Anthony Alfred Walter Long, Reigate, Surrey, and John Herbert Charles Nayler, Dorking, Surrey, both of England, assignors to Beecham Group Limited, Brentford, Middlesex, England

Filed Aug. 18, 1969, Ser. No. 851,062
Claims priority, application Great Britain, Aug. 23, 1968, 40,319/68
Int. Cl. C07d *99/16*
U.S. Cl. 260—239.1 **5 Claims**

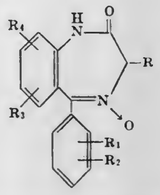
Derivatives of 6-Aminopenicillanic Acid possessing antibacterial activity are disclosed.

3,674,777
PROCESS FOR PREPARING 1,3-DIHYDRO-5-PHENYL-2H-1,4-BENZODIAZEPINE-2-THIONES

Jackson B. Hester, Jr., Galesburg, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

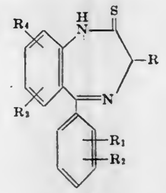
Filed Feb. 9, 1917, Ser. No. 114,047
Int. Cl. C07d *53/06*
U.S. Cl. 260—239.3 D **5 Claims**

A process to convert 5-phenylbenzodiazepine 4-oxides of the formula 1:



I

wherein R is selected from hydrogen and alkyl of one to three carbon atoms, inclusive; and wherein R_1, R_2, R_3, and R_4 are selected from hydrogen, chloro, bromo, iodo, alkyl of one to three carbon atoms, inclusive, alkoxy of one to three carbon atoms, inclusive, nitro, trifluoromethyl, cyano, alkylthio, alkylsulfinyl, alkylsulfonyl, alkanoylamino and dialkylamino in which the carbon moieties are of one to three carbon atoms, inclusive, with phosphorus pentasulfide to the thione II



II

where R, R_1, R_2, R_3, and R_4 are defined as above. The thus obtained thions 11 can be used as described in U.S. Pat. No. 3,422,091 issued Jan. 14, 1969, as anticonvulsants, sedatives and muscle relaxants and also as intermediates in the preparation, of other know compounds having these same uses.

3,674,778
PREPARATION OF 9,11-DICHLORO STEROIDS

Lewis J. Throop, Los Altos, Calif., assignor to Syntex Corporation, Panama, Panama

Filed Feb. 16, 1970, Ser. No. 11,877
Int. Cl. C07c *173/00*
U.S. Cl. 260—239.55 D **10 Claims**

A process for preparing 9,11-dichloro steroids which involves the step of treating a 9α-unsubstituted-11β-hydroxy steroid with sulfuryl chloride optionally in inert liquid reaction media containing a tertiary amine. The 9,11-dichloro steroid products are known, useful anti-inflammatory agents.

3,674,779
4-CHLORO-3-OXO-14-HYDROXY-OR 4-CHLORO-3,14-DIHYDROXY-CARDA-4,20-DIENOLIDES AND PROCESS FOR THEIR MANUFACTURE

Ulrich Stache, Hofheim/Taunus; Kurt Radschelt, Kelkheim/Taunus; Werner Fritsch, Neuenhain/Taunus; Werner Haede, Hofheim/Taunus, and Ernst Lindner, Frankfurt/Main, all of Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt/Main, Germany

Filed May 8, 1970, Ser. No. 35,895
Claims priority, application Germany, May 14, 1969, P 19 24 801.2
Int. Cl. C07c *173/02*
U.S. Cl. 260—239.57 **4 Claims**

Process for the manufacture of 4-chloro-3-oxo-14β-hydroxy- or 4-chloro-3,14β-dihydroxy-carda-4,20(22)dienolides wherein 3-oxo-carda-4,14,20(22)-trienolides are at first treated with chlorine, the compounds obtained are converted by hydrogenolysis into 3-oxo-4-chloro-carda-4,14,20-trienolides, these are treated with N-bromo-acid amides, and the 3-oxo-4-chloro-14β-hydroxy-15α-bromo-carda-4,20(22)-dienolides thus obtained are treated with Raney nickel and may be reduced.

3,674,780
NOVEL 2,5-DISUBSTITUTED THIAZOLE CARBOXALDEHYDE AND DERIVATIVES OF THE SAME

Gerald Berkelhammer, Princeton; Goro Asato, Titusville, both of N.J., and Edward Leslie Moon, St. Petersburg, Fla., assignors to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 598,209, Dec. 1, 1966, Pat. No. 3,505,346, which is a continuation-in-part of Ser. No. 515,442, Dec. 21, 1965, abandoned. This application Jan. 19, 1970, Ser. No. 4,049
Int. Cl. C07d *91/32*
U.S. Cl. 260—240 G **4 Claims**

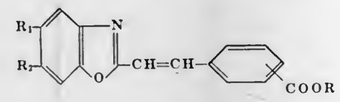
The present invention relates to novel 2,5-disubstituted mononitro thiazoles and to methods for their preparation. These compounds are used for controlling or inhibiting the growth of microorganisms, fungi and nematodes.

3,674,781
OPTICAL BRIGHTENERS OF THE BENZOXAZOLE SERIES

Erich Schinzel, Frankfurt am Main; Ulrich Pintschovius, Kelkheim am Taunus, and Karl Heinz Lebkucher, Hofheim am Taunus, all of Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt/Main, Germany

Continuation-in-part of Ser. No. 366,901, May 21, 1964, abandoned, Continuation of Ser. No. 624,721, March 21, 1967, abandoned. This application Sept. 15, 1970, Ser. No. 72,492
Int. Cl. C07d *85/48*; **C09b** *23/14*
U.S. Cl. 260—240 D **3 Claims**

Colorless or nearly colorless fluorescent benzoxazole compounds which correspond to the general formula



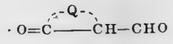
may be used as optical brighteners. In the above formula I, the radical R represents hydrogen, alkyl of one to four carbon atoms, cyclohexyl, halo lower alkyl, hydroxyethyl, lower alkoxy lower alkyl, di-(lower alkyl)-amino lower alkyl, tri-(lower alkyl)-amonium lower alkyl, phenyl and phenyl lower alkyl, and R_1 stands for hydrogen, lower alkyl or halogen, R_2 stands for lower alkyl.

3,674,782
INTERMEDIATES AND THE PREPARATION AND USE THEREOF

Carl H. Eldredge, and John D. Mee, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 24, 1968, Ser. No. 786,759
Int. Cl. C09b *23/10*
U.S. Cl. 260—240.4 **3 Claims**

Novel compounds of the formula:



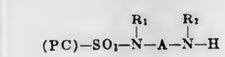
are provided wherein Q represents the non-metallic atoms required to complete an acidic nucleus of the type used in merocyanine dyes. Methods for preparing these compounds, and the preparation of merocyanine and oxonol dyes employing these compounds, are also described.

3,674,783
PHTHALOCYANINE COMPOUNDS

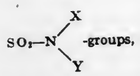
Hans Von Tobel, Riehen, Basel, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

Filed June 16, 1969, Ser. No. 833,732
Int. Cl. C07d *55/20, 27/74*
U.S. Cl. 260—242 **11 Claims**

Watersoluble condensation products of 2 Moles of a compound or two different compounds of the formula



wherein PC stands for a metal-free or metal-containing phthalocyanine radical bearing two or three SO_3H— and/or



A for an organic bridge-member, each of R_1 and R_2 for hydrogen or lower (substituted) alkyl, each of X and Y for hydrogen or lower (hydroxy) alkyl, with 1 Mol of cyanuric halide, as dyes with good wash-off and build-up properties, especially good for printing and exhaustion dyeing.

3,674,784
3-FORMYL CEPHALOSPORIN SULFOXIDES

J. Alan Webber, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed July 27, 1970, Ser. No. 58,678
Int. Cl. C07d *99/24*
U.S. Cl. 260—243 C **11 Claims**

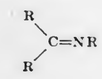
3-Formyl cephalosporin sulfoxide esters which are useful as intermediates in the preparation of new cephalosporin antibiotics.

3,674,785
CERTAIN FLUORIMINO OR AZOMETHINE CONTAINING COMPOUNDS

Ronald A. Mitsch, Falcon Heights, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Jan. 9, 1964, Ser. No. 336,839
Int. Cl. C07d *93/10, 87/00, 29/14*
U.S. Cl. 260—243 R **12 Claims**

8. A compound of the formula:



wherein each R is selected from the class consisting of fluorine and fluoroalkyl radicals and wherein R groups taken together can form ring systems, which compound comprises a ring which contains a plurality of hetero atoms therein, said ring containing only a single azomethine group, provided that said compound contains no atoms other than carbon, fluorine, nitrogen, oxygen and sulfur atoms.

10. Perfluoro-5,6-dihydro-2H-1,4-oxazine.

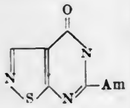
12. 1,1,1,1-tetrafluoroperfluoro-5,6-dihydro-2H-1,4-thiazine.

3,674,786
NEW-6-AMINO-4-OXO-4,5-DIHYDRO-ISOTHIAZOLO[5,4-D]PYRIMIDINES

Srinivasachari Rajappa, Bombay, India, assignor to Ciba-Geigy Corporation, Summit, N.J.

Filed Oct. 10, 1969, Ser. No. 865,477
Claims priority, application Switzerland, Oct. 17, 1968, 15560/68; Sept. 15, 1969, 13989/69
Int. Cl. C07d *87/46*
U.S. Cl. 260—247.1 **9 Claims**

Compounds of the formula



in which Am stands for optionally substituted amino, and which are substituted in 3-position and optionally substituted

in 5-position are useful as central depressant and hypnotic-sedative agents.

3,674,787
2-(α-MORPHOLINOBENZYL)-ANILIDES

Hans-Hasso Frey, Soborg, and Sven Lisberg, Vedbaek, both of Denmark, assignors to Lovens kemiske Fabrik Produktionsaktieselskab, Ballerup, Denmark

Filed March 10, 1969, Ser. No. 805,856

Claims priority, application Great Britain, March 14, 1968, 12,494/68

Int. Cl. C07d *87/42*

U.S. Cl. 260—247.2 A **9 Claims**

This invention relates to pharmaceutically active 2-(α-morpholinobenzyl)-anilides intended for use as tranquilizers having, e.g., an anticonvulsive, muscle-relaxing, or sedative effect, to salts of the said anilides, and to pharmaceutical preparations in dosage unit form, containing from 5 mg to 250 mg of the said anilides or salts per dose.

3,674,788
DIPYRIDYLIUM QUATERNARY DIHALIDE HALOGEN COMPLEXES

Robert M. Thomas; Fred R. Gerns, and John L. Sands, all of West Lafayette, Ind., assignors to Great Lakes Chemical Corporation, West Lafayette, Ind.

Continuation-in-part of Ser. No. 770,082, Oct. 23, 1968, Pat. No. 3,641,041. This application Jan. 15, 1971, Ser. No. 106,934

Int. Cl. C07d *51/02*

U.S. Cl. 260—250 R **5 Claims**

Halogen complexes of dipyridylium quaternary dihalides which are bacteriocidal and herbicidal agents and useful as defoliants and desiccants, particularly as cotton defoliant-desiccants.

This invention relates to novel quaternary dihalide halogen complexes, more particularly to halogen complexes of N,N'-ethylene-2,2'-dipyridylium dihalides and to their use as herbicides, especially for growing vegetation, which is substantially severely damaged or completely destroyed by herbicidal treatment therewith, and as defoliants and desiccants, particularly as superior harvest aid chemicals having special application in the preparation of cotton for harvest by defoliation and desiccation without concurrent suppression of the opening of mature bolls of cotton plants treated therewith.

3,674,789
TRICYCLOHEXYLTIN ESTERS

Donald E. Bubblitz, Concord, Calif., assignor to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 761,313, Sept. 20, 1968, Pat. No. 3,598,849. Filed July 28, 1970, Ser. No. 64,891

Int. Cl. C07d *105/00*

U.S. Cl. 260—270 **1 Claim**

Novel tricyclohexyltin esters wherein the ester moiety is selected from ferrocenylcarbonyloxy, pyridylcarbonyloxy, phenoxyacetoxy, chlorophenoxyacetoxy, and phenylthioacetoxy These compounds are useful as pesticides.

3,674,790
2,10-DISUBSTITUTED-1,2,3,4-TETRAHYDROBENZO[B]f[1,6]NAPHTHYRIDINES USEFUL AS CNS DEPRESSANTS

Milton Wolf, West Chester, and James L. Diebold, Havertown, both of Pa., assignors to American Home Products Corporation, New York, N.Y.

Division of Ser. No. 760,063, Sept. 16, 1968, Pat. No. 3,580,915, which is a continuation-in-part of Ser. Nos. 533,802, March 14, 1966, abandoned, and Ser. No. 533,793, March 14, 1966, abandoned, and Ser. No. 581,756, Sept. 22, 1966, abandoned. This application May 1, 1970, Ser. No. 33,932

Int. Cl. C07d *39/00*

U.S. Cl. 260—286 R **43 Claims**

This invention concerns 1,2,3,4-tetrahydrobenzo[b][1,6]naphthyridines, 1,2,3,4,4a,5,10,10a-octahydrobenzo[b][1,6]naphthyridines and the pharmacologically acceptable acid addition salts thereof which are pharmacologically active as central nervous system depressants which are useful in producing a calming effect in warm-blooded animals. Further, this invention concerns a process for the preparation of 10-amino-1,2,3,4-tetrahydrobenzo[b][1,6]naphthyridines.

3,674,791
BENZAMIDO 2 LOWER ALKYL DECAHYDROISOQUINOLINES

Ian William Mathison, Memphis, Tenn., assignor to Marion Laboratories, Inc., Kansas City, Mo.

Filed March 26, 1968, Ser. No. 715,946

Int. Cl. C07d *35/38*

U.S. Cl. 260—287 R **5 Claims**

Disclosed are 5,6,7 or 8-benzamido isoquinolines, tetrahydroisoquinolines and decahydroisoquinolines, processes of producing these compounds and intermediates useful in such processes.

Some of the compounds have useful biological activity. Thus, 5-(3,4,5-trimethoxybenzamido)-2-methyl decahydroisoquinoline has antiarrhythmic activity in animals.

3,674,792
1-(BENZOHETEROCYCLIC CYCLOPROPYLMETHYL)-4-PHENYL-4-PIPERIDINOLS

Carl Kaiser, 1105 Sylvan Drive, Haddon Heights, N.J., and Charles L. Zirkle, 373 Beechwood Road, Berwyn, Pa.

Filed July 16, 1970, Ser. No. 62,763

Int. Cl. C07d *29/36*

U.S. Cl. 260—293.57 **10 Claims**

1-(Benzoheterocyclic cyclopropylmethyl)-4-phenyl-1,2,5,6-tetrahydropyridines in which the benzoheterocyclic moiety is 2- or 3-thianaphthenyl, benzofuryl or indolyl and said moiety and/or the phenyl groups may be substituted by chloro, bromo, fluoro, methyl, methoxy or trifluoromethyl have central nervous system depressant and neuroleptic activity. The compounds are generally prepared from a benzoheterocyclic cyclopropanecarboxylic acid via the acid chloride or the lower alkyl mixed anhydride by condensation with a 4-phenyl-4-piperidinol to give a corresponding amide. The amide is reduced to the cyclopropylmethyl derivative which is dehydrated with acid to the tetrahydropyridine product. The amides and cyclopropylmethyl derivatives are useful intermediates.

3,674,793
6-HYDROXY-2-AZABICYCLO[2.2.2]OCTAN-3-ONES AND 2-AZABICYCLO [2.2.2.]OCTANE-3,6-DIONES

Denis M. Bailey, East Breenbush, N.Y., assignor to Sterling Drug Inc., New York, N.Y.

Filed March 29, 1967, Ser. No. 626,679

Int. Cl. C07d *39/00*

U.S. Cl. 260—293.54 **7 Claims**

2-R-6-hydroxy-2-azabicyclo[2.2.2]octan-3-ones (I) and 2-R-2-azabicyclo-[2.2.2]octane-3,6-diones (II) where R is benzyl or lower-alkyl, 6-(lower-alkanoates) of 2-R-6-hydroxy-2-azabicyclo-[2.2.2]octan-3-ones where R is lower-alkyl (III) and preparation of said compounds by reacting a lower-alkyl trans-3,4-epoxycyclohexanecarboxylate with an amine of the formula R—NH_2 and heating the resulting lower-alkyl 3-hydroxy-4-RNH-cyclohexanecarboxylate to form I, esterifying I where R is lower-alkyl to form II, and oxidizing I where R is benzyl or lower-alkyl to form III. The compounds have stimulatory activity.

3,674,794
CERTAIN-3-PYRIDINE-SULFONAMIDE DERIVATIVES

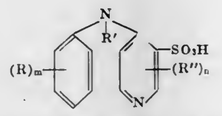
Renat Herbert Mizzoni, Long Valley, and Herbert Morton Blatter, Summit, both of N.J., assignors to Ciba-Geigy Corporation, Summit, N.J.

Continuation-in-part of Ser. No. 876,038, Nov. 12, 1969. This application March 18, 1970, Ser. No. 20,833

Int. Cl. C07d *31/50*

U.S. Cl. 260—294.8 F **3 Claims**

New 4-arylamino-3-pyridinesulfonic acids, e.g. those of the formula



R=H, alkyl, free, esterified or etherified OH, CF_3, NO_2, amino, free of functionally converted carboxy or sulfo
R'=H, alkyl or acyl
R''=H or alkyl
m=1-3, n=1 or 2

the N-oxide, esters and salts thereof, are diuretics.

3,674,795
PYRIDYL XANTHATES

Joseph E. Dunbar, and John W. Zemba, both of Midland City, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Aug. 20, 1970, Ser. No. 65,741

Int. Cl. C07d *31/50*

U.S. Cl. 260—294.8 E **7 Claims**

Novel pyridyl Xanthate compounds are prepared by the reaction of a polychloro-4-alkylsulfonyl pyridine or pentachloropyridine with an alkali metal salt of an alkylxanthic acid in the presence of an inert carrier as a reaction medium at a temperature of from bout 20° C. to about 95° C. The novel compounds are active as pesticides.

3,674,796
BASIC ETHERS OF 1-HYDROXYPHENYLBENZCYCLOALKANE-2-SPIROCYCLOALKYL DERIVATIVES

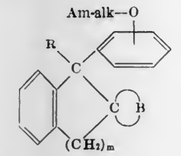
Lincoln Harvey Werner, Summit, N.J., assignor to Ciba-Geigy Corporation, Summit, N.J.

Filed Dec. 20, 1968, Ser. No. 785,785

Int. Cl. C07d *27/02*

U.S. Cl. 260—295.5 S **6 Claims**

Basic ethers of 1-hydroxyphenyl-benzcycloalkane-2-spirocycloaliphatic compounds, e.g. those of the formula



alk=lower alkylene
Am=an amino group
R=H or OH
B=lower alkylene or alkenylene
m=1-3

acyl derivatives, salts and quaternaries thereof exhibit antiestrogenic effects.

3,674,797
PRODUCTION OF BIS-QUATERNARY SALTS OF 4:4'-BIPYRIDYLS

John Edward Colchester; John Gerard Carey, and Michael David Taylor, all of Runcorn, England, assignors to Imperial Chemical Industries Limited, London, England

Filed Feb. 24, 1970, Ser. No. 13,801

Claims priority, application Great Britain, March 7, 1969, 12,175/69

Int. Cl. C07d *31/42, 31/42*

U.S. Cl. 260—295 AM **11 Claims**

A process for the production of a 1,1'-disubstituted-4,4'-bipyridylium salt which comprises treating a 1,1'-disubstituted-1,1',4,4'-tetrahydro-4,4'-bipyridyl with a 2-alkyl-9,10-anthraquinone, the 2-alkyl-9,10-anthraquinone being such that the corresponding 9,10-anthraquinol can be oxidized to the substituted 9,10-anthraquinone by oxygen and also being such that it is a hydrogen acceptor and has a redox potential in water more positive than −1.48 volts as compared with the saturated calomel electrode.

3,674,798
POLYFLUOROISOALKOXYALKYL PYRIDINIUM SALTS

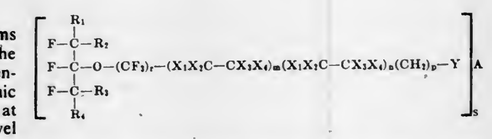
Alson K. Price, Eggertsville, and Bernard Sukornick, Williamsville, both of N.Y., assignors to Allied Chemical Corporation, New York, N.Y.

Filed Dec. 15, 1969, Ser. No. 885,328

Int. Cl. C07d *31/28*

U.S. Cl. 260—297 R **22 Claims**

Compounds of the formula



wherein R_1–R_4 are fluorine, chlorine or perhaloalkyl groups; X_1–X_4 are hydrogen, halogen, or alkyl halide; Y is thiourea, pyridine, quinoline, or the alkyl or hydroxyalkyl derivatives thereof; A is an accompanying anionic moiety; r is an integer from 1-2, m and n are integers from 0-20, and s is an integer from 1 up to the total negative charge of A. These compounds are useful as surface active agents and for imparting water and oil repellent properties to various substrates such as textiles, leather and paper.

3,674,799
[4'-(PHENYL-3,6-DIHYDRO-1-(2H)-PYRIDYL]-2-HYDROXY PROPOXY-ANILIDES AND DERIVATIVES THEREOF

Albrecht Edenhofer, Riehen, and Hans Spiegelberg, Basel, both of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Dec. 4, 1969, Ser. No. 882,298

Claims priority, application Switzerland, Dec. 24, 1968, 19268/68

Int. Cl. C07d *31/50*

U.S. Cl. 260—294.8 F **15 Claims**

Substituted [3-(4-phenyl-1-hydropyridyl)-propoxy or propyl-thio]anilines prepared, inter alia, by reacting the correspondingly substituted propoxy or propyl-thio anilines and N-phenyl-hydropyridines, are described. The end products, i.e., the substituted [3-(4-phenyl-1-hydropyridyl)-propoxy or propyl-thio]anilines are useful as antiphlogistic, antiallergic, antitussive and analgesic agents.

3,674,800
DERIVATIVES PYRIDINIUM OF POLYFLUOROISOALKOXYALKANAMIDES

Richard F. Sweeney, Randolph Township, Morris County; Aziz Urrehman Khan, Elizabeth; Alson K. Price, Morristown; Edward Stephen Jones, Whippany, and Julian A. Otto, Stockholm, all of N.J., assignors to Allied Chemical Corporation, New York, N.Y.

Filed April 14, 1969, Ser. No. 816,013
Int. Cl. C07d 31/44
U.S. Cl. 260—295 AM 10 Claims

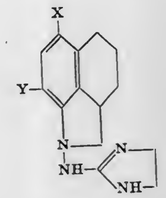
N-methylol and N-halomethyl derivatives of polyfluoroisoalkoxyalkanamides, and their substituted ammonium salts characterized in that an ether oxygen links a fluorinated carbon atom attached to two fluoroalkyl groups and at least one $-CF_2-$ group. These compounds are useful as water and oil repellency agents.

3,674,801
1,2,2A,3,4,5-HEXAHYDRO-1-(2-IMIDAZOLIN-2-YLAMINO)-BENZ[CD]INDOLES

Gerhard Bormann, Basel; John Gmunder, Muttenz/BL; Heinrich Wilkens, Brombach, and Franz Troxler, Bottmingen Basel-land, all of Switzerland, assignors to Sandoz Ltd., (also known as Sandoz AG), Basle, Switzerland

Filed Oct. 14, 1970, Ser. No. 80,748
Claims priority, application Switzerland, Oct. 24, 1969, 15858/69; July 6, 1970, 10182/70; July 6, 1970, 10183/70
Int. Cl. C07d 49/34
U.S. Cl. 260—309.6 7 Claims

The present invention concerns compounds of the formula:



wherein
X is hydrogen, halogen, methyl or methylthio and
Y is hydrogen,
or
X is hydrogen and
Y is methyl,
or
both X and Y are chlorine.

The compounds and pharmaceutically acceptable acid addition salts thereof are vasoconstrictors.

3,674,802
2-ACYL-4-ACYLOXY-2,3,4,5-TETRAHYDRO-1,2,4-OXADIAZOLES

John E. Franz, Crestwood, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Jan. 5, 1970, Ser. No. 841
Int. Cl. C07d 85/52
U.S. Cl. 260—307 F 5 Claims

2-Acyl-4-acyloxy-2,3,4,5-tetrahydro-1,2,4-oxadiazoles are described herein. These compounds find utility as herbicides. For example, 2-(parachlorobenzoyl)-2,3,4,5-tetrahydro-1,2,4-oxadiazole-4-yl-parachlorobenzoate and its herbicidal properties are disclosed herein.

3,674,803
2-0,0-DITHIOPHOSPHORYL-METHYL-BENZOXAZOLE

Otto Scherer, Bad Soden/Taunus, and Gerhard Stahler, Frankfurt/Main, both of Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt/Main, Germany

Continuation-in-part of Ser. No. 552,408, May 24, 1966, abandoned. This application July 16, 1969, Ser. No. 842,404
Claims priority, application Germany, June 9, 1965, F 46283; June 9, 1965, F 46284
Int. Cl. C07d 85/48
U.S. Cl. 260—307 D 1 Claim

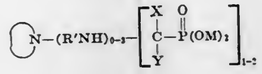
2-O,O-DIETHYL-DITHIOPHOSPHORYL-METHYL-5,7-DICHLOROBENZOXAZOLE is disclosed as having insecticidal, acaricidal and fungicidal activity.

3,674,804
IMIDAZOLINE PHOSPHONIC ACIDS

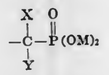
Derek Redmore, Ballwin, Mo., assignor to Petrolite Corporation, Wilmington, Del.

Filed Oct. 17, 1968, Ser. No. 768,509
Int. Cl. C07d 49/34; C07f 9/38
U.S. Cl. 260—309.6 5 Claims

Nitrogen-heterocyclic phosphonic acids and derivatives thereof characterized by aminomethyl (or substituted methyl) phosphonic acids or derivatives thereof bonded directly or indirectly, i.e., through a N-side chain to the nitrogen atom in the heterocyclic ring, for example those containing in the molecule at least one of the following units:



where represents a heterocyclic ring having a nitrogen atom on the ring; —R'N— represents an amino-terminated side chain attached directly to the ring nitrogen (which side chain may or may not be present); and



represents a methyl (or substituted methyl) phosphonic acid group where M is hydrogen, an alcohol or a salt moiety, and X and Y are hydrogen or a substituted group such as alkyl, aryl, etc., of which one or two units may be present depending on the available nitrogen bonded hydrogens, and to uses for these compounds, for example, as scale inhibitors, corrosion inhibitors, etc.

3,674,805
METHOD OF PREPARING POLY(COPPERPHTHALOCYANINE)

Richard V. Webb, and Donald C. Batesky, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Sept. 2, 1969, Ser. No. 854,738
Int. Cl. C09b 17/04
U.S. Cl. 260—314.5 R 8 Claims

Poly(copperphthalocyanine) is prepared by reaction of 1,2,4,5-tetrabromobenzene and cuprous cyanide in an N,N-dialkylamide, such as N,N-dimethylformamide or N,N-dimethylacetamide, which serves as both solvent and catalyst for the reaction. The reaction can be carried out at atmospheric pressure with temperature control provided by refluxing the reaction mixture so that it is well suited to use in commercial scale production.

3,674,806
1,3,3,4,4-PENTASUBSTITUTED PYRROLIDINES

Herbert J. Bluhm, and Eugene R. Fluck, both of Winston-Salem, N.C., assignors to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.

Filed April 30, 1969, Ser. No. 820,620
Int. Cl. C07d 27/02
U.S. Cl. 260—326.8 5 Claims

Novel 1,3,3,4,4-pentasubstituted pyrrolidines having pharmacological activity.

3,674,807
1-P-(ω-AMINOALKYL)PHENYL-CYCLOHEXANES, CYCLOHEXENES AND CYCLOHEXANOLS

Mario G. Buzzolini, Morristown, N.J., assignor to Sandoz-Wander, Inc., Hanover, N.J.

Filed Aug. 15, 1969, Ser. No. 850,675
Int. Cl. C07d 27/04
U.S. Cl. 260—326.5 M 12 Claims

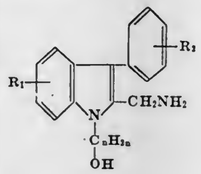
1-p-(ω-aminoalkyl)phenyl-substituted and unsubstituted cyclohexanes, cyclohexenes and cyclohexanols, e.g., 2-[4-(1-cyclohexen-1-yl)cyclohexyloxy]-N,N,-2-trimethyl-propylamine hydrochloride. The compounds are useful as hypolipidemic agents.

3,674,808
1-HYDROXYALKYL-2-AMINOMETHYL-INDOLE DERIVATIVES

Shigeho Inaba, Takarazuka; Mitsuhiro Akatsu, Ikeda, and Hisao Yamamoto, Nishinomiya, all of Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan

Filed Sept. 8, 1970, Ser. No. 70,564
Int. Cl. C07d 27/56
U.S. Cl. 260—326.15 4 Claims

Novel 1-hydroxyalkyl-2-aminomethylindole derivatives represented by the formula.



wherein R_1 and R_2 each represents hydrogen, halogen, C_1-C_4-alkyl, trifluoromethyl or nitro, and *n* represents an integer of 1 to 4, or salts thereof, and a process for producing thereof.

The 1-hydroxyalkyl-2-aminomethylindole derivatives are very useful intermediates for producing 1-hydroxyalkyl-1,4-benzodiazepin-2-one derivatives having prominent effects as tranquillizers, muscle relaxants, antispasmodics, anticonvalsants and hypnotics.

1-Hydroxyalkyl-1,4-benzodiazepin-2-one derivatives are prepared by oxidizing the 1-hydroxyalkyl-2-aminomethylindole.

3,674,809
N-(2-FLUOROETHYL)-N-[2-(3-INDOLE)ETHYL] AMINES

Zinon B. Papanastassiou, Lexington, and John L. Neumeyer, Wayland, both of Mass., assignors to Arthur D. Little Inc., Cambridge, Mass.

Division of Ser. No. 728,818, May 13, 1968, Pat. No. 3,591,603. This application July 30, 1970, Ser. No. 64,897
Int. Cl. C07d 27/56
U.S. Cl. 260—326.15 2 Claims

New 3-indoleglyoxamides and (3-indole)-lower-alkylamines having useful C.N.S. depressant activity and prepared, respectively, by reaction of a 3-indoleglyoxalyl halide or a (3-indole)-lower-alkyl halide with an appropriate amine.

3,674,810
4-CHLORO-5-(2-METHYLENE-BUTYRYL)-BENZO(6)THIOPHENE-2-CARBOXYLIC ACIDS

Janos Zergenyi, Riehen, and Ernst Habicht, Oberwil, both of Switzerland, assignors to Geigy Chemical Corporation, Ardsley, N.Y.

Division of Ser. No. 746,262, July 22, 1968, Pat. No. 3,580,931. This application Aug. 19, 1970, Ser. No. 65,342
Int. Cl. A61k 27/00; C07d 63/22
U.S. Cl. 260—330.5 1 Claim

The production of 5-(2-methylene-alkanoyl)-benzofuran-, 5-(2-methylene-alkanoyl)-indole- and 5-(2-methylene-alkanoyl)-benzo[b]thiophene-2-carboxylic acids by reaction of the corresponding 5-(2-dimethylaminomethyl-alkanoyl)-derivatives with sodium acetate in the glacial acetic acid and their pharmaceutically acceptable salts with bases, a method of producing a diuretic and saluretic effect in mammals comprising administering said compounds to said mammals and pharmaceutical compositions containing said compounds are described. A typical embodiment is 5-(2-methylene-butyryl)-6-methyl-benzofuran-2-carboxylic acid.

3,674,811
HETEROCYCLIC COMPOUNDS

Joerg Kern, Oberwil/Basel-land, Switzerland, assignor to CIBA-GEIGY Corporation, Basel, Switzerland

Filed Oct. 22, 1969, Ser. No. 868,590
Claims priority, application Switzerland, Nov. 1, 1968, 16332/68
Int. Cl. C07d 87/54
U.S. Cl. 260—338 3 Claims

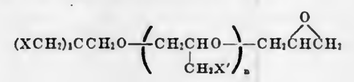
Heterocyclic compounds containing a hetero-ring with eight ring members, namely N,N'-substituted 2,5-dioxa-3,7-diazacyclooctanes are provided. These compounds are manufactured by eliminating water from the N,N-dimethylol compounds or the mixtures for the formation of these N,N-dimethylol compounds from formaldehyde and the corresponding amides or carbamic acid esters. The heterocyclic compounds are suitable as finishing agents for cellulose-containing materials, e.g., for creaseproofing, softening, hydrophobizing or oleophobizing textiles. Furthermore they may be useful as flameproofing or antimicrobical agents, or as intermediates in the manufacture of various products.

3,674,812
HALOGENATED EPOXIDES

Carl L. Gibbons, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Sept. 21, 1970, Ser. No. 74,205
Int. Cl. C07d 1/18
U.S. Cl. 260—348 R 7 Claims

Trihaloneopentyl alcohol is reacted with epihalohydrin and then with base to give an adduct of the formula



where each X and X′ is independently Br or Cl and *n* is an integer of 0 to about 10.

Such compounds are useful as plasticizers for polyvinyl chloride, as fire retardants for polyesters, and as intermediates.

3,674,813
METHOD OF PRODUCING PROPYLENE OXIDE, PROPYLENEGLYCOL AND ITS ESTERS

Erna Albertovna Bljumberg, Leninsky prospekt, 57, kv. 10; Alexandr Vasilievich Bobolev, Leninsky prospekt, 30, kv. 104; Svetlana Pavlovna Boboleva, Leninsky prospekt, 30, kv. 104, and Nikolai Markovich Emanuel, Vorobievskoe shosse, 26, kv. 44, all of Moscow, U.S.S.R.

Filed June 19, 1967, Ser. No. 647,250

Claims priority, application U.S.S.R., June 20, 1966, 1085374; June 20, 1966, 1096534

Int. Cl. C07d *1/12, 1/08, 31/20, 27/12*

U.S. Cl. 260—348.5 **8 Claims**

Propylene oxide, propylene glycol and esters thereof are produced by oxidizing propylene with an oxygen containing gas in an inert solvent at a temperature of at least 120° C. and a pressure of 50 to 10 atm in the presence of fluorine containing catalysts.

3,674,814
PREPARATION OF DIHYDROTEREPHTHALATES

Gerald Richard Aldridge, Elizabeth; Felix Frederick Ehrich, Westfield, and William Scott Struve, Chatham, all of N.J., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Jan. 19, 1970, Ser. No. 4,115

Int. Cl. C07c *49/64*

U.S. Cl. 260—396 N **7 Claims**

A process for preparing a dialkyl 2,5-diarylamino-3,6-dihydroterephthalate by condensing an arylamine with a dialkyl succinylsuccinate in the presence of a salt formed from trifluoroacetic acid and a secondary or tertiary amine, as a catalyst. This results in improved yields and purity of products obtained by subsequent pyrolysis of the terephthalates.

3,674,815
UNSATURATED 22-GUANIDYL STEROIDS

Rainer Philippson, Bergkamen; Helmut Hauser, Dortmund; Heinz Gibian, Berlin; Emanuel Kaspar, Kamen, and Hans-Joachim Kessler, Berlin, all of Germany, assignors to Schering AG, Berlin, Germany

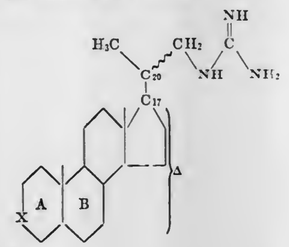
Filed April 30, 1970, Ser. No. 33,488

Claims priority, application Germany, April 30, 1969, P 19 22 457.8

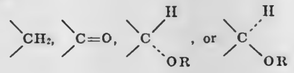
Int. Cl. C07c *169/38*

U.S. Cl. 260—397 **14 Claims**

22-Guanidyl steroids of the formula



wherein X is



in which R is a hydrogen atom or an acid residue and Δ represents a double bond present in at least one of rings A and B and between carbon atoms C_{17} and C_{20}, and the acid addition salts thereof, have anti-bacterial, anti-fungal and anti-trichomonadial activity.

3,674,816
ANNULENE STEROIDS, INTERMEDIATES, AND METHOD OF MAKING

John A. Edwards, Los Altos; John H. Fried, Palo Alto, and William McCrae, Los Altos, all of Calif., assignors to Syntex Corporation, Panama, Panama

Continuation-in-part of Ser. No. 714,078, March 18, 1968. This application Jan. 28, 1970, Ser. No. 14,571

Int. Cl. C07c *171/07, 169/20, 169/20*

U.S. Cl. 260—397.4 **25 Claims**

3-Keto-5,19-cyclo-androsta-1,7-diene and -1,6-diene steroids; 3-lower alkoxy-5,19-cyclo-5,10-secoandrosta-1(10),2,4,7-tetraene and -1(10),2,4,6-tetraene steroids; 3-carboxylic acyloxy-5,19-cyclo-5,10-seco-androsta-1(10),2,4,7-tetraene and -1(10),2,4,6-tetraene steroids; and 3-desoxy-5,19-cyclo-5,10-seco-androsta-1(10),2,4,7-tetraene and -1(10),2,4,6-tetraene steroids and methods of preparing these steroids and converting them to useful 5,10-sec-5,19-cycloandrosta-(10),2,4,6-pentaene steroids. The above compounds have utility as intermediates in the production of 5,10-sec-5,19-cycloandrosta-1(10),2,4,6-pentaene steroids which have utility in the treatment of conditions related to estrogen deficiencies and in the control and regulation of fertility.

3,674,817
NITRO-STEROIDS AND PROCESS FOR THEIR PREPARATION

Giuliana Baldratti; Alberto Consonni, and Roberto Sciaky, all of Milan, Italy, assignors to Societa Farmaceutici Italia, Milan, Italy

Filed June 8, 1970, Ser. No. 44,629

Claims priority, application Italy, June 11, 1969, 18045 A/69

Int. Cl. C07c *169/32*

U.S. Cl. 260—397.4 **16 Claims**

Some 7ξ-nitro-1,3,5(10)-estratrienes and a process for their preparation. The compounds inhibit gonatropin and ovulation both orally and parenterally.

3,674,818
SYNTHESIS OF A MATERIAL WITH JUVENILE HORMONE ACTIVITY

John H. Law, Chicago, Ill., assignor to The United States of America as represented by the Secretary of the Department of Health, Education and Welfare

Continuation of Ser. No. 626,677, March 29, 1967, abandoned. This application Dec. 5, 1969, Ser. No. 878,990

Int. Cl. C11c *3/00*

U.S. Cl. 260—408 **6 Claims**

Synthesis of a material with juvenile hormone activity by reacting crude or purified farnesoic acid with alcoholic hydrogen chloride wherein the alcohol is selected from the group consisting of ethanol, methanol, n-propanol and n-pentanol. Various comparisons are shown with other related compounds and an exemplary list of insects sensitive to the material is set forth.

3,674,819
PROCESS OF PREPARING ESTERS OF 3,7,11-TRIMETHYL-7,11-DICHLORO-2-DODECENE-1-OIC ACID

Miroslav Romanuk; Karel Slama, and Frantisek Sorm, all of Prague, Czechoslovakia, assignors to Ceskoslovenska Akademie Ved, Prague, Czechoslovakia

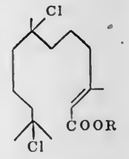
Filed April 30, 1969, Ser. No. 820,637

Claims priority, application Czechoslovakia, May 3, 1968, 3268/68

Int. Cl. C11c *3/00*

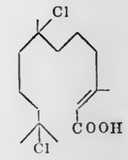
U.S. Cl. 260—408 **1 Claim**

Process for the preparation of esters of 3,7,11-trimethyl-7,11-dichloro-2-dodecene-1-oic acid having the formula



(I)

wherein R is alkyl, cycloalkyl, aryl or aralkyl which comprises reacting farnesylic acid with hydrogen chloride in the presence of acetic acid to thereby form 3,7,11-trimethyl-7,11-dichloro-2-dodecene-1-oic acid having the formula



(II)

reacting said 3,7,11-trimethyl-7,11-dichloro-2-dodecene-1-oic acid with a chlorination agent to thereby form the corresponding chloride and converting the chloride to the ester by reaction with an alcohol for producing the desired ester.

The 3,7,11-trimethyl-7,11-dichloro-2-dodecene-1-oic acid is novel.

The esters can be employed to prevent the maturation of insects, i.e., larvae so treated do not attain adulthood.

3,674,820
FLUORINATED ALCOHOLS AND THEIR ESTERS

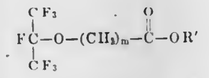
Allen G. Pittman, El Cerrito, and William L. Wasley, Berkeley, both of Calif., assignors to The United States of America as represented by the Secretary of Agriculture

Division of Ser. No. 703,199, Nov. 22, 1967, Pat. No. 3,527,742, which is a division of Ser. No. 477,331, Aug. 4, 1965, Pat. No. 3,424,785. This application July 14, 1969, Ser. No. 841,616

Int. Cl. C07c *69/66*; **C11c** *3/04*

U.S. Cl. 260—408 **4 Claims**

Fluorinated ketones are converted into ether-esters, using the following typical plan: Hexafluoroacetone is reacted with an alkali metal fluoride, and the resultant intermediate is reacted with an omega-halo-aliphatic carboxylic acid ester, yielding



wherein *m* is 1–20, R′ is a hydrocarbon group.

3,674,821
PRODUCTION OF HIGH STABILITY LIQUID VEGETABLE OILS

Chester M. Gooding, Westfield, N.J., assignor to CPC International Inc.

Filed Jan. 5, 1971, Ser. No. 104,140

Int. Cl. C11c *3/12*; **C11b** *7/00*

U.S. Cl. 260—409 **6 Claims**

A process for obtaining a high stability liquid vegetable oil comprising partially hydrogenating a winterized vegetable oil having an iodine value of about 100 to 120 to an iodine value of about 70 to 90, cooling the oil and separating the solid components.

3,674,822
MONOMERIC AND POLYMERIC BIS (ARYL-OXYARYL) TIN COMPOUNDS

John R. Stemniski, Swampscott, Mass., assignor to Monsanto Research Corporation, St. Louis, Mo.

Filed Sept. 19, 1963, Ser. No. 310,129

Int. Cl. C07f *7/22*

U.S. Cl. 260—429.7 **3 Claims**

This invention relates to disubstituted tin compounds of the formula $[R_1—Sn—R_2]n$ wherein each of R_1 and R_2 is a substituent selected from the class consisting of aryloxyaryl radicals containing from two to three benzene rings, wherein each said aryl radical is an aromatic hydrocarbon radical, and *n* is an integer with a value of at least 1. These compounds are useful as antioxidants for polyphenyl ether base fluids.

3,674,823
COMPOUND OF GERMANIC ACID AND CYSTEINE

Kazuo Makabe, Kamakura, Japan, assignor to Daiichi Yakuhin Sangyo Kabushiki Kaisha, Tokyo-to, Japan

Filed Feb. 20, 1970, Ser. No. 13,182

Claims priority, application Japan, April 2, 1969, 44/25338

Int. Cl. C07f *7/00*; **A61k** *27/00*

U.S. Cl. 260—429 R **2 Claims**

Novel compound of germanic acid and cysteine which displays therapeutic effects for inflammatory diseases and water-eczema (caused by pompholyx trichophytia) and process for preparation thereof by the addition of cysteine to an aqueous solution of germanic acid which is obtained by dissolving germanium dioxide in heated water.

3,674,824
LONG CHAIN HYDROCARBON DITHIOCARBAMATE ACCELERATORS AND METHOD OF MAKING SAME

Roger W. Amidon, Oxford, and Richard A. Gencarelli, Cheshire, both of Conn., assignors to Uniroyal, Inc., New York, N.Y.

Filed Sept. 9, 1970, Ser. No. 70,935

Int. Cl. C07f *3/06, 3/08, 15/02*

U.S. Cl. 260—429 K **35 Claims**

Long chain hydrocarbon dithiocarbamate accelerators such as zinc N-dodecyl-N-isopropyldithiocarbamate useful in the sulfur cure of blends of EPDM with highly unsaturated rubbers such as SBR, NR, etc. In making the accelerators high speed agitation is employed in the salt-forming step to obtain small particle size salt substantially free from entrapped or occluded impurities.

3,674,825
HALO(ARYL)METAL COMPOUNDS AND METHOD OF PREPARATION

Peter S. Fitton, and Edward A. Rick, both of Charleston, W. Va., assignors to Union Carbide Corporation, New York, N.Y.

Filed Sept. 30, 1969, Ser. No. 862,525

Int. Cl. C07f *15/00, 15/04*

U.S. Cl. 260—429 R **22 Claims**

Halo(aryl)metal compounds are readily produced when a Group VIII metal or a compound or complex of a Group VIII

metal is reacted with an aryl halide substituted with electron-withdrawing groups. The compounds have utility as catalysts for the oxidation of methyl benzenes and as intermediates in the arylation of olefins.

3,674,826

ANTIKNOCK TETRAMETHYL LEAD CONCENTRATE

Wallace L. Richardson, Lafayette; George J. Kautsky, El Cerrito, and Maurice R. Barusch, Richmond, all of Calif., assignors to Chevron Research Company

Filed July 11, 1960, Ser. No. 41,780
Int. Cl. C07f 7/24
U.S. Cl. 260—437 S **3 Claims**

An antiknock concentrate consisting essentially of tetramethyl lead, halohydrocarbon scavenger and hydrocarbon liquid is disclosed.

3,674,827

PREPARATION OF AROMATIC ISOCYANATES

Velliyur Nott Padmanabha Rao, West Haven; John A. Scott, North Haven, and Benjamin M. Surowiecki, Jr., Meriden, all of Conn., assignors to Olin Mathieson Chemical Corporation

Filed Sept. 3, 1968, Ser. No. 757,105
Int. Cl. C07c 119/04
U.S. Cl. 260—453 PC **25 Claims**

In the process for preparing an organic isocyanate by reacting an organic nitro compound with carbon monoxide in the presence of a catalyst, improved recovery of the organic isocyanate is obtained when the reaction is carried out in the presence of discrete particles of an oxide of iron. Further improvement in the recovery is also obtained when an oxide of molybdenum, an oxide of chromium, or mixture thereof is also added to the reaction mixture along with the oxide of iron.

3,674,828

PREPARATION OF LIQUID DIPHENYLMETHANE DIISOCYANATE COMPOSITIONS

Martin Frederick Brooks, and Vincent Kerrigan, both of Manchester, England, assignors to Imperial Chemical Industries Limited, London, England

Filed May 2, 1969, Ser. No. 821,457
Claims priority, application Great Britain, May 14, 1968, 22,884/68
Int. Cl. Co7c 119/04
U.S. Cl. 260—453 P **6 Claims**

A process for the manufacture of a liquid diphenylmethane diisocyanate composition which comprises heating at elevated temperature, a diphenylmethane diisocyanate which is solid or partially solid at 15° C., and a N,N'-disubstituted thiourea or N¹,N⁴-disubstituted-bis-thiourea in an amount of from 0.25 to 20 percent by weight of the diphenylmethane diisocyanate and distilling out an isothiocyanate from the heated mixture.

3,674,829

CHLOROSULPHONYL VINYL ISOCYANATES AND A PROCESS FOR THEIR PRODUCTION

Dieter Arlt, Cologne-Buchheim, Germany, assignor to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed June 3, 1969, Ser. No. 830,113
Claims priority, application Germany, June 6, 1968, P 17 68 608.7
Int. Cl. C07c 119/04, 143/70
U.S. Cl. 260—453 AL **6 Claims**

Chlorosulphonyl vinyl isocyanates are produced by reacting either an α-halogenated isocyanide dichloride or an α, β-unsaturated isocyanide dichloride with a halogen sulphonic acid. The chlorosulphonyl vinyl isocyanates produced are useful in the preparation of plant protection agents, dyestuffs and detergents and as monomers for the production of plastics.

3,674,830

PRODUCTION OF ALPHA-NAPHTHYL METHANESULFONATE ESTERS

Jorge R. Muratorio, Buenos Aires, Argentina, assignor to Celanese Corporation, New York, N.Y.

Filed Sept. 24, 1969, Ser. No. 860,838
Int. Cl. C07c 143/68
U.S. Cl. 260—456 P **2 Claims**

Disclosed herein is a method of preparing alpha-naphthyl esters by the oxidation of naphthalene with bis-(methanesulfonyl peroxide). High ratios of the alpha to the beta-ester are prepared at high efficiencies and at reasonable temperatures by selecting certain solvents and by controlling certain other reaction variables. The alpha-naphthyl esters can be easily converted to alpha-naphthol.

3,674,831

PROCESS FOR PREPARATION OF METHYLCYCLOPENTANE AND METHYLCYCLOHEXANECARBOXYLIC ACIDS AND ESTERS

Leonard E. Rennick, Boothwyn, Pa., assignor to Sun Oil Company, Philadelphia, Pa.

Filed March 25, 1970, Ser. No. 22,677
Int. Cl. C07c 51/00
U.S. Cl. 260—468 CB **6 Claims**

A process for the preparation of methylcyclopentane and methylcyclohexane carboxylic acids or esters by reacting methylcyclopentane or methylcyclohexane with carbon monoxide at a temperature of from about −10° to +10° C. in the presence of a mixture of fluosulfonic acid and antimony pentafluoride, and drowning the reaction mixture in water or an alkanol.

3,674,832

CYCLOPROPANE CARBOXYLIC ACID DERIVATIVES

Margaret H. Sherlock, Bloomfield, and Nathan Sperber, North Caldwell, both of N.J., assignors to Schering Corporation, Bloomfield, N.J.

Filed Aug. 22, 1968, Ser. No. 754,743
Int. Cl. C07c 63/42, 69/76
U.S. Cl. 260—469 **9 Claims**

Disclosed herein are 2-(p-substituted phenyl)-cyclopropane carboxylic acids, which compounds are useful in alleviating inflammation and pain.

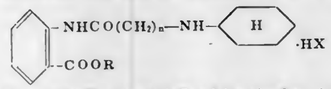
3,674,833

SALTS OF ETHYL O-(CYCLOHEXYLAMINO-ALKANOYLAMINO)-BENZOATE

Takeo Naito; Miyoshi Hirata, and Sumiro Isoda, all of Tokyo, Japan, assignors to Daiichi Seiyaku Co., Ltd., Tokyo, Japan

Filed Feb. 18, 1970, Ser. No. 12,424
Claims priority, application Japan, Feb. 21, 1969, 44/12593
Int. Cl. C07c 143/52
U.S. Cl. 260—470 **5 Claims**

Novel anthranilic derivatives represented by the formula:



wherein R, n, and X are as defined hereinafter, have been found to be especially effective anesthetic drugs for fish.

3,674,834

OXIMES OF 3,4-DIMETHOXYPHENYLPYRUVIC ACID ESTERS

Robert F. Parcell, Ann Arbor, Mich., assignor to Parke, Davis & Company, Detroit, Mich.

Filed March 30, 1970, Ser. No. 24,014
Int. Cl. C07c 131/00
U.S. Cl. 260—471 A **5 Claims**

Oximes of 3,4-dimethoxyphenylpyruvic acid, lower alkyl esters, and their salts. These compounds can be produced by

reacting a 3,4-dimethoxybenzylmalonic acid, di- (lower alkyl) ester with a lower alkyl nitrite in the presence of a base. The oximes are then converted by reductive acetylation, selective hydrolysis of the lower alkyl ester group, and acidification to N-acetyl-3-(3,4-dimethoxyphenyl)alanine. The latter compound is converted to 3-(3,4-dimethoxyphenyl)-L-alanine by the enzymatic action of an acylase and then to 3-(3,4-dihydroxyphenyl)-L-alanine by cleavage of the ether groups.

3,674,835

PROCESS FOR THE PRODUCTION OF GLYCOL ESTERS OF CARBOXYLIC ACIDS

Gunther Boehmke, Leverkusen-Steinbuechel, Germany, assignor to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Feb. 14, 1968, Ser. No. 705,310
Claims priority, application Germany, Feb. 24, 1967, E 51628
Int. Cl. C07c 69/00
U.S. Cl. 260—473 R **6 Claims**

The invention relates to a process for the production of glycol esters of carboxylic acids by reaction of a water-soluble alkylene oxide with an aqueous solution of an alkali metal or alkaline earth metal salt of a carboxylic acid at a pH value of from 6 to 10, the inorganic base liberated during the reaction being neutralized continuously.

3,674,836

2,2-DIMETHYL-ω-ARYLOXY-ALKANOIC ACIDS AND SALTS AND ESTERS THEREOF

Paul L. Creger, Ann Arbor, Mich., assignor to Parke, Davis & Company, Detroit, Mich.

Continuation-in-part of Ser. No. 730,946, May 21, 1968, abandoned. This application April 24, 1969, Ser. No. 819,126
Int. Cl. C07c 69/76
U.S. Cl. 260—473 G **7 Claims**

A series of 2,2-dimethyl-ω-phenoxyalkanoic acids and 2,2-dimethyl-ω-(disubstituted phenoxy)alkanoic acids having 3 to 6 methylene groups between the phenoxy group or 0 phenoxy group and the carbon atom substituted by two methyl groups; and their salts and esters. The compounds reduce serum triglyceride levels and can be produced by (a) reacting an alkali metal derivative of an isobutyric acid, salt, or ester with a phenoxyalkyl halide or a disubstituted phenoxyalkyl halide; (b) esterifying a carboxylic acid; or (c) hydrolyzing a carboxylate ester.

3,674,837

POLYESTERS WHICH CONTAIN HYDROXYL AND CARBON AMIDE GROUPS

Wolf-Dieter Wirth, Cologne, Stammheim, and Erwin Muller, Leverkusen, both of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed July 8, 1970, Ser. No. 53,280
Claims priority, application Germany, July 11, 1969, P 19 35 290.0
Int. Cl. C07c 101/26
U.S. Cl. 260—482 R **8 Claims**

Polyesters which contain hydroxyl and carbonamide groups are prepared by copolymerizing a lactone with a lactam in the presence of a low molecular weight initiator which contains at least two active hydrogen atoms at a temperature of from about 50° C. to about 300° C. These polyesters are particularly useful as plasticizers and stabilizers for polyvinyl chloride.

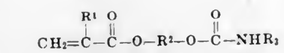
3,674,838

VINYL CARBAMYLOXY CARBOXYLATES

John David Nordstrom, Detroit, Mich., assignor to Ashland Oil, Inc., Ashland, Ky.

Division of Ser. No. 595,333, Nov. 18, 1966, Pat. No. 3,479,328. This application June 5, 1969, Ser. No. 830,880
Int. Cl. C07c 125/06
U.S. Cl. 260—482 C **8 Claims**

Unsaturated carbamyloxy carboxylates of the formula:



wherein R^1 is hydrogen, halogen, or a monovalent hydrocarbon radical of one to eight carbon atoms, and R^2 is a divalent hydrocarbon radical of one to 12 carbon atoms, and R^3 is a lower alkyl radical of one to eight carbon atoms, or, more preferably, hydrogen. These monomers are useful for preparing a variety of addition polymers.

3,674,839

PRODUCTION OF GLYCEROL ACETATES

Wilhelm Vogt, Efferen near Cologne; Kurt Sennewald, Hermulheim near Cologne, and Hermann Glaser, Lechenich near Cologne, all of Germany, assignors to Knapsack Aktiengesellschaft, Knapsack near Cologne, Germany

Filed Nov. 25, 1970, Ser. No. 92,573
Claims priority, application Germany, Dec. 1, 1969, P 19 60 142.4
Int. Cl. C07c 67/00
U.S. Cl. 260—491 **6 Claims**

Production of glycerol triacetate and glycerol diacetate by reacting allyl acetate, acetic acid and molecular oxygen at elevated temperatures in liquid phase. The compounds are more particularly produced by reacting a solution of allyl acetate in acetic acid with an oxygen/inert gas-mixture at 80° to 250° C. and under 1 to 200 atm. abs., in the absence of catalysts.

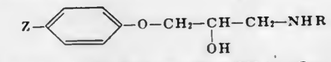
3,674,840

1-(PARA-ALKOXYALKOXY-PHENYL)-2-HYDROXY-3-ALKYLAMINOPROPANES AND THE SALTS THEREOF

Arne Elof Brandstrom, And Mattssonsgatan 13 B, S-415 06 Goteborg; Per Arvid Emil Carlsson, Torild Wulffsgatan 50, S-413 19 Goteborg; Stig Ake Ingemar Carlsson, Honekullavagen 43 F, S-435 00 Molnlycke; Hans Rudolf Corrodi, Kobbehallsvagen 13, S-436 00 Askim; Lars Ek, Syrnegatan 2 A, S-434 00 Kungsbacka; Bo Robert Lamm, Fridkullagatan 23 A, S-412 62 Goteborg, and Bengt Arne Hjalmar Ablad, Folke Bernadottes gata 2, S-411 28 Goteborg, all of Sweden

Filed May 19, 1970, Ser. No. 38,884
Claims priority, application Sweden, May 21, 1969, 7153/69
Int. Cl. C07c 93/06
U.S. Cl. 260—501.17 **8 Claims**

Compounds of the formula:



where Z is an oxaradical (a) R—O—$(CH_2)_n$—O—, (b) R—O—$(CH_2)_m$—O—$(CH_2)_n$—O—; *n* is an integer equal to 2–3; *m* is an integer equal to 2–3 and R is an alkyl radical having one to five carbon atoms; and pharmaceutically acceptable, non-toxic, acid addition salts thereof. Illustrative are compounds where R is isopropyl or t-butyl and Z is CH_3—O—CH_2—CH_2—O—, or CH_3—O—CH_2CH_2—O—CH_2CH_2—O—. Also pharmaceutical compositions containing these compounds, and the use thereof in treating cardiovascular diseases.

3,674,841

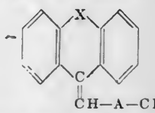
10,11-DIHYDRO-,9,10-DIHYDRO-10,10-DIMETHYL-5-OR 9-[3-AMINO-2-OXO -OR-HYDROXY-PROPYLIDENE] -5H-DIBENZO[A,D] CYCLOHEPTENES AND-ANTHRACENES

Jacques Robert Boissier, Paris, and Roger Ratouis, Saint-Cloud, both of France, assignors to Societe Anonymedite: Roussel-UCLAF, Paris, France

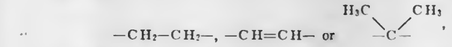
Filed March 3, 1969, Ser. No. 804,024
Int. Cl. C07c 91/02, 97/10
U.S. Cl. 260—501.12 **5 Claims**

The products are new tricyclic amino compounds and acid addition salts thereof, said tricyclic amino compounds cor-

responding to the general formula :



where X represents one of the following divalent hydrocarbon radicals :



A represents a carbonyl (CO) or a hydroxymethylene (CHOH) group and R represents a monoalkylamino or a dialkylamino radical.

They are very useful substances for human therapeutics, namely as antidepressants and antianxiety agents.

The process for preparing compounds of formula (1) and their salts is disclosed.

3,674,842

HEXAHYDROINDANE DICARBOXYLIC ACID DERIVATIVES

Shohei Hayakawa, Amagasaki; Yoshiko Kanematsu, Kyoto, and Takashi Fujiwara, Amagasaki, all of Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

Division of Ser. No. 771,994, Oct. 29, 1968, Pat. No. 3,560,558, which is a continuation-in-part of Ser. No. 478,735, Aug. 10, 1965, abandoned. This application Sept. 25, 1970, Ser. No. 75,728

Int. Cl. C07c *61/32*

U.S. Cl. 260—514 R **3 Claims**

4α-(-Carboxyethyl)-5-oxo-(1α-hydrogen- or 1α-hydroxyl)-7αβ-methyl-3αμ-hexahydroindane-carboxylic acids or lower alkanoic acids, which can be prepared by one-step fermentative degradation of the bile acids or their homologues, are useful as cholesterol lowering agents.

3,674,843

SUBSTITUTED PHENYLSULFAMYL SALICYLIC ACIDS AND DERIVATIVES THEREOF

Tsung-Ying Shen; Bruce E. Witzel, and Gordon L. Walford, all of Westfield, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 836,605, June 25, 1969. This application April 20, 1970, Ser. No. 30,298

Int. Cl. C07c *143/78*

U.S. Cl. 260—519 **13 Claims**

Substituted phenyl sulfamyl or sulfonamido salicylic acids and non-toxic pharmaceutical accepted salts, esters, amides and various derivatives thereof are claimed. Also a method of treating inflammation which comprises administering various substituted phenyl sulfamyl or sulfonamido salicylic acids and the various derivatives are also claimed. The substituted phenyl sulfamyl or sulfonamido salicylic acids described herein have anti-inflammatory, anti-pyretic and analgesic activity.

3,674,844

SALICYLIC ACID DERIVATIVES

Tsung-Ying Shen, Westfield; Howard Jones, Matawan; Bruce E. Witzel, and Gordon L. Walford, both of Westfield, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 836,623, June 25, 1969. This application April 20, 1970, Ser. No. 30,322

Int. Cl. C07c *103/30*

U.S. Cl. 260—519 **8 Claims**

New substituted salicylic acids and non-toxic pharmaceutically acceptable salts, esters, and amides derived therefrom. The substituted salicylic acids described herein are useful as anti-inflammatory compounds. Also included herein are methods of preparing said salicylic acid compounds, pharmaceutical compositions having said salicylic acid compounds as an active ingredient and methods of treating inflammation by administering these particular compositions to patients.

3,674,845

METHOD OF PRODUCING AROMATIC CARBOXYLIC ACIDS FROM ALKYLBENZENES

Cesare Reni, Busto Arsizio; Giorgio Gualdi, Verona, and Luigi Lugo, Milan, all of Italy, assignors to Societa' Italiana Resine S.p.A., Milan, Italy

Filed June 30, 1970, Ser. No. 51,385

Claims priority, application Italy, July 7, 1969, 19284 A/69

Int. Cl. C07c *63/02*

U.S. Cl. 260—524 R **10 Claims**

A process for the continuous production of aromatic carboxylic acids by the oxidation of alkyl benzenes in an aliphatic carboxylic acid environment and in the presence of catalysts consisting of heavy metal salts in which an activator selected from chlorides and bromides of chloroacetic and bromoacetic acids is present in the reaction mixture.

3,674,846

SYNTHESIS OF SUBSTITUTED 7-OCTEN-1-OLS

Gottfried J. Brendel, Baton Rouge, La., assignor to Ethyl Corporation, New York, N.Y.

Filed Nov. 10, 1969, Ser. No. 875,554. The portion of the term of this patent subsequent to Feb. 3, 1987, has been disclaimed.

Int. Cl. C07c *33/02*; **C11d** *3/50*

U.S. Cl. 260—632 R **16 Claims**

Novel compounds, 7-octen-1-ols having one or two methyl groups in the 6 position are prepared by hydrolyzing an intermediate formed by reaction among aluminum, tetrahydropyran or an alkyl substituted tetrahydropyran, a hydrocarbyl aluminum hydride and butadiene or butadiene substituted on either or both of the internal carbon atoms. During at least a portion of the reaction period the reaction temperature must be in the range of from about 185° to about 210°C. so that there is formed an intermediate condensation product via cleavage of the ring of the tetrahydropyran reactant. The 7-octen-1-ols are useful as perfumes, monomers, chemical intermediates and surface active agents.

3,674,847

PROCESS FOR UREA PRODUCTION IN COMBINATION WITH AMMONIA SYNTHESIS

Petrus J. C. Kaasenbrood, Sittard, and Petrus J. M. van Nassau, Geleen, both of Netherlands, assignors to Stamicarbon N.V., Heerlen, Netherlands

Filed March 17, 1969, Ser. No. 807,749

Claims priority, application Netherlands, March 16, 1968, 6803775

Int. Cl. C07c *127/04*

U.S. Cl. 260—555 A **6 Claims**

A process for the production of urea from ammonia and carbon dioxide, combined with the preparation of ammonia, is disclosed wherein ammonium carbamate in the urea solution produced is removed from said urea solution by subjecting the urea solution to two stripping stages. The first stripping stage uses the urea synthesis starting gas, which contains hydrogen, nitrogen and carbon dioxide. The second stripping stage, which is at substantially the same pressure as the first stripping stage, uses a gas containing at least one of the components needed in the ammonia synthesis. This second stripping gas is substantially free of ammonia and carbon dioxide. The disclosed process has the advantage, compared to prior processes, that the stripping gases need not be compressed at relatively high temperatures.

3,674,848

HYDRATION OF NITRILES USING METAL SALTS OF CATION EXCHANGE RESINS

Erwin Frederick Schoenbrunn, Ridgefeld, and Vinod Tarkeshwar Sinha, Stamford, both of Conn., assignors to American Cyanamid Company, Stamford, Conn.

Filed Aug. 19, 1970, Ser. No. 65,283

Int. Cl. C07c *103/30*

U.S. Cl. 260—558 R **10 Claims**

Solid catalysts for hydration of nitriles to amides comprise metal salts of cation exchange resins. Group I B and II B metals are used with either strong acid or weak acid cation exchange resins. A variety of organic nitriles may be used in the process. Detailed examples describe preparation of several catalysts and the synthesis of acrylamide, acetamide and benzamide. The reactants in liquid solution are contacted with the solid catalyst at 70°–180° C.

3,674,849

2'-5'-DIHALO-3-TERT. ALKYL-5-NITROSALICYLANILIDES

Walter A. Darlington, St. Louis, and John P. Chupp, Kirkwood, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 776,276, Nov. 15, 1968. This application Aug. 3, 1970, Ser. No. 67,651

Int. Cl. C07c *103/26*

U.S. Cl. 260—559 S **5 Claims**

Compounds having a 2'-5'-dihalo-3-tert. alkyl-5-nitrosalicylanilido nucleus useful in combatting chewing insect larvae species of the order Lepidoptera, particularly species of the family Noctuidae.

3,674,850

SUBSTITUTED SALICYLANILIDES

David Richard Duke Osborne, Bedford, England, assignor to Lever Brothers Company, New York, N.Y.

Continuation of Ser. No. 764,040, Sept. 25, 1968, Continuation of Ser. No. 511,989, Dec. 6, 1965. This application Dec. 22, 1969, Ser. No. 887,427

Claims priority, application Great Britain, Dec. 7, 1969, 49,805/64

Int. Cl. C07c *103/38*

U.S. Cl. 260—559 S **21 Claims**

The specification discloses salicylanilides and halogenated salicylanilides wherein either or both the aniline or salicyl rings are substituted with a member of the class consisting of phenoxy and halophenoxy groups and the use of these compounds as effective germicides particularly in detergent compositions, such as soap bars.

3,674,851

PROCESS FOR THE PREPARATION OF ALIPHATIC TERTIARY AMIDES

Saburo Senoo; Yohei Fukuoka, and Katuyoshi Sasaki, all of Tokyo, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed March 31, 1970, Ser. No. 24,368

Claims priority, application Japan, April 2, 1969, 44/24831; April 2, 1969, 44/24832; April 2, 1969, 44/24833

Int. Cl. C07c *103/00*

U.S. Cl. 260—561 R **7 Claims**

This invention discloses a process for the preparation of aliphatic tertiary amides which comprises reacting a fatty acid represented by the general formula R^1COOH wherein R^1 is a hydrogen atom or an alkyl group having one to six carbon atoms and ammonia directly with an alcohol represented by the general formula R^2OH wherein R^2 is an alkyl group having one to four carbon atoms at a temperature of 100° C. to 800° C. under pressure, said ammonia and alcohol being employed in amounts of 0.8 to five moles and 1.5 to ten moles per mole of fatty acid, respectively. In this process, there may be additionally employed a catalyst to accelerate the rate of reaction. Also, in this invention all or part of starting materials remaining unreacted and/or by-products may be recycled to the starting reaction mixture, thereby enabling the yield of the desired aliphatic tertiary amides to be remarkably improved. In addition, the removal of the water which is produced during the course of reaction assists the present process to be further improved. Thus, according to the present invention, aliphatic tertiary amides can be simply produced with excellent yields from the raw materials which are readily available at low cost, as opposed to the conventional process employing as a starting material dialkylamines which are difficult to obtain in the purified form.

3,674,852

PROCESS FOR PREPARING MESIDINE

Frederick John Averill, and Norman Riley, both of Manchester, England, assignors to Imperial Chemical Industries Limited, London, England

Filed May 19, 1969, Ser. No. 826,004

Claims priority, application Great Britain, May 29, 1968, 25,777/68

Int. Cl. C07c *85/00*

U.S. Cl. 260—578 **8 Claims**

Manufacture of mesidine by isomerization of N,N-dimethyl o-toluidine or -p-toluidine at above 200° C. preferably in presence of a primary or secondary amine as reaction moderator and (when nonferrous lined apparatus is used) in presence of iron or a salt of iron.

3,674,853

SULFUR-CONTAINING CARBORANE DERIVATIVES AND THE METHOD OF PREPARATION

Clayton O. Obenland, Williamsville, N.Y.; Stelvio Papetti, Leominster, Mass., and Hampton D. Smith, Jr., Anaheim, Calif., assignors to Olin Corporation

Continuation-in-part of Ser. No. 554,151, May 31, 1966, abandoned. This application Sept. 25, 1970, Ser. No. 75,701

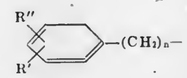
Int. Cl. C07f *5/02*

U.S. Cl. 260—606.5 B **21 Claims**

This invention relates to compounds of the formula:

$$RSCB_{10}H_aX_{10-a}CSR$$

wherein R is selected from the group consisting of hydrogen, alkyl having from one to 18 carbon atoms, and the radical:



wherein R' and R" are independently selected from the group consisting of hydrogen and alkyl having from 1 to 5 carbon atoms, and *n* is an integer from 0 to 1 inclusive: X is selected from the group consisting of chlorine, bromine and iodine, and *a* is an integer from 0 to 10 inclusive and to the method of preparing such compounds. It also relates to the metallothiocarboranes having the general formula:

$$MSCB_{10}H_aX_{10-a}CSM$$

wherein M is an alkali metal selected from the group consisting of sodium, lithium and cesium and X and *a* are as previously defined. These compounds find utility as aircraft gas turbine fuels and wood preserves.

3,674,354
(3,5 DIALKYL-4-HYDROXY BENZYL-)TRIALKYL PHOSPHONIUM CHLORIDES AND CORRESPONDING ZWITTERIONS
William H. Starnes, Jr., Baytown, Tex., assignor to Esso Research and Engineering Company
Division of Ser. No. 845,486, July 28, 1968. This application Jan. 25, 1971, Ser. No. 109,556
Int. Cl. C07f 9/54; C07d 105/02
U.S. Cl. 260—606.5 F 4 Claims

This invention relates to (3,5-dialkyl-4- hydroxy benzyl) trialkyl Phosphonium Chlorides and corresponding zwitterions which are useful as intermediates in the preparation of alkenyl phenols. The alkenyl phenols find utility as antioxidants for hydrocarbons and polyolefins.

3,674,855
ORGANIC DIACYL PEROXIDES
Hendrik Van Driel, Hengelo, Netherlands, assignor to N.V. Chefaro Maatschappij, Rotterdam, Netherlands
Filed July 25, 1969, Ser. No. 845,057
Claims priority, application Great Britain, July 30, 1968, 36,204/68
Int. Cl. C07c 147/02
U.S. Cl. 260—607 A 6 Claims

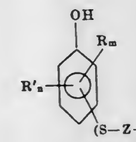
Organic diacyl peroxides containing one or more sulphonyl groups provided which do not explode upon moderate heating, have decreased shock-sensitivity and increase storage stability, and which function as very reactive polymerization initiators or catalysts. The improved diacyl peroxides are produced by reacting the corresponding carboxylic acid halide with hydrogen peroxide in the presence of an acid acceptor at a temperature of from −70° C. to 25° C. and then isolating the peroxide thus formed.

3,674,856
REACTION OF 1, 3-BUTADIENE AND ORGANIC SULFONYL HALIDES
Charles H. Chang, Piscataway, N.J., and David I. Randall, Easton, Pa., assignors to RAF Corporation, New York, N.Y.
Continuation-in-part of Ser. No. 605,623, Dec. 29, 1966, abandoned. This application Oct. 2, 1969, Ser. No. 863,383
Int. Cl. C07c 147/04
U.S. Cl. 260—607 A 2 Claims

Compounds of the formula Y_n-R-$SO_2CH_2CH{=}CHCH_2X$ wherein X is Cl or Br; Y is Cl, Br, or nitro; R is alkylene or cycloalkylene of one to six carbon atoms; and *n* is an integer of 1 to 5, such as 4-chlorobut-2-enyl-2′-chloroethyl sulfone, prepared for example by reaction of halo- or nitro-substituted alkylene or cycloalkylene sulfonyl halide with butadiene. Such compounds are useful as aquatic herbicides, pesticides, and fiber-reactive dyestuff intermediates.

3,674,857
(((ALKYLTHIO) ALKYL)THIO)PHENOLS
Walter Reifschneider, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.
Filed March 2, 1970, Ser. No. 15,845
Int. Cl. C07c 149/36
U.S. Cl. 260—609 F 10 Claims

Novel (((alkylthio)alkyl)thio)phenols corresponding to the formula



wherein R represents a lower alkyl, lower alkoxy, fluoro, chloro, bromo or iodo group; R′ represents an R or a cyclopentyl, cyclohexyl, phenyl, naphthyl, nitro, hydroxy, carboxy, carbalkoxy, trifluoromethyl or cyano group; *m* represents an integer fro 0 to 3; *n* represents an integer fro 0 to 2; Z represents a one to four carbon straight-chain or branched-chain alkylene group; R″ represents a lower alkyl, lower haloalkyl, lower alkenyl, or lower alkynyl group; *p* represents an integer from 1 to 2 and the sum of *m*+*n*+*p* is an integer from 1 to 5. The terms "lower alkyl," "lower haloalkyl" and "lower alkoxy" represent groups containing from one to four carbon atoms. The terms "lower alkenyl" and "lower alkynyl" represent groups containing from two to four carbon atoms. The compounds are useful as pesticides.

3,674,858
PREPARATION OF BENZOYL PEROXIDE
Robert G. La Barge, and Gary L. Johnson, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.
Filed Oct. 30, 1968, Ser. No. 771,980
Int. Cl. C07c 73/02
U.S. Cl. 260—610 D 7 Claims

Benzoyl peroxide is produced by reacting benzoic anhydride with an alkali metal perborate in an aqueous solution.

3,674,859
AQUEOUS DOXYCYCLINE COMPOSITIONS
Rolf Ernst Beutel; Kathe Christel Lohlbach, and Helmut Wilhelm Raaf, all of Karlsruhe, Germany, assignors to Pfizer Inc., New York, N.Y.
Filed June 25, 1969, Ser. No. 836,591
Claims priority, application Germany, June 28, 1968, P 17 67 891.0
Int. Cl. A61k 21/00
U.S. Cl. 424—80 9 Claims

Aqueous doxycycline solutions suitable for pharmaceutical use contain polyvinylpyrrolidone and are especially useful for either oral, topical or parenteral administration.

3,674,860
ANAPLASMOSIS VACCINES
Clarence J. Welter, Des Moines, Iowa, and Miodrag Ristic, Urbana, Ill., assignors to Diamond Laboratories, Inc., Des Moines, Iowa
Continuation-in-part of Ser. No. 576,545, Sept. 1, 1966, abandoned. This application July 14, 1969, Ser. No. 841,597
Int. Cl. A61k 23/00
U.S. Cl. 424—88 14 Claims

An anaplasmosis vaccine containing an avirulent Anaplasma marginale mutant in a red blood cell carrier is provided. The virulent form is exposed to radiation to accelerate the rate of dissociation of the virulent form to an avirulent form and the irradiated organism is subsequently passed through at least one nonbovine ruminant host.

3,674,861
LIVE ATTENUATED MAREK'S DISEASE VIRUS VACCINE FOR POULTRY
Anthony Edward Churchill, The Elms, Houghton, Huntingdon, England
Continuation-in-part of Ser. No. 843,189, July 18, 1962, abandoned. This application Oct. 31, 1969, Ser. No. 873,060
Claims priority, application Great Britain, Nov. 18, 1968, 54,717/68
Int. Cl. A61k 23/00; C12k 5/00
U.S. Cl. 424—89 17 Claims

Marek's disease virus which causes a serious infection in poultry may be attenuated by serial passage in tissue culture. Passaging causes the loss of the A antigen after a certain number of passes while important protective antigens are retained. The virus may be attenuated in avian cells particularly those of the chick and duck, kidney cells and embryo fibroblasts being especially preferred. Usually about 20 to 40 passes are required. The live protective virus so obtained is cultivated further into a vaccine for parenteral administration.

3,674,862
LIVE ATTENUATED RABIES VIRUS VACCINE AND PROCESS THEREFOR
John F. Lavender, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.
Filed April 2, 1970, Ser. No. 25,243
Int. Cl. C12k 5/00
U.S. Cl. 424—89 5 Claims

Live, attenuated rabies virus vaccine is produced from trypsinized rabies virus infected duck embryo cells grown in cell culture monoclayer. The infectivity for duck embryos of the rabies seed virus is enhanced by growing the CVS–11 fixed rabies virus alternately in mouse brain (or suckling rat brain — SRB) and duck embryo tissue cultures for five alternate passages, and then continuing the growth of the virus in duck embryo tissue cultures for six or seven passages.

3,674,863
POLYVALENT IMMUNIZING AGENTS AND METHODS FOR THEIR PRODUCTION
Myron W. Fisher, Bloomfield Hills, and Stephen Hanessian, Ann Arbor, both of Mich., assignors to Parke, Davis & Company, Detroit, Mich.
Continuation of Ser. No. 729,884, May 17, 1968, abandoned, which is a continuation of Ser. No. 704,995, Feb. 13, 1968, abandoned, which is a continuation-in-part of Ser. No. 619,179, Feb. 28, 1967, abandoned. This application Dec. 8, 1969, Ser. No. 878,985
Int. Cl. A61k 7/16
U.S. Cl. 424—92 28 Claims

Polyvalent antigens, including polyvalent vaccines, containing immunizing antigens from two or more selected strains of *Pseudomonas aeruginosa*. Optionally, the polyvalent antigens are administered to a host to produce an immune globulin. The immune globulin can be used in the form of a whole blood product, a plasma, a serum, or the isolated globulin. The products of the invention are capable of inducing protection against infection with a relatively high percentage of randomly-encountered strains of *Pseudomonas aeruginosa*.

3,674,864
PROCESS FOR STABILIZING PREPARATIONS OF INTERFERING VIRUSES
Romano Angelucci, Milan, Italy, assignor to Carlo Erba S.p.A., Milan, Italy
Continuation-in-part of Ser. No. 687,135, Dec. 1, 1967, abandoned. This application July 8, 1970, Ser. No. 53,325
Claims priority, application Italy, Dec. 16, 1966, 31189 A/66
Int. Cl. C12k 1/08, 1/00
U.S. Cl. 424—90 8 Claims

A stabilized fluid preparation of interfering viruses containing a minor proportion of a mono- and/or disaccharide and a method of stabilization of interfering virus materials comprising mixing with the virus materials a minor proportion of a mono- and/or disaccharide and freeze-drying the resulting mixture.

3,674,865
PROCEDURE FOR OBTAINING PITUITARY GONADOTROPIC HORMONES FROM URINE
Pietro Donini, Rome, Italy, assignor to Istituto Farmacologico Serono S.p.A., Rome, Italy
Continuation-in-part of Ser. No. 614,749, Feb. 8, 1967, abandoned, which is a continuation-in-part of Ser. No. 285,489, June 4, 1963, abandoned. This application May 11, 1970, Ser. No. 36,484
Claims priority, application Italy, March 11, 1963, 8378 A/63
Int. Cl. A61k 17/08
U.S. Cl. 424—99 8 Claims

A method for the preparation of a urinary gonadotropic hormone preparation containing FSH and LH hormones, the weight ratio of FSH:LH being at least 3:1 by extracting said hormones from menopausal or post-menopausal urine.

3,674,866
MOENOMYCIN AND PROCESS FOR PRODUCING SAME
Fritz Lindner; Karl Heinz Wallhausser, both of Hofheim/Taunus, and Gerhard Huber, Frankfurt/Main, all of Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt/Main, Germany
Continuation-in-part of Ser. No. 216,751, Aug. 14, 1962, abandoned, which is a continuation-in-part of Ser. No. 87,750, Feb. 8, 1961, abandoned. This application Sept. 1, 1964, Ser. No. 393,760
Claims priority, application Germany, Feb. 10, 1960, F 30,506
Int. Cl. A61k 21/00
U.S. Cl. 424—118 8 Claims

A high molecular weight amorphous polysaccharide antibiotic composition containing about 1.9 percent by weight phosphorus, 48.5 percent carbon, 7.3 percent hydrogen, 5.1 percent nitrogen and the balance oxygen; having a molecular weight of 68,000 to 70,000, infra-red absorption spectrum maxima, for the sodium salt at 2.95, 3.40, 6.00, 6.53, 7.28, 8.20 and 9.38 μ and activity in vitro and in vivo against gram positive microorganisms; and process of preparing same by cultivation of *S. bambergiensis*, *S. ghanaensis*, *S. ederensis* or *S. geysiriensis*.

3,674,867
TUMIMYCIN AND PROCESS FOR MAKING SAME
Adorjan Aszalos, Princeton; Robert S. Robison, North Brunswick; Nancy Kraemer, Cranford, all of N.J.; Jo Ann Henshaw, Staten Island, N.Y., and Mary Suzanne Giannini, New Brunswick, N.J., assignors to E. R. Squibb & Sons, Inc., New York, N.Y.
Filed Aug. 6, 1970, Ser. No. 61,564
Int. Cl. A61k 21/00
U.S. Cl. 424—122 2 Claims

An antibiotic selected from the group consisting of Tumimycin and salts thereof. This antibiotic is an orange-red powder having the following average elemental analysis: carbon, 66.79 percent; hydrogen, 6.85 percent; nitrogen, 3.45 percent; and an infrared absorption spectrum as shown in FIG. 1 and an NMR spectrum as shown in FIG. 2. Tumimycin is useful as an antimicrobial agent.

3,674,868
CRYSTALLINE FUNGIMYCIN, A METHOD OF PREPARING SAME, COMPOSITIONS AND USE
Jorgen Martin Dohm Schou, Copenhagen, Denmark, assignor to Kefalas A/S, Copenhagen-Valby, Denmark
Continuation-in-part of Ser. No. 782,995, Dec. 11, 1968, abandoned. This application May 28, 1969, Ser. No. 828,742
Int. Cl. A61k 21/00
U.S. Cl. 424—122 8 Claims

Crystalline fungimycin, a process of purifying non-crystalline, amorphous fungimycin in order to obtain said crystalline

material, compositions in oral dosage forms containing crystalline fungimycin and a method for the treatment of prostate hypertrophy in mammals with an effective dose of crystalline fungimycin.

3,674,869
COMPOSITIONS FOR STABILIZING TRANS-DIETHYLSTILBESTROL

Nelson H. Ludwig, Greenfield, and William A. White, Fountaintown, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed June 12, 1970, Ser. No. 45,911
Int. Cl. A61k *17/06, 27/00*
U.S. Cl. 424—175 **4 Claims**

Trans-diethylstilbestrol is stabilized in liquid and solid animal feed formulations by adding thereto an inhibitory amount of a compound containing sulfur, in the form of a thiol group or a thiol precursor group, to substantially inhibit isomerization to the cis-diethylstilbestrol. Elemental sulfur likewise inhibits the isomerization in the presence of base.

3,674,870
PHENYL BENZOIC ACID COMPOUNDS IN COMPOSITIONS AND METHODS FOR TREATING INFLAMMATION

William V. Ruyle, Scotch Plains; Lewis H. Sarett, Skillman, and Alexander R. Matzuk, Colonia, all of N.J., assignors to Merck & Co. Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 699,022, Jan. 19, 1968, abandoned, which is a continuation-in-part of Ser. No. 577,819, Sept. 8, 1966, abandoned, which is a continuation-in-part of Ser. No. 420,823, Dec. 23, 1964, abandoned. This application June 9, 1970, Ser. No. 44,868
Int. Cl. A61v *27/00*
U.S. Cl. 424—230 **22 Claims**

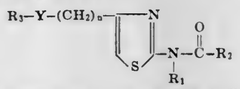
The invention relates to a method of treating inflammation by administering substituted 5-(phenyl) benzoic acids, esters and non-toxic pharmaceutically accepted salts thereof to patients.

3,674,871
ANTI-INFLAMMATORY METHOD

Delme Evans, Sandhurst, Berkshire, England, assignor to Lilly Industries, Ltd., London, England

Filed Oct. 5, 1970, Ser. No. 78,146
Claims priority, application Great Britain, Oct. 7, 1969, 49,196/69
Int. Cl. A61k *27/00*
U.S. Cl. 424—270 **4 Claims**

A method for treating inflammation in warm-blooded mammals comprising administering at a daily dose between 10 and 450 mg./kg. of body weight a 2-acylamino-4-(alkoxyalky or alkylthioalkyl)thiazone of the formula



wherein R_1 and R_2 are H or C_1–C_6 alkyl, R_3 is C_1–C_6 alkyl, Y is —O—, —S—, —SO— or —SO_2— and *n* is 1–4 and the pharmaceutically acceptable salts thereof.

3,674,872
ANTIMALARIAL COMPOSITIONS

Alfred Rheiner, Jr., Basel, Switzerland; Michel Fernex, Durmenach, France, and Jose Herrero, Basel, Switzerland, assignors to Hoffman-La Roche Inc., Nutley, N.J.

Continuation-in-part of Ser. No. 791,518, Jan. 15, 1969, abandoned. This application Sept. 29, 1970, Ser. No. 76,593
Int. Cl. A61k *27/00*
U.S. Cl. 424—229 **8 Claims**

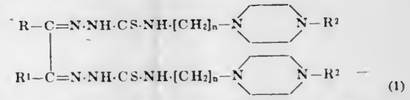
Antimalarial compositions comprising sulfadimethoxine [N'-(2,6-dimethoxy-4-pyrimidinyl)-sulfanilamide] and proguanil [1-(p-chlorophenyl)-5-isopropyl-biguanide] or their salts are described.

3,674,873
METHOD OF TREATING OR PREVENTING COCCIDIOSIS

Paul Anthony Barrett, London, England, assignor to Burroughs Wellcome Co.

Division of Ser. No. 550,934, May 18, 1966, Pat. No. 3,577,421. This application July 7, 1970, Ser. No. 53,040
Claims priority, application Great Britain, May 25, 1965, 22,006/65
Int. Cl. A61k *27/00*
U.S. Cl. 424—250 **18 Claims**

A method of treating or preventing coccidiosis in poultry which comprises orally administering to poultry an effective coccidiosis treatment or preventing amount of a compound of the Formula (I) or a pharmacologically acceptable acid addition salt thereof



(1)

wherein R and R' are the same or different and each is a hydrogen atom, loweralkyl, cyclohexyl, benzyl, phenyl, halogen substituted phenyl, or loweralkoxyloweralkyl, R^2 is lower alkyl and *n* has an integral value from 1 to 8. A composition comprising the compound of formula I and a pharmacologically acceptable carrier.

3,674,874
INSECTICIDAL AND ACARICIDAL COMPOSITIONS

Hans Rutz, Basel, and Kurt Gubler, Riehen, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 723,905, April 24, 1968, abandoned. This application June 8, 1970, Ser. No. 44,558
Claims priority, application Switzerland, April 26, 1967, 5960/67
Int. Cl. A01n *9/22*
U.S. Cl. 424—273 **13 Claims**

A method of controlling insects and a method for controlling acarinae, especially of the kind infesting warm-blooded animals as well as compositions are described which involve the use of an insecticidally or acaricidally effective amount of a 2,4,5-trihalogenoimidazole substituted in 1-position by a group of the formula R — X — A — wherein R represents an optionally substituted aliphatic hydrocarbon radical; X represents one of the bridges —O—, —S—,



and



, and A represents an alkylene radical, the compositions also contain carriers, distributing agents and the like which are compatible with the aforesaid active compounds and well tolerated by warm-blooded animals.

3,674,875
THE TREATMENT OF INFLAMMATION

Tsung-Ying Shen, Westfield; William V. Ruyle, Scotch Plains; Bruce E. Witzel, and Gordon L. Walford, both of Westfield, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 836,603, June 25, 1969. This application April 20, 1970, Ser. No. 30,364
Int. Cl. A61k *27/00*
U.S. Cl. 424—285 **3 Claims**

This invention relates to new tricyclic carboxylic acid and ester derivatives and processes for their preparation. These

compounds have anti-inflammatory, anti-pyretic and analgesic activity. Also included are claims for methods of treating inflammation using the carboxylic acid compounds of this invention.

3,674,876
BENZOTHIAZINE DIOXIDES AS LIPID REGULATING AGENTS

Joseph G. Lombardino, Niantic, and Gerald F. Holland, Old Lyme, both of Conn., assignors to Pfizer Inc.

Filed June 9, 1969, Ser. No. 831,768
Int. Cl. A61k *27/00*
U.S. Cl. 424—246 **36 Claims**

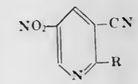
Certain 3,4-dihydro-4-oxo-2H-1,2-benzothiazine-3-carboxamide-1,1-dioxide and 3-oxo-2H-1,2-benzothiazine-4-carboxamide-1,1-dioxide compounds effective as lipid regulating agents are disclosed.

3,674,877
PESTICIDALLY ACTIVE COMPOUNDS AND COMPOSITIONS CONTAINING THEM

Peter Frank Hilary Freeman, Reading, England, assignor to Imperial Chemical Industries Limited, London, England

Filed June 2, 1970, Ser. No. 42,858
Int. Cl. A01n *9/22*
U.S. Cl. 424—263 **4 Claims**

Fungicidal and insecticidal compositions comprise as an active ingredient a compound of formula:



wherein R represents an atom of halogen, a hydroxy group or an ether derived therefrom, a mercapto group or a thioether derived therefrom, a sulphenylthio group, an unsubstituted or substituted amino group, or an N- containing heterocyclic group linked through the N- atom to the pyridine ring; or either (i) a quaternary salt thereof or (ii) an N-alkylated tautomer thereof.

3,674,878
PROCESS FOR CONTROLLING NEMATODES

Edward R. Degginger, Convent Station, N.J., and Frederick J. Goetz, Tacoma Park, Md., assignors to Allied Chemical Corporation, New York, N.Y.

Filed May 4, 1970, Ser. No. 34,559
Int. Cl. A61n *9/20*
U.S. Cl. 424—330 **1 Claim**

Process for controlling nematodes by treating nematode infested soil with a toxic quantity of 4-aminobiphenyl or a derivative thereof which is capable of being hydrolyzed to 4-aminobiphenyl.

3,674,879
PROCESS FOR PREPARING CHLORO-SUBSTITUTED BIS(HYDROXYPHENYL)METHANES

Harlan E. Tiefenthal, Western Springs; Eric Jungermann, Chicago; Eugene J. Miller, Jr., Wheaton, and John J. Callahan, Park Ridge, all of Ill., assignors to Armour Industrial Chemical Company, Chicago, Ill.

Continuation-in-part of Ser. No. 492,293, Oct. 1, 1965, abandoned. This application April 24, 1968, Ser. No. 723,893
Int. Cl. C07c *37/00, 39/16*
U.S. Cl. 260—619 A **16 Claims**

A process for preparing chloro-substituted bis (hydroxyphenyl)methanes by reacting a formaldehyde yielding substance with chloro-substituted phenol is the presence of hydrogen fluoride. Such chloro-substituted bis(hydroxyphenyl) methanes are useful as bactericides.

3,674,880
METHODS FOR PREPARING VALUABLE KETO AND HYDROXY CYCLIC COMPOUNDS

Charles H. Fisher, 1624 Mirabeau Avenue, New Orleans, La.

Filed Jan. 3, 1968, Ser. No. 695,323
Int. Cl. C07c *37/00*
U.S. Cl. 260—621 R **5 Claims**

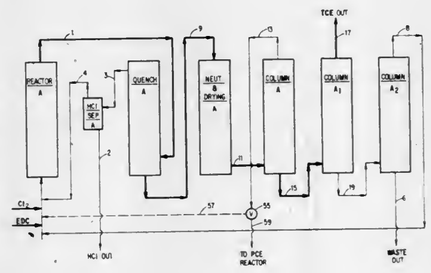
This invention relates to the conversion of poly-exomethylene cyclohexanes and poly-exomethylene cylcohexenes to ketone cyclic compounds and hydroxy aromatic compounds. The exo-methylene groups ($= CH_2$) are first converted to ozonides and the ozonide is then converted to ketones which rearrange to the hydroxy cyclic and aromatic compounds.

The resultant hydroxy compounds are used as antioxidants, preservatives, intermediates for making resins, plastics, adhesives, pharmaceuticals, and dyes.

3,674,881
INTEGRATED PROCESS FOR THE PRODUCTION OF CHLORINATED HYDROCARBONS

James J. Lukes, Cleveland, and Robert J. Koll, Mayfield Village, both of Ohio, assignors to Diamond Shamrock Corporation, Cleveland, Ohio

Filed Dec. 15, 1969, Ser. No. 885,183
Int. Cl. C07c *21/00*
U.S. Cl. 260—65.4 H **4 Claims**



The process involves the preparation of trichloroethylene and perchlorethylene in separate production trains the operation of which, however, is integrated with respect to the recycle of certain organic streams for the purpose of improving product purity and simplifying separation procedures.

3,674,882
DICHLORO TRIFLUOROMETHYL PHENYL LITHIUM

William J. Houlihan, Mountain Lakes, N.J., assignor to Sandoz-Wander, Inc., Hanover, N.J.

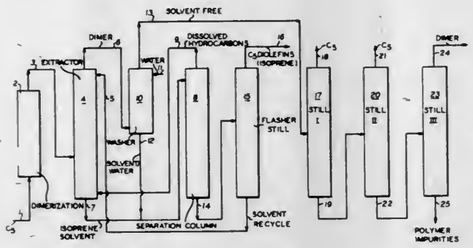
Continuation-in-part of Ser. No. 816,084, April 14, 1969, Pat. No. 3,592,842, which is a continuation-in-part of Ser. No. 729,944, May 17, 1968, abandoned. This application Jan. 21, 1971, Ser. No. 108,640
Int. Cl. C07f *1/02*; **B21d** *3/02*
U.S. Cl. 260—665 R **4 Claims**

Dichloro trifluoromethyl phenyl lithium compounds are prepared by reacting a dichloro trifluorotoluene with an alkyl lithium compound and are useful as intermediates in the preparation of dichloro-trifluoromethyl benzoic acids which are CNS depressants and agrochemical agents.

3,674,883
RECOVERING CYCLOPENTADIENE VALUES FROM C_5 FRACTIONS

Bernhard Schleppinghoff, Dormagen; Helmut Scherb, Sinnersdorf, and Hans Puxbaumer, Cologne-Zollstock, all of Germany, assignors to Erdolchemie Gesellschaft mit beschrankter Haftung, Cologne, Germany

Filed Aug. 11, 1970, Ser. No. 62,937
Claims priority, application Germany, Aug. 16, 1969, D 19 41 704.0
Int. Cl. C07c 7/00
U.S. Cl. 260—666 A **7 Claims**



A process for recovering the cyclopentadiene values from a cyclopentadiene-containing C_5 fraction consisting of a mixture of paraffinic, olefinic and diolefinic hydrocarbons, which comprises subjecting the fraction to treatment to dimerize the cyclopentadiene to dicyclopentadiene; subjecting the fraction to a liquid-liquid extraction with a selective solvent whereby there is formed a solvent phase containing the diolefinic hydrocarbons and a paraffin-olefin phase containing the dicyclopentadiene, and recovering the dicyclopentadiene from said paraffin-olefin phase by distillation.

3,674,884
PROCESS FOR THE PREPARATION OF AROMATIC HYDROCARBONS CONTAINING MONOETHYLENIC UNSATURATED RADICALS

Ichiro Moritani, Takaishi-shi, and Yuzo Fujiwara, Oyonaka-shi, both of Japan, assignors to Ube Industriee, Ltd., Nishihonmachi, Ube-shi Yamaguchi-ken, Japan

Filed July 29, 1968, Ser. No. 748,222
Claims priority, application Japan, Aug. 4, 1967, 42/49709
Int. Cl. C07c 15/10
U.S. Cl. 260—669 R **10 Claims**

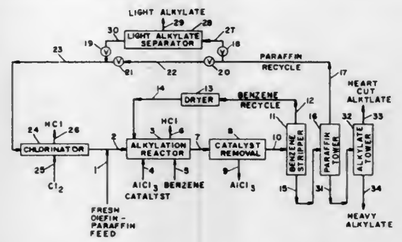
Process for the preparation of aromatic hydrocarbon compounds containing monoethylenically unsaturated radicals, which comprises reacting a monoethylenically unsaturated compound with an aromatic hydrocarbon compound in the presence of a palladium salt.

3,674,885
ALKYLATION OF BENZENE UTILIZING FISCHER-TROPSCH OLEFIN-PARAFFIN MIXTURES

William K. Griesinger, Haverford, Pa.; Harold A. Sorgenti, Olympia Fields, Ill., and George W. Schell, Broomall, Pa., assignors to Atlantic Richfield Company, New York, N.Y.

Filed Oct. 9, 1970, Ser. No. 79,389
Int. Cl. C07c 3/56
U.S. Cl. 260—671 B **7 Claims**

Paraffin-olefin mixtures synthesized by the Fischer-Tropsch process are used to alkylate benzene at high temperatures in the presence of an aluminum chloride catalyst at low catalyst volume to feed volume ratios. The paraffins are separated from the alkylation effluent and are recycled to a chlorination step from which the paraffin-chloroparaffin effluent mixture is combined with the fresh feed Fischer-Tropsch olefin-paraffin



mixture and the combined feeds are used to alkylate the benzene.

3,674,886
METHOD OF PREVENTING DOUBLE BOND MIGRATION OF MONO-OLEFINIC HYDROCARBONS IN SELECTIVE HYDROGENATION

Youji Komatsu, Chiba; Yasuhiro Furukawa, Saitama, and Takashi Yokomizo, Chiba, all of Japan, assignors to Maruzen Oil Company Limited, Osaka, Japan

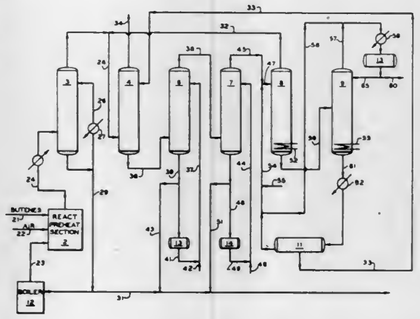
Filed Jan. 22, 1971, Ser. No. 109,051
Claims priority, application Japan, Jan. 26, 1970, 45/6333
Int. Cl. C07c 11/00, 11/12
U.S. Cl. 260—677 H **18 Claims**

A method of preventing double bond migration of a mono-olefin hydrocarbon during the selective hydrogenation of a polyunsaturated hydrocarbon coexisting with a mono-olefinic hydrocarbon, each of the mono-olefinic hydrocarbons and polyunsaturated hydrocarbons having at least four carbon atoms, in the presence of hydrogen, using a palladium- or nickel-hydrogenation catalyst, which comprises adding carbon monoxide to the reaction system in an amount of from 1 to 50 mol. % based on said hydrogen during the initial stage of the selective hydrogenation reaction and following the initial stage, lowering the content of carbon monoxide to a range of from 0.05–1 mol. % based on the hydrogen.

3,674,887
OXIDATIVE DEHYDROGENATION PROCESS

Harris A. Clay, Bartlesville, Okla., assignor to Phillips Petroleum Company

Filed Dec. 24, 1970, Ser. No. 101,277
Int. Cl. C07c 5/18
U.S. Cl. 260—680 E **9 Claims**



Impurities introduced during the oxidative dehydrogenation of paraffin or olefin hydrocarbons are removed from the olefin

product using water and caustic scrubbing. The olefin product while absorbed in an oil is scrubled with the caustic solution.

3,674,888
PROCESS FOR SELECTIVELY HYDROGENATING UNSATURATED HYDROCARBONS

Michel Derrien, and Jean Francois Le Page, both of Rueil Malmaison, France, assignors to Institut Francias du Petrole des Carburants et Lubrifiants

Filed Dec. 8, 1970, Ser. No. 96,277
Claims priority, application France, Dec. 12, 1969, 6943283
Int. Cl. C01c 5/08
U.S. Cl. 260—681.5 **7 Claims**

This invention relates to a process for selectively hydrogenating unsaturated hydrocarbons in the liquid phase, in the presence of a catalyst comprising palladium on an alumina carrier, said catalyst resulting from contacting alumina agglomerates of at least a 120 m^2/g specific surface with steam at 110° – 300° C. for at least 15 minutes, drying the resulting agglomerates, heating them to a temperature from 500° to 1,200° C., so as to obtain alumina agglomerates of a 40 – 100 m^2/g specific surface, admixing said agglomerates with a palladium compound and heating up the resulting mixture to 300° – 600° C.

3,674,889
PREPARATION OF OLEFINS VIA PT-SN CATALYST

Raymond A. Schell, Berkley, and Lawrence J. Kehoe, Huntington Woods, both of Mich., assignors to Ethyl Corporation, New York, N.Y.

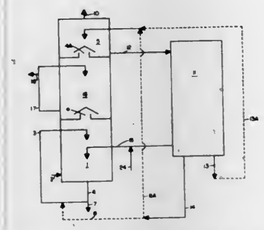
Continuation-in-part of Ser. No. 776,788, Nov. 18, 1968, abandoned. This application June 23, 1970, Ser. No. 49,161
Int. Cl. C07c 1/20, 11/12
U.S. Cl. 260—681 **16 Claims**

A process for preparing unsaturated organic compounds by reacting an allylic alcohol and a ketone or aldehyde in the presence of carbon monoxide using a hydrohalo acid of a Group VIII metal/germanium or tin salt combination catalyst is described. The unsaturated organic compounds are principally hydrocarbon olefins having a molecular weight greater than the allylic alcohol reactant.

3,674,890
QUENCHING PROCESS FOR PYROLYTICALLY CRACKED HYDROCARBONS

Thaddeus J. Oleszko, Neu Otting, and Lynn P. Walker, Burghausen, both of Germany, assignors to Marathon Oil Company, Findley, Ohio

Filed March 4, 1970, Ser. No. 16,443
Int. Cl. C07c 3/00; C10g 9/12
U.S. Cl. 260—683 **22 Claims**



Improved quenching of pyrolytically cracked gas is effected by separating the hydrocarbon-water emulsion produced in a quenching zone having a plurality of stages and then transferring the emulsion to the initial stage of the quenching zone wherein incoming gases vaporize the water from the emulsion. Also, transferring a slurry containing particulate carbon, e.g., produced in the Wulff process by scrubbing the exhaust gases of the generation step, to the initial stage of the quenching zone and recovery of hydrocarbon and particulate carbon is taught.

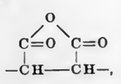
3,674,891
NON-CROSSLINKED OLEFINIC SILOXANE-ORGANIC POLYMER GRAFT COPOLYMERS

Marshall L. Wheeler, Jr., Olean, N.Y., assignor to Union Carbide Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 422,037, Dec. 29, 1964, Pat. No. 3,573,334, which is a continuation-in-part of Ser. No. 356,944, April 2, 1964, abandoned. This application July 23, 1970, Ser. No. 57,797
Int. Cl. C08g 47/10; C08f 29/50
U.S. Cl. 260—827 **4 Claims**

This invention provides non-crosslinked copolymers of olefinic siloxanes grafted to one of a particular class of organic polymers [i.e. polyurethanes, polyesters, epoxy resins, polyacetals, polysulfides, polycarbonates, phenoxy resins, mineral oils, polystyrene, polyacrylates, polyvinyl chloride and polymers comprising at least one of the following types of units:

$-CH_2-CH(OCOCH_3)-$,



$-CH_2-CCl-$, $-CH_2-CFH-$, $-CF_2-$, $-CH_2-CH(CN)-$, $-CH_2-CH(OR)-$, $-CH_2-CH-CCl_3-$, $-CH_2-CH\ C(CH_3)-CH_2-$ and $-CH_2CH\ ClCH_2-$ wherein R is alkyl].

3,674,892
INTERNALLY PLASTICIZED EPOXIDE RESINS OF TRIGLYCIDYL ISOCYANURATE, HYDROXY FUNCTIONAL URETHANE POLYMER AND POLYCARBOXYLIC ACID ANHYDRIDE

Zissis Aggias, Hilden, Germany, assignor to Henkel & Cie, GmbH, Dusseldorf, Germany

Filed Oct. 13, 1969, Ser. No. 866,017
Claims priority, application Germany, Oct. 31, 1968, P 18 06 202.7
Int. Cl. C08g 45/14, 45/12
U.S. Cl. 260—835 **7 Claims**

A process for the preparation of internally plasticized hardened epoxide resin having increased flexibility without a substantial effect on its thermal properties which comprises the steps of reacting a mixture consisting essentially of (1) a crystalline triglycidyl isocyanurate having an epoxide oxygen content of at least 14 percent, (2) an organic polycarboxylic acid anhydride epoxide hardener, and (3) from 10 to 30 percent by weight, based on the amount of (1) and (2) above, of long-chain organic polyurethanes having at least two free hydroxyl groups per molecule and free of other reactive groups, said polyurethanes having a molecular weight between 800 and 5,000, under epoxide resin hardening conditions, and recovering said internally plasticized hardened epoxide resin.

3,674,893
THERMOSETTABLE RESINS CONTAINING VINYLESTER RESIN, POLYDIENE RUBBERS AND VINYL MONOMERS

Robert M. Nowak, and Thomas O. Ginter, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 812,326, April 1, 1969, abandoned. This application March 9, 1970, Ser. No. 17,947
Int. Cl. C08g 45/04
U.S. Cl. 260—836 **19 Claims**

Stable compositions are prepared from a mixture of an unsaturated vinyl ester thermosettable resin containing a

copolymerizable monomer and an unsaturated polydiene rubber having an inherent viscosity between about 0.30 to 1.2 deciliters/gram. Thermoset articles reinforced with glass fibers, etc. prepared from said composition have improved properties such as impact strength, surface smoothness and paintability as well as good mechanical properties such as tensile strength and modulus. The compositions are noteworthy in their ability to accept pigments uniformly without producing mottling even with dark pigments.

3,674,894

UNSATURATED POLYESTER RESINS MODIFIED WITH ORGANIC DIBASIC ACID SALTS

James Economy, Buffalo; Luis C. Wohrer, Lewiston, and John H. Mason, Clarence, all of N.Y., assignors to The Carborundum Company, Niagara Falls, N.Y.

Division of Ser. No. 751,647, June 24, 1968, Pat. No. 3,567,689, which is a division of Ser. No. 353,266, March 19, 1964, Pat. No. 3,418,273. This application May 5, 1970, Ser. No. 46,568

Int. Cl. C08f *43/00, 43/02*

U.S. Cl. 260—875 **7 Claims**

Metal salts of alkanedioic and aromatic dibasic acids are used to improve one or more of the physical properties of certain thermoplastic and thermosetting resins, either before or after exposure to high temperatures.

3,674,895

POLYMERIZATION OF 1-OLEFINS WITH MULTIFUNCTIONAL INITIATOR SYSTEMS

Rudolf H. Gaeth, Lake Jackson, Tex., and Ralph C. Farrar, Bartlesville, Okla., assignors to Phillips Petroleum Company

Filed May 12, 1969, Ser. No. 823,941

Int. Cl. C08f *1/28, 3/06, 3/18*

U.S. Cl. 260—878 B **6 Claims**

1-Olefins are efficiently polymerized with an initiator system formed from an organomonolithium compound, a polyvinyl aromatic compound, an N,N,N',N'-hydrocarbyl-substituted ethylenediamine compound and optionally, a solubilizing monomer.

3,674,896

BONDING WITH AMMONIUM POLYMER SALTS

Chester L. Purcell, and Walter H. Smarook, both of Somerville, N.J., assignors to Union Carbide Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 669,259, Sept. 20, 1967, abandoned, Continuation-in-part of Ser. No. 568,409, July 28, 1966, abandoned. This application June 3, 1970, Ser. No. 43,196

Int. Cl. C08f *29/12*

U.S. Cl. 260—897 B **10 Claims**

Water-soluble ammonium salts of ethylene-acrylic acid copolymers are used to coat or bond various substrates with water insoluble ethylene-acrylic acid copolymers by first applying the salt alone or with polyvinyl alcohol to the substrate from aqueous solutions or dispersions and then drying the treated substrate. During the drying step ammonia is evolved leaving the ethylene-acrylic acid copolymer on the substrate. This invention has been used to coat articles with a temporary coating, and to prepare floor polishes, paper coatings, nonwoven fabrics and water-proof wood.

3,674,897

PROCESS FOR MANUFACTURING TRIALKYL PHOSPHITES

Fusao Tada, Nara-shi; Seiei Inamine, Osaka-shi, and Tsutomu Hatanaka, Sakai-shi, all of Japan, assignors to Sakai Chemical Industry Company Limited, Osaka-fu, Japan

Filed Nov. 25, 1969, Ser. No. 879,933

Int. Cl. C07f *9/08*; **C10m** *1/46*

U.S. Cl. 260—976 **8 Claims**

A process for manufacturing trialkyl phosphite comprises adding with stirring a phosphorus trihalide at a temperature of −5° to 30° C to at least stoichiometric amount of an aliphatic alcohol having one to 18 carbon atoms in the presence of at least one of an organic acid and ammonium salt thereof while introducing ammonia to the reaction system to maintain the pH value in the system in the range of 6.5 to 10.0 to thereby effect the reaction of the phosphorus trihalide and the aliphatic alcohol to produce trialkyl phosphite. Said organic acid has a dissociation constant in water at 25° C of 1×10^{-7} to 9×10^{-6}.

3,674,898

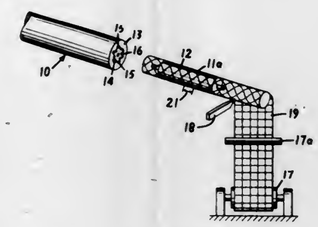
METHOD FOR BIAS CUTTING A TUBULAR NET

Ronald L. Larsen, Minneapolis, Minn., assignor to Conwed Corporation

Continuation of Ser. No. 793,079, Jan. 22, 1969, abandoned. This application Feb. 24, 1971, Ser. No. 117,922

Int. Cl. B29d *23/04, 7/16*

U.S. Cl. 264—146 **9 Claims**



This invention provides a method for continuously severing a rotating and axially moving tubular net, having an axially oriented pattern, along a bias line thereof to transform the tubular net into a continuous flat web having a length oriented pattern different from the axially oriented pattern of the tubular net.

3,674,899

PROCESS FOR CURING PNEUMATIC TIRES

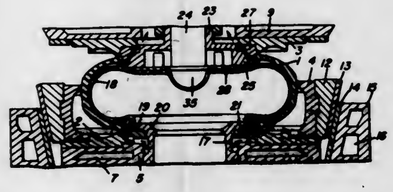
Renato Caretta, Gallarate, and Antonio Pacciarini, Milan, both of Italy, assignors to Industrie Pirelli S.p.A., Milan, Italy

Division of Ser. No. 607,227, Jan. 4, 1967, Pat. No. 3,520,024. This application Jan. 13, 1970, Ser. No. 2,510

Claims priority, application Italy, Jan. 13, 1966, 13350/66

Int. Cl. B29h *5/02*

U.S. Cl. 264—315 **4 Claims**



A method for curing already toroidally shaped pneumatic tires. The tire beads are forced into their respective seats in axially approachable mold section while the mold sections are spaced from each other and the mold open. A flexible curing bag is introduced inside the tire, expanded, and pumped to remove air trapped between its outer surface and the inside of the tire while the beads remain in their respective seats. The mold is then closed and the tire cured. Rigid mechanical means can be used to force the beads into the seats.

3,674,900

RADIOACTIVE MACROAGGREGATES OF SERUM ALBUMIN

Lloyd M. Thompson, 144 Millhaven Avenue, Pointe Claire, Quebec, Canada

Filed Jan. 3, 1967, Ser. No. 606,525

Int. Cl. A61k *27/04*

U.S. Cl. 424—1 **5 Claims**

Human serum albumin is made radioactive, denatured, and then agglutinated to form macroaggregates of a nearly uniform size. This latter is achieved by the use of weak organic acids. Their uniform size makes them more suitable for scintiscanning.

3,674,901

SURGICAL SUTURES

Thomas H. Shepherd, Hopewell, and Francis E. Gould, Princeton, both of N.J., assignors to National Patent Development Corporation, New York, N.Y.

Continuation-in-part of Ser. Nos. 567,856, July 26, 1966, Pat. No. 3,220,949, and Ser. No. 650,259, June 30, 1967, Pat. No. 3,572,685, which is a division of Ser. No. 654,044, July 5, 1967, abandoned. This application April 27, 1970, Ser. No. 32,448. The portion of the term of this patent subsequent to Feb. 25, 1986, has been disclaimed.

Int. Cl. A61l *15/00, 17/00*

U.S. Cl. 424—27 **2 Claims**

A process for preparing hydrophilic cross-linked polymers and products prepared thereby, said process comprising admixing in a solvent-free system in the presence of a free radical, vinyl polymerization catalyst and reacting a major amount of a water-soluble polymerizable monoester of an olefinic acid having at least one substituted functional group with a minor amount of a polymerizable diester of one of said olefinic acids having at least two esterifiable hydroxyl groups. The novel products include a solid friable foam which can be disintegrated to powder. Shaped bodies can be prepared in the from of articles which can be cast with additives such as fragrances, medicinals, flavors, chemicals and the like, which are gradually released from the article when it is wetted in water or alcohol. Liquid casting syrups adapted to be polymerized in situ with or without additives can be formed. The casting syrups can be prepared in water to yield a polymer soluble in alcohol which is suitable for formation of hydrophilic coatings as by spray, dip, casting and the like. Surgical suture threads can be coated with the polymers.

3,674,902

HAIR COSMETIC COMPOSITIONS CONTAINING NON-IONIC SURFACE ACTIVE AGENTS

Gregoire Kalopissis, Paris, and Guy Vanlerberghe, Mitry-Mory (Seine et Marne), both of France, assignors to Societe anonyme dite: L'Oreal, Paris, France

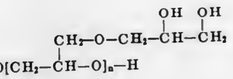
Continuation-in-part of Ser. No. 541,527, April 11, 1966, abandoned. This application Sept. 27, 1968, Ser. No. 763,340

Claims priority, application Luxembourg, April 15, 1965, 48,400; March 28, 1966, 50,777

Int. Cl. A61k *7/06, 7/12*

U.S. Cl. 424—70 **7 Claims**

Cosmetic compositions, such as shampoos and hair dyes, which contain non-ionic surface active agents that form cleaning compositions that do not irritate the mucous membrane of the eyes having the formula

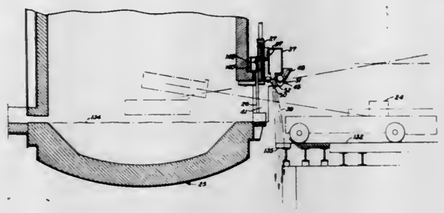


in which R is selected from the group consisting of alkyl, alkenyl and alkyl and alkenyls having intervening CONH, O and CHOH groups having eight to 22 carbon atoms, and n is 1 to 5 and methods of making said compound.

ERRATA

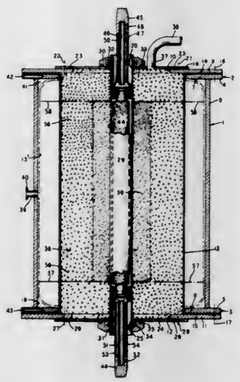
For Classes 424—80 to 424—330 see:
Patent Nos. 3,674,859 thru 3,674,878

3,674,903
METHOD AND APPARATUS FOR REDUCING AIR INFILTRATION INTO ELECTRIC ARC FURNACE DURING THE CHARGING AND MELTING OPERATION
William W. Bintzer, Malvern, Pa., assignor to Lukens Steel Company, Coatesville, Pa.
Filed April 20, 1971, Ser. No. 135,678
Int. Cl. F27d *23/00*
U.S. Cl. 13—9 19 Claims



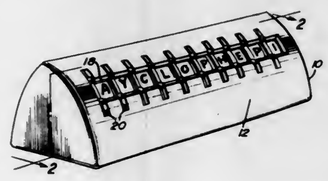
An air curtain arrangement for the charging opening of an electric arc steelmaking furnace for restricting entry of air into the furnace, the air curtain apparatus being disposed above the opening and spaced sufficiently from the furnace wall to permit the door which normally covers the opening to be raised. An air screen is directed downwardly and a pair of side air flows are provided to screen the areas between the furnace wall and the air screen which is provided across the opening. Two further air flows are directed against the sides of the door, one on each side thereof for the purpose of screening these areas against incursion around the raised door of outside air into the furnace which is maintained at a pressure slightly less than atmospheric pressure during the door charging operation.

3,674,904
FURNACE FOR MAKING FUSED QUARTZ HOLLOW SLUGS
Lothar Jung, Millington, N.J., assignor to Amersil, Inc., Hillside, N.J.
Filed May 21, 1971, Ser. No. 145,611
Int. Cl. F27b *15/00*; F27d *3/00*; H05b *3/40*
U.S. Cl. 13—20 6 Claims



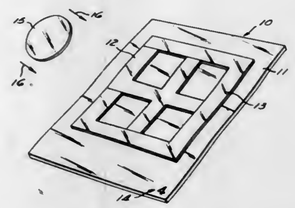
A furnace for making fused quartz hollow slugs comprising a tubular housing containing an elongated electrical resistor heating means mounted coaxially in the housing with a quartz powder charge chamber intermediate the inner walls of the housing and the heating means, and a contained elastic tubular lining adjacent to and spaced from the inner walls, whereby the lining is hydrostatically motivated to compress a contained quartz powder charge in the charge chamber in the direction of the heating means.

3,674,905
TEACHING AID
James W. Collins, Sr., 400 N.W. Fifth Street, Mineral Wells, Tex.
Filed April 22, 1970, Ser. No. 30,659
Int. Cl. G09b *19/00*
U.S. Cl. 35—35 G 6 Claims



A windowed housing internally supports a removable rod that mounts a series of concentrically positioned wheels having indicia thereon which appear through the windows. Detent means between the wheels and the housing permit the selective positioning of the wheels such that particular indicia remain in view through the windows. Brackets are provided in the interior of the housing to slidably mount the rod thereby permitting rapid removal and replacement of the rod. Removal of the rod allows rapid rearrangement of the wheel order on the rod.

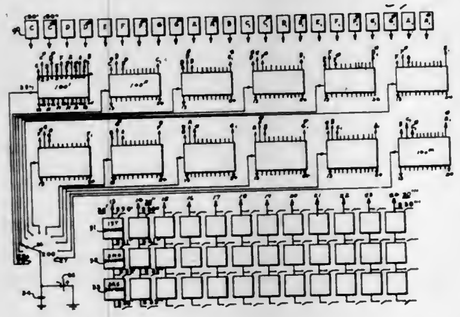
3,674,906
EDUCATION DEVICE EMPLOYING POLARIZED PLASTIC MATERIAL
Edward L. Warren, 6333 Stafford Drive, North Olmsted, Ohio
Filed May 11, 1970, Ser. No. 36,094
Int. Cl. G09b *3/00*
U.S. Cl. 35—48 R 8 Claims



A method and apparatus are disclosed for transmitting information from a first person to a second person while precluding transmission of the information to other persons. A first polarizing area and a second polarizing area are arranged such that their directions of polarization are angularly related. The first and second polarizing areas are displayed by the first person for visual perception by the second person, and light is passed through the first and second polarizing areas. A polarizing means is provided for blocking light received from

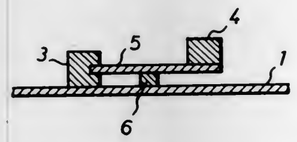
one of the polarizing areas and for permitting light received from the other of the polarizing areas to pass therethrough so that the information is transmitted only to the second person when the second person views the first and second polarizing areas through the polarizing means. In a first and second embodiment, the first polarizing area is arranged in a first predetermined pattern corresponding to the information to be transmitted, and the second polarizing area cooperates with the first polarizing area to form a second predetermined pattern. In a third embodiment, the first polarizing area is positioned to cover the information that is to be transmitted and the second polarizing area is positioned to cover other information.

3,674,907
KEYBOARD TRANSPOSITION OF ELECTRICAL MUSICAL INSTRUMENTS
Wendell A. Derry, 419 High Street, Randolph, Mass.
Filed , Ser. No. 199,474
Int. Cl. G10h *1/00*
U.S. Cl. 84—1.01 7 Claims



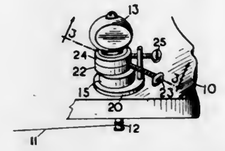
The keyboard of musical instruments, such as electronic organs, is connected through frequency divider circuits to basic tone generators such that corresponding keys of adjacent octaves produce notes which are separated by an octave and adjacent keys produce the tonal scale. This invention discloses electronic switching which allows all keys to be moved up or down the tonal scale in unison by connecting different tone generators to the frequency divider networks according to the key in which the music is to be provided while the music may be played on the keyboard from sheet music written in a different key.

3,674,908
PIANO SOUNDING BOARD ASSEMBLY
Ingo Ludemann, Hamburg, Germany, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu-shi, Japan
Filed April 26, 1971, Ser. No. 137,465
Claims priority, application Japan, Aug. 28, 1970, 45/74936
Int. Cl. G10c *3/04*
U.S. Cl. 84—212 8 Claims



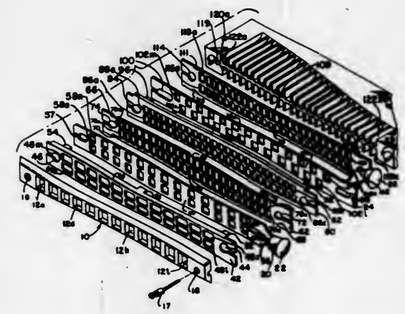
There is described a piano sounding board assembly whereby the vibration from the bass bridge may be effectively transmitted and distributed to the open area of the sounding board and the tonal qualities in the bass range may be improved to a considerable extent, the sounding board assembly incorporating a connecting plate member adapted for directly interconnecting the bass and treble bridges on one side of the sounding board.

3,674,909
PITCH CHANGE LIMITING DEVICE FOR STRINGED MUSICAL INSTRUMENTS
Joseph Peters, Jr., 2105 Lyde Place, Scotch Plains, N.J., and Brian P. Feeney, 2803 2nd Street, Santa Monica, Calif.
Filed July 6, 1970, Ser. No. 52,621
Int. Cl. G10d *3/14*
U.S. Cl. 84—312 4 Claims



A pitch changing device for string instruments comprising an adapter cylinder rigidly mounted on the tuning key shaft, an upper ring rotatably mounted on the adapter cylinder, a lower ring rotatably mounted on the upper ring, and a limit stop rigidly mounted on the instrument head. The device enables the user to limit the rotational motion of the tuning key shaft to a predetermined angular value.

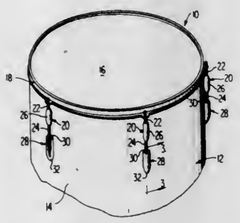
3,674,910
CHROMATIC HARMONICA
James G. McKenzie, P.O. Box 1982, Orange, Calif.
Filed June 17, 1970, Ser. No. 47,010
Int. Cl. G10d *7/12*
U.S. Cl. 84—377 9 Claims



A chromatic harmonica employing a pair of independently movable, manually actuated valve slides with predetermined patterns of lands and apertures formed therein. Such slides are disposed behind the mouthpiece and before the comb and reed plates in the path of flow for the breath expelled by the person playing this instrument. The comb and reed plate is designed so that each cell in the comb is subdivided into a plurality of wind cells with a separate reed for each wind cell, and four wind cells are exposed to each opening in the mouthpiece of the harmonica. By proper manipulation of the pair of valve slides three of the four wind cells operatively associated with each opening are blocked by appropriate lands in the slides; thus, only the single reed within the selected wind cell is

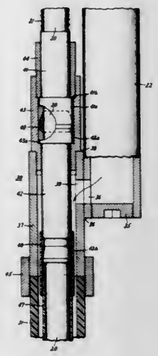
placed in communication with the mouthpiece to receive the breath expelled thereinto. Consequently, with this unique configuration of coacting elements, the instant harmonica may be played in a unidirectional, "all-blow," or "all-draw" fashion approximating the operation of a woodwind instrument. Furthermore, such harmonica is capable of producing all of the notes of the chromatic scale with a more nearly consistent smoothness of transition from one note to the next, and more trills are available.

3,674,911
DRUM BODY HAVING INTEGRAL MOUNTING LUGS FOR DRUMHEAD TENSIONING APPARATUS
Kenneth W. Phillips, and Iris L. Phillips, both of 2050 Perkins Drive, Springfield, Ohio
Filed Dec. 8, 1970, Ser. No. 96,154
Int. Cl. G10d *13/02*
U.S. Cl. 84—411 **8 Claims**



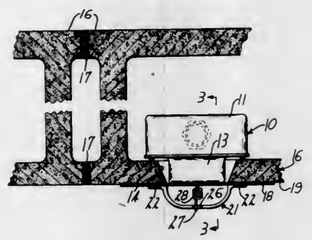
A drum body comprising a hollow shell member and a plurality of protuberant lugs forming mounting lugs for drumhead tensioning apparatus. The lugs and member are joined as an integral unit.

3,674,912
CABLE CONNECTION FOR WATER COOLER UNDERGROUND ELECTRODE
Charles H. Titus, Newtown Square, and Harold N. Schneider, Springfield, both of Pa., assignors to General Electric Company
Filed Feb. 22, 1971, Ser. No. 117,488
Int. Cl. H01b *7/34*
U.S. Cl. 174—15 C **7 Claims**



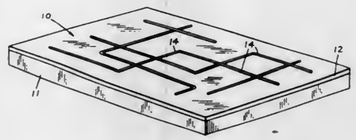
A high power fluid cooled electric cable conduit is fixed in laterally offset axially overlapping relation to a fluid supply conduit with registering fluid passage ports in adjacent side walls thereof. The fluid supply conduit is closed at its overlapping end and an electric cable is introduced axially into the cable conduit through its overlapping end and in sealed relation therewith, the fluid supply ports being located between such overlapping ends of the conduits.

3,674,913
TEMPORARY SUPPORT FOR ELECTRICAL OUTLET BOX
Kenneth Yates, Vinemont, Ala., assignor to Donald B. Allison, Vinemont, Ala., a part interest
Filed July 9, 1971, Ser. No. 161,008
Int. Cl. H02g *3/12*
U.S. Cl. 174—48 **5 Claims**



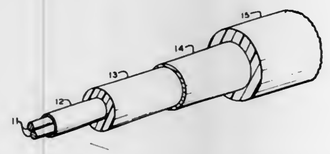
A temporary support for an electrical outlet box mounted inwardly of the outer surface of a wall. A transverse member extends across outer portion of box and engages outer surface of wall and outer portion of box upon movement thereof into substantial alignment with each other. Spring means operatively connected to transverse member has oppositely disposed end portions extending outwardly and detachably connected to box urging transverse member and box toward each other.

3,674,914
WIRE SCRIBED CIRCUIT BOARDS AND METHOD OF MANUFACTURE
Robert Page Burr, Huntington, N.Y., assignor to Photocircuits Corporation, Glen Cove, N.Y.
Continuation-in-part of Ser. No. 704,383, Feb. 9, 1968, abandoned, which is a continuation-in-part of Ser. No. 628,701, April 5, 1967, abandoned. This application March 5, 1970, Ser. No. 16,742
Int. Cl. H05k *3/20*
U.S. Cl. 174—68.5 **13 Claims**



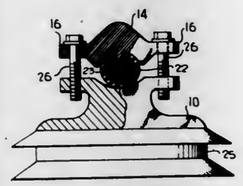
The present invention represents a new approach to solving modern electronic packaging problems which combines in one system the best features of discrete wiring techniques and printed circuits. According to this invention, there are provided new and useful procedures whereby a prefabricated organized wire interconnecting device, hereinafter referred to as a wire scribed circuit board, is produced by writing or plotting a predetermined circuit interconnection onto the surface of an insulating base using as the writing medium or "ink" a continuous wire filament. The wire is fed onto the surface of the base continuously from one side thereof, simultaneously affixed to the base to form the interconnecting pattern, and cut at the finish of each line, to thereby form a written wire image of a predetermined interconnecting pattern on the base. Preferred embodiments of the wire scribed boards include a wire image of a predetermined interconnecting pattern in which wire conductors exhibit inflection points produced solely as a result of the writing technique and/or crossovers in essentially the same plane as the wire, as well as connection terminals to which the written wire lines and/or electrical components may be attached. The boards resemble a printed circuit board in appearance and cubic packing potential, although no art work or graphic processes of any kind are employed in their production. Unlike printed circuit boards, repairs as by conductor additions or deletions or modifications may be readily made.

3,674,915
ELECTRICAL CABLE HAVING AN ETHYLENE-1-OLEFIN COPOLYMER AS THE DIELECTRIC MATERIAL
James E. Pritchard, Bartlesville, Okla., assignor to Phillips Petroleum Company
Filed June 1, 1971, Ser. No. 148,392
Int. Cl. H01b *9/04*
U.S. Cl. 174—102 R **12 Claims**



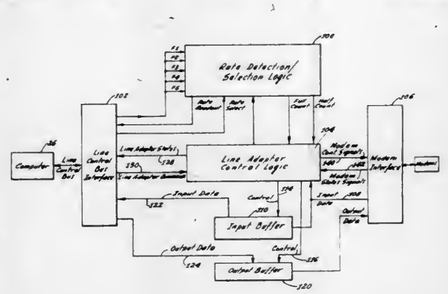
An electrical cable having at least two spaced apart electrical conductors separated by a dielectric material comprising a copolymer of ethylene and a 1-olefin having at least three carbon atoms per molecule, the copolymer having a density in the range of about 0.928 to about 0.945 and the dielectric material having a dielectric constant of less than about 2.325, a dielectric dissipation factor of less than about 55 microradians at 30 megahertz, and an environmental stress cracking resistance of at least 800 hours.

3,674,916
INSULATOR WITH CONDUCTOR PIERCING CLAMP FOR INSULATED CABLE
Dominick W. Langella, 12 Kendrick Lane, Dix Hills, N.Y.
Filed March 16, 1971, Ser. No. 124,848
Int. Cl. H01b *17/16*
U.S. Cl. 174—169 **2 Claims**



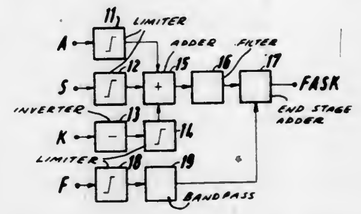
A clamp for securing an insulated or covered cable to a pole insulator. The clamp has provision for piercing the insulation of the cable and thereby directly connecting the clamp to the conductor of the cable, averting radio frequency discharges between the conductor and the clamp.

3,674,917
FREQUENCY SELECTING SYSTEM
William N. Myers, Jr., Huntington Beach, Calif., assignor to American Micro-Systems, Inc., Santa Clara, Calif.
Filed Feb. 24, 1971, Ser. No. 118,396
Int. Cl. H04l *15/00*
U.S. Cl. 178—2 R **14 Claims**



This invention relates to a computer system for selecting the rate of presentation of a plurality of digital signals from a particular number of rates stored in the computer. During a particular number of digital signals such as the first two digital signals in a sequence, clock signals are introduced to a counter. Every time that the counter overflows, the frequency of the clock signals is reduced by an arithmetic factor and a count is inserted into the counter in accordance with the reduction in the frequency of the clock signals. At the end of the particular number of digital signals, the computer determines the rate of the digital signals from the count in the counter and the frequency of the clock signals and selects, from the particular number of rates stored in the computer, the rate closest to the determined rate. The computer then resets the count in the counter and selects the frequency of the clock signals in accordance with the selected rate of the digital signals.

3,674,918
METHOD AND ARRANGEMENT FOR THE TRANSMISSION OF SYNCHRONIZING INFORMATION TO COLOR TELEVISION APPARATUS
Ernst Legler, Seeheim a. d., Germany, assignor to Fernseh GmbH, Darmstadt, Germany
Continuation of Ser. No. 780,368, Dec. 2, 1968, abandoned. This application March 2, 1971, Ser. No. 120,371
Claims priority, application Germany, Dec. 1, 1967, P 15 37 104.7
Int. Cl. H04n *9/44*
U.S. Cl. 178—5.2 R **23 Claims**



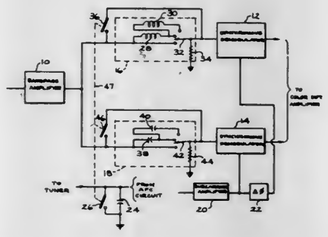
A method and arrangement for the transmission of synchronizing information to color television apparatus, particularly when operated in accordance with the PAL (V-axis) color television system. The required synchronizing signals are

all combined within one signal which is then transmitted over a single video transmission line to the color television apparatus. The four required synchronizing signals are the blanking signal, the sync signal, the registration pulse (burst gating pulse) of the color sync signal, and the color carrier signal. The blanking signal and the sync signal are added with identical polarity, whereas the registration pulse (burst gating pulse) of the color sync signal is added with opposite polarity and with equal amplitude. The blanking signal and the registration pulse (burst gating pulse) assume the identical amplitude region. The color carrier signal is added to the preceding sum after suppression of the color carrier frequency portions.

3,674,919
DISABLING CIRCUITRY, FOR AUTOMATIC FREQUENCY HUE CONTROL

Donald E. Garrett, Chesapeake, and Theodore V. Zaloudek, Portsmouth, both of Va., assignors to General Electric Company

Filed Oct. 26, 1970, Ser. No. 83,828
Int. Cl. H04n *5/50, 9/12*
U.S. Cl. 178—5.4 R **5 Claims**



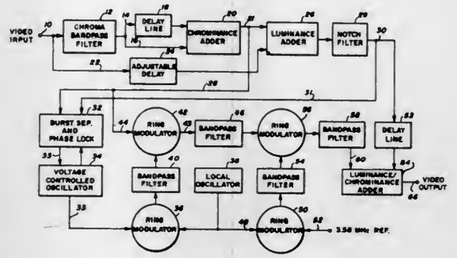
First and second selector switch means are provided for adding or subtracting reactive elements from phase shift circuits which supply chroma signals to the demodulator stages of a color television receiver. First and second disabling switch means are placed in shunt with the reactive elements and associated switch means for disabling the phase shift circuits during fine adjustment of various controls by a viewer. A third disabling switch is provided for removing a bias provided by an automatic frequency control module from the tuner stage of the receiver. All three disabling switches are linked together for simultaneous operation such that tuning and color signal control circuitry is disabled to allow the receiver to be adjusted manually. The disabling switches may then be opened, allowing the automatic frequency control and phase shifting circuits to resume their functions.

3,674,920
TIME BASE CORRECTION SYSTEM FOR VIDEO RECORDING APPARATUS

Yves C. Faroudja, Sunnyvale, Calif., assignor to Data Memory, Inc., Mt. View, Calif.

Filed Sept. 14, 1970, Ser. No. 71,845
Int. Cl. H04n *1/22*
U.S. Cl. 178—5.4 CD **7 Claims**

A color correction system wherein a comb filter circuit and a heterdyne circuit are operatively interrelated to provide time base correction with de minimis reduction in luminance information. The comb filter portion of the circuit provides for the extraction and separation of chrominance and luminance information while the heterodyne portion provides time base correction of the unstable chrominance information. After stabilization, the chrominance signal is recombined

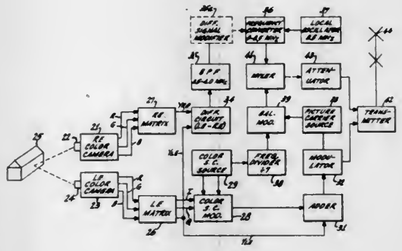


with the luminance signal to reconstitute the composite video output signal.

3,674,921
THREE-DIMENSIONAL TELEVISION SYSTEM

Alfred Norton Goldsmith, New York, N.Y., assignor to RCA Corporation

Continuation-in-part of Ser. No. 678,710, Oct. 27, 1967, abandoned. This application Nov. 12, 1969, Ser. No. 875,796
Int. Cl. H04n *9/60*
U.S. Cl. 178—5.4 R **28 Claims**

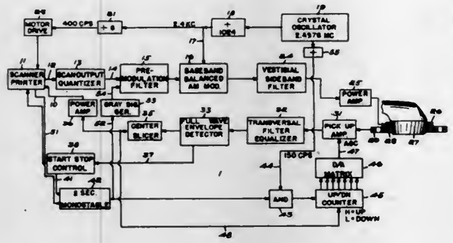


The high frequency difference between the complete respective left and right eye representative video signals is shifted to the low frequency video signal spectrum and transmitted at reduced amplitude in the vestigial sideband of the picture carrier, the complete sideband of which conveys one of the complete video signals to a receiver at which the complete video and difference signals are separately recovered, the latter being restored to its original amplitude and position in the frequency spectrum and combined with the recovered complete video signal to simulate the other complete video signal. The fully transmitted and recreated video signals are employed to produce two horizontally interleaved images on the screen of a cathode ray tube for viewing through vertical lenticulations. The difference signal may be modified before transmission to compensate for certain anomalous optical effects and/or to create a desired psychophysical effect in the picture reproduced by the cathode ray tube.

3,674,922
SYNCHRONIZED OR UNSYNCHRONIZED PARTIAL RESPONSE BINARY SIGNALLING

Roy G. Salaman, and John B. Picchiottino, both of Boulder, Colo., assignors to Phonocopy, Inc., Wilmington, Del.

Continuation of Ser. No. 719,062, April 5, 1968, abandoned, which is a continuation-in-part of Ser. No. 579,591, Sept. 15, 1966, abandoned. This application Jan. 19, 1971, Ser. No. 107,866
Int. Cl. H04b *1/66, 3/14;* **H04l** *27/00*
U.S. Cl. 178—6 **15 Claims**



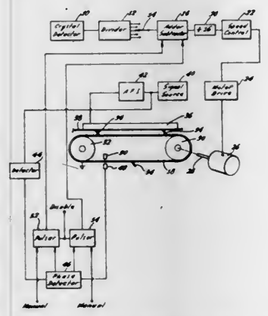
A transmission system for synchronized or unsynchronized non-return to zero (NRZ) binary waves with minimum time between transitions of $1/Kf_1$ where $K<2$ and f_1 is the upper frequency zero response for the transmission channel utilizes a center threshold to recover the original binary NRZ stream from a partial response binary signal resulting from transmission of the NRZ binary through the narrow band channel. The partial response binary signal transmitted is obtained from the original NRZ binary signal of signal shaping in accordance with an amplitude function of:

$$A(f)=\frac{\pi f}{2f_1}\cot\frac{\pi f}{2f_1}$$ and a linear phase characteristic.

3,674,923
FACSIMILE SYSTEM WITH IMPROVED SCANNING

Thomas H. Gifft, Anaheim, Calif., assignor to T. H. Gift Co., Inc., Anaheim, Calif.

Filed June 30, 1969, Ser. No. 837,545
Int. Cl. G01d *15/06, 15/24;* **H04n** *1/22*
U.S. Cl. 178—6.6 R **11 Claims**

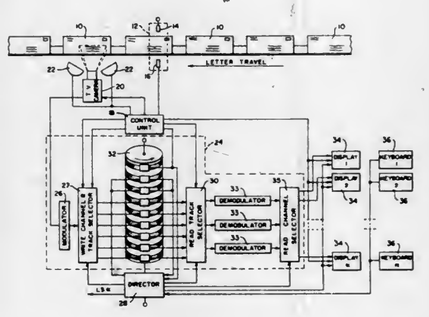


A facsimile system includes means to add or subtract control pulses or means to control a voltage controlled oscillator to provide for the proper visual orientation of the facsimile on the facsimile paper. The addition or subtraction of pulses may be accomplished manually or may be accomplished automatically using the phase detector to determine the proper orientation of the visible facsimile. The control of the voltage controlled oscillator may also be accomplished using a phase detector. The invention also includes an automatic frequency selector to provide that the amplitude of the signal applied to the facsimile system has a linear relationship with frequency of the input signal so as to produce the proper facsimile reproduction. The invention also includes the use of a canted roller system to insure that the facsimile paper has the proper tension to prevent shrinkage of the paper which again insures a proper visual output representation of the facsimile.

3,674,924
DOCUMENT SCANNING AND DISPLAY SYSTEM

Robert E. Fischer, Dayton; Lawrence C. Raiff, Kettering; James M. Seybold, Trotwood, and Donald F. Zimmerle, Dayton, all of Ohio, assignors to The National Cash Register Company, Dayton, Ohio

Filed Oct. 2, 1970, Ser. No. 77,640
Int. Cl. H04n *7/18*
U.S. Cl. 178—6.8 **3 Claims**



A system for scanning a moving document and displaying a still image of the document without physically impeding the travel of the moving document. The documents, which may contain human-readable information thereon, are caused to be successively transported past a television camera positioned in a darkened chamber, with the document side containing the readable information oriented towards the television camera. Timed control pulses cause flash lamps, also housed in the darkened chamber, to be momentarily energized, thus bathing the document in a bright flash of light at a time when the document is positioned within the television camera's field of view. The light image formed by the document is stored in the form of charged picture elements on the television camera's light-sensitive screen. These charged picture elements are then electronically scanned for generating video signals, which are stored in a storage device. The stored video signals are subsequently displayed on one of a plurality of television display monitors on a first-in, first-out basis. The readable information is then read by human operators who determine the final disposition of the documents whose image is being currently displayed on a television monitor.

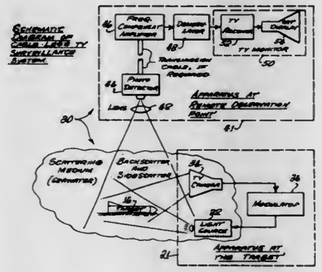
3,674,925
CABLE-LESS TELEVISION SYSTEM

Paul J. Heckman, Jr., Rancho Santa Fe, Calif., assignor to The United States of America as represented by the Secretary of the Navy

Filed Dec. 3, 1970, Ser. No. 94,659
Int. Cl. H04n *7/02*
U.S. Cl. 178—6.8 **12 Claims**

This invention relates to apparatuses and methods for enabling surveillance of a distant target from a remote viewing point which does not require a cable or acoustic signals

between the target and the viewing point. The apparatus at the target includes a light source, for example, a laser, for illuminating the target, and which may be modulated by any of various known techniques, at a frequency in the range of 3 kHz or more. A TV camera tube, which observes the target, generates a conventional composite video signal, including horisontal and vertical blanking pulses, the bandwidth of the video system being at least 50 kHz. A light source modulator connected between the light source and the TV camera tube, modulates the light source in accordance with the variation in amplitude of the composite video signal.



The apparatus at the remote viewing point includes a lens for focusing the light from the target, remote light source, and any scattered light from the medium in which the target is located, and a photodetector for receiving the light focused by the lens. A frequency-compensating amplifier, connected to the photodetector, compensates for any drop in high-frequency response to the photodetector. A demodulator, connected to the output of the frequency-compensating amplifier, demodulates the modulated composite video signal, and, in effect, decodes the video information. A TV monitor, connected to the output of the pulse-time demodulator, permits observing the target at the viewing point remote from the target.

3,674,926

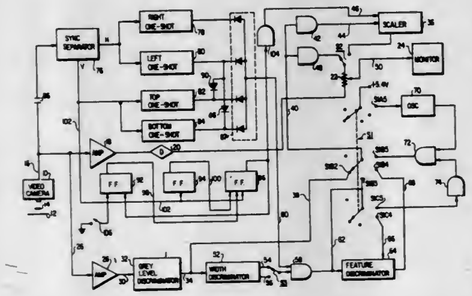
FEATURE COUNTER WITH IMPROVED MASKING AND GREY LEVEL DETECTION

Raymond D. Dewey, Bon Air; Robert S. Mapes, and Garth S. Jones, both of Richmond, all of Va., assignors to Reynolds Metals Company, Richmond, Va.

Continuation-in-part of Ser. Nos. 767,614, Oct. 15, 1968, Pat. No. 3,578,904, and Ser. No. 848,474, Aug. 8, 1969, Pat. No. 3,579,249. This application Feb. 11, 1971, Ser. No. 114,456

Int. Cl. H04n *7/18*

U.S. Cl. 178—6.8 **10 Claims**



A specimen analyzer including a video camera for scanning a specimen and selectively counting features thereof on the basis of grey level and/or size. The device may operate in several modes to count only features darker (or lighter) than the selected grey level, to count only features that are darker than a first grey level but lighter than a second grey level, to count only features wider than a selected width, to count only features wider than a first width but not as wide as a second width, or to count features that meet more than one of these tests. A variable electronic mask permits the operator to select any area of the specimen within the view of the camera for features analysis without moving the specimen. Check spot pulses are generated for each featured counted and these may be displayed on a video monitor superimposed on a video display of the specimen. Provision is made for background compensation when counting features against the background that varies considerably in grey level. Further provision is made for cycling the specimen analyzer through a single cycle, corresponding to the field scan time of the video camera, each time a start button is depressed.

3,674,927

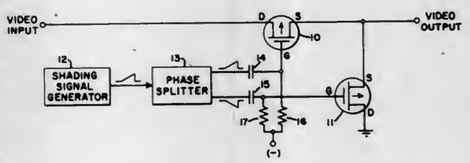
VIDEO SHADING MODULATOR WITH PARAPHASE CONTROL SIGNALS APPLIED RESPECTIVELY TO VARIABLE IMPEDANCE DEVICES IN SERIES AND IN PARALLEL WITH THE VIDEO SIGNAL PATH

Thomas M. Jordan, Jr., Liverpool, N.Y., assignor to General Electric Company

Filed March 16, 1971, Ser. No. 124,777

Int. Cl. H04n *5/40*

U.S. Cl. 178—7.2 **6 Claims**



To correct for degrading optical and pickup tube effects, amplitude of a video signal is varied by a shading signal. The shading signal is furnished to the input of a phase splitter and the resulting signals of opposite phase are furnished to respective gates of a pair of closely matched, variable impedance devices, such as field effect transistors, one such device being connected in series with the video signal path and the other such device being connected in shunt with the video signal path. By using matched field effect transistors as the variable impedance devices, their quiescent output resistances are substantially identical and the circuit, therefore, exhibits symmetry.

3,674,928

SCANNING APPARATUS FOR ELECTROLUMINESCENT CROSSED-GRID PANEL

Masami Yoshiyama; Teruo Sato, and Hitoshi Takeda, all of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed March 10, 1970, Ser. No. 18,067

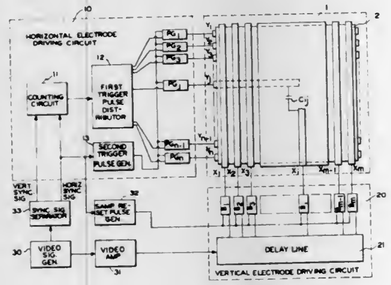
Claims priority, application Japan, March 14, 1969, 44/21067; March 14, 1969, 44/21068; March 14, 1968, 44/21069

Int. Cl. H04n *5/70*

U.S. Cl. 178—7.3 D **3 Claims**

A scanning apparatus for an electroluminescent crossed-grid panel having a multiplicity of electroluminescent elements at the intersections of horizontal and vertical electrodes. The scanning apparatus has a horizontal electrode driving circuit adapted to be coupled to said horizontal electrodes and having a set of pulse generators for supplying a selecting pulse to a horizontal electrode to be scanned sequentially in response to a synchronizing signal of a video signal

and for supplying the remaining horizontal electrodes at the same time with blanking pulses which are in phase with said selecting pulse and have an amplitude less than one-half of said selecting pulse. A video signal supply means is coupled to said horizontal electrode driving circuit for supplying the synchronizing signal of the video signal. A vertical electrode driving circuit is provided which has a set of brightness control circuits, each of which includes a transistor having the collector thereof adapted to be connected to a corresponding vertical electrode. A circuit for supplying a multi-channel video signal is connected to the base of each said transistor, and a delay means is provided having a delay time corresponding to one horizontal period of the video signal and has taps connected to associated brightness control circuits. A sample reset signal generator is coupled to said brightness control circuits and to said video signal supply means for supplying a sample signal and a reset signal to said brightness control circuits in response to synchronizing signals of a video signal. The video signal supply means is coupled to said vertical electrode driving circuit for supplying an amplified video signal to the input terminal of said delay means. By means of this apparatus each of said electroluminescent elements along the horizontal electrode to be scanned is simultaneously controlled with respect to the brightness thereof by varying the collector resistance of each of said transistors in response to the multi-channel video signals which are sampled at each tap of said delay means at the same time.



3,674,929

DEMODULATION SYSTEM REGENERATING CARRIER WAVES PHASE SYNCHRONIZED WITH CORRESPONDING CARRIER WAVE COMPONENTS IN HORIZONTAL SYNCHRONIZING PULSE MODULATED CARRIER WAVES

Susumu Akiyama, and Mitsuaki Naganuma, both of Tokyo, Japan, assignors to Nippon Electric Company, Limited, Tokyo, Japan

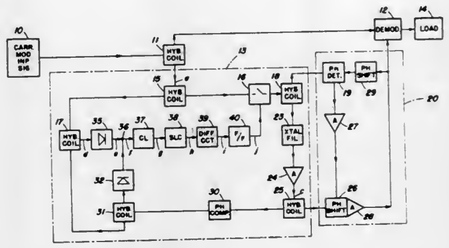
Filed Oct. 17, 1969, Ser. No. 867,306

Claims priority, application Japan, Dec. 9, 1968, 43/89729

Int. Cl. H04n *5/44*; **H04b** *1/68*

U.S. Cl. 178—7.3 R **10 Claims**

A receiver for a vestigial sideband television signal having a low excess carrier ratio regenerates the carrier for demodulation of that signal by means of a sampling gate and a filter. The sampling gate samples the received signal during the synchronizing intervals therein under control of a gate signal which is developed by the subtraction of the envelope of the regenerated carrier from the envelope of the in phase sum of the regenerated carrier and the received signal. The regenerated carrier is supplied to the demodulator through an Automatic Phase Control system.



3,674,930

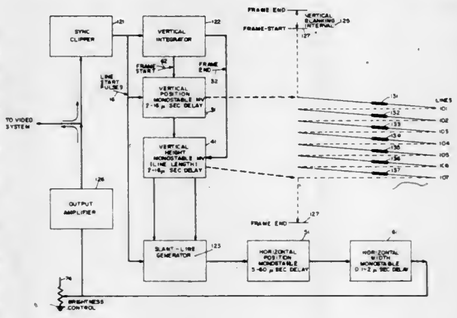
VIDEO POINTER

Michael R. Monett, Somerville, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Oct. 2, 1969, Ser. No. 863,154

Int. Cl. H04m *5/44*

U.S. Cl. 178—7.5 R **8 Claims**



A line or rectangle is superimposed on a video picture to direct attention to features of the picture and to indicate heights and angles of lines in the picture. Video signals are sampled to provide synchronizing triggers to timing circuits. Four timing circuits define the vertical position and height, and horizontal position and width of the rectangle or line. One additional timing circuit defines the angle the line makes with the vertical, permitting slanted lines or diamond shapes. The pulses which form the line, rectangle or diamond shape are fed back to the video system on the same cable which brought the composite signal to the hand-held video pointer circuitry.

3,674,931

DARK CURRENT CLAMP FOR TELEVISION CAMERA WITH A CIRCULAR FIELD OF VIEW PERMITTING MAXIMUM UTILIZATION OF VIDICON TARGET

James A. Fazio, Liverpool, N.Y., and William H. Wesbey, New Berlin, Wis., assignors to General Electric Company

Filed Dec. 8, 1969, Ser. No. 883,101

Int. Cl. H04n *5/18*

U.S. Cl. 178—7.1 DC **12 Claims**

A vidicon camera, operated in an overscan condition in order to obtain high resolution and sensitivity, employs a mask around the periphery of the target. Dark current clamp cir-

cuitry is made dependent on target current in the masked region, with the clamp pulse generated only at a time when the beam is sensing the portion of the target behind the mask so as to avoid producing horizontal streaks in the portion of the

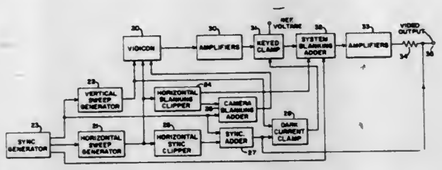
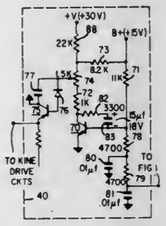


image containing the video information desired to be viewed. In conjunction with an X-ray image intensifier presenting a circular display, a circular ring-shaped mask permits a maximum amount of information to be viewed.

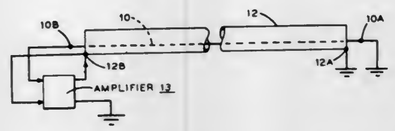
3,674,932
AUTOMATIC BEAM CURRENT LIMITER
Dal Frank Griepentrog, Indianapolis, Ind., assignor to RCA Corporation
Filed Feb. 16, 1971, Ser. No. 115,473
Int. Cl. H04n *5/19, 5/58*
U.S. Cl. 178—7.5 R **11 Claims**



A normally saturated transistor having its collector electrode serially coupled with the brightness control for a television kinescope, its emitter electrode grounded, and its base electrode coupled to sense the amount of current flowing through such device is effective to dynamically adjust the direct current bias of the video signal chain when that current exceeds a predetermined value, with the change in bias being in an offsetting direction to reduce the kinescope drive. Such an arrangement proves advantageous in eliminating the need for a brightness limiter control potentiometer—of the type utilized in U.S. Pat. No. 3,541,240, for example—which, though normally pre-set prior to delivery of the receiver to a purchasing customer, could become misadjusted and result in damage to the television picture tube.

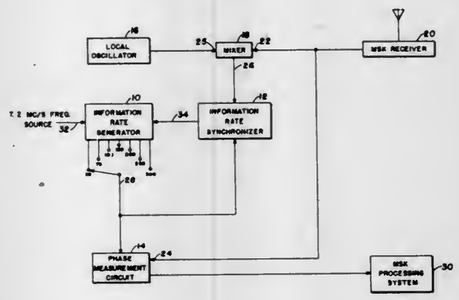
3,674,933
COMMUNICATIONS CABLES HAVING REDUCED INTERFERENCE CHARACTERISTICS
Walter Karl-Theodor Baum, Leyherstrasse 15, and Otto Breitenbach, Backlerstrasse 25, both of 85 Nurnberg, Germany
Filed Nov. 5, 1969, Ser. No. 874,225
Claims priority, application Germany, Nov. 7, 1968, P 18 07 408.3
Int. Cl. H04b *3/32*
U.S. Cl. 178—69 B **8 Claims**

A communications cable comprising a core with at least a first and a second signal conductor and a sheath of conductive material. The first signal conductor carries the communication signals. The input of an amplifier is connected to the second signal conductor while the output of the amplifier is connected at least to the sheath so that any voltages developed



across the second signal conductor and the sheath are fed via the amplifier to the sheath to neutralize their effect on the core.

3,674,934
MINIMUM SHIFT KEYED (MSK) PHASE MEASUREMENT DEVICE
Otis E. Gooding, Laurel, and Alton E. Dixon, Townson, both of Md., assignors to The United States of America as represented by the Secretary of the Navy
Filed Feb. 24, 1970, Ser. No. 13,397
Int. Cl. H04b *1/26*
U.S. Cl. 178—88 **5 Claims**

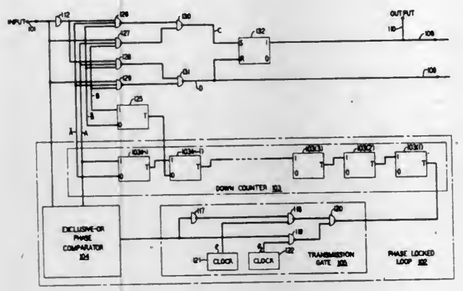


Apparatus for measuring the phase of an unsynchronized but phase continuous and stabilized Minimum Shift Keyed (MSK) signal by monitoring the data channels of an MDK data communication system. This is accomplished by a phase synchronization and measurement technique that compensates for the phase shifts introduced from the MSK modulation scheme. Thus, time-varying phase changes caused by propagation effects are determinable.

3,674,935
DIGITAL CIRCUIT DEMODULATOR FOR FREQUENCY-SHIFT DATA SIGNALS
Thomas Russell Lawrence, Leonardo, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Oct. 7, 1970, Ser. No. 78,696
Int. Cl. H04l *27/14*
U.S. Cl. 178—88 **10 Claims**

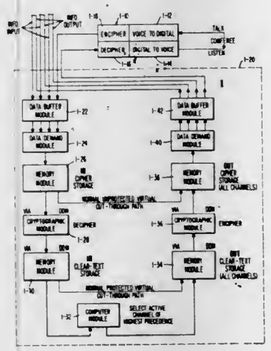
FSK data signals are applied to a digital phase-locked loop having a countdown feedback circuit producing a signal wave which leads or lags the phase of the data signal by an angle which is dependent on the frequency of the data signal. The countdown circuit also generates a second signal wave which lags the phase of the feedback wave by a fixed angle. The

unique permutations of concurrent amplitudes of the three signals are processed by sets of gates to recover the baseband



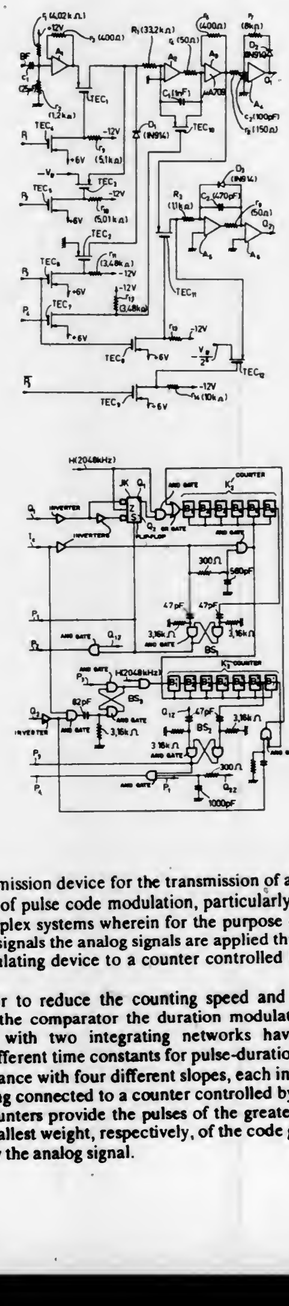
signal. Counters monitor the outputs of the gates to detect steady tone signals and loss of carrier.

3,674,936
VOICE CONFERENCE SYSTEM
Fred G. Wolfe, Malvern, Pa., assignor to Burroughs Corporation, Detroit, Mich.
Continuation of Ser. No. 625,067, March 22, 1967, abandoned. This application Feb. 26, 1970, Ser. No. 14,771
Int. Cl. H04m *3/16*
U.S. Cl. 179—1.5 R **6 Claims**



The present application discloses a voice conference system which may be utilized to provide virtual cut-through (VCT) service when used in conjunction with a modular data processor in a store and forward message switching system. The virtual cut-through service so provided allows the transmission of continuous traffic as well as digital voice communications. This feature coupled with other novel characteristics of the system make it possible to implement an extremely effective secure voice conference service.

3,674,937
TRANSMISSION DEVICE FOR THE TRANSMISSION OF ANALOG SIGNALS BY MEANS OF PULSE CODE MODULATION
Maurice Georges Bellanger, Antony; Jacques Lucien Daguet, St. Maur, and Tuan Kiet Duong, Velizy, all of France, assignors to S.A. Telecommunications Radioelectriques et Telephoniques T.R.T., Paris, France
Filed Feb. 2, 1970, Ser. No. 7,635
Int. Cl. H04j *3/04*
U.S. Cl. 179—15 A **6 Claims**



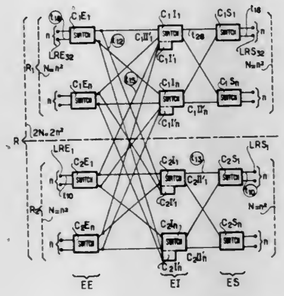
A transmission device for the transmission of analog signals by means of pulse code modulation, particularly in time-division multiplex systems wherein for the purpose of generating the PCM signals the analog signals are applied through a duration modulating device to a counter controlled by clock pulses.

In order to reduce the counting speed and the dynamic range of the comparator the duration modulating device is provided with two integrating networks having mutually greatly different time constants for pulse-duration modulation in accordance with four different slopes, each integrating network being connected to a counter controlled by clock pulses which counters provide the pulses of the greatest weight and of the smallest weight, respectively, of the code group characterized by the analog signal.

3,674,938
EXPANDED MULTI-STAGE TIME CONNECTION NETWORK

Jean-Baptiste Jacob, Saint-Quay Perros, France, assignor to C.I.T.-Compagnie Industrielle Des Telecommunications, Paris, France and Societe Lannionaise D'Electronique, Lannion, France

Filed Dec. 29, 1970, Ser. No. 102,371
Claims priority, application France, Dec. 29, 1969, 6945219
Int. Cl. H04j 3/08; H04q 3/42
U.S. Cl. 179—15 AQ 8 Claims

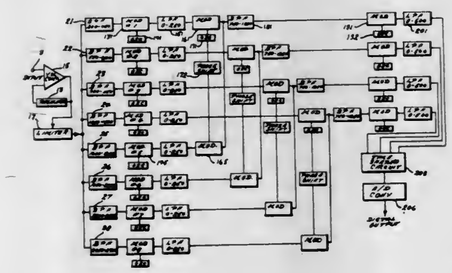


Time connection network consisting of two identical networks, each input switch of a network being connected to the intermediate switches, each intermediate switch comprising two assemblies consisting of input registers and a buffer memory, each assembly being connected to a control memory and to the same output registers.

3,674,939
BASEBAND PULSE CODE MODULATION SYSTEM

Fred A. Brooks, 5 Emerson Gardens, Lexington, Mass.

Filed Nov. 26, 1969, Ser. No. 879,999
Int. Cl. H04b 1/66
U.S. Cl. 179—15.55 R 2 Claims

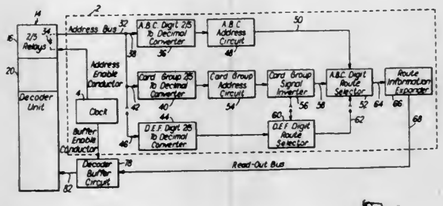


Pulse code modulation system for reducing bandwidth in which voice signal input is compressed, limited, filtered into frequency channels, all of which are converted to the same baseband frequency and are fed to a time sharing multiplexing circuit followed by an analog to digital circuit for transmission. The digital signal is received, converted to analog, demultiplexed, demodulated to voice frequency channels and bandpass filtered. The number of channels applied to the time sharing circuit can be reduced by common band occupancy quadrature carrier methods and then converted to baseband.

3,674,940
TELEPHONE TRANSLATOR APPARATUS

Derek Leyburn, Mississauga, Ontario; Bernard R. Montague, Dollard Des Ormeaux, Quebec, and Henry K. Mattila, Roxboro, Quebec, all of Canada, assignors to Bell Canada, Montreal, Quebec, Canada

Filed June 29, 1970, Ser. No. 50,808
Claims priority, application Great Britain, July 3, 1969, 33,657/69
Int. Cl. H04q 3/47
U.S. Cl. 179—18 ET 10 Claims

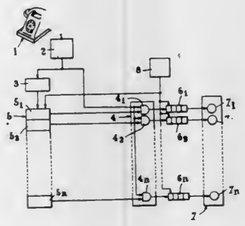


Telephone translator apparatus including an integrated circuit translator unit for translating input codes each made up of a number of code digits into translations each made up of a number of information bits and a plurality of decoder stages to initiate a direct route connection and capable of providing an alternate route when a direct route is not available, the integrated circuit translator unit being selectively connected, in turn, to the output of each decoder stage.

3,674,941
CALL-NUMBER MONITORS FOR TELEPHONES

Guy Claude Guetta, 12 Place d'Anuers, Paris, 9, France

Filed June 1, 1970, Ser. No. 42,129
Claims priority, application France, June 1, 1970, 6918008
Int. Cl. H04m 1/56
U.S. Cl. 179—90 AN 15 Claims

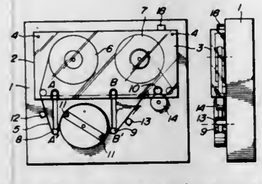


A monitor for sensing and displaying a call-number transmitted from a telephone when a telephone number is dialled, comprises an electrical impulse generator for sensing electrical impulses transmitted from the telephone when a number is dialled, and transmitting an amplified train of impulses to a monostable vibrator. The monostable vibrator in turn emits a pulse to a digit counter having a plurality of spaces. A logic circuit is provided including a plurality of gate means each having first inputs electrically connected to the output of the electrical impulse generator and second inputs each connected respectively to an output of a different stage of the digit counter. A plurality of totalizing counters are each electrically connected to the output of a gate means for totalizing the inputs transmitted from the gate means and the output of each totalizing counter is connected to display means.

3,674,942
MAGNETIC RECORDING AND REPRODUCING APPARATUS OF CASSETTE TYPE

Hiroshi Sugaya, Sulta, and Takuya Nasu, Hirakata, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 673,166, Oct. 5, 1967, abandoned.
This application Nov. 24, 1970, Ser. No. 92,544
Claims priority, application Japan, Oct. 17, 1966, 41/68833
Int. Cl. G11b 23/08
U.S. Cl. 179—100.2 Z 8 Claims

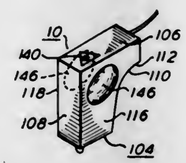


A magnetic recording and reproducing apparatus of the cassette type having a tape drive system in which a tape supply reel and a take-up reel are accommodated in a juxtaposed or unitarily stacked relation in a detachable tape cassette and movable tape guide rollers or pins are provided so that a magnetic tape can substantially straightly run in the quick feed and quick rewinding operation without being interfered by a rotary video head and other members, while the tape can be brought into engagement with the rotary video head in the recording and reproducing operation.

3,674,943
HANDHELD MAGNETIC TRANSDUCER WITH TIP MEMBERS HAVING A HEMISPHERICAL READING PORTION

William G. Benson, West Orange, N.J., assignor to Litton Business Systems, Inc., New York, N.Y.

Filed Sept. 4, 1969, Ser. No. 855,122
Int. Cl. G11b 5/22
U.S. Cl. 179—100.2 C 2 Claims

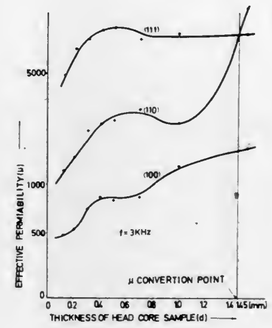


A handheld magnetic transducer comprises a gun-shaped housing having a directional arrow on one surface. The arrow is illuminated by a light within the housing indicating the operating state of the transducer as determined by a signal device. The housing has dimples in opposed side walls for ease of grasping. The armature is in two parts. Each part has a T-shaped portion the crossbars of which overlap. The armature is inserted within the bobbin and is resiliently held at the crossbars to lock into position with a shim. The bobbin front wall in combination with the armature and shim form the muzzle or reading end of the transducer and has a substantially frustro pyramidal shape. The armature-bobbin structure is held in place by fingers which form a part of the transducer housing. The wires from the coil are secured to clips. The clips or terminal are U-shaped members spring retained on arms of the bobbin. The clips each have a flange portion for engaging an aperture in the arm. The reading portion of the transducer is hemispherical in shape with the gap defining an arc thereon such that the transducer is capable of rotation or positioning about one of three axes while moving relative to a record.

3,674,944
MAGNETIC TRANSDUCER HEADS

Toshio Iemura; Masaru Doi, and Yoshiaki Shimizu, all of Moriguchi, Japan, assignors to Sanyo Electric Co., Ltd.

Filed June 12, 1970, Ser. No. 45,670
Claims priority, application Japan, June 12, 1969, 44/46382
Int. Cl. G11b 5/14
U.S. Cl. 179—100.2 C 6 Claims

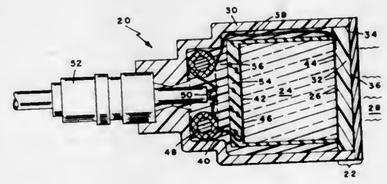


A magnetic transducer head comprises a pair of single crystal ferrite core members each having a magnetic path forming surface of a 111 plane, or substantially a 111 plane, such that if inclined thereto no property of a 111 plane is lost. The ferrite block is decreased in thickness by working under a frequency parameter f comprising the operating upper limit frequency of the head core, the thickness of the head core affording a μ conversion point defined by the thickness v. effective permeability characteristic curve of the head core which is not smaller than the width of the track on the record medium engaged by the head.

3,674,945
ACOUSTIC IMPEDANCE MATCHING SYSTEM

Edward Hands, San Carlos, Calif., assignor to Raytheon Company, Lexington, Mass.

Filed March 11, 1970, Ser. No. 18,582
Int. Cl. H04r 1/28, 17/00
U.S. Cl. 179—110 A 12 Claims

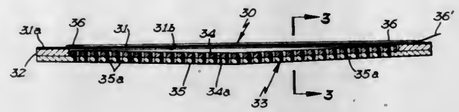


A transducer assembly incorporating a stratified medium for conducting acoustic waves from an acoustic source of relatively high impedance, such as a piezoelectric crystal, to a gaseous environment of relatively low impedance, the stratified medium including typically at least one layer of a foam structured low density plastic material, whereby uniform variations in impedance are provided progressively from the source through the layers of the stratified medium into the gaseous environment to effect an impedance match.

3,674,946
ELECTROMAGNETIC TRANSDUCER

James M. Wisey, White Bear Lake, Minn., assignor to Magnepan Incorporated, White Bear Lake, Minn.

Filed Dec. 23, 1970, Ser. No. 100,856
Int. Cl. H04r 9/00
U.S. Cl. 179—115.5 42 Claims

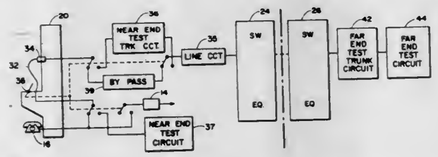


An electromagnetic transducer utilizing one or more vibratable diaphragms, each carrying one or more conductors which may be stacked upon each other on the diaphragm, and a flexible sheet magnet confronting the diaphragm and spaced therefrom and being magnetized in a direction through its thinnest dimension in elongate zones, following the configuration of the conductors on the diaphragm, the sheet magnet lying against a panel of ferromagnetic material; another diaphragm optionally located at the opposite side of the magnet, the diaphragm being stretched in many embodiments, and numerous vibratable areas with different resonant frequencies.

3,674,947
REMOTE TESTING SYSTEM FOR COMMUNICATION CIRCUITS

William Chulak, Chambly, Quebec, Canada, assignor to Northern Electric Company, Limited, Quebec, Canada

Filed May 3, 1971, Ser. No. 139,724
Int. Cl. H04m 3/22
U.S. Cl. 179—175.2 R 5 Claims



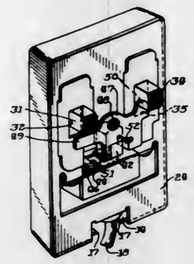
A connection to a test trunk circuit and associated test circuit at an outlying central office is dialed from a test center, eliciting a short reply tone pulse as a signal to restore local circuits manually from the dialing to the testing connection. This last operation causes the local circuits to supply an answering tone which causes the remote circuits to be readied for testing until disconnected by operation of a disconnect key at the test center. In order to dispose of accidental calls by third parties to the far end test number, a timer applies a busy tone to the far end line if the answer signal does not appear within 6 seconds after the line is seized.

3,674,948
CONTROL MECHANISM HAVING CYCLE SWITCHES SELECTIVELY ACTUATING A MODE SWITCH

Frank W. Betlejewski, Chicago, and Sanford M. Hanberg, Morton Grove, both of Ill., assignors to Bell & Howell Company, Chicago, Ill.

Filed Feb. 2, 1971, Ser. No. 111,891
Int. Cl. H01h 9/20
U.S. Cl. 200—50 C 5 Claims

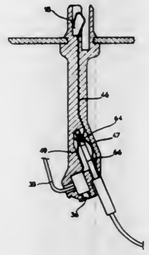
A control mechanism is provided for selecting among predetermined operational modes of an instrument upon actuation of selected of a plurality of manually operable cycle switches. The cycle switches are coupled mechanically with a mode switch which is adjustable to be actuated to one of the operative modes upon first actuation of a cycle switch following an actuation of another cycle switch. The last actuated cycle switch may be cycled repeatedly without changing the mode switch.



3,674,949
CONNECTING DEVICE FOR AN ELECTRONIC APPARATUS CARRYING PANEL

Claude P. H. Leymarie, Grenoble, France, assignor to MERLIN GERIN, Societe Anonyme of Rue Henri Tarze, Grenoble, France

Filed Aug. 3, 1971, Ser. No. 168,692
Claims priority, application France, Aug. 10, 1970, 7029464
Int. Cl. H01r 33/30
U.S. Cl. 200—51.1 8 Claims



A connecting device for connecting a plurality of input and output conductors directly to an electronic apparatus carrying panel, such as a printed circuit-panel. A binding post having plug-in contacts receives the border of the panel and has screw-operated contacts for clamping the end of the conductors. The plug-in contacts and the screw contacts are connected by a strips having a bridge contact which can be opened by an insulating jack.

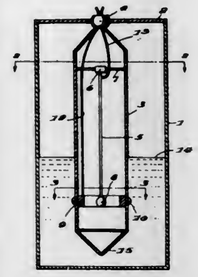
3,674,950
SELF-ALIGNING MOTION DETECTORS

Andrew E. Scoville, Ellington, Conn., assignor to American Multi-Lert Corporation, Hersbey, Pa.

Filed Oct. 21, 1970, Ser. No. 82,570
Int. Cl. H01h 35/14
U.S. Cl. 200—61.48 12 Claims

A motion detector for energizing an alarm signal at a suitable location and which is responsive to linear motion of an object on which the detector may be mounted and capable of self-alignment to the object. The detector comprises a case or

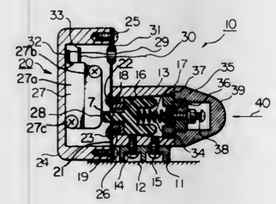
suitable enclosure within which an outer pendulum or pendulum body is supported for freedom of universal but sluggish movement and within which a second pendulum or body is supported for universal and unconstrained movement with respect to the outer pendulum. Contact is made between respective pendulums or bodies upon motion of the case to transmit an electrical signal to a suitable sensor, alarm or the like. The motion of the outer pendulum is suitably constrained as by immersing it in a liquid within the case or by providing it with a greater period than the inner pendulum or body in compound pendulum aspects. A contact ring may be located on the inner wall of the outer pendulum or other suitable contact means for electrical contact between the ring and the inner pendulum or between the contact means to close a control circuit.



3,674,951
TRIGGER SWITCH FOR MOTOR VEHICLE SAFETY DEVICES

Takashi Haruna, Yokosuka, and Kazutaka Taniguchi, Tokyo, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Feb. 19, 1971, Ser. No. 116,961
Claims priority, application Japan, March 18, 1970, 45/26022
Int. Cl. H01h 35/14
U.S. Cl. 200—61.53 1 Claim

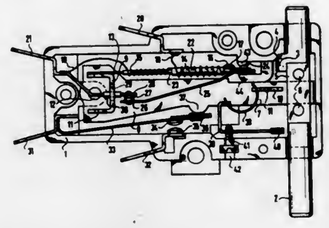


A trigger switch mechanism for actuating motor vehicle safety devices responsively to deceleration of a given magnitude resulting from a collision of the motor vehicle. The mechanism comprises a cylinder mounted on the vehicle body in a horizontal manner with a cylindrical weight mounted within the cylinder chamber for axial movement so that when the trigger switch mechanism is subjected to deceleration of a given magnitude in the one direction, a force of inertia forces the cylindrical weight to move axially in the opposite direction, allowing an actuator pin to extend so that a microswitch is closed.

3,674,952
LOCKSWITCH

Jakob Ellenberger, Altdorf near Nuernberg, Germany, assignor to Ellenberger & Poensgen GmbH, Altdorf near Nuernberg, Germany

Filed Oct. 26, 1970, Ser. No. 83,893
Claims priority, application Germany, Oct. 27, 1969, P 19 53 983.4
Int. Cl. H01h 27/06, 61/013, 7/00
U.S. Cl. 200—61.64 9 Claims

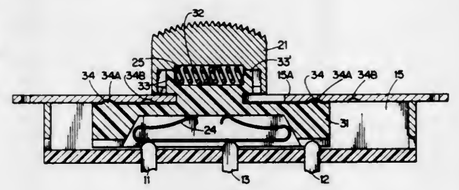


A lock switch for washing machine doors and the like having a locking plunger which is moved by a lever which is acted on by a bimetal strip. The strip may be caused to bend by a heating coil, and the bending movement is transmitted to the plunger by the lever.

3,674,953
SLIDE SWITCH WITH SNAP ACTION

Arnold A. Brevick, Hollywood, Fla., assignor to UID Electronics Corp., Hollywood, Fla.

Filed Sept. 21, 1970, Ser. No. 73,706
Int. Cl. H01h 15/18
U.S. Cl. 200—77 8 Claims



A snap action sliding contact switch interconnects at least two stationary contacts. Actuation temporarily stores energy in a spring generally parallel to the path of sliding movement that is then released against the movable contact support to provide snap action.

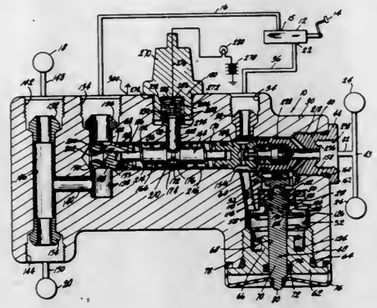
3,674,954
PRESSURE RESPONSIVE MECHANISM

George R. Kish, Owosso, and Kenneth B. Swanson, Bannister, both of Mich., assignors to Midland-Ross Corporation, Cleveland, Ohio

Filed June 19, 1970, Ser. No. 47,718
Int. Cl. B60t 17/22
U.S. Cl. 200—82 D 7 Claims

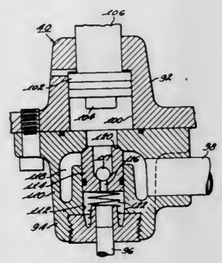
A pressure responsive mechanism for use in dual hydraulic brake systems of automotive vehicles wherein the front and rear brakes of the vehicle are provided with independent hydraulic brake systems actuated by a dual master cylinder, the pressure responsive mechanism being interposed between the dual master cylinder and the front and rear brake actuators and incorporating means actuable when a predetermined

pressure differential occurs between the front and rear brake systems to effect a signal and being automatically reset when the pressure differential falls below a predetermined value. The pressure responsive mechanism also incorporates brake proportioning means and in the event of loss of pressure in the



front brake system while pressurization of the rear brake system relative to the front brake system has been reduced by the brake proportioning means, means is also provided for disabling the brake proportioning means and restoring full pressurization of the rear brake system.

3,674,955
CIRCUIT BREAKER WITH HYDRAULIC OPERATING MECHANISM FOR VACUUM INTERRUPTER
Henry L. Peek, Wellesley, Mass., assignor to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.
Filed Dec. 17, 1970, Ser. No. 98,972
Int. Cl. H01h *35/38*
U.S. Cl. 200—82 B **9 Claims**

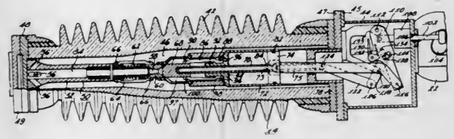


A vacuum circuit breaker comprises three vacuum circuit interrupters, each having a pair of separable contacts therein, which are opened and closed by an operating mechanism. The operating mechanism comprises a separate operating rod connected to the movable contact of each interrupter and each operating rod has an opening acceleration spring connected thereto. All operating rods are driven to contact closed position by a main piston which is disposed in a hydraulic cylinder. Hydraulic fluid is supplied to the cylinder under great pressure by a high-speed gear pump, which is driven by a DC series-wound high speed electric motor, through a small orifice (containing a one-way check valve) located in a valve piston in the cylinder. The valve piston, which is spring-loaded, effects closure of a relatively large dump port leading from the cylinder. The valve piston is moved to open the dump port when the main piston is mechanically moved against the fluid in the cylinder by all operating rods as they are driven to contact open position by their accelerating springs.

Closing of the circuit breaker is accomplished by energizing a closing solenoid which releases a first latch which allows a spring loaded motor control switch to close momentarily. Closure of the motor control switch starts the pump motor and the pump supplies hydraulic fluid to drive the main piston (and all operating rods) to contact closed position. Such movement allows a second latch to reset and engage a lever connected to the main piston to lock the latter (and the operating rods and contacts) in closed position. Resetting of the second latch also opens the motor control switch to stop the pump motor.

Opening of the circuit breaker is accomplished by energizing a trip solenoid which releases a third latch which allows the second latch to be disengaged from the lever under the action of the opening acceleration springs on the operating rods as the latter move to open position. Such movement of the operating rods causes movement of the main piston, opening of the valve piston, and rapid dumping of the hydraulic fluid from the cylinder.

3,674,956
PUFFER TYPE CIRCUIT INTERRUPTER
Heinrich H. Erni, Walpole, Mass., assignor to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.
Filed Nov. 19, 1970, Ser. No. 91,057
Int. Cl. H01h *33/70*
U.S. Cl. 200—148 A **21 Claims**

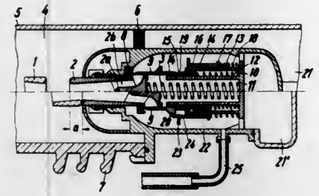


Electrical circuit interrupting apparatus comprises a support at ground potential having three spaced apart upstanding rotatable insulators thereon. Disconnect switch means are supported between a first end column and a second center column and rotation of both of these columns effects operation of the disconnect switch. A puffer type circuit interrupter is connected in series with the disconnect switch and is supported between the second center column and a third end column and rotation of the latter column effects operation of the interrupter.

The interrupter comprises a sealed housing comprising a hollow insulator and a hollow metallic portion containing an arc extinguishing gas and a hollow stationary contact and a solid movable contact are located within the insulated portion of the housing. A stationary cylinder with a piston therein is also located within the insulated portion of the housing. Operating means are located in the metallic portion of the housing and are responsive to rotation of the third end column and effects piston movement in one direction and compression of the gas in the cylinder. Subsequent to compression of the gas in the cylinder, contact separation occurs and gas is forced from the cylinder, through the arc established between the separating contacts, through the hollow stationary contact and back into the housing.

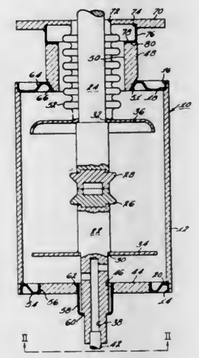
3,674,957
GAS BLAST SWITCH
Gerhard Korner, Schriesheim; Wolfgang Schmitz, Birkenau; Friedhelm Dabringhausen, Mannheim-Wallstadt, and Lothar Gruber, Dortmund, all of Germany, assignors to Brown, Boveri & Cie AG, Mannheim, Germany
Filed May 19, 1971, Ser. No. 144,765
Claims priority, application Germany, May 22, 1970, P 20 24 988.1
Int. Cl. H01h *33/86*
U.S. Cl. 200—148 BV **11 Claims**

In the gas blast switch disclosed, a first contact member in a gas pressure chamber moves from an open position out of contact with a counter-contact member toward the forward position of the counter-contact member until it hits the latter and drives it backwards against the force of a spring. The counter-contact member forms a gas seal with a valve sleeve that the counter-contact member pushes back against the force of a second spring. A spring actuated retaining mechanism holds the sleeve in the back position. When the first contact member



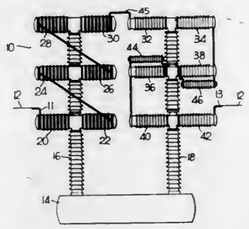
is moved into the open position the sleeve is held and the first spring moves the counter-contact member away from the sleeve to open the seal. This releases a flow of gas from the chamber past the contact member. The gas flow strikes a vane in the retaining mechanism. The response of the vane is to release the sleeve. The second spring drives the thus released sleeve into engagement with the counter-contact member to cut off gas flow.

3,674,958
VACUUM CIRCUIT INTERRUPTER
Edward A. Attia, Milwaukee, and Rolf Dethlefsen, New Berlin, both of Wis., assignors to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.
Filed Nov. 23, 1970, Ser. No. 92,032
Int. Cl. H01h *33/66*
U.S. Cl. 200—144 B **4 Claims**



An improved vacuum type circuit interrupter rated at 50 mva and for use at a voltage level of 4.8 KV and above comprises a constant diameter hollow cylindrical copper envelope into which a stationary and movable OFHC copper contact rods extend. Each contact rod is provided at its tip with a copper-bismuth alloy contact. A pump-out port is provided through the stationary contact rod. In one embodiment, one end of the envelope is provided with a substantially flat ceramic end plate which has a central opening for accommodating the stationary contact rod. A thin Kovar sealing ring is disposed between the envelope and the outer periphery of the ceramic end plate and a thin Kovar sleeve is disposed between the end plate and the stationary contacr rod. The other end of the envelope is provided with a hollow cylindrically shaped ceramic end tube. A thin Kovar ring is disposed between the envelope and the outer periphery of the ceramic end tube. A copper mounting plate having a central opening is secured to the outer end of the ceramic end tube and a cylindrical bellows surrounds the movable contact rod and is secured between the mounting plate and the movable contact rod. Disk-like shields made of copper or nickel are disposed against shoulders on the two contact rods to confine arc products. In a second embodiment of the invention, a ceramic tube is used instead of the flat ceramic end plate.

3,674,959
CIRCUIT INTERRUPTER CLOSING RESISTORS
Thomas F. Clark, Canton, Mass., assignor to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.
Filed Dec. 10, 1970, Ser. No. 96,887
Int. Cl. H01h *33/16, 33/14*
U.S. Cl. 200—144 AP **5 Claims**

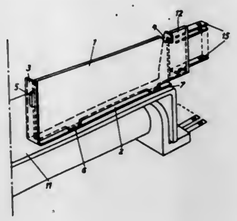


A fluid blast type electric circuit interrupter comprises a tank at ground potential containing compressed fluid (air). First and second hollow insulating columns are mounted on said tank in spaced apart relationship. The first insulating column supports six transversely arranged insulating housings and a pair of separable circuit interrupter contacts are located in each housing. The second insulating column also supports six transversely arranged insulating housings. A pair of separable isolator contacts are located in each of the two upper and each of the two lower housings on the second insulating column. A pair of separable resistor control contacts are located in each of the two middle housings on the second insulating column. All pairs of contacts are connected in series. Each pair of resistor control contacts is shunted by a closing resistor. Fluid flow control valves are located in the tank and in the two insulating columns to effect opening and closing operations of the pair of contacts of the circuit interrupter. The control valves effect an opening operation by first opening the circuit interrupter contacts, subsequently opening the isolator contacts and the resistor control contacts simultaneously, and subsequently reclosing the circuit interrupter contacts. The control valves effect a closing operation by first closing the isolator contacts and subsequently closing the resistor control contacts.

3,674,960
MEANS FOR ATTACHING A PRINTED CIRCUIT CARD ON A RELAY
Tore Samuel Krantz, Stockholm, Sweden, assignor to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden
Filed Dec. 17, 1970, Ser. No. 98,981
Claims priority, application Sweden, Jan. 9, 1970, 254/70
Int. Cl. H01b *9/02*
U.S. Cl. 200—168 C **3 Claims**

A substantially rectangular printed circuit board is secured to the yoke of a relay by means of a generally U-shaped holder the web of which is detachably mounted on the yoke. The circuit board is placed with its short edges between the branches of the holder parallel thereto. One short edge and one long edge of the board is retained on one branch and the web

respectively of the holder by lugs extending into corresponding slots in said branch and the web. The other branch of the holder is formed with a hook overlying the other long edge of the board pressing the same against the web. The board occupies the space on the yoke normally occupied by the contact spring assembly of the relay and has at its edge held by the hook soldering tags aligned with the general plane of the board. These tags are shaped and located similar to the soldering tags of a contact spring assembly.

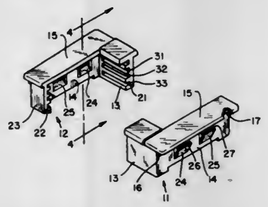


3,674,961

INSERTABLE HOUSING

Thomas H. Wright, Jr., Boca Raton, Fla., assignor to ULD Electronics Corp., Hollywood, Fla.

Filed April 2, 1971, Ser. No. 130,652
Int. Cl. H01h *9/08, 9/02*
U.S. Cl. 200—168 C **9 Claims**



Two like L-shaped elements mate together to form an insertable switch housing having a number of spaced grooves in opposed end walls for accommodating different types of switches and have opposed pairs of cantilevered L-shaped legs serrated at the top that may be urged inward as the housing is inserted through an opening in a chassis and then snap out to coact with an outside lip of the hosing and sandwich a portion of the chassis plate adjacent the edge of the slot through which the switch is inserted. A feature of the invention is that a number of switches may be inserted side by side in a common slot with a generally Z-shaped adapter between switches arranged to coact with respective generally L-shaped members so that two of the L-shaped members and one less than the total number of side-by-side switches to be accommodated form the housing.

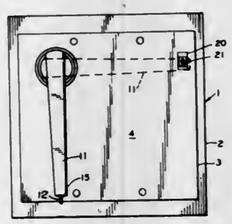
3,674,962

MEANS FOR A RETAINING A CIRCUIT BREAKER HANDLE IN ON POSITION WHILE THE CIRCUIT BREAKER CONTACT ARMS ARE LATCHED IN OFF POSITION

Jerry E. Kroeger, Mount Vernon, Iowa, assignor to Square D Company, Park Ridge, Ill.

Filed July 12, 1971, Ser. No. 161,824
Int. Cl. H01h *3/06*
U.S. Cl. 200—172 A **4 Claims**

The circuit breaker has an enclosure with a cover. An exterior operating handle is pivotally mounted on the cover for swinging in a path alongside the outer face of the cover to and from ON and OFF positions, selectively. A latching detent carried by the handle is movable relative thereto toward and away from the cover and is biased away from the cover by a spring. The cover carries an abutment positioned in said path. When the handle is swung along the path while the detent is in the retracted position, the detent can pass the abutment. The abutment is close to the ON position of the handle and can engage the detent when the handle is moved slightly from ON toward OFF position while the detent is in extended position. The force of the biasing spring is such that frictional resistance of the engaged surfaces of the detent and abutment can overcome the biasing force of the detent spring and thereby hold the detent member in extended position and thereby the handle in ON position, so long as a predetermined minimum applied force is applied to the handle in a direction to bias the handle in the OFF direction. The spring can retract the detent when the applied force becomes less than said predetermined minimum. The applied force is applied by toggle springs of the operating mechanism of the circuit breaker which springs have been preconditioned, by the movement of the handle to ON position, while the circuit breaker contact arms are latched in OFF position, for moving the contact arms of the circuit breaker to ON position when the arms are released.

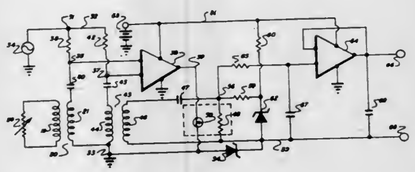


3,674,963

MEASUREMENT APPARATUS HAVING NON-CONTACT ELECTRICAL COUPLING TO COMPONENTS ON A MOVING SURFACE

Leonardo V. Serrano, Minneapolis, Minn., assignor to Rosemount Inc., Eden Prairie, Minn.

Filed Oct. 19, 1970, Ser. No. 81,852
Int. Cl. H05b *5/00*
U.S. Cl. 219—10.61 **12 Claims**



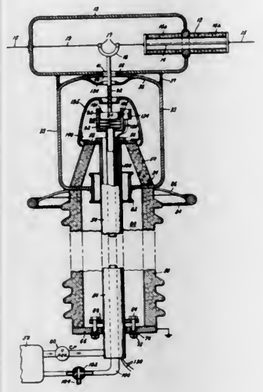
A system for measuring temperature sensed by a resistance thermometer attached to a moving structure. Impedance of the resistance thermometer is coupled into an AC bridge and a variable resistor is also coupled into the bridge to balance the bridge when the thermometer changes in impedance due to temperature change. The resistance of the variable resistor is sensed by DC circuitry and a resultant DC signal proportional to temperature is thus provided.

3,674,964

HIGH VOLTAGE ELECTRIC CIRCUIT BREAKER WITH RAPID RESPONSE TRIPPING MEANS

Philip Barkan, Media, Pa., assignor to General Electric Company

Filed May 20, 1971, Ser. No. 145,415
Int. Cl. H01h *33/54*
U.S. Cl. 200—148 R **18 Claims**



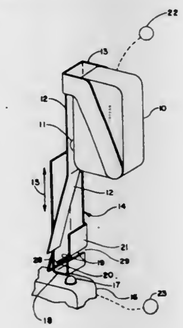
A high voltage electric circuit breaker comprising a high potential tank mounted atop an insulating column. Opening of the circuit breaker is initiated by an operator located atop the insulating column in a housing filled with high dielectric strength fluid. The operator is maintained at ground potential by electroconductive structure extending vertically through the column between the operator and the base of the column. The operator is connected to control means within the high potential tank by a short operating rod of insulating material that extends through said dielectric fluid.

3,674,965

SWITCH PROGRAMMING DEVICE WITH SEQUENTIALLY ACTUATED SWITCHES

Donald E. Moodie, Nashua, N.H., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Oct. 5, 1970, Ser. No. 78,103
Int. Cl. H01h *9/26*
U.S. Cl. 200—153 R **20 Claims**



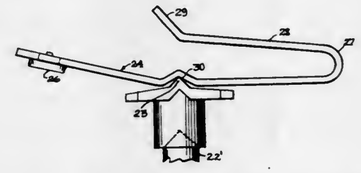
A mechanical system for operating functions for example, electrical switches on a programmed basis. An actuator movable past a follower in reciprocatory movement with the follower on one path in one direction and on another path in the reverse direction. One way mechanical gate to require change in travel path on reverse of reciprocation to preclude reversal of sequence regardless of reversal of movement. Ramp and platform to actuate and hold switch on programmed basis. Application example, sequential operation of electronic flash units in a photographic system.

3,674,966

TILT SWITCH WITH ELONGATED SWITCH BLADE MOUNTED ON A TRIANGULAR PIVOT FOR WIPING ACTION

Eric L. Long, Highland Park, Ill., assignor to Cherry Electrical Products Corporation, Highland Park, Ill.

Continuation-in-part of Ser. No. 724,809, April 29, 1968, Pat. No. 3,562,462. This application June 22, 1970, Ser. No. 48,197
Int. Cl. H01h *1/18, 23/30*
U.S. Cl. 200—164 **4 Claims**



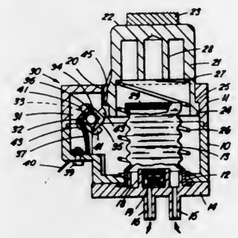
A switch having a tiltable actuator for pivoting a switch blade about a pivot terminal post in a make-and-break movement with respect to a pair of associated terminal contacts, and for effecting continuing wiping movement of the blade transversely across the face of the terminal contact.

3,674,967

WINDSCREEN WASHING DEVICES

Brian Allison Walker, Stoke, England, assignor to Chrysler United Kingdom Limited, London, England

Filed Sept. 14, 1970, Ser. No. 71,644
Claims priority, application Great Britain, Sept. 19, 1969, 46,341/69
Int. Cl. H01h *17/08*
U.S. Cl. 200—156 **2 Claims**



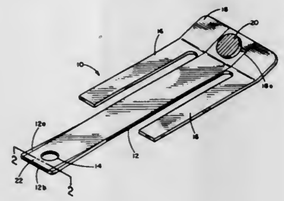
A windscreen washing device comprises a washing fluid pump having an operating member which also opens and closes an electrical switch for a windscreen wiper motor by successive movements of the member from a first to a second position. Detent means are provided for holding the switch in the closed and open positions and the switch can be closed by movement of the operating member to an intermediate position without releasing the detent means so that when the operating member is returned to the first position the detent means re-open the switch.

3,674,968
ELECTRICAL CONTACT ASSEMBLY HAVING DAMPING MEANS
Thomas Edward Langdon, 10 Park Crescent, Elstree, England
Filed July 20, 1970, Ser. No. 56,287
Claims priority, application Great Britain, July 25, 1969, 37,613/69
Int. Cl. H01h *1/50*
U.S. Cl. 200—166 H **12 Claims**



An electrical contact for a conductive shaft such as a shaft for a moving coil in an electrical meter, the contact comprising a housing containing a mobile conductive medium such as mercury, which connects the shaft to an input or output conductor. The mobile conductive medium is normally retained within the housing by virtue of a small running clearance for the shaft. The contact is vibration proof within a range of acceleration forces and vibration frequencies Damping of the shaft may be effected by a liquid mobile conductive medium.

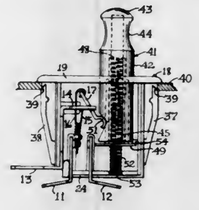
3,674,969
STAINLESS STEEL SNAP ACTING MECHANISM WITH LOW RESISTANCE ELECTRICAL PATH
Gordon A. Engle, Freeport, Ill., assignor to Honeywell Inc., Minneapolis, Minn.
Filed Aug. 4, 1971, Ser. No. 168,915
Int. Cl. H01h *1/02*
U.S. Cl. 200—166 C **5 Claims**



A snap acting electrical switch having a current carrying snap acting mechanism formed of an integral stainless steel member including a tension element and a compression element, one of the elements being substantially flat and the other being displaced from a planer configuration. The substantially flat element only having a material of higher conductivity joined thereto so as to enhance current carrying characteristics of the mechanism without having adverse effect on the mechanical characteristics of the mechanism.

3,674,970
PANEL-MOUNTED SWITCH
Michael F. Bedocs, Highland Park, Ill., assignor to Cherry Electrical Products Corporation, Highland Park, Ill.
Filed Oct. 23, 1970, Ser. No. 83,497
Int. Cl. H01h *3/12*
U.S. Cl. 200—168 C **4 Claims**

A switch housing adapted to be mounted in an opening formed in a wall panel having a construction comprising complementary case and cover, each providing an inner structural configuration by which various switch actuators resulting in different conventional operations of the switch components, may be accommodated. The switch components employed with the various actuators comprise spaced apart terminals

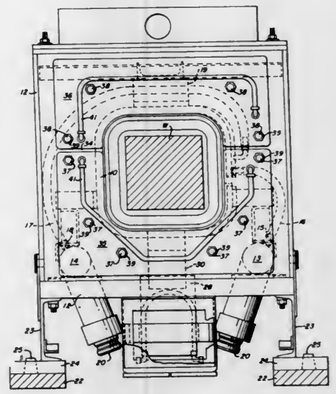


fixedly mounted in the switch housing, a combination terminal and pivot post for a switch blade, and a coil spring overcentering mechanism. The switch housing provides external yieldable arms by which the switch may be fixedly positioned in the opening formed in the wall panel, with the actuator exposed for ready operation.

ERRATUM

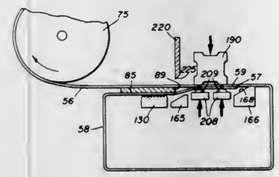
For Class 219—10.61 see:
Patent No. 3,674,963

3,674,971
INDUCTION HEATING COIL CONSTRUCTED TO MINIMIZE VIBRATION AND NOISE
William A. Emerson, and John A. Redmond, both of Ellicott City, Md., assignors to United States Steel Corporation
Filed May 13, 1971, Ser. No. 142,870
Int. Cl. H05b *9/02*
U.S. Cl. 219—10.79 **6 Claims**



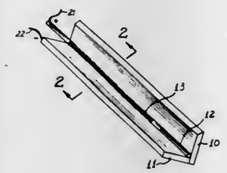
An induction heating coil which is constructed to minimize vibration and noise despite heavy loads and high voltage. The coil includes a tubing formed into a plurality of turns mounted in a frame. The tubing defines a tunnel through which a workpiece travels continuously in the direction of its length. Sectional water-cooled metal plates are placed over the ends of the tunnel and connected with tie bolts. The bolts carry Belleville washers or springs which are tightened to flatness.

3,674,972
WELDED JOINT STRAPPING MACHINE
Edward J. Stahnke, Riverdale, Ill., assignor to Interlake, Inc., Chicago, Ill.
Filed Oct. 27, 1970, Ser. No. 84,377
Int. Cl. B23k *1/00*
U.S. Cl. 219—56 **30 Claims**



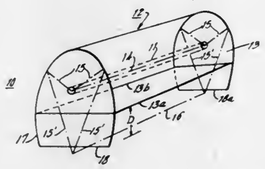
A strapping machine comprises gripping jaws for holding a strap encircled about an object with a free end portion of the strap overlapping the supply portion thereof, means for tensioning the loop about the object, a pair of welding electrodes disposed between the object and the overlapped portions of the strap, a shorting bar disposed on the opposite side of the overlapped portions of the strap, a shear blade for severing the welded strap loop from the strap supply, first drive mechanism for operating the shear blade and for moving the electrodes and shorting bar between a spaced-apart strap-passing position and a welding position clamping the free end portion of the strap against the overlapping tensioned portion, second drive mechanism for opening and closing the gripping jaws and for moving the electrodes laterally between the strap-passing position and a strap-releasing position disposed from between the strap and the object, and control apparatus actuating the drive mechanisms to sequentially tension the loop, weld the joint, relieve the strap tension, sever the strap, open the gripping jaws and move the electrodes to the releasing position.

3,674,973
LAYDOWN ELECTROSLAG WELDING PROCESS
Brian Anthony Graville, Ville La Salle, Quebec, Canada, assignor to Dominion Bridge Company Limited, Montreal, Quebec, Canada
Filed May 6, 1971, Ser. No. 140,731
Claims priority, application Canada, March 22, 1971, 108,393
Int. Cl. B23k *9/18*
U.S. Cl. 219—73 **5 Claims**



An electroslag welding process is described for welding metal workpieces, in which a consumable electrode is melted by contact with a molten slag pool supported in contact with surfaces of the workpieces onto which the metal from the electrodes is deposited. According to the novel feature, the workpiece surfaces together form a horizontally extending groove and the consumable electrode is placed horizontally within the groove surrounded by flux and at a distance from the workpieces greater than that at which arcing to the workpieces occurs during welding, whereby the electrode is progressively melted by the molten slag pool along the length of the groove with the molten electrode metal collecting at the bottom of the slag pool to form a weld joining the workpieces.

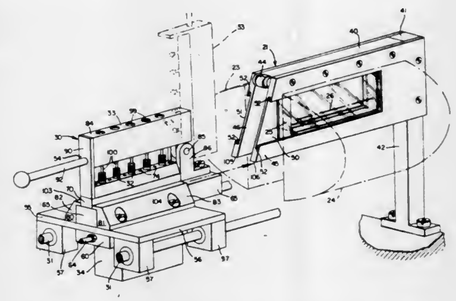
3,674,974
HEATING & FUSING DEVICE
Bernard J. Costello, Ringoes, N.J., assignor to Argus Engineering Company, Inc., Hopewell, N.J.
Filed Oct. 9, 1970, Ser. No. 79,515
Int. Cl. B23k *1/02*
U.S. Cl. 219—85 **8 Claims**



A heating device comprised of an elongated source of radiant energy and a reflector having a concave reflective surface whose cross-sectional configuration is substantially elliptical. The elongated energy source is positioned substantially coincident with the primary focus of the elliptical cylindrical reflector so as to cause radiant energy striking the reflective concave surface to be focused at the image focus of the elliptical surface.

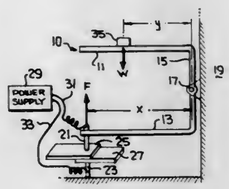
The reflector is a cylindrical member having planar highly reflective end portions which act to compensate for end losses and provide substantially uniform intensity of radiation along the entire line image.

3,674,975
APPARATUS FOR ASSEMBLING STACKS
Reginald F. Nugent, Yardley, Pa., and George P. Snyder, Trenton, N.J., assignors to Time Research Laboratories, Inc., Pennington, N.J.
Filed Nov. 6, 1969, Ser. No. 874,505
Int. Cl. B23k *1/02*
U.S. Cl. 219—85 **9 Claims**



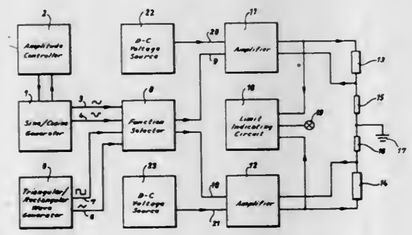
Equipment for assembling stacks including an infra-red source, a fixed socket, a reciprocating shuttle on which groups of stacks can be loaded in upright position, the shuttle is movable into the socket to form a dry box with the stacks inside, the stacks are then subject to receive infra-red energy through window means in the socket section and mechanical energy through a transducer mounted on the shuttle. After exposure the shuttle is moved away from the socket so that the stacks can be unloaded and replaced by a new group.

3,674,976
WELDING HEAD FOR PRODUCING UNIFORM AND REPEATABLE RESISTANCE WELDS
Sheldon S. Bitko, Cherry Hill, N.J., assignor to Fifth Dimension Inc., Princeton, N.J.
Filed Nov. 13, 1970, Ser. No. 89,391
Int. Cl. B23k 9/28
U.S. Cl. 219—86 5 Claims



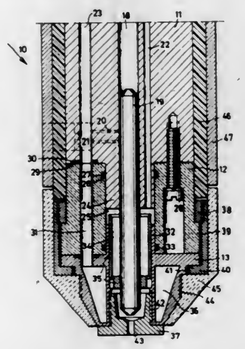
In a welding head, the weight of a substantially free-falling body is applied to a welding electrode via a lever, the mechanical advantage introduced by the lever being selected to achieve a predetermined movement of said electrode into a body to be welded during a predetermined time interval, irrespective of the magnitude of the weight, the weight being selected to apply a predetermined weld pressure at the electrode via the mechanical advantage of the lever. Timing operation depends solely on a falling weight and hence is perfectly reproducible for a variety of weld pressures.

3,674,977
ELECTRON BEAM DEFLECTION APPARATUS
Rolf Mayer, and Johann Reitinger, both of Stuttgart, Germany, assignors to Universitat Stuttgart, as represented by the Institut fur Kernenergetik, Stuttgart, Germany
Filed Dec. 11, 1970, Ser. No. 97,095
Claims priority, application Germany, Dec. 18, 1969, P 19 63 454.9
Int. Cl. B23k 15/00
U.S. Cl. 219—121 EB 7 Claims



Apparatus for deflecting the beam of an electron beam welding device, or similar source of a beam of radiant energy. The apparatus comprises a sine/cosine wave generator and a triangular/rectangular wave generator selectively connectable to the inputs of a bi-channel amplifier whose output is connected, for example, to the deflection coils, or plates, of the electron beam device. Circuitry is provided to obtain either a frequency or amplitude modulation of the deflection currents or voltages supplied to the deflection coils or plates of the device.

3,674,978
TORCH, ESPECIALLY FOR PLASMA CUTTING
Werner Becker, Frankfurt am Main; Alfward Farwer, Kelkheim; Georg Frank, Langen; Bernhard Reis, Frankfurt am Main; Josef Rohf, Frankfurt am Main, and Rupert Auer, Frankfurt am Main, all of Germany, assignors to Messer Griesheim GmbH, Frankfurt/Main, Germany
Filed April 23, 1971, Ser. No. 136,883
Claims priority, application Germany, April 24, 1970, P 20 19 946.6
Int. Cl. B23k 9/00
U.S. Cl. 219—121 P 6 Claims



Disclosed is a plasma cutting torch comprising an electrode holder, an intermediate insulating piece and a nozzle holder with a nozzle inset. The parts are coaxially arranged and connected by axial fastening means. The insulating piece has a central passage into which centering plugs of the electrode holder and of the nozzle holder are inserted. A central through bore in the electrode holder holds an electrode extending through a ceramic cartridge into the interior of the nozzle inlet.

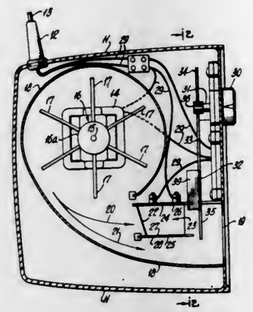
3,674,979
METHOD OF ARC WELDING
Arthur T. Cape, Monterey, Calif., assignor to Coast Metals, Inc., Little Ferry, N.J.
Filed Sept. 23, 1970, Ser. No. 74,930
Int. Cl. B23k 9/00
U.S. Cl. 219—137 4 Claims

A method of arc welding is disclosed in which a consumable electrode of predetermined composition and the same composition in granular or powdered form are fed separately to the weld area, so that variations in the amount of consumable electrode and granular or powdered composition are of no consequence, and the composition of the deposit will always remain constant. The necessity for careful control of the ratio of feed is thus eliminated, and, moreover, the pool of molten material under the arc is substantially cooler than that of the pool in other or conventional submerged arc welding methods, with the result that there is less dilution of the pool by the base or substrate.

3,674,980
DIVIDED FLOW HAIRDRYER
Ernest Francis Cox, Ponteland, Newcastle, England, assignor to Ronson Corporation, Woodbridge, N.J.
Filed May 9, 1968, Ser. No. 727,806
Claims priority, application Great Britain, May 9, 1967, 21,585/67
Int. Cl. H05b 3/00; F24h 3/04; A45d 20/08
U.S. Cl. 219—367 10 Claims

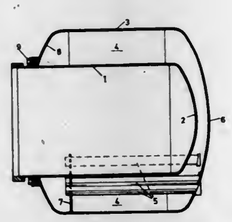
A hairdrying device having an electrically driven fan mounted therein for blowing ambient air, two distinct internal

air flow paths which terminate at a common output orifice, in one of which is mounted an electric resistance heating element, and an air flow regulator movably disposed common to both paths and located adjacent the common output orifice for mixing the hot and cold air streams in a ratio, according to



the user's desire, which is infinitely variable. The air flow regulator is in the form of a shutter which is larger than the output end of the air flow paths and has an open portion and a solid portion in which the open portion covers one of the paths and the solid portion covers the other in any desired ratio.

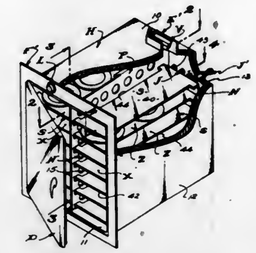
3,674,981
ELECTRICALLY HEATED STEAM-RAISING AUTOCLAVE
Henry M. Hattersley Pickard, Stanningley, Pudsey, England
Filed Jan. 11, 1971, Ser. No. 105,523
Claims priority, application Great Britain, Jan. 9, 1970, 1,233/70
Int. Cl. F27d 11/00
U.S. Cl. 219—401 5 Claims



A steam-raising autoclave having an outer jacket, an inner pan, an enclosed space between said outer jacket and the inner pan, and electrical heating means for heating water within the enclosed space for producing steam. The outer jacket is made of larger diameter or longer than usual, or both, in order to make the space between the outer jacket and the inner pan larger than usual for containing a required amount of water.

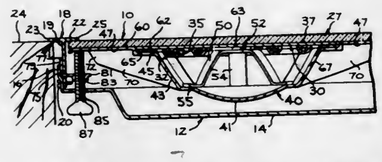
3,674,982
ZONE CONTROLLED COOK OVEN
Edwin D. Hoyt, Hemet, and Luther Welsh, Riverside, both of Calif., assignors to Rama Industrial Heater Co., San Jacinto, Calif.
Filed Nov. 9, 1970, Ser. No. 87,772
Int. Cl. F27d 11/02
U.S. Cl. 219—403 6 Claims

An oven for heating a plurality of individual prepared and refrigerated meals and comprising an insulated cabinet with an access door, a plurality of vertically spaced support shelves in the cabinet, the perimeters of which are spaced from adjacent walls of the cabinet, each shelf adapted to support a number of plates or trays on which the prepared meals are deposited and comprising a flat imperforate shelf-plate of



metal having a high modulus of heat conductivity, resistance heater units engaged within the shelf-plates and heat control means related to each shelf-plate and including an elongate heat sensing device within and substantially coextensive with the major dimension of the shelf-plate.

3,674,983
SMOOTH SURFACE ELECTRIC COOKTOP
Bohdan Hurko, and Raymond L. Dills, both of Louisville, Ky., assignors to General Electric Company
Filed April 8, 1971, Ser. No. 132,348
Int. Cl. H05b 3/68
U.S. Cl. 219—462 11 Claims

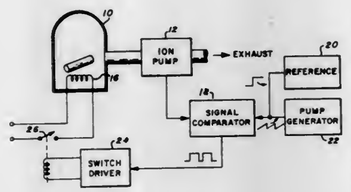


A smooth surface cooktop having a large glass-ceramic plate means with individual heated areas where each area is supplied with a combined aluminum plate and an electric heating element therebeneath. A deep drawn reflector pan underlies the aluminum plate and supports the peripheral edge thereof. The top edge of the reflector pan is extended outwardly to underlie the expanse of the glass-ceramic plate surrounding the heated area. A metal compression spring is seated in the reflector pan to bear against the underside of the aluminum plate to ensure good thermal coupling between the heated aluminum plate and the glass-ceramic plate. Adjustable hold-down means secure each heating element in a rough-in mounting box.

3,674,984
VARIABLE SETPOINT PROPORTIONAL CONTROL APPARATUS FOR VACUUM BAKEOUT SYSTEMS
John C. Coats, and George W. Wilson, III., both of Garland, Tex., assignors to Republic National Bank of Dallas; Irving Trust Company and Union Bank
Filed May 14, 1970, Ser. No. 37,271
Int. Cl. H05b 1/02
U.S. Cl. 219—496 3 Claims

An electronic heater control system for maintaining the vapor pressure within a vacuum bakeout system at an optimum level by causing the heating elements to be alternately energized and de-energized at a high frequency with the ON-OFF duty cycle being determined by the instantaneous vapor

pressure in the system. The control circuitry includes a means for generating a time varying reference signal and a signal comparator means for comparing a pressure responsive signal



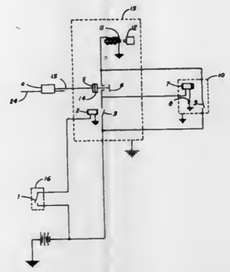
to the reference signal. The comparator means then generates a heater control signal in response to the comparison for use in driving a heater energization switching means.

3,674,985
IMMERSION HEATER ELEMENT
Beatrice Ragault, 27 Bois Jerome par Vernon, France
Filed Jan. 14, 1971, Ser. No. 106,484
Claims priority, application France, Jan. 16, 1970, 7001495
Int. Cl. H05b *3/06*
U.S. Cl. 219—523 **4 Claims**

An immersion heater comprising essentially a coil obtained by winding coilwise cable sections adapted to heat in their central portions and remain cold at their ends, and a tube containing the cold outlets of said coil and of a connector for securing the immersion heater to the edge of the vessel containing the fluid to be heated is characterized in that the turns of the coil are supported by flexible and resistant longitudinal rodlike elements assembled on the same side of the coil as the cold ends thereof, and sealed in the outlet tube. This immersion heater further comprises an electrical relay following the fastening connector. The coil and tube assembly is housed in an insulating sheath formed with slots.

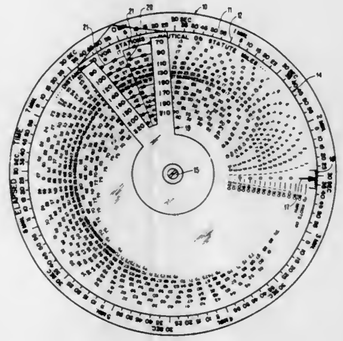
3,674,986
AUTOMATIC OCCUPIED TRIP COUNTING APPARATUS
Pascual S. Paz, 9073 Hormiga Street, Rizal, Philippines
Filed Feb. 16, 1971, Ser. No. 115,445
Int. Cl. G07b *13/00*
U.S. Cl. 235—30 A **2 Claims**

An apparatus that automatically counts and registers all occupied trips of a vehicle, partly actuated by the rotation of the vehicle wheel and partly by the occupant's weight, and which



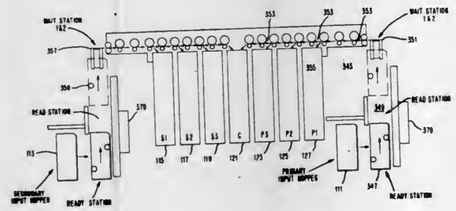
is also actuated by pulling down the taximeter flag.

3,674,987
AIRCRAFT NAVIGATIONAL CALCULATOR
Nunzio P. Addabbo, P.O. Box 926, Copperhill, Tenn.
Filed June 16, 1971, Ser. No. 153,571
Int. Cl. G06c *3/00*; **G06g** *7/78*
U.S. Cl. 235—88 **10 Claims**



A calculator, which enables a pilot of an aircraft to determine the distance of the aircraft from a VOR station when the ground speed of the aircraft is known or the ground speed of the aircraft when the distance of the aircraft from the VOR station is known, includes a circular base member having a scale in terms of time thereon. A member is rotatably mounted on the base member and has a plurality of concentrically arranged scales in terms of distance to the VOR station with each scale being for a different ground speed of the aircraft. When a pointer on the rotatable member is aligned at the time required to fly between two bearing radicals of the VOR station that are 20° apart, a transparent fixed indicator having a hairline radially aligned with the center of rotation of the rotatable member and concentrically arranged marks engaging the hairline with each mark representing one of the ground speeds of the aircraft enables either the distance of the aircraft from the VOR station to be determined with the ground speed known or vice versa. The base member has three circular concentric scales on its opposite side divided into 10° increments to indicate the required heading of the aircraft to fly between two bearing radials that are 10° apart.

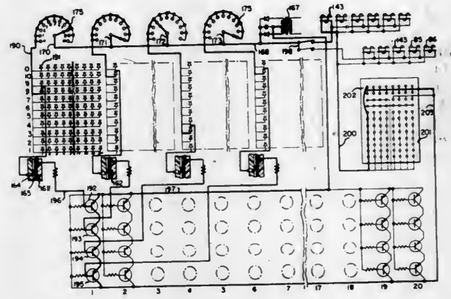
3,674,988
MACHINE TO READ INFORMATION FROM PUNCHED CARDS FOR THE PURPOSE OF DATA PROCESSING SAID INFORMATION AND FOR THE PURPOSE OF SORTING, COLLATING AND MERGING SAID PUNCHED CARDS IN ACCORDANCE WITH SAID PROCESSED INFORMATION
Joseph Pirra Francini, Norristown, Pa.; James Lopez Braxton, Jr., Morrestown, N.J.; Vera Gloria Lewis, Philadelphia, Pa.; Frank Henderson McPherson, Rosemont, Pa.; Daniel Rosenberg, Norristown, Pa., and Torkjell Sekse, Norristown, Pa., assignors to Sperry Rand Corporation, New York, N.Y.
Filed Oct. 19, 1964, Ser. No. 404,758
Int. Cl. G05b *1/00*; **G06k** *15/00*
U.S. Cl. 235—61.7 **33 Claims**



The present apparatus provides two read stations which simultaneously read cards at a high rate of speed and two associated transport means which enable cards to be transported toward a common receiving station and which are capable of transporting punch cards of various sizes. In addition the high speed transport systems have means to readily remove card jams. Further each of the transport systems has a waiting station therein which holds two cards simultaneously, each of said cards having been previously read and each of said cards being compared with a third card being transported through the associated read station. In addition the system provides an arithmetic means as well as a comparison means in order to permit the information from the cards to be processed arithmetically, i.e., added or subtracted and to be compared with a standard value or with an answer arrived at by virtue of the arithmetic process. Yet further the present system provides an editing means for inserting or deleting information as well as a means for translating from one code to another to accommodate a prescribed checking sequence priority. Another feature is the read-in and read-out means by virtue of which the present system may be used as a peripheral device with another data processor.

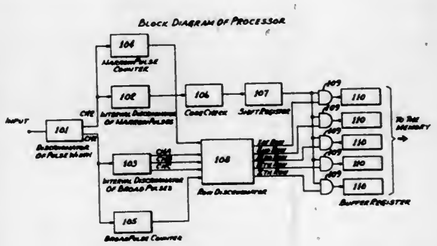
3,674,989
PUNCH CARD CONTROLLED ACCOUNTING MACHINE
Charles S. Nagy, Dayton, Ohio, assignor to The National Cash Register Company, Dayton, Ohio
Filed Feb. 12, 1971, Ser. No. 114,792
Int. Cl. G06k *15/06*
U.S. Cl. 235—61.6 R **11 Claims**

An accounting machine in which a perforated control card insertable into the machine programs the control of a plurality of feeding and printing mechanisms by predetermined control keys on the keyboard. Control circuits are utilized which include differentially settable switch means, sensing means for sensing perforations in the control card and a plurality of "AND" gates for selectively operating electromagnetic means



which control the feeding mechanism and a plurality of printing mechanisms.

3,674,990
MOVING OBJECT IDENTIFICATION SYSTEM
Noritaka Kurauchi; Shotaro Tada; Hiroshi Shima; Susumu Hiraoka; Taichiro Nagao; Masahiro Koyama; Satoshi Shiraishi; Masuo Shindo, and Yoshinobu Kobayshi, all of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan
Filed May 12, 1970, Ser. No. 36,558
Int. Cl. G06k *7/10, 19/06*; **E04g** *17/00*
U.S. Cl. 235—61.11 E **16 Claims**

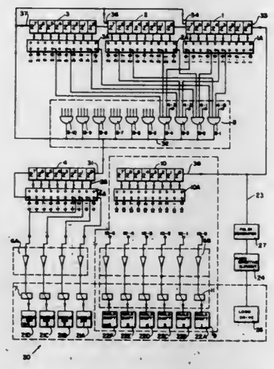


An optical electronic system for identification of railway cars. Code plates are attached to each of the railway cars and have a plurality of vertical row arrays of wide and narrow retroreflective strips arranged with respect to each other in accordance with a predetermined alpha-numeric and row code. A light beam narrower than the narrowest retroreflective stripe is vertically scanned over the code plate repeatedly as the railway car moves therepast horizontally in order to scan each of the vertical arrays of stripes and thereby produce a train of reflected light pulses which are then converted to electric pulses and decoded by measuring the pulse widths and intervals.

3,674,991
AUTOMATIC PROGRAMMING DEVICE FOR LOOMS
Krum Kostov Isvetkov; Ezekiya Georguiev Ezekiev, both of Sofia; Petko Petrov Nikolov, and Vassil Christov Otsetov, both of Samokov, all of Bulgaria, assignors to DSO Avtomatizatsia I Priborostroene, Sofia, Bulgaria
Filed Jan. 6, 1971, Ser. No. 104,446
Int. Cl. G07c *3/10*
U.S. Cl. 235—92 PD **5 Claims**

A prescribed program of weft color repeats for a loom is represented by stored counts in a plurality of binary counters.

During each of a succession of operating cycles of the loom in which wefts of the same color are to be repeated, the loom shuttle box assigned to that color is actuated by a corresponding output of a first one of the counters, whose counting input is driven by a coincidence circuit associated with a second counter. The second counter is pre-set for the prescribed number of weft color repeats and is stepped at the rate of



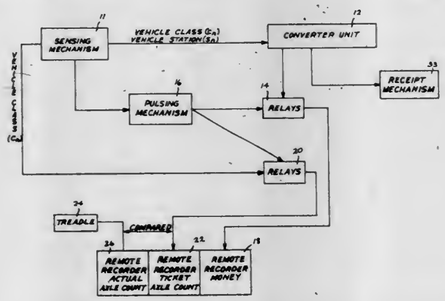
operation of the loom. When the last weft of that color repeat is inserted, the second counter excites the coincidence circuit to step the first counter. This action excites the shuttle box associated with the next weft color. A third counter stepped in synchronism with the stepping of the second counter selectively activates the loom heald shafts in preparation for insertion of the appropriate wefts.

3,674,992

CONVERTER FOR A TOLL VERIFICATION SYSTEM

Jackie L. Kirkham, 802 East Street, and Warren E. Jones, R.R. No. 5, P.O. Box 421, both of La Porte, Ind.

Filed June 11, 1969, Ser. No. 832,395
Int. Cl. B61l 1/16; G08g 1/065
U.S. Cl. 235—92 TC **5 Claims**



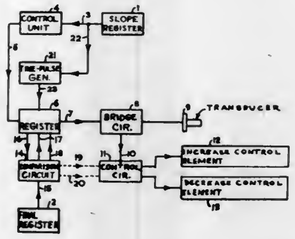
A converter for use in cooperation with a ticket sensing means and toll recorder in a toll verification system. Means are provided for producing a plurality of pulsed signal sequences to actuate the toll recorder. A plurality of switch means are provided in which each switch means controls the emission of a specific pulsed signal sequence. Means are included for receiving first and second output signals from the ticket sensing means and converting said signals into at least one switching signal which actuates a selected switch means to permit the pulsed signal sequence controlled thereby to activate the toll recorder.

3,674,993

CONTROL CIRCUIT ARRANGEMENT FOR CONTROLLING PARAMETERS OF A PROCESS AND A COMPARISON CIRCUIT ARRANGEMENT FOR USE IN CONJUNCTION WITH THE CONTROL CIRCUIT ARRANGEMENTS

Robert Mienstaedt, Spartanburg, S.C., assignor to Deering Milliken, Inc.

Filed July 15, 1968, Ser. No. 46,563
Int. Cl. G05b 19/02
U.S. Cl. 235—150.1 **5 Claims**



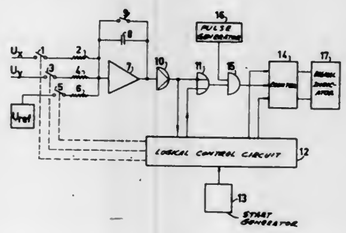
A control circuit arrangement for controlling parameters of a process in which information concerning a processing condition is contained in a register, and in which information concerning the rate by which the condition is to vary, e.g., the slope information, is supplied to a control unit controlling the register. The register is a digital register and the control unit is arranged to supply a pulse to the register each time a period, depending on the slope information, has elapsed whereby the register will alter its contents by a certain value in a direction determined by the desired find condition.

3,674,994

METHOD AND APPARATUS FOR MULTIPLYING ANALOG ELECTRICAL QUANTITIES

Volker Zimmermann, Viernheim, Germany, assignor to Brown, Boveri & Cie., A.G., Mannheim-Kaferstal, Germany

Filed Nov. 24, 1969, Ser. No. 879,392
Int. Cl. G06g 7/16; G06j 1/00
U.S. Cl. 235—150.52 **10 Claims**



Apparatus for multiplying analog electrical quantities comprises an integrator, such as a Miller integrator, to whose input can be selectively applied two or more electrical quantities, in the form of positive voltages, or a reference voltage, which is a negative voltage. The output of the integrator is connected to a signal range indicator whose output is connected to the inverted input of an OR gate and to a logical control circuit connected to the output of a start generator. The logical control circuit is connected to the non-inverted input of the OR gate, and the OR gate is connected to one input of an AND gate whose other input has connected thereto a post generator.

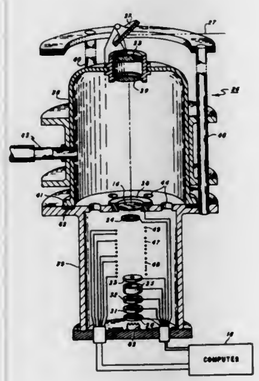
The output of the AND gate is connected to a counter whose counting direction is controlled by the logical control circuit, and the counter-output is connected to a digital indicator. To multiply the analog electrical quantities, the logical control circuit is activated to apply the first electrical quantity to the integrator and simultaneously to open the AND gate for transmission of a predetermined number of pulses from the pulse generator to the counter counting in the forward direction. After counting of the predetermined number of pulses, the first electrical quantity is disconnected at a first given time and the reference voltage is applied to the integrator while resetting the counter toward zero, until the voltage at the integrator output is zero at a second time. The reference voltage is then disconnected and a second electrical quantity is applied to the integrator while pulses are transmitted to the counter which is still counting in the backward direction, until the counter reading is zero. When the counter reading is zero, the second electrical quantity is disconnected at a third given time, the counter is set to count in the forward direction and the reference voltage is again applied to the integrator while the pulses are transmitted to the counter. The pulse count is then continued until the integrator output voltage is again zero.

3,674,995

COMPUTER CONTROLLED DEVICE TESTING AND SUBSEQUENT ARBITRARY ADJUSTMENT OF DEVICE CHARACTERISTICS

Don Leslie Kendall, Richardson, Tex., assignor to Texas Instruments Inc., Dallas, Tex.

Filed Aug. 31, 1970, Ser. No. 68,100
Int. Cl. G06f 15/46; G05b 15/00
U.S. Cl. 235—151.1 **21 Claims**



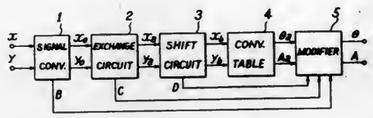
A system for arbitrary adjustment of device characteristics to produce parameter matched arrays or to do custom design utilizes computer control. The computer is linked with electron beam scanned testing to derive individual device characteristic information such as breakdown voltage, leakage, and switching time. From such derived information the computer generates a signal back to the electron beam, increasing its current intensity to heat the device and thereby change the device's characteristic properties. If bulk breakdown voltage is too low, for example, increased current intensity shifts the material toward n-type if done at about 500° C. in an N^+p diode, this would increase bulk breakdown voltage. When it reaches the predetermined (computed) level, the beam cuts off.

3,674,996

CONVERSION SYSTEM USING A CONVERSION TABLE

Hidetaka Yanagidaira, Ohmiya; Kazuo Kawai, and Sotokichi Shintani, both of Tokyo-to, all of Japan, assignors to Kokusai Denshin Denwa Kabushiki Kaisha, Tokyo-to, Japan

Filed Sept. 8, 1970, Ser. No. 70,403
Claims priority, application Japan, Sept. 12, 1969, 44/72461
Int. Cl. H04l 3/00
U.S. Cl. 235—154 **5 Claims**



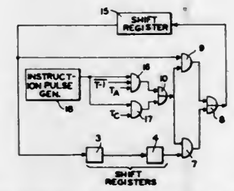
A conversion system for converting input information indicated by at least two input code units to output information indicated by at least two output code units by the use of a conversion table, in which the two input code units are shifted before application to the conversion table in the direction to upper digits until the most significant digit of a code unit indicative of an absolute value of one of the two input code units assumes one of two possible states of binary information so that the most significant digit of the two input code units applied to the conversion table do not at all assume the other of two possible states of binary information. Particular combinations of the two input code units having a condition in which a particular one of the two input code units is larger than the other may be excluded by exchanging the two input code units for each other.

3,674,997

RIGHT SHIFTING SYSTEM WITH DATA STORED IN POLISH STACK FORM

Goro Hamano, Osaka-shi, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Kadoma, Osaka, Japan

Filed Feb. 16, 1970, Ser. No. 11,385
Claims priority, application Japan, Feb. 26, 1969, 44/15197; Feb. 26, 1969, 44/15198
Int. Cl. G06f 7/48
U.S. Cl. 235—159 **2 Claims**

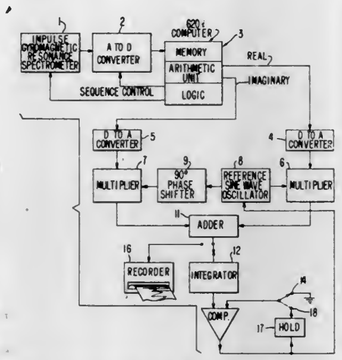


A right shifting system of a circulating register storing a plurality of time-space registers in serial of bits, in time division serial of time-space registers and in serial of digits. The system has a first shift register means, a second shift register means which receives output signals from the first shift register means, an input gate means which feeds input signals from both shift register means and for which two signal paths are provided, the first path receiving output signals from the first shift register means and the second path receiving output signals from the second shift register means, and a control circuit means which is coupled to the input gate means and which controls input signals to the input gate means from the two signal paths selectively so that the right shifting operation of the contents of at least two time-space registers of the plurality of time-space registers is completed.

3,674,998
METHOD AND APPARATUS FOR AUTOMATIC PHASE CONTROL IN A FOURIER ANALYZED READOUT OF IMPULSE RESONANCE DATA

Hanspeter Benz, Santa Clara County, Calif., assignor to Varian Associates, Palo Alto, Calif.

Filed March 4, 1970, Ser. No. 16,497
Int. Cl. G01r 33/08
U.S. Cl. 235—151.3 14 Claims

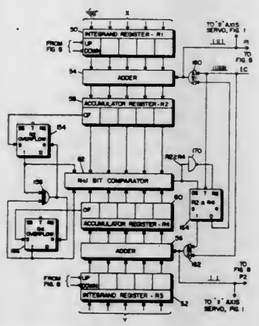


Method and apparatus for storing and reading out impulse resonance spectral data is disclosed. Impulse resonance spectral data containing a plurality of simultaneous Fourier components are added and time averaged in a computer or storage and adder. The stored resonance data is then Fourier analyzed to obtain a complex reference resonance line output containing a sum of both the real and imaginary parts of the time averaged resonance component. The resonance component is then analyzed for line symmetry to obtain an output representative of line symmetry. The line symmetry output is employed for changing the phase of both the real and imaginary components of the Fourier analyzed resonance component to reduce either the real or complex part of the resonance component to zero to obtain pure absorption or dispersion mode resonance spectra output.

3,674,999
NUMERICAL FUNCTION GENERATOR

Leroy U. G. Kelling, Waynesboro, Va., assignor to General Electric Company

Filed Oct. 22, 1970, Ser. No. 82,979
Int. Cl. G06f 1/02
U.S. Cl. 235—152 18 Claims

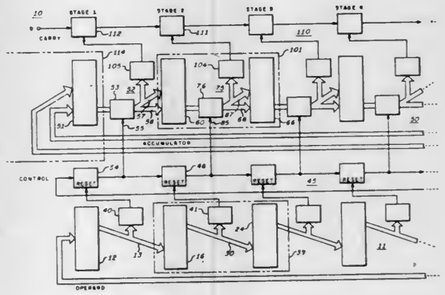


A numerical function generator for use with numerical control systems in generating linear and nonlinear numerical functions including circular and parabolic functions. The input data indicative of the desired numerical function is stored in two separate integrand registers which are individually associated with digital adders so that their contents can be selectively added to the contents of two separate accumulator registers. The contents of the two accumulator registers are compared by a bit comparator in order to indicate which of the two accumulator registers presently has the larger number stored therein. As a result of this comparison, the integrand register associated with the accumulator register having the smallest number is added to that accumulator register until such time as the situation reverses itself. At this time, the contents of the other integrand register are added to its associated accumulator register. Two separate pulse frequency digital signals are generated as a result of the addition operations referred to above. The basic function generator described heretofore is then modified so as to generate circular arcs by increasing the contents of one integrand register and decreasing the contents of the other integrand register as the function is generated. A further modification contemplates increasing (or decreasing) the contents of one integrand register while maintaining the contents of the other integrand register constant so as to generate parabolic arcs.

3,675,000
APPARATUS FOR ARITHMETIC OPERATIONS BY ALERTING THE CORRESPONDING DIGITS OF THE OPERANDS

Andrew J. Lincoln, Concord, and Karl S. Menger, Cambridge, both of Mass., assignors to Sperry Rand Corporation

Filed Aug. 6, 1970, Ser. No. 61,527
Int. Cl. G06f 7/50
U.S. Cl. 235—168 28 Claims

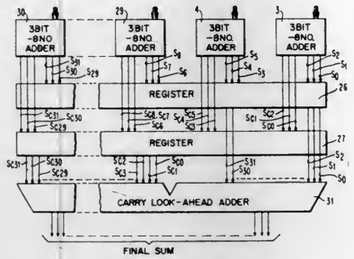


Apparatus for arithmetically combining the values of two numbers, for example adding and subtracting, comprising a first shift register for storing one of the numbers with stages interconnected to diminish the values of the digits of the one number by predetermined amounts, respectively, as the digits thereof transfer between the stages. A second shift register for storing the other number is included for increasing the values of the digits of the other number corresponding to the digits of the one number, respectively, by the corresponding predetermined amounts, as the digits of the other number transfer between the stages thereof. The digits of the other number are increased until the corresponding digits of the one number attain the values zero, respectively.

3,675,001
FAST ADDER FOR MULTI-NUMBER ADDITIONS

Shanker Singh, Beacon, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 10, 1970, Ser. No. 96,875
Int. Cl. G06f 7/50
U.S. Cl. 235—175 5 Claims



A fast adder for adding more than three numbers, the digits of each of which are arranged in groups in accordance with the expression $n=[\log_2(k-1)]$ where:

$[\log_2(k-1]$ is the smallest integer greater or equal to $\log_2(k-1)$

n = the number of digits in each group and

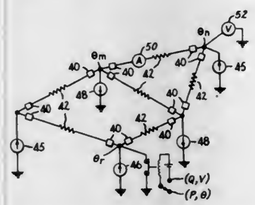
k = the number of numbers to be added.

The most significant digit of each group of digits comprising each number to be added is applied to an adder which directly produces a partial sum consisting of a sum digit and carry digits. In the next cycle of operation, the second most significant digit of each group of digits is applied to the same adder to produce a corresponding partial sum in the same manner. Then, the third most significant digit of each group of digits is applied to the same adder and so on until all of the digits have been processed. Each partial sum includes a number of digits having overlapping positional significance (weight) with respect to an equal number of digits of another partial sum. However, no more than two digits possess the same positional significance. Half of the digits from all of the partial sums are applied to a first register and the remainder of the digits are applied to a second register with appropriate positional significance. One additional cycle is required in order to apply the digits in the two registers to a carry look-ahead adder to yield the desired final sum.

3,675,002
SYSTEM FOR COMPUTING ELECTRIC POWER FLOW

Tsuneo Mitsui, Tokyo; Jun-Ichi Baba, Kobe, and Ikuo Yamada, Kobe, all of Japan, assignors to Tokyo Denryoku Kabushiki Kaisha and Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed June 23, 1970, Ser. No. 49,122
Int. Cl. G06g 7/50
U.S. Cl. 235—185 4 Claims



Disclosed herein is a simulated power system including a network of resistances, power sources, and loads corresponding respectively to line reactances, generators, and loads of an actual power system, and further including measuring devices for determining voltages and current flow between selected nodes (e.g. m and n) of the network, wherein the active power Pmn and the reactive power Qmn through the branch between the nodes can be calculated rapidly according to the formulas

$$Pmn=\frac{\theta m-\theta n}{Xmn}, \text{ and}$$

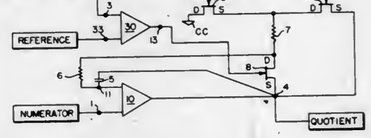
$$Qmn=\frac{\Delta Vm-\Delta Vn}{Xmn},$$

where θm and θn are the phase angles at the respective nodes and are proportional to the voltages at the nodes, and ΔVm and ΔVn are difference voltages between actual and standard voltages at the selected nodes. In the simulated system the power sources are provided by constant current supply devices or constant voltage devices, and the load units are provided by constant current withdrawal devices, wherein the power sources and loads are connected to predetermined nodes of the network.

3,675,003
SYSTEMS INVOLVING DIVISION

John Somerville Snyder, Webster, N.Y., assignor to Sybron Corporation, Rochester, N.Y.

Filed Aug. 27, 1970, Ser. No. 67,435
Int. Cl. G06g 7/16
U.S. Cl. 235—196 7 Claims



A system wherein division by zero is avoided. A numerator voltage is applied to a high gain amplifier having a negative feedback loop controlled by a denominator voltage which if zero disables part of the feedback loop. The effect of this is avoided by, in effect, replacing this part of the loop in response to the denominator becoming zero.

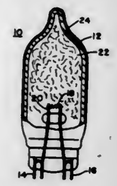
3,675,004
PHOTOFLASH LAMP AND MULTIPLE FLASHLAMP SYSTEM

Earl A. Gulbrasen; Richard L. Tallman, both of Pittsburgh; Kenneth F. Andrew, East Pittsburgh, all of Pa., and Bruce T. Buzalski, Dover, N.J., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed June 15, 1970, Ser. No. 46,378
Int. Cl. G03b 15/02
U.S. Cl. 240—1.3 11 Claims

An improved combustible photoflash lamp is described which produces an increased peak and integrated lumen output per unit lamp volume, and an improved color temperature of light output. The combustible comprises shredded foil substantially comprised of hafnium metal which is burned in a

super pressure oxygen atmosphere. The shredded foil cross-sectional area can be varied to further vary the color temperature of the light output. The lamp envelope including the protective lacquer coating on the exterior thereof is substantially



transmissive of all visible radiations generated upon operation of the lamp. This lamp eliminates the need for a light-absorbing, color-correcting blue lacquer coating in order to achieve a high color temperature of light output. The lamp is conveniently utilized in an improved multiple flashlamp system.

3,675,005
COIFFEUR DECORATING APPARATUS
Raymond F. Curiel, 7100 East Hummingbird Lane, Paradise Valley, Ariz.
Filed Jan. 21, 1970, Ser. No. 4,687
Int. Cl. F21v *33/00*
U.S. Cl. 240—2 **1 Claim**



Apparatus for securing in a lady's coiffeur including a tubular member having a battery and lamp secured therein. A plurality of optic fibers are clamped and are mounted adjacent the lamp. The tubular member is enclosed within a flexible mesh to facilitate securing the tubular member within the coiffeur; the fibers may then subsequently be combed into the hair to provide a decorative light pattern. A removable lens is positioned between the lamp and the clamped ends of the fibers to permit changing the color of the light being transmitted by the optic fibers.

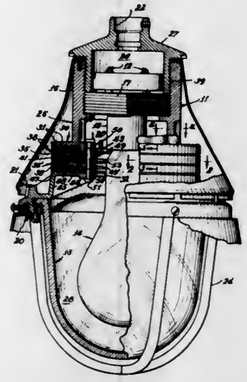
3,675,006
ROOM LIGHTING INSTALLATION
Samuel J. Zagel, Oak Park, and Thomas H. Patton, Niles, both of Ill., assignors to Compco Corporation, Chicago, Ill.
Filed Jan. 12, 1972, Ser. No. 217,357
Int. Cl. F21v *21/02, 21/34*
U.S. Cl. 240—9 R **3 Claims**

A room lighting installation having a plurality of aligned U-shaped brackets interconnected and supporting three sets of rails each having rail sections aligned end to end, two of the sets of rails being at the bottom of the brackets and supporting horizontal light diffuser means, the third set of rails being positioned above one of the other sets and cooperating therewith



in supporting panel means, each set of rails having additional ways for receiving alignment means.

3,675,007
EXPLOSION PROOF LIGHTING FIXTURE
Norton A. Appleton, Northfield, and Herbert W. Penzel, Chicago, both of Ill., assignors to Appleton Electric Co., Chicago, Ill.
Filed Oct. 20, 1969, Ser. No. 867,438
Int. Cl. F21v *25/00*
U.S. Cl. 240—11.2 E **2 Claims**

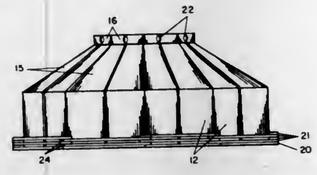


An explosion suppressing vent for an electrical fixture which includes continuous flame-arresting channel of air space passing through the fixture wall and connecting airspace within the fixture with exterior air. Electrical fixtures partially enclosed by glass, or other relatively fragile membranes, benefit greatly from the invention since, through its use, maximum internal pressures during combustion of enclosed potentially explosive gas mixture is suprisingly low.

3,675,008
DECORATIVE LAMP SHADES
Clifford W. Hill, Pardeeville, Wis.
Filed April 29, 1970, Ser. No. 32,793
Int. Cl. F21v *1/00*
U.S. Cl. 240—108 **1 Claim**

A lamp shade that is decorative and which can also be sold in "kit form" to be built by hobbyists, to be used as a kit for

both educational purposes and for manual dexterity training, and which can also be easily assembled by handicapped persons such as the blind. The lamp shade has a translucent colored plastic liner which provides the inner portion of the

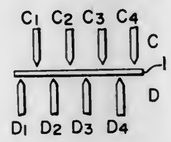


shade and also provides a form on which to stack elongated members in interleaved relation. The liner and elongated members have corresponding alignment indicia on them to facilitate the proper alignment of the elongated members on the liner.

3,675,009
CARBON BLACK BLENDING IN RUBBER
Gerard Kraus, Bartlesville, Okla., assignor to Phillips Petroleum Company
Filed May 18, 1970, Ser. No. 38,523
Int. Cl. G01n *23/04*
U.S. Cl. 250—49.5 R **6 Claims**

A method has been developed for predicting the relative abrasion index of a rubber into which carbon black is blended, depending upon a particle size distribution relationship of the carbon black.

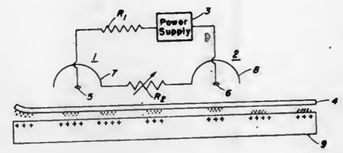
3,675,010
ELECTRICAL CHARGING DEVICE
Wilhelm Josef Knechtel, Rodheim, and Detlef Schaffer, Wetzlar, both of Germany, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed July 13, 1970, Ser. No. 54,334
Claims priority, application Germany, July 16, 1969, P 19 36 168.3
Int. Cl. G03g *15/00*
U.S. Cl. 250—49.5 ZC **8 Claims**



Corona discharge apparatus incorporating an electrode assembly comprising needle electrode pluralities providing corona discharge at opposite sides of a longitudinal passage in the apparatus through which a chargeable member is moved. Electrodes are spaced particularly in lateral and longitudinal manner for providing a uniform electrical charge on the chargeable member.

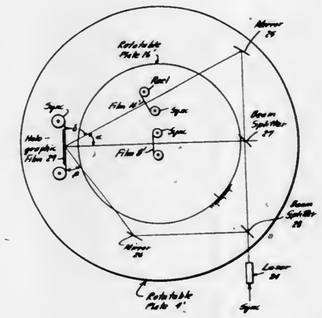
3,675,011
METHODS AND APPARATUS FOR OPERATING PAIRED COROTRONS OF OPPOSITE POLARITY
Morton Silverberg, Rochester, N.Y., assignor to Xerox Corporation
Filed Jan. 21, 1971, Ser. No. 108,304
Int. Cl. G03g *15/00*
U.S. Cl. 250—49.5 ZC **9 Claims**

Methods and apparatus for applying opposite polarity, equal magnitude charging currents to a surface to be charged are provided according to the present invention. In accordance with one embodiment of the present invention at least two corotrons are energized by a floating power supply exhibiting substantially constant current characteristics. The positive terminal of the floating power supply is connected to a coronode of one of the at least two corotrons while the negative terminal of the floating power supply is connected to the



coronode of another one of such at least two coronodes. Additionally, the shields of each of such at least two corotrons are interconnected through a current limiting impedance so that current flow between the shields of the at least two corotrons is maintained within a selected range whereupon the ion charging current produced by each of the corotrons is maintained at substantially uniform magnitude levels.

3,675,012
CINEFLUOROGRAPHIC HOLOGRAPHY
George Derderian, Maitland, Fla., and Joseph L. De Clerk, Red Bank, N.J., assignors to The United States of America as represented by the Secretary of the Navy
Filed Oct. 15, 1970, Ser. No. 80,877
Int. Cl. G01n *23/04*; G02b *27/22*
U.S. Cl. 250—60 **1 Claim**



Two motion picture cameras are arranged to photograph the fluoroscopic image derived from two respective X-ray or other energy beams which pass through a subject at respectively different angles. The motion picture films are developed and used in steroscopic pairs to make holograms on a third motion picture film. The information on the third film provides a three dimensional motion picture holographic image of the subject.

3,675,013
IMAGE-CARRYING FILM FOR USE AS AN ORIGINAL FOR PROJECTION AND ITS MANUFACTURING METHOD

Keishi Kubo, and Kiyoshi Sakai, both of Tokyo, Japan, assignors to Kabushiki Kaisha Ricoh, Tokyo, Japan

Continuation-in-part of Ser. No. 758,668, Sept. 10, 1968, abandoned, and a continuation-in-part of Ser. No. 771,287, Oct. 28, 1968, abandoned, and a continuation-in-part of Ser. No. 805,842, March 10, 1969, abandoned. This application Nov. 6, 1970, Ser. No. 87,584

Int. Cl. G01d *15/10*

U.S. Cl. 250—65 T **12 Claims**

The invention relates to a diapositive polypropylene film transparency that is self-supporting and dimensionally stable to conditions of storage and use having at least 60 percent of parallel luminous transmittancy to visible light rays at a thickness of 50 μ or more and a method of its manufacture which comprises placing a transparent undeveloped polypropylene film having a heat-shrinking coefficient less than 15 percent in both biaxial directions in juxtaposition with an infrared absorbing image and transmitting infrared irradiation through the polypropylene film to the original image to create on the film a corresponding light diffusive image comprised of fine undulations of the surface and low light transmittancy, the finished film being useful for projecting said image upon a reflecting screen as a corresponding unilluminated image in contrast to the corresponding transparent portion as an illuminated area.

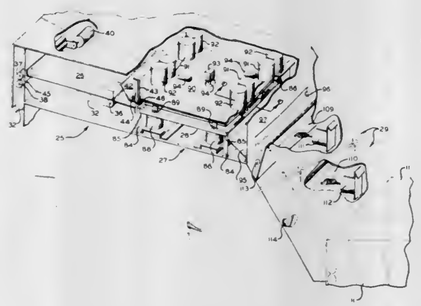
3,675,014
LIGHT-PROOFED AUTOMATIC RADIOGRAPHIC CASSETTE UNLOADER-RELOADER

Theodore Perl, Fayetteville, N.Y.

Filed April 9, 1971, Ser. No. 132,743

Int. Cl. H05g *1/60*

U.S. Cl. 250—66 **9 Claims**



A light-proof cabinet housing has separate layers or modules for different sizes of cassettes. Each module has electrically operated means for opening the cassette, raising the cover, marking the film therein, extracting the film and feeding the film to a conventional processor. In each module means are provided for storage of a fresh supply of film and also electrically operated means for extracting one sheet at a time and feeding it to the opened cassette, then closing the cassette. Electrical sequencing means are provided for automatic operation, or for initially loading an empty cassette, and for stopping the machine upon any malfunction. A modified form of cassette is provided adapted to cooperate with cassette opening means in each module.

3,675,015
ABHESIVE PATTERN DETECTOR SYSTEM

Thomas E. Gelb, Florissant, Mo., assignor to Weyerhaeuser Company, Tacoma, Wash.

Filed Sept. 2, 1969, Ser. No. 854,440

Int. Cl. G01n *21/16*

U.S. Cl. 250—71 R **4 Claims**

A system for detecting the location and uniformity of a coating on a substrate is provided. The process comprises the steps of adding a fluorescent dye material to the coating material, coating the substrate with the fluorescent dye-containing coating material, and viewing the pattern obtained thereby under an ultraviolet light source. A gable-top container employing a non-heat sealing coating containing a fluorescent dye on a portion thereof is described. The fluorescent dye is used to aid in evaluating the location and uniformity of the coating.

3,675,016
FLYING SPOT SCANNING

William H. Blaisdell, Rochester, and Edward C. Cornelius, Fairport, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 17, 1970, Ser. No. 12,083

Int. Cl. H01j *39/00*

U.S. Cl. 250—83.3 H **1 Claim**



A flying spot scanner system is disclosed which obviates the prior art use of a large expensive lens by reflecting focused light off a multifaceted mirror to the element being scanned. The spot is made invariant and as small in size as possible by defining the dimensions of the focused beam so that only part, preferably half, of a mirror facet is illuminated during scanning; and by locating the mirror as close to the element being scanned as will allow the spot to be formed of all of the light beamed at the mirror. The source of illumination is a laser; and uniform spot intensity during scanning is assured by a suitably dimensioned stop.

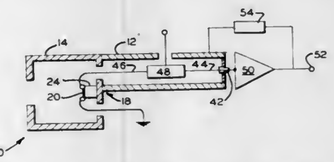
3,675,017
SHIELDED PYROELECTRIC DETECTOR APPARATUS AND METHOD

Walter M. Doyle, 5 Arnold Avenue, Utica, N.Y.

Filed Aug. 10, 1970, Ser. No. 62,286

Int. Cl. G01j *5/02*

U.S. Cl. 250—83.3 H **9 Claims**



A method and apparatus for providing a pyroelectric detector with stray capacitance reducing shielding is disclosed herein. In order to minimize stray capacitance of the detector, the housing of the detector is coupled to the output of the detector output signal amplifier through a suitable feedback network to maintain the housing at output signal potential. The capacitive impedance between the housing and the various electrical leads is then apparently infinite.

3,675,018
SEMICONDUCTOR TYPE RADIATION DETECTOR

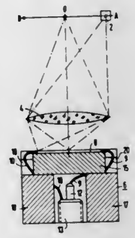
Bernt Paul, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Dec. 3, 1970, Ser. No. 94,640

Claims priority, application Germany, Dec. 9, 1969, P 19 61 576.0

Int. Cl. G01j *5/20*

U.S. Cl. 250—83.3 R **3 Claims**



An apparatus for detecting radiation emanating from a source movable along a path has an elongated radiation-sensitive electronic semiconductor of a first crystalline phase. The semiconductor is positionable substantially parallel to the path. Inclusions of a second crystalline phase are contained in the semiconductor and have an electrical conductivity higher than the first phase. The inclusions are orientated substantially perpendicular to the current flow in the semiconductor response to the radiation. Two magnetic structures are disposed one behind the other laterally of the semiconductor along its longitudinal dimension and have respective magnetic fields which penetrate the semiconductor in mutually opposite directions.

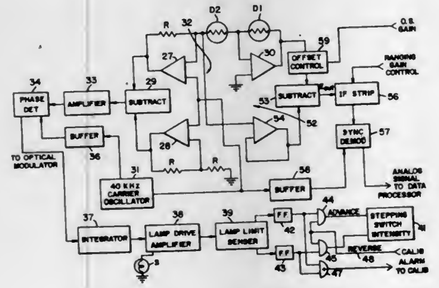
3,675,019
APPARATUS FOR MEASURING THE AMOUNT OF A SUBSTANCE THAT IS ASSOCIATED WITH A BASE MATERIAL

Robert C. Hill, Santa Clara; John M. French, San Jose, and Richard E. Toepfer, Campbell, all of Calif., assignors to Measurex Corporation, Santa Clara, Calif.

Division of Ser. No. 799,784, Feb. 17, 1969, Pat. No. 3,614,400. This application March 19, 1971, Ser. No. 126,209

Int. Cl. G01n *23/00, 21/26*

U.S. Cl. 250—83.3 D **1 Claim**



A moisture gauge for paper material includes an infrared source and two detectors one of which is responsive to a wavelength of 1.94 microns which is sensitive to moisture in the paper; the other detector is responsive to 1.8 microns which is not affected by moisture. The operating point of the detector not sensitive to moisture is maintained constant by a feedback system. At the same time an impedance ratio of the two detectors provides information as to absolute moisture content. Automatic standardization of the system is also provided.

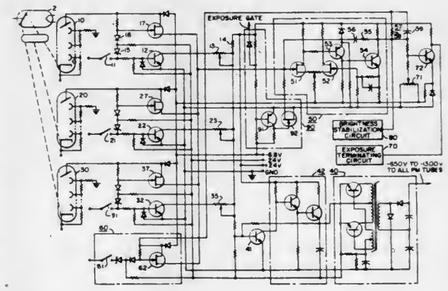
3,675,020
X-RAY TUBE CONTROL CIRCUITRY

Melvin P. Siedband, Baltimore; Philip A. Duffy, Jr., Catonsville, and Jack L. James, Baltimore, all of Md., assignors to CGR Medical Corporation, Cheverly, Md.

Filed Sept. 24, 1969, Ser. No. 860,603

Int. Cl. H05g *1/30*

U.S. Cl. 250—93 **8 Claims**



Simple unified circuitry for use in controlling an X-ray generator for combining a selected photomultiplier tube with an operational amplifier which is either in an integrator mode or signal amplifier mode depending on whether radiographic procedures, fluoroscopic procedures or cine procedures are to be used.

3,675,021
METAL OXIDE FILM STRUCTURE

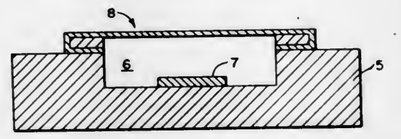
Abraham Aladjem, Holon, Israel, assignor to State of Israel, Atomic Energy Commission, Beer-Sheba, Israel

Filed Sept. 19, 1969, Ser. No. 859,310

Claims priority, application Israel, Sept. 26, 1968, 30770

Int. Cl. G21h *5/00*

U.S. Cl. 250—106 S **13 Claims**

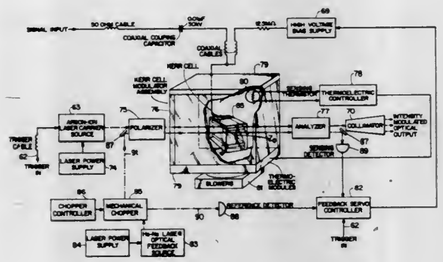


The invention provides metal oxide film structures for use as radioactive radiation windows, membranes of electrolytic cells and other purposes. The structures consist of an annular, or other closed frame of tantalum, niobium, tungsten or zirconium integral with a thin film of an oxide of the same metal, which spans the area enclosed by the frame. The structure is manufactured by subjecting a blank of the metal concerned, centrally masked on the larger part of the surface, to an anodizing treatment producing the oxide on all not-masked parts, removing the mask and subjecting the oxide-covered blank, as anode, to an electrolytic process by which the not-oxidized metal except the marginal portion, which constitutes the frame, is dissolved.

3,675,022
KERR CELL SYSTEM FOR MODULATING A LASER BEAM

Melvin A. Nelson; Jerry G. Lackey, and Terence J. Davies, all of Santa Barbara, Calif., assignors to The United States of America as represented by the United States Atomic Energy Commission

Filed May 21, 1970, Ser. No. 39,345
Int. Cl. H04b 9/00
U.S. Cl. 250—199 1 Claim



The electro-optical telemetr system of the present invention includes a laser, polarizer and analyzer elements and a Kerr cell modulator containing a parallel plate transmission line immersed in a birefringent liquid such as nitrobenzene. The modulating signal is applied to the parallel plate transmission line which is terminated in its characteristic impedance. Preferably, the laser beam is directed into the modulator at an angle equal to

$$\cos^{-1}\frac{n}{\sqrt{e}}$$

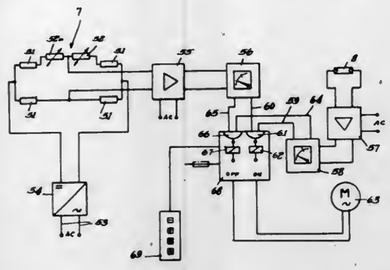
where n and e are the index of refraction and the dielectric coefficient, respectively, of the birefringent liquid. Two parallel mirrored surfaces may be used to make the laser beam traverse the modulator a plurality of times. An environmental chamber containing a liquid bath and a thermo-electrical control system may be utilized to maintain the temperature of the modulator at a predetermined point. The Kerr cell modulator may also be biased by a bias voltage provided by a high voltage bias supply controlled by a feedback system utilizing another laser.

3,675,023
AUTOMATIC CONTROL OF VENETIAN BLINDS IN RESPONSE TO BOTH HEAT AND LIGHT BEING BELOW RESPECTIVE THRESHOLD VALUES

Arthur Kunke, Oldenburg; Dieter Reinhardt, Bodenfelde, and Waldemar Glass, Gottingen, all of Germany, assignors to Justin Huppe, Oldenburg, Germany

Filed Aug. 28, 1970, Ser. No. 67,685
Claims priority, application Germany, June 25, 1970, P 20 31 428.7; Aug. 29, 1969, G 69 33 965.7
Int. Cl. E05f 15/20; G01t 1/16; H01j 3/14
U.S. Cl. 250—83.3 8 Claims

Sensing devices respectively reacting to light intensity and to heat radiation are mounted in an exposed position such as on the top of a building. The sensing devices are oriented for direct exposure to sunlight according to the direction of the sunlight at different times of day, and operate through electronic control circuits to operate electric motors, and thereby to control the amount of sunlight admitted through windows



on various sides of the building by adjusting the venetian blinds in the windows.

3,675,024
PHOTO-ELECTRIC POSITIONING DEVICE

Christian Louis Georges Benard, Paris, France, assignor to Societe Parisienne des Anciens Etablissements Barbier, Benard & Turenne, Paris, France

Filed May 26, 1970, Ser. No. 40,681
Int. Cl. H01j 39/12
U.S. Cl. 250—208 10 Claims

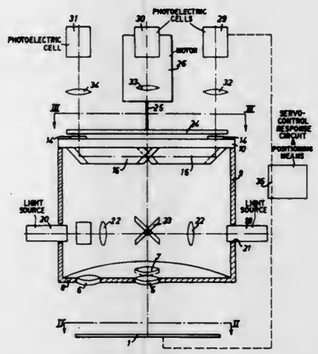


Photo-electric positioning device for adjustment to a very accurate position in the manufacture of micro-circuits in which the enlarged images of the three first reflecting references drawn on the object to the positioned are centered on second opaque reference marks engraved on a translucent plate, a modulator disk having two concentric tracks rotating on each side of the said opaque references transmitting an identification signal to photo-electric cells which automatically control the lateral displacement of the object to center correctly each image on the corresponding reference mark.

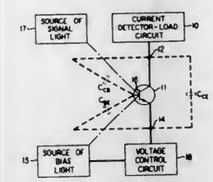
3,675,025
ELECTROMAGNETICALLY SENSITIVE DEVICE AND CHARGE STORAGE METHOD OF OPERATION

Martin Feldman, Springfield, and George Ludwig Heiter, Berkeley Heights, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed June 16, 1970, Ser. No. 46,646
Int. Cl. H01j 39/12
U.S. Cl. 250—211 J 15 Claims

Apparatus and method for detecting relatively low intensity electromagnetic energy with high sensitivity comprises a

transistor having a light sensitive base area, a current detector-load circuit coupled to its collector terminal, and a voltage control circuit coupled to its emitter terminal. The voltage control circuit serves to supply selective potentials to the

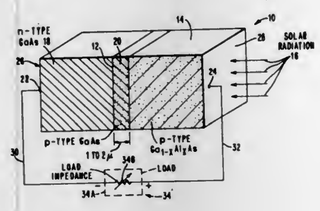


emitter terminal in order to enable or inhibit conduction. The current detector-load circuit acts as a low impedance transistor collector load and monitors changes in conduction of the transistor.

3,675,026
CONVERTER OF ELECTROMAGNETIC RADIATION TO ELECTRICAL POWER

Jerry M. Woodall, White Plains, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed June 30, 1969, Ser. No. 837,755
Int. Cl. H01l 15/00
U.S. Cl. 250—211 J 6 Claims



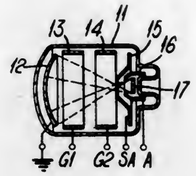
The converter obtains an efficient conversion of solar electromagnetic radiation into electrical power. A p-n junction is fabricated close to an optical surface of a region of n-type GaAs which is receptive of the solar radiation. There is a window on the optical surface consisting of a window layer of $Ga_{1-x}AlxAs$, where x is less than one and greater than zero with a composition to cause the window layer to contribute selectively to absorbing and transmitting certain components of the incoming solar radiation. The layer of $Ga_{1-x}Al_xAs$ is made nearly transparent to electromagnetic radiation and is nearly absorbent of the energetic particle radiation content of the received solar radiation. The window layer is an integral part of the procedure for forming the p-n junction. It contributes the p-type doping species to the junction by diffusion into the n-type GaAs substrate. For certain applications, the $Ga_{1-x}AlxAs$ window can be removed by etching with aqueous solution of HCl. If the window if removed, the ohmic contact is then made to the optical surface of the p-type GaAs.

Illustratively, another structure provided by this disclosure includes a window of GaP of p-type conductivity on the surface of a region of n-type InP with a p-type transition region of InP therebetween.

3,675,027
SYSTEM FOR CONTINUOUSLY VARYING THE SIZE OF THE FIELD OF AN X-RAY IMAGE INTENSIFIER TUBE

Motohisa Tsuda, and Masao Yoshimura, both of Kyoto, Japan, assignors to Shimadzu Seisakusho Ltd., Kyoto, Japan

Filed Sept. 22, 1970, Ser. No. 74,454
Claims priority, application Japan, Oct. 3, 1969, 44/79463
Int. Cl. H01j 31/50
U.S. Cl. 250—213 VT 5 Claims

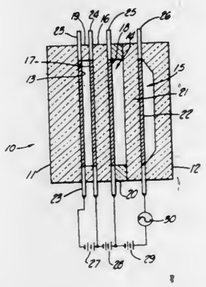


A system for continuously varying the size of the field of an X-ray image intensifier tube, wherein the voltages impressed on the electrodes of the tube are so controlled that the size of the field of view of the tube changes in such a manner that each and every point of the output image of the tube moves at a substantially constant speed.

3,675,028
IMAGE INTENSIFIER WITH ELECTROLUMINESCENT PHOSPHOR

John M. Grant, Granada Hills, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Aug. 13, 1969, Ser. No. 849,682
Int. Cl. H01j 31/50
U.S. Cl. 250—213 VT 8 Claims

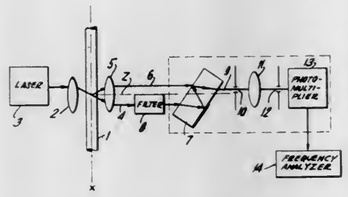


The subject dealt with herein concerns an intensifier tube which utilizes a channel-type electron multiplier. It is conventional to direct the output of such a multiplier onto an aluminized phosphor screen. However, poor resolution and aluminum layer damage results. According to this disclosure, a plate is provided having electroluminescent phosphor. An AC voltage is then applied between the multiplier and across the phosphor. Resolution is thereby improved and no screen damage results.

3,675,029
METHODS AND MEANS FOR MEASURING THE VELOCITIES OF LOCALIZED PORTIONS OF FLOWING MEDIA

Paul Dominik Iten, Oberrohrdorf, and Francois Mottier, Zurich, both of Switzerland, assignors to Brown Boveri & Company Limited, Baden, Switzerland

Filed April 22, 1971, Ser. No. 136,385
Claims priority, application Switzerland, April 27, 1970, 6247/70
Int. Cl. G01n *21/26*
U.S. Cl. 250—218 7 Claims

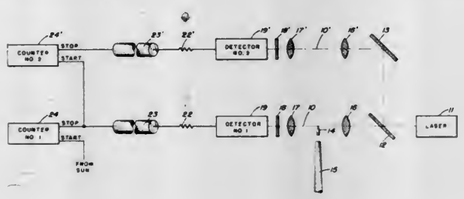


The velocity of a localized portion of a fluid medium is measured by focusing a laser beam onto the point to be measured, and then, with a single lens focused on the point, transforming the resulting scattered light as well as the unscattered light into beams parallel to the axis of the lens. The back face of a plate angularly oriented to the axis of the lens reflects one of the beams toward the intersection of an other beam with the front face of the plate. The front face is a half mirror which passes the oncoming other beam and again reflects the already reflected beam. This superimposes the two beams. The composite beam is then detected by a photodetector. Suitable means indicate the resulting heterodyne frequency as a measure of the velocity of the medium.

3,675,030
FAST LASER PROJECTILE DETECTION SYSTEM

Martin Tanenhaus, Suitland, Md., assignor to The United States of America as represented by the Secretary of the Navy

Filed Jan. 25, 1971, Ser. No. 109,269
Int. Cl. G01p *3/68*
U.S. Cl. 250—222 R 5 Claims

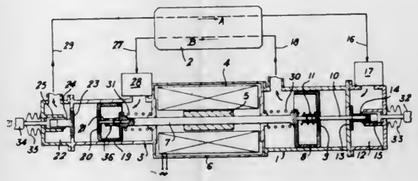


The present invention is directed to an improvement in a system for measuring the ejection time and muzzle velocity of a gun. The measurement system utilizes a laser whose beam is split and then directed across the projectile ejection path to two photodetectors. When the gun is triggered, a projectile is fired and successively breaks the light paths between the laser beams and their associated photodetectors. The improvement comprises the use of analog and digital integrated circuit components in the detector portion of the measuring system. An analog device, a differential video amplifier, and a digital device, a differential dual line receiver, are combined with a photodetector and current amplifier to form the improved detector circuit.

3,675,031
HEAT-TO-ELECTRIC POWER CONVERTER

Pierre Lavigne, Grenoble, France, assignor to Commissariat A L'Energie Atomique, Paris, France

Filed Nov. 18, 1970, Ser. No. 90,645
Claims priority, application France, Nov. 27, 1969, 6940996
Int. Cl. H02k *35/02*
U.S. Cl. 290—1 2 Claims

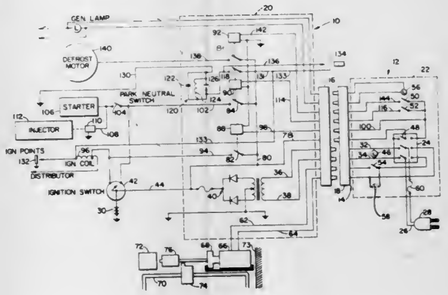


The converter comprises a linear alternator consisting of a stationary armature and a field winding which is capable of linear reciprocating motion within the armature. A fluid is circulated within a closed loop system so as to operate a driving machine constituted by an expansion section and a compression section each containing a piston directly connected to the field winding for carrying out the reciprocating motion and causing simultaneous expansion and compression of the fluid within the two sections. The hot fluid which is discharged from the expansion section and the cold fluid which is discharged from the compression section are circulated in two circuits in opposite directions within a heat exchanger and then fed back respectively into the compression section and the expansion section.

3,675,032
REMOTE VEHICLE STARTING SYSTEM

John Shaheen, Roslindale, Mass.

Filed May 11, 1970, Ser. No. 36,272
Int. Cl. F02n *11/08*
U.S. Cl. 290—38 C 4 Claims

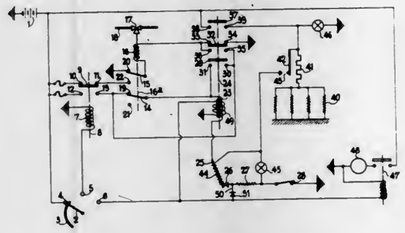


A relay unit is mounted in the vehicle and connected to the vehicle's electrical system. A detachable cable connects the relay unit to a control unit located in the house or other remote location. From the remote location, the system may be set to apply a charge to the vehicle's battery, then to start the vehicle's engine and operate the heater control so that the engine and the compartment will be warm and ready to be driven when the operator goes out to drive the vehicle.

3,675,033
DEVICE FOR STARTING AND STOPPING A DIESEL ENGINE

Gilbert Richard, Giromagny, and Gerard Moronval, La Garenne, both of France, assignors to Automobiles Peugeot, Paris and Regie Nationale Des Usines Renault, Billancourt, France

Filed Oct. 23, 1970, Ser. No. 83,502
Claims priority, application France, Jan. 7, 1970, 7000360; March 31, 1969, 6909616
Int. Cl. F02n *11/00*
U.S. Cl. 290—38 12 Claims

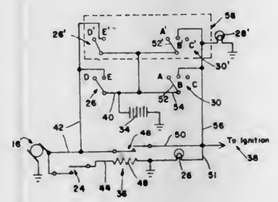


Device for starting and stopping a combustion engine of the Diesel type comprising a three-position switch having a stable position in which the heater plug circuit and the engine starter circuit are open, a second stable position in which, assuming that the engine is insufficiently warm, the heater plug circuit is closed, the starter circuit remaining open, and an unstable position in which the starter circuit is closed. Means are provided to indicate to the driver when the switch can be placed in the unstable position. The heater plug circuit is automatically opened at the end of a given period of time which depends on the surrounding temperature irrespective of whether the user has or has not placed the switch in the unstable position and actuated the engine starter.

3,675,034
BLOCKING CIRCUIT FOR INBOARD ENGINE IGNITION

George W. Abplanalp, Belmont, and Steve Corson, Luther, both of Mich.

Filed July 6, 1971, Ser. No. 159,666
Int. Cl. H02j *1/00*
U.S. Cl. 307—9 6 Claims

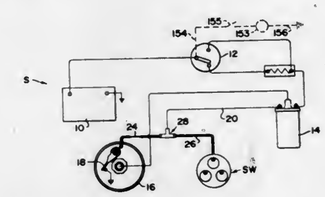


A blocking circuit is provided in combination with an inboard motorboat engine, blower, and ignition circuit which prevents actuation of the ignition circuit until after the blower has operated for a predetermined period of time to ventilate the engine compartment. A time-delay switch is operated by a blower-activated switch in circuit with the ignition circuit. Upon actuation of the blower, the blower-activated switch closes energizing the time-delay switch. After a predetermined time interval, the time-delay switch closes and completes the ignition circuit whereupon the craft may be started and operated in a conventional manner. An emergency ignition switch is also provided in parallel with the blocking circuit to allow operation of the engine in the event of an emergency. Use of the emergency switch renders it inoperative requiring that it be replaced after such use to prevent indiscriminate subsequent use by an unconscionable operator.

3,675,035
THEFT-PROOF AUTOMOBILE IGNITION SYSTEM

Joseph Brasty, Maple Heights, Ohio

Filed Jan. 25, 1971, Ser. No. 109,513
Int. Cl. H02g *3/00*
U.S. Cl. 307—10 AT 11 Claims

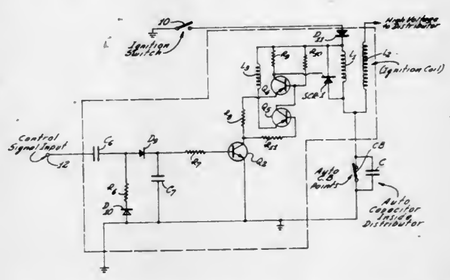


The theft-proof ignition system comprises a special multi-element control switch connected between the primary of an ignition coil and the breaker circuit of a distributor whereby the auto cannot be started until the special switch is closed. Shielding provided on the leads prevents any possible shorting out of the control switch. Means also may be provided to render the control switch inoperative automatically when the driver's door of the automobile is open. The shielded leads have a connection or coupling member therein.

3,675,036
AUTO THEFT PREVENTION SYSTEM

Ronald C. Davies, Las Vegas, Nev., assignor to Modern Research Inc., Las Vegas, Nev.

Filed April 9, 1970, Ser. No. 27,018
Int. Cl. B60r *25/04*
U.S. Cl. 307—10 AT 9 Claims

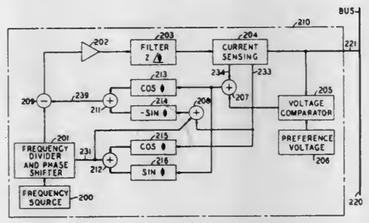


An improved anti-theft system for a motor vehicle, or the like, which effectively prevents any voltage from being built up across the ignition coil of the vehicle unless a control signal is applied to the system. This is achieved by including a silicon controlled rectifier, for example, in the circuit, the silicon controlled rectifier being fired whenever attempts are made to start the vehicle without the introduction of the control signal to the ignition circuit, the silicon controlled rectifier effectively short-circuiting the primary of the ignition coil as to prevent any build-up of ignition voltage across the secondary. An improved electronic lock circuit supplies the required control signal to the anti-theft system only when a series of switches are closed in a particular pre-selected sequence known only to the owner of the vehicle.

3,675,037
TECHNIQUE FOR SYNCHRONOUS PARALLEL OPERATION OF STATIC INVERTERS

Billy Harold Hamilton, Summit, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed June 1, 1971, Ser. No. 148,681
Int. Cl. H02j 3/38
U.S. Cl. 307—51 10 Claims

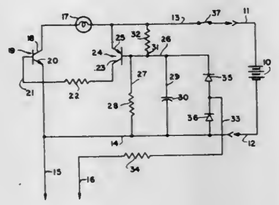


A plurality of static inverters are connected in parallel to a common bus. A frequency and voltage control feedback loop in each inverter encompasses the load terminals and permits the inverter to operate independently with only its output terminals common to the rest of the system. The inverter output is harmonized with the common signal on the bus by achieving orthogonality between the real and reactive output currents and the voltage and frequency, respectively, of the common signal on the bus. The orthogonality is obtained by applying appropriate voltage magnitude and phase correction signals to the internal voltage generating mechanism of each individual inverter. This permits the utilization of the inverters in parallel without the necessity of using some common reference frequency signal source and hence improves reliability of the system.

3,675,038
AUXILIARY LIGHTING SYSTEM

H. Daniel Dyer, III, Georgetown, Conn.

Filed Oct. 23, 1970, Ser. No. 83,273
Int. Cl. H02j 7/00
U.S. Cl. 307—66 2 Claims

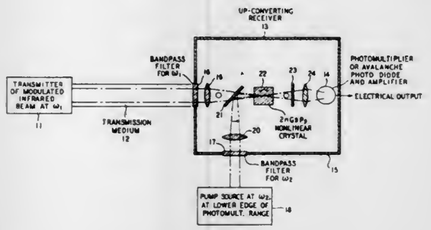


An auxiliary electric lighting system is described which comprises plug means for insertion into an outlet of a public utility circuit, circuitry connected electrically to the plug means, an independent source of power connectable into said circuitry, a filament light source also in the circuitry which is illuminated by said independent source of power when the auxiliary system is in operation. The device also includes a bistable, transistorized, automatically reversible circuit portion which includes said light source. The auxiliary lighting system is inoperative during normal power supply to the outlet and operative only upon failure of such normal power supply.

3,675,039
COHERENT OPTICAL DEVICES EMPLOYING ZINC GERMANIUM PHOSPHIDE

Gary Delane Boyd, Rumson; Ernest Buehler, Chatham, and William Bentley Gandrud, Madison, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Feb. 9, 1971, Ser. No. 113,913
Int. Cl. H03f 7/00; H04b 9/00
U.S. Cl. 307—88.3 11 Claims

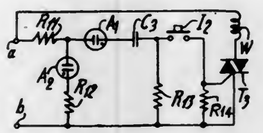


An upconverting receiver for modulated radiation at a carrier wavelength of 10.6 micrometers and a tunable parametric oscillator operating in the infrared portion of the spectrum are disclosed, in each of which a zinc germanium phosphide ($ZnGeP_2$) crystal is employed as the interaction medium and is pumped by a laser operating substantially at 1.06 micrometers in the infrared in a direction substantially normal to the optic axis. This crystal is presently unique in providing phase matching nearly normal to the optic axis for sum frequency upconversion from a signal wavelength of 10.6 micrometers.

3,675,040
ELECTROMAGNETIC SYSTEM CONTROLLING A MOVABLE MEMBER THROUGH THE AGENCY OF A MAGNETIC FIELD

Harald Stampfli, Petit-Saconnex, Switzerland, assignor to Lucifer S.A., Carouge-Geneva, Switzerland

Filed May 5, 1970, Ser. No. 34,762
Int. Cl. H01h 9/56
U.S. Cl. 307—133 3 Claims

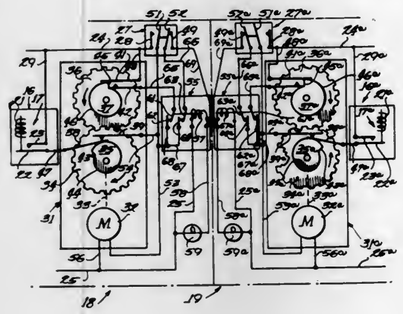


An electronic system energizing a winding adapted to produce a magnetic attraction on a movable member. In order to produce the maximum peak in amplitude of the current energizing the winding, which peak is obtained when the A.C. voltage feeding the winding passes through zero, an electronic switch is inserted between the A.C. supply and the winding to be energized, said switch becoming conductive at the moment of the reversal of current at this zero voltage. Said switch is constituted advantageously by a semi-conductor rectifier such as a SCR or thyristor associated with a diode which is rendered conductive just before the passage of the A.C. voltage through zero so as to allow current to pass through the SCR as soon as it is reversed. Other embodiments resort to a triac which is released at the actual moment of current reversal.

3,675,041
REGENERATION CONTROL AND TIMER SYSTEM

Eugene R. Elliott, and Lehner C. Freborg, both of Libertyville, Ill., assignors to Culligan International Company, Northbrook, Ill.

Filed Dec. 28, 1970, Ser. No. 101,601
Int. Cl. H01h 43/00
U.S. Cl. 307—141 14 Claims

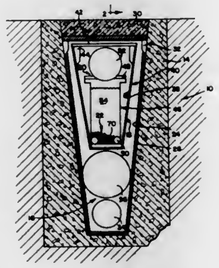


A regeneration control and timer system for one or two water softening or conditioning units to provide for regeneration of the softening material when it has become exhausted, with each water softening unit containing a sensor for indicating the stage of exhaustion of the material and actuating a timer for initiating a regeneration cycle. A timer clock is also present for utilization if the sensor is inoperable and the control contains a shiftable lever and a switch to change from sensor to clock operation. Also, the control system provides for duplexing of the timers and sensors of two water softeners using only a pair of connecting wires so that only one of the two softeners will be regenerated at a time even though both softeners reach the point of exhaustion at substantially the same time.

3,675,042
APPARATUS FOR POWER TRANSMISSION UTILIZING SUPERCONDUCTIVE ELEMENTS

Marshall F. Merriam, Berkeley, Calif., assignor to Gulf Oil Corporation, San Diego, Calif.

Continuation of Ser. No. 703,582, Feb. 7, 1968. This application March 13, 1970, Ser. No. 18,385
Int. Cl. H01b 7/34; H02g 9/06
U.S. Cl. 307—147 3 Claims

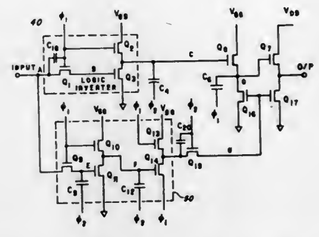


An electrical power transmission line utilizing superconductivity is provided in which each conductor includes a superconductive portion and a normally conductive portion having high thermal conductivity with the two portions being in electrical and thermal contact along substantially their entire lengths. The conductors are in the shape of thin wires to provide a low magnetic field and permit high current densities. The conductors are connected in pairs into a plurality of direct current circuits which in turn are connected to one another in parallel and are arranged in a plurality of circular clusters to further minimize the magnetic field and which may be selectively connected between a power source and one or more loads.

3,675,043
HIGH SPEED DYNAMIC BUFFER

Anthony Geoffrey Bell, 6718 De Moss 069, Houston, Harris County, Tex.

Filed Aug. 13, 1971, Ser. No. 171,654
Int. Cl. H03k 19/08
U.S. Cl. 307—205 18 Claims

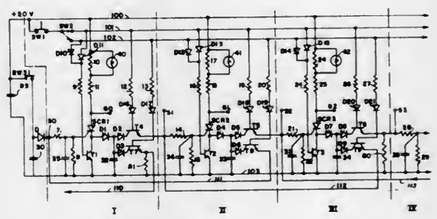


Disclosed is a high speed insulated gate field effect transistor output buffer circuit integrated on a monolithic clip utilizing novel voltage drive circuitry. The circuit combines high speed with low operating voltages to provide a bipolar TTL compatible circuit.

3,675,044
SILICON CONTROLLED RECTIFIER FORWARD AND REVERSE SHIFT REGISTER

Walter H. Vogelsberg, Carversville, Pa., assignor to Wheaton Industries, Millville, N.J.

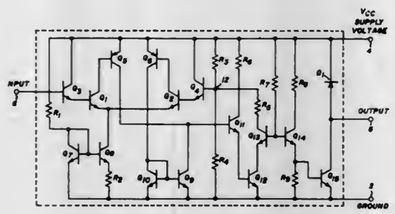
Filed Jan. 7, 1971, Ser. No. 104,643. The portion of the term of this patent subsequent to Feb. 16, 1988, has been disclaimed.
Int. Cl. G11c 19/00; H03k 21/00
U.S. Cl. 307—221 B 41 Claims



A silicon controlled shift register capable of shifting in a forward or reverse direction and shifter circuits for controlling the register are disclosed. The shift register is made up of a plurality of identical stages. Each stage comprises an input circuit, one silicon controlled rectifier, signal storage means, signal output means, a forward signal transfer means, and a reverse signal transfer means. The register can be operated as a serial register with a single input and a single output or it can be operated in a ring fashion or a plurality of inputs and out-

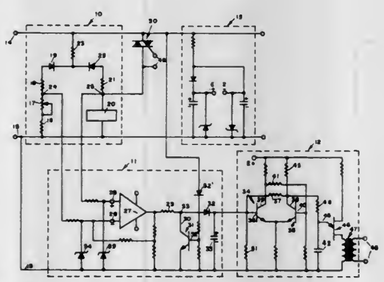
puts can be provided. The register is particularly adaptable to machine control and to the control of industrial processes. Several different shifter circuits and a special input circuit are disclosed. The shifter circuits range from mechanical switching circuits to electro-mechanical switching circuits.

3,675,045
VOLTAGE RESPONSIVE SWITCH
Jerome R. Mullaly, Liverpool, N.Y., assignor to General Electric Company
Filed Feb. 4, 1971, Ser. No. 112,685
Int. Cl. H03k *5/20, 3/26*
U.S. Cl. 307—235 **5 Claims**



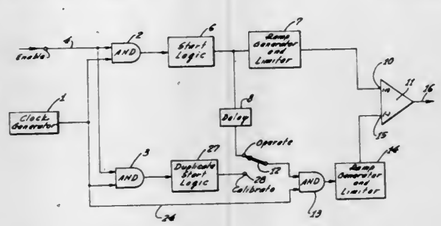
A voltage amplitude-responsive monolithic semiconductor integrated bi-stable switch is described, which switches responsive to level of input voltage relative to an internally generated reference potential, and is operable over a wide range of supply voltages and ambient temperatures with high gain regenerative switching action and predetermined hysteresis.

3,675,046
CONTROL CIRCUIT
Robert J. Harkenrider, and John L. Moe, both of Winona, Mich., assignors to Waynco, Inc., Winona, Minn.
Filed Sept. 28, 1970, Ser. No. 76,086
Int. Cl. H03k *17/00*
U.S. Cl. 307—252 B **10 Claims**



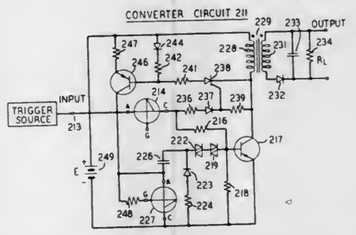
A circuit is provided in which an electrically conductive load being controlled is in one leg of a bridge with the load also acting as its own transducer. When power to the load is off, energy pulses are applied to the bridge to compare the operating condition of the load to the balance setting of the bridge. An unbalanced condition in the bridge is then used to initiate control action.

3,675,047
PRECISION PULSE GENERATOR
Richard E. Vahlstrom, Villa Park; Donald C. Nutten, Newport Beach, and Dennis R. Bayne, Placentia, all of Calif., assignors to Northrop Corporation, Los Angeles, Calif.
Filed June 7, 1971, Ser. No. 150,376
Int. Cl. H03k *5/00, 5/04*
U.S. Cl. 307—260 **6 Claims**



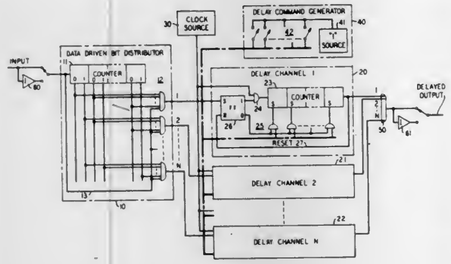
The square wave output of a crystal clock pulse generator is operated on by logic circuitry to start a ramp generator exactly at the beginning of one clock pulse. The signal which started this ramp generator is delayed for a predetermined time and then used to start an identical ramp generator exactly at the beginning of a later clock pulse. Outputs of the ramp generators are fed respectively to the opposite-polarity inputs of a difference amplifier, so that the amplifier output is a pulse started by the first ramp generator and stopped by starting of the second ramp generator, and the output pulse width is a precise multiple of the clock pulse period. Calibrating circuitry, when actuated, bypasses the delay function and allows comparison of the two ramp generator outputs simultaneously. If they are equal as they should be, the output of the difference amplifier is a straight line.

3,675,048
PULSE CIRCUIT FOR CONTROLLING PULSE DURATION
Osman Metin Yenisey, Rockaway, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed June 28, 1971, Ser. No. 157,411
Int. Cl. H03k *5/04, 5/13, 3/284*
U.S. Cl. 307—261 **7 Claims**



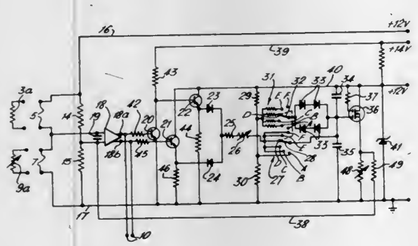
A two-transistor pulse circuit generates an output pulse or a series of output pulses of predetermined duration from the collector of the first transistor. The number of output pulses depends upon the duration of a trigger current applied to the base of the first transistor. The second transistor aids the first transistor in switching by drawing its collector current through a capacitor connected to the base circuit of the first transistor. When the collector current of the second transistor charges the capacitor to a predetermined level, a voltage-sensitive switch discharges the capacitor through the first transistor to turn it off and end the output pulse. A modified version of the circuit is used to generate an output pulse with an energy content independent of power supply voltage variations.

3,675,049
VARIABLE DIGITAL DELAY USING MULTIPLE PARALLEL CHANNELS AND A SIGNAL-DRIVEN BIT DISTRIBUTOR
Roger Lindsy Haven, North Kingstown, R.I., assignor to Western Electric Company, Incorporated, New York, N.Y.
Filed April 24, 1970, Ser. No. 31,689
Int. Cl. H03k *17/26*
U.S. Cl. 307—293 **11 Claims**



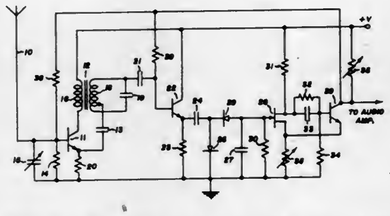
A device for delaying the bits of a serial data stream particularly suitable for producing a variable delay for a large number of bit times. Bits of the incoming data stream are sequentially applied to the inputs of a number of parallel delay channels by a bit distributor. The outputs of all the delay channels are logically "OR"ed together to reform the data stream. The distributor advances only after a "one" has been applied to a delay channel; therefore, fewer data channels are necessary than the number which corresponds to the maximum delay produced by the system.

3,675,050
CONTROL CIRCUITS FOR USE IN AUTOMATIC CONTROL SYSTEMS
Ian Andrew Paul, Bishopbriggs, Scotland, assignor to Honeywell Inc., Minneapolis, Minn.
Filed Jan. 14, 1971, Ser. No. 106,521
Claims priority, application Great Britain, Jan. 16, 1970, 2,335/70
Int. Cl. H03k *3/26*
U.S. Cl. 307—304 **14 Claims**



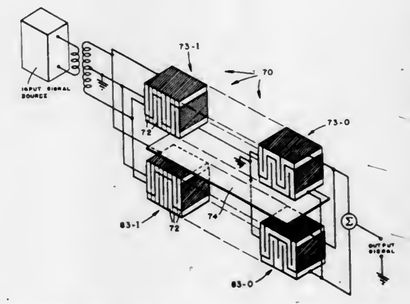
A controller for use in a control system is provided having an internal electronic feedback loop to approximate proportional plus integral control. The approximation is achieved through the charging and discharging of a capacitor located in the electronic feedback loop. An actuator is driven during the charging cycles of the capacitor.

3,675,051
HAND PROXIMITY ALARM CONTROL CIRCUIT
George T. Mloduski, Houston, Tex., assignor to General Electric Company
Filed June 24, 1970, Ser. No. 49,448
Int. Cl. H03k *17/00*
U.S. Cl. 307—308 **7 Claims**



A hand proximity alarm control circuit having principal application to a clock radio receiver, for turning off the radio for a brief period by simply the wave of a hand once it has come on in response to an alarm signal. Said circuit operates through a capacitive coupling, provided by placing the hand or other object close to the radio, to trigger an oscillator which is coupled to a timing circuit and bi-stable network for inhibiting the radio's audio amplifier stage. A feedback connection from the bi-stable network output to the oscillator input inhibits further triggering of the oscillator until said brief period has ended. The present control circuit may also have use with other forms of electronic devices in addition to radio receivers for temporarily modifying their operation.

3,675,052
FIELD-DELINEATED ACOUSTIC WAVE DEVICE
George F. Lindsay, Los Angeles, and Harper John Whitehouse, Hacienda Heights, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy
Filed Aug. 7, 1970, Ser. No. 62,117
Int. Cl. H01v *7/00*
U.S. Cl. 310—8.1 **10 Claims**



An acoustic wave device, wherein an applied electrical signal is transduced to an acoustic wave, comprising: a substrate capable of propagating the acoustic wave; a conductive structure disposed upon the substrate, including at least three separate conductive paths; a pair of the conductive paths including spaced-apart electrodes; and the third conductive path including field-delineating electrodes which are disposed between the electrodes of the pair of paths. In more detail, each of the conductive paths of the acoustic wave device include electrodes in the form of parallel elements, linear or

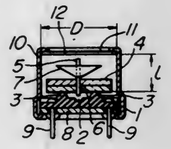
planar, disposed upon the substrate perpendicularly to the direction of surface wave propagation, caused by the application of an electrical voltage to the pair of conductive paths, which is transduced to an acoustic surface wave. The electrodes of each conductive path are spaced a distance *nd* apart, where *n* is an integer, *n* being equal to 1 for the spacing of the shielding electrodes. A bus at one end of the elements connects the set of elements of each respective conductive path.

3,675,053

ULTRASONIC WAVE MICROPHONE

Hideo Mifune, Hirakata, and Kenroku Tani, Osaka, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed May 21, 1970, Ser. No. 39,214
Claims priority, application Japan, May 26, 1969, 44/41224
Int. Cl. H04r *17/00*
U.S. Cl. 310—8.2 **7 Claims**



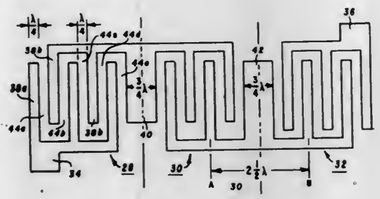
An ultrasonic wave microphone which comprises a flat piezo-electric vibrator and a funnel-like appendant resonator formed of a metal having a high Q and connected to the piezo-electric vibrator at the center thereof so that electrical characteristics of the microphone can be varied, and which is especially useful for a remote control device or the like for a television set.

3,675,054

SERIES CONNECTION OF INTERDIGITATED SURFACE WAVE TRANSDUCERS

William Stanley Jones, Richardson, and Clinton S. Hartmann, Dallas, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 2, 1970, Ser. No. 94,305
Int. Cl. H01v *7/00*
U.S. Cl. 310—9.8 **16 Claims**



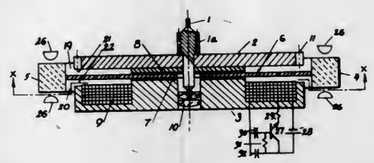
In a transducer in which a plurality of acoustic sections are cascaded in series, a plurality of electrical sections are also cascaded in series to produce a relatively long interdigitated surface wave transducer having a relatively large input impedance. In one embodiment, electrical cascading is effected so that the interconnected acoustic sections are in phase with each other. In a different embodiment the series electrical cascading produces a phase reversal between the interconnected acoustic sections.

3,675,055

MOTOR INCORPORATING TORSIONAL MODE RESONATOR

C. Hunter McShan, P.O. Box 392, Northport, N.Y.

Continuation-in-part of Ser. No. 888,435, Dec. 29, 1969. This application March 15, 1971, Ser. No. 124,178
Int. Cl. H02k *33/16*
U.S. Cl. 310—22 **33 Claims**



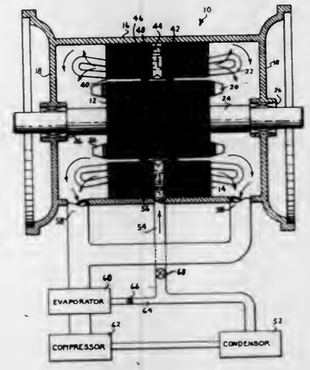
A subminiature microwatt synchronous motor includes a rotor driven magnetically or mechanically by a balanced torsional mode resonator which is attitude-insensitive and temperature-compensated. The shock resistance of the resonator is improved by strengthening the torsional arm in the direction parallel to the plane of the rotor, and by reducing the moment of inertia of the masses in the cantilever mode to raise the ratio of cantilever/torsional frequencies.

3,675,056

HERMETICALLY SEALED DYNAMOELECTRIC MACHINE

Henry George Lenz, Scotia, N.Y., assignor to General Electric Company

Filed Jan. 4, 1971, Ser. No. 103,497
Int. Cl. H02k *9/10*
U.S. Cl. 310—54 **9 Claims**



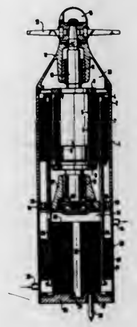
Effective spray cooling of the stator of a hermetically sealed motor is achieved without a reduction in stator flux carrying capacity by passing fluid refrigerant through triangularly shaped axial channels situated entirely within the stator teeth. Desirably, the edges of the channels are disposed parallel to the tapered faces of their associated teeth and the flux carrying area of each tooth is equal to the flux carrying area of the tooth face confronting the motor air gap. In one embodiment of the invention, entry of fluid refrigerant to the axial channels within the teeth is accomplished utilizing a diversely apertured annular manifold centrally positioned along the stator core and the refrigerant is withdrawn at both ends of the motor. Other refrigerant flow configurations, e.g., admitting the refrigerant at both ends of the motor and exhausting the refrigerant at the center or both ends of the motor, also are described.

3,675,057

SUBMERSIBLE ELECTRIC MOTOR

Friedrich-Wilhelm Pleuger, Hamburg, Germany, assignor to Pleuger Unterwasserpumpen GmbH, Hamburg, Germany

Filed Dec. 24, 1970, Ser. No. 101,204
Claims priority, application Germany, Dec. 30, 1969, P 19 65 543.7
Int. Cl. H02k *11/00*
U.S. Cl. 310—68 D **10 Claims**



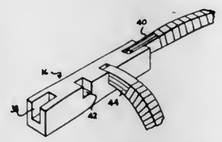
In a submersible liquid filled motor transformer assembly the stator and rotor members of the motor have bar windings. The bar windings of the stator are directly connected to the bar shaped secondary windings of the transformer, the primary windings of which are enclosed in a fluidtight cartridge which is interchangeable for connection to mains of different voltages and frequencies and exposed to the liquid filling of the assembly which also contacts the bar windings of both motor members.

3,675,058

DYNAMOELECTRIC MACHINE UTILIZING PREFORMED WINDING CONNECTORS AND METHOD OF MAKING

Norman A. Beddows; John A. Quigley, both of Scotia, and Warren P. Wielt, Schenectady, all of N.Y., assignors to General Electric Company

Filed Sept. 8, 1970, Ser. No. 70,165
Int. Cl. H02k *11/00*
U.S. Cl. 310—71 **4 Claims**



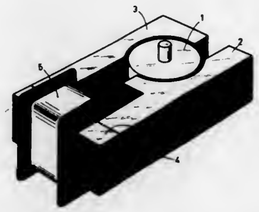
Series connections of rectangular aluminum multi-strand coil leads of a dynamoelectric machine can be readily made in a confined space by the utilization of prefabricated aluminum connectors having apertures therein to snugly receive the uninsulated extremities of the coil leads being joined. In making the weld, the individual strands forming the coil leads initially are joined e.g., utilizing MIG-welding or other conventional joining techniques, whereafter the joined strands are welded to the connector side wall and the weld is finished with a concave aluminum button to maximize the reliability of the joint. A suitable electrical insulation then is applied over both the connector and the uninsulated extremities of the coil leads and the joined leads are mechanically secured to the motor end turns to reduce stress upon the joint during motor operation. Prefabricated connectors also are disclosed for joining the phase and/or series leads to the arcuately shaped ring conductor without canting the natural curvature of the conductors forming the connection.

3,675,059

SELF STARTING SYNCHRONOUS MOTOR HAVING MEANS FOR REDUCING NEGATIVE TORQUE TO PRODUCE STABLE NO-LOAD ROTATION

Richard Thees, Aachen, Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 8, 1965, Ser. No. 494,066
Claims priority, application Germany, Oct. 15, 1964, N 25680
Int. Cl. H02k *21/12*
U.S. Cl. 310—156 **9 Claims**



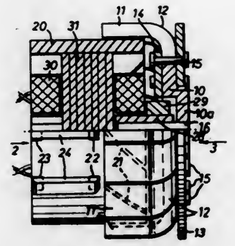
A synchronous motor having a permanent magnet rotor of the type that is self-starting by vibration. A more stable no-load rotation of the motor is achieved by providing means for reducing the negative portions of the instantaneous torque produced by the motor. The above object is obtained in one embodiment of the invention by choosing the dimensions of the stator so that the stator iron is saturated under no-load conditions of the motor.

3,675,060

INDUCTION MOTORS

Brian Hills, Pentire, Knockholt, Sevenoaks, Kent, England

Filed Dec. 3, 1970, Ser. No. 94,692
Claims priority, application Great Britain, Dec. 9, 1969, 60,032/69
Int. Cl. H02k *17/10*
U.S. Cl. 310—172 **14 Claims**



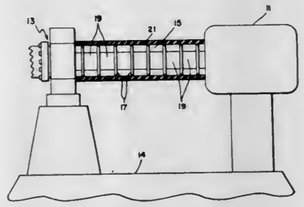
An induction motor having its rotor symmetrically outside its stator has the rotor formed of a cup-shaped ferromagnetic member, which has an annular array of fingers encircling the stator and projecting from a base which is axially beyond the stator, there being a squirrel cage conductor system disposed

solely at the base end of the rotor. The stator consists of a pole-forming ring with shading band sets and adjacent high reluctance paths and with internal energizing coils.

ERRATUM

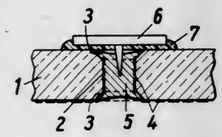
For Class 310—266 see:
Patent No. 3,675,102

3,675,061
SHIELDING FOR A PARTICLE ACCELERATOR
Stanley Harrison, Bedford, Mass., assignor to KEV Electronics Corporation, Wilmington, Mass.
Filed June 4, 1969, Ser. No. 830,274
Int. Cl. H05h *5/00*
U.S. Cl. 313—63 **3 Claims**



In the apparatus disclosed herein, the accelerating tube of a particle accelerator is shielded against the emission of X-rays by a shield which comprises particles of lead oxide supported in a semi-insulating rubber matrix.

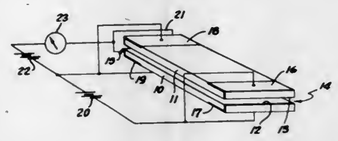
3,675,062
METHOD AND APPARATUS FOR CONNECTING TO A NESA LAYER
Gunter Flasche, Darmstadt, Germany, assignor to Fernseh GmbH, Darmstadt, Germany
Filed April 2, 1970, Ser. No. 25,192
Claims priority, application Germany, April 5, 1969, P 19 17 674.0
Int. Cl. H01j *31/26*
U.S. Cl. 313—65 **6 Claims**



Connection is made to the conductive Nesa layer of a television camera tube by drilling a hole from the backside of a substrate, putting the Nesa layer on the substrate, inserting an indium plug through the hole to contact the Nesa layer, and making contact with the plug on the backside.

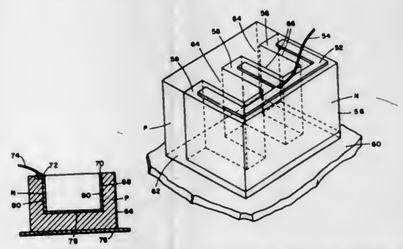
3,675,063
HIGH CURRENT CONTINUOUS DYNODE ELECTRON MULTIPLIER
Charles A. Spindt, Menlo Park, and Kendal T. Rogers, Los Altos, both of Calif., assignors to Stanford Research Institute, Menlo Park, Calif.
Filed Jan. 2, 1970, Ser. No. 360
Int. Cl. H01j *43/00*
U.S. Cl. 313—104 **1 Claim**

A continuous dynode electron multiplier for detecting and multiplying charge flow in a vacuum. Continuous dynodes are deposited on thermally conductive substrates. Heat sinks attached to the substrates permit operation of the multiplier at high current levels without the threat of thermal runaway.



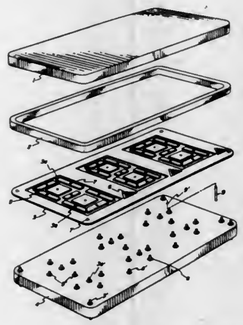
Further, the method of making the continuous dynodes includes depositing from a composite source, whereby the dynode resistance can be accurately controlled.

3,675,064
DIRECTED EMISSION LIGHT EMITTING DIODE
Michael G. Coleman, and Tommie R. Huffman, both of Tempe, Ariz., assignors to Motorola, Inc., Franklin Park, Ill.
Filed Feb. 16, 1970, Ser. No. 11,573
Int. Cl. H05b *33/02*; **H01z** *3/14*
U.S. Cl. 313—108 D **12 Claims**



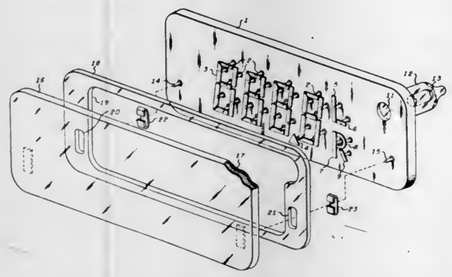
Semiconductor light sources comprising PN junctions in which the PN junctions project the light they produce in a desired direction. This is accomplished by positioning one or more PN junctions in a plane parallel to the desired direction.

3,675,065
PLANAR GAS DISCHARGE INDICATOR
Leland C. Warne, Phoenix, Ariz., assignor to Sperry Rand Corporation
Filed Jan. 23, 1970, Ser. No. 5,435
Int. Cl. H01j *7/42*; **H01k** *1/60*; **H05b** *37/00*
U.S. Cl. 313—109.5 **6 Claims**



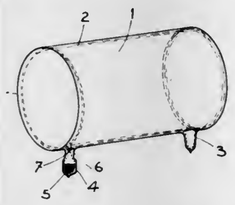
An alpha-numeric indicator of the planar gas tube variety wherein both the anode and cathode elements are planar surfaces supported in a common plane spacer from the supporting base of the assembly by electrical connections passing through the base.

3,675,066
PLANAR RAISED CATHODE ALPHA-NUMERIC GAS DISCHARGE INDICATOR
James B. Armstrong; Dan J. Schott, and Leland C. Warne, all of Phoenix, Ariz., assignors to Sperry Rand Corporation
Continuation-in-part of Ser. No. 742,662, July 5, 1968, abandoned. This application Sept. 4, 1970, Ser. No. 69,679
Int. Cl. H01j *61/66*
U.S. Cl. 313—109.5 **4 Claims**



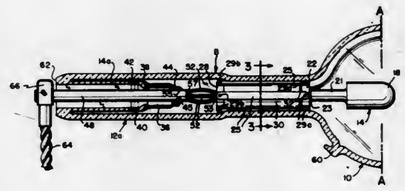
A gas discharge indicator comprising a cathode-supporting substrate and a parallel transparent anode spaced from and hermetically sealed to said substrate to contain an ionizable gas therebetween. Individual cathode segments having greater width than thickness are mounted on the tops of feed-through pins which penetrate the substrate in hermetically sealed relationship and extend beyond the opposite surfaces of the substrate whereby the individual cathode segments are spaced relative to the substrate as well as relative to the anode. The cathode-substrate spacing is such that the cathode segments glow only on the anode or viewable side of the cathode, thereby reducing the sputtering rate, and increasing the luminous efficiency. Additionally, a cup-shaped moat is formed in the cathode side of the substrate about each pin. The raised cathode and moat structure collectively and individually minimize the effects of sputtering and extend the operating life of the indicator.

3,675,067
OPTICAL RESONANCE CELL WITH MEANS FOR REGULATING INTERNAL VAPOR PRESSURE
Henri Brun, Paris, France, assignor to CSF-Compagnie Generale de Telegraphite Sans Fil
Continuation of Ser. No. 796,236, Feb. 3, 1969, abandoned. This application March 16, 1971, Ser. No. 124,974
Claims priority, application France, Feb. 2, 1968, 68138532
Int. Cl. H01j *61/24*
U.S. Cl. 313—174 **7 Claims**



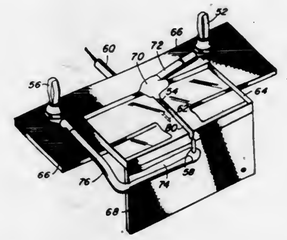
An optical resonance cell containing an alkali vapor to be optically pumped, the transparent walls of which are coated with a layer of paraffin while a bulb containing the reserve of alkali metal is connected to the cell in such a manner as to decelerate the alkali vapor flow between the bulb and the cell.

3,675,068
SEAL STRUCTURES FOR ELECTRIC DISCHARGE LAMPS
Herbert S. Strauss, Paramus, N.J., assignor to Duro-Test Corporation, Bergen, N.J.
Filed Sept. 10, 1970, Ser. No. 71,128
Int. Cl. H01j *5/50*, *61/36*
U.S. Cl. 313—217 **9 Claims**



Seal structures for electrical discharge lamps which include a relatively massive rod-like member which carries the full lamp current and which has a portion within the lamp envelope for connection to the electrode and a portion outside of the lamp envelope to which a current-carrying lead is connected. The rod-like member is fastened to another member which in turn is hermetically sealed to a portion of the envelope to complete a seal which is capable of operating at high temperatures.

3,675,069
POINT LIGHT SOURCE
Kenneth R. Crossen, New York, N.Y., assignor to EG&G, Inc., Bedford, Mass.
Filed Jan. 6, 1971, Ser. No. 104,383
Int. Cl. H01j *1/88*
U.S. Cl. 313—268 **5 Claims**

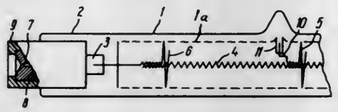


A point light source is disclosed having a spark gap in which the arc is confined in a groove and is viewed end-on through an aperture in a mask.

3,675,070
TUBULAR INCANDESCENT LAMP
Evgeny Fedorovich Prytkov, Bolshevistskaya ulitsa, 30, kv. 3, Saransk Mordovskoi, U.S.S.R.
Filed Sept. 30, 1970, Ser. No. 76,773
Int. Cl. H01j *1/94*; **H01k** *1/24*
U.S. Cl. 313—279 **2 Claims**

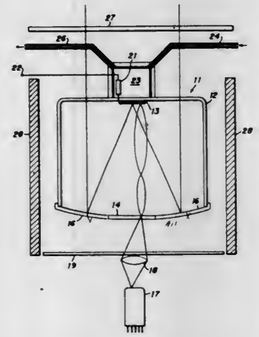
A tubular incandescent lamp adapted to be mounted for operation in positions other than horizontal comprising a

transparent envelope receiving thereinside a single-spiral incandescent body rigidly connected with a pair of electric leads sealingly secured in said envelope, and at least one holder supporting the incandescent body inside said envelope; the lamp



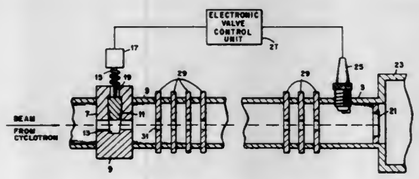
being additionally provided with at least one auxiliary support means including a tube welded to the inner surface said envelope, and with the tube receiving therein a portion of an adjacent one of a holder supporting the incandescent body.

3,675,071
INFRA-RED VIDICON
John P. Choisser, 8487 Paseo Del Ocaso, La Jolla, Calif.
Filed Oct. 10, 1969, Ser. No. 871,399
Int. Cl. H01j *39/00, 31/26*
U.S. Cl. 315—10 **2 Claims**



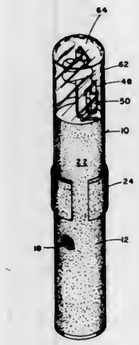
An infrared vidicon utilizing a photo-emissive cathode from which the target of the vidicon is scanned to detect infrared radiation in the intermediate infrared region.

3,675,072
FAST-CLOSING VALVE SYSTEM FOR CYCLOTRONS
Richard L. Hahn; Roland L. Stone; James R. Tarrant, and Lee D. Hunt, all of Oak Ridge, Tenn., assignors to The United States of America as represented by the United States Atomic Energy Commission
Filed Jan. 28, 1971, Ser. No. 110,690
Int. Cl. F16k *31/06*; **H05h** *7/10*
U.S. Cl. 315—111 **4 Claims**



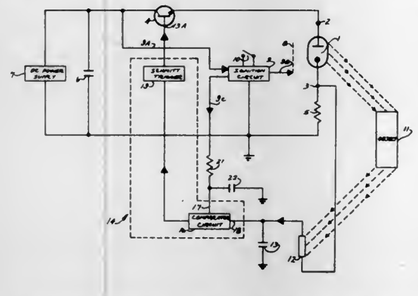
A fast-closing valve system has been provided which operates to protect a cyclotron from loss of vacuum and backwash of radioactive contamination when using intensely alpha-active actinide targets. The valve portion consists of a valve chamber adapted for mounting in a beam tube and having aligned ports on opposite sides through which the accelerated particle beam travels. A valve gate is slidably mounted in the valve chamber between the ports and normally urged into a seated position, closing the ports, by means of compression springs. The valve gate is held open by means of an electromagnet and, when the current to the electromagnet is suddenly shorted, the magnetic field rapidly collapses and the springs slam the valve gate into the seated position. The circuit controlling the actuation of the electromagnet uses a spark plug as a pressure sensor mounted in the beam tube, downstream of the valve and when a slight pressure rise in the beam tube occurs the spark plug fires triggering the control circuit which, in turn, shorts the electromagnet. A plurality of annular baffles are mounted in the beam tube to retard the shock wave from pressurized gas backwash in the case of an accident, such as a target rupture, allowing the valve to close before the gas reaches the valve assembly.

3,675,073
STROBE FLASH APPARATUS
Robert M. Hogue, 4425 W. Dunwood Road, Brown Deer, Wis.
Filed March 6, 1970, Ser. No. 17,234
Int. Cl. H05b *37/02*
U.S. Cl. 315—149 **17 Claims**



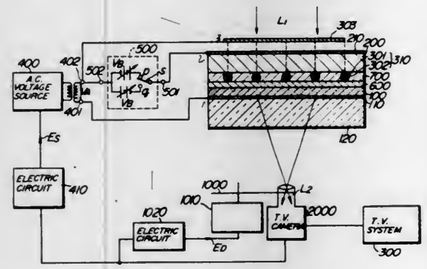
Disclosed herein is a strobe flash apparatus with a modular construction in which the gas-filled flash tube and the circuit components are mounted on a printed circuit board to form a circuit module. The circuit module is mounted in a tubular housing with the camera sync-plug interfitting in a through aperture in the housing wall to anchor the circuit module against axial and angular displacement. The flash tube plugs into a socket at one end of the module and is located within a transparent protective cover to afford 360° light emanation. The circuit includes a light sensitive silicon controlled rectifier located in registry with a window in the housing to afford use of the flash as a light triggered slave unit. An axially shiftable sleeve on the housing is positionable over the window when the flash is triggered with the camera shutter contacts. A neon ready light is located in the transparent cover adjacent the flash tube and blinks or pulsates to indicate that the power pack has recycled and is ready for firing. A high resistance bridge minimizes idling drain of the battery in the power supply, and a high resistance and low current in the semi-conductor isolated trigger circuit minimizes burn of shutter contacts.

3,675,074
TRANSISTORIZED QUENCHING ARRANGEMENT FOR A DURATION-CONTROLLED FLASH TUBE
Rolf Dictor Dennewitz, Berlin, Germany, assignor to Loewe Opta GmbH, Berlin, Germany
Filed Aug. 6, 1970, Ser. No. 61,742
Claims priority, application Germany, Aug. 6, 1969, P 19 40 616.7
Int. Cl. H05b *41/38*
U.S. Cl. 315—159 **4 Claims**



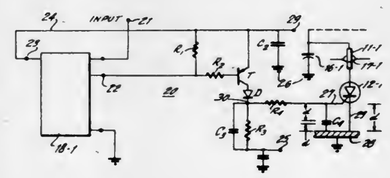
A normally disabled transistor gate is serially connected with the main electrodes of a flash tube for selectively coupling operating voltage thereto. A reference voltage generated when an igniting pulse is applied to the tube is coupled to one input of a comparator circuit whose output excites a Schmitt trigger, thereby causing the trigger to generate a voltage of a first polarity. The trigger output voltage opens the gate to energize the main electrodes of the flash tube, thereby causing the tube to emit a flash of light. A portion of the light reflected from an object illuminated by the flash tube is detected by a photosensitive element and integrated to form a control signal, which is coupled to a second input of the comparator circuit. After a lapse of time sufficient to permit the control voltage to exceed the reference voltage, the comparator output reverses the state of the output voltage from the Schmitt trigger to disable the gate and terminate the flash.

3,675,075
AN ENERGY RESPONSIVE IMAGE CONVERSION AND AMPLIFICATION DEVICE
Tadao Kohashi, Yokohama, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Sept. 6, 1968, Ser. No. 758,057
Claims priority, application Japan, Sept. 11, 1967, 42/58897
Int. Cl. H05b *33/02, 37/00*
U.S. Cl. 315—169 **9 Claims**



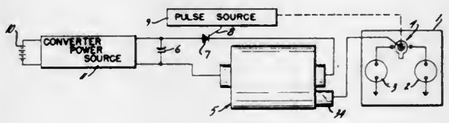
A solid-state electroluminescent image display device which produces the output thereof in response to an image of the light, X-ray or other types of energy projected on to said device, said output being able to be controlled by varying a DC bias voltage for said device, and which comprises an electroluminescent layer excited by an AC electric field and controllable by a DC field and an energy-responsive layer whose resistivity varies in response to the incident energy such as a photoconductive layer, said two layers being interposed between a first light-pervious electrode and a second electrode in such a manner that the electroduminescent layer is adjacent to said first electrode, a third or composite electrode place between said two layers, the AC exciting voltage being connected between said first and third electrodes and the DC bias voltage between said second and third electrodes.

3,675,076
LAMP TRIGGERING CIRCUIT
Joseph M. Klockenbrink, New York, N.Y., and Kemal Aydin, Old Greenwich, Conn., assignors to Path Computer Equipment Inc., Stamford, Conn.
Filed June 12, 1970, Ser. No. 45,607
Int. Cl. H05b *41/34*
U.S. Cl. 315—200 R **11 Claims**



Lamp triggering circuits for use in triggering selected lamps within a plural lamp array in a high-speed fashion and having circuit connection means adapted to prevent false triggering of lamps adjacent to those selected to fire.

3,675,077
HIGH VOLTAGE IGNITION SYSTEM TRANSFORMER
Floyd M. Minks, Rte. 1, Box 41, Kissimmee, Fla.
Filed Jan. 18, 1971, Ser. No. 107,051
Int. Cl. H01g *9/00*; **H01t** *15/02*
U.S. Cl. 315—209 R **17 Claims**



A pulse transformer connects a capacitor to an ignition means.

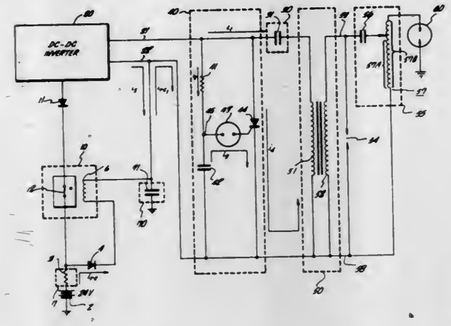
A secondary coil housing is a tubular shaped member molded about a core leg carrying a flat wound primary coil. An axially extended coaxial recess receives a multi-turn single layer secondary coil wound on a support tube. The recess is filled with a suitable potting material and a U-shaped core assembly is secured to the center core leg to define a closed rectangular path.

A high voltage connector is connected to the innermost turn of the secondary coil with a minimum spacing therebetween.

3,675,078
ELECTRONIC LAMP DRIVING CIRCUIT FOR HAND HELD LAMP

Stanley P. Levy, Oaklyn, N.J., assignor to Pichel Industries, Inc., Los Angeles, Calif.

Filed May 8, 1969, Ser. No. 822,962
Int. Cl. H05b 41/26
U.S. Cl. 315—289 13 Claims

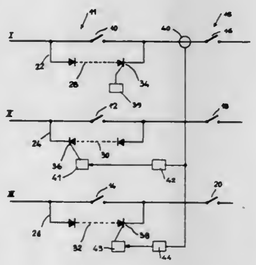


An electronic gaseous discharge lamp ignition and running circuit is described which employs a relatively low voltage supply to provide high frequency starter pulses in conjunction with high energy starter circuit pulses and the proper low running voltage. A trigger circuit is provided which assures that the high frequency starter pulse supply is fully energized before application to the lamp. A sensing circuit disconnects the ignition circuit from the low voltage supply once the lamp has started.

3,675,079
THREE PHASE ELECTRIC SWITCHING SYSTEM HAVING RECTIFIER SHUNTED CONTACTS

Louis Labbaye, Grenoble, and Georges Bernard, Saint Egreve, both of France, assignors to Merlin Gerin, Societe Anonyme, Grenoble, France

Filed June 28, 1971, Ser. No. 157,464
Claims priority, application France, July 15, 1970, 7026086
Int. Cl. H02h 7/22
U.S. Cl. 317—11 A 6 Claims

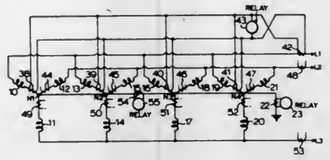


A medium or high voltage three phase electric switching system comprising in each phase a pair of separable contacts shunted by a plurality of serially connected rectifiers. A special connection of the rectifiers of the different phases and a gated trigger circuit permit to select the number of serially connected rectifiers of two of the phases corresponding to only a fraction of the circuit interphase reverse restriking voltage.

3,675,080
LARGE GENERATOR PROTECTIVE RELAYING SCHEME

Duncan Thomas Bath, Peterborough, Ontario, Canada, assignor to Canadian General Electric Company Limited, Toronto, Ontario, Canada

Filed Sept. 21, 1971, Ser. No. 182,358
Claims priority, application Canada, Feb. 24, 1971, 106,117
Int. Cl. H02h 7/06
U.S. Cl. 317—13 R 9 Claims

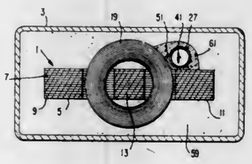


A scheme for protecting a large dynamoelectric machine, such as a waterwheel generator, against internal failure in an A.C. winding is disclosed. For a machine having its A.C. winding formed in at least two three phase star-connected circuits, the neutrals of each being connected generally together and to ground and the free ends of corresponding phases of each being connected together and to line terminals, a preferred form of the scheme consists of a first current transformer connected between one pair of neutrals. When this transformer senses an inter-neutral current above the normal value of inter-neutral current, a relay connected across it is actuated to initiate disconnecting the machine. Another current transformer may be connected between the neutrals and ground which similarly operates another relay upon sensing a substantial current flowing through it. Further current transformers are placed in each phase of the circuits. The outputs of those in corresponding phases are connected in parallel and differentially across the output of the current transformer in the respective line. A further relay is connected across this parallel arrangement to initiate disconnecting the machine when there is a flow of current through it.

3,675,081
THERMAL-OVERLOAD PROTECTIVE ARRANGEMENT FOR INDUCTIVE DEVICES

Mason H. Earing, Danville, Ill., assignor to General Electric Company

Continuation of Ser. No. 669,233, Sept. 20, 1967, abandoned.
This application April 27, 1970, Ser. No. 29,768
Int. Cl. H02h 7/14
U.S. Cl. 317—15 18 Claims



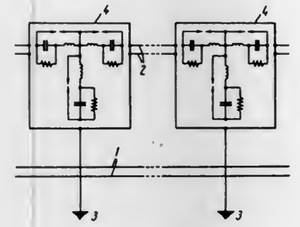
A thermal overload protective arrangement is provided for an inductive device having a core and coil assembly. The arrangement comprises a thermal overload protector which is supported on the inductive device in intimate heat exchange relation with the coil by means of a thermally conducting adhesive. A thermally insulating coating is then deposited on the surface of the thermal overload protector, remote from the coil, to prevent heat from the coil from being dissipated away

before it reaches the thermal overload protector, thereby increasing the sensitivity of the device. The thermally insulating coating also serves to protect the thermal overload protector from an asphaltic potting composition which is poured, while hot, to enclose the entire inductive device.

3,675,082
DIRECT-CURRENT POWER TRANSMISSION LINE

Semen Solomonovich Klyamkin, prospekt M. Toreza, 38, korpus 1, kv. 64, and Jury Solomonovich Kraichik, prospekt Smirnova, 16, korpus 2, kv. 39, both of Leningrad, U.S.S.R.

Filed Dec. 3, 1970, Ser. No. 94,746
Int. Cl. H02h 3/20
U.S. Cl. 317—20 1 Claim



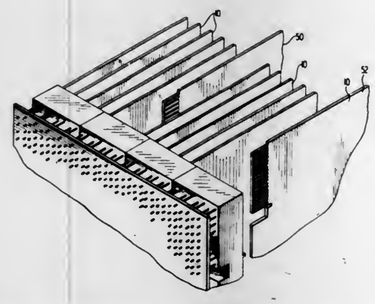
An improvised a.c. limiter arrangement in a d.c. transmission line having earth wires, comprises connecting a.c. limiters which include reactive elements, in an electric circuit formed by the earth wires.

The loops formed by the earth wires and the a.c. limiters produce an electromagnetic effect on the loops formed by the line conductors. By suitably selecting the reactive elements, it is possible to raise the a.c. resistance of the loop formed by the line conductors and thus to reduce the a.c. component.

3,675,083
UNIVERSAL BUS ARRANGEMENT FOR DATA PROCESSING SYSTEMS

Donald A. White, Westminster, Mass., assignor to Digital Equipment Corporation, Maynard, Mass.

Filed Sept. 14, 1970, Ser. No. 72,092
Int. Cl. H05k 1/02
U.S. Cl. 317—101 4 Claims

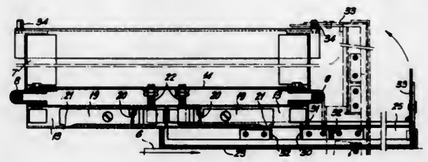


An arrangement for interconnecting circuit boards in a data processing system. Signals are coupled to and from individual circuit boards over contacts formed on the boards. Corresponding contacts on each board are reserved for a specific signal. In use, the boards are inserted in connector blocks which have corresponding terminal pins in circuit with the individual contacts. Another circuit board supports each connector block. Conductors on this board connect corresponding terminal pins on all the connector blocks in parallel so that any individual circuit board can be inserted in any connector block.

3,675,084
SIGNALING AND CONTROL APPARATUS SLIDABLY AND SWINGABLY MOUNTED ON A SUPPORTING CABINET

Andre Jammaud, Neuilly, Marne, France, assignor to Societe Industrielle Honeywell Bull Societe Anonyme, Paris, France

Filed March 10, 1971, Ser. No. 122,715
Claims priority, application France, March 20, 1970, 7010137
Int. Cl. H02b 1/06
U.S. Cl. 317—101 CB 14 Claims

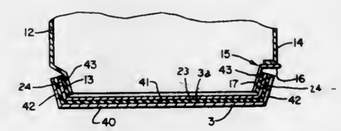


A signaling and control apparatus mounted on a computer cabinet or the like for displaying visual signaling elements thereon in a plurality of directions, wherein a housing structure provided on one face with visual signaling elements is slidably supported on a pair of shutters, and wherein, in addition to a normal position where said face is visible from the front side, the housing structure can slide onto either of said shutters and turn thereon in such a manner that said face is visible from one side or from the opposite side of said cabinet.

3,675,085
PANEL BOARD FOR STACKED ELECTRICAL DEVICES WITH SEALING COVERS

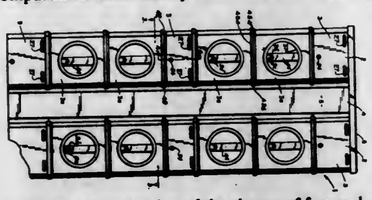
Harris I. Stanback, Lexington, Ky., assignor to Square D Company, Park Ridge, Ill.

Filed Aug. 13, 1971, Ser. No. 171,445
Int. Cl. H02b 1/12
U.S. Cl. 317—106 10 Claims



A panelboard of the type having a plurality of open front compartments adapted to accommodate electrical devices, respectively, and arranged in an upright row, each compart-

ment having an individual cover. Each cover is connected at its upper margin to the panel adjacent the top of its associated compartment. The lower margin of the cover of each compartment overlies and conceals the connection of the cover of the compartment immediately therebeneath. A rain tight seal



is provided by a combination of the shapes of forward margins of the compartment walls, the shapes of flanges and lower margins of the respective covers comparable with said margins, and the arrangement of gaskets between the coacting flanges and margins.

3,675,086

ELECTRICAL ELEMENT LAMINATED IN STRUCTURE

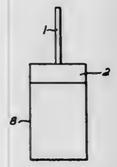
Kurt Wenzel, Vienna, Austria, assignor to Telephon-und Telegraphen-Fabriks A.G. Kapsch & Sohne, Vienna, Austria

Filed June 29, 1970, Ser. No. 50,537

Claims priority, application Austria, Jan. 26, 1970, A 672/70

Int. Cl. H01g 9/05

U.S. Cl. 317—230 **4 Claims**



The laminated electrical element, such as an electrolytic capacitor, voltage sensitive capacitor and the like, comprises, successively arranged, a highly porous substrate of a metal of the fifth group of the periodic system, an oxide film of said substrate metal, an electrolytically deposited oxide layer of a metal of the seventh group of the periodic system and a semiconductive intermediate (mixing) zone resulting between the oxide film and the oxide layer. The thickness of the oxide layer of a metal of the seventh group is in the range of five to 200 molecules.

3,675,087

ELECTROLYTIC CAPACITOR AND A METHOD OF MANUFACTURING THE SAME

Vladimir Pavlovich Zykov, ulitsa Bljukhera, 43, kv. 51; Alexei Alexandrovich Panov, ulitsa Kirova, 76, kv. 73; Pavel Alexeevich Prudnikov, ulitsa Vatutina, 33/2, kv. 12; Mikhail Ivanovich Khlopin, ulitsa B. Bogatkova, 25, kv. 47, and Alexei Dmitrievich Shlyapnikov, ulitsa Sakko-Vantsetti, 52, kv. 55, all of Novosibirsk, U.S.S.R.

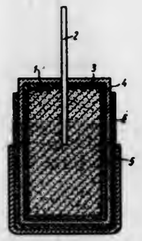
Filed April 19, 1971, Ser. No. 135,026

Claims priority, application U.S.S.R., April 20, 1970, 1423255

Int. Cl. H01g 9/05

U.S. Cl. 317—230 **3 Claims**

In an electrolytic capacitor having a positive and a negative electrode separated by a dielectric layer, the negative electrode is electrically connected to the current collector thereof via a contact conductor, the contact conductor (contact electrode) being a film formed from a mixture of carbon black, graphite and polymerized thermosetting resin. The contact electrode is manufactured by preparing a suspension comprising carbon black, graphite, thermosetting resin and a solvent for said resin, followed by applying the resulting suspension



onto the negative electrode surface and carrying out suspension coat drying at a temperature that provides for resin polymerization and solvent removal.

3,675,088

NEGATIVE RESISTANCE DEVICE

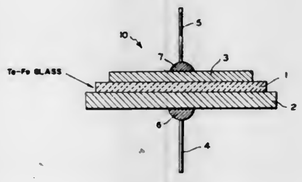
Masahiro Nagasawa, Hirakata, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed July 28, 1970, Ser. No. 58,782

Claims priority, application Japan, Dec. 7, 1969, 44/02158

Int. Cl. H01l 3/02

U.S. Cl. 317—234 R **6 Claims**



A non-rectifying monostable negative resistance device. The device has a glass layer 0.002 to 0.2 mm thick with a composition consisting essentially of, by analysis, tellurium, iron, and oxygen. Two electrodes are applied to opposite surfaces of said glass layer. The atomic ratio of tellurium to iron ranges from 85:15 to 64:36. Such a device has a monostable current-voltage characteristic which includes negative resistance regions and which is very stable.

3,675,089

HEAT DISPENSER FROM A SEMICONDUCTOR WAFER BY A MULTIPLICITY OF UNALIGNED MINUSCULE HEAT CONDUCTIVE RAISED DOTS

Gerald H. Hantusch; David A. Vincent, and Eric H. Van Tongerloo, all of Ottawa, Ontario, Canada, assignors to Microsystems International Limited, Ottawa, Ontario, Canada

Filed Sept. 11, 1970, Ser. No. 72,559

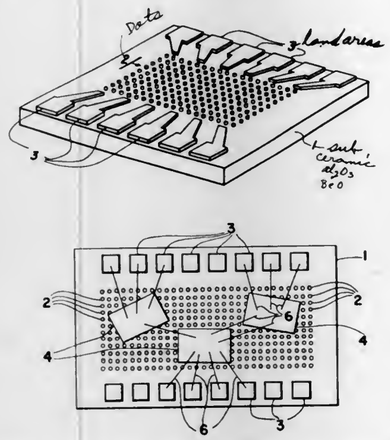
Claims priority, application Canada, Aug. 14, 1970, 090,833

Int. Cl. H01l 3/00, 5/00

U.S. Cl. 317—234 R **8 Claims**

A heat sink for a semiconductor wafer comprising a multiplicity of individual miniscule raised dots of heat conducting material adherent to the surface of an electrically insulative, but heat conductive substrate. The wafer is mounted on the tops of the dots. The dots provide heat conductive paths from

the wafer to the substrate, do not short circuit between exposed elements of the wafer, while taking up the strain of differential expansion and contraction between the wafer and the substrate during heating and cooling.



3,675,090

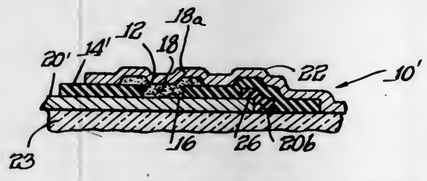
FILM DEPOSITED SEMICONDUCTOR DEVICES

Ronald G. Neale, Birmingham, Mich., assignor to Energy Conversion Devices, Inc., Troy, Mich.

Continuation-in-part of Ser. Nos. 773,013, Nov. 4, 1968, and Ser. No. 806,994, March 13, 1969. This application Oct. 17, 1969, Ser. No. 867,341. The portion of the term of this patent subsequent to Oct. 5, 1988, has been disclaimed.

Int. Cl. H01l 3/00, 19/00

U.S. Cl. 317—234 R **26 Claims**



A film of semiconductor material is deposited within a pore formed in a layer of insulating material to make electrical contact with an electrode-forming layer on both sides of the semiconductor material with at least one side of the semiconductor material having an effective contact area limited by the size of the pore to define a limited volume of such semiconductor material through which current can flow.

3,675,091

PLANAR P-N JUNCTION WITH MESH FIELD ELECTRODE TO AVOID PINHOLE SHORTS

Susumu Naomoto, Ibaragi; Tadataka Kaneko, Suita, and Hideya Esaki, Hirakata, all of Japan, assignors to Matsushita Electronics Corporation and Matsushita Electric Industrial Co., Ltd., Osaka, Japan

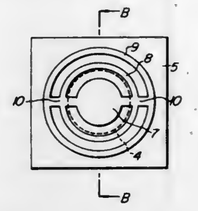
Filed May 21, 1970, Ser. No. 39,215

Claims priority, application Japan, May 28, 1969, 44/43039

Int. Cl. H01l 5/06

U.S. Cl. 317—235 R **1 Claim**

A planar p-n junction semiconductor device, wherein an electrode surrounding a p-n junction is provided on a protective film covering the surface of a higher resistivity region of two regions of different conductivity types which form a p-n junction, another electrode is provided in a lower resistivity



region in ohmic contact therewith, said two electrodes being electrically connected, and the space charge region is extended and the breakdown voltage of the p-n junction is enhanced when a reverse bias is applied to the p-n junction.

3,675,092

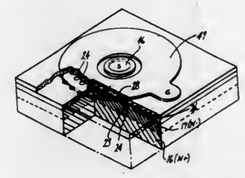
SURFACE CONTROLLED AVALANCHE SEMICONDUCTOR DEVICE

Joseph Kocsis, Sunnyvale, and Thomas Peter Cauge, Mountain View, both of Calif., assignors to Signetics Corporation, Sunnyvale, Calif.

Filed July 13, 1970, Ser. No. 54,097

Int. Cl. H01l 11/02

U.S. Cl. 317—235 R **10 Claims**

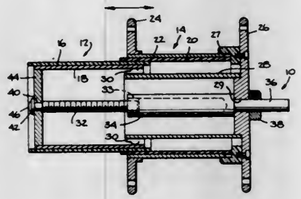


Surface controlled avalanche semiconductor device formed of a semiconductor body having a planar surface. The semiconductor body has an impurity therein so it has a conductivity of one type. Regions of opposite conductivity are formed in the body and provide P-N junctions which extend to the surface in such a manner that they form a pattern of a plurality of closed lines enclosing a plurality of small areas distributed over the surface with at least one portion of the surface being free of said P-N junctions and being in contact with said region of opposite conductivity type. A layer of insulating material overlies the surface. Source metallization is disposed on the layer of insulating material and extends through the layer of insulating material to make contact with said portion of the surface. Gate metallization separated from the source metallization overlies the layer of insulating material and the P-N junctions.

In the method for forming a surface controlled avalanche semiconductor device, there are formed in a semiconductor body of one conductivity type a plurality of regions of opposite conductivity type to form P-N junctions which extend to the surface so that a pattern is formed consisting of a plurality of closed lines which enclose small areas which are distributed over the surface of the semiconductor body with the exception of a small portion of the surface of the semiconductor body which is free of such P-N junctions and which is in contact with said region of opposite conductivity type. A layer of insulating material is formed on the surface. An opening is formed in the layer of insulating material overlying said portion of the surface area. Metallization is formed on the insulat-

ing layer in such a manner that source metallization extends through the opening in the insulating layer and makes contact with said region of opposite conductivity type and gate metallization is provided which overlies the insulating layer and said P-N junctions.

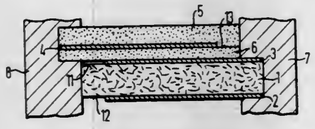
3,675,093
VARIABLE CAPACITOR
Paul Russo, Franklin Square, and Markus Mowogrozki, New York, both of N.Y., assignors to Polyfion Corporation, New Rochelle, N.Y.
Filed Feb. 1, 1971, Ser. No. 111,567
Int. Cl. H01g *5/04*
U.S. Cl. 317—249 R **7 Claims**



The invention relates to variable capacitors suitable for high frequency, high voltage, low loss applications.

The capacitor is formed of at least two sections or elements which are relatively movable to achieve selective capacitance variation. The capacitor sections or elements each comprise a metallic layer, serving as an electrode, secured to a layer of dielectric material with the layers of dielectric material being of generally equal thickness and in contiguous slidable contact to form the variable capacitor.

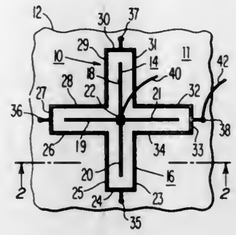
3,675,094
IMPREGNATED SELF-HEALING ALTERNATING VOLTAGE CAPACITOR
Walter Voelkl, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany
Filed June 22, 1971, Ser. No. 155,484
Claims priority, application Germany, June 25, 1970, P 20 31 741.3
Int. Cl. H01g *3/215*
U.S. Cl. 317—258 **5 Claims**



An AC voltage capacitor employs a pair of layers of varnish with a metallic layer therebetween to form one electrode of the capacitor, the layer structure being carried by a second layer structure including a rough surface dielectric having metallic layers on both sides which are electrically connected together to form the other electrode of the capacitor.

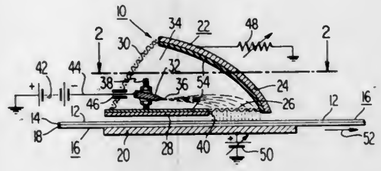
3,675,095
CAPACITORS OF CONSTANT CAPACITANCE
William Lester Lehmann, Indianapolis, Ind., assignor to RCA Corporation
Filed June 10, 1971, Ser. No. 151,717
Int. Cl. H01g *1/035*
U.S. Cl. 317—261 **6 Claims**

An improved printed capacitor includes a pair of inner and outer, closely spaced, coplanar electrodes. The inner electrode has the general shape of a cross, and the outer electrode surrounds the inner electrode and also has the general shape



of a cross. The capacitor has a substantially constant capacitance regardless of the relative position of the inner electrode with respect to the outer electrode.

3,675,096
NON AIR-POLLUTING CORONA DISCHARGE DEVICES
Helmut Gustav Kiess, Hightstown, N.J., assignor to RCA Corporation
Filed April 2, 1971, Ser. No. 130,644
Int. Cl. H01t *19/00*
U.S. Cl. 317—262 A **7 Claims**

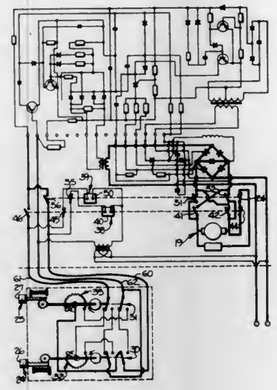


A corona generating device, adapted to operate in air, to apply an electrostatic charge to a surface, includes an elongated, knife-edged, corona-generating electrode enclosed within a housing. The housing includes a foraminous screen that has an optical transmission of less than 50 percent to prevent ultraviolet light produced by the corona from reaching the surface to be charged. The screen and the interior of the housing are formed, or coated, with a catalytic material, such as silver, to convert any ozone formed by the corona discharge, to oxygen, thereby preventing pollution of the air with toxic ozone.

3,675,097
REMOTE CRANE MOTOR CONTROL WITH VARIABLE DIRECTION AND SPEED OF MOVEMENT
William L. Mulligan, Charlotte, N.C., assignor to Parks-Cramer Company, Fitchburg, Mass.
Filed June 24, 1970, Ser. No. 49,224
Int. Cl. H02p *7/20*
U.S. Cl. 318—17 **8 Claims**

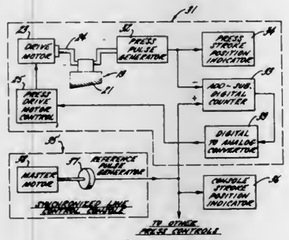
A crane having at least one movable member and a drive for moving the movable member wherein the control for the crane permits an operator to controllably vary the direction and speed of movement of the movable member. Adaptation of the control to cranes of otherwise conventional construction or to pre-existing cranes is facilitated by an advantageous

electrical circuit arrangement, in which direction and speed signals are conducted through a minimum number of electri-



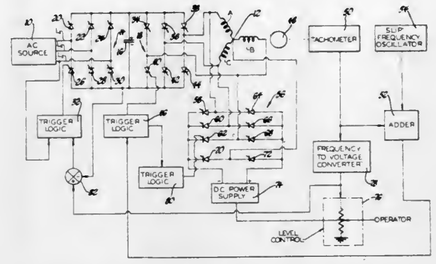
cal conductors in accomplishing the controlled variation of direction and speed of movement.

3,675,098
DIGITAL CONTROL OF PRESS SYNCHRONIZATION
Francis E. Heiberger, Elmhurst, Ill., assignor to Danly Machine Corporation
Filed June 11, 1970, Ser. No. 45,316
Int. Cl. H02p *5/50*
U.S. Cl. 318—85 **5 Claims**



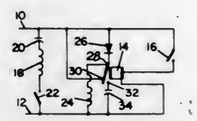
For automatically synchronizing the operation of a line of independently driven presses, each equipped with a variable speed drive, a digital control system in which respective digital signals representative of the instantaneous phase positions of the several presses in the line are each differentially compared against a digital reference signal representative of reference phase position. As a result of the differential comparisons, if the phase of any given press leads or lags the reference phase, a phase error is detected. This phase error is converted to an analog control signal which has a sense dependent on whether the press phase is leading or lagging the reference phase and a magnitude dependent on the amount of such lead or lag, and the control signal is fed back to the press drive to speed up or slow down the press as necessary to bring it back into step. The digital reference phase position signal cycles at the desired line operating speed, so that all presses operate in synchronism at that speed.

3,675,099
INDUCTION MOTOR REGENERATIVE BRAKING SYSTEM
Richard W. Johnston, Troy, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed July 2, 1971, Ser. No. 159,206
Int. Cl. H02p *3/22*
U.S. Cl. 318—211 **8 Claims**



A controlled slip AC induction motor system is provided with normal and regenerative braking modes of operation. During normal operation, voltage from a source of alternating voltage is rectified by a full-wave bridge rectifier and supplied to the input of an inverter connected with the winding of the motor. A filter capacitor is interposed between the bridge rectifier and the inverter to filter the DC input voltage to the inverter. A feedback control regulates the switching repetition rate of controlled rectifiers in the inverter to maintain a preselected slip frequency for the voltage supplied the motor. During regenerative braking, an auxiliary power source is selectively connected with the motor phase windings to excite the motor to enable it to operate as a generator. The feedback control loop used during normal operation is used during periods of regeneration to regulate the frequency of the excitation voltage; this control provides a preselected negative slip frequency for operating the motor as a generator. The power feed inverter used in normal operation functions as a bridge rectifier transferring power from the motor to the filter capacitor during braking. The effective load impedance provided by the capacitor is electronically controlled by periodically discharging the capacitor a predetermined amount through the full-wave bridge rectifier used in normal operation (functioning as an inverter during regeneration) to the source of alternating voltage. Flexible electronic control of regeneration by the induction motor is obtained by this system.

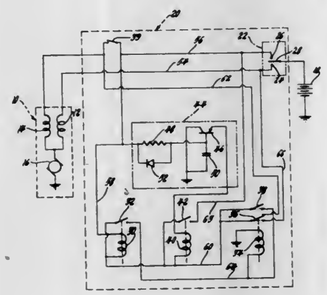
3,675,100
CIRCUIT FOR MULTI-SPEED TWO-PHASE MOTOR
Thomas J. McNamara, and Arlon G. Sangster, both of c/o Decitek Division of the Jamesbury Corp., 15 Sagamore Road, Worcester, Mass.
Continuation-in-part of Ser. No. 783,867, Dec. 16, 1968, abandoned. This application Jan. 15, 1971, Ser. No. 106,796
Int. Cl. H02p *7/36*
U.S. Cl. 318—220 R **3 Claims**



This circuit utilizes an RLC network, using the motor winding as a component, to alter the speed of an ac two-phase

servo motor. The RLC circuit produces a dc component and variable frequency ac component which effectively produce a signal on the control winding of the motor. Power for the RLC network is taken from the ac line through a rectifier (diode).

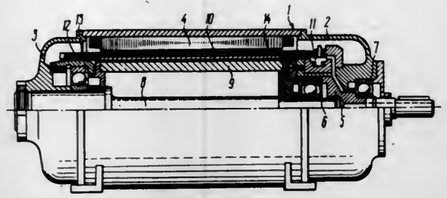
3,675,101
POWER WINDOW REVERSING UNIT
Samuel B. Robbins, Rochester, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed May 25, 1970, Ser. No. 40,991
Int. Cl. H02p 1/22
U.S. Cl. 318—266 **7 Claims**



A circuit for controlling a power window operating motor having first and second field windings selectively energized to open and close a window. Placement of a switch in a window opening setting energizes the first winding and opens the window. Placement of the switch in a window closing setting energizes the second winding so as to close the window. Should the window encounter an obstacle when closing the current to the second winding will be increased above a certain level, energizing a current responsive relay and a reversing relay that reverses the motor by deenergizing the second winding and energizing the first winding. A time delay network is provided for preventing the window from being reversed for a predetermined time after the switch is placed in the window closing setting so as to prevent reversal of the motor due to its starting current transients. A limit switch responsive to the window position is provided for preventing reversal of the window when the window is substantially closed so as to permit the motor to draw an increased current when it seals the window closed.

3,675,102
DYNAMO-ELECTRIC MACHINE
Oleg Pavlovich Sidorov, ulitsa Golyanova, korpus 202, kv. 8; Pavel Sergeevich Ryabtsev, Mukomolny proezd, 15, korpus 2, kv. 8, both of Moscow, and Rostislav Ivanovich Lastochkin, deceased, late of Moscow, U.S.S.R. (by Nadezhda Andreevna Lastochkina and Tatyana Rostislavovna Lastochkina, administrators), both of Scherbakovskaya ulitsa, 40/42, Kv. 50
Filed Nov. 18, 1970, Ser. No. 90,522
Int. Cl. H02k 1/22
U.S. Cl. 310—266 **2 Claims**

A dynamo-electric machine, in particular a direct-current electric machine in which a rotatable hollow armature with windings arranged thereon is placed into an air gap between an armature core and pole pieces, with one end of said hollow armature being secured to a shaft of the machine and the



other end thereof being provided with a support which is used for centering the armature.

3,675,103
SEGMENT WIPE CONTROL FOR WINDSHIELD WIPER SYSTEM
James O. Elliott, Xenia, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Filed Oct. 6, 1970, Ser. No. 78,439
Int. Cl. B60s 1/02
U.S. Cl. 318—281 **3 Claims**

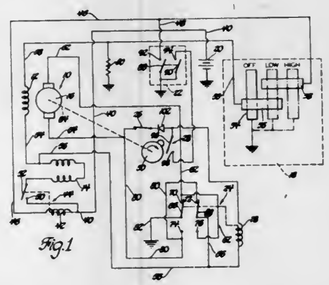


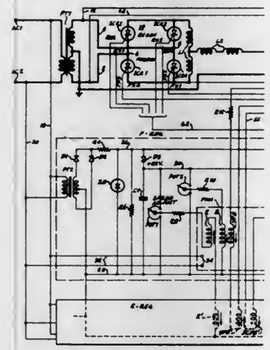
Fig. 1

The segment wipe control of this invention affords operation of an automotive windshield wiper system to wipe an area substantially less than the area of the normal wipe. To effect the segment wipe, the current supplied the armature of the windshield wiper system's DC drive motor is periodically reversed to cause the motor to reverse the direction of its rotation. To accomplish this reversal of current, a double-pole, double-throw relay energized through two cam actuated switches is utilized to switch the motor feed connections and concurrently reverse the polarity of the current supplied to the motor. The cam actuated switches are alternately actuated by a cam driven by the motor's output shaft, thus synchronizing the reversals of the DC motor with the sweep of the windshield wiper blades which are driven by linkage connected with the motor's output shaft.

3,675,104
SINGLE-PHASE FULL-WAVE REGENERATIVE SCR SHUNT MOTOR CONTROL SYSTEM
Arthur F. Allison, West Bend; Donald J. Greening, Thiensville, and Anton N. Mollgaard, Pewaukee, all of Wis., assignors to Cutler-Hammer, Inc., Milwaukee, Wis.
Filed Dec. 17, 1970, Ser. No. 99,065
Int. Cl. H02p 5/16
U.S. Cl. 318—345 **10 Claims**

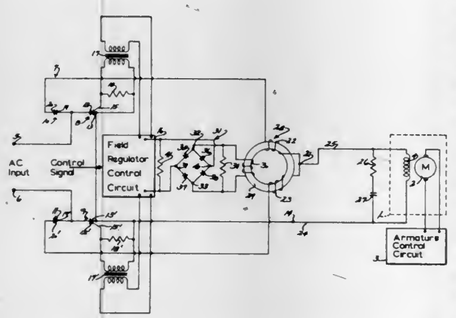
A single-phase full-wave regenerative SCR (silicon controlled rectifier) drive having a series and shunt, T-network, reactor configuration, minimum firing of both forward and

regenerative SCR's, and current feedback regulation. The reactor configuration along with the controlled minimum firing angle assures continuous current through the motor armature over substantially the entire load range except for the low 10 to 20 percent whereas normally continuous current oc-



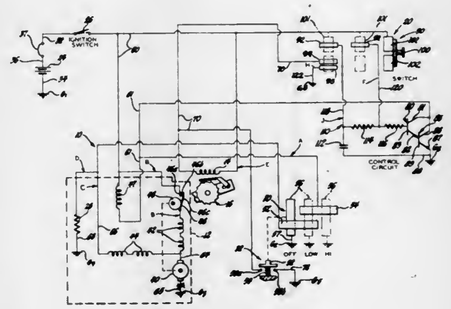
curred only in about the upper half of the load range. This allows the current regulator to be designated for continuous current rather than discontinuous current, having higher gain, and affording better control. By continuous current, heating also is reduced.

3,675,105
CURRENT SENSING APPARATUS
Andrew Petrigalla, Parma, Ohio, assignor to A. O. Smith Corporation, Milwaukee, Wis.
Filed Jan. 18, 1971, Ser. No. 107,255
Int. Cl. H02p 5/16
U.S. Cl. 318—356 **9 Claims**



A current transformer having a pair of primary windings is connected between a single phase thyristor-diode full-wave bridge network and a shunt field winding of a D.C. motor to linearly sense the direct current flowing within the field winding. Opposed magnetic flux signals are alternately induced within the current transformer core by the direct current flowing through the winding. A secondary winding is coupled to the current transformer core to provide an alternating current signal proportional to the flux signals. A full wave rectifier is connected to the secondary winding and supplies a unidirectional signal to a parallel connected resistor thereby providing an isolated analog output voltage proportional to the direct current flowing within the D.C. motor field winding.

3,675,106
ELECTRONIC DEMAND WINDSHIELD WIPER CONTROL
Bohdan I. Pryjmak, Kettering, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Filed April 20, 1971, Ser. No. 135,562
Int. Cl. H02k 3/08
U.S. Cl. 318—443 **5 Claims**

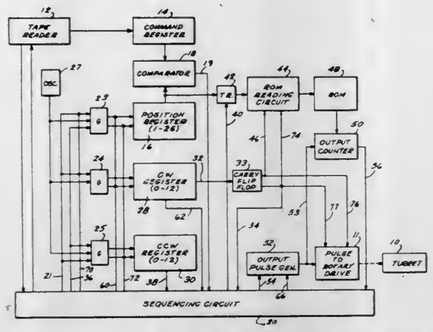


In a preferred form, this disclosure relates to an electrical control system for controlling operation of a windshield wiper unit and a washer unit for an automotive vehicle, and in which the wiper unit has a pair of oscillatable wipers which are moved through outboard and inboard strokes during each cycle of operation. The electrical control system comprises a power source, an electric motor means for driving the wipers, an electrically operated washer unit and a first control circuit means including a manual switch for effecting either low or high speed continuous operation of the wipers and a second manual switch for controlling operation of the washer unit. The electrical control system further includes a second control circuit means in parallel with a first control circuit means and which includes a transistor means connected in series with the motor means, an RC electrical time delay means connected with the base of the transistor means and a push button control switch. The control switch is operable when partially depressed to effect operation of the wiper motor through either a single cycle of operation, any number up to a predetermined number of cycles of operation or any number plus a predetermined number of cycles of operation depending upon the length of time the control switch is partially depressed prior to being released and is operable when momentarily fully depressed to effect simultaneous operation of the washer unit and the wiper unit for a predetermined number of cycles of operation and with the wiper motor shutting off automatically subsequent to the cessation of washer operation.

3,675,107
TURRET INDEXING CONTROL SYSTEM
Joseph J. Barber, Williamsville, N.Y., assignor to Houdaille Industries, Inc., Buffalo, N.Y.
Filed Oct. 1, 1970, Ser. No. 77,139
Int. Cl. G05b 19/28
U.S. Cl. 318—601 **4 Claims**

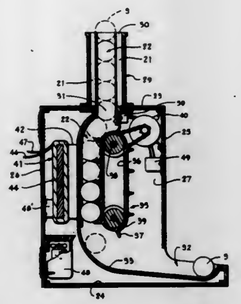
For controlling indexing of the turret of a punching press where tool stations have different distances therebetween, a read only memory stores the number of indexing pulses required to index between each pair of adjacent stations, and a

readout circuit serves to read out the number of such pulses required to execute a desired indexing operation. Preferably



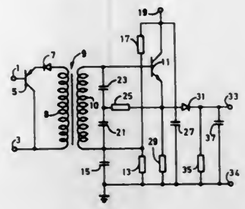
the system executes a move in the indexing direction requiring traversal of the lesser number of tool stations.

3,675,108
INDUCTION CHARGING DEVICE
Thomas H. Nicholl, 1204 W. 27th St., Kansas City, Mo.
Filed Oct. 12, 1971, Ser. No. 187,982
Int. Cl. H01m *45/04*
U.S. Cl. 320—2 **11 Claims**



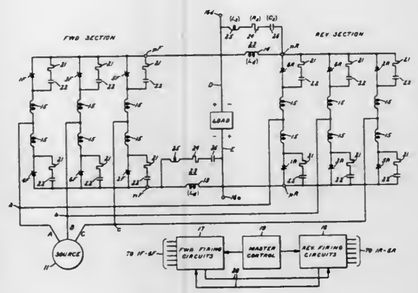
An induction charging device for recharging a battery or batteries for use in a rechargeable battery powered appliance is disclosed and includes a housing having walls defining a passage extending therethrough with the passage having an entrance shaped to receive a rechargeable battery powered appliance. An appliance support member is positioned within the passage to receive an appliance or battery container and move same along a battery recharging path having a transformer primary coil and core within the housing and arranged adjacent the battery recharging path so that a secondary coil and core within the appliance or battery container will move along the battery recharging path with the respective cores aligned. A current is connected to the primary coil to thereby energize the secondary coil in the appliance or battery container and direct current through a rectifier in the appliance whereby a unidirectional current is supplied to the rechargeable battery or batteries in the appliance. Cooperative portions on the passage defining walls and a body of the appliance or battery container in the battery recharging path and act as a key whereby only an appliance or battery container having a proper size ans shape may be received in and move in the respective cooperative interengaging portions and have the battery or batteries therein charged in the induction charging device.

3,675,109
INFORMATION TRANSMITTING DEVICE
Hilding G. Skoog, Balsta, Sweden, assignor to Sevenska Dalaregisster AB, Solna, Sweden
Filed Nov. 18, 1970, Ser. No. 90,679
Int. Cl. H02m *3/22*
U.S. Cl. 321—2 **9 Claims**



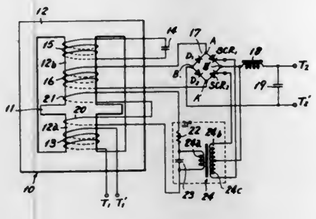
A device for transmitting information, represented by different levels of DC-voltage, from a transmitter to a receiver galvanically separated from the transmitter. A transformer, one winding of which forms a part of a LC-oscillator, and the second winding of the transformer is connected to a first transistor via a diode, the transistor in emitter-follower configuration. A second transistor, also having an emitter follower configuration is a part of the LC-oscillator. A second output diode is connected to the emitter of the second transistor. The arrangement being so designed that the voltage level appearing at the cathode of the second diode corresponds to the input voltage level appearing at the input of the first transistor.

3,675,110
MEANS FOR DAMPING VOLTAGE OSCILLATIONS IN SOLID-STATE SWITCHING CIRCUITS
Fred W. Kelley, Jr., Media, Pa., assignor to General Electric Company
Filed Jan. 27, 1971, Ser. No. 110,165
Int. Cl. H02m *1/18*
U.S. Cl. 321—14 **9 Claims**



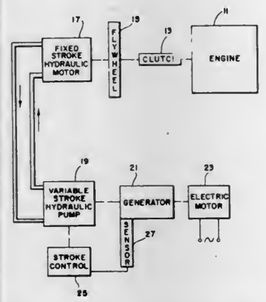
A thyristor is serially joined to an inductor and is shunted by a snubber circuit comprising a resistor in series with a capacitor. When subjected to a stepped change in voltage, the series combination of the inductor and the snubber circuit may become oscillatory. To prevent the voltage across the thyristor from undesirably overshooting, a tuned damping circuit is connected in parallel with the inductor, or alternatively in parallel with the snubber circuit.

3,675,111
AUTOMATIC DC VOLTAGE REGULATING SYSTEM
Toshikatsu Sakka, 8-12, 4-chome, Higashi-Mukojima, Sumida-ku, Tokyo, and Kiyoshi Takano, 1814 Mutsuura-cho, Kanazawa-ku, Yokohama-shi, Kanagawa, both of Japan
Filed June 11, 1971, Ser. No. 152,049
Claims priority, application Japan, June 25, 1970, 45/55721
Int. Cl. H02m *7/24*; G05f *1/20*
U.S. Cl. 321—18 **9 Claims**



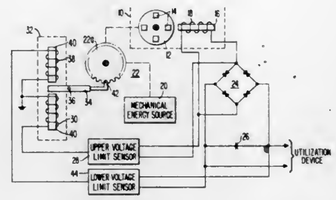
An automatic DC voltage regulating system includes an automatic AC voltage regulator whose output impedance is inductive. Voltages respectively in phase with the voltages of an input and an output winding of this AC voltage regulator are combined by means of a pair of additional windings magnetically connected with the input and output windings and themselves interconnected in series. A series circuit of a resistance and a capacitor, for example, is connected to the aforesaid additional windings so as to cause a desired phase lag to the above obtained resultant of the input and output voltages of the AC voltage regulator. The output voltage of this resistance-capacitor series circuit is applied via a transformer to a rectifier connected in tandem with the AC voltage regulator, thereby controlling the gate of at least one thyristor included in the rectifier in accordance with variation in the value of the load current. There are also disclosed herein several other examples of the automatic DC voltage regulating system of the invention.

3,675,112
STANDBY POWER SYSTEM
Peter B. Smith, Monroe, Conn., assignor to Dynamics Corporation of America, New York, N.Y.
Filed July 9, 1970, Ser. No. 53,432
Int. Cl. H02k *7/02*
U.S. Cl. 322—4 **3 Claims**



A standby generator having a flywheel storage system coupled to the standby engine. The flywheel is also coupled to the motor generator set through a hydrostatic transmission system including a fixed stroke hydraulic motor and a variable stroke hydraulic pump.

3,675,113
SYSTEM FOR THE GENERATION OF ELECTRICAL POWER HAVING A SPRING POWERED PRIME MOVER RESPONSIVE TO OUTPUT VOLTAGE
Clifford J. Bader, West Chester, and Richard P. Branco, Bridgeport, both of Pa., assignors to Burroughs Corporation, Detroit, Mich.
Filed Nov. 24, 1971, Ser. No. 201,638
Int. Cl. H02p *9/04*
U.S. Cl. 322—28 **10 Claims**

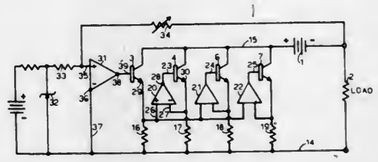


The present disclosure describes a system for providing a nonvolatile electrical energy source which employs a finite source of mechanical energy, metered in accordance with the electrical power demands of the utilization device. A basic embodiment of the system contemplated by the invention as a replacement for the volatile electro-chemical storage battery with its limited shelf life, comprises a spring-wound generator, electrical energy storage means, and electrical latching means controlled by upper and lower voltage limit sensors for metering out the mechanical energy of the spring as a function of the level of electrical energy present at any given time in the storage means.

ERRATUM

For Class 322—31 see:
Patent No. 3,675,117

3,675,114
HIGH CURRENT VOLTAGE/CURRENT REGULATOR EMPLOYING A PLURALITY OF PARALLEL CONNECTED POWER TRANSISTORS
Sarkis Nercessian, Long Island, N.Y., assignor to Forbro Design Corp., New York, N.Y.
Filed June 14, 1971, Ser. No. 152,675
Int. Cl. G05f *1/56*
U.S. Cl. 323—9 **5 Claims**

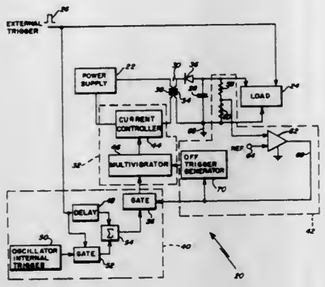


In a high current regulator employing high power parallel connected pass transistors, equal current sharing is forced by comparing the voltage drop across small emitter resistors and by means of differential (operational) amplifiers forcing these voltage drops to be substantially equal at all output currents. Three additional quantities are controlled; first, output voltage; second, output current; and third, fold-back overload current characteristics. The overall performance in all major characteristics is enhanced by the liberal use of high gain integrated circuit operational amplifiers.

3,675,115
POWER SUPPLY PROVIDING SYNCHRONIZED ENERGIZATION OF A LOAD

James P. O'Loughlin, Sudbury, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed Nov. 26, 1969, Ser. No. 880,070
Int. Cl. G05f 1/56
U.S. Cl. 323—6 4 Claims

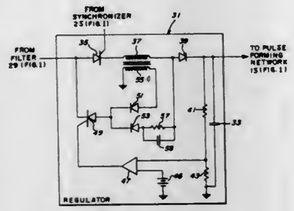


A power supply having an energy storage capacitor for supplying energy at a predetermined voltage to a pulsed load, and a charging circuit operative during recurring intervals between the pulsing of the load and responsive to the magnitude of the voltage supplied to the pulsed load for charging the energy storage capacitor. A transformer is provided in combination with the charging circuit to isolate the energy storage capacitor from the charging circuit during the pulsing of the load.

3,675,116
RESONANT CHARGING CIRCUIT

Henry M. Israel, 1/56, Worcester, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed March 15, 1971, Ser. No. 124,136
Int. Cl. G05f 1/56
U.S. Cl. 323—17 1 Claim

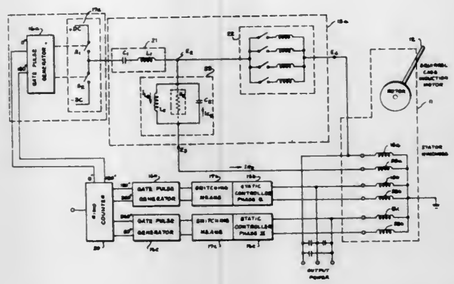


A resonant charging choke and switching arrangement in a regulator for controlling the voltage across a capacitive storage element despite large variations in the voltage of a source of DC power for such element, the switching arrangement being operated through a control circuit: (a) electrically to disconnect the resonant charging choke from the capacitive storage element; and, (b) electrically to connect the resonant charging choke, through a low impedance circuit to the source of DC power when the voltage across the capacitive storage element reaches a predetermined level.

3,675,117
ASYNCHRONOUS GENERATOR DEVICE

Eberhart Reimers, 7700 Random Run Lane #201, Falls Church, Va.

Continuation-in-part of Ser. No. 55,205, July 15, 1970. This application April 26, 1971, Ser. No. 137,368
Int. Cl. H02p 9/46
U.S. Cl. 322—31 8 Claims

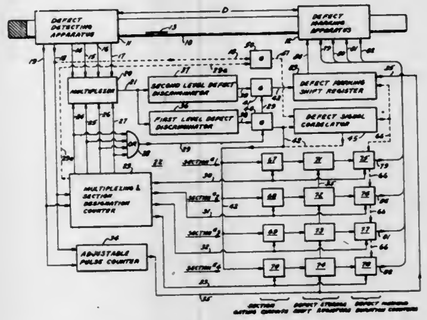


The drive means of this invention comprises a squirrel cage induction motor adapted to operate as an asynchronous alternator without the use of an auxiliary synchronous machine. This relatively light weight drive means is especially appropriate for vehicle propulsion.

3,675,118
MULTI-PROBE METOD AND APPARATUS FOR DETECTING, CORRELATING AND CLASSIFYING DEFECTS IN TEST MEMBERS

Robert C. Booth, Bethlehem, Pa., assignor to Bethlehem Steel Corporation

Filed April 21, 1970, Ser. No. 30,397
Int. Cl. G01r 33/12
U.S. Cl. 324—37 18 Claims

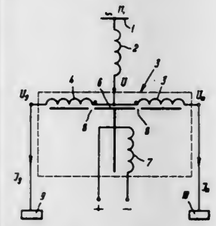


Nondestructive test apparatus detects both straight and skewed defects in test members such as steel billets and bars having flat surfaces. Detecting means, including a plurality of probes adapted to scan a surface of said member sequentially and cyclically during relative lengthwise movement therewith, produces a plurality of electrical signals representative of defects detected in said member. The plurality of electrical signals are selected sequentially one at a time by a multiplexer. The selected electrical signals cause defect pulses to be produced and those pulses are coordinated with probe position signals in electronic circuits which classify the defects according to location, or location in combination with level of defect severity and/or length, in a longitudinally extending section of the test member. A signal correlator may be added to reject noise and false defect pulses as well as to accommodate skewed defects when either or both such situations are encountered. The finally processed defect pulses are utilized, for example, to activate reworkable or rejectable defect markers downstream of the probe over each section of the scanned surface where the defects occurred in said member

3,675,119
TWIN REACTOR EMPLOYED FOR VOLTAGE STABILIZATION IN POWER PLANTS

Mark Samuilovich Libkind, pereulok Stopani, 8, kv. 6, Moscow, and Gurami Semenovich Lezhava, ulitsa Pavlova, 49, kv. 8, Tbilisi, both of U.S.S.R.

Filed Jan. 15, 1970, Ser. No. 3,145
Int. Cl. G05f 7/00; H01f 29/14
U.S. Cl. 323—48 10 Claims



A duplex reactor having two inductively coupled working windings connected in series opposition. The windings having a common output lead connected to a power source and respective output leads connected to consumer loads. A member which controls the mutual inductance of the working windings is arranged on a magnetic core.

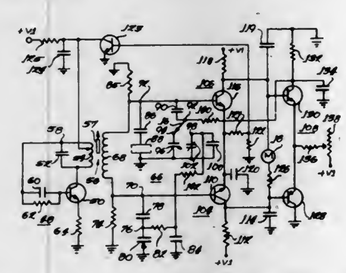
ERRATUM

For Class 324—37 see:
Patent No. 3,675,118

3,675,120
IMPEDANCE MEASURING CIRCUIT INCLUDING MEANS FOR AUTOMATICALLY ADJUSTING INITIAL CONDUCTORS THEREOF

George H. Fathauer, Decatur, Ill., assignor to Harold O. Hill, Jr.

Filed April 30, 1970, Ser. No. 33,326
Int. Cl. G01r 27/26
U.S. Cl. 324—61 R 13 Claims

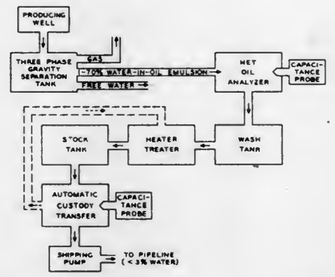


A grain moisture tester having an impedance measuring capacitive bridge circuit with an unknown capacitance, a manually variable capacitor, and a varactor diode in the arms thereof and an automatic balance circuit including a differential amplifier with inputs coupled across the bridge null points and an output d.c. coupled to the varactor diode and controlling its capacitance is disclosed.

3,675,121
DIELECTRIC CONSTANT MEASUREMENT METHOD

Don D. Thompson, Corona Del Mar, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed June 26, 1970, Ser. No. 50,022
Int. Cl. G01r 27/26
U.S. Cl. 324—61 R 7 Claims

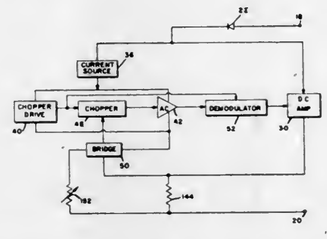


The real part of the complex dielectric constant of a fluid medium containing conducting impurities and water is accurately measured by avoiding the effects of dielectric dispersion and water dipole absorption. Dielectric dispersion is avoided by operating the capacitance probe circuit at a frequency above about 10 megahertz. Water dipole absorption is avoided by operating a capacitance probe circuit at a frequency below about 300 megahertz.

3,675,122
TWO-WIRE CURRENT TRANSMITTER EMPLOYING A STABILIZED CURRENT SOURCE IN ONE ELECTRICAL CIRCUIT CONTAINING CONTROL MEANS IN SERIES THEREWITH FOR CONTROLLING A DIRECT CURRENT AMPLIFIER CONTAINED IN A PARALLEL CIRCUIT

Robert C. Rose, Minneapolis, Minn., assignor to Rosemount Engineering Company, Eden Prairie, Minn.

Filed Oct. 27, 1969, Ser. No. 869,687
Int. Cl. G01r 27/02
U.S. Cl. 324—62 13 Claims



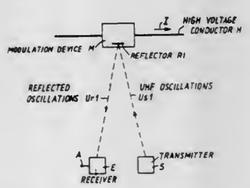
A transmitter controls the flow of load current through only two wires in accordance with the magnitude of a variable condition. Within the transmitter the current follows two paths, one portion of the current flowing through a direct current amplifier and the remaining portion flowing through a stabilized current source which provides the sole energization for

certain components, including a condition responsive bridge network, in order to operate the DC amplifier in response to the condition sensed by the bridge network. The current recombines to constitute the load current that is indicative of the magnitude of the variable condition.

3,675,123
DEVICE FOR MEASURING CURRENTS IN A HIGH VOLTAGE CONDUCTOR BY MODULATED RADIATED BEAMS

Wolfgang Hermstein, and Klaus Mollenbeck, both of Berlin, Germany, assignors to Siemens Aktiengesellschaft, Berlin, Germany

Filed Aug. 5, 1970, Ser. No. 61,064
Claims priority, application Germany, Aug. 6, 1969, P 19 40 614.5
Int. Cl. G01r *19/00, 31/00*
U.S. Cl. 324—96 **9 Claims**

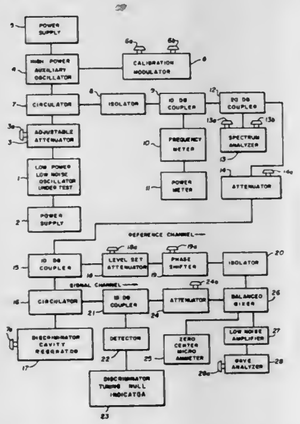


A modulation device at a high voltage has a reflector for reflecting high frequency oscillations in accordance with the magnitude of the current to be measured. The reflector has resonant characteristics corresponding to the magnitude of the current to be measured. A transmitter transmits high frequency oscillations to the reflector. A receiver converts the reflected oscillations to signals corresponding to the magnitude of the current to be measured.

3,675,124
APPARATUS FOR MEASURING FREQUENCY MODULATION NOISE SIGNALS AND FOR CALIBRATING SAME

James R. Ashley, Colorado Springs, Colo., and Frank M. Palka, Clearwater, Fla., assignors to Sperry Rand Corporation

Filed Oct. 28, 1970, Ser. No. 84,673
Int. Cl. G01r *27/00*
U.S. Cl. 324—57 **6 Claims**

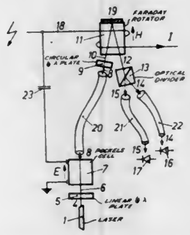


Apparatus is provided for the measurement of frequency modulation noise on the carrier signal output of a low-noise, low-power, high-frequency diode oscillator under test. An auxiliary injection phase-locked oscillator, driven by the oscillator under test, is used to provide a signal of sufficient level for operation of a high-frequency discriminator used for noise measurement. The auxiliary oscillator may additionally be used for calibration of the discriminator preliminary to taking noise measurements.

3,675,125
OPTICAL WATTMETER

Andre Jaecklin, Ennetbaden, Switzerland, assignor to Aktiengesellschaft Brown, Boveri & Cie, Baden, Switzerland

Filed Dec. 1, 1970, Ser. No. 94,027
Claims priority, application Switzerland, Dec. 10, 1969, 18403/69
Int. Cl. G01r *31/00, 7/00, 21/00*
U.S. Cl. 324—96 **9 Claims**



An optical wattmeter for measuring the magnitude of the instantaneous power being transmitted over a high voltage line utilizes a monochromatic circularly polarized light beam which is transmitted through an electro-optical modulator such as K_{eff} or Pockels cell subjected to an electric field produced by the high voltage line proportional to the voltage component of the power to be measured. The light beam, doubly refracted in the modulator thereby to produce an elliptically polarized beam, the eccentricity of the ellipse being variable with the line voltage, is passed through a circular quarter-wave plate and then delivered to a Faraday rotator which is subjected to a magnetic field produced by the high voltage line proportional to the current component of the power to be measured. The magnetic field produces a phase shift proportional to the magnetic field between the laevo-rotatory and dextro-rotatory components of the light beam which results in a change of inclination proportional to the magnetic field of the ellipse of the outcoming elliptically polarized beam. The elliptically polarized light beam emerging from the Faraday rotator thus containing data relative to the strength of the electric field as a function of the eccentricity of the ellipse and data relative to the strength of the magnetic field as a function of its inclination is then passed through a polarization type beam splitter such as a Wollaston prism which divides the light beam into two partial beams having different polarization directions, these partial beams then being passed respectively to photo-electric detectors which produce electrical intensities and which are then electrically substrated to produce an output current proportional to the product of the voltage on, and current flow in, the high voltage line at the point at which the instantaneous power level is measured.

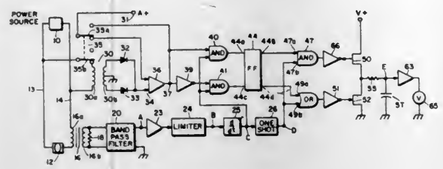
3,675,126
COMMUTATED MOTOR SPEED MEASURING MEANS

Charles B. Chilton, Baltimore, Md., assignor to The Bendix Corporation

Filed Oct. 29, 1970, Ser. No. 85,012
Int. Cl. G01p *3/48*
U.S. Cl. 324—168 **10 Claims**

A device for measuring the speed of a commutated electric motor such as a d-c or universal motor uses a current trans-

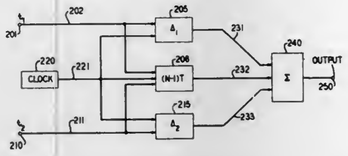
former and band-pass filter for sensing power line perturbations caused by motor commutation. The sensed perturbations trigger a one-shot whose ON time with respect to total time is taken as a measure of motor speed. When a universal motor is powered by an a-c power source, a synchronous gating circuit is used to blank the measuring circuit near the zero crossings of the power line. A full wave level detector senses when instantaneous line voltage drops below a preset threshold level and at that time qualifies the synchronous gating circuit. The gating circuit is not actually opened, however, until a subsequent perturbation is detected, at which time motor speed measurement is suspended. When instantaneous line voltage now rises above the threshold level, the synchronous gating circuit is qualified to close but will not close until a second subsequent power line perturbation is detected.



3,675,127
GATED-CLOCK TIME MEASUREMENT APPARATUS INCLUDING GRANULARITY ERROR ELIMINATION

Dennis Lester McKiernan, Lincoln Park, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 28, 1970, Ser. No. 101,477
Int. Cl. G04f *9/00, 11/06*
U.S. Cl. 324—186 **4 Claims**



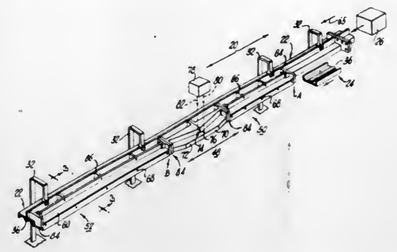
A precise measure of the time interval between the occurrence of first and second events is obtained by utilizing gated-clock time interval measurement apparatus. A plurality of clock pulses occurring during the interval between the events is counted. Errors in the time interval measurement are minimized by obtaining a measure of an interval between the first event and the first counted clock pulse and by obtaining a measure of an interval between the last counted clock pulse and the second event. Analog signals representative of the error intervals and the clock pulse count are combined to yield the desired time interval measurement.

3,675,128
MICROWAVE REPEATER

Manlio G. Abele, Garden City, N.Y., assignor to General Applied Science Laboratories, Inc., Westbury, N.Y.

Filed July 30, 1970, Ser. No. 59,601
Int. Cl. H04n *3/36, 3/60*
U.S. Cl. 325—1 **17 Claims**

A repeater for a stationary waveguide in a system for communicating between the waveguide and a moving vehicle such as a train. The stationary waveguide structure includes an inverted channel-shaped shield with a semi-cylindrical dielectric rod which acts as the waveguide. The shield protects the waveguide from ice, rain, birds and foreign objects, without itself interferring with the transmission of microwave energy through the waveguide. A coupler or antenna is attached to the moving vehicle and moves along underneath the stationary waveguide structure to couple signals between the vehicle and the stationary waveguide. The repeater comprises two short auxiliary sections of waveguides which are mounted parallel to

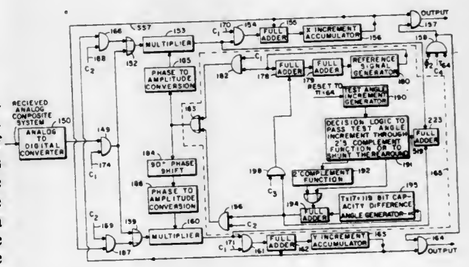


the stationary waveguide, and a microwave amplifier. The first auxiliary waveguide removes a small portion of the signal flowing in the main waveguide and conducts that signal to the amplifier. The amplifier amplifies the signal and delivers it to the second waveguide which couples the energy back to the main waveguide in amplified form. By means of this repeater, the energy in the main waveguide is amplified substantially without interrupting the signal received by or transmitted by the moving vehicle.

3,675,129
DIFFERENTIALLY COHERENT PHASE SHIFT KEYED DIGITAL DEMODULATING APPARATUS

William J. Melvin, Costa Mesa, Calif., assignor to Collins Radio Company, Cedar Rapids, Iowa

Filed May 13, 1970, Ser. No. 36,742
Int. Cl. H04l *27/22*
U.S. Cl. 325—320 **13 Claims**

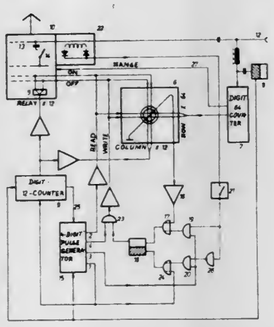


A digitally implemented demodulating system for use in detecting a multitone differentially coherent phase shift keyed received signal. A plurality of reference tones are sequentially generated and separated into in-phase and quad-phase components. These components are multiplied by the input signal and stored in a plurality of accumulators equal to twice the number of received tones to obtain the X and Y components of each received tone. Substantially the same circuitry is then used to measure the phase of each received tone with respect to a test angle after which the reference is updated to have the same phase as the received tone in preparation for the next detection operation. Recovery of the detection information is obtained by testing the polarity of the X and Y accumulators.

3,675,130
A CIRCUIT ARRANGEMENT FOR EFFECTING A TUNING OF A TRANSCEIVER BY MEANS OF A MANGETIC CORE MEMORY

Paul Bamberg, Pforzheim, Germany, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Sept. 18, 1970, Ser. No. 73,285
Int. Cl. H04b *1/04*
U.S. Cl. 325—174 **8 Claims**

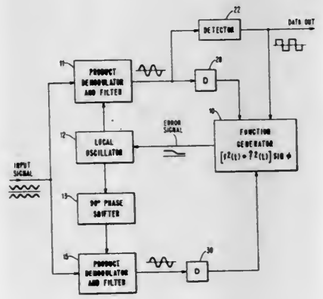


There is provided a remotely controlled antenna tuning device comprising a conventional magnetic core memory having the same number of rows as associated tuning steps of the transceiver and the same number of columns as antenna tuning elements (capacitors) connected by means of relays to the tuning circuit. The output signals of a first counter controlled by pulses generated while tuning the transceiver step by step, selects the corresponding row of the memory, in the columns of which is stored the information to activate the relays. The information may be stored in the memory or written in, respectively, by means of a tuning discriminator and a logic circuitry controlling a second counter and a pulse generator.

3,675,131
COHERENT SINGLE SIDEBAND PHASE LOCKING TECHNIQUE

Raymond L. Pickholtz, Brooklyn, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 15, 1971, Ser. No. 106,763
Int. Cl. H04b *1/68*
U.S. Cl. 325—329 **8 Claims**

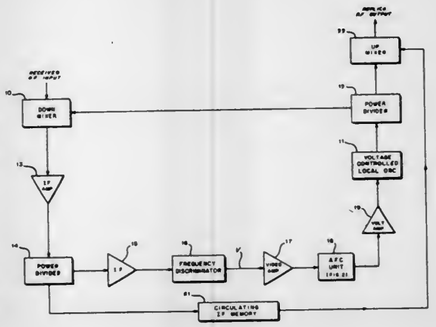


A phase-locked loop system capable of producing a synchronous reference of the proper frequency and phase to coincide with the frequency and phase of a transmitted single sideband modulated signal in order to properly demodulate the received signal for baseband recovery of the data. The invention makes use of post detection feedback to generate an error signal for locking a voltage control oscillator (VCO) to the correct phase for synchronous demodulation without using a transmitted carrier tone. The error signal which is equal to the sum of the baseband data waveform squared, plus the Hilbert transform of the baseband data waveform squared, times the sine of the phase difference between the VCO output and the input signal is generated from the delayed output of a first product demodulator, the delayed output of a second product demodulator and the output of the signal detector.

3,675,132
SEARCH-LOCK SYSTEM

Neil W. Hansen, Pompton Plains, N.J., and Nathan Orenstein, New York, N.Y., assignors to The United States of America as represented by the Secretary of the Navy

Filed Aug. 31, 1970, Ser. No. 68,581
Int. Cl. H04b *1/26*
U.S. Cl. 325—423 **8 Claims**



A received RF signal is mixed with the output of a voltage-controlled local oscillator to provide an IF signal which is simultaneously passed to a frequency discriminator and a circulating memory. Control voltage for the oscillator is provided by an AFC unit which comprises an integrator receiving selected constant voltage inputs. During the search mode a search ramp is generated by the integrator. A flyback circuit causes the search voltage to repeat its traverse over a prescribed range. Bipolar video discriminator outputs above a predetermined threshold place the system in the lock mode and selectively gate two settable, constant voltage inputs to furnish a triangle wave integrator output centered on a voltage corresponding to the desired local oscillator frequency. The oscillator output is mixed with the stored IF to produce a replica of the input signal.

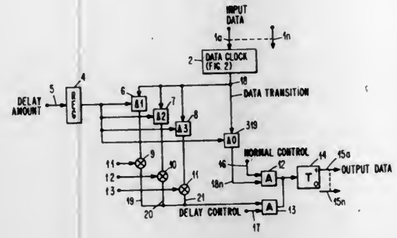
3,675,133
APPARATUS AND METHOD INDEPENDENTLY VARYING THE WIDTHS OF A PLURALITY OF PULSES

Richard F. Frankeny, and Joey K. Tuttle, both of Longmont, Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 21, 1971, Ser. No. 155,091
Int. Cl. H03k *5/159, 17/26*
U.S. Cl. 328—55 **13 Claims**

Input data comprises a plurality of serial random-width pulses each having a leading and a trailing edge. The relative position of each leading and trailing edge is independently adjustable in accordance with external data to give output data comprising a plurality of serial pulses derived from, but selectively

different than, the input data. A data clock generates a transition signal for each pulse edge. Each transition signal is directed into a different variable delay circuit which imposes a delay dictated by external data. The delayed transitions

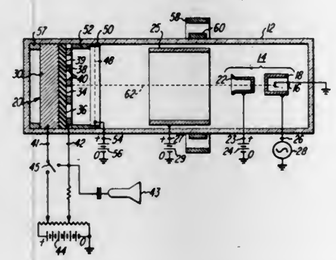


operate a pulse regenerating flip-flop to form the output data. Appropriate gating controls permit width control of only selected pulses. By defining normal data as delayed input data, output data may be shifted either forward or backward in time relative to the normal data.

3,675,134
METHOD OF OPERATING AN INFORMATION STORAGE TUBE

Eduard Luedicke, Neshanic, and Robert Steven Silver, Kendall Park, both of N.J., assignors to RCA Corporation

Filed May 27, 1971, Ser. No. 147,391
Int. Cl. G11c *11/26*
U.S. Cl. 328—124 **10 Claims**

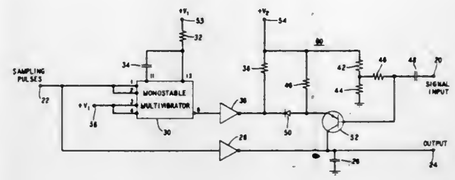


In the operation of an information storage tube including a storage target, comprising a conducting or semiconductor substrate, an insulating storage layer and a conducting grid or mesh, means for scanning the target with an electron beam, and a secondary electron collector adjacent to the target; the storage target is primed by scanning the target with a low velocity beam in a series of steps while maintaining the conducting grid at a low positive potential (e.g., +5 volts) and applying successively higher positive potentials to the substrate, until the difference between the potentials of the substrate and the conducting mesh is about 25 volts, and then reducing the substrate potential enough to reduce the storage layer potential to zero, preparatory to writing. Now, the signal information can be (1) stored on the storage layer, by scanning the target with a high velocity writing beam; (2) read out nondestructively, by scanning the target with a low velocity reading beam; and (3) erased, by scanning the target with a high velocity erasing beam.

3,675,135
SAMPLE-AND-HOLD CIRCUIT

David Reis Weller, Bernardsville, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed July 27, 1970, Ser. No. 58,229
Int. Cl. H03k *17/56*
U.S. Cl. 328—151 **5 Claims**

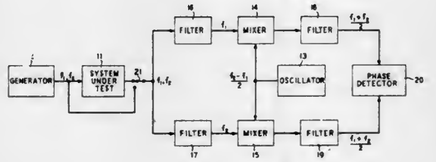


A sample-and-hold circuit wherein the input signal to be sampled controls a current switch that supplies a linear charging current to a storage device in response to periodic sampling pulses. The storage device is completely discharged immediately preceding the taking of each sample.

3,675,136
APPARATUS FOR USE IN MEASURING PHASE DISPERSION PRODUCED BY APPARATUS OR A SYSTEM

Kevin Christopher O'Brien, Parsippany, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed April 1, 1971, Ser. No. 130,204
Int. Cl. G01r *25/00*
U.S. Cl. 328—133 **2 Claims**



First and second waves at distinct frequencies are mixed with a 3rd wave to produce fourth and fifth waves having a common frequency. The phase difference between the fourth and fifth waves is then detected to produce an output which is directly related to the phaseal relationship between the first and second waves.

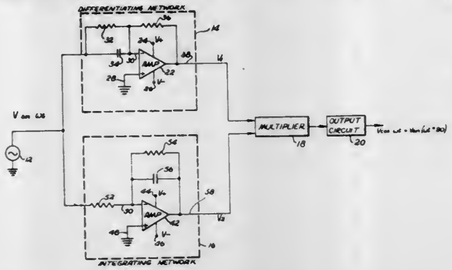
3,675,137
INSTANTANEOUS SINUSOIDAL ORTHOGONAL CONVERTER

Leon Raphael, 23816 Calvert St., Woodland Hills, Calif.

Filed April 5, 1971, Ser. No. 131,208
Int. Cl. G06g *7/20*
U.S. Cl. 328—144 **6 Claims**

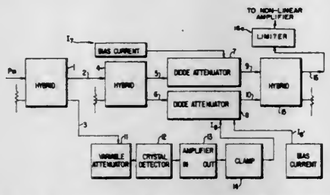
A system for instantaneously providing a predetermined phase shift in a sinusoidal signal, the attenuation of which is substantially constant with changes in the frequency of the applied signal. First, phase displacement between two developed signals is accomplished by supplying an input signal both to: a differentiating network and an integrating network. Next, the phase displaced signals are multiplied to cancel the variations in attenuation providing a signal that is substantially invariable

with frequency variations and is phase displaced from the initial input signal. As disclosed, a root circuit may provide a



signal that is representative of the square root of the multiplied signal.

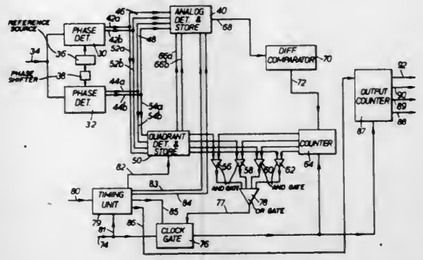
3,675,138
REDUCTION OF INTERMODULATION PRODUCTS
Arthur F. Standing, Rockville, Md., assignor to Communications Satellite Corporation
Filed Sept. 23, 1970, Ser. No. 74,567
Int. Cl. H03b 1/00
U.S. Cl. 328—163 **32 Claims**



Apparatus for reducing the intermodulation products in active devices such as klystrons, traveling wave tubes and limiters is disclosed. A feedforward control amplitude predistorter which has a characteristic inverse to that of the active device predistorts the amplitude of the input signal to the active device so as to effectively linearize it. A feedforward control phase compensator predistorts the phase of the input signal to the active device so as to compensate for the differential signal phase shift through the active device due to a change in signal input power.

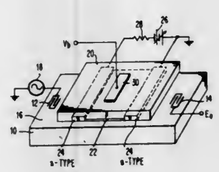
3,675,139
ELECTRICAL DEMODULATION SYSTEMS
Ashley W. Guest, Waterlooville, England, assignor to Plessey Handel Und Investments A.G., Zug, Switzerland
Filed Jan. 11, 1971, Ser. No. 105,577
Claims priority, application Great Britain, Jan. 14, 1970, 1,731/70
Int. Cl. H04l 27/22
U.S. Cl. 329—104 **16 Claims**

The system demodulates an input signal in which the data carried in each of successive periods is represented by the phase of the signal during that period with respect to the phase in the preceding period. Two phase detectors respectively produce outputs whose signs are dependent on the phase difference between the input carrier and a phase reference and between the input carrier and the phase reference displaced by 90°. From these outputs, a quadrant detector determines a serial number identifying the phase quadrant in which the input carrier vector lies. A ring counter is stepped to equal this count. The process is repeated during the next period and the counter is re-stepped to match the new count. The number of counts necessary in this re-stepping process is measured by an output counter whose final count identifies the value of the data in the second period. During each period an analogue unit measures the angle of the input vector relative to the



beginning of its quadrant, and a comparator increases the count of the ring counter by unity if the angle of the input vector during one period is less than the corresponding angle in the previous period, and thus compensates for noise effects.

3,675,140
ACOUSTIC WAVE AMPLIFIER HAVING A COUPLED SEMICONDUCTOR LAYER
Frank F. Fang, Yorktown Heights, and Eric G. Lean, Mahopac, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed June 30, 1970, Ser. No. 51,286
Int. Cl. H03f 3/04
U.S. Cl. 330—5.5 **15 Claims**

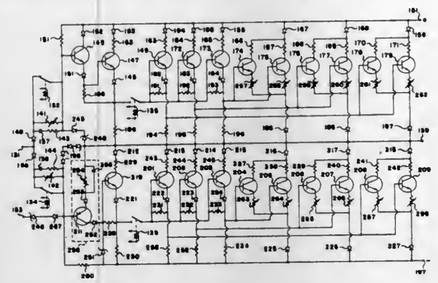


An amplifier for Rayleigh surface acoustic waves in which an additional control is provided. A region of variable conductivity is located in close proximity to the surface on which the acoustic wave travels. Examples of this region are an inversion layer whose conductivity is controlled by electrical bias, and a bulk region whose conductivity is controlled by a variable width depletion region. The electric field produced by moving charge carriers in the variable conductivity region interacts with the piezoelectric field produced by the acoustic wave to transfer energy to the acoustic wave, or extract energy from this wave.

3,675,141
MODULAR SOLID-STATE POWER AMPLIFIER
Robert H. Adams, Sun Valley, Calif., assignor to Lockheed Aircraft Corporation, Burbank, Calif.
Continuation-in-part of Ser. No. 835,344, June 23, 1969, Pat. No. 3,569,847. This application March 8, 1971, Ser. No. 121,711
Int. Cl. H03f 3/18
U.S. Cl. 330—13 **10 Claims**

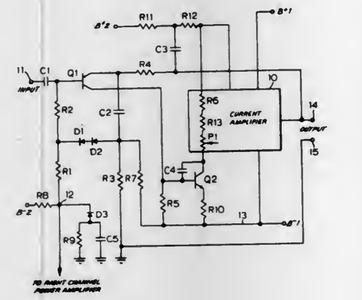
A modular solid-state amplifier capable of delivering several kilowatts of audio-frequency power over a frequency range of 0 to approximately 7,500 hertz and which has an output impedance selectively variable from substantially zero to

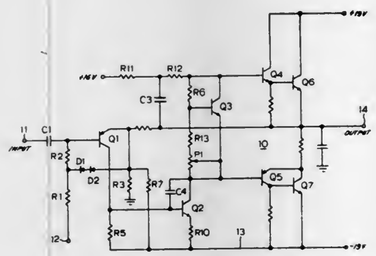
approximately 100,000 ohms. The amplifier modules may readily be combined to obtain either voltage or current gain,



or both, by appropriate series and parallel arrangements, or combinations thereof.

3,675,142
TRANSISTOR POWER AMPLIFIER WITH DC OUTPUT VOLTAGE STABILIZATION
Roland H. Fichtner, Ontario, Canada, assignor to Electrohome Limited, Kitchener, Ontario, Canada
Filed March 5, 1971, Ser. No. 121,473
Int. Cl. H03f 3/18, 3/04
U.S. Cl. 330—17 **9 Claims**

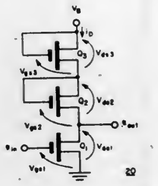




A transistor power amplifier comprises a voltage amplifier DC coupled with a current amplifier and provided with a network that inhibits the flow of DC current through the voice coil of a loudspeaker connected between the output terminals of the amplifier.

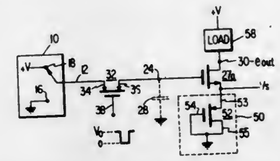
3,675,143
ALL-FET LINEAR VOLTAGE AMPLIFIER
Richard M. Greene, Smithtown, N.Y., assignor to GTE Laboratories Incorporated
Filed Feb. 16, 1970, Ser. No. 11,599
Int. Cl. H03f 3/16
U.S. Cl. 330—18 **9 Claims**

A linear voltage amplifier circuit which utilizes a plurality of field-effect devices having substantially identical operating characteristics. The devices are connected in a series arrangement with the source electrode of each device coupled to the drain electrode of its adjacent device. Each of the devices except one selected device has its gate electrode coupled to its



drain electrode. An input terminal is coupled to the gate electrode of the selected device and an output terminal is connected to the drain electrode of one of the devices. In a preferred embodiment of the invention the gain of the amplifier is $-(n-1)$ where n equals the number of devices in the series arrangement.

3,675,144
TRANSMISSION GATE AND BIASING CIRCUITS
Borys Zuk, Somerville, N.J., assignor to RCA Corporation
Filed Sept. 4, 1969, Ser. No. 855,167
Int. Cl. H03f 3/04
U.S. Cl. 330—40 **26 Claims**

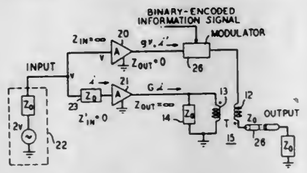


A single transistor transmission gate coupled at the output end of its conduction channel to a circuit input terminal. When operating in the following mode, the undesired effect of the offset voltage which develops at said output end of said channel, due to the threshold voltage of the transmission gate, is counteracted by reverse biasing, the circuit being driven by a voltage similar to the offset voltage. Shift register employing this circuit and means for changing one of the levels of the output voltage produced by this circuit are also described.

3,675,145
AMPLIFIER WITH MATCHED INPUT AND OUTPUT
Henry Richard Beurrier, Chester Township, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.
Filed March 22, 1971, Ser. No. 126,683
Int. Cl. H03f 3/68
U.S. Cl. 330—124 R **15 Claims**

This application describes an arrangement for matching the output impedance of an amplifier to its load. The amplifier comprises two active stages having mutually inverse output impedances whose respective magnitudes are, preferably, at

least an order of magnitude greater than and at least an order of magnitude less than the impedance of the external load circuit to which the amplifier is connected. The lower output impedance stage is connected to a first load impedance through one winding of a two-winding transformer. The higher output impedance stage is connected to ground through the other transformer winding. A second, impedance-matching load is



connected in shunt with either one of the two transformer windings. By controlling the relative amplitude and phase of the signals derived from the two stages, the signal current can be coupled to either one or the other of the two load impedances, or to both.

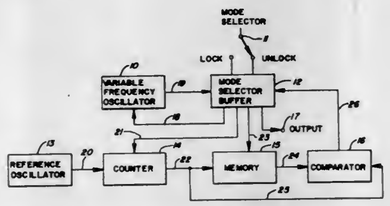
Arrangements for increasing the amplifier gain and obtaining a match at the amplifier input are also described.

3,675,146

DIGITAL VARIABLE FREQUENCY OSCILLATOR

J. Michael Langham, 16 W. 525 Lake Drive N., Clarendon Hills, Ill.

Filed March 8, 1971, Ser. No. 121,837
Int. Cl. H03b 3/04
U.S. Cl. 331—1 R **14 Claims**



A plural oscillator system with all the characteristics of an analog or variable frequency oscillator, but with the added capability of locking digitally to any frequency within its range. The system has two modes of operation, unlocked and locked. In the unlocked mode, the system employs a variable frequency oscillator together with a reference oscillator and counter to produce the system output and to log the period of the variable frequency oscillator into a memory. In the locked mode, the contents of the memory are held constant, and the variable frequency oscillator no longer drives the system output. Instead, the reference oscillator and counter are used in conjunction with a digital comparator to produce the system output with a frequency determined by the contents of the memory. Thus, the system in the locked mode operates as a digital oscillator at the frequency that the variable frequency oscillator operated before the mode change.

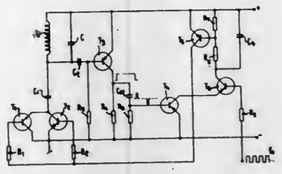
3,675,147

CIRCUIT FOR REGULATING THE MEAN FREQUENCY OF AN OSCILLATING SYSTEM

Jean Claude Berney, Lausanne, Switzerland, assignor to Compagnie des Montres Longines, Francillon S.A., Bern, Switzerland

Filed May 5, 1970, Ser. No. 34,733
Claims priority, application Switzerland, May 8, 1969, 7066/69
Int. Cl. H03b 3/04
U.S. Cl. 331—8 **2 Claims**

A circuit for regulating the mean frequency of an oscillating system by temporarily connecting a capacity to said oscillating system by means of an electronic switch controlled by a phase-



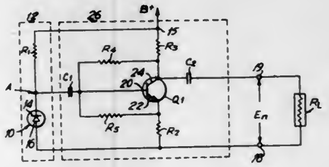
detecting system to which are applied the frequency of said oscillating system and a reference frequency.

3,675,148

RANDOM NOISE GENERATOR DIODE WITH IMPEDANCE MATCHED TRANSISTOR AMPLIFIER

Lon E. Edwards, Danbury, Conn., assignor to Solitron Devices, Inc., Tappan, N.Y.

Filed June 6, 1969, Ser. No. 830,939
Int. Cl. H03b 29/00
U.S. Cl. 331—78 **6 Claims**



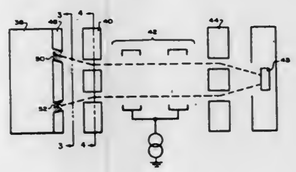
A random noise generator employs a silicon diode as the active noise source in an amplifier circuit where the output impedance of the noise diode is matched to the input impedance of the amplifier circuit to provide an increased frequency spectrum, temperature stability and increased independence of power supply variations.

3,675,149

ATOMIC BEAM TUBE HAVING MULTIPLE BEAMS

Leonard S. Cutler, executor, Los Altos Hills, Calif.; Joseph H. Holloway, deceased, late of Saratoga, Calif., and Wilson R. Turner, Los Gatos, Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation-in-part of Ser. No. 743,839, July 10, 1968, abandoned. This application Oct. 29, 1970, Ser. No. 85,092
Int. Cl. H01s 1/06
U.S. Cl. 331—94 **6 Claims**



An atomic beam tube produces a plurality of atomic beams, all of which are passed through a pair of R.F. cavities and then detected by a single detector. First and second state-selecting magnets are configured with a plurality of deflecting gaps, each of which produces an inhomogeneous magnetic field.

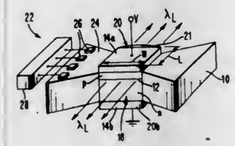
The deflecting gaps are arranged in symmetrical pairs to provide a beam tube having a high tolerance to acceleration forces. The use of multiple beams provides a high signal-to-noise ratio.

3,675,150

INTERNAL MODULATION OF INJECTION LASERS USING ACOUSTIC WAVES

Erik P. Harris, Yorktown Heights; Eric G. Lean, Mahopac, and Carl G. Powell, Yorktown Heights, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 30, 1970, Ser. No. 51,110
Int. Cl. H01s 3/00
U.S. Cl. 331—94.5 **17 Claims**



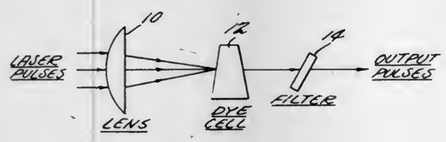
An injection laser whose light output is spatially modulated by internal effects in the active region of the laser. An acoustic wave is launched into the laser and is existent only in a small area including the active region of the laser. In low acoustic frequency operation, the acoustic wave is steered over an angle θ to cause the laser light output to be steered through this angle. In high frequency operation, the frequency of the acoustic wave can be changed to steer the light output, or the acoustic wave can be steered to cause light deflection, as in the low frequency case. The acoustic wave causes phase modulation and loss modulation which results in scanning of the light output. The acoustic wave can be a surface acoustic wave, a Love wave, or a Stonley wave.

3,675,151

SUPERRADIANT TRAVELING-WAVE DYE LASER

Michael E. Mack, Vernon, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.

Filed Sept. 25, 1970, Ser. No. 75,636
Int. Cl. H01s 3/00
U.S. Cl. 331—94.5 **7 Claims**



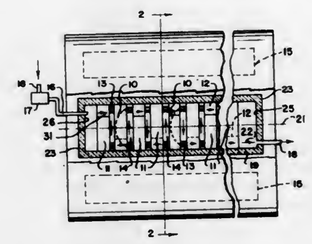
Superradiant traveling-wave laser emission is produced with polymethine cyanine dyes pumped by mode-locked or Q-switched laser pulses without the necessity of a feedback cavity for the dye. Picosecond duration laser pulses may be produced at a variety of wavelengths by choosing the proper dye and the pumping laser wavelength.

3,675,152

COMPENSATOR FOR A RADIAL REFRACTIVE-INDEX GRADIENT IN A DISC LASER

Charles Gilbert Young, Storrs, Conn., assignor to American Optical Corporation, Southbridge, Mass.

Continuation-in-part of Ser. No. 20,946, March 19, 1970, Pat. No. 3,602,836. This application June 24, 1970, Ser. No. 49,263
Int. Cl. H01s 3/00
U.S. Cl. 331—94.5 **12 Claims**



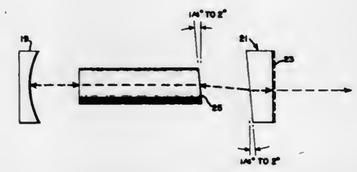
A disc laser structure of all-glass support construction. A segmented neodymium-doped glass laser rod is supported in a glass tubing and is designed to permit fluid coolant flow within the tubing and amongst the rod segments. The non-laserable glass supporting means consists of samarium-doped cladding glass to reduce interference by "off axis" spontaneously emitted light. The fluid coolant has an index of refraction which matches that of the laser glass to achieve a high efficiency. The absence of metallic supporting means minimizes the chance of metallic decomposition under the influence of pump light. Compensation for a radial refractive index gradient is provided by figuring (creating a non-zero optical power in) one or more of the glass discs.

3,675,153

LASER OSCILLATOR CONSTRUCTION

Orville B. Bakeman, Syracuse, and Allen D. French, Manlius, both of N.Y., assignors to General Electric Company

Filed Sept. 1, 1970, Ser. No. 68,606
Int. Cl. H01s 3/00
U.S. Cl. 331—94.5 **4 Claims**

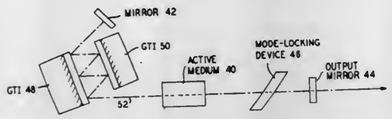


A laser oscillator (Fabry-Perot) cavity configuration supporting only the primary oscillation with no inner loop parallel planes capable of supporting secondary oscillations which cause hot spots in the laser beam. Such configuration is accomplished by angling the output end surface of the laser rod, or both end surfaces of the rod in severe cases, slightly off the perpendicular to the rod axis.

3,675,154
DISPERSION COMPENSATION IN LASERS

Michel Albert Duguay, Summit, and John Wilfred Hansen, North Plainfield, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Oct. 1, 1970, Ser. No. 77,228
Int. Cl. H01S 3/00; G01b 9/02
U.S. Cl. 331—94.5 12 Claims

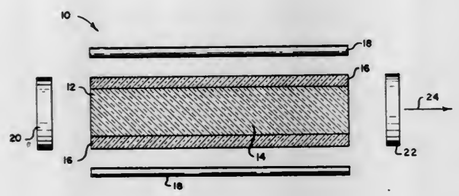


The normal dispersion of a solid state active laser medium is compensated for by means of an intracavity multireflection device such as a pair of spaced parallel diffraction gratings or a Gires-Tournois interferometer.

3,675,155
SENSITIZING LUMINESCENCE OF ERBIUM WITH MOLYBDENUM

Robert J. Landry, Sturbridge, and Elias Snitzer, Wellesley, both of Mass., assignors to American Optical Corporation, Southbridge, Mass.

Filed Nov. 3, 1970, Ser. No. 86,572
Int. Cl. H01s 3/00
U.S. Cl. 331—94.5 7 Claims



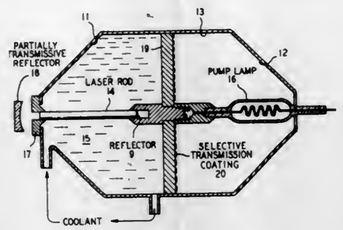
The luminescence of an erbium or erbium-ytterbium doped glass laser rod is sensitized by surrounding the laser rod with a glass cladding containing trivalent molybdenum ions. The trivalent molybdenum ions in the cladding absorb pumping light energy in a wavelength region in which trivalent erbium ions have no strong absorption bands, and the trivalent molybdenum ions fluoresce at a wavelength within an absorption band of the trivalent erbium ions, thereby increasing the pumping light energy absorbed by the erbium laser rod.

3,675,156
LASER PUMP CAVITY WITH CONICAL GEOMETRY

Hans Guenter Danielmeyer, Matawan, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Feb. 25, 1971, Ser. No. 118,772
Int. Cl. H01s 3/09
U.S. Cl. 331—94.5 4 Claims

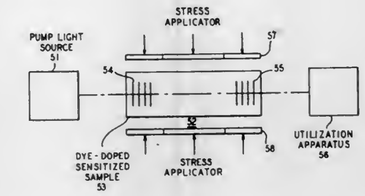
There is disclosed an optically pumped laser employing a pump cavity including two facing internally reflective conical elements within which an elongated laser element and an elongated pump lamp are respectively axially oriented. Typically, an internally-reflective cylindrical element connects the two conical elements. As compared to prior pump cavities, this cavity provides superior fundamental transverse mode operation and simplified fabrication.



3,675,157
TUNABLE LASER IN A SENSITIZED TRANSPARENT MATERIAL INCLUDING AN INTERNAL RESONATOR AND OPTICAL GUIDE

Ivan Paul Kaminow, New Shrewsbury, and Heinz Paul Weber, Middletown, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed April 27, 1971, Ser. No. 137,866
Int. Cl. H01s 3/16
U.S. Cl. 331—94.5 12 Claims



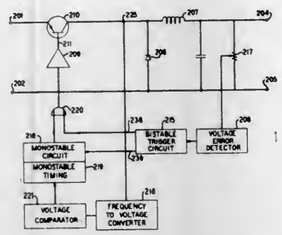
There is disclosed a compact, narrow-band single frequency laser employing a pair of internal grating reflectors photo-induced in a suitably sensitized transparent material doped with an active medium. Specifically, a laser is obtained in a photosensitized sample of dye-doped poly(methyl methacrylate). It includes an internal resonator formed by a pair of grating reflectors permanently induced in the sample, in which optical guides can also be induced upon exposure to ultraviolet radiation. The resonated laser frequency is selected from the usual broad dye emission spectrum by choice of the grating spacings. Tunability can be achieved by applying stress to the sample to change the grating spacings and the laser resonator length either simultaneously or independently.

3,675,158
SELF-OSCILLATING SWITCHING REGULATOR WITH SECONDARY SWITCHING CONTROL SIGNAL TO REGULATE SWITCHING FREQUENCY

Frank Fuller Judd, Madison, and Helmut Wilhart, Whippany, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Dec. 21, 1970, Ser. No. 100,147
Int. Cl. G05f 1/40; H03b 3/04
U.S. Cl. 331—109 6 Claims

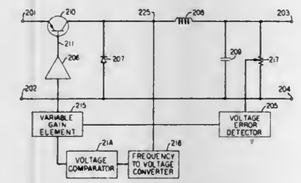
A self-oscillating switching regulator is frequency regulated by the introduction of secondary switching control signals into the voltage regulation feedback loop to delay switching of the switching device. The secondary switching control signal is generated by a monostable circuit with a frequency responsive time constant. The secondary switching control signal comprises a variable duration pulse signal. This pulse signal is tacked onto the trailing edge of the conventional switching control signal and hence extends the duration of the control signal applied to the switching device. The switching delay introduced by the secondary control signal directly regulates the switching frequency of the switching regulator.



3,675,159
SELF-OSCILLATING SWITCHING REGULATOR WITH FREQUENCY RESPONSIVE FEEDBACK LOOP GAIN CONTROL

Frank Fuller Judd, Madison; Jan Mark Lieberman, Lake Hiawatha, and Helmut Wilhart, Whippany, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Dec. 21, 1970, Ser. No. 100,149
Int. Cl. G05f 1/44; H03b 3/02
U.S. Cl. 331—109 5 Claims



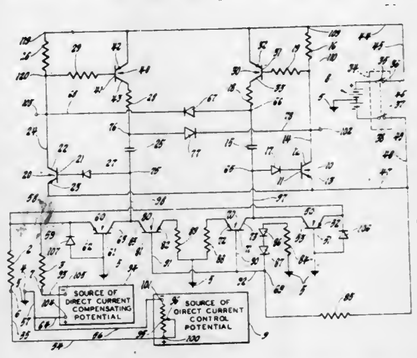
A self-oscillating switching mode regulator includes circuitry to automatically control the gain of voltage feedback loop. The gain circuitry is responsive to the deviations of the switching frequency of the regulator from some desired value. By altering the loop gain the frequency of the regulator can be regulated at the desired value.

3,675,160
POTENTIAL CONTROLLED OSCILLATOR

William C. Staker, Springfield, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 31, 1970, Ser. No. 68,068
Int. Cl. H03k 3/282
U.S. Cl. 331—113 R 6 Claims

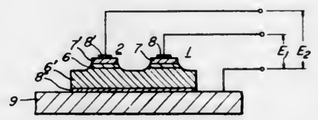
A potential controlled oscillator including two transistors interconnected for alternate conduction, each corresponding to a respective timing capacitor, having the current carrying electrodes thereof connected in parallel across the output terminals of a direct current potential source. Each timing capacitor is charged in a first direction by the direct current potential source through the base-emitter electrodes of the corresponding transistor when conductive and in a second direction by a selectively variable direct current control potential through a constant current circuit responsive to the magnitude of the selectively variable direct current control potential for varying the magnitude of charge current and the collector-emitter electrodes of the other transistor when conductive. When either timing capacitor has become charged in the second direction, the selectively variable direct current control potential, applied across the base-emitter electrodes of the corresponding transistor, triggers the corresponding transistor conductive. Upon the triggering of either one of the transistors conductive, the other timing capacitor, charged in the first direction, discharges therethrough in an inverse polarity relationship across the base-emitter electrodes of the corresponding transistor to quickly extinguish the corresponding transistor and begins to charge therethrough in the second direction.



3,675,161
VARACTOR-CONTROLLED PN JUNCTION SEMICONDUCTOR MICROWAVE OSCILLATION DEVICE

Iwao Teramoto, Ibaragi-shi; Hitoo Iwasa, Takatsuki-shi; Yukio Miyai, Osaka, and Masumi Takeshima, Takatsuki-shi, all of Japan, assignors to Matsushita Electronics Corporation, Osaka, Japan

Filed Oct. 8, 1969, Ser. No. 864,684
Claims priority, application Japan, Oct. 12, 1968, 43/74739
Int. Cl. H03c 3/22
U.S. Cl. 332—16 R 10 Claims



A solid state microwave generating device comprising a 3-terminal element having a p-n junction representing a negative resistance and a junction of which the junction capacitance is varied according to a voltage applied thereto. A reverse voltage is imparted to said p-n junction so that the latter is maintained in a negative resistance condition resulting from an avalanche current. The other junction is set to a suitable reactance value so as to produce a microwave of a tuned wavelength, and under such a condition a modulating signal is supplied in superimposition to said other junction to thereby

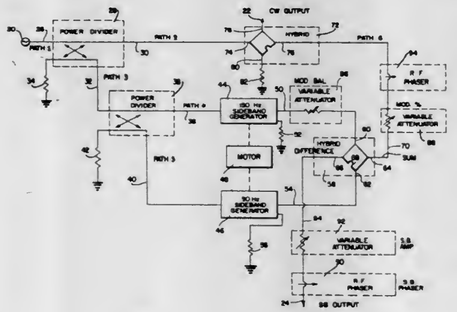
change the reactance value thereof, thus effecting microwave modulation. With this device, the oscillation wave occurring in a resonator circuit is controlled in accordance with lumped constants so that the tuning operation of the resonant circuit, modulation (FM), automatic frequency control (AFC) and so forth can be easily and efficiently performed.

3,675,162

MODULATOR FOR INSTRUMENT LANDING SYSTEM

James Neal Owen, Shawnee, Kans.; Raymond Ronald Moberly, Liberty, Mo.; Edwin J. Martin, Jr., Kansas City, Mo.; Akemichi Yamada, Raytown, Mo., and Edmund C. Thomas, Kansas City, Kans., assignors to Wilcox Electric, Inc.

Filed July 15, 1970, Ser. No. 55,102
Int. Cl. G01s 1/08
U.S. Cl. 332—23 **24 Claims**



A modulator for an instrument landing system includes a source of a radio frequency carrier wave and a first power divider coupling the carrier wave to a first hybrid combining circuit and through a second power divider to first and second constant input impedance audio frequency double sideband suppressed carrier generators with good isolation. The sideband generators are coupled to a second hybrid combining network having a double sideband suppressed carrier difference signal output, constituting a "sideband" output of the modulator, and a double sideband suppressed carrier sum output which is combined with the carrier wave in the first hybrid combining circuit to provide a "carrier wave" output of the modulator. The sideband generators each include a capacitor bridge, and phase shift means are provided so that the signals on one side of the bridge are reversed in phase with respect to signals on the other side thereof. The bridges are each formed by a pair of spaced parallel stator plates having four facing conductive patterns and a motor driven rotor having a plurality of pie-shaped conductive patterns positioned therebetween. The shape and size of the stator conductive patterns, the number of rotor conductive patterns, and the speed of rotation of the rotor are so selected that a sinusoidal audio frequency modulation of the carrier wave is effected.

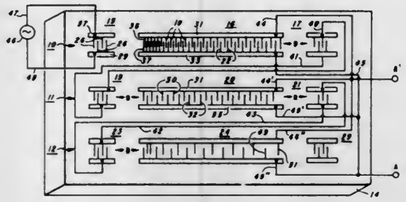
3,675,163

CASCADED F. M. CORRELATORS FOR LONG PULSES

Clinton S. Hartmann, 8923 Clearwater Drive, Dallas, Tex., and William S. Jones, 427 Beverly Drive, Richardson, Tex.

Filed Aug. 26, 1970, Ser. No. 67,017
Int. Cl. H03h 7/30, 9/30
U.S. Cl. 333—30 R **9 Claims**

Methods and apparatus are disclosed for producing a frequency dispersive surface wave delay device or correlator having a large time bandwidth product. The device comprises several sections, each of which contributes a discrete frequency dispersive delay to the incident signal. These sections are cascaded together and the individual delays are additive producing a device having a large time bandwidth product. Each section comprises at least two interdigital surface wave transducers deposited on a piezoelectric substrate, at least one



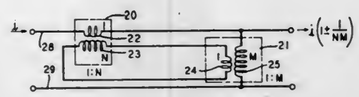
of the transducers having electrodes of graded periodicity. A Fourier transform computer program may be used to optimize the overall correlator characteristics by defining the optimum weighting pattern to be utilized on one or both of the transducers of each cascaded section.

3,675,164

IMPEDANCE-MATCHING NETWORK

Harold Seidel, Warren, N.J., assignor to Bell Telephone Laboratories, Incorporated, Berkeley Heights, N.J.

Filed Oct. 21, 1969, Ser. No. 868,017
Int. Cl. H03b 7/38
U.S. Cl. 333—32 **6 Claims**



This application describes an impedance-matching network comprising two transformers having turns ratios, 1:N and 1:M, where N and M are rational numbers. The first of these transformers senses the signal current flowing in the signal wavepath and induces a secondary current that is proportional thereto. The secondary current, thus induced, energizes the second transformer which injects into said wavepath a component of current that is proportional to the signal current by a factor equal to the product of the turns ratios of the two transformers. When at least one of the two transformers is a two-winding transformer, the effective turns ratio of this network is given by $1:1 \pm 1/(NM)$, where the sign (±) is determined by the manner in which the transformers are connected. When two, single-winding transformers, such as autotransformers, are used, the effective turns ratio is given by $1:[(N-1)/N \pm 1/MN]$.

3,675,165

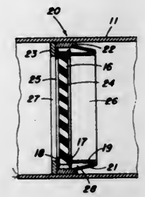
WAVEGUIDE WINDOW FOR TRANSMISSION OF ELECTROMAGNETIC WAVES

Isao Ueda; Takao Kageyama, and Isao Inomata, all of Tokyo, Japan, assignors to Nippon Electric Company, Limited, Tokyo, Japan

Filed Aug. 21, 1970, Ser. No. 66,040
Claims priority, application Japan, Sept. 1, 1969, 44/69148
Int. Cl. H01p 1/08, 1/30, 5/00
U.S. Cl. 333—98 P **5 Claims**

A window for sealing a waveguide gas pressurized to transmit microwave signals comprising: a dielectric plate permeable to the microwave signals, and a mechanical structure hermetically sealing the dielectric plate in the interior of the

waveguide and including four openings dimensioned to provide the window with a substantially flat voltage standing wave ratio versus frequency characteristic over a predetermined frequency range, two relatively movable members to permit



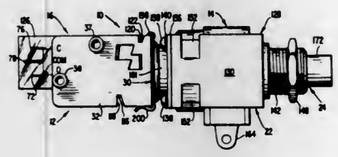
the dielectric plate to move to compensate for unequal gas pressures on opposite surfaces thereof, and a space to allow movement of the two members to compensate for thermal expansion thereof due to microwave signal loss in the dielectric plate.

3,675,166

SWITCHING DEVICES

Fenimore G. McCloskey, and William Robert Jordan, Columbus, Ohio, assignors to Columbus Electric Manufacturing Co., Columbus, Ohio

Filed Sept. 16, 1970, Ser. No. 72,607
Int. Cl. H01h 9/20
U.S. Cl. 335—164 **11 Claims**



A switching device of the electromechanical type including a push button actuator, a permanent magnet for keeping the actuator in the operated position, and an electromagnet which is energizable to neutralize the permanent magnet field and allow the actuator to return to its unoperated position.

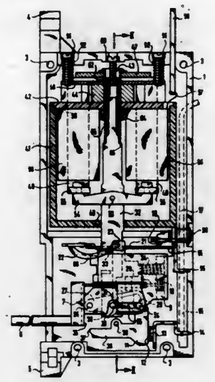
3,675,167

SWITCH OVERLOAD

Jakob Ellenberger, Altdorf near Nuernberg, Germany, assignor to Ellenberger & Poensgen GmbH, Altdorf near Nuernberg, Germany

Filed Nov. 2, 1970, Ser. No. 85,845
Claims priority, application Germany, Nov. 4, 1969, P 19 55 306.1
Int. Cl. H01h 51/27
U.S. Cl. 335—179 **17 Claims**

An overload switch having a core associated with a permanent magnet with two sets of limbs and armatures associated with each set connected by a lever. The sets of limbs are provided with windings which are wound so that a current in the windings increases the magnetic attraction in the case of one armature, but decreases it in the case of the other armature. At a predetermined current level, a spring pivots the lever to release a catch to open the switch.

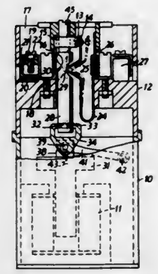


3,675,168

ELECTRICAL RELAYS

Norman Harry Olley, Essex, England, assignor to Mte-Contractor (Components) Limited, Essex, England, a part interest

Filed March 25, 1971, Ser. No. 127,964
Claims priority, application Great Britain, April 2, 1970, 15,694/70
Int. Cl. H01h 1/06
U.S. Cl. 335—198 **4 Claims**

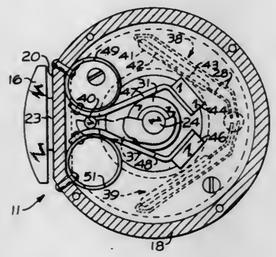


An electrical relay is provided in which by a simple manual adjustment external to the relay casing the pairs of contacts can be changed from a make combination to a break combination and vice versa. An operating member in the form of a circular rod is provided for each pair of contacts and is linearly movable on movement of the relay armature. Each rod is provided with two cams arranged at diametrically opposite positions on the rod and spaced apart a distance equal to the stroke of the armature. A spring carrying the moving contact of the pair has a cam follower which when the electromagnet is in one condition engages a cam and when the electromagnet is in the other condition engages the surface of the rod. Rotation of the rod through 180 degrees reverses the engagement of the cam and surface of the rod. The rods project a short distance beyond the casing and are slotted for screw-driver adjustment.

3,675,169
DURABLE ELECTRICAL SWITCH

Rolland D. Scholl, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed June 24, 1971, Ser. No. 156,228
Int. Cl. H01h 21/80
U.S. Cl. 335—205 9 Claims

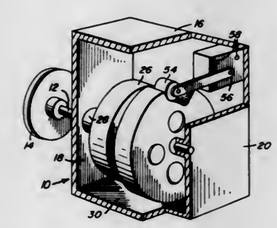


A manually operated switch having a sealed cylindrical housing is controlled through a pivotable, radially extending external actuator member and contains a pair of magnetically actuated sets of reed contacts for connection to the electrical circuit with which the switch is associated. A pair of permanent magnets are carried on resilient arms within the housing whereby each may be shifted into an operative position relative to one of the sets of reed contacts upon flexing of the associated arm. The external actuator member is disposed on an axle which extends into the housing through a circular seal and bearing to connect with a parallel internal actuator that bears against either of the resilient arms according to the direction of pivoting. This enables external actuator movement to be transmitted into the housing in the form of purely rotational motion through the circular seal thereby simplifying sealing problems and minimizing wear to provide a compact rugged and long lived mechanism.

3,675,170
MAGNETIC CLUTCH COUPLING FOR MONITORING SHAFT ROTATION

James W. Wellman, Jr., 1445 Brook Valley Place, Dallas, Tex.

Filed Feb. 26, 1971, Ser. No. 119,228
Int. Cl. H01h 3/40, 3/42
U.S. Cl. 335—207 10 Claims

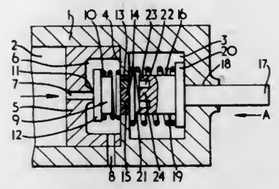


A wheel having permanent magnets therein is keyed to a rotatable shaft. A second wheel is positioned adjacent the first wheel and also includes a number of permanent magnets therein. The second mentioned wheel is driven by magnetic coupling when the shaft and the first mentioned wheel turns. Means are provided for sensing the rotation of the second or driven wheel which indicates direction of rotation for the shaft.

3,675,171
MAGNETICALLY OPERABLE DEVICE

Colin John Kirk, Crothorne, England, assignor to Martonair Limited, Twickenham, Middlesex, England

Filed Dec. 16, 1970, Ser. No. 98,649
Claims priority, application Great Britain, Jan. 15, 1970, 2,013/70
Int. Cl. H01f 7/08
U.S. Cl. 335—232 9 Claims

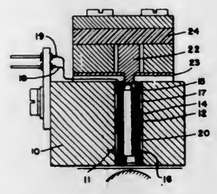


A magnetically operable valve or like device including a movable member and a fixed member, each including a magnetic material. The movable member is movable between positions remote from and adjacent the fixed member so that when the magnetic material of one of said members is magnetized and when said movable member is moved to a position adjacent the fixed member, a magnetic field is produced in the fixed member. The valve or like device also includes a movable magnetic element supported adjacent the side of the fixed member remote from the movable member and biased into an initial position from which it is movable by said magnetic field against the bias when the movable member is moved adjacent said fixed member.

3,675,172
DAMPING APPARATUS FOR A LINEAR ACTUATOR DEVICE

Neil J. Petusky, Norristown, Pa., assignor to Decision Data Corporation, Warminster, Pa.

Filed May 17, 1971, Ser. No. 144,084
Int. Cl. H01f 7/08
U.S. Cl. 335—257 15 Claims

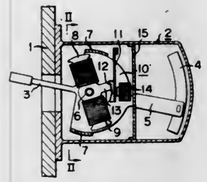


A damping system used for controlling the rebound of actuator members used in high speed printers or the like is disclosed. The system involves the use of the principle that when masses collide in an elastic collision, the kinetic energy of the system remains constant. In the system, a secondary mass is free for limited movement between restraining walls at least one of which is of energy absorptive material and is positioned in the path of a rebounding actuator element. The collision between the actuator element and the mass results in a transference of kinetic energy to the secondary mass which energy is rapidly dissipated as the secondary mass collides with the energy absorptive material. Also disclosed is a holding coil for holding the actuator element following the collision with the primary mass and an intermittently operable firing coil which when energized overrides the holding force and fires the actuator element.

3,675,173
PRESETTING DEVICE FOR ELECTRONIC MUSICAL INSTRUMENT

Nobuhiko Suzuki, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki, Hammamatsu-shi, Japan

Continuation of Ser. No. 761,034, Sept. 20, 1968. This application Sept. 22, 1970, Ser. No. 74,475
Claims priority, application Japan, Sept. 26, 1967, 42/61435; Sept. 26, 1967, 42/61436
Int. Cl. H01f 7/08
U.S. Cl. 335—268 13 Claims

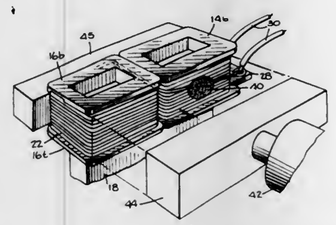


A device for memorizing and reproducing a position of a continuously adjustable controller, comprising a rotatable yoke of magnetic material and adapted to rotate on a pivot axis to the position corresponding to the position of adjustment of said adjustable controller, an armature rotatably mounted on said pivot axis in close proximity to said rotatable yoke and having a coil thereon and a brake adapted to brake the rotation of said armature, whereby the position of the adjustable controller can be memorized by releasing the brake from the armature and then energizing the armature coil to rotate the armature to the position of said rotatable yoke and the position of the controller can be reproduced by applying the brake to the armature and energizing the armature coil to rotate the rotatable yoke to tee position of the armature.

3,675,174
ELECTRICAL COIL AND METHOD OF MANUFACTURING SAME

Stephen Horbach, Mountain Lakes, N.J., assignor to Electronic Associates Inc., West Long Branch, N.J.

Filed Nov. 9, 1970, Ser. No. 87,736
Int. Cl. H01f 5/00
U.S. Cl. 335—299 17 Claims

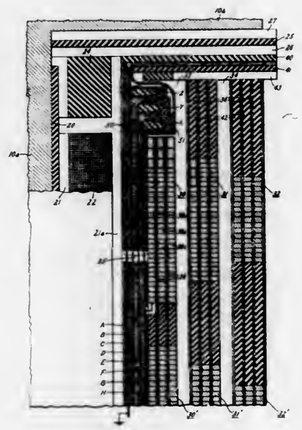


An encapsulated printer coil having two bobbins on each one of which a coil is wound. The coil is wound from a single continuous wire and is wound such that the polarity on one bobbin is opposite from the polarity on the other bobbin. Coil winding to achieve this result occurs by placing the bobbins in axial alignment on a common mandrel and winding the wire in a single rotational direction on both bobbins. The bobbins are subjected to a two-step curing. When initially molded, the bobbins are partially cured to provide wall resilience during winding. They are finally cured during the final encapsulation step. The wire has an epoxy overcoat. Prior to encapsulation the wire is heated by having a current pass through it and pressure is exerted on the wire by having the coil compressed between two jaws. This provides a pre-encapsulation sizing and fixing of the wires. Mold gate positioning and dimensioning provide minimum winding disturbance during encapsulation.

3,675,175
HIGH VOLTAGE COIL ASSEMBLY FOR ELECTRIC INDUCTION APPARATUS

John C. Dutton, Rome, Ga., assignor to General Electric Company

Filed May 10, 1971, Ser. No. 141,735
Int. Cl. H01f 15/04
U.S. Cl. 336—70 9 Claims



In a high voltage winding assembly of the balanced multilayer type, axially juxtaposed winding sections each having a line terminal connected to its outermost coil layer are connected in series circuit relation at their innermost coil layers and wound upon a common supporting cylinder of wrapped insulating material. Interwound in the supporting cylinder are a plurality of radially spaced shielding sleeves of electrically conductive material, and at opposite ends of the winding each sleeve is flared radially outward and over opposite ends of the winding to connect with one of a series of axially spaced apart shielding rings. The radially innermost shielding sleeve is connected to ground and the radially outermost shielding sleeve is connected to the winding midpoint between the serially connected, balanced winding sections.

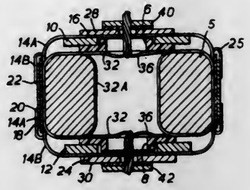
3,675,176
ELECTRICAL TRANSFORMERS

Anthony R. Brown, Wokingham, England, assignor to Racal-Mobilcal Limited, Reading, Berkshire, England

Filed May 12, 1971, Ser. No. 142,567
Claims priority, application Great Britain, May 12, 1970, 22,827/70
Int. Cl. H01f 27/28
U.S. Cl. 336—182 8 Claims

A wideband transformer, particularly suitable for use in transistor high-frequency amplifiers, is disclosed. The transformer has a toroidal core mounted between first and second electrically conductive, apertured disks. A conductive band encircles the outer periphery of the core. The single-layer primary consists of several parallel-connected windings each having two bi-filar turns one of which is connected to one of

the disks and passes round the core and is connected to the encircling band, and the second of which is connected to the encircling band and passes round the core and terminates on the other disk. The secondary, also single-layer, comprises several

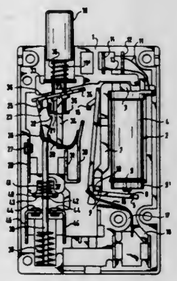


parallel-connected windings each having a number of turns, the ends of the secondary windings passing through the apertures of the conductive disks and terminating on further, insulated conductive washers.

3,675,177
SAFETY SWITCH

Jakob Ellenberger, Altdorf near Nuernberg, Germany, assignor to Ellenberger & Poeniger GmbH, Altdorf near Nuernberg, Germany

Filed Oct. 26, 1970, Ser. No. 83,892
Claims priority, application Germany, Oct. 27, 1969, P 19 53 984.5
Int. Cl. H01h *71/40, 71/58, 83/06*
U.S. Cl. 337—66 **9 Claims**



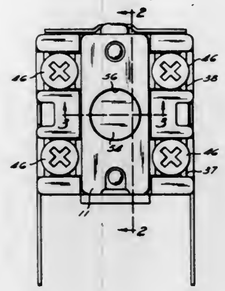
A safety switch for connection in a circuit to an electric machine has at least one contact closing member which is held in a position to close the circuit so long as current flows through an electromagnet coil connected to a supply. If the current fails the circuit cannot be reclosed on resumption of the current until a push button on the switch is pressed. A safety device comprising a bimetal strip may be provided to close the switch in the event of current overload.

3,675,178
MANUAL RESET THERMOSTAT

Donald E. Pioce, Mansfield, Ohio, assignor to Therm-O-Disc, Incorporated, Mansfield, Ohio

Filed Feb. 22, 1971, Ser. No. 117,239
Int. Cl. H01h *37/04, 37/54, 71/58*
U.S. Cl. 337—348 **17 Claims**

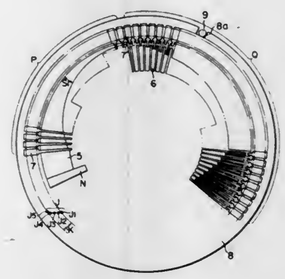
A trip-free manual reset bimetal disc operated thermostat is disclosed. A unitary bumper operatively connects the disc to a pair of switches and a manual reset member. The travel of the manual reset member is limited, and the elements are proportioned so that full movement of the reset member does not cause switch operation unless the disc is at reset temperatures. The elements are arranged to cooperate to define a pair of switch chambers which are isolated from each other and are also isolated from a disc cavity.



3,675,179
VARIABLE ZIG-ZAG RESISTOR WITH TABS

Masaaki Tsukamoto, Kawasaki; Tatsuo Fujii, Tokyo, and Shigeo Ono, Yokohama, all of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Filed Dec. 4, 1970, Ser. No. 95,146
Claims priority, application Japan, Dec. 15, 1969, 44/100115
Int. Cl. H01c *9/04*
U.S. Cl. 338—190 **8 Claims**

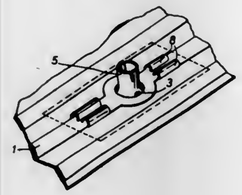


A variable resistor of this invention includes tap electrodes, a sliding brush, zig-zag resistor having resistor films, and if necessary a wedge-shaped resistance layer connected series to the zig-zag resistor. The tap electrodes are spaced apart from each other and located in the path of the sliding brush, and the tap films of the tap electrodes are formed outside of said path. The resistor films of the zig-zag resistor are overlaid on the tap films. And the width of the tap films is made smaller than that of the resistor films but is made equal to the pattern spacing of the resistor films.

3,675,180
FLAT CABLE CONNECTOR

Alan William Ronald Podmore, St. Albans, England, assignor to AMP Incorporated, Harrisburg, Pa.

Filed Sept. 8, 1970, Ser. No. 70,137
Claims priority, application Great Britain, Nov. 6, 1969, 54,405/69
Int. Cl. H01r *15/12*; **H05k** *1/10*
U.S. Cl. 339—17 F **4 Claims**

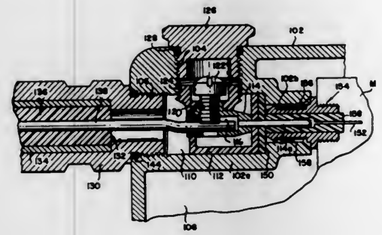


An electrical connector for flat cable, comprising a generally planar sheet metal base having a post receptacle extending generally normally of the base and at least one pair of ears defining a crimping ferrule struck from the base.

3,675,181
COAXIAL CONNECTOR MEANS AFFORDING ALTERNATE 90° SEIZURE

Barre D. Lankford, Seneca Falls, N.Y., and Charles W. Lanham, deceased, late of Silver Spring, Md. (by Betty U. Lanham, administratrix), assignors to Entron, Inc., Silver Spring, Md.

Filed May 14, 1970, Ser. No. 37,275
Int. Cl. H01r *27/00, 17/04*
U.S. Cl. 339—32 R **3 Claims**

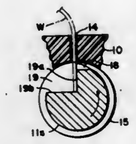


Improved coaxial connector means adapted to seize the center conductor of a coaxial cable, said connector being designed to afford alternate insertion and seizure of the cable through either of two orthogonally arranged openings in the connector body. According to a first embodiment, the connector means are integrally formed in a corner portion of an amplifier housing, while in a second embodiment, the connector means are in the form of a separate right-angle connector block adapted for threaded connection with the housing. In a third embodiment, the universal 90° seizure means are in the form of a splice block for splicing together the ends of a pair of coaxial cables.

3,675,182
COMBINATION MULTIPLE WIRE TERMINATION BLOCK AND WIRE STRIPPER

David L. Gregory, Huntsville, Ala., assignor to Avco Corporation, Huntsville, Ala.

Filed Dec. 28, 1970, Ser. No. 101,938
Int. Cl. H01r *9/08*
U.S. Cl. 339—98 **4 Claims**

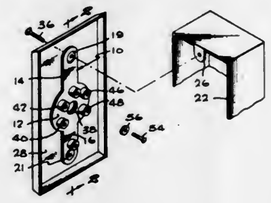


The invention is a combination multiple wire termination block and wire stripper for use in electrical systems requiring a plurality of common connection points. A supporting body or block containing a rotatable metal shaft is secured to a chassis or other convenient support and the insulated wires to be connected are simply inserted in appropriate holes therein and the shaft rotated a fraction of a revolution to partially strip the wires and simultaneously force the bare ends between the internal sides of the block and the shaft, thereby making a common electrical connection. Counterrotation effects a disconnection.

3,675,183
TELEPHONE CORD TERMINAL BLOCK

King B. Drake, Los Angeles, Calif., assignor to Dracon Industries, Chatsworth, Calif.

Filed Aug. 3, 1970, Ser. No. 60,370
Int. Cl. H01r *13/58, 9/00*
U.S. Cl. 339—103 R **6 Claims**

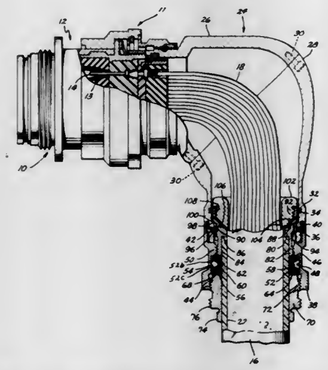


The terminal block joins the interconnecting cable and the telephone cord in a recessed receptacle box in the wall. The terminal block has a binding post for each wire in the telephone cord, and corresponding wires in the interconnecting cable. The terminal block has a central hole, between the terminal posts, for entry of the telephone cord to the terminal posts. The terminal block can be positioned directly beneath the receptacle cover plate, or may be integrally formed therewith.

3,675,184
COMBINED CABLE CLAMP AND SEAL FOR A BACKSHELL

Ottomar H. Vetter, Minneapolis, Minn., assignor to United-Carr, Incorporated, Boston, Mass.

Filed Oct. 17, 1969, Ser. No. 867,183
Int. Cl. H01r 13/58
U.S. Cl. 339—103 B 10 Claims

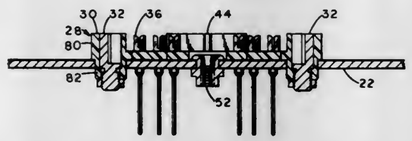


A specially grooved elastomeric ring member provides both the requisite anchoring of the cable at one end of a backshell and an effective sealing in the region where the cable enters the backshell.

3,675,185
ELECTRICAL CONNECTORS FOR DISTRIBUTION PLATE AND RACK AND PANEL APPLICATIONS

Herbert E. Ruehlemann, Huntingdon Valley, and Alexander Wontorsky, Philadelphia, both of Pa., assignors to Elco Corporation, Willow Grove, Pa.

Filed Feb. 3, 1971, Ser. No. 112,164
Int. Cl. H02b 1/02; H01r 13/64
U.S. Cl. 339—126 RS 13 Claims

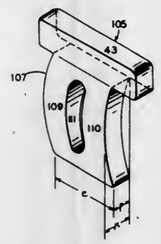


One family of connectors, having miniature size and close contact spacing, provides both an Input/Output (I/O) connector (i.e., a pluggable connector for connecting a plurality of leads to an automatically wire-wrappable electrical distribution plate or computer back panel) and a Rack-and-Panel (R/P) connector (i.e., a pluggable connector for connecting one plurality of leads to another plurality thereof, such as required for connecting an electrical equipment chassis to its mounting rack). The family comprises a R/P receptacle, an I/O receptacle, and a plug which can mate with either receptacle. The plug and both receptacles include flat, fork-like androgynous contacts, those in the plug being recessed in individual cavities and those in the receptacles having free-standing mating (nose) portions. The connectors have orientation keying in the form of side grooves in the plug arranged in an asymmetric pattern; these mate with complimentary integral ribs on (1) the inside of an upstanding upper wall of the R/P receptacle insulator, or (2) the insides of opposed upstanding short side walls of the I/O receptacle insulator. Connector keying is provided by an androgynous pin mounted at each side of the plug, the R/P, and the I/O receptacle ; each pin is asymmetric and is mountable in any of six different positions. The I/O receptacle comprises an assembly of flat modules (center, side, and keying) having cylindrical bottom bushings for holding each module to a foraminous metal plate and holding the module's contacts. The center module contains, in addition to the aforementioned short side walls, bushings for holding a plurality of contacts and an opening to accommodate a socket for a connecting screw. The side modules, provided in pairs, hold sufficient additional contacts to mate with whatever size plug is used. The keying modules, also provided in pairs, hold the connector keying pins.

3,675,186
MEANS FOR POLARIZING A CONNECTOR ASSEMBLY

Max L. Jayne, North Warren, and Robert W. Pihlblad, Warren, both of Pa., assignors to Sylvania Electric Products Inc.

Continuation-in-part of Ser. No. 37,961, May 18, 1968, abandoned, which is a division of Ser. No. 737,163, June 14, 1968, Pat. No. 3,566,340. This application Jan. 7, 1971, Ser. No. 104,744
Int. Cl. H01r 13/64
U.S. Cl. 339—186 M 7 Claims



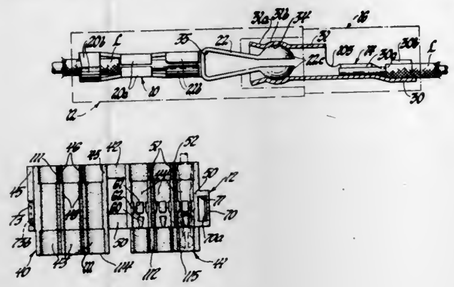
Removable key means for polarizing a multiple contact connector assembly for accommodating printed circuit boards whereof at least one key of flexural material has the longitudinal portion thereof discretely formed to resiliently fit within respective spaced apart polarizing channels in a manner that the key can be easily inserted thereinto and resiliently retained within substantially the channel width to provide desired polarization of the assembly. The key is also formed with provisions to provide facile removal thereof when a change of polarization is desired.

3,675,187
BALL AND SOCKET ELECTRICAL CONNECTOR MEANS

Charles P. Christman, Warren, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 5, 1970, Ser. No. 77,856
Int. Cl. H01r 11/22
U.S. Cl. 339—211 3 Claims

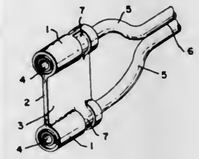
In a preferred form, this disclosure relates to an electrical connector means comprising a female terminal housed within a female insulator body and a male terminal housed within a male insulator body. The female terminal has a forward portion provided with a tapered entry section and a spherical socket section. The male terminal has the forward portion comprising a pair of spaced arms having hemispherical sections at their forward end which together define a spherical forward end section. The male terminal is connectable to the female terminal by inserting the same therein until its spherical end section seats within the spherical section of the female terminal. The mating parts provide a large contact area and mechanically interlock the male and female terminals and the male and female insulator bodies together.



3,675,188
MULTIPLE COLD CRIMP SLEEVE PLUG AND SOCKET

Kenneth John Startin, Hemel Hempstead, and Kamal Ahmed, Middlesex, both of England, assignors to AMP Incorporated, Harrisburg, Pa.

Division of Ser. No. 762,068, Sept. 24, 1968, Pat. No. 3,590,108. This application Sept. 23, 1970, Ser. No. 74,727
Int. Cl. H01r 9/08
U.S. Cl. 339—220 R 2 Claims



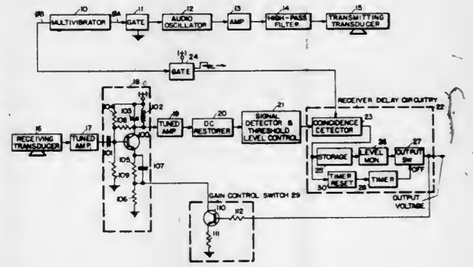
A method of forming plug or socket multiple connectors by the cold crimp sleeve technique involves the use of a twin sleeve extrusion, the sleeves being joined by a web, portions of the sleeves being cut out at intervals around web portions which serve as a carrier strip. Such an extrusion can then be fed conveniently to the dual die of a crimping machine where terminals of a twin core lead are inserted into respective sleeves. On crimping, both sleeves are simultaneously cold formed about respective terminals, and the carrier strip portion is severed. To facilitate use, a portion of the web between the sleeves may also be cut away to allow penetration of one multiple connector into the sleeves of another multiple connector.

3,675,189
ELECTRICAL CONNECTOR

James P. Smith, Warwick, R.I., assignor to Ostby & Barton Co.

Filed Dec. 22, 1970, Ser. No. 100,596
Int. Cl. H01r 9/08
U.S. Cl. 339—221 R 1 Claim

An electrical connector comprising in combination a panel having an opening extending therethrough, an electrical receptacle, and an elongated male connector. The electrical receptacle has its lower section fixedly held in the top portion of said opening with its bottom edge positioned inwardly from the bottom of said opening. The lower section forms a female connector and conductor securing means are formed on the upper section of the receptacle. The elongated male connector has an external diameter just slightly less than the diameter of the opening in the panel to provide lateral support and the tip of the connector is provided with means to mate with the female connector.



3,675,190
SONIC PRESENCE DETECTOR SYSTEM

John H. Auer, Jr., Fairport, and Jerry P. Huffman, Rochester, both of N.Y., assignors to General Signal Corporation, Rochester, N.Y.

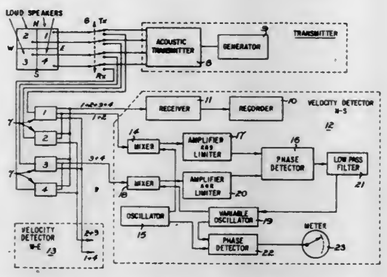
Division of Ser. No. 641,086, April 7, 1967, which is a continuation-in-part of Ser. No. 444,147, March 31, 1965, abandoned. This application May 19, 1969, Ser. No. 836,191
Int. Cl. G01s 9/66
U.S. Cl. 340—1 11 Claims

A system for indicating the presence of objects, where sonic energy reflected from the surfaces of objects is recognized and detected. Sonic energy pulses are periodically directed toward objects to be detected and electrical signals are generated in response to that portion of the sonic energy reflected from the object's surface. The signals are conducted to a tuned amplifier gated at intervals corresponding to the anticipated transit times of reflected pulses. Recognition circuitry responds to reflected pulses and produces an indication of object presence when they are coincident with the gate intervals. A timer extinguishes the presence indication when reflected pulses cease to be received for a period of time commensurate with a predetermined minimum rate.

3,675,191
ACOUSTIC SOUNDER

Lindsay G. McAllister, Elizabeth South, South Australia, Australia, assignor to The Commonwealth of Australia Care of The Secretary Department of Supply, Parkes, Canberra, Australia

Filed Dec. 29, 1969, Ser. No. 888,284
Int. Cl. G01s 9/66
U.S. Cl. 340—1 R 8 Claims

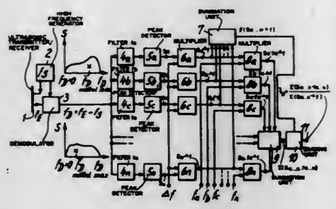


A method of recording upper atmospheric characteristics which comprises transmitting in a generally upward direction recurrent pulses of acoustic energy at a selected frequency band of operation at a repetition interval longer than that required to receive back a reflected signal from a target, receiving the back-scattered energy on a facsimile recorder or other indicating mechanism which records the time and/or intensity and/or duration and/or direction of the backscattered energy to permit upper atmospheric characteristics to be determined at airports or other localities where such information is of vital importance, the apparatus including a transducer to radiate the pulses of acoustic energy and to receive the backscattered energy and to record from it the required data.

3,675,192
ARRANGEMENT FOR ESTABLISHING THE SPEED OF FLOW OF BLOOD

Kurt Erich Fahrbach, Wiesbaden-Schierstein, Germany, assignor to Siemens Aktiengesellschaft, Erlangen, Germany

Filed Sept. 12, 1969, Ser. No. 857,391
Claims priority, application Germany, Sept. 28, 1968, P 17 91 191.0
Int. Cl. G01s 9/66
U.S. Cl. 340—3 D 3 Claims

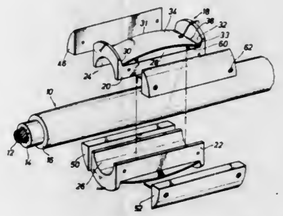


A device for determining the speed of blood flow in blood vessels uses the ultrasonic Doppler effect method and includes an ultrasonic transmitter and a receiver for receiving ultrasounds reflected from the flowing blood as well as means determining a value proportional to the speed of the blood flow from the transmitting and receiving frequencies. The device is particularly characterized by a measuring device which measures the amplitudes of several selected frequencies within the frequency spectrum of the reflected ultrasonic wave or when using a member connected with the ultrasonic receiver for providing the difference between the receiving and transmitting frequencies within the frequency spectrum of the differential signal, the measuring device being connected with a calculating device.

3,675,193
HOOP STRESSED BEAM HYDROPHONE

Billy W. Davis, Flagstaff, Ariz., assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed Dec. 28, 1970, Ser. No. 101,873
Int. Cl. G01v 1/16
U.S. Cl. 340—10 21 Claims

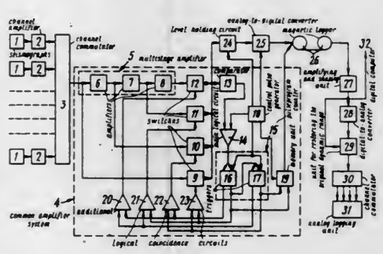


Seismic hydrophone streamer assemblies are constructed utilizing hydrophones which comprise cylindrical segments of crystals disposed with the axis of the crystals transverse to the axis of the streamer cable. This construction permits usage of a crystal having a diameter significantly larger than the diameter of the cable regardless of whether the crystal is disposed internally of a streamer cable. A crystal mounting means is provided which can be affixed to the exterior of a central stress member streamer cable and which supports the crystal solely by the edge of the crystal segment parallel to the cylindrical axis of the cylinder.

3,675,194
SEISMIC PROSPECTING STATION

Gennady Mikhailovich Borkovsky, Khoroshevskoe shasse, 16, kv. 11; Vitaly Borisovich Tsukernik, Chisty pereulok 5a, kv. 27, and Irina Nikolaevna Ierusalimskaya, Khoroshevskoe shasse, 16, kv. 11, all of Moscow, U.S.S.R.

Continuation of Ser. No. 796,328, Feb. 4, 1969, abandoned.
This application Feb. 3, 1971, Ser. No. 112,398
Int. Cl. G01v 1/22
U.S. Cl. 340—15.5 DP 1 Claim

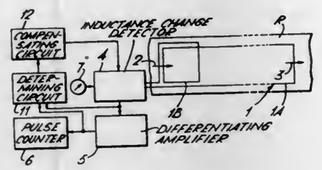


A seismic prospecting station with digital recording of the received seismic signals having a common amplifier system which provides for logging of the information of the seismic prospecting data within a wide dynamic range.

3,675,195
APPARATUS FOR DETECTING TRAFFIC INFORMATION

Shunsuke Iwamoto, and Ryohei Kawasaki, both of Kyoto, Japan, assignors to Omron Tateisi Electronics Co., Kyoto, Japan

Filed Nov. 18, 1969, Ser. No. 877,803
Claims priority, application Japan, Nov. 29, 1968, 43/87431; Dec. 12, 1968, 43/91228
Int. Cl. G08g 1/01
U.S. Cl. 340—38 L 6 Claims

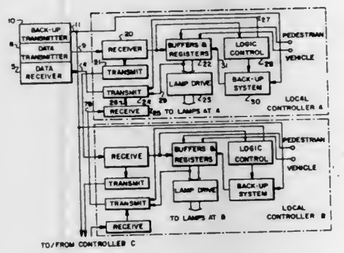


Apparatus for detecting traffic information employs as a vehicle detector a composite inductance loop laid on a road of which traffic information is to be detected. The composite loop consists of a series combination of a large loop portion and a small loop portion. When a vehicle enters the small loop portion, the composite loop suffers a first pulse-like change in the inductance value thereof. As the vehicle moves from the small into the large loop portion the inductance value of the composite loop is reduced to a level lower than the level of the first pulse-like change and kept substantially at that level so long as the vehicle remains inside the large loop portion. When the vehicle is passing the opposite end of the large loop portion, the inductance value thereof again suffers a pulse-like change which is smaller than the first pulse-like change. From such changes in the inductance of the composite loop it will be possible to know traffic informations such as traffic volume, traffic density, vehicle speed, etc. The system may be provided with means for compensating for changes in the inductance of the composite loop caused by changes in environmental conditions.

3,675,196
TRAFFIC SIGNAL CONTROL SYSTEM

Kenneth H. Molloy, Bedford; John P. Ward, Acton, and Victor Mark Benson, Groton, all of Mass., assignors to Computer Systems Engineering, Inc., No. Billerica, Mass.

Filed Jan. 25, 1971, Ser. No. 109,533
Int. Cl. G08g 1/08
U.S. Cl. 340—40 11 Claims

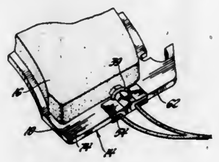


An automobile traffic signal control system controls traffic signals (lights) at a plurality of traffic intersections by way of a master controller which communicates with a local controller at each intersection and transmits pulse trains containing sets of data bits in sequence to the receivers at all the intersections, whereupon the intersection to which a specific set of data bits is addressed stores the set and uses each specific bit in the set to control a specific light or signal at that intersection. In this manner, all lights and signals at all intersections are specifically each controlled by a specific bit in a specific set of bits transmitted by the master controller to the local controllers at the intersections.

3,675,197
BRAKE LINING WEAR SENSING CIRCUIT

Ronald W. Bennett, Miamisburg; Donald L. Parker, Middletown, and Arthur R. Shaw, Dayton, all of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed June 26, 1970, Ser. No. 50,247
Int. Cl. B60t 17/22
U.S. Cl. 340—52 A 8 Claims

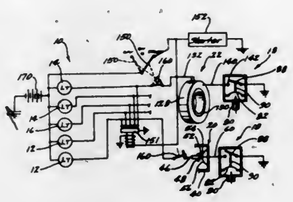


Vehicle brake apparatus including a plurality of series connected conductive sensors secured to the brake shoes of a vehicle by clips which support each of the sensors proximate an electrically grounded brake drum and at a predetermined level above the brake shoes, below which level brake lining wear is deemed excessive. When a brake lining is excessively worn by a brake drum the sensor secured to the brake shoe which supports the brake lining is contacted and grounded by the brake drum. A grounded indicator network is series connected with the sensors to provide for energizing an indicator device when a sensor is grounded so as to indicate excessive wear of a brake lining. A grounded switch is series connected with the sensors and the indicator network for checking the operation of the sensors and the indicator network. When the switch is closed the indicator device is energized if the indicator network and the sensors are operative.

3,675,198
VEHICLE TIRE AIR PRESSURE MONITORING SYSTEM

George C. Drown, Fort Dodge, Iowa, assignor to Leward M. Larson, Fort Dodge, Iowa, a part interest

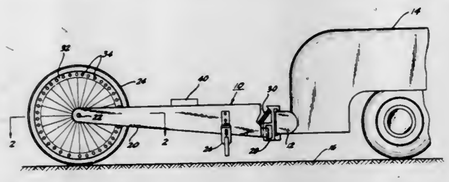
Filed Aug. 25, 1970, Ser. No. 66,690
Int. Cl. B60c 23/04
U.S. Cl. 340—58 10 Claims



A monitoring electrical circuit includes either a pressure gauge or signal light on the dashboard of an automobile for each of the tires on the vehicle and the circuit includes a pressure responsive switch on each of the wheels. The electrical circuit in each of the front wheels includes a terminal on the outer end of the front axle frictionally engaged by an electrically conductive spring held in and insulated from an enclo-

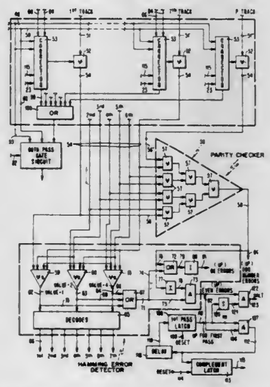
sure cover rotatable with the front wheel. The electrical circuit through the rear wheels involves a conductive ring on the axle at each wheel engaged at its periphery by a carbon brush held stationary on the axle housing. The air pressure signalling units on the wheels are positioned parallel to the axis of rotation of the wheels such that they are unaffected by the centrifugal forces generated by the wheels when turning.

3,675,199
VEHICLE POSITION MARKING DEVICE
Robert W. Jamison, Springfield Township, Delaware County, Pa., and Paul A. Norcross, Downers Grove, Ill., assignors to Union Oil Company of California, Los Angeles, Calif.
Filed June 15, 1970, Ser. No. 46,181
Int. Cl. G01p 3/52; G01c 22/02
U.S. Cl. 340—62 **10 Claims**



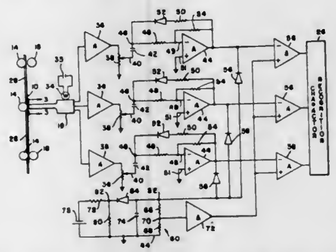
A wheeled device adapted for attachment to a vehicle for marking the location on a surface where the vehicle traveling over the surface attains a selected speed. The device includes a marking gun adapted to fire an electrically detonable cartridge containing a color marking substance and an electronic speedometer that electrically detonates the cartridge at the selected speed, thereby discharging the color marking substance downwardly against the surface to mark thereon the location where the vehicle attains the selected speed.

3,675,200
SYSTEM FOR EXPANDED DETECTION AND CORRECTION OF ERRORS IN PARALLEL BINARY DATA PRODUCED BY DATA TRACKS
Douglas C. Bossen, Wappingers Falls; Robert A. Henle, Hyde Park; Mu Y. Hsiao, Poughkeepsie; Gerald A. Maley, Fishkill, and W. David Pricer, Poughkeepsie, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Nov. 23, 1970, Ser. No. 91,726
Int. Cl. G06f 11/08; G06k 5/00
U.S. Cl. 340—146.1 F **38 Claims**



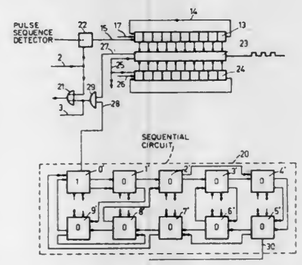
Errors in parallel binary data produced by a plurality of data track, e.g., a plurality of parallel shift registers, are corrected by a system in which the shift registers which are stuck, i.e., inalterable, are determined and counted. By single Hamming error detection means, the presence of a Hamming error and an indication of the bit position of a single Hamming error is made. Comparison means determine if the indicated Hamming error is coincident with a stuck track. Then, dependent on the parity condition of the data as well as the count of stuck tracks, apparatus is provided for complementing one or more of the stuck tracks and/or correcting the indicated Hamming error.

3,675,201
THRESHOLD VOLTAGE DETERMINATION SYSTEM
John A. McKissick, Madison Heights, and Arvin D. McGregor, Birmingham, both of Mich., assignors to Burroughs Corporation, Detroit, Mich.
Filed Feb. 24, 1970, Ser. No. 13,490
Int. Cl. G06k 9/00
U.S. Cl. 340—146.3 AG **2 Claims**



In a character recognition system, a threshold voltage determination system for providing a decision making voltage level separating "black" data signals from "white" data signals. A plurality of scanning amplifiers are individually coupled in an electrical parallel circuit to a voltage divider which responds to variations in the "black" data signals. The threshold voltage determination system generates a voltage level which is intermediate the voltage magnitude of the "black" data signal and the "white" data signal. A minimum threshold voltage level is also provided to maintain a predetermined minimum decision making voltage level in the absence of character being read.

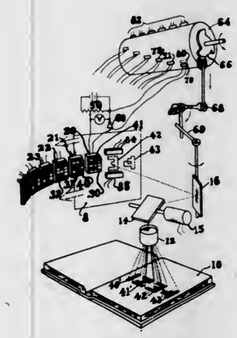
3,675,202
DEVICE FOR CHECKING A GROUP OF SYMBOLS TO WHICH A CHECKING SYMBOL IS JOINED AND FOR DETERMINING THIS CHECKING SYMBOL
Jacobus Verhoeff, Hague, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed June 1, 1970, Ser. No. 41,892
Claims priority, application Netherlands, May 30, 1969, 6908248
Int. Cl. G06f 11/10
U.S. Cl. 340—146.1 AQ **16 Claims**



A device for checking a group of symbols including a check symbol, the symbols being chosen from $2m$ different symbols,

the device operating by assigning a fixed value to each incoming symbol weighted in accordance with order of reception, forming the product of the incoming product and storing same, the check indicating correctness or incorrectness after reception of an entire group of symbols by comparing the final result with a predetermined value.

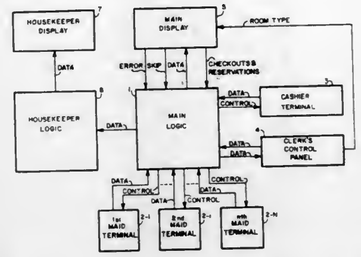
3,675,203
AUTOMATIC PATTERN RECOGNITION WITH WEIGHTED AREA SCANNING
Dwight M. B. Baumann, 39 Amherst Road, Belmont, Mass.
Continuation of Ser. No. 480,242, Aug. 5, 1965, abandoned, which is a continuation of Ser. No. 149,833, Nov. 11, 1961, abandoned. This application April 9, 1969, Ser. No. 852,953
Int. Cl. G06k 9/12
U.S. Cl. 340—146.3 AQ **28 Claims**



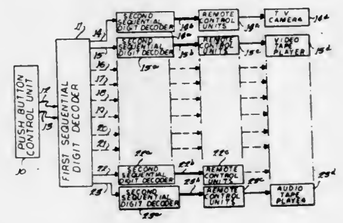
The apparatus scans a series of weighted masks to trigger a threshold circuit to produce an output signal when the particular character being compared exceeds a certain level of similarity to the mask. The occurrance of output signals indicates the membership of the pattern in a particular subset, portion, etc. The masks are selected in accordance with the frequency of occurrance of the black portions of the font of characters in the set being considered.

3,675,204
STATUS SYSTEM
James A. Miehle, Los Altos; David S. Pratt, Cupertino, and Robert M Rees, Atherton, all of Calif., assignors to Varian Associates, Palo Alto, Calif.
Filed May 4, 1970, Ser. No. 34,496
Int. Cl. G08b 5/00, 7/06
U.S. Cl. 340—147 R **31 Claims**

A system for use in monitoring the statuses of a plurality of similar type objects includes transmitting terminals, logic structure and display structure. When used to monitor the status of a hotel room, information identifying the hotel room, and its status, including whether the room is vacant and not made up, vacant and made up, and occupied, is shown on a display. Information identifying a particular room and describing its status is transmitted from any transmitting terminal to the logic. Selected transmitting terminals, such as the cashier's terminal, are given priority in the transmission of data to the main logic over all other transmitting terminals. Structure is provided for indicating errors in the displayed status of a given room resulting from conflicting data relating to that room being received from the transmitting terminals. The system can detect a false report that the room is vacant, or a false report that the room is occupied. Because a hotel contains numerous types of rooms, structure is provided for displaying simultaneously all the rooms of a given type. Both the room clerk and housekeeper have a separate display. The information on the clerk's display is capable of being corrected or updated not only by new information from the transmitting terminals but also by information placed into the system by the clerk and the cashier. Structure is provided to enable the clerk to change the status of any room to any status that may be desired. The clerk's display also shows running counts of total rooms occupied, total rooms vacant, total number of rooms scheduled to be vacated and total number of rooms reserved for new occupants. To prevent the system from failing to operate when all the data expected from a transmitting terminal fails to be received, structure is provided for automatically restarting the system.



3,675,205
SYSTEM FOR SELECTION AND REMOTE CONTROL WITH SEQUENTIAL DECODING HAVING PLURAL DECODING STAGES
Donald E. Mereen, and Jack E. J. Barrett, both of Appleton, Wis., assignors to Midwest Communications & Audio, Incorporated, Appleton, Wis.
Filed April 8, 1969, Ser. No. 814,423
Int. Cl. H04q 3/00, 11/00
U.S. Cl. 340—147 **12 Claims**

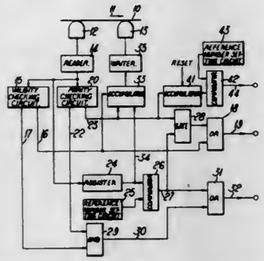


A system is disclosed for selecting and controlling any one of a number of remotely-located, controllable subsystems. A decoding network establishes a direct link from the user to control circuitry for the intended subsystem by sequentially decoding call or address signals initiated by the user and transmitted over a single pair of wires. Once the link from the user to a particular control unit selected has been established, the connection remains secure until broken by the user; and subsequent control signals actuated by the user select and control the desired function of the remote subsystem.

3,675,206
AUTOMATIC TICKET GATE

Keisuke Osaki; Hiroshi Egashira, and Yasunori Hayashi, all of Kyoto, Japan, assignors to Omron Tateisi Electronics Co., Kyoto, Japan

Filed Oct. 21, 1970, Ser. No. 82,588
Claims priority, application Japan, Oct. 24, 1969, 44/85427
Int. Cl. H04q 3/02; E05b 65/00
U.S. Cl. 340—149 A 4 Claims

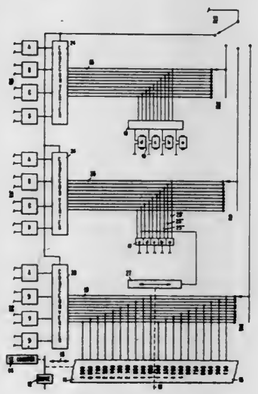


An automatic ticket gate wherein when a ticket is used, its information is read, and depending upon whether the information is valid or not the user of the ticket is allowed or not allowed to pass through the gate. When the ticket has been recognized as invalid due to misreading of the ticket information, the information that the ticket information has been misread is recorded on the ticket and the passenger is allowed to pass through the gate despite the recognition of the ticket as invalid, and only when the information of a ticket has been misread successively more than a predetermined number of times, the user of that ticket is not allowed to pass through the gate.

3,675,207
TEXT SELECTION ARRANGEMENT IN AUTOMATIC PRINT-OUT DEVICES

Klaus Schlickeiser, Boll bei Hechingen, Germany, assignor to Dipl. Ing. Walter Buhmann Elektro-Apparate-Bau GmbH, Hechingen, Hhz., Germany

Filed April 21, 1970, Ser. No. 30,512
Claims priority, application Germany, April 23, 1969, P 19 20 721.7
Int. Cl. G11b 5/56
U.S. Cl. 340—172.5 18 Claims

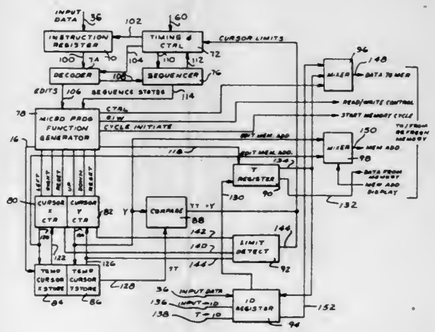


A tape has a plurality of parallel tracks holding selectable texts. A text selection is made by marking three digits on a program card, the first controlling the movement of read heads in a direction transverse to the tracks, the second controlling the longitudinal position of the tape relative to the reading heads, and the third selecting one of the reading heads.

3,675,208
EDITING SYSTEM FOR VIDEO DISPLAY TERMINAL

Irving Gary Bard, Philadelphia, Pa., assignor to Delta Data Systems Corporation, Cornwells Heights, Pa.

Filed May 28, 1970, Ser. No. 41,474
Int. Cl. G06f 3/14
U.S. Cl. 340—172.5 13 Claims



A video display terminal is disclosed having an editing system for controlling the entry of characters on the video display as well as the editing or manipulation of the data provided on the display. The editing system is operable between succeeding scan lines of the video display raster. The editing system includes a microprogram function generator which enables the execution of a plurality of steps in an edit by the mere insertion of a single instruction into the video display terminal.

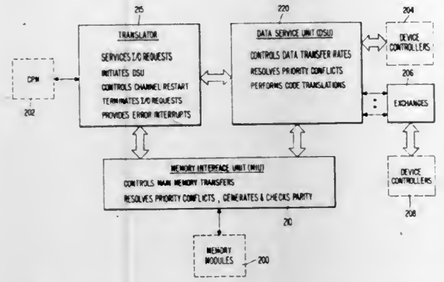
3,675,209
AUTONOMOUS MULTIPLE-PATH INPUT/OUTPUT CONTROL SYSTEM

Joseph C. Trost, Hatboro; Robert V. Bock, Malvern; Frederick H. Gerbstadt, Berwyn; William J. Graham, Drexel Hills; Wilson D. Miles, West Chester, and Charles R. Questa, King of Prussia, all of Pa., assignors to Burroughs Corporation, Detroit, Mich.

Filed Feb. 6, 1970, Ser. No. 9,275
Int. Cl. G06f 3/00
U.S. Cl. 340—172.5 20 Claims

A multiple channel input/output channel system for information processing systems, including one or more control modules each having a unit for translating program elements, modular data service apparatus controlled by I/O data transfer descriptors provided by the translational unit, and a memory interface unit for controlling the transfer of information between the translator and data service units and a data processing system memory. The translator unit asynchronously obtains I/O program words or elements from the processing system and combines designated portions of them to form data transfer descriptors for input/output tasks

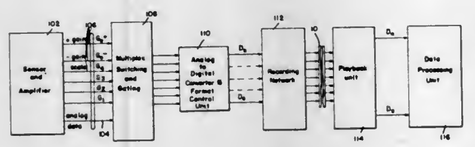
to be done. The data service apparatus interfaces with a plurality of peripheral control units which are coupled for controlling peripheral input/output devices either directly or via multiple-path peripheral exchange units.



3,675,210
METHOD AND APPARATUS FOR THE TRANSMISSION OF ACQUIRED DATA IN THE FORM OF MAGNITUDE REPRESENTING SIGNALS AND SIGNALS REPRESENTING CHANGES OF SCALE OF MAGNITUDE

Donald Edmund Block, and Nicholas George Alexakis, both of Los Angeles, Calif., assignors to Digital Data Systems, Inc., Houston, Tex.

Filed May 16, 1966, Ser. No. 550,240. The portion of the term of this patent subsequent to June 4, 1988, has been disclaimed.
Int. Cl. G06f 3/05
U.S. Cl. 340—172.5 15 Claims



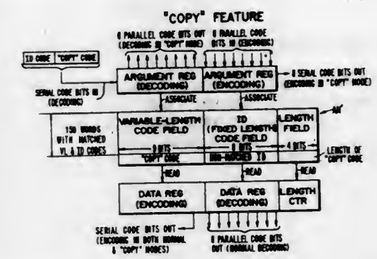
A data acquisition system is described which enables efficient utilization of a limited data channel by transmitting data signals representing magnitude of a sampled parameter, together with incremental signals representing the scale or gain of the sampling apparatus. Periodically, signals are transmitted which correspond to the scale or gain setting of the sampling equipment, for updating and error correcting purposes. If desirable, the sign of each increment can be a function of the data interval, during which the increment is transmitted.

3,675,211
DATA COMPACTION USING MODIFIED VARIABLE-LENGTH CODING

Josef Raviv, Yorktown Heights, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Sept. 8, 1970, Ser. No. 70,251
Int. Cl. G06f 5/00
U.S. Cl. 340—172.5 9 Claims

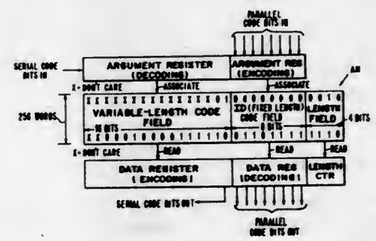
A three-state associative memory is employed as an encoding-decoding instrumentality for making conversions between fixed-length codes and variable-length codes. The available variable-length codes are stored in a field of the associative memory that has uniform word lengths. Memory cells which are not needed for storing bits of the variable-length codes are set to a "don't care" state. Fixed-length codes and code length indications corresponding to these stored variable-length codes are stored in other fields of the associative memory. A "COPY" feature enables the system to function with an associative memory of relatively small size which performs normal encoding and decoding operations for the more frequently occurring codes, thereby achieving a high degree of data compaction, while the less frequently occurring codes are handled in a manner that does not achieve such compaction but requires much less memory. Encoding in the "COPY" mode of operation involves appending the fixed-length code word to a special COPY code which is the same for all code words in this category. Decoding a combination code word of this kind involves discarding the COPY code portion and directly utilizing the remainder as the decoded fixed-length code word. Only one line of stored data is needed in the associative memory to handle all code words which use the COPY code.



3,675,212
DATA COMPACTION USING VARIABLE-LENGTH CODING

Josef Raviv, Ossining, and Michael A. Wesley, Somers, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 10, 1970, Ser. No. 62,306
Int. Cl. G06f 5/00; H03k 13/00
U.S. Cl. 340—172.5 10 Claims



A three-state associative memory is employed as an encoding-decoding instrumentality for making conversions between fixed-length codes and variable-length codes. During the encoding process, associations are performed upon fixed-length codes to find the corresponding variable-length codes. The shorter-length codes are assigned to the most frequently occurring words or bytes for achieving a minimum average code length. The available variable-length codes are stored in a field of the associative memory that has uniform word lengths. Memory cells which are not needed for storing bits of the variable-length codes are set to a "don't care" state. During each

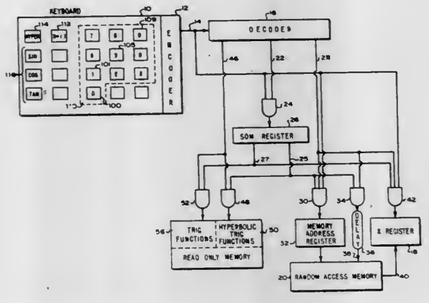
readout of a variable-length code, a corresponding "length" value is read out of the memory to indicate the number of valid bits that are to be read serially from the data register, excluding the "don't cares." During the decoding process, the bits of successive variable-length codes are fed serially to an argument register, and as each association is performed upon a variable-length code to find the corresponding fixed-length code, the "length" field indicates the number of bit positions by which the contents of the argument register are to be shifted for bringing the next variable-length code bit string into registry.

3,675,213

STORED DATA RECALL MEANS FOR AN ELECTRONIC CALCULATOR

Richard M. Spangler, Loveland, Colo., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Oct. 14, 1970, Ser. No. 80,534
Int. Cl. G06f 3/02
U.S. Cl. 340—172.5 **2 Claims**



A calculator instruction key is provided which preconditions the calculator to transfer information to a display register from an address in memory to be specified by subsequent key strokes. The above-mentioned calculator instruction key generates a key code identical to a second calculator instruction key which also preconditions the calculator to compute a hyperbolic trigonometric function. The function performed by the calculator is determined by the kind of key depressed following the instruction key, an alpha-numeric key initiating the memory transfer operation or a trigonometric key initiating the computation of a hyperbolic trigonometric function.

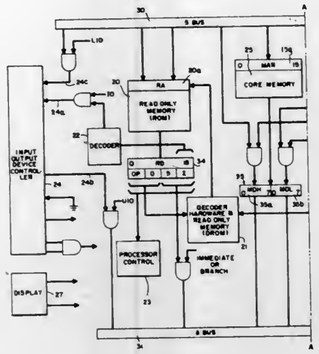
3,675,214

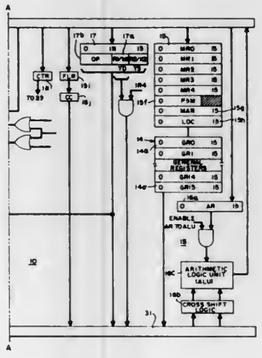
PROCESSOR SERVICING EXTERNAL DEVICES, REAL AND SIMULATED

David R. Ellis; John Michels, both of Holmdel, and Ira Gabbert, Neptune, all of N.J., assignors to Interdata, Incorporated

Filed July 17, 1970, Ser. No. 55,894
Int. Cl. G06f 9/16, 9/18
U.S. Cl. 340—172.5 **6 Claims**

This invention pertains to the performance of a microroutine in accordance with a program being run on a processor having user's instructions in main memory. External devices having discrete device numbers cause interrupt signals to be transmitted to the microroutine which acknowledges the interrupt signal and obtains the device number associated with the signal. A service pointer is fetched from the service pointer table in the main memory corresponding to the device number, which in turn defines a service block function to be fetched from the main memory. Input - output service is then performed for the external devices in accordance with the in-





terrupt service block function without interrupting the program that is being currently run.

3,675,215

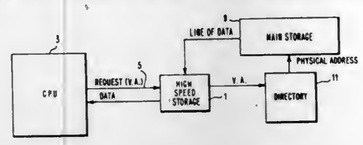
PSEUDO-RANDOM CODE IMPLEMENTED VARIABLE BLOCK-SIZE STORAGE MAPPING DEVICE AND METHOD

Richard F. Arnold, Palo Alto, Calif.; Philip S. Dauber, Ossining, N.Y., and Edward H. Sussenguth, Stamford, Conn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 29, 1970, Ser. No. 50,485
Int. Cl. G06f 9/20
U.S. Cl. 340—172.5 **12 Claims**

A directory, or index, of variable-sized pages of data for use in a two-level storage system employing virtual addressing, wherein data is stored in a large capacity main storage and retrieved to a smaller, faster buffer storage for processing. If a desired piece of data indicated by a virtual address is not currently resident in buffer storage, the location of the beginning of the page containing that data in main storage is found by searching the directory. Directory addresses for searching the directory are formed by a pseudo-random function of two parameters, the virtual address and a count. Since a larger

page-size entry will be addressed statistically more frequently than a smaller page-size entry, a new directory entry for a given page size is made in the first location along its algorithm



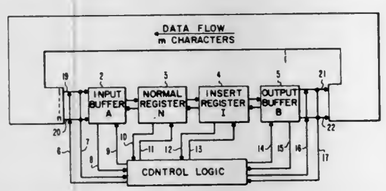
chain which currently contains either an invalid entry or a smaller page-size entry. Thus, it may be necessary to relocate a smaller page-size entry further down its chain.

3,675,216

NO CLOCK SHIFT REGISTER AND CONTROL TECHNIQUE

Randell L. James, Austin, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 8, 1971, Ser. No. 104,888
Int. Cl. G06f 3/00, 3/10
U.S. Cl. 340—172.5 **10 Claims**



A shift register and control technique in which no clocking is employed between the control logic, the shift register, and the input to and output from the shift register. Upon start-up of the system a flag code is loaded at random, into a stage of the register and the remaining stages or data positions of the register are loaded with dummy code. Thereafter, the control logic and input to and output from the shift register is timewise controlled by the sensing of the flag which, in the case that the associated input and output means is a typewriter, moves synchronously with the print element or carriage of the typewriter. Four buffers which are connected to the control logic and the data buss for data input to an output from the shift register are connected between the input and output stages of the register and these buffers are logically selectively introduced into the data flow upon the sensing of the flag in the output stage of the register to accomplish timewise shifting of the data in the register for insertion of additional data, deletion of data, and other usual functions such as error correct backspace. Due to the utilization of the sensing of the flag to control the instant that a change in the data path is made no clocking between the input/output and control logic is required and additionally, the length of the shift register can be increased or decreased or the basic timing changed without any change in the control logic.

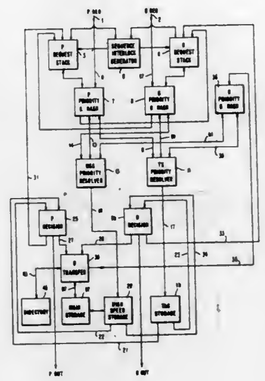
3,675,217

SEQUENCE INTERLOCKING AND PRIORITY APPARATUS

Philip S. Dauber, Ossining, N.Y.; Russell J. Robelen, Palo Alto, and John R. Wierzbicki, Saratoga, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 23, 1969, Ser. No. 887,468
Int. Cl. G06f 13/00, 9/18
U.S. Cl. 340—172.5 **11 Claims**

Described is a sequence interlock generator and priority apparatus combination suitable for use in a storage control system for a two-level storage, wherein the storage system includes a high-speed storage against which requests for data are processed and a slower, larger-capacity main storage. Requests can be received and serviced concurrently at a plurality of request ports in the system where they are buffered in request stacks. A tag storage serves as an index to the data currently resident in high-speed storage and a directory storage acts as an index to data currently in main storage. The sequence interlock generator interlocks requests in the plurality of request stacks to insure that requests to the same storage area are performed in proper sequence to insure data integrity. A sequence interlock vector is computed when the request first enters its request port and is appended to the



request until the request is clear to request service. A request is received in terms of a logical address. The logical address is transformed into a plurality of physical addresses in high-speed storage. The physical addresses are used to address corresponding tags from the tag storage to determine the contents of the desired addresses in high-speed storage. The priority apparatus essentially splits the request into two priority determinations, one for priority to access the tag storage and the second for priority to access the data storage. The ideal situation is for tags and storage to be accessed concurrently. However, the invention makes provision for action to begin upon the tags if the tag storage can be accessed due to conflicts for accessing the addressable entity in high-speed storage. As a consequence of the invention, initiation of service of a given request is begun at the earliest possible time.

3,675,218

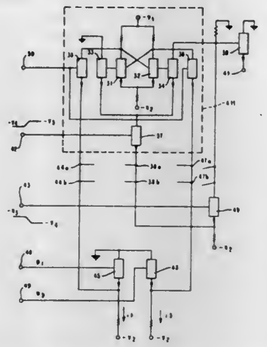
INDEPENDENT READ-WRITE MONOLITHIC MEMORY ARRAY

Robert F. Sechler, Wappingers Falls, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 15, 1970, Ser. No. 3,163
Int. Cl. G11c 11/40
U.S. Cl. 340—173 FF **9 Claims**

A memory array is formed of a plurality of memory cells arranged in a matrix and providing for the simultaneous writing of information into one portion of the array while accomplishing the retrieval of information from another portion of the array. Each cell of the array utilizes cross-coupled flip flops as the storage circuit and includes control circuitry for reading

from the cell and independent control circuitry for writing into the cell. Each cell of the array is further expandable by

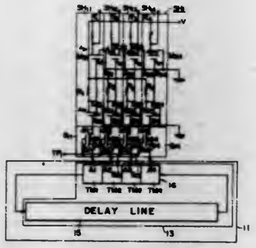


adding appropriate reading and/or writing control circuits for providing multiple data in and/or data out bussing.

3,675,219
DYNAMIC MEMORY SYSTEM HAVING SIGNAL HOLDING DEVICE

Jun Kawasaki, Kodaira, and Hiroshi Uehara, Kokubunji, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 639,549, May 18, 1967, abandoned. This application June 22, 1970, Ser. No. 48,446
Claims priority, application Japan, May 18, 1966, 41/31170; May 18, 1966, 41/31171
Int. Cl. G11c 19/00
U.S. Cl. 340—173 RC **20 Claims**



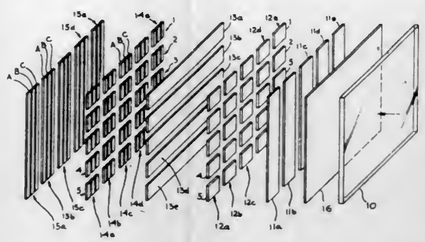
A dynamic memory system wherein a continuously recirculating delay loop includes a plurality of read-out stations and a plurality of gating circuits are provided to selectively connect a plurality of corresponding signal holding circuits to said read-out stations at periodic times of the recirculating cycle, each holding circuit comprising an amplifying insulated gate field effect transistor and storage capacitance means formed by the interelectrode capacitance of said field effect transistor.

3,675,220
PLANAR RANDOM ACCESS FERROELECTRIC COMPUTER MEMORY

Alvin A. Snaper; George D. Gregory, and Miles R. Munroe, all of Las Vegas, Nev., assignors to Advanced Patent Technology, Inc., Las Vegas, Nev.

Filed Nov. 30, 1970, Ser. No. 93,551
Int. Cl. G11c 11/22
U.S. Cl. 340—173.2 **1 Claim**

This memory device uses ferroelectric materials and it stores information as a change in the crystalline formation of the ferroelectric material. In turn, this change manifests itself

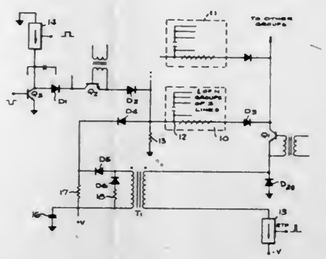


as a change in the light intensity of polarized light incident upon the ferroelectric bits.

3,675,221
MAGNETIC CORE MEMORY LINE SINK VOLTAGE STABILIZATION SYSTEM

Philip A. Harding, Palos Verdes, Calif., assignor to Electronic Memories and Magnetics Corporation, Los Angeles, Calif.

Filed June 29, 1970, Ser. No. 50,563
Int. Cl. G11c 5/02, 11/06
U.S. Cl. 340—174 TB **12 Claims**



A magnetic core memory line sink voltage stabilization system is disclosed using a current or voltage source to charge a group of selected lines. The sink ends through which the lines are charged are terminated with the approximate characteristic impedance of all lines connnected at their sink end to a common junction, and a balanced transformer is employed to keep the potential of the junction substantially constant when a current pulse is applied at the drive end of a selected pulse. The primary of the transformer is connected in series with a current pulse source, and the secondary is connected in parallel with the terminating resistor. The turns ratio of the transformer and polarity of the secondary winding are so selected as to inject a current into the common junction substantially equal to that driven through the line by the current pulse source, and of proper polarity, to maintain the potential of the common junction substantially constant.

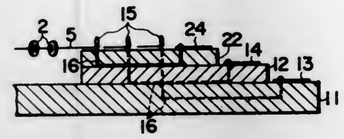
3,675,222
FRAME STRUCTURE FOR MAGNETIC MEMORY PLANES

Seihin Kobayashi; Michihiro Torii, and Fujio Yamakawa, all of Shizuoka-ken, Japan, assignors to Fuji Denki Kagaku Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 8, 1970, Ser. No. 79,081
Claims priority, application Japan, Oct. 14, 1969, 44/81988
Int. Cl. G11c 5/04, 11/06
U.S. Cl. 340—174 MA **7 Claims**

An improved frame structure for a magnetic memory plane is provided, which comprises a plurality of stepped planes

descending from the inner circumference of said frame toward the outer circumference thereof, a number of terminal plates being provided on the stepped planes so that the adjacent terminal plates may be disposed on the different stepped planes

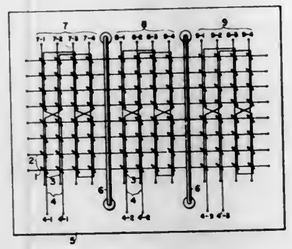


with a fixed space. A number of metal bars are each connected at their outer ends to the outermost terminal plates on the lowest stepped plane and, at their inner vertical portions, are projected above the uppermost stepped plane to a drive winding.

3,675,223
MAGNETIC MEMORY PLANE

Seihin Kobayashi; Michihiro Torii, and Koichiro Suzaki, all of Shizuoka-ken, Japan, assignors to Fuji Denki Kagaki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 12, 1970, Ser. No. 79,926
Claims priority, application Japan, Oct. 15, 1969, 44/81853
Int. Cl. G11c 7/02, 11/06
U.S. Cl. 340—174 S **7 Claims**



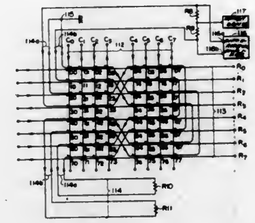
A magnetic memory plane is divided into a plurality of sections each comprising a plurality of memory elements and a separate sense means. The improvement comprises a conductor provided between the adjacent sections and connected to a ground plane to form a closed electric circuit therewith.

3,675,224
COINCIDENT-CURRENT MAGNETIC CORE MEMORY WITH COMBINED INHIBIT AND SENSE WINDING

Shoichi Ninomiya; Masaaki Sakai; Sakae Oka, all of Kawasaki-shi, and Kikunobu Kusunoki, Tokyo, all of Japan, assignors to Fujitsu Limited, Kawasaki-shi and Nippon Telegraph and Telephone Public Corporation, Tokyo, Japan, a part interest to each

Continuation-in-part of Ser. No. 505,556, Oct. 28, 1965, abandoned. This application Aug. 21, 1969, Ser. No. 852,066
Claims priority, application Japan, Oct. 31, 1964, 39/61740
Int. Cl. G11c 5/02, 5/06, 11/06
U.S. Cl. 340—174 **6 Claims**

In a coincident-current magnetic core memory having the form of a matrix of toroidal magnet cores threaded by a pair of row and column half-select wires, a common inhibit and sense winding composed of two bifilar winding sections is wound back and forth in one direction with each of the sections being staggered upon passing from one to another of two groups of the cores and with one bifilar winding section being interlaced with the other winding section. A differential amplifier has its

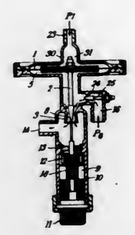


inputs each connected to one of the bifilar winding sections and an inhibit driver is connected to both the amplifier inputs.

3,675,225
PRESSURE RATIO SENSING

Stanley George Glaze, Brierley Hill, England, assignor to H. M. Hobson Limited, London, England

Filed Nov. 12, 1969, Ser. No. 875,949
Claims priority, application Great Britain, Nov. 12, 1968, 53,600/68
Int. Cl. G08c 19/00
U.S. Cl. 340—196 **3 Claims**



A pressure ratio sensor for producing a signal proportional to the ratio of two pneumatic pressures derived from two probes and comprising a casing, a diaphragm dividing the casing into two chambers each having an inlet, a needle attached to the diaphragm and extending through one of the chambers and controlling, in accordance with the position of the diaphragm, the effective area of an outlet from that chamber, the signal pressure from one probe being applied directly to one of the inlets, the signal pressure of the other probe being multiplied by a known factor, the multiplied signal pressure being applied to the other inlet and the position of the needle producing a signal indicative of the ratio.

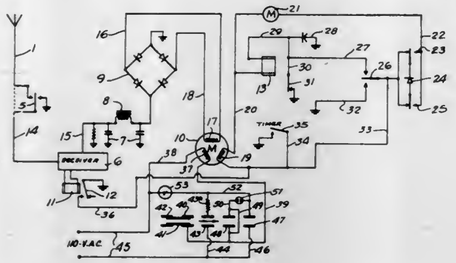
3,675,226
RADIO REMOTE CONTROL FOR A SLIDE PROJECTOR

J. Burton Long, deceased, late of Sarasota, Fla. (by Clarice Cleland Long, executrix) 2924 Grove St., Sarasota, Fla.

Filed May 4, 1970, Ser. No. 34,461
Int. Cl. H04b 7/00
U.S. Cl. 343—225 **2 Claims**

The present remote control system is for rotating a drum type magazine of a slide projector. A portable radio trans-

mitter is employed for sending a signal, when operated, to said



system for presenting a different slide in the magazine to be projected by the slide projector.

3,675,227

LIQUID-LEVEL DROP ALARMING SYSTEM

Noboru Fukasawa, and Yukiyoshi Hatori, both of Yokohama, Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed March 22, 1971, Ser. No. 126,499
Claims priority, application Japan, April 1, 1970, 45/27115
Int. Cl. B60r *18/00*; G08b *23/00*
U.S. Cl. 340—244 A **6 Claims**

A liquid-level drop alarming system is provided, which comprises a sensor for sensing the level of a liquid stored in a reservoir, a drive signal generator for generating a drive signal in accordance with the output from the sensor and an alarm means for producing an alarm signal in accordance with the drive signal. The drive signal generator is adapted to be inoperative or disabled when the liquid is localized with the reservoir inclined from the horizontal plane or subjected to vibrations, acceleration or deceleration.

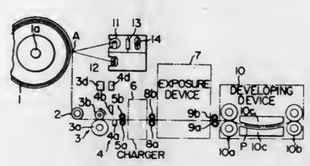
3,675,228

DEVICE FOR ELECTROPHOTOCOPYING MACHINES FOR DETECTING WHETHER A USABLE LENGTH OF COPY PAPER IS LEFT ON A ROLL THEREOF

Minoru Iwamoto, Tokyo, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan

Filed Dec. 16, 1970, Ser. No. 98,586
Int. Cl. G08b *21/00*
U.S. Cl. 340—259 **5 Claims**

A detection device wherein the copy paper unrolled from a roll of copy paper loaded in the electrophotocopying machine is illuminated at a predetermined location so that light reflected by or transmitted through the copy paper may be incident upon a photoelectric element whose output varies depending upon whether the copy paper is present or not at the predetermined location. Switching means is provided which is actuated by the output of the photoelectric element in such a manner that when the last portion of the copy paper of the roll is sufficient in length to make one copy but not sufficient to



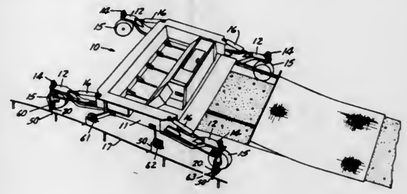
make two copies it will be transported through the machine and discharged therefrom without being cut into a predetermined size by the cutting means which is deactivated by the switching means and then the machine may be automatically stopped. Clogging of copy paper in the machine may be prevented and photocopying operation may be greatly facilitated.

3,675,229

SENSING CONTROL FOR A ROAD BUILDING MACHINE

Richard H. Rink, Huron, S. Dak., assignor to Huron Manufacturing Corporation, Huron, S. Dak.

Filed Aug. 26, 1970, Ser. No. 66,990
Int. Cl. G08b *21/00*
U.S. Cl. 340—267 R **5 Claims**



A sensing device and system for controlling the horizontal and/or vertical position of a steerable, vertically adjustable road building machine. The device including a movable dial with exposed contacts about its periphery which make connection with fixed contacts upon movement thereof in response to relative movement of the machine horizontally or vertically to a preset line to operate electrically a power means to restore the machine to a desired position. The system affords the operation of a signal if any abnormal movement is sensed as may happen if the preset line ends or breaks and the electrical switching is bypassed which would normally perform a control function to adjust for the relative movement.

3,675,230

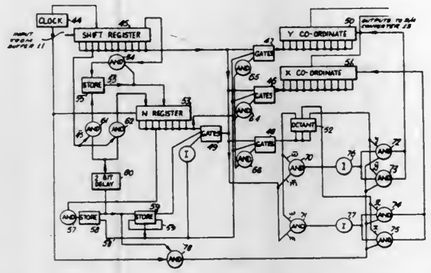
APPARATUS FOR DECODING GRAPHIC-DISPLAY INFORMATION

Michael Lloyd Victor Pitteway, Knole Hill, England, assignor to National Research Development Corporation, London, England

Filed July 28, 1969, Ser. No. 845,394
Claims priority, application Great Britain, July 29, 1968, 36,172/68
Int. Cl. G06f *3/14*
U.S. Cl. 340—324 A **7 Claims**

Apparatus is described for decoding information specifying a display for display means, such as a cathode-ray tube or an

incremental plotter. The information is received in a form which specifies a number of curves making up the display in a small number of "bits". Each curve is specified by the origin of the curve, one of a number of sectors of the display area in which the curve falls each sector bounded by straight lines



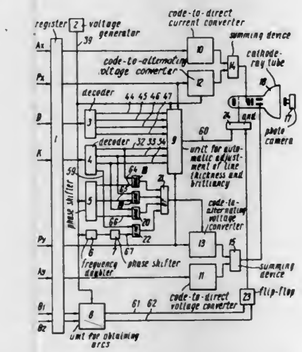
radiating from the origin point of the curve, the direction of a series of elemental lines each connected the proceeding and making up the curve, and the number of such lines in the curve. The apparatus decodes this information, using logic circuits, to provide a signal suitable for the display means.

3,675,231

AUTOMATIC DEVICE FOR MAKING DRAWINGS

Marlen Solomonovich Bezrodny, Pavlova Pole, 5 Mikroraion, 76, kv. 43, Kharkov, U.S.S.R.

Filed Nov. 7, 1968, Ser. No. 774,132
Int. Cl. G06f *3/14*
U.S. Cl. 340—324 A **8 Claims**



An automatic drawing device wherein use is made of codes set by digital computer, the codes describing the position of a line on the drawing, length of projection and the configuration of the lines.

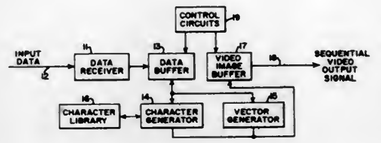
3,675,232

VIDEO GENERATOR FOR DATA DISPLAY

Frederick D. Strout, Phoenix, Ariz., assignor to General Electric Company

Filed May 21, 1969, Ser. No. 826,332
Int. Cl. G06f *3/14*
U.S. Cl. 340—324 A **9 Claims**

Video generator circuitry is disclosed for converting randomly occurring input data information into a time-sequential digital video display output signal. The circuits include a video image buffer of relatively small storage capacity which converts random video signals into a sequential video output signal suitable for displaying the data (such as numerals, letters, vectors, pictures, or special characters) on a scanned-



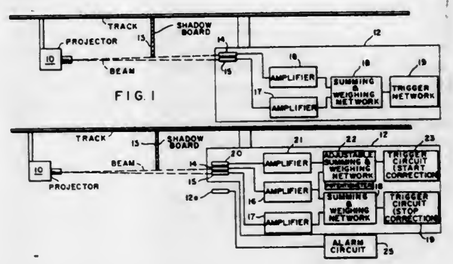
raster cathode-ray tube or other display device. The aforesaid random video signals are produced by means including video pattern generators and a data buffer having a thread address means for sorting the randomly provided input data into proper groupings for writing information into the video image buffer.

3,675,233

LIGHT REFERENCE SYSTEM FOR RAILROAD TRACK SURVEYING

Odon Steven Benczics, 4917 Coronation Ave., Montreal, Quebec, Canada, and Helmut Rolf Erich Von Beckmann, 189 Castle Road, Columbia, S.C.

Filed Sept. 5, 1969, Ser. No. 855,591
Int. Cl. G08b *13/00*
U.S. Cl. 340—258 B **5 Claims**

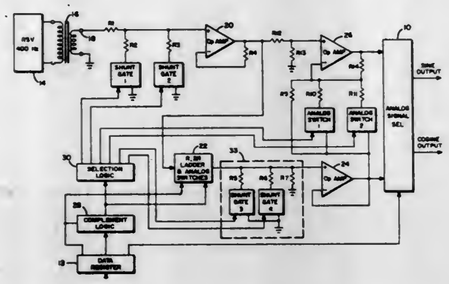


This invention relates to reference systems of the type used for surveying railroad track in which a light beam transmitter, a beam receiver spaced therefrom and a railroad condition sensor having a single edged shadow board is located therebetween. The invention contemplates positioning at least two photo-cells in the receiver physically closely spaced apart in the direction of shadow board motion. The outputs from the photo-electric cells are electrically connected in a differential configuration so that a command signal is generated to stop shadow board movement into the transmitted beam when the shadow board reaches a datum position at which point the distribution of the transmitted light on the photo-cells will have achieved a predetermined difference. In one aspect of the invention a deadband producing photo-cell is provided in the receiver and located physically closely spaced apart from the other two photo-cells in the direction of the shadow board motion and inwardly of the edge thereof when it is in datum position. The deadband producing photo-cell is electrically connected to generate a command signal to commence shadow board movement into the beam when the deadband producing photo-electric cell is exposed by a predetermined amount to the transmitted beam.

3,675,234
DIGITAL-TO-SYNCHRO/RESOLVER CONVERTER

Louis C. Metz, St. Paul, Minn., assignor to Sperry Rand Corporation, New York, N.Y.

Filed Feb. 11, 1971, Ser. No. 114,444
Int. Cl. H03k *13/04*
U.S. Cl. 340—347 DA 9 Claims

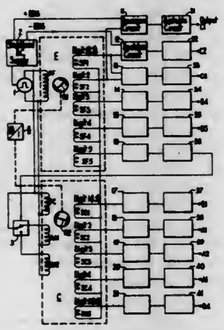


A digital-data to shaft-angle converter that compensates for the non-linear relationship between a 12-bit data word θ_{12}, representing the desired shaft angle, and its corresponding trigonometric sine and cosine functions as represented by analog voltages. Basically the invention constructs, by empirical means and using linear voltage signals, first and second voltage segments whose amplitudes closely approximate sine and cosine functions, respectively, over the 0° – 45° range. The invention is also capable of constructing by empirical means, third and fourth signals which are mirror images of the first and second signals described above. By proper selection of two of the four possible signals described above and assigning a proper polarity thereto, all in accordance with a truth table, sine and cosine analog voltage signals are generated which can be employed to drive the synchro shaft to any desired angle angular position from 0° to 360°. Both the generation of the 0 – 45 sine and cosine voltage segments (and their mirror images) and the selecting of the proper ones of such generated voltage segments are effected by logic which is directly under the control of the data word θ_{12}.

3,675,235
READ-OUT CIRCUITS FOR ELECTRICAL POSITION-ENCODERS

Cecil John Wayman, Stanmore, England, assignor to The General Electric Company Limited, London, England

Filed Aug. 11, 1970, Ser. No. 62,847
Int. Cl. G08c *9/00*
U.S. Cl. 340—347 P 7 Claims

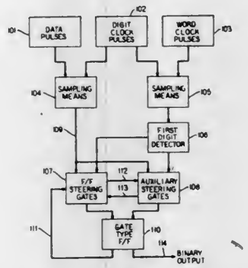


A read-out circuit for a digital position encoder which reads directly in, say, a reflected binary code, and which is required to read in, say, a decimalized binary code. The direct read-out signals are biased in various ways e.g. by adding a fraction of one to another, and by simple d.c. biasing, so as to produce final output signals which have a basic digital cycle of other than the four-unit cycle of a reflected binary code, e.g. a 10-unit cycle.

3,675,236
SERIAL GRAY-TO-BINARY TRANSLATOR WITH CLOCK TRANSITION TIMING

Stephen Davis Sheap, Matawan, N.J., assignor to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.

Filed Sept. 2, 1970, Ser. No. 68,904
Int. Cl. H03k *13/24*
U.S. Cl. 340—347 DD 6 Claims

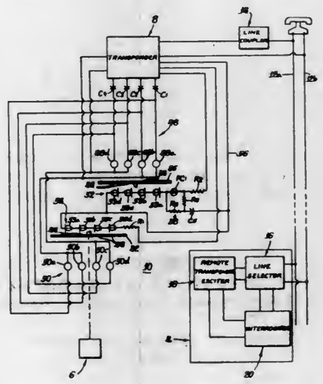


A Gray-to-Binary code converter relies on clock transition sampling, rather than requiring coincidence of pulse width and pulse phase. Half-period timing signals are complemented and used for precise time delays. Discrete conversion control apparatus under control of the timing signals presets conversion apparatus for translation in accordance with a multi-equation conversion algorithm.

3,675,237
CODE TRANSMITTER HAVING INTERMITTENT DRIVE MECHANISM

William J. Weinfurt, Elm Grove, Wis., assignor to McGraw-Edison Company, Elgin, Ill.

Filed March 2, 1970, Ser. No. 15,362
Int. Cl. H04g *9/10*
U.S. Cl. 340—357 R 15 Claims

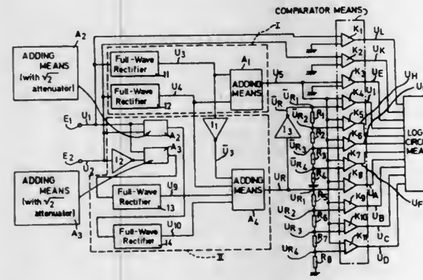


An intermittent drive mechanism for an encoding device is driven by a continuously rotating drive source. First and second Geneva drive discs are each rotated through a sequence of rotated rapid incremental displacements to a plurality of positions each of which are utilized for providing coded information. The first Geneva drive disc is rotated by a drive means which is moved to a high energy level condition by the drive source and permitted to rapidly discharge. A second drive means is connected to the first disc and is moved to a high energy level condition by rotation of the first disc and permitted to discharge to rapidly drive the second disc.

3,675,238
INTERPOLATION MEANS FOR DISPLACEMENT MEASUREMENT

Karlheinz Butscher, Langenargen/Bodensee, Germany, assignor to Carl Zeiss-Stiftung, Wuerttemberg, Germany

Filed Sept. 3, 1970, Ser. No. 69,264
Claims priority, application Germany, June 9, 1969, P 19 45 206.3
Int. Cl. H03k *13/14*
U.S. Cl. 340—347 SY 11 Claims



The invention contemplates employment of plural preset comparators, such as flip-flop set to trigger at different reference-voltage levels, to accurately identify and quantize discrete voltage levels in the electric-signal wave form by which displacement increments are tracked, or picked off, for measurement. The fast change of state in each of the elements of such a device makes possible the prompt, accurate and unambiguous identification of each particular displacement increment. The described device is inherently applicable to digital encoding for remote transmission, and several embodiments are described.

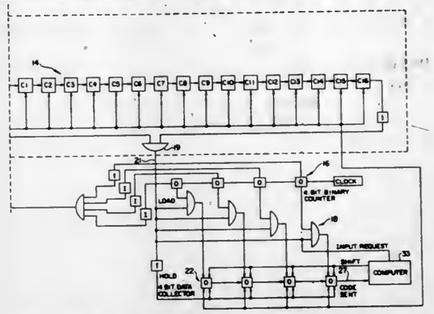
3,675,239
UNLIMITED ROLL KEYBOARD CIRCUIT

Howard T. Ackerman, Kettering, and Clarence W. Kessler, Dayton, both of Ohio, assignors to The National Cash Register Company, Dayton, Ohio

Filed Sept. 14, 1970, Ser. No. 71,972
Int. Cl. G08c *15/12*
U.S. Cl. 340—365 7 Claims

The present invention relates to a full-roll keyboard circuit which provides unlimited roll of the keys within the full-roll keyboard circuit. The keys are connected individually to corresponding cells of a first shift register. Data is entered parallelly during a first strobe pulse from the depressed keys into the first shift register. Thereafter during a first 16 bit cycle, bits are shifted serially out of the first shift register into a compare circuit and also into a second shift register. A 4 bit polynomial counter counts the codes of the 16 keys during the 16 bit cycle. The bits in the first shift register are shifted into the compare circuit throughout the first 16 bit cycle to cause loading of the corresponding binary information from the polynomial counter into a key code collector.

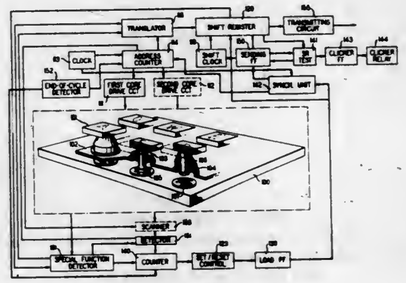
New bits are then read from the keyboard into the first shift register during a second strobe pulse. During a second 16 bit cycle, after the second strobe pulse, the bits in the first shift register are shifted into the second shift register and to the compare circuit. Bits from the first shift register and bits from the second shift register are individually compared during the second 16 bit cycle by the compare circuit. If a one bit simultaneously comes from the first shift register and a one bit comes from the second shift register during the second 16 bit cycle, this indicates that a certain key within the keyboard was depressed both during the first strobe pulse and also during the second strobe pulse. The binary information from the polynomial counter for that key will not be loaded again into the key code collector at this time.



3,675,240
KEYBOARD ENCODING ARRANGEMENT

Robert V. Anderson, Westfield, and David W. Hagelbarger, Morris Township, Morris County, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

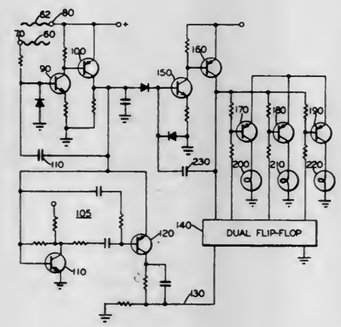
Filed Dec. 23, 1969, Ser. No. 887,655
Int. Cl. G08c *1/00*
U.S. Cl. 340—365 5 Claims



A magnetic keyboard and associated encoding circuitry are described. A permanent magnet on each of the keys of the keyboard alters the switching characteristics of a ferrite core associated with that key when the key is depressed. Logic circuitry is provided which determines when the addresses of depressed keys are to be entered in an output shift register and which addresses are to be transmitted. A unique lockout fea-

ture prevents both the transmission of address information from the output shift register if more than one key is depressed and the inadvertent retransmission of the address of a core already transmitted.

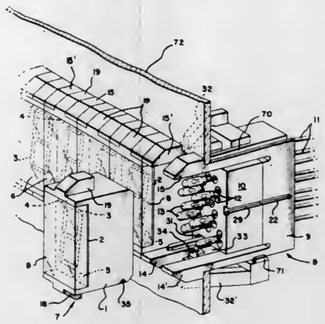
3,675,241
CRYSTAL BALL DISPLAY SYSTEM HAVING TOUCH CONTROLLED LIGHTS
David Glaser, 256 Greenbrook Road R. D. 2, Bound Brook, N.J.
Filed Oct. 29, 1970, Ser. No. 85,124
Int. Cl. G08b *5/36, 5/38*
U.S. Cl. 340—366 1 Claim



The display system includes a crystal ball having an operating circuit coupled thereto which includes electrode means in operative relation with the crystal ball and adapted to be energized by proximity or contact with the hands of an operator, whereby the associated circuit is energized and provides a desired response including, as an example, sequencing of lights. The circuit includes an amplifier operated by the electrode means connected (1) to means for energizing the lights and (2) to a multivibrator and flip-flop for sequencing the lights. The circuit includes a capacitor for storing charge and holding on one light after the operator removes his hands from the apparatus.

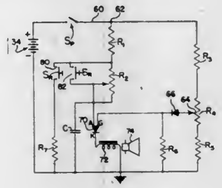
3,675,242
ALPHA-NUMERIC DISPLAY
Kemper Martel Hammell, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.
Filed Feb. 25, 1970, Ser. No. 14,137
Int. Cl. G09f *9/30*
U.S. Cl. 340—381 6 Claims

The disclosure relates to an alpha-numeric light display capable of providing substantially uniform illumination over the entire character being illuminated and utilizing relatively low power requirement. This is accomplished, in part, by providing a reflector behind the lamp filament for each character element, the reflector being arranged to transmit most of the light reflected therefrom to the outer regions of the character element. The disclosure also includes provisions for cascading a plurality of the alpha-numeric light display elements to provide a snap-in, self supporting, heat dissipating multi alpha-numeric display.



3,675,243
ELECTRONIC DRIP TIMING DEVICE
John F. Landuyt, Des Plaines, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.
Filed Jan. 22, 1970, Ser. No. 4,967
Int. Cl. G08b *3/00*; H03k *3/31*
U.S. Cl. 340—384 E 8 Claims

Electronic timing device for timing drips in intravenous feeding and similar systems can be adjusted to provide an audible or visible signal in accordance with any desired drip rate between about 4 and 300 drips per minute. The device overcomes the inherent deficiency of conventional electronic metronomes which are unsuitable for adjusting drip rates since they have a first pulse period different from the remainder. The first pulse period is of the exact length of the remaining pulse periods due to the presence of a circuit which can be maintained in a standby condition with its capacitor partially charged. This permits the pulse producing circuit to be actuated simultaneously with the visual observance by an operator of a drip passing a predetermined point. If the actual drop rate is different from the desired rate, the operator adjusts it and again actuates the timing device. This operation is repeated until the timing rate and the drip rate are synchronized. The device is battery operated and sufficiently small as to be easily carried around the neck or in the pocket of the person using it.



ERRATUM
For Class 343—225 see:
Patent No. 3,675,226

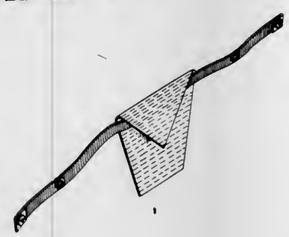
DESIGNS

JULY 4, 1972

224,077
EXPANDED CEREAL FOOD PRODUCT
Leroy F. Duvall, Barrington, and Charles D. Stone, North Barrington, Ill., assignors to The Quaker Oats Company
Filed Dec. 8, 1970, Ser. No. 26,352
Term of patent 14 years
Int. Cl. D1—*01*
U.S. Cl. D1—1



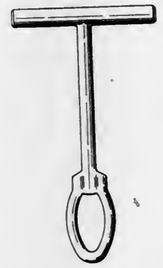
224,078
PURSE FOR ATTACHMENT TO A BRA
Daniel Wise, Reading, Pa., assignor to Healthwear Underwear, Inc., Wernersville, Pa.
Filed Nov. 6, 1970, Ser. No. 25,859
Term of patent 14 years
Int. Cl. D2—*07*
U.S. Cl. D2—400



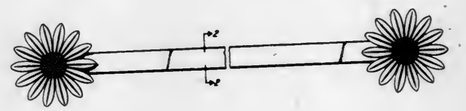
224,079
HIGH CHAIR
Charles L. Voytko, Johnstown, Pa., assignor to Hedstrom Company, Bedford, Pa.
Filed Feb. 16, 1971, Ser. No. 115,907
Term of patent 7 years
Int. Cl. D6—*02*
U.S. Cl. D6—8



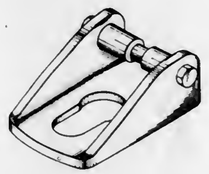
224,080
PULLING TOOL OR SIMILAR ARTICLE
Bruce F. Lawson, 2028 Angling Road, Corfu, N.Y. 14036
Filed Dec. 4, 1970, Ser. No. 26,281
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—14



224,081
DRAPERY ROD
David M. Hadlow, Kensington, Conn., assignor to The Stanley Works, New Britain, Conn.
Filed Jan. 22, 1969, Ser. No. 15,456
Term of patent 14 years
Int. Cl. D8—*09*
U.S. Cl. D8—208



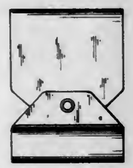
224,082
TIE-DOWN DEVICE
Frank Kolstee, Sr., 1819 S. Central, Kent, Wash. 98031
Filed Oct. 8, 1970, Ser. No. 25,391
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—229



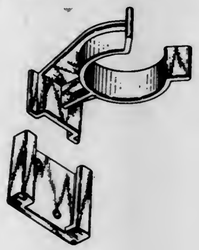
224,083
HOLDDOWN FOR ANCHORING WALL STUDS IN FRAME CONSTRUCTION TO BUILDING FOUNDATIONS
Tyrell T. Gilb, Berkeley, Calif., assignor to Simpson Company
Filed Oct. 30, 1970, Ser. No. 25,724
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—233



224,084
GUN SUPPORT
James F. Gaffney, 328 SE. 15th St., Pryor, Okla. 74361
Filed Nov. 18, 1970, Ser. No. 26,051
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—235



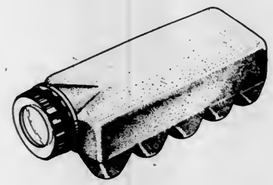
224,085
LIGHT SOCKET HOLDER
Angelo C. Cuva, 1024 Sumac Drive, Sunnyvale, Calif. 94086
Filed Sept. 29, 1969, Ser. No. 19,337
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—259



224,086
PIN
Sheldon Willis, 1230 NW. 187th St., Miami, Fla. 33169
Filed Apr. 9, 1971, Ser. No. 132,928
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—266



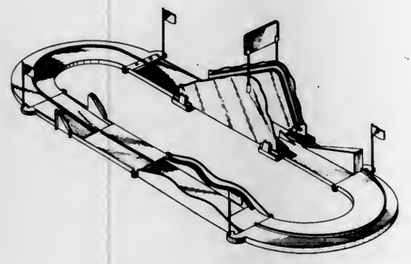
224,087
COMBINED BOTTLE AND ICE TRAY
Rikio Matsumoto, Kamakura, Japan, assignor to Asahi Engineering Co., Ltd., Sonyo Kako Co., Ltd., and Hitachi Ltd., Tokyo, Japan
Filed Oct. 30, 1970, Ser. No. 25,738
Term of patent 7 years
Int. Cl. D9—*01*
U.S. Cl. D9—10



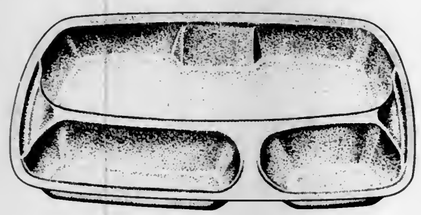
224,088
BOTTLE OR SIMILAR ARTICLE
Charles K. Huthsing, Jr., Libertyville, Ill.; N. Evelyn Huthsing, executor of said Charles K. Huthsing, Jr., deceased
Filed Sept. 29, 1970, Ser. No. 25,255
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—40



224,089
TOY TRACKWAY
Kazutaka Takeuchi, Narashino, Japan, assignor to Tomy Kogyo Co., Ltd., Tokyo, Japan
Filed Mar. 8, 1971, Ser. No. 122,290
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15



224,090
COMPARTMENTED COVER FOR A TRAY
Steve Cyr and Mark Whelan, Chippewa Falls, Wis., assignors to Standard Oil Company, Chicago, Ill.
Filed July 28, 1970, Ser. No. 24,185
Term of patent 14 years
Int. Cl. D9—*07*
U.S. Cl. D9—254



224,091
DISPENSING TOP FOR A CONTAINER
Peter Swartzbaugh, Toledo, Ohio, assignor to Abbott Laboratories, North Chicago, Ill.
Filed Nov. 10, 1970, Ser. No. 25,923
Term of patent 14 years
Int. Cl. D9—*07*
U.S. Cl. D9—257



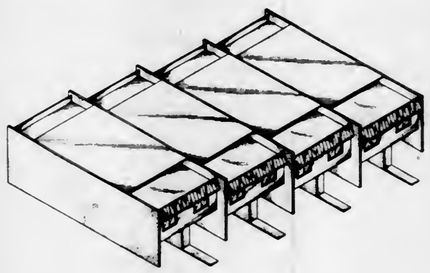
224,092
DISPENSING CLOSURE
Roy B. Steidley, Costa Mesa, Calif., assignor to RDW Industries, Inc., Santa Ana, Calif.
Filed Jan. 20, 1971, Ser. No. 108,244
Term of patent 14 years
Int. Cl. D9—*07*
U.S. Cl. D9—258



224,093
CARRYING HANDLE FOR A CONTAINER OR THE LIKE
Elmer W. Griese, Jr., Chicago, Ill., assignor to National Can Corporation, Chicago, Ill.
Filed Apr. 20, 1970, Ser. No. 22,508
Term of patent 14 years
Int. Cl. D9—*99*
U.S. Cl. D9—291



224,094
MULTIPLE DWELLING STRUCTURE
Hue R. Lee, 1353 W. Nancy Creek Drive NE., Atlanta, Ga. 30319
Filed Oct. 14, 1970, Ser. No. 25,480
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1



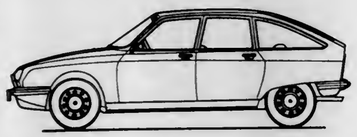
224,095
COMPONENT FOR GRILL WORKS, RAILINGS, COLUMNS AND THE LIKE
Ellis Deloy Larson, 225 E. State Road, Pleasant Grove, Utah 84062
Filed Mar. 1, 1971, Ser. No. 120,000
Term of patent 14 years
Int. Cl. D25—*02*
U.S. Cl. D13—1



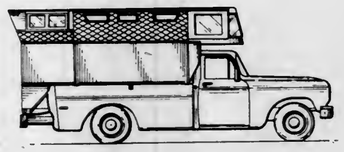
224,096
CART
Robert L. Propst, Ann Arbor, and James O. Kelley, Saline, Mich., assignors to Herman Miller Inc., Zeeland, Mich.
Filed Oct. 26, 1970, Ser. No. 25,631
Term of patent 14 years
Int. Cl. D12—*02*
U.S. Cl. D14—3



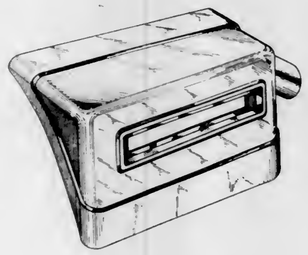
224,097
AUTOMOBILE
Jean Cadiou, Saint Cloud, France, assignor to Societe Anonyme Automobiles Citroen, Paris, France
Filed Nov. 2, 1970, Ser. No. 25,777
Claims priority, application France May 6, 1970
Term of patent 14 years
Int. Cl. D12—*08*
U.S. Cl. D14—3



224,098
CAMPER
Jimmy W. Ammons, Box 175, Magnum, Okla. 73554
Filed Nov. 13, 1970, Ser. No. 25,964
Term of patent 14 years
Int. Cl. D12—*10*
U.S. Cl. D14—3



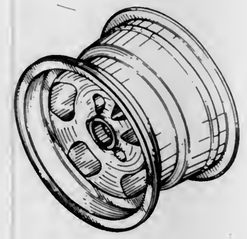
224,099
COMBINED MUD FLAP SUPPORT AND TAIL LIGHT HOLDER FOR TRUCKS
Robert J. Gaskins, 2777 Marina Blvd., San Leandro, Calif. 94577
Filed Dec. 7, 1970, Ser. No. 26,327
Term of patent 7 years
Int. Cl. D12—*16*
U.S. Cl. D14—6



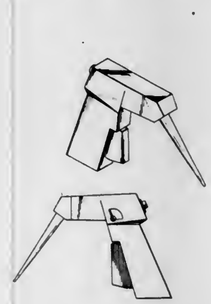
224,100
STEERING WHEEL RIM
Robert T. Mora, 1186 Emerson Ave., Campbell, Calif. 95008
Filed July 10, 1970, Ser. No. 24,240
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D14—30



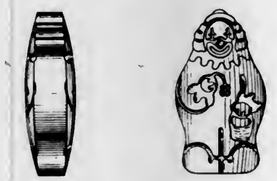
224,101
WHEEL
Roy E. Richter, 9835 Wileyburke Ave., Downey, Calif. 90240
Filed Sept. 21, 1970, Ser. No. 25,084
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D14—30



224,102
AUTOMATIC PIPETTE
Earl F. Raczak, Southampton, Pa., assignor to Bio/Data Corporation, Hatboro, Pa.
Filed Jan. 28, 1970, Ser. No. 21,222
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D16—2



224,103
VITAMIN TABLET OR SIMILAR ARTICLE
Robert R. Wiethop, Evansville, Ind., assignor to Mead Johnson and Company, Evansville, Ind.
Filed Apr. 2, 1971, Ser. No. 130,875
Term of patent 14 years
Int. Cl. D28—*01*; D1—*02*
U.S. Cl. D16—3



224,104
FISHING LURE
Donald K. Smith, 727 W. Outer Drive, Oak Ridge, Tenn. 37830
Filed Dec. 7, 1970, Ser. No. 26,313
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—28



224,105
WATER FILTER OR SIMILAR ARTICLE
Michael A. Turturro, 2020 Idaho Ave., Santa Monica, Calif. 90403
Filed Dec. 11, 1970, Ser. No. 26,407
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—4

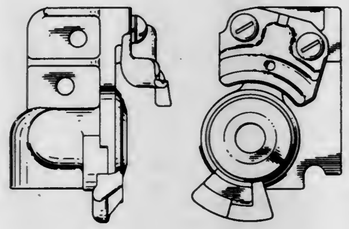


224,106
PRESSURE REGULATOR
Frank Baranowski, Jr., 7 Pine St., Lynnfield Center, Mass. 01940
Filed Dec. 15, 1970, Ser. No. 26,501
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—21

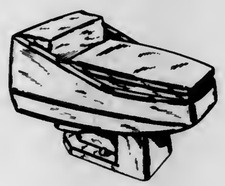




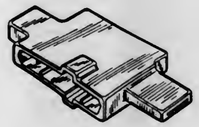
224,107
GLADHAND CONNECTOR
Victor Mastis, Hinsdale, Ill., assignor to The Berg Manufacturing Company, Des Plaines, Ill.
Filed July 28, 1970, Ser. No. 24,190
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—44



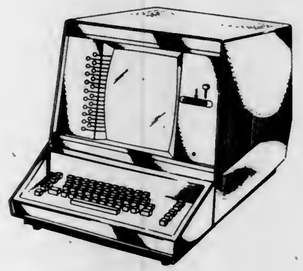
224,108
WATER CLOSET
Donald W. Doman, Janesville, Wis., assignor to Kohler Co., Kohler, Wis.
Filed Dec. 29, 1970, Ser. No. 26,687
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—65



224,109
CONNECTOR SOCKET
Corliss O. Burandt, Hopkins, Minn., assignor to Thexton Manufacturing Company, St. Louis Park, Minn.
Filed Oct. 13, 1970, Ser. No. 25,475
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—1



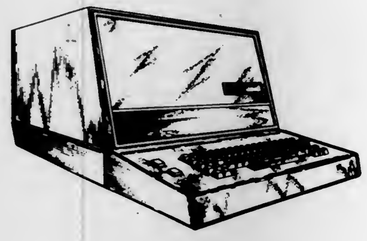
224,110
DATA DISPLAY CONSOLE
Richard F. Heimann, 179 Concord Road, Sudbury, Mass. 01776
Continuation-in-part of design application Ser. No. 21,170, Jan. 30, 1970. This application Dec. 2, 1970, Ser. No. 26,276
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5



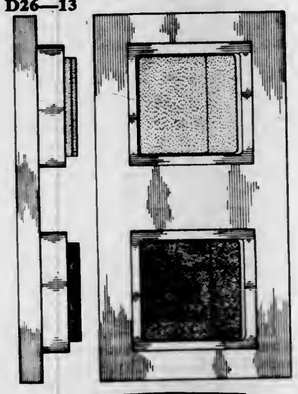
224,111
MULTIPLE GAS DISCHARGE DISPLAY DEVICE
Fred E. Mansur, Temperance, Mich., and Larry J. Lohmann, Gerald E. Wojcik, and Richard A. Martel, Toledo, Ohio, assignors to Owens-Illinois, Inc.
Filed Dec. 7, 1970, Ser. No. 26,326
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5



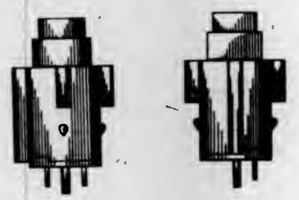
224,112
COMBINED DATA TERMINAL AND HARD COPY PRINTER
Carl J. Clement, Mountain View, Calif., assignor to Pholophysics, Inc., Mountain View, Calif.
Filed Jan. 22, 1971, Ser. No. 109,086
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5



224,113
FUSE PANEL
William L. Brown, Lake Zurich, Ill., assignor to Littelfuse, Inc., Des Plaines, Ill.
Filed Aug. 26, 1970, Ser. No. 24,695
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—13



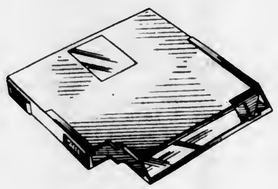
224,114
PUSH-BUTTON SWITCH
Edward G. Mueller, Kimball, Nebr., assignor to George Risk Industries, Inc., Kimball, Nebr.
Filed Aug. 26, 1970, Ser. No. 24,714
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—13



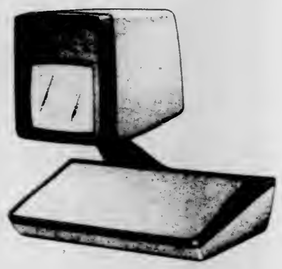
224,115
CONTROL STATION FOR PNEUMATIC TUBE SYSTEM
Herbert Kalendar, Hallandale, Fla., assignor to Advance Metal Products, Inc., Miami, Fla.
Filed Sept. 10, 1970, Ser. No. 24,910
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—13



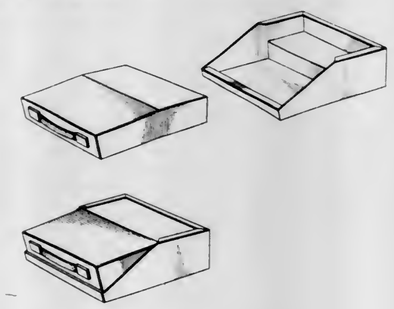
224,116
CALCULATOR TAPE CARTRIDGE
Shiro Anzai and Minoru Murata, Kanagawa-ken, Tatsuo Nishikawa, Tokyo, and Takamitsu Hanakata, Kanagawa-ken, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Oct. 12, 1970, Ser. No. 25,432
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—14



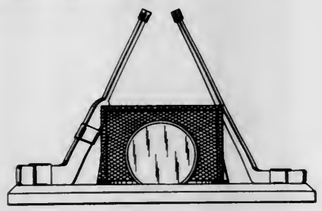
224,117
VIDEOTELEPHONE TRANSCEIVER
Donald Michael Genaro, Haworth, and Thomas Joseph Kelly, Middletown, N.J., John Neil McGarvey, Drexel Hill, Pa., and Rembert Ryan Stokes, Middletown, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Jan. 7, 1971, Ser. No. 104,830
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14



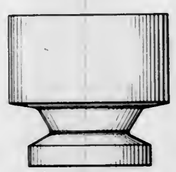
224,118
COMBINED BATTERY PACK AND CHARGER UNIT
George R. Hartz, Canoga Park, Calif., assignor to Berkey/Colortran Mfg., Inc., Burbank, Calif.
Filed Oct. 12, 1970, Ser. No. 25,453
Term of patent 14 years
Int. Cl. D13—*02*
U.S. Cl. D26—15



224,119
HOCKEY SOUVENIR
William M. Scire, 10 S. Bedford St., Woburn, Mass. 01801
Filed Aug. 5, 1970, Ser. No. 24,320
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D29—28



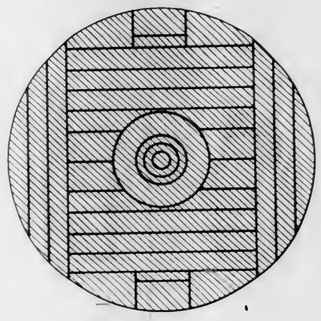
224,120
FLORAL VASE OR THE LIKE
Edwin K. Kaelke, Dundee, Ill., assignor to The Haeger Potteries, Inc., Dundee, Ill.
Filed Dec. 28, 1970, Ser. No. 26,670
Term of patent 7 years
Int. Cl. D11—*02*
U.S. Cl. D29—28



224,121
SKI DOLL
Martha L. H. Balerl, Box 164, Hayden, Colo. 81639
Filed Mar. 12, 1971, Ser. No. 123,930
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—4



224,122
GAME BOARD
Raymond F. Tremel, Grandview, and Thomas C. Christian, Kansas City, Mo., assignors to Ar-Ka-Mo Sporting Goods, Inc., Kansas City, Mo.
Filed Dec. 21, 1970, Ser. No. 26,595
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5



224,123
TWIRLING BATON
Donald L. Sartell, 328 Seminole Road, Janesville, Wis. 53545
Filed Jan. 20, 1971, Ser. No. 108,245
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5



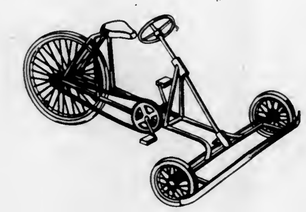
224,124
CHILD'S RIDING VEHICLE
Howard J. Morrison, Highland Park, and Marvin I. Glass, Chicago, Ill., assignors to Marvin Glass & Associates, Chicago, Ill.
Filed Jan. 29, 1971, Ser. No. 111,175
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15



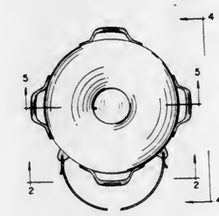
224,125
SKI SCOOTER
Theodore D. Boganowski, 3059 S. 48th Ave., Omaha, Nebr. 68106
Filed Feb. 8, 1971, Ser. No. 113,794
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D34—15



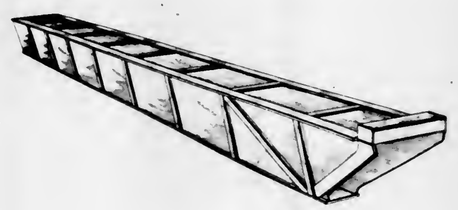
224,126
TRICYCLE
Peter Huley, 121 W. 13th St., North Vancouver, British Columbia, Canada
Filed Apr. 7, 1970, Ser. No. 22,301
Term of patent 7 years
Int. Cl. D12—*11*
U.S. Cl. D34—15



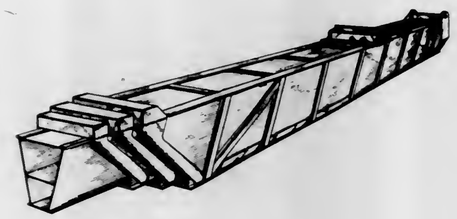
224,127
INFLATABLE SLED
Randolph L. Frank, 34808 Farragut, Westland, Mich. 48185
Filed Dec. 11, 1970, Ser. No. 26,424
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—15



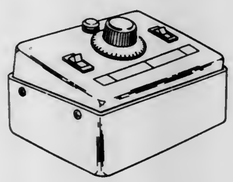
224,128
BOOM SECTION FOR A TELESCOPIC CRANE BOOM
Russell L. Sterner, Greencastle, Pa., assignor to Walter Kidde & Company, Inc., Clifton, N.J.
Filed Sept. 28, 1970, Ser. No. 25,215
Term of patent 14 years
Int. Cl. D12—*05*; D15—*04*
U.S. Cl. D41—1



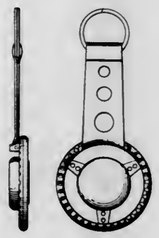
224,129
TELESCOPIC CRANE BOOM
Russell L. Sterner, Greencastle, Pa., assignor to Walter Kidde & Company, Inc., Clifton, N.J.
Filed Sept. 28, 1970, Ser. No. 25,216
Term of patent 14 years
Int. Cl. D12—*05*; D15—*04*
U.S. Cl. D41—1



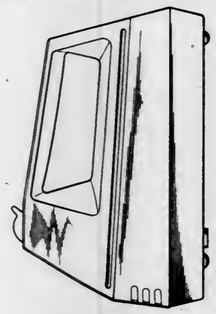
224,130
PHOTOGRAPHIC TIMER
Keith N. Swanson, 112 W. Cota St., Santa Barbara, Calif. 93101
Filed Aug. 31, 1970, Ser. No. 24,783
Term of patent 7 years
Int. Cl. D10—*03*
U.S. Cl. D42—7



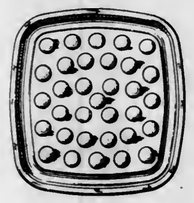
224,131
CASE FOR A PENDANT WATCH
Raymond Musy, La Chaux-de-Fonds, Switzerland, assignor to Accurist S.A., La Chaux-de-Fonds, Switzerland
Filed Oct. 19, 1970, Ser. No. 25,542
Claims priority, application Switzerland June 11, 1970
Term of patent 14 years
Int. Cl. D10—*02*
U.S. Cl. D42—8



224,132
FOOD MIXER
Yasuaki Yamamoto, Tokyo, Japan, assignor to Janone Sewing Machine Co., Ltd., Tokyo, Japan
Filed June 26, 1970, Ser. No. 23,683
Claims priority, application Japan May 1, 1970
Term of patent 14 years
Int. Cl. D7—*04*
U.S. Cl. D44—1



224,133
SINK PAD HOLDER OR THE LIKE
James B. Swett, Barrington, R.I., assignor to Dart Industries Inc., Los Angeles, Calif.
Filed Dec. 11, 1970, Ser. No. 26,413
Term of patent 14 years
Int. Cl. D7—*07*
U.S. Cl. D44—1



224,134
CANISTER
Charles H. Simpson, Phoenix, Ariz. (7029 E. Palm Lane, Scottsdale, Ariz. 85257)
Filed Nov. 18, 1970, Ser. No. 26,063
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D44—6



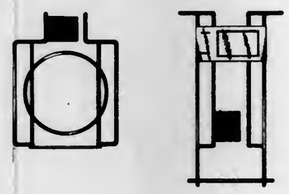
224,135
COVERED BOWL
Melvin Woodruff, Los Angeles, Calif., assignor to Watts Manufacturing Company, Compton, Calif.
Filed Oct. 16, 1970, Ser. No. 25,523
Term of patent 3½ years
Int. Cl. D7—*01*
U.S. Cl. D44—15



224,136
PLATE OR THE LIKE
Gregory Mirow, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.
Filed Dec. 4, 1970, Ser. No. 26,282
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D44—15



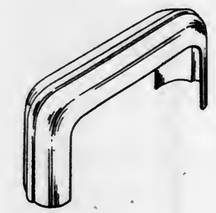
224,137
MILK CARTON HOLDER
Vincent B. Steffen, 321 E. Hamilton, New Hampton, Iowa 50659
Filed Oct. 26, 1970, Ser. No. 25,658
Term of patent 14 years
Int. Cl. D7—*999*
U.S. Cl. D44—21



224,138
MAT
Kenneth Mahler, 722 Carew Tower, Cincinnati, Ohio 45202
Filed June 7, 1971, Ser. No. 150,880
Term of patent 14 years
Int. Cl. D7—*99*
U.S. Cl. D44—31



224,139
TABLE LAMP
Luciano Annichini, Via Roma 9, Turate, Como, Italy
Filed Sept. 14, 1970, Ser. No. 24,983
Claims priority, application Italy Mar. 16, 1970
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D48—20



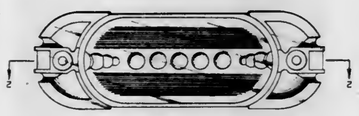
224,140
LAMP
Phillip Purer, Beverly Hills, Calif., assignor to Victory-Puretec, Inc., Culver City, Calif.
Filed Feb. 22, 1971, Ser. No. 117,878
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D48—20



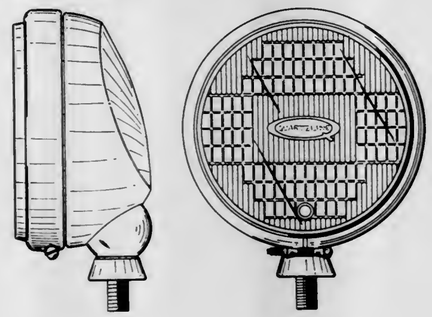
224,141
LAMP
Edward Sexton, Healdsburg, Calif., assignor to The Third Eye, Inc., New York, N.Y.
Filed Feb. 25, 1971, Ser. No. 119,083
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D48—20



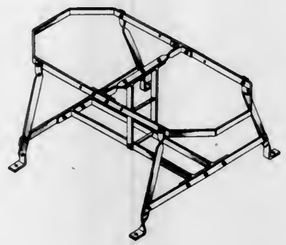
224,142
VEHICLE MARKER LIGHT LENS
George A. Knapp, Syracuse, N.Y., assignor to R. E. Dietz Company, Syracuse, N.Y.
Filed Nov. 2, 1970, Ser. No. 25,788
Term of patent 14 years
Int. Cl. D26—*06*
U.S. Cl. D48—32



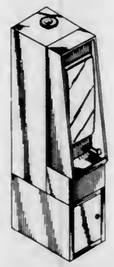
224,143
VEHICLE AUXILIARY LAMP
Douglas R. Cleminshaw and Robert G. Wells, Syracuse, N.Y., assignors to R. E. Dietz Company, Syracuse, N.Y.
Filed Sept. 15, 1970, Ser. No. 24,999
Term of patent 14 years
Int. Cl. D26—*06*
U.S. Cl. D48—32



224,144
REFUSE CAN STAND
Julian J. Acree, P.O. Box 668, Okmulgee, Okla. 74447
Filed Feb. 16, 1971, Ser. No. 115,930
Term of patent 14 years
Int. Cl. D7—*05*
U.S. Cl. D49—30



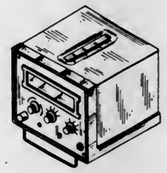
224,145
VENDING MACHINE
Cecil F. Ussery, Dallas, Tex., assignor to Ussery Industries, Inc., Dallas, Tex.
Filed Nov. 18, 1970, Ser. No. 26,053
Term of patent 14 years
Int. Cl. D20—*01*
U.S. Cl. D52—3



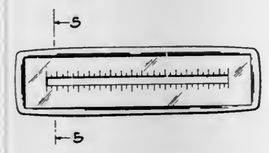
224,146
HEIGHT GAUGE
Nicholas M. Milan, 21664 Newcastle, Harper Woods, Mich. 48236
Filed Mar. 18, 1971, Ser. No. 125,924
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D52—6



224,147
DIGITAL THERMOMETER
M. Louis Miller, Westfield, N.J., assignor to Victory Engineering Corporation, Springfield, N.J.
Filed Mar. 9, 1970, Ser. No. 21,827
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D52—7



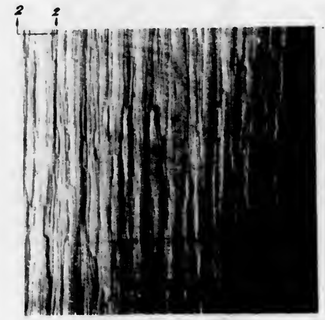
224,148
THERMOMETER
Russell A. Walter, 8890 Echo Lake Drive NE. 44484, and James C. Salsgiver, 1857 Bonnie Brae NE. 44483, both of Warren, Ohio
Filed Feb. 25, 1971, Ser. No. 119,085
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D52—7



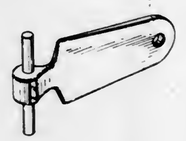
224,149
ARCHITECTURAL PANEL
Roland R. Sahm, Palos Verdes Estates, Calif., assignor to Elixir Industries, Gardena, Calif.
Filed Aug. 31, 1970, Ser. No. 24,788
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D54—2



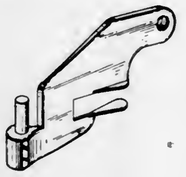
224,150
ARCHITECTURAL PANEL
Roland R. Sahm, Palos Verdes Estates, Calif., assignor to Elixir Industries, Gardena, Calif.
Filed Aug. 31, 1970, Ser. No. 24,789
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D54—2



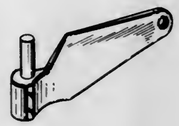
224,151
INSERT ROLL HOLD DOWN
James M. Lapeyre, 13 Richmond Place, New Orleans, La. 70115
Filed Oct. 21, 1970, Ser. No. 25,570
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D55—1



224,152
INSERT ROLL HOLD DOWN
James M. Lapeyre, 13 Richmond Place, New Orleans, La. 70115
Filed Oct. 20, 1970, Ser. No. 25,571
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D55—1



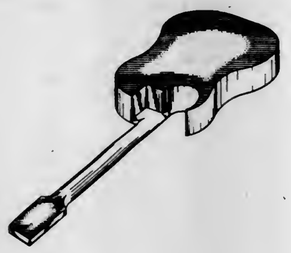
224,153
INSERT ROLL HOLD DOWN
James M. Lapeyre, 13 Richmond Place, New Orleans, La. 70115
Filed Oct. 21, 1970, Ser. No. 25,572
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D55—1



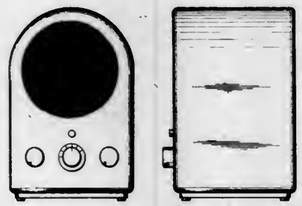
224,154
GUITAR
Clifford W. Gilbert, 910 Watson St., Flint, Mich. 48503
Filed Oct. 12, 1970, Ser. No. 25,447
Term of patent 14 years
Int. Cl. D17—*03*
U.S. Cl. D56—1



224,155
GUITAR BODY OR SIMILAR ARTICLE
Ralph G. Smith, 1420 Georgia St., Wichita, Kans. 67216
Filed Dec. 16, 1970, Ser. No. 26,526
Term of patent 14 years
Int. Cl. D17—*03*
U.S. Cl. D56—1



224,156
RADIO CABINET
George L. L. Hunter, 353 Kearny St., San Francisco, Calif. 94108
Filed Aug. 13, 1970, Ser. No. 24,464
Term of patent 3½ years
Int. Cl. D14—*03*
U.S. Cl. D56—4



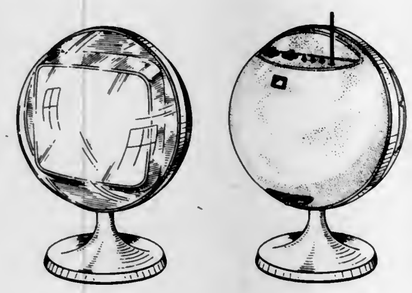
224,157
COMBINED RADIO-PHONOGRAPH AND TAPE PLAYER OR SIMILAR ARTICLE
Carl Yurdin, Port Washington, N.Y., assignor to Harman-Kardon, Incorporated, Plainview, N.Y.
Filed Mar. 3, 1971, Ser. No. 120,787
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D56—4



224,158
PHONOGRAPH
Carl Yurdin, Port Washington, N.Y., assignor to Harman-Kardon, Incorporated, Plainview, N.Y.
Filed Mar. 3, 1971, Ser. No. 120,786
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D56—4



224,159
TELEVISION RECEIVER
Donald S. Griffin, Kitchener, Ontario, Canada, assignor to Electrohome Limited, Kitchener, Ontario, Canada
Filed Apr. 7, 1971, Ser. No. 132,246
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D56—4



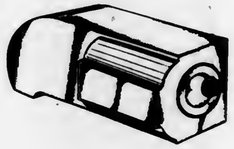
224,160
PAIR OF SPECTACLES
Jack Bloch, Leominster, Mass., assignor to Foster Grant Co., Inc., Leominster, Mass.
Filed Sept. 10, 1970, Ser. No. 24,927
Term of patent 14 years
Int. Cl. D16—*06*
U.S. Cl. D57—1



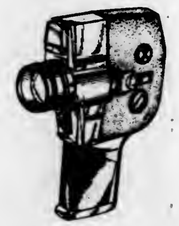
224,161
HOUSING FOR A COMBINED RADIO RECEIVER AND RECORD PLAYER OR SIMILAR ARTICLE
Harvey K. McQuarrie, Kitchener, Ontario, Canada, assignor to Electrohome Limited, Kitchener, Ontario, Canada
Original design application June 15, 1970, Ser. No. 23,476. Divided and this application May 27, 1971, Ser. No. 147,713
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D56—4



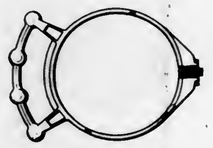
224,162
MOTION PICTURE CAMERA HOUSING
Walter H. Bach, 1771 N. Crescent Heights Blvd., Los Angeles, Calif. 90069
Filed Sept. 22, 1970, Ser. No. 25,135
Term of patent 14 years
Int. Cl. D16—*01*
U.S. Cl. D61—1



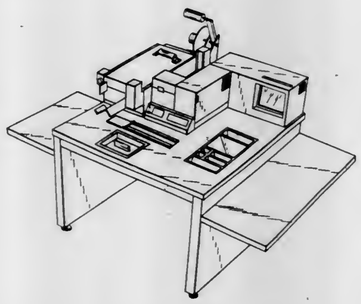
224,163
MOTION PICTURE CAMERA
Shigeo Mizukawa, % Fuji Shashin Koki Kabushiki Kaisha, 324, 1-chome, Uetake-cho, Ohmiya-shi, Saitama-ken, and Mashihiro Fukuda, % Fuji Shashin Film Kabushiki Kaisha, 26–30, 2-chome, Nishiazabu, Minato-ku, both of Tokyo, Japan
Filed Feb. 1, 1971, Ser. No. 111,778
Claims priority, application Japan Aug. 1, 1970
Term of patent 14 years
Int. Cl. D16—*01*
U.S. Cl. D61—1



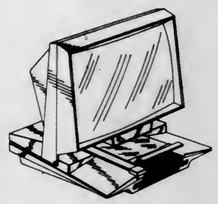
224,164
CAMERA FOCUSSING HANDLE
Kazuo Goto, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo-to, Japan
Filed Feb. 26, 1971, Ser. No. 119,453
Claims priority, application Japan Sept. 25, 1970
Term of patent 14 years
Int. Cl. D16—*05*
U.S. Cl. D61—1



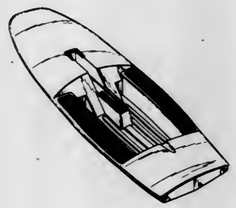
224,165
PHOTOFINISHING CONSOLE
Thomas C. Laughon, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Mar. 15, 1971, Ser. No. 124,642
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D61—1



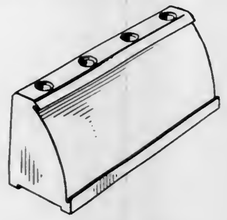
224,166
MICROFICHE VIEWER
Lewis E. Simpson, Inglewood, Calif., assignor to Dioptrix, Inc., La Jolla, Calif.
Filed Apr. 6, 1971, Ser. No. 131,853
Term of patent 14 years
Int. Cl. D16—*02*
U.S. Cl. D61—1



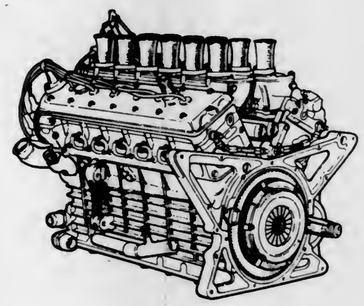
224,167
SAIL BOAT HULL
Douglas Ben Ian Proctor, "Fenmead," Brook Ave., Warsash, Southampton, England
Filed Oct. 12, 1970, Ser. No. 25,433
Claims priority, application Great Britain Apr. 10, 1970
Term of patent 14 years
Int. Cl. D12—*06*
U.S. Cl. D71—1



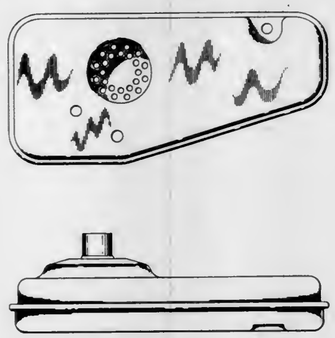
224,168
HOLDER FOR PENS AND PICTURES
Russell H. Hooker, Box 359, Southold, N.Y. 11971
Filed Oct. 14, 1970, Ser. No. 25,486
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D74—5



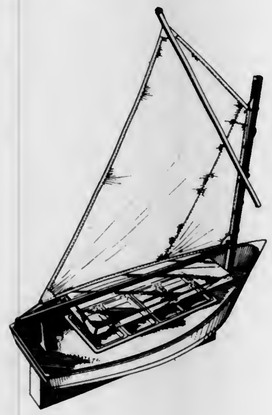
224,169
INTERNAL COMBUSTION ENGINE
Anthony Cyril Rudd, Norwich, England, assignor to Rubery, Owen & Company Limited, Darlaston, Wednesbury, Staffordshire, England
Filed Aug. 21, 1970, Ser. No. 24,637
Claims priority, application Great Britain Feb. 24, 1970
Term of patent 14 years
Int. Cl. D15—*01*
U.S. Cl. D77—1



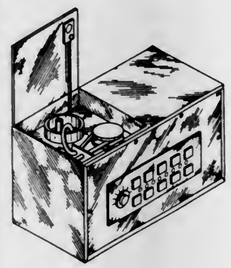
224,170
MUFFLER
Douglas Gordon, Hartford, Wis., assignor to Briggs & Stratton Corporation, Milwaukee, Wis.
Filed Apr. 19, 1971, Ser. No. 135,532
Term of patent 14 years
Int. Cl. D15—*01*
U.S. Cl. D77—1



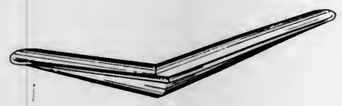
224,171
FOOD BAR
Glen C. Hancock, Sarasota, Fla., and W. Terry Young, Charlotte, N.C., assignors to Shoney's South, Inc., Memphis, Tenn.
Filed Oct. 6, 1970, Ser. No. 25,359
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. D80—2



224,172
DIALYZING UNIT
Clarence E. Schmidt, Santa Ana, Calif. (10510 Chapman Ave., Suite 12, Garden Grove, Calif. 92640)
Filed May 13, 1970, Ser. No. 22,962
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D83—1



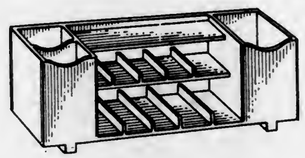
224,173
TONGUE DEPRESSOR
Arthur John Clifford, "Cheam," Clarkmont Road, Sassafras, Victoria, Australia
Filed Sept. 4, 1970, Ser. No. 24,844
Claims priority, application Australia Mar. 13, 1970
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D83—12



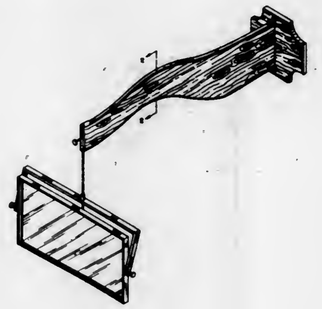
224,174
CIGARETTE HOLDER OR SIMILAR ARTICLE
William R. Holden, 2109 Pullman Lane, Redondo Beach, Calif. 90278
Filed Dec. 8, 1970, Ser. No. 26,354
Term of patent 14 years
Int. Cl. D27—*02*
U.S. Cl. D85—8



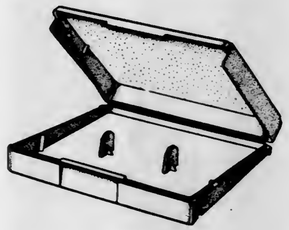
224,175
COSMETIC VANITY TRAY
Rebecca Mark, 195 Turn of River Road, Stamford, Conn. 06905
Filed Oct. 12, 1970, Ser. No. 25,439
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D86—10



224,176
COSMETIC MIRROR
Vivian S. Spencer, 130 S. Greenwich Road, Wichita, Kans. 67207
Filed Sept. 11, 1970, Ser. No. 24,946
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D86—10



224,177
TAPE CASSETTE BOX
Robert S. Wallace, 2706 S. Robertson Blvd., Los Angeles, Calif. 90034
Filed Apr. 10, 1970, Ser. No. 22,364
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D87—1



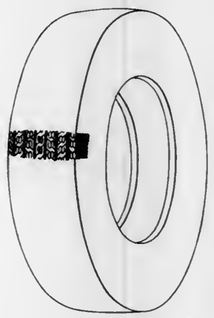
224,178
KNAPSACK
Helen H. Bryant, 2801 Gardner Park Drive, Gastonia, N.C. 28053
Continuation-in-part of design application Ser. No. 22,008, Mar. 23, 1970. This application Sept. 9, 1970, Ser. No. 24,894
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D87—1



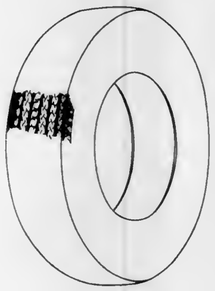
224,179
SHELLER FOR PEAS OR THE LIKE
George F. Taylor, P.O. Box 625, Moultrie, Ga. 31768
Filed Nov. 23, 1970, Ser. No. 26,113
Term of patent 14 years
Int. Cl. D7—*04*
U.S. Cl. D89—1



224,180
PNEUMATIC TIRE
Arthur C. Blankenship, Detroit, Mich., assignor to Uniroyal, Inc., New York, N.Y.
Filed May 3, 1971, Ser. No. 139,996
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D90—20



224,181
PNEUMATIC TIRE
William K. Pope, Detroit, Mich., assignor to Uniroyal, Inc., New York, N.Y.
Filed Nov. 25, 1970, Ser. No. 26,302
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D90—20



LIST OF PATENTEES

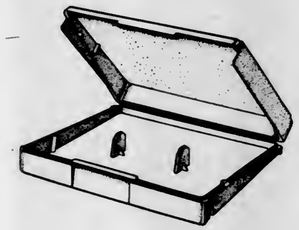
TO WHOM

PATENTS WERE ISSUED ON THE 4TH DAY OF JULY, 1972

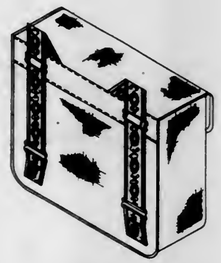
NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

AB Billingsfors-Langed: *See*—
Persson, Leif R., 3,674,594.
Abbott Laboratories: *See*—
Kurath, Paul, 3,674,773.
Abbott, Terence Arnold: *See*—
Shephard, Robert Basil; Clachan, Margaret Loudon; Kennedy, David Rankine; and Abbott, Terence Arnold, 3,674,531.
Abele, Manlio G., to General Applied Science Laboratories, Inc. Microwave repeater. 3,675,128, Cl. 325-1.000.
Ablad, Bengt Arne: *See*—
Brandstrom, Arne Elof; Carlsson, Per Arvid Emil; Carlsson, Stig Ake Ingemar; Corrodi, Hans Rudolf; Ek, Lars; Lamm, Bo Robert; and Ablad, Bengt Arne, 3,674,840.
Abplanalp, George W.; and Corson, Steve. Blocking circuit for inboard engine ignition. 3,675,034, Cl. 307-9.000.
Abraham, Bruce C.; Fegley, Charles R.; and Lougher, George B., III, to Western Electric Company, Incorporated. Article handling with fluid ejection. 3,674,141, Cl. 209-74.000.
Abrahams, Louis: *See*—
Waters, James L.; Abrahams, Louis; and Hutchins, Burleigh M., Jr., 3,674,373.
ACF Industries, Incorporated: *See*—
Randolph, Robert W.; and Dare, Roy R., 3,673,914.
Ackerman, Howard T.; and Kessler, Clarence W., to National Cash Register Company, The. Unlimited roll keyboard circuit. 3,675,239, Cl. 340-365.000.
Ackerman, Tracy R.; and Schickler, John F., to General Motors Corporation. Flow process. 3,674,087, Cl. 165-2.000.
Adam, Robert; and Keefer, Dayle. Setting device for a boring tool. 3,673,694, Cl. 33-185.00r.
Adams, Gerald E., to Uniroyal, Inc. Toothed power transmission belt and method of manufacturing the same. 3,673,883, Cl. 74-233.000.
Adams, Jay C.; and Cook, Russell E., to Ranco Incorporated. Control device for pressure lubricated compressors. 3,673,811, Cl. 62-158.000.
Adams, John S.: *See*—
Ladin, Eli M.; Kegerise, Harry L.; and Adams, John S., 3,674,357.
Adams, Richard T.: *See*—
Stawarski, Chester C.; Gerding, Charles C.; and Adams, Richard T., 3,673,869.
Adams, Robert H., to Lockheed Aircraft Corporation. Modular solid-state power amplifier. 3,675,141, Cl. 330-13.000.
Addabbo, Nunzio P. Aircraft navigational calculator. 3,674,987, Cl. 235-88.000.
Addressograph-Multigraph Corporation: *See*—
Blanchette, Robert G., 3,674,473.
Advaced Patent Technology, Inc.: *See*—
Snaper, Alvin A.; Gregory, George D.; and Munroe, Miles R., 3,675,220.
Agence Nationale de Valorisation de la Recherche (Anvar): *See*—
Globus, Anatol; Duplex, Paul; and Vautier, Roger, 3,674,218.
Agfa-Gevaert: *See*—
Lambrechts, Jan Bernard, 3,674,588.
Vrancken, Marcel Nicolas; Brinckman, Eric Maria; and Heugebaert, Frans Clement, 3,674,483.
Agfa-Gevaert Aktiengesellschaft: *See*—
Kampfer, Helmut; von Konig, Anita; Ranz, Erwin; von Rintelen, Harald; Mayer, Dietmar; and Sasse, Klaus, 3,674,479.
Kampfer, Helmut; Von Konig, Anita; Ranz, Erwin; von Ritelen, Harald; Mayer, Dietmar; and Sasse, Klaus, 3,674,480.
Kohler, Roland; Nagel, Erich; Hujer, Friedrich; and Viehrig, Wolfgang, 3,674,365.
Matejec, Reinhart, 3,674,490.
Moll, Franz; Posse, Rolf-Fred; and Ringe, Werner, 3,674,703.
Theer, Anton, 3,674,349.
von Konig, Anita; Liebe, Werner; and Timmler, Helmut, 3,674,481.
Aggias, Zissis, to Henkel & Cie G.m.b.H. Internally plasticized epoxide resins of triglycidyl isocyanurate, hydroxy functional urethane polymer and polycarboxylic acid anhydride. 3,674,892, Cl. 260-835.000.
Agri-Tech, Inc.: *See*—
Hoover, Richard D.; and Kohler, George O., 3,674,770.
Ahland, Erwin: *See*—
Schmalfeld, Paul; Janssen, Heinrich; Bock, Burkhard; Peters, Werner; and Ahland, Erwin, 3,674,449.
Ahmed, Kamal: *See*—
Startin, Kenneth John; and Ahmed, Kamal, 3,675,188.
Air Products and Chemicals, Inc.: *See*—
Barrer, Richard M.; and Cole, John F., 3,674,709.
Uffner, Melville W., 3,674,757.
Airich, Gustav: *See*—
Eirich, Wilhelm; and Airich, Gustav, 3,674,241.
Aisin Seiki Kabushiki Kaisha: *See*—
Ono, Takeshi, 3,673,971.
A.I.T. Industries, Inc.: *See*—
Stern, Theodore J., 3,673,738.
Aitken, Thomas; Anderson, Donald R.; and Jursich, Myron J., to Nalco Chemical Company. Cationization of starch for filler retention utilizing a cationic polyepihalohydrin-tertiary amine polymer. 3,674,725, Cl. 260-9.000.
Ajax Tool Works, Inc.: *See*—
Benedict, Neil W., Jr., 3,673,686.
Ajinomoto Co., Inc.: *See*—
Ikeda, Shigeho; Ishizaki, Ayaaki; Hirose, Yoshio; and Shiro, Teruo, 3,674,639.
Akatsu, Mitsuhiro: *See*—
Inaba, Shigebo; Akatsu, Mitsuhiro; and Yamamoto, Hisao, 3,674,808.
Akira, Fukami: *See*—
Shunichiro, Nishizaki; and Akira, Fukami, 3,674,741.
Akiyama, Susumu; and Naganuma, Mitsuaki, to Nippon Electric Company, Limited. Demodulation system regenerating carrier waves phase synchronized with corresponding carrier wave components in horizontal synchronizing pulse modulated carrier waves. 3,674,929, Cl. 178-7.30r.
Akron Spool and Manufacturing Co.: *See*—
Hawley, John B., 3,674,069.
Aktiebolaget Atomenergi: *See*—
Holmer, Bernt Arne Gustaf, 3,674,006.
Aktiebolaget Hassle: *See*—
Brandstrom, Arne Elof; Carlsson, Per Arvid Emil; Carlsson, Stig Ake Ingemar; Corrodi, Hans Rudolf; Ek, Lars; Lamm, Bo Robert; and Ablad, Bengt Arne, 3,674,840.
Aktiebolaget Svenska Icopalfabriken, mesne: *See*—
Bokvist, Kjell; and Ingestrom, Curt Holger, 3,673,750.
Aktiengesellschaft Brown, Boveri & Cie: *See*—
Jaecklin, Andre, 3,675,125.
Kaser, Alfred, 3,673,653.
Akzo N.V.: *See*—
Brants, Johannes Petrus; and Van der Meulen, Johan, 3,674,522.
Aladjem, Abraham, to Israel Atomic Energy Commission, State of. Metal oxide film structure. 3,675,021, Cl. 250-106.00s.
Albertson, Robert V. Combined building humidifier and clothes dryer. 3,673,701, Cl. 34-90.000.
Albright & Wilson Limited: *See*—
Lyde, Derek Martin, 3,674,660.
Albright, Charles Jere. Multiple facilities for assembling cooking and dispensing food-products. 3,673,948, Cl. 99-55.000.
Alco Standard Corporation: *See*—
Moreau, Glenn T.; and Bielefeldt, Irvin P., 3,673,678.
Alder, Hanspeter, to Du Pont de Nemours, E. I., and Company. Process for preparing copper sulfide voltaic cell cathodes. 3,674,560, Cl. 136-23.000.
Aldridge, Gerald Richard; Ehrich, Felix Frederick; and Struve, William Scott, to Du Pont de Nemours, E. I., and Company. Preparation of dihydrotherephthalates. 3,674,814, Cl. 260-396.00n.
Alexakis, Nicholas George: *See*—
Block, Donald Edmund; and Alexakis, Nicholas George, 3,675,210.
Alfieri, Giulio, to Officine Alfieri Maserati. Internal combustion engines with at least two rows of cylinders with overhead camshafts. 3,673,990, Cl. 123-52.00r.
Allcock Laight and Westwood Limited: *See*—
Parsons, Ronald W., 3,674,293.
Allen, Glenn L.: *See*—
Marks, Joseph D.; Le Beck, Norman G.; and Allen, Glenn L., 3,674,181.
Allen, Julian H. Aircraft storage hangar. 3,673,749, Cl. 52-73.000.
Allen, Kenneth M. Circular stair with central support and disc spacers between treads. 3,673,752, Cl. 52-187.000.
Allen, Merton, to Environment/One Corporation. Controlled environment apparatus and process for plant husbandry. 3,673,733, Cl. 47-58.000.
Allen, Randy B. Amphibian camper vehicle. 3,673,622, Cl. 9-1.00t.
Allied Chemical Corporation: *See*—
Degginger, Edward R.; and Goetz, Frederick J., 3,674,878.
Lohr, Thomas E., 3,674,284.
Price, Alson K.; and Sukornick, Bernard, 3,674,798.
Stephenson, Robert L., 3,674,059.
Sweeney, Richard F.; Khan, Aziz Urrehman; Price, Alson K.; Jones, Edward Stephen; and Otto, Julian A., 3,674,800.
Allied Research Products, Inc.: *See*—
Mallory, Glenn O., 3,674,550.

224,177
TAPE CASSETTE BOX
Robert S. Wallace, 2706 S. Robertson Blvd., Los Angeles, Calif. 90034
Filed Apr. 10, 1970, Ser. No. 22,364
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D87—1



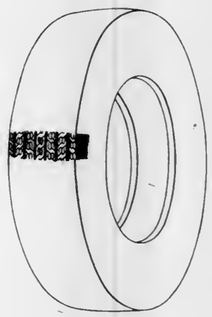
224,178
KNAPSACK
Helen H. Bryant, 2801 Gardner Park Drive, Gastonia, N.C. 28053
Continuation-in-part of design application Ser. No. 22,008, Mar. 23, 1970. This application Sept. 9, 1970, Ser. No. 24,894
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D87—1



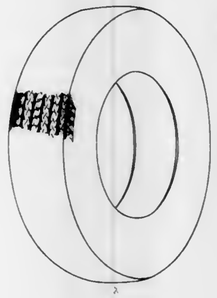
224,179
SHELLER FOR PEAS OR THE LIKE
George F. Taylor, P.O. Box 625, Moultrie, Ga. 31768
Filed Nov. 23, 1970, Ser. No. 26,113
Term of patent 14 years
Int. Cl. D7—*04*
U.S. Cl. D89—1



224,180
PNEUMATIC TIRE
Arthur C. Blankenship, Detroit, Mich., assignor to Uniroyal, Inc., New York, N.Y.
Filed May 3, 1971, Ser. No. 139,996
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D90—20



224,181
PNEUMATIC TIRE
William K. Pope, Detroit, Mich., assignor to Uniroyal, Inc., New York, N.Y.
Filed Nov. 25, 1970, Ser. No. 26,302
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D90—20



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 4TH DAY OF JULY, 1972

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

AB Billingsfors-Langed: *See*—
Persson, Leif R., 3,674,594.
Abbott Laboratories: *See*—
Kurath, Paul, 3,674,773.
Abbott, Terence Arnold: *See*—
Shephard, Robert Basil; Clachan, Margaret Loudon; Kennedy, David Rankine; and Abbott, Terence Arnold, 3,674,531.
Abele, Manlio G., to General Applied Science Laboratories, Inc. Microwave repeater. 3,675,128, Cl. 325-1.000.
Ablad, Bengt Arne: *See*—
Brandstrom, Arne Elof; Carlsson, Per Arvid Emil; Carlsson, Stig Ake Ingemar; Corrodi, Hans Rudolf; Ek, Lars; Lamm, Bo Robert; and Ablad, Bengt Arne, 3,674,840.
Abplanalp, George W.; and Corson, Steve. Blocking circuit for inboard engine ignition. 3,675,034, Cl. 307-9.000.
Abraham, Bruce C.; Fegley, Charles R.; and Lougher, George B., III, to Western Electric Company, Incorporated. Article handling with fluid ejection. 3,674,141, Cl. 209-74.000.
Abrahams, Louis: *See*—
Waters, James L.; Abrahams, Louis; and Hutchins, Burleigh M., Jr., 3,674,373.
ACF Industries, Incorporated: *See*—
Randolph, Robert W.; and Dare, Roy R., 3,673,914.
Ackerman, Howard T.; and Kessler, Clarence W., to National Cash Register Company, The. Unlimited roll keyboard circuit. 3,675,239, Cl. 340-365.000.
Ackerman, Tracy R.; and Schickler, John F., to General Motors Corporation. Flow process. 3,674,087, Cl. 165-2.000.
Adam, Robert; and Keefer, Dayle. Setting device for a boring tool. 3,673,694, Cl. 33-185.00r.
Adams, Gerald E., to Uniroyal, Inc. Toothed power transmission belt and method of manufacturing the same. 3,673,883, Cl. 74-233.000.
Adams, Jay C.; and Cook, Russell E., to Ranco Incorporated. Control device for pressure lubricated compressors. 3,673,811, Cl. 62-158.000.
Adams, John S.: *See*—
Ladin, Eli M.; Kegerise, Harry L.; and Adams, John S., 3,674,357.
Adams, Richard T.: *See*—
Stawarski, Chester C.; Gerding, Charles C.; and Adams, Richard T., 3,673,869.
Adams, Robert H., to Lockheed Aircraft Corporation. Modular solid-state power amplifier. 3,675,141, Cl. 330-13.000.
Addabbo, Nunzio P. Aircraft navigational calculator. 3,674,987, Cl. 235-88.000.
Addressograph-Multigraph Corporation: *See*—
Blanchette, Robert G., 3,674,473.
Advaced Patent Technology, Inc.: *See*—
Snaper, Alvin A.; Gregory, George D.; and Munroe, Miles R., 3,675,220.
Agence Nationale de Valorisation de la Recherche (Anvar): *See*—
Globus, Anatol; Duplex, Paul; and Vautier, Roger, 3,674,218.
Agfa-Gevaert: *See*—
Lambrechts, Jan Bernard, 3,674,588.
Vrancken, Marcel Nicolas; Brinckman, Eric Maria; and Heugebaert, Frans Clement, 3,674,483.
Agfa-Gevaert Aktiengesellschaft: *See*—
Kampfer, Helmut; von Konig, Anita; Ranz, Erwin; von Rintelen, Harald; Mayer, Dietmar; and Sasse, Klaus, 3,674,479.
Kampfer, Helmut; Von Konig, Anita; Ranz, Erwin; von Ritelen, Harald; Mayer, Dietmar; and Sasse, Klaus, 3,674,480.
Kohler, Roland; Nagel, Erich; Hujer, Friedrich; and Viehrig, Wolfgang, 3,674,365.
Matejec, Reinhart, 3,674,490.
Moll, Franz; Posse, Rolf-Fred; and Ringe, Werner, 3,674,703.
Theer, Anton, 3,674,349.
von Konig, Anita; Liebe, Werner; and Timmler, Helmut, 3,674,481.
Aggias, Zissis, to Henkel & Cie G.m.b.H. Internally plasticized epoxide resins of triglycidyl isocyanurate, hydroxy functional urethane polymer and polycarboxylic acid anhydride. 3,674,892, Cl. 260-835.000.
Agri-Tech, Inc.: *See*—
Hoover, Richard D.; and Kohler, George O., 3,674,770.
Ahland, Erwin: *See*—
Schmalfeld, Paul; Janssen, Heinrich; Bock, Burkhard; Peters, Werner; and Ahland, Erwin, 3,674,449.
Ahmed, Kamal: *See*—
Startin, Kenneth John; and Ahmed, Kamal, 3,675,188.
Air Products and Chemicals, Inc.: *See*—
Barrer, Richard M.; and Cole, John F., 3,674,709.
Uffner, Melville W., 3,674,757.
Airich, Gustav: *See*—
Eirich, Wilhelm; and Airich, Gustav, 3,674,241.
Aisin Seiki Kabushiki Kaisha: *See*—
Ono, Takeshi, 3,673,971.
A.I.T. Industries, Inc.: *See*—
Stern, Theodore J., 3,673,738.
Aitken, Thomas; Anderson, Donald R.; and Jursich, Myron J., to Nalco Chemical Company. Cationization of starch for filler retention utilizing a cationic polyepihalohydrin-tertiary amine polymer. 3,674,725, Cl. 260-9.000.
Ajax Tool Works, Inc.: *See*—
Benedict, Neil W., Jr., 3,673,686.
Ajinomoto Co., Inc.: *See*—
Ikeda, Shigeho; Ishizaki, Ayaaki; Hirose, Yoshio; and Shiro, Teruo, 3,674,639.
Akatsu, Mitsuhiro: *See*—
Inaba, Shigeho; Akatsu, Mitsuhiro; and Yamamoto, Hisao, 3,674,808.
Akira, Fukami: *See*—
Shunichiro, Nishizaki; and Akira, Fukami, 3,674,741.
Akiyama, Susumu; and Naganuma, Mitsuaki, to Nippon Electric Company, Limited. Demodulation system regenerating carrier waves phase synchronized with corresponding carrier wave components in horizontal synchronizing pulse modulated carrier waves. 3,674,929, Cl. 178-7.30r.
Akron Spool and Manufacturing Co.: *See*—
Hawley, John B., 3,674,069.
Aktiebolaget Atomenergi: *See*—
Holmer, Bernt Arne Gustaf, 3,674,006.
Aktiebolaget Hassle: *See*—
Brandstrom, Arne Elof; Carlsson, Per Arvid Emil; Carlsson, Stig Ake Ingemar; Corrodi, Hans Rudolf; Ek, Lars; Lamm, Bo Robert; and Ablad, Bengt Arne, 3,674,840.
Aktiebolaget Svenska Icopalfabriken, mesne: *See*—
Bokvist, Kjell; and Ingestrom, Curt Holger, 3,673,750.
Aktiengesellschaft Brown, Boveri & Cie: *See*—
Jaecklin, Andre, 3,675,125.
Kaser, Alfred, 3,673,653.
Akzo N.V.: *See*—
Brants, Johannes Petrus; and Van der Meulen, Johan, 3,674,522.
Aladjem, Abraham, to Israel Atomic Energy Commission, State of. Metal oxide film structure. 3,675,021, Cl. 250-106.00s.
Albertson, Robert V. Combined building humidifier and clothes dryer. 3,673,701, Cl. 34-90.000.
Albright & Wilson Limited: *See*—
Lyde, Derek Martin, 3,674,660.
Albright, Charles Jere. Multiple facilities for assembling cooking and dispensing food-products. 3,673,948, Cl. 99-55.000.
Alco Standard Corporation: *See*—
Moreau, Glenn T.; and Bielefeldt, Irvin P., 3,673,678.
Alder, Hanspeter, to Du Pont de Nemours, E. I., and Company. Process for preparing copper sulfide voltaic cell cathodes. 3,674,560, Cl. 136-23.000.
Aldridge, Gerald Richard; Ehrich, Felix Frederick; and Struve, William Scott, to Du Pont de Nemours, E. I., and Company. Preparation of dihydrotherephthalates. 3,674,814, Cl. 260-396.00n.
Alexakis, Nicholas George: *See*—
Block, Donald Edmund; and Alexakis, Nicholas George, 3,675,210.
Alfieri, Giulio, to Officine Alfieri Maserati. Internal combustion engines with at least two rows of cylinders with overhead camshafts. 3,673,990, Cl. 123-52.00r.
Allcock Laight and Westwood Limited: *See*—
Parsons, Ronald W., 3,674,293.
Allen, Glenn L.: *See*—
Marks, Joseph D.; Le Beck, Norman G.; and Allen, Glenn L., 3,674,181.
Allen, Julian H. Aircraft storage hangar. 3,673,749, Cl. 52-73.000.
Allen, Kenneth M. Circular stair with central support and disc spacers between treads. 3,673,752, Cl. 52-187.000.
Allen, Merton, to Environment/One Corporation. Controlled environment apparatus and process for plant husbandry. 3,673,733, Cl. 47-58.000.
Allen, Randy B. Amphibian camper vehicle. 3,673,622, Cl. 9-1.00t.
Allied Chemical Corporation: *See*—
Degginger, Edward R.; and Goetz, Frederick J., 3,674,878.
Lohr, Thomas E., 3,674,284.
Price, Alson K.; and Sukornick, Bernard, 3,674,798.
Stephenson, Robert L., 3,674,059.
Sweeney, Richard F.; Khan, Aziz Urrehman; Price, Alson K.; Jones, Edward Stephen; and Otto, Julian A., 3,674,800.
Allied Research Products, Inc.: *See*—
Mallory, Glenn O., 3,674,550.

Allied Tube & Conduit Corporation: *See—*
Dunbar, Glenn G., 3,674,166.
Krengel, Theodore H.; and Pool, Richard L., 3,673,980.

Allis-Chalmers Manufacturing Company: *See—*
Attia, Edward A.; and Dethlefsen, Rolf, 3,674,958.
Berg, David A., 3,674,096.
Clark, Thomas F., 3,674,959.
Crooks, James W., 3,673,890.
Dreisin, Alexander, 3,673,996.
Erni, Heinrich H., 3,674,956.
Manion, Jean P.; and Davies, Daniel J., 3,674,667.
Peek, Henry L., 3,674,955.

Allison, Arthur F.; Greening, Donald J.; and Mollgaard, Anton N., to Cutler-Hammer, Inc. Single-phase full-wave regenerative SCR shunt motor control system. 3,675,104, Cl. 318-345.000.

Allison, Donald B.: *See—*
Yates, Kenneth, 3,674,913.

Allport, Walter F., to International Paper Company. Method for the preparation of integrated nettings and laminates. 3,674,583, Cl. 156-167.000.

Allport, Walter F., to International Paper Company. Apparatus for the preparation of integrated nettings and laminates. 3,674,607, Cl. 156-511.000.

Allum, Keith George; and Hancock, Ronald David. Modified polyalcohol. 3,674,768, Cl. 260-91.3.

Alperovich, Viktor Borisovich; and Prut, Alfred Iosifovich. Pitot tube probe for taking total head and static pressure of air flow. 3,673,866, Cl. 73-212.000.

Alt, Gerhard H., to Monsanto Company. Phytotoxic compositions. 3,674,459, Cl. 71-18.000.

Aluminium Delfzijl N.V.: *See—*
Arts, Mathieu Gerardus Henricus; Lucker, Jan Anna Antonius; and Groenenboom, Maarten, 3,674,674.

Aluminum Company of America: *See—*
Brown, Melvin Henry, 3,674,652.
Brown, Robert H.; Anderson, William A.; and King, William, 3,674,448.

American Can Company: *See—*
Canamero, Ernest V.; and Ullmann, Christoph, 3,673,760.

American Cyanamid Company: *See—*
Berkelhammer, Gerald; Asato, Goro; and Moon, Edward Leslie, 3,674,780.
Schoenbrunn, Erwin Frederick; and Sinha, Vinod Tarkeshwar, 3,674,848.

American Hoist & Derrick Company: *See—*
Crook, Edward J., Jr., 3,674,301.

American Home Products Corporation: *See—*
Wolf, Milton; and Diebold, James L., 3,674,790.

American Micro-Systems, Inc., mesne: *See—*
Myers, William N., Jr., 3,674,917.

American Multi-Lert Corporation: *See—*
Scoville, Andrew E., 3,674,950.

American Optical Corporation: *See—*
Berkovits, Barouh V., 3,674,015.
Deeg, Emil W.; and Graf, Robert E., 3,674,530.
Goldberg, Herbert E., 3,674,018.
Laliberte, Norman U., 3,674,587.
Landry, Robert J.; and Snitzer, Elias, 3,675,155.
Polanyi, Michael L., 3,674,013.
Sage, Stanley J., 3,674,012.
Strack, Richard R., 3,674,452.
Young, Charles Gilbert, 3,675,152.

American Science & Engineering: *See—*
Cavalucci, Ralph; and Walters, John, 3,673,706.

Amersil Inc.: *See—*
Jung, Lothar, 3,674,904.

Ames, Horace L.: *See—*
Stanley, Robert W.; Ames, Horace L.; and Jennings, Peter H., 3,674,424.

AMF Incorporated: *See—*
Sicard, Marcel Clarence, 3,674,154.

Amidon, Roger W.; and Gencarelli, Richard A., to Uniroyal, Inc. Long chain hydrocarbon dithiocarbamate accelerators and method of making same. 3,674,824, Cl. 260-429.00k.

Amole, Inc., mesne: *See—*
Lala, Louis A., 3,673,954.

AMP Incorporated: *See—*
Demler, Henry William, Sr., 3,674,292.
Hammell, Kemper Martel, 3,675,242.

AMP Incorporated, mesne: *See—*
Kindell, Colin David, 3,673,643.
Podmore, Alan William Ronald, 3,675,180.
Startin, Kenneth John; and Ahmed, Kamal, 3,675,188.
van de Kerkhof, Lodevicus Lambertus Johannes, 3,673,847.

Anderson, Charles C. Fish and game receptacle. 3,674,188, Cl. 224-5.00g.

Anderson, Donald R.: *See—*
Aitken, Thomas; Anderson, Donald R.; and Jursich, Myron J., 3,674,725.

Anderson, George C. Support device for concrete reinforcing bars. 3,673,753, Cl. 52-685.000.

Anderson, James: *See—*
Gaudry, Paul E.; Gaudry, Edouard; Descarries, Raymond; and Anderson, James, 3,673,628.

Anderson, John Ray; and Hollingworth, Richard Peck, to Sybron Corporation. Removal of copper from aqueous solutions with highly stressed, activated ferrous metals. 3,674,466, Cl. 75-109.000.

Anderson, Robert Bernard: *See—*
Pieters, William Johan Meindert; Freel, John; and Anderson, Robert Bernard, 3,674,707.

Anderson, Robert V.; and Hagelbarger, David W., to Bell Telephone Laboratories, Incorporated. Keyboard encoding arrangement. 3,675,240, Cl. 340-365.000.

Anderson, William A.: *See—*
Brown, Robert H.; Anderson, William A.; and King, William, 3,674,448.

Ando, Sadanao, to Kabushiki Kaisha Ricoh. Exposure and development device for wet-type electrostatic photography. 3,674,362, Cl. 355-10.000.

Andresen, Otto: *See—*
Aunstrup, Knud; Andresen, Otto; and Outtrup, Helle, 3,674,643.

Andrew, Kenneth F.: *See—*
Gulbrasen, Earl A.; Tallman, Richard L.; Andrew, Kenneth F.; and Buzalski, Bruce T., 3,675,004.

Andros, Arthur A., to Monsanto Europe S.A., mesne. Plastic containers. 3,674,512, Cl. 99-178.000.

Angelica Corporation: *See—*
Hardy, John C., 3,674,034.

Angelo, Rudolph John, to Du Pont de Nemours, E. I., and Company. Insulated electrical conductor. 3,674,627, Cl. 161-175.000.

Angelucci, Romano, to Erba, Carlo, S.p.A. Process for stabilizing preparation of interfering viruses. 3,674,864, Cl. 424-90.

Annis, Rupert E., Jr.; and Kyritsis, William T., to USM Corporation. Apparatus for injection molding articles of foam material. 3,674,401, Cl. 425-244.000.

Anspon, Harry D.; Clampitt, Bert H.; and Gilbert, Ronald E., to Gulf Research & Development Company. Method for the preparation of ethylene-carboxylic acid copolymers. 3,674,761, Cl. 260-87.300.

Anthony, Andrew J.; Gaines, Albert L.; and Krawiec, Donald M., to Combustion Engineering, Inc. Bimetallic spacer grid. 3,674,635, Cl. 176-78.000.

Anthony, Russell W.: *See—*
Daniel, David W.; and Anthony, Russell W., 3,673,887.

Anthony, William H.: *See—*
Pryor, Michael J.; and Anthony, William H., 3,674,569.

Aono, Shigeo; Manaka, Nobuzi; and Inagaki, Tokuichi, to Nissan Motor Company, Limited. Acceleration actuating device for fuel injection system. 3,673,989, Cl. 123-32.0ea.

Aono, Shigeo, to Nissan Motor Company, Limited. Crankcase blow-by gas recirculating device. 3,673,994, Cl. 123-119.00b.

Appleton Electric Co.: *See—*
Appleton, Norton A.; and Penzel, Herbert W., 3,675,007.

Appleton, Norton A.; and Penzel, Herbert W., to Appleton Electric Co. Explosion proof lighting fixture. 3,675,007, Cl. 240-11.20e.

Arai, Fumiaki: *See—*
Kurokawa, Junji; Arai, Fumiaki; and Usui, Noriyuki, 3,674,474.

Archilithic Co., The: *See—*
Winn, James B., Jr., 3,674,600.

Ardco, Inc.: *See—*
Winsler, Robert J.; and Richter, Frederic A., 3,673,735.

Arden, Thomas Victor; Borra, Albert George; and Clayton, Rolf Crowther, to Permutit Company Limited, The. Process of and apparatus for the ion-exchange treatment of liquids. 3,674,685, Cl. 210-33.000.

Arfert, Horst F. W., to Reynolds Metals Company. Apparatus for and method of operating on container constructions. 3,673,835, Cl. 72-57.000.

Arganbright, Ned H.; Koepnick, Paul J.; Nelson Carl T.; and O'Brien, Arthur F., to Werner Lahara, Inc. Continuous pan conveyor baking apparatus. 3,673,949, Cl. 99-43.000.

Argus Chemical Corporation: *See—*
Brecker, Lawrence R.; and Thee, Alfred, 3,674,737.

Argus Engineering Company, Inc.: *See—*
Costello, Bernard J., 3,674,974.

Arkansas Company, Inc.: *See—*
Sapers, Ira, 3,674,420.

Arlt, Dieter, to Farbenfabriken Bayer Aktiengesellschaft. Chlorosulphonyl vinyl isocyanates and a process for their production. 3,674,829, Cl. 260-453.0al.

Armco Steel Corporation: *See—*
Chalk, David L., 3,674,467.

Armour Industrial Chemical Company: *See—*
Tiefenthal, Harlan E.; Jungermann, Eric; Miller, Eugene J., Jr.; and Callahan, John J., 3,674,879.

Armstrong, James B.; Schott, Dan J.; and Warne, Leland C., to Sperry Rand Corporation. Planar raised cathode alpha-numeric gas discharge indicator. 3,675,066, Cl. 313-109.500.

Arnell, Alvin, to Commercial Envelope Manufacturers, Inc. Sheet feeding device. 3,674,255, Cl. 271-29.000.

Arnold, Richard F.; Dauber, Philip S.; and Sussenguth, Edward H., to International Business Machines Corporation. Pseudo-random code implemented variable block-size storage mapping device and method. 3,675,215, Cl. 340-172.500.

Arnold, William O., Jr., to Union Insulating Company, Inc. Method for attaching bracket means to an imperforate support. 3,673,670, Cl. 29-432.200.

Arrant, Kearney D., to Monsanto Company. Hoisting and transporting device. 3,674,165, Cl. 214-396.000.

Arrigo, Michael F.: *See—*
Asbelle, Charles C.; Arrigo, Michael F.; Hunting, Kenneth E.; and Helmuth, Gene R., 3,673,613.

Artaud, Maurice H.; Johnson, Ronald W.; and Sampath, Prativadi I., to Stromberg Datagraphix, Inc. Microfilm viewer-printer. 3,674,354, Cl. 355-5.000.

Arts, Mathieu Gerardus Henricus; Lucker, Jan Anna Antonius; and Groenenboom, Maarten, to Aluminium Delfzijl N.V. Apparatus for controlling electrode adjustment during aluminum oxide reduction. 3,674,674, Cl. 204-225.000.

Asahi Glass Company Limited: *See—*
Suzuki, Yoshiro; Nagahara, Shigehiro; and Ichimura, Nobuyoshi, 3,674,520.

Asahi Kasei Kogyo Kabushiki Kaisha: *See—*
Seko, Maomi; Ogawa, Shinsaku; Komori, Ryozo; Asuma, Masaro; Isoya, Toshiro; and Sakai, Takamasa, 3,674,653.
Senoo, Saburo; Fukuoka, Yohei; and Sasaki, Katuyoshi, 3,674,851.
Shichijo, Yoshihisa; and Tsujihara, Mamoru, 3,674,416.
Takeda, Isao; Iguchi, Takashi; Tsuzuki, Katsuaki; and Nakano, Tooru, 3,674,639.

Asahidenka Kogyo Kabushiki Kaisha: *See—*
Ueda, Tadao; Sato, Kenji; and Nakamura, Yasusi, 3,674,426.

Asato, Goro: *See—*
Berkelhammer, Gerald; Asato, Goro; and Moon, Edward Leslie, 3,674,780.

Asbelle, Charles C.; Arrigo, Michael F.; Hunting, Kenneth E.; and Helmuth, Gene R., to United States of America, Navy. Variable friction knee unit with an improved swing phase control of artificial legs. 3,673,613, Cl. 3-27.000.

Ashe, Anthony Grenfell: *See—*
Howells, Francis Thomas; and Ashe, Anthony Grenfell, 3,674,040.

Ashkin, Arthur; and Ippen, Erich Peter, to Bell Telephone Laboratories, Incorporated. Light wave coupling into thin film light guides. 3,674,335, Cl. 350-96.0wg.

Ashland Oil, Inc.: *See—*
Nordstrom, John David, 3,674,838.

Ashley, James R.; and Palka, Frank M., to Sperry Rand Corporation. Apparatus for measuring frequency modulation noise signals and for calibrating same. 3,675,124, Cl. 324-57.000.

Ashton, Philip E. Hydraulic press. 3,673,800, Cl. 60-54.5ha.

Aspro-Nicholas Limited: *See—*
File, Harold Thomas, 3,674,140.

Associated Engineering Limited: *See—*
Levington, Henry John; and Clark, Charles Keith, 3,673,846.

Astra-Meditec AB: *See—*
Tillander, Hans, 3,674,014.

Asuma, Masaro: *See—*
Seko, Maomi; Ogawa, Shinsaku; Komori, Ryozo; Asuma, Masaro; Isoya, Toshiro; and Sakai, Takamasa, 3,674,653.

Aszalos, Adorjan; Robison, Robert S.; Kraemer, Nancy; Henshaw, Jo Ann; and Giannini, Mary Suzanne, to Squibb, E. R., & Sons, Inc. Tumimycin and process for making same. 3,674,867, Cl. 424-122.000.

Athanas, Terry George, to RCA Corporation. Formation of openings in insulating layers in MOS semiconductor devices. 3,674,551, Cl. 117-212.000.

Atlantic Richfield Company: *See—*
Griesinger, William K.; Sorgenti, Harold A.; and Schell, George W., 3,674,885.
Statton, Gary L.; and Sauer, Richard W., 3,674,715.
Verdol, Joseph A.; and Ryan, Patrick W., 3,674,743.

Atlas Copco Aktiebolag: *See—*
Liedberg, Kurt Herman, 3,674,209.

Atomic Energy of Canada Limited: *See—*
McGregor, John Cameron, 3,674,638.

Atomjuboll S.r.l.: *See—*
Massarotti, Luigi, 3,674,245.

Attia, Edward A.; and Dethlefsen, Rolf, to Allis-Chalmers Manufacturing Company. Vacuum circuit interrupter. 3,674,958, Cl. 200-144.00b.

Audiffred, Sidney J.; Johnson, Lowell E.; and Pearce, Shairyl I., to Caterpillar Tractor Company. Torque converter modulating piston. 3,673,799, Cl. 60-54.000.

Auer, John H., Jr.; and Huffman, Jerry P., to General Signal Corporation. Sonic presence detector system. 3,675,190, Cl. 340-1.000.

Auer, Rupert: *See—*
Becker, Werner; Farwer, Alfward; Frank, Georg; Reis, Bernhard; Rohf, Josef; and Auer, Rupert, 3,674,978.

Aufdermarsh, Carl Albert, Jr.; and Fogiel, Adolf Wojciech, to Du Pont de Nemours, E. I., and Company. Process for preparing flexible polyurethane foams and coatings. 3,674,721, Cl. 260-2.5ac.

Aunstrup, Knud; Andresen, Otto; and Outtrup, Helle, to Novo Terapeutisk Laboratorium A/S. Preparation of proteolytic enzymes having maximum activity at high alkalinity. 3,674,643, Cl. 195-62.000.

Austin, Oliver K.; and Loewen, Bruno F., to Phillips Petroleum Company. Carbon black pellet mixer with sectional helical-pin mixer. 3,674,437, Cl. 23-252.00r.

Automatic Close & Lock Corporation: *See—*
Ratner, George I., 3,674,360.

Automation Industries, Inc.: *See—*
Couture, John W., 3,673,859.

Automobiles Peugeot: *See—*
Froumajou, Armand; and Falay, Bernard, 3,673,882.
Mangin, Jean-Pierre, 3,673,995.
Richard, Gilbert; and Moronval, Gerard, 3,675,033.
Tixier, Michel, 3,673,837.

Avco Corporation: *See—*
Dickey, Thomas A., 3,673,771.
Gregory, David L., 3,675,182.
McGowan, Kenneth J. J., 3,673,963.

Averbach, Alexander U., to Dick, A. B., Company. Reversal electrostatic toner composition. 3,674,693, Cl. 252-62.100.

Averill, Frederick John; and Riley, Norman, to Imperial Chemical Industries Limited. Process for preparing mesidine. 3,674,852, Cl. 260-578.000.

Avisun Corporation: *See—*
Khelghatian, Habet M.; and Poppe, Wassily, 3,674,536.

Awano, Yoji: *See—*
Kimura, Takashi; Majima, Azusa; Hamamoto, Hiroshi; and Awano, Yoji, 3,674,472.

Aydin, Kemal: *See—*
Klockenbrink, Joseph M.; and Aydin, Kemal, 3,675,076.

Ayella, Edmond R., to Penntube Plastics Company. Colored heat shrinkable elastomeric tubing. 3,674,733, Cl. 260-30.600.

Ayres, Richard H.; and Lieder, Gaylerd M., to Bemis Company, Inc. Bag hanger apparatus. 3,673,759, Cl. 53-29.000.

Baba, Jun-Ichi: *See—*
Mitsui, Tsuneo; Baba, Jun-Ichi; and Yamada, Ikuo, 3,675,002.

Babb, Billy W., to Walker, Robert R., Jr. Closet bend stabilizer. 3,674,288, Cl. 285-24.000.

Badachhape, Ramachandra B.: *See—*
Margrave, John L.; Badachhape, Ramachandra B.; Wood, James L.; and Lagow, Richard J., 3,674,432.

Bader, Clifford J.; and Branco, Richard P., to Burroughs Corporation. System for the generation of electrical power having a spring powered prime mover responsive to output voltage. 3,675,113, Cl. 322-28.000.

Badische Anilin- & Soda-Fabrik Aktiengesellschaft: *See—*
Gonon, Eugen, 3,674,387.
Hoffmann, Horst; Krauch, Carl Heinrich; Otto, Hans-Werner; and Volkert, Otto, 3,674,494.
Wuerstlin, Franz; and Feichtmayr, Franz, 3,674,695.

Baginski, Albert R.: *See—*
de Gelder, Jacob; Baginski, Albert R.; and Miller, Anthony D., 3,674,271.

Bagrov, Oleg Nikolaevich: *See—*
Berlin, Zalman Leivikovich; Bagrov, Oleg Nikolaevich; Maslovsky, Gennady Vasilievich; Serkov, Anatoly Gavrilovich; and Yakimovich, Viktor Yakovlevich, 3,673,988.

Bailey, Denis M., to Sterling Drug Inc. 6-Hydroxy-2-azabicyclo [2.2.2]octane-3,6-diones. 3,674,793, Cl. 260-293.540.

Bakelite Xylonite Limited: *See—*
Fletcher, Clive R., 3,673,987.

Bakeman, Orville R.; and French, Allen D., to General Electric Company. Laser oscillator construction. 3,675,153, Cl. 331-94.500.

Baldratti, Giuliana; Consonni, Alberto; and Sciaky, Roberto, to Societa Farmaceutici Italia. Nitro-steroids and process for their preparation. 3,674,817, Cl. 260-397.400.

Baldwin, Roger A.; and Cheng, Ming T., to Kerr-McGee Chemical Corporation, mesne. Phosphorane polyesters and polyamides. 3,674,742, Cl. 260-47.00p.

Baller, Ernst O.; Crandell, Melvin G.; Pease, Donald L.; and Witinski, Francis D., to Xerox Corporation. Sheet feeding apparatus. 3,674,363, Cl. 355-14.000.

Ballu, Vincent Pierre Marie, to Tecnoma. Device for spraying treatment products used particularly for farming. 3,674,208, Cl. 239-77.000.

Bamberg, Paul, to International Standard Electric Corporation. Circuit arrangement for effecting a tuning of a transceiver by means of a magnetic core memory. 3,675,130, Cl. 325-174.000.

Bamberg, Walter H., to Cryogenic Technology, Inc. In-line multistage cryogenic apparatus. 3,673,809, Cl. 62-6.000.

Bancroft Racket Company: *See—*
Hollis, James E., 3,674,267.

Bandyopadhyay, Pratip, to Cities Service Oil Company. Process for reducing heat loss during in situ thermal recovery. 3,674,092, Cl. 166-271.000.

Barber, Joseph J., to Houdaille Industries, Inc. Turret indexing control system. 3,675,107, Cl. 318-601.000.

Barbier, Benard & Turenne. . 7,104,172, Cl. .

Bard, Irving Gary, to Delta Data Systems Corporation. Editing system for video display terminal. 3,675,208, Cl. 340-172.500.

Barden Corporation, The: *See—*
Zeneski, Edmund A., 3,674,356.

Barkan, Philip, to General Electric Company. High voltage electric circuit breaker with rapid response tripping means. 3,674,964, Cl. 200-148.00r.

Barnard, George A., III. Direct charge-rate indicator. 3,673,793, Cl. 58-152.00r.

Barnett, Richard C.; Dark, Joe W.; and Schulze, James L., Sr., said Barnett and Dark assors. to General Electric Company. Gas-fired space heater means. 3,674,005, Cl. 126-91.00a.

Barrer, Richard M.; and Cole, John F., to Air Products and Chemicals, Inc. Aluminosilicates containing soldalite and/or cancrinite cages encapsulating salts. 3,674,709, Cl. 252-454.000.

Barrett, Jack E. J.: *See*—
Mereen, Donald E.; and Barrett, Jack E. J., 3,675,205.

Barrett, Paul Anthony, to Burroughs Wellcome Co. Method of treating or preventing coccidiosis. 3,674,873, Cl. 424-250.000.

Barry, John K , to Southco, Inc. Panel fastener with expandable sleeve. 3,673,913, Cl. 85-70.000.

Barry, Wright, Corporation, mesne: *See*—
Wassell, George W., 3,673,721.

Bartsch, Raymond C.: *See*—
Lerman, Frank; and Bartsch, Raymond C., 3,674,736.

Barusch, Maurice R.: *See*—
Richardson, Wallace L.; Kautsky, George J.; and Barusch, Maurice R., 3,674,826.

Baszczuk, Andrew R.: *See*—
Hameister, Harold L.; and Baszczuk, Andrew R., 3,674,451.

Bata, George L.: *See*—
Hakka, Leo E.; Bata, George L.; and Hazell, John E., 3,674,439.

Bates, John D.; and Olson, Virginia A., to Kimberly-Clark Corporation. Catamental tampon and wrapper therefor. 3,674,029, Cl. 128-285.000.

Batesky, Donald C.: *See*—
Webb, Richard V.; and Batesky, Donald C., 3,674,805.

Bath, Duncan Thomas, to Canadian General Electric Company Limited. Large generator protective relaying scheme. 3,675,080, Cl. 317-13.00r.

Battelle Development Corporation, The: *See*—
Mirick, William M., 3,674,729.

Battelle Development Corporation, The, mesne: *See*—
Johnson, Curtis C., 3,674,008.

Batzer, Hans: *See*—
Lohse, Friedrich; Schmid, Rolf; Fisch, Willy; and Batzer, Hans, 3,674,746.

Bauer, Eddie, to Simco; a co-partnership consisting of and Bauer, Eddie and Bauer, Eddie C. Fishing lure or attractor. 3,673,727, Cl. 43-42.510.

Bauer, Eddie and Bauer, Eddie C.: *See*—
Bauer, Eddie, 3,673,727.

Bauer, Russell E., to KDI-Bauer Corporation. Marine sewage pump. 3,674,380, Cl. 427-92.000.

Baum, Walter Karl-Theodor; and Breitenbach, Otto. Communications cables having reduced interference characteristics. 3,674,933, Cl. 178-68.00b.

Baumann, Bernard, to L'Aluminium Francais. Process for the assembly of sheets and apparatus for same. 3,674,605, Cl. 156-479.000.

Baumann, Dwight M. B. Automatic pattern recognition with weighted area scanning. 3,675,203, Cl. 340-146.3aq.

Baumgartner, Siegfried; Kindler, Hubert; Lidl, Rolf; and Boden, Henrich, 50% to Krauss-Maffei Aktiengesellschaft and 50% to Farbenfabriken Bayer Aktiengesellschaft. Scavenging system for injection-molding machine. 3,674,398, Cl. 425-159.000.

Baumgartner, Siegfried; Fries, Bernd; Lidl, Rolf; and Zippe, Gunter, to Krauss-Maffei Aktiengesellschaft. Molding machine for foam-plastic articles. 3,674,408, Cl. 425-406.000.

Bayless, Robert G.; Shank, Charles P.; Botham Ruth A.; and Werkmeister, Dennis W., to National Cash Register Company, The. Process of forming minute capsules and three-phase capsule-forming system useful in said process. 3,674,704, Cl. 252-316.000.

Bayne, Dennis R.: *See*—
Vahlstrom, Richard E.; Nutten, Donald C.; and Bayne, Dennis R., 3,675,047.

Beals, Robert N. Pressure responsive actuator having application to a valve spool or like device. 3,674,041, Cl. 137-1.000.

Beasley, Donald L., to Townsend Engineering Company. Fatting attachment for skinning machines. 3,674,071, Cl. 146-130.000.

Beatrice Foods Co.: *See*—
Kasik, Robert L.; and Luksas, Anthony J., 3,674,508.

Beatty, David L. Outdoor speaker enclosure. 3,674,108, Cl. 181-31.00b.

Beaver Precision Products, Inc.: *See*—
Doran, Leo F.; and Schlenker, Theodore R., 3,673,817.

Bechtel International Corporation: *See*—
Ellers, Frederick S.; Small, Sam W.; and Serpas, Luis B., 3,674,062.

Becker, Charles H.: *See*—
Brimmer, Donald B.; Brown, James Stuart; and Becker, Charles H., 3,674,686.

Becker, Norman D. Method and apparatus for drilling and casing a large diameter borehole. 3,674,100, Cl. 175-69.000.

Becker, Werner: *See*—
Schrotz, Kurt; and Becker, Werner, 3,674,609.

Becker, Werner; Farwer, Alfward; Frank, Georg; Reis, Bernhard; Rohf, Josef; and Auer, Rupert, to Messer Griesheim G.m.b.H. Torch, especially for plasma cutting. 3,674,978, Cl. 219-121.00p.

Beckham, Robert R.; Walters, Emmett L.; Brown, Jack G.; De Rose, Kenneth M.; and Ryan, Joseph D., to Libbey-Owens-Ford Company. Filming apparatus. 3,673,981, Cl. 118-6.

Beckman Instruments, Inc.: *See*—
Gomez, Ray J.; and Sawa, Kenneth B., 3,674,153.

Becton, Dickinson & Company: *See*—
Beury, James Prescott, III; and Burridge, Robert Ernest, 3,673,868.

Beddows, Norman A.; Quigley, John A.; and Wielt, Warren P., to General Electric Company. Dynamoelectric machine utilizing preformed winding connectors and method of making. 3,675,058, Cl. 310-71.000.

Bedker, Bruce D.; and Wunderlich, Frederick C., to Salvo Tool & Engineering Company. Centering attachment. 3,673,832, Cl. 72-35.000.

Bedoca, Michael F., to Cherry Electrical Products Corporation. Panel-mounted switch. 3,674,970, Cl. 200-168.00c.

Beecham Group Limited: *See*—
Long, Anthony Alfred Walter; and Nayler, John Herbert Charles, 3,674,776.

Beidil, Max: *See*—
Nielsen, Ole; and Beidil, Max, 3,673,839.

Belhomme, Charles: *See*—
Yperman, Jean Michel Baudry Ghislain; and Belhomme, Charles, 3,674,713.

Bell & Howell Company: *See*—
Betlejewski, Frank W.; and Hanberg, Sanford M., 3,674,948.
Carlson, Richard K., 3,673,934.
Figge, Erwin E.; and Ho, Edward J., 3,674,348.
Iha, Kiyoshi, 3,674,347.
Lancor, Joseph H., Jr., 3,674,346.

Bell, Anthony Geoffrey. High speed dynamic buffer. 3,675,043, Cl. 307-205.000.

Bell Canada: *See*—
Leyburn, Derek; Montague, Bernard R.; and Mattila, Henry K., 3,674,940.

Bell, Jack T.; and Smith, Barton K., to Weyerhaeuser Company. Bottom flap folding and conveying apparatus. 3,673,764, Cl. 53-374.000.

Bell, Randall P.: *See*—
Lazar, Burton A.; Bell, Randall P.; and Vanderhoef, John P., 3,673,723.

Bell, Randall P.; and Vanderhoef, John P., to Intercraft Industries Corporation. Interconnecting picutre frames. 3,673,724, Cl. 40-152.000.

Bell Telephone Laboratories, Incorporated: *See*—
Anderson, Robert V.; and Hagelbarger, David W., 3,675,240.
Ashkin, Arthur; and Ippen, Erich Peter, 3,674,335.
Beurrier, Henry Richard, 3,675,145.
Boyd, Gary Delane; Buehler, Ernest; and Gandrud, William Bentley, 3,675,039.
Danielmeyer, Hans Guenter, 3,675,156.
Duguay, Michel Albert; and Hansen, John Wilfred, 3,675,154.
Erdman, William Charles, 3,674,580.
Feldman, Martin; and Heiter, George Ludwig, 3,675,025.
Goldrick, Michael Richard; Kerwin, Robert Eugene; and Skinner, John George, 3,674,492.
Griffiths, James Edward, 3,674,696.
Hamilton, Billy Harold, 3,675,037.
Judd, Frank Fuller; and Wilhart, Helmut, 3,675,158.
Judd, Frank Fuller; Lieberman, Jan Mark; and Wilhart, Helmut, 3,675,159.
Kaminow, Ivan Paul; and Weber, Heinz Paul, 3,675,157.
Kogelnik, Herwig Werner, 3,674,332.
Kogelnik, Herwig Werner, 3,674,336.
Lawrence, Thomas Russell, 3,674,935.
Marcatili, Enrique Alfredo Jose, 3,674,337.
McKiernan, Dennis Lester, 3,675,127.
O'Brien, Kevin Christopher, 3,675,136.
Rushton, John R., 3,674,498.
Seidel, Harold, 3,675,164.
Shoap, Stephen Davis, 3,675,236.
Weller, David Reis, 3,675,135.
Yenisey, Osman Metin, 3,675,048.

Bellanger, Maurice Georges; Daguet, Jacques Lucien; and Duong, Tuan Kiet, to S.A. Telecommunications Radioelectriques et Telephoniques T.R.T. Transmission device for the transmission of analog signals by means of pulse code modulation. 3,674,937, Cl. 179-15.

Bellis, Harold Edward, to Du Pont de Nemours, E. I., and Company. Nickel or cobalt wear-resistant compositions and coatings. 3,674,447, Cl. 29-196.600.

Bemberg S.p.A.: *See*—
Cerutti, Giacomo, 3,673,650.

Bemis Company, Inc.: *See*—
Ayres, Richard H.; and Lieder, Gaylerd M., 3,673,759.

Benard, Christian Louis Georges, to Societe Parisienne des Anciens Etablissements Barbier, Benard & Turenne. Photo-electric positioning device. 3,675,024, Cl. 250-208.000.

Bencsics, Odon Steven; and Von Beckmann, Helmut Rolf Erich. Light reference system for railroad track surveying. 3,675,233, Cl. 340-258.00b.

Bendix Corporation, The: *See*—
Chilton, Charles B., 3,675,126.
Giardini, Dante S., 3,673,739.
Giardini, Dante S.; and Szempruch, Robert S., 3,673,740.
Giardini, Dante S.; and Wieg, Heinrich J., 3,673,743.
Hickner, George B.; Howard, Donald W.; and Suttle, Ward C., 3,674,318.
Howard, Donald W., 3,674,114.
Howard, Donald W.; and Hickner, George B., 3,674,320.
Kasselmann, John T., 3,673,875.
Mayer, Endre A., 3,674,044.

Millman, William V.; and Mayer, Endre A., 3,674,045.
Teitelbaum, Bernard R., 3,673,857.
Tirabassi, Benjamin John, 3,674,251.

Benedict, Neil W., Jr., to Ajax Tool Works, Inc. Lead sleeve cutting tool. 3,673,686, Cl. 30-168.000.

Benjamin, Thaer L.; and Reynolds, Carole A. Basket game utilizing convexly shaped paddles and an irregularly shaped ball. 3,674,270, Cl. 273-101.000.

Bennett, Donald L. Tools for applying self-adhesive surface covering material. 3,674,610, Cl. 156-579.000.

Bennett, Fay M.: *See*—
Phillips, Cecil E.; and Bennett, Fay M., 3,673,687.

Bennett, Ronald W.; Parker, Donald L.; and Shaw, Arthur R., to General Motors Corporation. Brake lining wear sensing circuit. 3,675,197, Cl. 340-52.00a.

Bennett, Roswell J., to Union Carbide Corporation. Oxygen-depolarized galvanic cell. 3,674,563, Cl. 136-86.00a.

Benson, Victor Mark: *See*—
Molloy, Kenneth H.; Ward, John P.; and Benson, Victor Mark, 3,675,196.

Benson, William G., to Litton Business Systems, Inc. Handheld magnetic transducer with tip members having a hemisperical reading portion. 3,674,943, Cl. 179-100.20c.

Benz, Hanspeter, to Varian Associates. Method and apparatus for automatic phase control in a fourier analyzed readout of impulse resonance data. 3,674,998, Cl. 235-151.300.

Benz, Helmut: *See*—
Neuhauser, Hans; Benz, Helmut; and Gukelberger, Werner, 3,673,919.

Benzing, Robert J.: *See*—
Clow, William L.; Benzing, Robert J.; and McConnell, Bobby D., 3,674,690.

Berg, David A., to Allis-Chalmers Manufacturing Company. Bulldozer blade mounting. 3,674,096, Cl. 172-805.000.

Berger, Erwin: *See*—
Gruenig, Rudolf; Berger, Erwin; and Sieber, Charles, 3,674,200.

Bergum, Bernard C.; and Kenyon, Kenneth H., to ESB Incorporated. Multicell battery having double adhesive, liquid sealing window. 3,674,565, Cl. 136-111.000.

Berkelhammer, Gerald; Asato, Goro; and Moon, Edward Leslie, to American Cyanamid Company. Novel 2,5-disubstituted thiazole carboxaldehyde and derivatives of the same. 3,674,780, Cl. 260-240.00g.

Berkovits, Barouh V., to American Optical Corporation. Rate discriminatory electrocardio-graphic monitoring system. 3,674,015, Cl. 128-2.06f.

Berlin, Zalman Leivikovich; Bagrov, Oleg Nikolaevich; Maslovsky, Gennady Vasilievich; Serkov, Anatoly Gavrilovich; and Yakimovich, Viktor Yakovlevich, to Gosudarstvenny Naucho-issledovatelsky Institut tsvetnykh metallov and Belgorodsky Kotlo-Stroitelny zavod. Exhaust heat boiler. 3,673,988, Cl. 122-7.00r.

Bernard, Georges: *See*—
Labbaye, Louis; and Bernard, Georges, 3,675,079.

Bernard, Pig. Plate carrying a plurality of inscriptions. 3,673,718, Cl. 40-5.000.

Berney, Jean Claude, to Compagnie des Montres Longines. Circuit for regulating the mean frequency of an oscillating system. 3,675,147, Cl. 331-8.000.

Bertram, Leroy W., to Unarco Industries, Inc. Pneumatic safety system for vehice lading. 3,673,968, Cl. 105-369.0ba.

Bethlehem Steel Corporation: *See*—
Booth, Robert C., 3,675,118.

Betlejewski, Frank W.; and Hanberg, Sanford M., to Bell & Howell Company. Control mechanism having cycle switches selectively actuating a mode switch. 3,674,948, Cl. 200-50.00c.

Betz, Norman L.; and Stepaniuk, Nickolas J., to Mallinckrodt Chemical Works. Preparation of soybean derivatives useful as egg white extenders and whipping agents. 3,674,501, Cl. 99-17.000.

Beurrier, Henry Richard, to Bell Telephone Laboratories, Incorporated. Amplifier with matched input and output. 3,675,145, Cl. 330-124.00r.

Beury, James Prescott, III; and Burridge, Robert Ernest, to Becton, Dickinson & Company. Temperature probe. 3,673,868, Cl. 73-343.00r.

Beutel, Rolf Ernst; and Raaf, Helmut Wilbelm, to Pfizer Inc. Aqueous doxycycline compositions. 3,674,859, Cl. 424-80.000.

Bevens, Darwin K. Multisensory teaching apparatus. 3,673,708, Cl. 35-37.000.

Bexford Limited: *See*—
Shephard, Robert Basil; Clachan, Margaret Loudon; Kennedy, David Rankine; and Abbott, Terence Arnold, 3,674,531.

Bezrodny, Marlen Solomonovich. Automatic device for making drawings. 3,675,231, Cl. 340-324.

Bice, John R.; and Lewis, Philip J., to Brogdex Company. Method and composition for preventing decay of fruit and inhibiting sporulation thereon. 3,674,510, Cl. 99-154.000.

Biddison, John M., to Globe Tool and Engineering Company, The. Shaft rotating mechanism. 3,673,878, Cl. 74-125.500.

Bielefeldt, Irvin P.: *See*—
Moreau, Glenn T.; and Bielefeldt, Irvin P., 3,673,678.

Bier, Albert, to Moeller & Neumann GmbH. Screwdown devices for rolling mills. 3,673,841, Cl. 72-248.000.

Billiet, Jan Maria G. R. Process and machine according to this process for printing or dyeing textiles or sheet material. 3,673,958, Cl. 101-122.000.

Billino, Rene Alfredo. Safety lock. 3,673,830, Cl. 70-352.000.

Bintzer, William W., to Lukens Steel Company. Method and apparatus for reducing air infiltration into electric arc furnace during the charging and melting operation. 3,674,903, Cl. 13-9.000.

Bio-Medical Sciences, Inc.: *See*—
Sagi, Zsigmond, 3,674,176.

Birnkrant, Melvin, to Colorforms. Percussion musical instrument. 3,673,909, Cl. 84-403.000.

Birtchet, Ralph D., to Schneider-Simpson, Inc. Screed extension assembly for asphalt paving machines. 3,673,930, Cl. 94-45.00r.

Bitko, Sheldon S., to Fifth Dimension Inc. Welding head for producing uniform and repeatable resistance welds. 3,674,976, Cl. 219-86.000.

Bjornson, Geir; and Fox, Homer M., to Philips Petroleum Company. Electric arc process for making hydrogen cyanide, acetylene and acrylonitrile. 3,674,668, Cl. 204-171.000.

Black and Decker Manufacturing Company, The: *See*—
Fritts, Russell A.; and Nebold, Jerome I., 3,673,921.
Weber, Edwin J., 3,673,777.

Blair, Richard L. Treating liquid waste effluent. 3,674,216, Cl. 241-18.000.

Blaisdell, William H.; and Cornelius, Edward C., to Eastman Kodak Company. Flying spot scanning. 3,675,016, Cl. 250-83.30h.

Blanchette, Robert G., to Addressograph-Multigraph Corporation. Cumulene containing photoconductive binder elements for use in electrophotography. 3,674,473, Cl. 96-1.500.

Blank, Fritz; Day, William C.; Harmon, Sandra R.; Toncic, Pauline F.; and Yu, Ruey J., to Temple University. Keratinolytic enzyme isolated from trichophyton mentagorphytes and process therefor. 3,674,645, Cl. 195-66.00r.

Blatter, Herbert Morton: *See*—
Mizzoni, Renat Herbert; and Blatter, Herbert Morton, 3,674,794.

Blaw-Knox Foundry & Mill Machinery, Inc.: *See*—
Robinson, Raymond E., 3,674,193.

Bleh, Otto: *See*—
Dijkhuizen, Willem; Termin, Erich; Bleh, Otto; and Morgenstern, Dieter, 3,674,716.

Bleuer, Keith T. Tampon assembly. 3,674,025, Cl. 128-263.000.

Bljumberg, Erna Albertovna; Bobolev, Alexandr Vasilievich; Boboleva, Svetlana Pavlovna; and Emanuel, Nikolai Markovich. Method of producing propylene oxide, propyleneglycol and its esters. 3,674,813, Cl. 260-348.5.

Block, Donald Edmund; and Alexakis, Nicholas George, to Digital Data Systems, Inc., mesne. Method and apparatus for the transmission of acquired data in the form of magnitude representing signals and signals representing changes of scale of magnitude. 3,675,210, Cl. 340-172.500.

Bloomer-Fiske, Inc.: *See*—
Neubeck, William H., Jr., 3,674,163.

Blose, James H.; and Talvalkar, Shashikant G., to National Cash Register Company, The. Heat sensitive record material. 3,674,535, Cl. 117-36.800.

Bluhm, Herbert J.; and Fluck, Eugene R., to Reynolds, R. J., Tobacco Company. 1,3,3,4,4-pentasubstituted pyrrolidines. 3,674,806, Cl. 260-326.8.

Blumber, Hans: *See*—
Wahlen, Werner; and Blumber, Hans, 3,673,920.

Boardman, Charles Robert: *See*—
Knutson, Carroll F.; and Boardman, Charles Robert, 3,674,313.

Boassy, Emil J.; and Shanni, Vincent, to Champion Incorporated. Building and swimming pool construction. 3,673,751, Cl. 52-169.000.

Bobolev, Alexandr Vasilievich: *See*—
Bljumberg, Erna Albertovna; Bobolev, Alexandr Vasilievich; Boboleva, Svetlana Pavlovna; and Emanuel, Nikolai Markovich, 3,674,813.

Boboleva, Svetlana Pavlovna: *See*—
Bljumberg, Erna Albertovna; Bobolev, Alexandr Vasilievich; Boboleva, Svetlana Pavlovna; and Emanuel, Nikolai Markovich, 3,674,813.

Bock, Burkhard: *See*—
Schmalfeld, Paul; Janssen, Heinrich; Bock, Burkhard; Peters, Werner; and Ahland, Erwin, 3,674,449.

Bock, Herbert G.; and Szerejko, Walter J., to Chandler Evans, Inc. Apparatus for filling a pressure vessel. 3,673,762, Cl. 53-86.000.

Bock, Robert V.: *See*—
Trost, Joseph C.; Bock, Robert V.; Gerbstadt, Frederick H.; Graham, William J.; Miles, Wilson D.; and Questa, Charles R., 3,675,209.

Boden, Henrich: *See*—
Baumgartner, Siegfried; Kindler, Hubert; Lidl, Rolf; and Boden, Henrich, 3,674,398.

Boehmke, Gunther, to Farbenfabriken Bayer Aktiengesellschaft. Process for the production of glycol esters of carboxylic acids. 3,674,835, Cl. 260-473.00r.

Boercker, Ethel. Matching game apparatus. 3,674,264, Cl. 273-1.00r.

Bohm, Horst Otto: *See*—
Laue, Hans-Jurgen Rainer; Bohm, Horst Otto; and Reddemann, Bernhard Hermann, 3,674,470.

Boissier, Jacques Robert; and Ratouis, Roger, to Societe Anonyme dite: Roussel-UCLAF. 10,11-Dihydro-,9,10-dihydro-10,10-dimethyl-5- or 9-[3-amino-2-oxo- or-hydroxy-propylidene]-5H-dibenzo [a,d] cycloheptenes and -anthracenes. 3,674,841, Cl. 260-501.120.

Bokov, Jury Sergeevich; Vikulina, Ninel Vladimirovna; Dogadkin, Boris Aristarkhovich; Erofeev, Boris Vasilievich; Larina, Anastasia Vasilievna; Lavrischev, Vadim Petrovich; Markov, Vladimir Vladimirovich; Naumova, Sofia Fadeevna; Jurina, Olge Demidovna; and Yarovaya, Galina Dmitrievne. Negative light-sensitive material. 3,674,496, Cl. 96-91.00n.

Bokvist, Kjell; and Ingestrom, Curt Holger, to Aktiebolaget Svenska Icopalfabriken, mesne. Bottom for buildings without basement, and a method of making such bottom. 3,673,750, Cl. 52-169.000.

Boliden Aktiebolag: *See*—
Gorling, Karl Goran, 3,674,462.

Bombardier Limited: *See*—
Southiere, Bertrand, 3,673,884.

Bommer, Peter; and Menzi, Hans, to Mettler Instruments AG. Platform balance. 3,674,102, Cl. 177-256.000.

Bondina Limited: *See*—
Pearson, William Michael; and Pearson, Anthony, 3,674,593.

Bonnette, Richard Arthur, to RCA Corporation. Filamentary display devices. 3,673,652, Cl. 29-25.160.

Bookwrights, Inc.: *See*—
Sendor, Mortimer S., 3,674,399.

Booth, Robert C., to Bethlehem Steel Corporation. Multi-probe method and apparatus for detecting, correlating and classifying defects in test members. 3,675,118, Cl. 324-37.000.

Booth, Robert W.: *See*—
Sheets, Harry L.; and Booth, Robert W., 3,674,265.

Boothe Airside Systems, Inc., mesne: *See*—
Eggert, Walter S., Jr., 3,673,675.
Santos, Gerard R.; and Herring, James M., Jr., 3,674,107.

Bore, Pierre, to Societe Anonyme dite: L'Oreal. Treatment of human hair with zinc and cadmium dithiolate derivatives. 3,674,038, Cl. 132-7.000.

Borg-Warner Corporation, mesne: *See*—
Iliopulos, Miltiadis I.; and Hindersinn, Raymond R., 3,674,748.

Borkovsky, Gennady Mikhailovich; Tsukernik, Vitaly Borisovich; and Ierusalimskaya, Irina Nikolaevna. Seismic prospecting station. 3,675,194, Cl. 340-15.5dp.

Bormann, Gerhard; Gmunder, John; Wilkens, Heinrich; and Troxler, Franz, to Sandoz Ltd.; a/k/a and Sandoz A.G. 1,2,2a,3,4,5-Hexanhydro-1-(2-imidazolin-2-ylamino)-benz [cd] indoles. 3,674,801. Cl. 260-309.600.

Borra, Albert George: *See*—
Arden, Thomas Victor; Borra, Albert George; and Clayton, Rolf Crowther, 3,674,685.

Bossen, Douglas C.; Henle, Robert A.; Hsiao, Mu Y.; Maley, Gerald A.; and Pricer, W. David, to International Business Machines Corporation. System for expanded detection and correction of errors in parallel binary data produced by data tracks. 3,675,200, Cl. 340-146.10f.

Botham Ruth A.: *See*—
Bayless, Robert G.; Shank, Charles P.; Botham Ruth A.; and Werkmeister, Dennis W., 3,674,704.

Botney, Richard H. Compact folding chair. 3,674,306, Cl. 297-17.000.

Bowerman, William R. Compensated phonograph turntable. 3,674,278, Cl. 274-39.00a.

Bowman, P. H., Company, Inc.: *See*—
Petersen, George R., 3,673,671.

Box, E. O., Jr.; Drehman, Lewis E.; and Farha, Floyd E., Jr., to Phillips Petroleum Company. Tin impregnation regeneration of group VIII reforming-dehydrogenation catalysts. 3,674,706, Cl. 252-412.000.

Boyd, Gary Delane; Buehler, Ernest; and Gandrud, William Bentley, to Bell Telephone Laboratories, Incorporated. Coherent optical devices employing zinc germanium phosphide. 3,675,039, Cl. 307-88.300.

Boyd, Sherman H., Jr., to Stromberg Datagraphix, Inc. Surface deformation imaging process. 3,674,591, Cl. 156-272.000.

Boynton, James S.: *See*—
Reed, Everett E.; and Boynton, James S., 3,674,375.

Bradley, Thompson G.; and Swinkels, Dominicus A. J., to General Motors Corporation. Electrolysis cell and process using a wick electrode. 3,674,567, Cl. 136-164.000.

Brady, Donnie G., to Phillips Petroleum Company. Quarternary phosphonium salt catalyzed synthesis of urethanes and polyurethanes. 3,674,750, Cl. 260-77.50r.

Branco, Richard P.: *See*—
Bader, Clifford J.; and Branco, Richard P., 3,675,113.

Brandl, Willi. Central heating and service water system. 3,674,204, Cl. 237-8.000.

Brandstrom, Arne Elof; Carlsson, Per Arvid Emil; Carlsson, Stig Ake Ingemar; Corrodi, Hans Rudolf; Ek, Lars; Lamm, Bo Robert; and Ablad, Bengt Arne, to Aktiebolaget Hassle. 1-(Para-alkoxyalkoxyphenyl)-2-hydroxy-3-alkylaminopropanes and the salts thereof. 3,674,840, Cl. 260-501.170.

Brants, Johannes Petrus; and Van der Meulen, Johan, to Akzo N.V. Masonry materials that resist efflorescence and are colored with increased intensity and permanence, and methods of producing such materials. 3,674,522, Cl. 106-90.000.

Brasty, Joseph. Theft-proof automobile ignition system. 3,675,035, Cl. 307-10.0at.

Bratko, Rudolph S. Process for coating wire. 3,674,537, Cl. 117-49.000.

Braun Aktiengesellschaft: *See*—
Fischer, Richard, 3,673,683.

Braun, Anton: *See*—
Lacy, James G.; and Byrne, John V., 3,673,999.

Braunhut, Harold N. Method and materials used for hatching brine shrimp. 3,673,986, Cl. 119-2.000.

Braxton, James Lopez, Jr.: *See*—
Francini, Joseph Pirra; Braxton, James Lopez, Jr.; Lewis, Vera Gloria; McPherson, Frank Henderson; Rosenberg, Daniel; and Sekse, Torkjell, 3,674,988.

Breckenridge, George J.: *See*—
Kalnin, Ilmar L.; and Breckenridge, George J., 3,674,581.

Brecker, Lawrence R.; and Thee, Alfred, to Argus Chemical Corporation. Reaction products of dialkyltin oxides and higher dialkyltin monohydric aliphatic saturated alcohol esters of thiomalic and thiolactic acids. 3,674,737, Cl. 260-45.75k.

Breitenbach, Karl-Heinz, to SKF Kugellagerfabriken GmbH. Apparatus for spinning yarn. 3,673,781, Cl. 57-58.890.

Breitenbach, Otto: *See*—
Baum, Walter Karl-Theodor; and Breitenbach, Otto, 3,674,933.

Brenda Mines, Ltd.: *See*—
Stanley, Robert W.; Ames, Horace L.; and Jennings, Peter H., 3,674,424.

Brendel, Gottfried J., to Ethyl Corporation. Synthesis of substituted 7-octen-1-ols. 3,674,846, Cl. 260-632.00r.

Brevick, Arnold A., to UID Electronics Corporation. Slide switch with snap action. 3,674,953, Cl. 200-77.000.

Bridge, Alan G.: *See*—
Mitchell, David S.; Bridge, Alan G.; and Scott, John W., 3,674,682.

Brimmer, Donald B.; Brown, James Stuart; and Becker, Charles H., to DeLaval Turbine, Inc. Filter precoating method. 3,674,686, Cl. 210-37.000.

Brinckman, Eric Maria: *See*—
Vrancken, Marcel Nicolas; Brinckman, Eric Maria; and Heugebaert, Frans Clement, 3,674,483.

Bristol, Thomas R.; Lakin, Harold; and Renga, Fred L., to Kleer-Vu Industries, Inc. Collating and collecting apparatus. 3,674,142, Cl. 209-74.000.

Britax London Limited: *See*—
Burleigh, David William, 3,673,645.

British Iron and Steel Research Association, The: *See*—
Sturgeon, George; and Jackson, George, 3,674,389.
Sturgeon, George Mc Hardy; and Sheffield, Jackson George, 3,674,390.

British Petroleum Company Limited, The: *See*—
Desty, Denis Henry; and Whyman, Barry Herbert Francis, 3,674,409.

British Steel Piling Company Limited, The: *See*—
Virgo, James Russell, 3,674,098.

Brogdex Company: *See*—
Bice, John R.; and Lewis, Philip J., 3,674,510.

Bronson, George E., to N. L. Industries, Inc., mesne. Titanium dioxide pigment compositions of matter useful in printing ink compositions. 3,674,528, Cl. 106-300.000.

Bronzine, Bruno, to Fratelli Morando & C. S.p.A. Horizontal lathe with overhead bridge. 3,673,898, Cl. 82-2.500.

Brookhyser, Byron B., to Weyerhaeuser Company. Thin sheet thrower. 3,674,256, Cl. 271-63.000.

Brooks, Fred A. Baseband pulse code modulation system. 3,674,939, Cl. 179-15.55r.

Brooks, Martin Frederick; and Kerrigan, Vincent, to Imperial Chemical Industries Limited. Preparation of liquid diphenylmethane diisocyanate compositions. 3,674,828, Cl. 260-453.00p.

Brown, Anthony R., to Racal-Mobilcal Limited. Electrical transformers. 3,675,176, Cl. 336-182.000.

Brown, Boveri & Cie: *See*—
Zimmermann, Volker, 3,674,994.

Brown, Boveri & Cie Aktiengesellschaft: *See*—
Korner, Gerhard; Schmitz, Wolfgang; Dabringhausen, Friedhelm; and Gruber, Lothar, 3,674,957.

Brown Boveri & Company Limited: *See*—
Iten, Paul Dominik; and Mottier, Francois, 3,675,029.

Brown, Dwight C. Bag closure. 3,673,640, Cl. 24-30.50r.

Brown, Jack G.: *See*—
Beckham, Robert R.; Walters, Emmett L.; Brown, Jack G.; De Rose, Kenneth M.; and Ryan, Joseph D., 3,673,981.

Brown, James Stuart: *See*—
Brimmer, Donald B.; Brown, James Stuart; and Becker, Charles H., 3,674,686.

Brown, Lowell N. Air nozzles. 3,674,214, Cl. 239-526.000.

Brown, Melvin Henry, to Aluminum Company of America. Method of water purification. 3,674,652, Cl. 203-11.000.

Brown, Robert A., Jr.: *See*—
Jeffery, Robert W.; Brown, Robert A., Jr.; and Cullen, Allen F., 3,673,978.

Brown, Robert H.; Anderson, William A.; and King, William, to Aluminum Company of America. Anodic aluminum material and articles and composite articles comprising the material. 3,674,448, Cl. 29-197.500.

Brown, Thomas W. Rail and brace end coupling. 3,674,243, Cl. 256-65.000.

Brownbuilt Limited: *See*—
Clempson, Philip George, 3,673,838.

Bruckner-Apparatebau Michelstadt GmbH: *See*—
Schuierer, Manfred, 3,673,825.

Brugger, Franz; and Paul, Jurgen, to Daimler-Benz Aktiengesellschaft. Safety circuit for a brake-force control installation intended for vehicles especially for motor vehicles. 3,674,319, Cl. 303-21.0cg.

Brun, Henri, to CSF-Compagnie Generale de Telegraphite Sans Fil. Optical resonance cell with means for regulating internal vapor pressure. 3,675,067, Cl. 313-174.000.

Brunner, Hans A.; and Vogeleer, George B., to Reynolds Metals Company. Apparatus for and method of operating on container constructions. 3,673,834, Cl. 72-57.000.

Bubblitz, Donald E., to Dow Chemical Company, The. Tricyclohexyltin esters. 3,674,789, Cl. 260-270.000.

Buckwalter, Paul S.: *See*—
Street, Frederick G.; and Buckwalter, Paul S., 3,674,276.

Budzak, Steve, to Marvin Shafer Co., Inc. Pusher accessory for roll forming machine. 3,674,259, Cl. 271-84.000.

Buehler, Ernest: *See*—
Boyd, Gary Delane; Buehler, Ernest; and Gandrud, William Bentley, 3,675,039.

Buffington, James F. Grain drying apparatus. 3,673,699, Cl. 34-66.000.

Bugaut, Andree: *See*—
Kalopissis, Gregoire; Gascon, Jean; Gallien, Jacqueline; Bugaut, Andree; and Gaston-Breton, Hubert, 3,674,414.

Buhmann, Walter, Dipl. Ing., Elektro-Apparate-Bau GmbH: *See*—
Schlickeiser, Klaus, 3,675,207.

Buhr Machine Tool Corporation, mesne: *See*—
Gerchow, Wilbur R., 3,673,656.

Buisker, Raymond A., to Warner Electric Brake & Clutch Company. Magnetic friction clutch-brake unit. 3,674,122, Cl. 192-113.00a.

Burbick, Ross E.: *See*—
Calisher, Jay V.; and Burbick, Ross E., 3,674,061.

Burchill, Phyllis I.: *See*—
Schilling, Eugene D.; and Burchill, Phyllis I., 3,674,506.

Burke, John W. Variable speed tractive transmission. 3,673,881, Cl. 74-198.000.

Burkholder, Jack: *See*—
Porter, Donald E.; and Burkholder, Jack, 3,674,235.

Burleigh, David William, to Britax London Limited. Safety belt anchorage. 3,673,645, Cl. 24-23.000.

Burlis, Norbert W.; and Talonn, Daniel A., to Sherwood Medical Industries Inc. Extruder apparatus and accumulator. 3,674,404, Cl. 425-326.000.

Burr, Robert Page, to Photocircuits Corporation. Wire scribed circuit boards and method of manufacture. 3,674,914, Cl. 174-68.500.

Burridge, Robert Ernest: *See*—
Beury, James Prescott, III; and Burridge, Robert Ernest, 3,673,868.

Burroughs Corporation: *See*—
Bader, Clifford J.; and Branco, Richard P., 3,675,113.
Hunter, James R.; Lazzarotti, Sebastion James; and Mann, Abe, 3,674,143.
McKissick, John A.; and McGregor, Arvin D., 3,675,201.
Trost, Joseph C.; Bock, Robert V.; Gerbstadt, Frederick H.; Graham, William J.; Miles, Wilson D.; and Questa, Charles R., 3,675,209.
Wolfe, Fred G., 3,674,936.

Burroughs Wellcome Co.: *See*—
Barrett, Paul Anthony, 3,674,873.

Burrus, Bill S., to Combustion Engineering, Inc. Liquid level detector. 3,673,850, Cl. 73-1.00r.

Bush, Harold Jesse, to Thomas & Betts Corporation. Stripping apparatus. 3,673,894, Cl. 81-9.510.

Busi, Ettore. Device for applying liners of thermoplastic material to closure caps or the like. 3,674,393, Cl. 425-110.000.

Butler Manufacturing Company: *See*—
McCarthy, Robert P.; and Matlock, Charles W., 3,674,620.

Butscher, Karlheinz, to Carl Zeiss-Stiftung; d/b/a and Zeiss, Carl. Interpolation means for displacement measurement. 3,675,238, Cl. 340-347.0sy.

Butt, John B.: *See*—
Foster, Richard N.; and Butt, John B., 3,674,666.

Buzalski, Bruce T.: *See*—
Gulbrasen, Earl A.; Tallman, Richard L.; Andrew, Kenneth F.; and Buzalski, Bruce T., 3,675,004.

Buzzolini, Mario G., to Sandoz-Wander, Inc. 1-p-(ω-aminoalkyl) phenyl-cyclohexanes, cyclohexenes and cyclohexanols. 3,674,807, Cl. 260-326.50m.

Byrne, John V.: *See*—
Lacy, James G.; and Byrne, John V., 3,673,999.

Cadwell, Gilbert C., to Rohr Corporation. Shock wave riveting means and method. 3,673,833, Cl. 72-56.000.

Cain, Charles L.: *See*—
Clingenpeel, William R.; Cain, Charles L.; Hungerford, Philip C., Jr.; and Hayes, Robert R., 3,674,085.

Cain, James P.; and Cross, John H., to Deering Milliken Research Corporation. Molded hats having improved shape retention and recoverability. 3,673,611, Cl. 2-192.000.

California Computer Products, Inc.: *See*—
Tanaka, Edward Y.; Cossaart, Darrel D.; and Edwards, Norman B., 3,673,680.

Calisher, Jay V.; and Burbick, Ross E., to Wiggins, E. B., Inc. Liquid transfer apparatus with pressure-sensitive automatic shut-off nozzle. 3,674,061, Cl. 141-198.000.

Callahan, Jack D. Copy camera. 3,674,366, Cl. 355-55.000.

Callahan, John J.: *See*—
Tiefenthal, Harlan E.; Jungermann, Eric; Miller, Eugene J., Jr.; and Callahan, John J., 3,674,879.

Callan, John E., to Cities Service Company. Semi-vulcanized butyl rubber for sealant applications. 3,674,735, Cl. 260-33.6aq.

Cameli, Nazzareno; Longi, Paolo; and Valvassori, Alberto, to Goodrich, B. F., Company, The. Vulcanizable ethylene/propylene copolymers and process for their preparation. 3,674,754, Cl. 260-79.50.

Canadian General Electric Company Limited: *See*—
Bath, Duncan Thomas, 3,675,080.

Canadian Patents and Development Limited: *See*—
Farnand, Joseph Redmond; and Puddington, Ira Edwin, 3,674,461.

Canamero, Ernest V.; and Ullmann, Christoph, to American Can Company. Packaging method and apparatus. 3,673,760, Cl. 53-22.00a.

Canon Kabushiki Kaisha: *See*—
Hasegawa, Goro; and Ito, Masaharu, 3,674,343.
Sayanagi, Kazuo, 3,674,339.

Canon Kabushiki Kaisha, mesne: *See*—
Knechtel, Wilhelm Josef; and Schaffer, Detlef, 3,675,010.

Cape, Arthur T., to Coast Metals, Inc. Method of arc welding. 3,674,979, Cl. 219-137.000.

Caperton, Charles B. Drive for rodding machine. 3,673,627, Cl. 15-104.3sn.

Caprarola, Leroy J., to RCA Corporation. Hybrid thermoelectric generator. 3,674,568, Cl. 136-205.000.

Carasso, Daniel, to Societe anonyme dite: Compagnie Gervais-Danone. Volume-inflated freezable product preservable in the fresh state and a process for manufacturing same. 3,674,507, Cl. 99-136.000.

Carbajal, Bernard G., III; Gosney, William Milton; and Hall, Lou H., to Texas Instruments, Incorporated. Complementary insulated gate field effect devices. 3,673,679, Cl. 29-571.000.

Carbonetti, Emidio J., Jr.; and Conover, Lewis. Automated paint spray system. 3,674,207, Cl. 239-69.000.

Carbonnel, Jack V.; Grammont, Paul D.; and Werotte, Louis E., to Diamond Shamrok Corporation. Ion exchange resins. 3,674,728, Cl. 260-2.20r.

Carborundum Company, The: *See*—
Economy, James; Wohrer, Luis C.; and Mason, John H., 3,674,894.

Caretta, Renato; and Pacciarini, Antonio, to Industrie Pirelli S.p.A., mesne. Process for curing pneumatic tires. 3,674,899, Cl. 264-315.000.

Carey, John Gerard: *See*—
Colchester, John Edward; Carey, John Gerard; and Taylor, Michael David, 3,674,797.

Carl Zeiss-Stiftung; d/b/a: *See*—
Butscher, Karlheinz, 3,675,238.

Carlon Engineering Company, Incorporated: *See*—
Nielson, Lonnie R., 3,673,795.

Carlson, Dana Peter, to Du Pont de Nemours, E. I., and Company. Stabilized tetrafluoroethylene-fluoroolefin copolymers having methyl ester end-groups and process for producing same. 3,674,758, Cl. 260-87.5.

Carlson, Lee Allen, to Dennison Manufacturing Company. Electrophotographic reproduction sheet and composition containing photoconductive material and coarse filler particles. 3,674,477, Cl. 96-1.800.

Carlson, Richard K., to Bell & Howell Company. Automatic filter actuator for a cartridge load camera. 3,673,934, Cl. 95-11.000.

Carlsson, Per Arvid Emil: *See*—
Brandstrom, Arne Elof; Carlsson, Per Arvid Emil; Carlsson, Stig Ake Ingemar; Corrodi, Hans Rudolf; Ek, Lars; Lamm, Bo Robert; and Ablad, Bengt Arne, 3,674,840.

Carlsson, Stig Ake Ingemar: *See*—
Brandstrom, Arne Elof; Carlsson, Per Arvid Emil; Carlsson, Stig Ake Ingemar; Corrodi, Hans Rudolf; Ek, Lars; Lamm, Bo Robert; and Ablad, Bengt Arne, 3,674,840.

Carman, Kenneth K., to Koppers Company. Gear type coupling. 3,673,814, Cl. 64-8.000.

Carmichael, Alan, to Efco Limited. Conveyors. 3,674,130, Cl. 198-195.

Carrier Corporation: *See*—
McGrath, William L., 3,674,203.
Miller, Charlie D., 3,673,858.

Carter, Edward H., Jr.; Park, Vernon K.; and Seeger, Horst K., to Eastman Kodak Company. Process for polymerizing alpha-olefins. 3,674,765, Cl. 260-88.200.

Cartmell, James V.; and Churchill, Donald, to National Cash Register Company, The. Rear projection screen employing liquid crystals. 3,674,338, Cl. 350-117.000.

Casey, Ernest D.; and Sole, Lloyd H., to Ernest-Lloyd Limited. Magnetic pipeline pigs. 3,673,629, Cl. 15-104.06r.

Cash, David R., to Cash, James, Machine Co. Automatic border panel measuring and cutting machine. 3,673,906, Cl. 83-208.000.

Cash, James, Machine Co.: *See*—
Cash, David R., 3,673,906.

Cashin, William F.; and Mourning, James R., to Honeywell Inc. Humidity responsive element. 3,673,867, Cl. 73-337.000.
Castellano, Joseph Anthony; and Friel, Ronald Norman, to RCA Corporation. Liquid crystal display device including side-by-side electrodes on a common substrate. 3,674,342, Cl. 350-160.00r.
Catalyst Research Corporation: *See—*
Schneider, Alan A.; and Moser, James R., 3,674,562.
Caterpillar Tractor Company: *See—*
Audiffred, Sidney J.; Johnson, Lowell E.; and Pearce, Shairyl I., 3,673,799.
McMurray, Mitchell; Plouzek, Eugene A.; and Sturges, James R., 3,674,279.
Scholl, Rolland D., 3,675,169.
Weick, Louis F.; and Linne, William F., 3,673,796.
Cattermole, George R.; Cummings, Austin M.; and Lyerly, William M., to Du Pont de Nemours, E. I., and Company. Water-in-oil emulsion type blasting agent. 3,674,578, Cl. 149-2.000.
Catulle, Lyderic G., to S.A. Sodialox. Method for assembling together of frame sections. 3,673,674, Cl. 29-464.
Cauge, Thomas Peter: *See—*
Kocsis, Joseph; and Cauge, Thomas Peter, 3,675,092.
Caulfield, Henry John, to Sperry Rand Corporation. Space division multiplexed holographic apparatus. 3,674,331, Cl. 350-3.500.
Cavalucci, Ralph; and Walters, John, to American Science & Engineering. Demonstration compass. 3,673,706, Cl. 35-19.00a.
Celanese Corporation: *See—*
Kalnin, Ilmar L.; and Breckenridge, George J., 3,674,581.
Muratorio, Jorge R., 3,674,830.
Cescioni, Livio. Hinge for internal surface mounting, for doors of pieces of furniture or cabinet doors in general. 3,673,635, Cl. 16-163.000.
CER Geonuclear Corporation: *See—*
Knutson, Carroll F.; and Boardman, Charles Robert, 3,674,313.
Certain-Teed Products Corporation: *See—*
Heilmayr, Peter F.; Kimbrell, Sol B.; and Giuffre, Joseph C., 3,674,388.
Cerutti, Giacomo, to Bemberg S.p.A. Method for producing a thermoplastic synthetic yarn having a latent crimp. 3,673,650, Cl. 28-72.100.
Ceskoslovenska akademie ved: *See—*
Romanuk, Miroslav; Slama, Karel; and Sorm, Frantisek, 3,674,819.
CGR Medical Corporation, mesne: *See—*
Siedband, Melvin P.; Duffy, Philip A., Jr.; and James, Jack L., 3,675,020.
Chalk, David L., to Armco Steel Corporation. Non-ridging chromium stainless steel. 3,674,467, Cl. 75-126.00r.
Champion Incorporated: *See—*
Bossay, Emil J.; and Shanni, Vincent, 3,673,751.
Champion Spark Plug Company: *See—*
Kock, Erhard, 3,674,205.
Chandler Evans, Inc.: *See—*
Bock, Herbert G.; and Szerejko, Walter J., 3,673,762.
Chang, Charles H.; and Randall, David I., to RAF Corporation. Reaction of 1,3-butadiene and organic sulfonyl halides. 3,674,856, Cl. 260-607.00a.
Chapman, Brian M., to Time, Incorporated. Method for handling and positioning film. 3,674,367, Cl. 355-77.000.
Cheng, Ming T.: *See—*
Baldwin, Roger A.; and Cheng, Ming T., 3,674,742.
Chernotsky, Alan; and Satz, Richard, said Satz assor. to said Chernotsky. Sound movie projector. 3,674,345, Cl. 352-31.000.
Cherry Electrical Products Corporation: *See—*
Bedocs, Michael F., 3,674,970.
Long, Eric L., 3,674,966.
Chevron Research Company: *See—*
Fraser, G. Frank, 3,674,413.
Mitchell, David S.; Bridge, Alan G.; and Scott, John W., 3,674,682.
Richardson, Wallace L.; Kautsky, George J.; and Barusch, Maurice R., 3,674,826.
Thompson, Don D., 3,675,121.
Chicago Show Printing Company: *See—*
Krebs, Jimmie M., 3,674,156.
Chilton, Charles B., to Bendix Corporation, The. Commutated motor speed measuring means. 3,675,126, Cl. 324-168.000.
Chiola, Vincent; and Dodds, Phyllis R., to GTE Sylvania Incorporated. Process for removing copper from molybdenum. 3,674,464, Cl. 75-101.00r.
Chiyoda Kako Kensetsu Kabushiki Kaisha: *See—*
Washimi, Koichi; Kanbayashi, Masaaki; Kanai, Toshio; and Fujimori, Akihiro, 3,674,679.
Choisser, John P. Infra-red vidicon. 3,675,071, Cl. 315-10.000.
Christ, Herbert. Device for placing tiles on building walls or the like. 3,673,755, Cl. 52-749.000.
Christman, Charles P., to General Motors Corporation. Ball and socket electrical connector means. 3,675,187, Cl. 339-211.000.
Chromalloy American Corporation: *See—*
Prill, Arnold L.; and Tarkan, Stuart E., 3,674,575.
Chromy, Franz, to Hilti Aktiengesellschaft. Drill construction. 3,674,101, Cl. 175-389.000.
Chrysler Corporation: *See—*
Claunch, Robert W., 3,673,614.
Chrysler United Kingdom Limited: *See—*
Walker, Brian Allison, 3,674,967.
Chulak, William, to Northern Electric Company, Limited. Remote testing system for communication circuits. 3,674,947, Cl. 179-175.20r.
Chupp, John P.: *See—*
Darlington, Walter A.; and Chupp, John P., 3,674,849.
Churchill, Anthony Edward. Live attenuated Marek's disease virus vaccine for poultry. 3,674,861, Cl. 424-89.000.
Churchill, Donald: *See—*
Cartmell, James V.; and Churchill, Donald, 3,674,338.
Ciba Limited: *See—*
Lohse, Friedrich; Schmid, Rolf; Fisch, Willy; and Batzer, Hans, 3,674,746.
Ciba-Geigy AG: *See—*
Leitz, Wilfried, 3,673,761.
Ciba-Geigy Corporation: *See—*
Kern, Joerg, 3,674,811.
Marand, Jean, 3,674,212.
Mizzoni, Renat Herbert; and Blatter, Herbert Morton, 3,674,794.
Rajappa, Srinivasachari, 3,674,786.
Rutz, Hans; and Gubler, Kurt, 3,674,874.
Werner, Lincoln Harvey, 3,674,796.
Cincinnati Milling Machine Company, The: *See—*
Dunn, Donald, 3,674,720.
Circuit Foil Corporation: *See—*
Yates, Charles B., 3,674,656.
Cirillo, John, to Kidde, Walter, & Company, Inc. Incision irrigator for use during surgical procedures. 3,674,024, Cl. 128-234.000.
C.I.T.-Compagnie Industrielle des Telecommunications: *See—*
Jacob, Jean-Baptiste, 3,674,938.
Cities Service Company: *See—*
Callan, John E., 3,674,735.
Driscoll, Richard E.; and DeCuir, George L., 3,674,431.
Wyatt, Glenn O., 3,674,433.
Cities Service Oil Company: *See—*
Bandyopadhyay, Pratip, 3,674,092.
Filachek, Lawrence A.; and Rakow, Marvin S., 3,674,450.
Moore, Ted R., 3,674,089.
Citizen Watch Company Limited: *See—*
Tsuzuki, Akira; and Suzuki, Choken, 3,673,789.
Citroen S.A. (Automobiles Citroen, Berliet, Panhard): *See—*
Grosseau, Albert, 3,674,285.
Clachan, Margaret Loudon: *See—*
Shephard, Robert Basil; Clachan, Margaret Loudon; Kennedy, David Rankine; and Abbott, Terence Arnold, 3,674,531.
Clampitt, Bert H.: *See—*
Anspon, Harry D.; Clampitt, Bert H.; and Gilbert, Ronald E., 3,674,761.
Clark, Charles Keith: *See—*
Levington, Henry John; and Clark, Charles Keith, 3,673,846.
Clark, Thomas F., to Allis-Chalmers Manufacturing Company. Circuit interrupter closing resistors. 3,674,959, Cl. 200-144.0ap.
Claunch, Robert W., to Chrysler Corporation. Sewage disposal system with reusable flush medium. 3,673,614, Cl. 4-10.000.
Clay, Harris A., to Phillips Petroleum Company. Oxidative dehydrogenation process. 3,674,887, Cl. 260-680.00e.
Clayton, Rolf Crowther: *See—*
Arden, Thomas Victor; Borra, Albert George; and Clayton, Rolf Crowther, 3,674,685.
Clempson, Philip George, to Brownbuilt Limited. Continuous forming of transverse stifening ribs on strip material. 3,673,838, Cl. 72-187.000.
Clinehens, Richard M.; Stewart, John K., Jr.; and Ditmer, Robert W., to National Cash Register Company, The. Method of forming electrical conductors. 3,674,579, Cl. 156-5.000.
Clingenpeel, William R.; Cain, Charles L.; Hungerford, Philip C., Jr.; and Hayes, Robert R., to ESB Incorporated, mesne. Machine for casting battery intercell connectors. 3,674,085, Cl. 164-333.000.
Clow, William L.; Benzing, Robert J.; and McConnell, Bobby D., to United States of America, Air Force. Air drying silicone resin bonded dry film lubricant. 3,674,690, Cl. 252-25.000.
Coast Metals, Inc.: *See—*
Cape, Arthur T., 3,674,979.
Coats, John C.; and Wilson, George W., III, to Republic National Bank of Dallas Irving Trust Company and Union Bank. Variable setpoint proportional control appartus for vacuum bakeout systems. 3,674,984, Cl. 219-496.000.
Coffey, Peter E.: *See—*
Van Luik, Frank W.; and Coffey, Peter E., 3,674,435.
Colalillo, Edward P.: *See—*
Ricci, Vero; and Colalillo, Edward P., 3,673,960.
Colbaugh, Syril A. Lapidary machine. 3,673,742, Cl. 51-101.00r.
Colchester, John Edward; Carey, John Gerard; and Taylor, Michael David, to Imperial Chemical Industries Limited. Production of bisquaternary salts of 4;4'-bipyridyls. 3,674,797, Cl. 260-295.0am.
Cole, Edward N., to General Motors Corporation. Exhaust emission control. 3,674,441, Cl. 23-288.00f.
Cole, John F.: *See—*
Barrer, Richard M.; and Cole, John F., 3,674,709.
Cole Manufacturing Company: *See—*
Hatcher, John C., 3,673,970.
Coleman, Michael G.; and Huffman, Tommie R., to Motorola, Inc. Directed emission light emitting diode. 3,675,064, Cl. 313-108.
Colgate-Palmolive Company: *See—*
Simon, Jean Ellen, 3,674,135.

Collins, James W., Sr. Teaching aid. 3,674,905, Cl. 35-35.000.
Collins, Joseph John, to Union Carbide Corporation. Adsorption process for water and nitrogen oxides. 3,674,429, Cl. 23-159.000.
Collins Radio Company: *See—*
Melvin, William J., 3,675,129.
Collister, Frank C. Key bolt. 3,673,910, Cl. 85-3.00r.
Colorforms: *See—*
Birnkrant, Melvin, 3,673,909.
Columbia Electric Manufacturing Co.: *See—*
McCloskey, Fenimore G.; and Jordan, William Robert, 3,675,166.
Combustion Engineering, Inc.: *See—*
Anthony, Andrew J.; Gaines, Albert L.; and Krawiec, Donald M., 3,674,635.
Burrus, Bill S., 3,673,850.
Combustion Equipment Associates, Inc.: *See—*
Gleason, Thomas G., 3,673,769.
Commarmot, Roger, to Rhone-Poulenc S.A. Valve. 3,674,236, Cl. 251-176.000.
Commercial Envelope Manufacturers, Inc.: *See—*
Arnell, Alvin, 3,674,255.
Commissariat a l'Energie Atomique: *See—*
de Vaulchier Du Deschaux, Louis; de Fouchier, Alain; de Vaucelles, Emmanuel; and Facquet, Louis, 3,674,655.
Delafosse, Jacques; and Viaud, Jean-Luc, 3,674,637.
Jacob, Louis, 3,674,340.
Lavigne, Pierre, 3,675,031.
Commonwealth of Australia, care of Secretary Department of Supply, The: *See—*
Mc Allister, Lindsay G., 3,675,191.
Communications Satellite Corporation: *See—*
Standing, Arthur F., 3,675,138.
Compagnie des Montres Longines: *See—*
Berney, Jean Claude, 3,675,147.
Compagnie Generale des Etablissements Michelin raison sociale Michelin & Cie: *See—*
Lejeune, Daniel, 3,674,315.
Verdier, Henri, 3,674,077.
Compagnie Generale des Etablissements Michelin, raison Sociale Michelin & Cie: *See—*
Verdier, Henri, 3,674,080.
Compco Corporation: *See—*
Zagel, Samuel J.; and Patton, Thomas H., 3,675,006.
Computer Systems Engineering, Inc.: *See—*
Molloy, Kenneth H.; Ward, John P.; and Benson, Victor Mark, 3,675,196.
Congoleum Industries, Inc.: *See—*
Petry, Robert K.; and Shortway, Harry A., 3,674,611.
Connair, Michael John, to Du Pont de Nemours, E. I., and Company. Preparation of two-side coated photosensitive papers. 3,674,534, Cl. 117-34.000.
Conover, Lewis: *See—*
Carbonetti, Emidio J., Jr.; and Conover, Lewis, 3,674,207.
Consolidated Foods Corporation, mesne: *See—*
Gaudry, Paul E.; Gaudry, Edouard; Descarries, Raymond; and Anderson, James, 3,673,628.
Consonni, Alberto: *See—*
Baldratti, Giuliana; Consonni, Alberto; and Sciaky, Roberto, 3,674,817.
Container Graphics Corporation: *See—*
Saunders, Philip G., 3,673,929.
Continental Can Company, Inc.: *See—*
Ruekberg, Herbert S., 3,674,060.
Converters Incorporated: *See—*
Welch, Archibald H., 3,674,254.
Conveyor system for drive-in restaurants: *See—*
Kropf, Frederic F., 3,673,967.
Conwed Corporation: *See—*
Larsen, Ronald L., 3,674,898.
Cook, Russell E.: *See—*
Adams, Jay C.; and Cook, Russell E., 3,673,811.
Cook-Waite Laboratories, Inc.: *See—*
Melott, Norman W., 3,673,766.
Cooke, Robert F., to Unitec Industries, Inc. Wound filament ladder. 3,674,110, Cl. 182-46.000.
Cooley, Eugene A.: *See—*
Worstell, Wayne C.; Cousins, Richard C.; and Cooley, Eugene A., 3,674,119.
Cooper, Donno W. Tire chucking device. 3,674,067, Cl. 144-288.00a.
Cooper, Julius; and Nielsen, Edwin A., to Ideal Toy Corporation. Apparatus for starting and terminating a toy vehicle race. 3,674,269, Cl. 273-86.00r.
Cooper, Michael Henry; and Fryatt, Leslie Alva, to N.G.N. Limited. Microtome assemblies. 3,673,904, Cl. 83-171.000.
Copeland, Charles R., to General Motors Corporation. Engagement control of friction drives. 3,674,121, Cl. 192-52.000.
Copeland, George G., to Copeland Systems, Inc. Kraft liquor recovery system including physically isolated oxidation and reduction stages. 3,674,630, Cl. 162-30.000.
Copeland Systems, Inc.: *See—*
Copeland, George G., 3,674,630.
Coppola, Salvatore: *See—*
Formisano, Mario; and Coppola, Salvatore, 3,674,649.
Cordis Corporation: *See—*
Williamson, Donald E., 3,674,009.
Cornelius, Edward C.: *See—*
Blaisdell, William H.; and Cornelius, Edward C., 3,675,016.
Corrigan, Harry G. Cameras. 3,673,943, Cl. 95-24.000.
Corrodi, Hans Rudolf: *See—*
Brandstrom, Arne Elof; Carlsson, Per Arvid Emil; Carlsson, Stig Ake Ingemar; Corrodi, Hans Rudolf; Ek, Lars; Lamm, Bo Robert; and Ablad, Bengt Arne, 3,674,840.
Corson, Steve: *See—*
Abplanalp, George W.; and Corson, Steve, 3,675,034.
Cossaart, Darrel D.: *See—*
Tanaka, Edward Y.; Cossaart, Darrel D.; and Edwards, Norman B., 3,673,680.
Costello, Bernard J., to Argus Engineering Company, Inc. Heating and fusing device. 3,674,974, Cl. 219-85.000.
Cotugno, Dolores. Method of forming a ruffle or the like. 3,674,187, Cl. 223-46.000.
Coughlan, Edward H., to Polaroid Corporation. Drive system for a reflex member. 3,673,935, Cl. 95-11.00r.
Coulombe, Raymond Francis, to Dart Industries Inc. Dip coating machine. 3,673,984, Cl. 118-416.000.
Court, Otto: *See—*
Vernaleken, Hugo; Court, Otto; and Weirauch, Kurt, 3,674,740.
Cousins, Richard C.: *See—*
Worstell, Wayne C.; Cousins, Richard C.; and Cooley, Eugene A., 3,674,119.
Couture, John W., to Automation Industries, Inc. Magnetic pulser circuit for material tester. 3,673,859, Cl. 73-67.80r.
Cox, Ernest Francis, to Ronson Corporation. Divided flow hairdryer. 3,674,980, Cl. 219-367.000.
CPC International Inc.: *See—*
Gooding, Chester M., 3,674,821.
Meyer, Gilbert R.; and Everett, Rollo J., 3,674,555.
Crabtree, Ronald; and Horacek, Peter. Vehicle lifting device. 3,674,252, Cl. 269-55.000.
Crandell, Melvin G.: *See—*
Baller, Ernst O.; Crandell, Melvin G.; Pease, Donald L.; and Witinski, Francis D., 3,674,363.
Crane, Edward J., to International Agri-Systems, Inc. Poultry picker. 3,673,637, Cl. 17-11.100.
Craven, James M., to Du Pont de Nemours, E. I., and Company. Polyiminoquinazolinediones. 3,674,749, Cl. 260-77.5ch.
Cravener, James A. Tamper-proof lock for small arms. 3,673,725, Cl. 42-1.00r.
Creamer, Edward L.: *See—*
Stewart, Richard C.; and Creamer, Edward L., 3,674,469.
Creger, Paul L., to Parke, Davis & Company. 2,2-Dimethyl-ω-aryloxyalkanoic acids and salts and esters thereof. 3,674,836, Cl. 260-473.00g.
Crewe, John Mervyn, to Smith & Wesson Chemical Company, Inc. Airborne dispenser. 3,674,174, Cl. 221-87.000.
Cristol, Stanley J.; and Lee, George A., to Du Pont de Nemours, E. I., and Company, mesne. Photosynthesis of cyclopropyl compounds from allylic compounds. 3,674,665, Cl. 204-163.000.
Crook, Edward J., Jr., to American Hoist & Derrick Company. Hook and collar with gate. 3,674,301, Cl. 294-82.000.
Crook, Richard D., to Industrial Problem Solves, Inc. Vane ejector tool. 3,673,668, Cl. 29-254.000.
Crooks, James W., to Allis-Chalmers Manufacturing Company. Auxiliary transmission. 3,673,890, Cl. 74-681.000.
Cross, John H.: *See—*
Cain, James P.; and Cross, John H., 3,673,611.
Crossen, Kenneth R., to EG&G, Inc. Point light source. 3,675,069, Cl. 313-268.000.
Crowe, William P., to General Electric Company. Refrigerator cabinet with removable partition. 3,674,359, Cl. 312-214.000.
Crown Imports Co., Inc.: *See—*
Radding, Jason D., 3,674,308.
Cryogenic Technology, Inc.: *See—*
Bamberg, Walter H., 3,673,809.
CSF-Compagnie Generale de Telegraphite Sans Fil: *See—*
Brun, Henri, 3,675,067.
Cubberly, Walter E., Jr., to Schlumberger Technology Corporation. Methods and apparatus for detecting the entry of formation gases into a well bore. 3,673,864, Cl. 73-153.000.
Cullen, Allen F.: *See—*
Jeffery, Robert W.; Brown, Robert A., Jr.; and Cullen, Allen F., 3,673,978.
Cullen, Roy H.; and Elliott, Charles H., to Youngstown Sheet and Tube Company. Method for wire-wrapping pipe. 3,673,785, Cl. 57-161.000.
Culligan International Company: *See—*
Elliott, Eugene R.; and Freborg, Lehner C., 3,675,041.
Cummings, Austin M.: *See—*
Cattermole, George R.; Cummings, Austin M.; and Lyerly, William M., 3,674,578.
Curiel, Raymond F. Coiffeur decorating apparatus. 3,675,005, Cl. 240-2.000.
Curtis-Wright Corporation: *See—*
Larrinaga, John; and Jones, Charles, 3,674,384.
Curtiss, Robert H.; Holzman, Richard; and Lazarow, Seldan A., to Nortec Computer Devices, Inc. Means detecting non-rebailed print hammers to recycle the bailing means. 3,673,955, Cl. 101-93.00c.
Curwood, Inc.: *See—*
Mergy, James I., 3,674,626.
Customline Control Products, Inc.: *See—*
Wright, Edward L.; and Meseck, Eugene, 3,673,851.

Cuthbertson, John Harry: *See—*
Swanwick, Barry Frederick; West, Ernest; and Cuthbertson, John Harry, 3,673,819.

Cutler, Leonard S.: *See—*
Cutler, Leonard S.; Holloway, Joseph H.; and Turner, Wilson R., 3,675,149.

Cutler, Leonard S.; Holloway, Joseph H.; deceased (by Cutler, Leonard S.; executor Turner, Wilson R.); and Turner, Wilson R., to Hewlett-Packard Company. Atomic beam tube having multiple beams. 3,675,149, Cl. 331-94.000.

Cutler-Hammer, Inc.: *See—*
Allison, Arthur F.; Greening, Donald J.; and Mollgaard, Anton N., 3,675,104.

Dabringhausen, Friedhelm: *See—*
Korner, Gerhard; Schmitz, Wolfgang; Dabringhausen, Friedhelm; and Gruber, Lothar, 3,674,957.

Dabrowski, Jan: *See—*
Lyons, Richard J.; and Dabrowski, Jan, 3,674,418.

Dacey, Paul F.; De Toma, Samuel; Hayes, Thomas; and Mc Namara, Matthew F., to EDUS Corporation. Educational device. 3,673,712, Cl. 35-74.000.

Daguet, Jacques Lucien: *See—*
Bellanger, Maurice Georges; Daguet, Jacques Lucien; and Duong, Tuan Kiet, 3,674,937.

Dahlquist, John A.: *See—*
Growald, Bert; Dahlquist, John A.; and Marlor, Guy A., 3,674,711.

Daiichi Seiyaku Co., Ltd.: *See—*
Naito, Takeo; Hirata, Miyoshi; and Isoda, Sumiro, 3,674,833.

Daiichi Yakuhin Sangyo Kabushiki Kaisha: *See—*
Makabe, Kazuo, 3,674,823.

Daikin Kogyo Co., Ltd.: *See—*
Izumo, Masanori; and Yoshimura, Tatsushiro, 3,674,762.
Nakamura, Naoya; and Miyata, Yasuo, 3,674,763.

Dailey, Charles R., Jr., to General Tire & Rubber Company, The. Pneumatic tire tread design. 3,674,076, Cl. 152-209.00r.

Daimler-Benz Aktiengesellschaft: *See—*
Brugger, Franz; and Paul, Jurgen, 3,674,319.
Reisacher, Josef; Noltemeyer, Friedrich; and Dziggel, Reiner, 3,674,000.

Daly, Dante: *See—*
Giolitti, Nicolo; and Daly, Dante, 3,674,202.

Danbrova, Roger G. Fish lure. 3,673,728, Cl. 43-42.510.

Daniel, David W.; and Anthony, Russell W., to Lear Siegler, Inc. Indexable adjustable abutment. 3,673,887, Cl. 74-568.00r.

Danielmeyer, Hans Guenter, to Bell Telephone Laboratories, Incorporated. Laser pump cavity with conical geometry. 3,675,156, Cl. 331-94.500.

Daniels, Alma U., to Du Pont de Nemours, E. I., and Company. Titanium carbide-nickel compositions. 3,674,443, Cl. 29-182.800.

Danly Machine Corporation: *See—*
Heiberger, Francis E., 3,675,098.

Danti, Bernard, to Millipore Corporation. Check valve. 3,674,147, Cl. 210-136.000.

D'Aprile, Paul J., to Wiremold Company, The. Scuff strip for tow-element helically wound tubing. 3,674,056, Cl. 138-134.000.

Dardenne, Jean. Insulating tape and method of fabrication thereof. 3,674,615, Cl. 161-49.000.

Dare, Roy R.: *See—*
Randolph, Robert W.; and Dare, Roy R., 3,673,914.

Dark, Joe W.: *See—*
Barnett, Richard C.; Dark, Joe W.; and Schulze, James L., Sr., 3,674,005.

Darlington, Walter A.; and Chupp, John P., to Monsanto Company. 2',5-Dihalo-3-tert. alkyl-5-nitrosalicylanilides. 3,674,849, Cl. 260-559.00s.

Dart Industries Inc.: *See—*
Coulombe, Raymond Francis, 3,673,984.

Data Memory, Inc.: *See—*
Faroudja, Yves C., 3,674,920.

Dauber, Philip S.: *See—*
Arnold, Richard F.; Dauber, Philip S.; and Sussenguth, Edward H., 3,675,215.

Dauber, Philip S.; Robelen, Russell J.; and Wierzbicki, John R., to International Business Machines Corporation. Sequence interlocking and priority apparatus. 3,675,217, Cl. 340-172.5.

Davies, Daniel J.: *See—*
Manion, Jean P.; and Davies, Daniel J., 3,674,667.

Davies, Robert H., to Parker-Hannifin Corporation. Fluid motor. 3,673,925, Cl. 92-128.000.

Davies, Ronald C., to Modern Research Inc., mesne. Auto theft prevention system. 3,675,036, Cl. 307-10.0at.

Davies, Terence J.: *See—*
Nelson, Melvin A.; Lackey, Jerry G.; and Davies, Terence J., 3,675,022.

Davin, John Joseph. Construction support means. 3,674,234, Cl. 248-239.000.

Davis, Billy W., to Schlumberger Technology Corporation. Hoop stressed beam hydrophone. 3,675,193, Cl. 340-10.000.

Davis, Kenneth E., to Hobart Manufacturing Company, The. Analysis of comminuted meat products. 3,673,852, Cl. 73-15.400.

Davis, Terry R.: *See—*
Schaab, Carl K.; Weyrauch, George T.; and Davis, Terry R., 3,674,589.

Day, William C.: *See—*
Blank, Fritz; Day, William C.; Harmon, Sandra R.; Toncic, Pauline F.; and Yu, Ruey J., 3,674,645.

Dayco Corporation: *See—*
Huber, Walter E., 3,674,322.

De Barros, Fernando. Nivagational trapezoid. 3,673,690, Cl. 33-75.000.

De Brey, Robert J. Particle monitor. 3,674,316, Cl. 302-65.000.

De Clerk, Joseph L.: *See—*
Derderian, George; and De Clerk, Joseph L., 3,675,012.

de Fouchier, Alain: *See—*
de Vaulchier Du Deschaux, Louis; de Fouchier, Alain; de Vaucelles, Emmanuel; and Facquet, Louis, 3,674,655.

de Gelder, Jacob; Baginski, Albert R.; and Miller, Anthony D., to Mattel, Inc. Reversible surface tray assembly for a toy top. 3,674,271, Cl. 273-115.000.

De Rose, Kenneth M.: *See—*
Beckham, Robert R.; Walters, Emmett L.; Brown, Jack G.; De Rose, Kenneth M.; and Ryan, Joseph D., 3,673,981.

De Simone, David N., to United States of America, Navy. Protective helmet. 3,673,609, Cl. 2-3.00r.

De Toma, Samuel: *See—*
Dacey, Paul F.; De Toma, Samuel; Hayes, Thomas; and Mc Namara, Matthew F., 3,673,712.

de Vaucelles, Emmanuel: *See—*
de Vaulchier Du Deschaux, Louis; de Fouchier, Alain; de Vaucelles, Emmanuel; and Facquet, Louis, 3,674,655.

de Vaulchier Du Deschaux, Louis; de Fouchier, Alain; de Vaucelles, Emmanuel; and Facquet, Louis, to Commissariat a l'Energie Atomique. Surface preparation of uranium parts. 3,674,655, Cl. 204-1.500.

de Villeneuve, Yolande-Paule Marie-Josephe: *See—*
Phlipot, Georges A.; Michiels, Marie-Jose-Suzanne and; and de Villeneuve, Yolande-Paule Marie-Josephe, 3,674,745.

Deal, Joseph D., Jr.; and Michie, James C., III, to Newport News Shipbuilding and Dry Dock Company. Method of maritime delivery of crude oil through ice-congested regions. 3,674,042, Cl. 137-1.000.

Dean, Warren E.; and Dorsett, Charles M., to PPG Industries, Inc. Mercury removal. 3,674,428, Cl. 23-134.000.

Decca Limited: *See—*
Hendley, Dennis Alfred, 3,673,977.

Decision Data Corporation: *See—*
Petusky, Neil J., 3,675,172.

Decker, Herbert; and Waldenburger, Hermann, to Triumph Werke Nurnberg AG. Type head drive. 3,674,126, Cl. 197-55.000.

DeCuir, George L.: *See—*
Driscoll, Richard E.; and DeCuir, George L., 3,674,431.

Decupper, Jean A., to Detec S.A. Apparatus for purifying and sterilizing premises. 3,674,421, Cl. 21-74.00r.

Dee, Kenneth Herbert William: *See—*
Huber, Manfred; Klimek, Norbert; and Dee, Kenneth Herbert William, 3,673,956.

Deeg, Emil W.; and Graf, Robert E., to American Optical Corporation. Optical glasses having improved spectral transmission produced from mercury nitrate containing glass batches. 3,674,530, Cl. 106-47.00q.

Deere & Company: *See—*
Egli, John Alfred, 3,674,105.
Holzhfi, Don Earl, 3,673,772.
Jones, Frank D. Lloyd, 3,673,775.
Nelson, Roger John, 3,674,095.

Deering Milliken, Inc.: *See—*
Mienstaedt, Robert, 3,674,993.

Deering Milliken Research Corporation: *See—*
Cain, James P.; and Cross, John H., 3,673,611.
Gagarine, Dmitry M., 3,674,548.
Klein, Norman E., 3,674,584.
Otto, Wolfgang Karl Ferdinand, 3,674,417.
Varner, George C., 3,674,079.

Degenkolbe, Joachim; and Musgen, Bruno, to Huttenwerk Oberhausen AG. Fabrication of steel structures by welding. 3,674,577, Cl. 148-143.000.

Degginger, Edward R.; and Goetz, Frederick J., to Allied Chemical Corporation. Process for controlling nematodes. 3,674,878, Cl. 424-330.000.

Delafosse, Jacques; and Viaud, Jean-Luc, to Commissariat a l'Energie Atomique. Spacer grid for nuclear reactor fuel element assembly. 3,674,637, Cl. 176-78.000.

DeLaval Turbine, Inc.: *See—*
Brimmer, Donald B.; Brown, James Stuart; and Becker, Charles H., 3,674,686.

Delta Data Systems Corporation: *See—*
Bard, Irving Gary, 3,675,208.

Demler, Henry William, Sr., to AMP Incorporated. Tubular connection devices. 3,674,292, Cl. 285-174.000.

Dening, Robert D.; and Garlinghouse, Leslie H., to Garlinghouse Brothers Manufacturing Co. Self-supporting compactor. 3,673,931, Cl. 94-45.00a.

Dennewitz, Rolf Dictor, to Loewe Opta GmbH. Transistorized quenching arrangement for a duration-controlled flash tube. 3,675,074, Cl. 315-159.000.

Dennison Manufacturing Company: *See—*
Carlson, Lee Allen, 3,674,477.

Derderian, George; and De Clerk, Joseph L., to United States of America, Navy. Cinefluorographic holography. 3,675,012, Cl. 250-60.000.

Derrien, Michel; and Le Page, Jean Francois, to Institut Francais du Petrole des Carburants et Lubrifiants. Process for selectively hydrogenating unsaturated hydrocarbons. 3,674,888, Cl. 260-681.500.

Derry, Wendell A. Keyboard transposition of electrical musical instruments. 3,674,907, Cl. 84-1.010.

Des Jardins, James, to Emerson Electric Co. Self-ejecting chuck key. 3,673,895, Cl. 81-90.00a.

Descarries, Raymond: *See—*
Gaudry, Paul E.; Gaudry, Edouard; Descarries, Raymond; and Anderson, James, 3,673,628.

Desty, Denis Henry; and Whyman, Barry Herbert Francis, to British Petroleum Company Limited, The. Burners having a pulsating mode of operation. 3,674,409, Cl. 431-1.000.

Detec S.A.: *See—*
Decupper, Jean A., 3,674,421.

Dethlefsen, Rolf: *See—*
Attia, Edward A.; and Dethlefsen, Rolf, 3,674,958.

Deutsche Gold- und Silber-Scheideanstalt vormals Roessler: *See—*
Illigen, Alfred; and Neugebauer, Walter, 3,674,430.

Dewey, Raymond D.; Mapes, Robert S.; and Jones, Garth S., to Reynolds Metals Company. Feature counter with improved masking and grey level detection. 3,674,926, Cl. 178-6.800.

Di Crispino, Joseph S.; and Kaldor, Leslie M., to United States of America, Navy. Triaxial stress test apparatus. 3,673,862, Cl. 73-102.000.

Diamond, Clyde, Sr. Adjustable archery sight. 3,674,002, Cl. 124-30.00r.

Diamond Laboratories, Inc.: *See—*
Welter, Clarence J.; and Ristic, Miodrag, 3,674,860.

Diamond Shamrock Corporation: *See—*
Carbonnel, Jack V.; Grammont, Paul D.; and Werotte, Louis E., 3,674,728.
Fogelman, Edward I., 3,674,676.
Lukes, James J.; and Koll, Robert J., 3,674,881.
Sellet, Lucien, 3,674,415.

Diazit Company Inc.: *See—*
Neeb, Robert P.; and Patrick, Henry W., 3,674,257.

Dick, A. B., Company: *See—*
Averbach, Alexander U., 3,674,693.
Stone, J. James, Jr.; Madden, Thomas J., Jr.; Gerlach, Glendon T.; and Keur, Robert I., 3,673,936.

Dickey, Thomas A., to Avco Corporation. Multi-channel particle separator. 3,673,771, Cl. 55-306.000.

Diebold, James L.: *See—*
Wolf, Milton; and Diebold, James L., 3,674,790.

Dietrich, John W.: *See—*
Ripsco, William B.; and Dietrich, John W., 3,673,824.

Digital Data Systems, Inc., mesne: *See—*
Block, Donald Edmund; and Alexakis, Nicholas George, 3,675,210.

Digital Equipment Corporation: *See—*
White, Donald A., 3,675,083.

Dijkhuizen, Willem; Termin, Erich; Bleh, Otto; and Morgenstern, Dieter, to Dynamit Nobel Aktiengesellschaft. Manufacture of polyurethanes using organic vanadium compounds as catalysts. 3,674,716, Cl. 260-2.5ab.

Dillingham Corporation: *See—*
Worstell, Wayne C.; Cousins, Richard C.; and Cooley, Eugene A., 3,674,119.

Dills, Marguerite B. Teaching device. 3,673,704, Cl. 35-8.

Dills, Raymond L.: *See—*
Hurko, Bohdan; and Dills, Raymond L., 3,674,983.

Diolot, Lucien, to Societe Nouvelle Spidem. Rolling method using prestressing. 3,673,843, Cl. 72-245.000.

Dippolhofer, Robert: *See—*
Schnegg, Robert; Pelousek, Herbert; Dippolhofer, Robert; Wiegreffe, Wolfgang; Voelz, Hans-Georg; and Kienast, Gerhard, 3,674,747.

Ditmer, Robert W.: *See—*
Clinehens, Richard M.; Stewart, John K., Jr.; and Ditmer, Robert W., 3,674,579.

Dittel, Friedrich; and Jorns, Peter, to Hooker Chemical Corporation. Noncorrosive cleaning composition and process. 3,674,699, Cl. 252-135.000.

Diversified Medical Corporation: *See—*
Falenks, John, 3,674,010.

Dixon, Alton E.: *See—*
Gooding, Otis E.; and Dixon, Alton E., 3,674,934.

Dodd, John Alton, Jr.; and Line, George Harry, to RCA Corporation. Method of making matching photoprinting masters. 3,674,488, Cl. 96-44.000.

Dodds, Phyllis R.: *See—*
Chiola, Vincent; and Dodds, Phyllis R., 3,674,464.

Dodgson, Hugh, to Moore Business Forms, Inc. Multiple form with removable tabs. 3,674,286, Cl. 281-2.000.

Dogadkin, Boris Aristarkhovich: *See—*
Bokov, Jury Sergeevich; Vikulina, Ninel Vladimirovna; Dogadkin, Boris Aristarkhovich; Erofeev, Boris Vasilievich; Larina, Anastasia Vasilievna; Lavrischev, Vadim Petrovich; Markov, Vladimir Vladimirovich; Naumova, Sofia Fadeevna; Jurina, Olge Demidovna; and Yarovaya, Galina Dmitrievne, 3,674,496.

Dohmeier & Strothotte KG: *See—*
Dohmeier, Arnold; and Schwedhelm, Diether, 3,673,765.

Dohmeier, Arnold; and Schwedhelm, Diether, to Dohmeier & Strothotte KG. Packaging device. 3,673,765, Cl. 53-187.000.

Dohogne, Linus E.: *See—*
Koehler, Albert T.; Shideler, Paul J.; and Dohogne, Linus E., 3,673,950.

Doi, Masaru: *See—*
Iemura, Toshio; Doi, Masaru; and Shimizu, Yoshiaki, 3,674,944.

Dols, Wilhelmus Emilius Maria, to Van Der Grinten N.V. Development apparatus for electrophotographic copies. 3,673,985, Cl. 118-637.000.

Dominion Bridge Company Limited: *See—*
Graville, Brian Anthony, 3,674,973.
Hagen, William Dobson, 3,673,658.
Mutch, Robert Douglas, 3,674,302.

Donalson, Alton E. Plumbing grate fixture. 3,674,149, Cl. 210-163.000.

Donini, Pietro, to Istituto Farmacologico Serono S.p.A. Procedure for obtaining pituitary gonadotropic hormones from urine. 3,674,865, Cl. 424-99.000.

Doonan Truck & Equipment, Inc.: *See—*
Doonan, Wendell M.; and Knobloch, Ronald E., 3,674,303.

Doonan, Wendell M.; and Knobloch, Ronald E., to Doonan Truck & Equipment, Inc. Livestock trailer. 3,674,303, Cl. 296-24.00c.

Doran, Leo F.; and Schlenker, Theodore R., to Beaver Precision Products, Inc. Ball spline assembly. 3,673,817, Cl. 64-23.700.

Dorfmann, Oskar, to Grand-City Container Corporation. Carton erecting and packaging machine. 3,673,763, Cl. 53-183.000.

Dorsett, Charles M.: *See—*
Dean, Warren E.; and Dorsett, Charles M., 3,674,428.

Dounoucos, Angelo, to General Electric Company. Integrated system for generating oxygen and controlling carbon dioxide concentration in closed circuit breathing apparatus. 3,674,022, Cl. 128-142.000.

Dove, Ernest Baker, to Teleflex Products Limited. Safety seats for automobiles and aircraft. 3,674,307, Cl. 297-284.000.

Dow Chemical Company, The: *See—*
Bubblitz, Donald E., 3,674,789.
Drasner, Joseph, 3,674,597.
Dunbar, Joseph E.; and Zemba, John W., 3,674,795.
Gibbons, Carl L., 3,674,812.
La Barge, Robert G.; and Johnson, Gary L., 3,674,858.
Larsen, Eric R.; Keller, Albert Kent; and Plepys, Raymond A., 3,674,664.
Nowak, Robert M.; and Ginter, Thomas O., 3,674,893.
Reifschneider, Walter, 3,674,857.

Doyle, Richard H., to Fastener Corporation. Fastener driving tool. 3,673,922, Cl. 91-422.000.

Doyle, Walter M. Shielded pyroelectric detector apparatus and method. 3,675,017, Cl. 250-83.30h.

Dracon Industries: *See—*
Drake, King B., 3,675,183.

Drake, King B., to Dracon Industries. Telephone cord terminal block. 3,675,183, Cl. 339-103.00r.

Drasner, Joseph, to Dow Chemical Company, The. Chlorinated polyethylene-organic polyisocyanate adhesive for laminating chlorinated polyolefin film or sheet materials to fabric. 3,674,597, Cl. 156-331.000.

Drehman, Lewis E.: *See—*
Box, E. O., Jr.; Drehman, Lewis E.; and Farha, Floyd E., Jr., 3,674,706.

Dreisin, Alexander, to Allis-Chalmers Manufacturing Company. Fuel injection pump timing and metering arrangement. 3,673,996, Cl. 123-139.0ap.

Dresser Industries, Inc.: *See—*
Harper, James C., 3,673,974.

Driesenga, Edwin J.: *See—*
Van Ryn, Edwin; and Driesenga, Edwin J., 3,673,634.

Driscoll, Richard E.; and DeCuir, George L., to Cities Service Company. Generation of silicon tetrafluoride. 3,674,431, Cl. 23-205.000.

Driscoll, Rosemary F. Laundering clasp. 3,673,639, Cl. 24-16.0pb.

Drown, George C., 1/2 to Larson, Leward M. Vehicle tire air pressure monitoring system. 3,675,198, Cl. 340-58.000.

Druschel, William O., to International Business Machines Corporation. Mask overlay checking means. 3,674,487, Cl. 96-41.000.

DSO 'Avtomatizatsia I Priborostroene': *See—*
Tsvetkov, Krum Kostov; Ezekiev, Ezekiya Gueorguiev; Nikolov, Petko Petrov; and Otsetov, Vassil Christov, 3,674,991.

Du Pont de Nemours, E. I., and Company: *See—*
Alder, Hanspeter, 3,674,560.
Aldridge, Gerald Richard; Ehrich, Felix Frederick; and Struve, William Scott, 3,674,814.
Angelo, Rudolph John, 3,674,627.
Aufdermarsh, Carl Albert, Jr.; and Fogiel, Adolf Wojciech, 3,674,721.
Bellis, Harold Edward, 3,674,447.
Carlson, Dana Peter, 3,674,758.
Cattermole, George R.; Cummings, Austin M.; and Lyerly, William M., 3,674,578.
Connair, Michael John, 3,674,534.
Craven, James M., 3,674,749.
Daniels, Alma U., 3,674,443.
Hytrek, Frederick Paul, 3,674,705.
Jenkins, Francis Edward, 3,674,719.
Kelemen, Denis G., 3,674,515.
Parker, Fred W., 3,674,734.
Self, James M., 3,674,526.

— Strolle, Clifford Hugh, 3,674,545.
Du Pont de Nemours, E. I., and Company, mesne: *See*—
Cristol, Stanley J.; and Lee, George A., 3,674,665.
Duffy, Philip A., Jr.: *See*—
Siedband, Melvin P.; Duffy, Philip A., Jr.; and James, Jack L., 3,675,020.
Dugger, Cortland O., to United States of America, Air Force. Process for the synthesis of glass and single crystal germanates of identical composition. 3,674,455, Cl. 65-134.000.
Duguay, Michel Albert; and Hansen, John Wilfred, to Bell Telephone Laboratories, Incorporated. Dispersion compensation in lasers. 3,675,154, Cl. 331-94.500.
Dukes, John N., to Hewlett-Packard Company. Temperature compensation of a laser interferometer. 3,674,371, Cl. 356-106.000.
Dunbar, Glenn G., to Allied Tube & Conduit Corporation. Material transporting apparatus. 3,674,166, Cl. 214-501.000.
Dunbar, Joseph E.; and Zemba, John W., to Dow Chemical Company, The. Pyridyl zanthates. 3,674,795, Cl. 260-294.80e.
Dunn, Donald, to Cincinnati Milling Machine Company, The. Process for mixing coreactive liquids which form polyurethanes. 3,674,720, Cl. 260-2.5bc.
Duong, Tuan Kiet: *See*—
Bellanger, Maurice Georges; Daguet, Jacques Lucien; and Duong, Tuan Kiet, 3,674,937.
Duplex, Paul: *See*—
Globus, Anatol; Duplex, Paul; and Vautier, Roger, 3,674,218.
Durbin, George A. Juice extracting device. 3,673,952, Cl. 100-98.000.
Duro-Test Corporation: *See*—
Strauss, Herbert S., 3,675,068.
Dusik, Josef: *See*—
Havranek, Milan; Zouhar, Drahomir; Dusik, Josef; Kucera, Jaromir; and Krejcirik, Jiri, 3,673,818.
Dutton, John C., to General Electric Company. High voltage coil assembly for electric induction apparatus. 3,675,175, Cl. 336-70.000.
Duve, Gunther: *See*—
Oberst, Hermann; Ebigt, Joachim; Duve, Gunther; and Schommer, Alfred, 3,674,624.
Oberst, Hermann; Ebigt, Joachim; Duve, Gunther; and Schommer, Alfred, 3,674,625.
Dwyer, James L.: *See*—
Post, Arthur H., Jr.; Polinsky, Ronald J.; and Dwyer, James L., 3,674,678.
Dyckerhoff & Widmann: *See*—
Finsterwalder, Ulrich; Finsterwalder, Klemens; and Stefaniak, Hans, 3,673,624.
Dyer, H. Daniel, III. Auxiliary lighting system. 3,675,038, Cl. 307-66.000.
Dyna-Jet Corporation, The: *See*—
Gage, Frank H.; and Zabel, Marvin L., 3,674,211.
Dynamics Corporation of America: *See*—
Smith, Peter B., 3,675,112.
Dynamit Nobel Aktiengesellschaft: *See*—
Dijkhuizen, Willem; Termin, Erich; Bleh, Otto; and Morgenstern, Dieter, 3,674,716.
Wittholz, Helge, 3,673,916.
Dziggel, Reiner: *See*—
Reisacher, Josef; Noltemeyer, Friedrich; and Dziggel, Reiner, 3,674,000.
Earing, Mason H., to General Electric Company. Thermal-overload protective arrangement for inductive devices. 3,675,081, Cl. 317-15.000.
Early, Robert M.; and Raes, Maurice C., to Olin Corporation. Dielectrically heat sealable polyurethane foam. 3,674,718, Cl. 260-2.5aq.
Eastman Kodak Company: *See*—
Blaisdell, William H.; and Cornelius, Edward C., 3,675,016.
Carter, Edward H., Jr.; Park, Vernon K.; and Seeger, Horst K., 3,674,765.
Eldredge, Carl H.; and Mee, John D., 3,674,782.
Harvey, Donald M., 3,673,939.
Harvey, Donald M., 3,673,940.
Jarvis, James G., 3,673,961.
Jeffreys, Roy A.; and Thomas, David A., 3,674,493.
Michatek, Chester W.; and Harvey, Donad M., 3,673,938.
Morse, Theodore H., 3,674,532.
Phlipot, Georges A.; Michiels, Marie-Jose-Suzanne and; and de Villeneuve, Yolande-Paule Marie-Josephe, 3,674,745.
Staiger, Ulrich, 3,674,350.
Streicher, Heinz; Riek, Siegfried; and Leutwein, Manfred, 3,674,351.
Trachtenberg, William, 3,674,353.
Webb, Richard V.; and Batesky, Donald C., 3,674,805.
Williams, Francis A., 3,673,941.
Eberle, Gunter. Receptacle holder for centrifuges. 3,674,198, Cl. 233-26.000.
Ebigt, Joachim: *See*—
Oberst, Hermann; Ebigt, Joachim; Duve, Gunther; and Schommer, Alfred, 3,674,624.
Oberst, Hermann; Ebigt, Joachim; Duve, Gunther; and Schommer, Alfred, 3,674,625.
Eclipse Sleep Products, Inc.: *See*—
Kline, John C.; and Kronman, Albert F., 3,673,619.
Economy, James; Wohrer, Luis C.; and Mason, John H., to Carborundum Company, The. Unsaturated polyester resins modified with organic dibasic acid salts. 3,674,894, Cl. 260-875.000.
Edenhofer, Albrecht; and Spiegelberg, Hans, to Hoffmann-La Roche Inc. [4'-(Phenyl-3,6-dihydro-1-(2H)-pyridyl]-2-hydroxy propoxy-anilides and derivatives thereof. 3,674,799, Cl. 260-294.80f.
Edmiston, Dorothy Byars. Threshing implements. 3,674,035, Cl. 130-10.000.
Edstrom, Woodrow O.; and Norling, Charles H., to Sperry Rand Corporation. Method of making side entry card guides. 3,673,669, Cl. 29-428.000.
EDUS Corporation: *See*—
Dacey, Paul F.; De Toma, Samuel; Hayes, Thomas; and Mc Namara, Matthew F., 3,673,712.
Edwards, Alan: *See*—
Loukes, David Gordon; and Edwards, Alan, 3,674,453.
Edwards, John A.; Fried, John H.; and McCrae, William, to Syntex Corporation. Annulene steroids, intermediates, and method of making. 3,674,816, Cl. 260-397.400.
Edwards, Lon E., to Solitron Devices, Inc. Random noise generator diode with impedance matched transistor amplifier. 3,675,148, Cl. 331-78.000.
Edwards, Norman B.: *See*—
Tanaka, Edward Y.; Cossaart, Darrel D.; and Edwards, Norman B., 3,673,680.
Efco Limited: *See*—
Carmichael, Alan, 3,674,130.
EG&G, Inc.: *See*—
Crossen, Kenneth R., 3,675,069.
Egashira, Hiroshi: *See*—
Osaki, Keisuke; Egashira, Hiroshi; and Hayashi, Yasunori, 3,675,206.
Eggert, Walter S., Jr., to Boothe Airside Systems, Inc., mesne. Method of assemblying a vehicle body. 3,673,675, Cl. 29-469.000.
Egli, John Alfred, to Deere & Company. Drive axle for wide-track crawler vehicles. 3,674,105, Cl. 180-9.480.
Egnaczak, Raymond K., to Xerox Corporation. Cleaning apparatus. 3,673,632, Cl. 15-316.000.
Ehrich, Felix Frederick: *See*—
Aldridge, Gerald Richard; Ehrich, Felix Frederick; and Struve, William Scott, 3,674,814.
Eirich, Wilhelm; and Airich, Gustav. Mixing machine. 3,674,241, Cl. 259-15.000.
Eisenhauer, Leigh E.: *See*—
Eisenhauer, William A., 3,673,710.
Eisenhauer, William A.: *See*—
Eisenhauer, William A., 3,673,710.
Eisenhsuer, William A., to Eisenhauer, William A., Eisenhauer, William P., Trust, Ida J. and Eisenhauer, Leigh E. Apparatus for providing a representation of celestial bodies. 3,673,710, Cl. 35-44.000.
Eisenhauer, William P.: *See*—
Eisenhauer, William A., 3,673,710.
Ek, Lars: *See*—
Brandstrom, Arne Elof; Carlsson, Per Arvid Emil; Carlsson, Stig Ake Ingemar; Corrodi, Hans Rudolf; Ek, Lars; Lamm, Bo Robert; and Ablad, Bengt Arne, 3,674,840.
El Chico Corporation: *See*—
Pomara, Johnny B., Jr., 3,674,178.
Elco Corporation: *See*—
Ruehlemann, Herbert E.; and Wontorsky, Alexander, 3,675,185.
Eldredge, Carl H.; and Mee, John D., to Eastman Kodak Company. Intermediates and the preparation and use thereof. 3,674,782, Cl. 260-240.400.
Electrohome Limited: *See*—
Fichtner, Roland H., 3,675,142.
Electronic Associates Inc.: *See*—
Horbach, Stephen, 3,675,174.
Electronic Memories and Magnetics Corporation: *See*—
Harding, Philip A., 3,675,221.
Elitex Zavody textilniho strojirenstvi generalni reditestvi: *See*—
Havlas, Jiri; and Sedlarik, Jaroslav, 3,673,649.
Elitex-Zavody textilniho strojirestvi, generalni: *See*—
Havranek, Milan; Zouhar, Drahomir; Dusik, Josef; Kucera, Jaromir; and Krejcirik, Jiri, 3,673,818.
Ellenberger & Poensgen GmbH: *See*—
Ellenberger, Jakob, 3,675,177.
Ellenberger & Poensgen GmbH: *See*—
Ellenberger, Jakob, 3,674,952.
Ellenberger, Jakob, 3,675,167.
Ellenberger, Jakob, to Ellenberger & Poensgen GmbH. Lockswitch. 3,674,952, Cl. 200-61.640.
Ellenberger, Jakob, to Ellenberger & Poensgen GmbH. Switch overload. 3,675,167, Cl. 335-179.000.
Ellenberger, Jakob, to Ellenberger & Poenegen GmbH. Safety switch. 3,675,177, Cl. 337-66.000.
Ellers, Frederick S.; Small, Sam W.; and Serpas, Luis B., to Bechtel International Corporation. Offshore loading and unloading of tankers. 3,674,062, Cl. 141-387.000.
Elliott, Charles H.: *See*—
Cullen, Roy H.; and Elliott, Charles H., 3,673,785.
Elliott, Eugene R.; and Freborg, Lehner C., to Culligan International Company. Regeneration control and timer system. 3,675,041, Cl. 307-141.000.
Elliott, James O., to General Motors Corporation. Segment wipe control for windshield wiper system. 3,675,103, Cl. 318-281.000.

Ellis, David R.; Michels, John; and Gabbert, Ira, to Interdata, Incorporated. Processor servicing external devices, real and stimulated. 3,675,214, Cl. 340-172.500.
Ellis, Forest M. Body attached stilts with vertically adjustable steps. 3,673,615, Cl. 3-4.000.
Elsner, Nils Ake; and Nilson, Hans Erik, to Infrarodteknik AB. Method for packing carbonated beverages into containers using electromagnetic energy. 3,674,513, Cl. 99-217.000.
Emanuel, Nikolai Markovich: *See*—
Bljumberg, Erna Albertovna; Bobolev, Alexandr Vasilievich; Boboleva, Svetlana Paviovna; and Emanuel, Nikolai Markovich, 3,674,813.
Emerson Electric Co.: *See*—
Des Jardins, James, 3,673,895.
Emerson, William A.; and Redmond John A., to United States Steel Corporation. Induction heating coil constructed to minimize vibration and noise. 3,674,971, Cl. 219-10.790.
Emhart Corporation: *See*—
Prete, John A.; and Raudat, John L., 3,673,756.
Energy Absorption Systems, Inc.: *See*—
Young, Bruce O.; Walker, Grant W.; Ford, Duane B.; and Seegmiller, Wan, 3,674,115.
Energy Conversion Devices, Inc.: *See*—
Neale, Ronald G., 3,675,090.
Engelhard Hanovia, Inc.: *See*—
Highberg, Carle W., 3,673,746.
Engelhardt, Hans: *See*—
Rohde, Robert P.; Welsh, Clarence E.; and Engelhardt, Hans, 3,674,385.
Engle, Gordon A., to Honeywell Inc. Stainless steel snap acting mechanism with low resistance electrical path. 3,674,969, Cl. 200-166.00c.
English Clays Lovering Pochin & Company Limited: *See*—
Noble, Frank Raymond, 3,674,521.
English Clays Lovering Pochin & Company Limited: *See*—
Malden, Peter James, 3,674,558.
Toms, Gerald Lance, 3,674,529.
English, Dolores J. Method of and apparatus for visual instruction. 3,673,711, Cl. 35-62.000.
English Numbering Machines Limited: *See*—
Huber, Manfred; Klimek, Norbert; and Dee, Kenneth Herbert William, 3,673,956.
English, William D.: *See*—
Randle, Walter N.; Spieth, Howard H.; and English, William D., 3,673,871.
Ensley, Donald L., to U.S. Atomic Energy Commission under the provisions of 42 U.S.C. 2182. Cryogenic sound supported inertial reference. 3,673,872, Cl. 73-505.000.
Entron, Inc.: *See*—
Lankford, Barre D.; and Lanham, Charles W., 3,675,181.
Entschel, Roland; and Steinemann, Willy, to Sandoz Ltd.; a/k/a and Sandoz A.G. Basic phenylazophenyl dyes containing a quaternized aminoalkylenecarboxamide group. 3,674,772, Cl. 260-207.000.
Environment/One Corporation: *See*—
Allen, Merton, 3,673,733.
Eppler, Daniel, to Thomas & Betts Corporation. Extrusion tool. 3,674,392, Cl. 425-109.000.
Eppolito, Salvatore J. Shaping and ribbing tool for bowling ball finger holes. 3,673,685, Cl. 30-142.000.
Erba, Carlo, S.p.A.: *See*—
Angelucci, Romano, 3,674,864.
Erdman, William Charles, to Bell Telephone Laboratories, Incorporated. Zirconium mask for semiconductor fabricated using alkaline etchants. 3,674,580, Cl. 156-13.000.
Erdmann, M. Otto, to International Telephone and Telegraph Corporation, Snow and ice removal system for an antenna. 3,674,215, Cl. 239-548.000.
Erdolchemie Gesellschaft mit beschrankter Haftung: *See*—
Schleppinghoff, Bernhard; Scherb, Helmut; and Puxbaumer, Hans, 3,674,883.
Erickson, John W. Centrifugal pump for operating at low suction head. 3,674,378, Cl. 416-177.000.
Erikson, J. Alden; and Gacesa, Gerald R., to PPG Industries, Inc. Coating method. 3,674,670, Cl. 204-181.000.
Eriksson, Bjorn Sven Hilding: *See*—
Mattsson, Mats Erik; Eriksson, Bjorn Sven Hilding; and Lindelow, Claes-Goran, 3,674,199.
Ernest-Lloyd Limited: *See*—
Casey, Ernest D.; and Sole, Lloyd H., 3,673,629.
Erni, Heinrich H., to Allis-Chalmers Manufacturing Company. Puffer type circuit interrupter. 3,674,956, Cl. 200-148.00a.
Erofeev, Boris Vasilievich: *See*—
Bokov, Jury Sergeevich; Vikulina, Ninel Vladimirovna; Dogadkin, Boris Aristarkhovich; Erofeev, Boris Vasilievich; Larina, Anastasia Vasilievna; Lavrischev, Vadim Petrovich; Markov, Vladimir Vladimirovich; Naumova, Sofia Fadeevna; Jurina, Olge Demidovna; and Yarovaya, Galina Dmitrievne, 3,674,496.
Esaka, Teruo, to Okamoto Chemical Industry Company Limited. Sensitizing layer. 3,674,495, Cl. 96-91.00r.
Esaki, Hideya: *See*—
Naomoto, Susumu; Kaneko, Tadataka; and Esaki, Hideya, 3,675,091.
ESB Incorporated: *See*—
Bergum, Bernard C.; and Kenyon, Kenneth H., 3,674,565.
ESB Incorporated, mesne: *See*—
Clingenpeel, William R.; Cain, Charles L.; Hungerford, Philip C., Jr.; and Hayes, Robert R., 3,674,085.
Esso Production Research Company: *See*—
Lock, Everett H.; and Heilhecker, Joe K., 3,673,676.
Esso Research and Engineering Company: *See*—
King, Laurence F., 3,674,730.
Lyon, Richard K., 3,674,681.
Robson, Harry Edwin, 3,674,425.
Scher, Herbert I.; and Ungar, Israel S., 3,674,619.
Starnes, William H., Jr., 3,674,854.
Vanderbilt, Byron M.; and Fasnacht, James J., 3,674,542.
Welty, Albert B., Jr., 3,674,427.
Estes, Joseph F.; and Kertesz, Imre, to North American Rockwell Corporation. Sensing instrument havng a cantilevered proof mass. 3,673,873, Cl. 73-517.000.
Esty, Joseph J. Method of packaging and preserving perishable products. 3,673,758, Cl. 53-22.00b.
Etablissement Radiator: *See*—
Jonsson, Finn Lennart; Trolle, Stern; and von Platen, Baltzar Carl, 3,674,403.
Ethyl Corporation: *See*—
Brendel, Gottfried J., 3,674,846.
Schell, Raymond A.; and Kehoe, Lawrence J., 3,674,889.
Etimex Interplastic GmbH: *See*—
Welle, Dieter, 3,674,391.
Eutectic Corporation: *See*—
Joseph A. David, 3,674,471.
Evalahti, Osmo Rainer, to Osakeyhtio, A. Ahlstrom. Headbox for a paper machine providing for simultaneous adjustment of the front wall and mixing roll therein. 3,674,633, Cl. 162-342.
Evans, David J. I.; and Weir, Donald Robert, to Sherritt Gordon Mines Limited. Recovery of nickel from nicbel ammonium carbonate systems. 3,674,465, Cl. 75-108.000.
Evans, David T., to Wells Manufacturing Corporation. Band saw blade cleaning means. 3,673,903, Cl. 83-168.000.
Evans, Delme, to Lilly Industries, Ltd. Anti-inflammatory method. 3,674,871, Cl. 424-270.000.
Evans, Wallace D., Jr., to Rolatape Corporation. Measuring wheel apparatus. 3,673,693, Cl. 33-141.00r.
Everett, Rollo J.: *See*—
Meyer, Gilbert R.; and Everett, Rollo J., 3,674,555.
Evesque, Roger A., to Seaquist Valve Company; division of and Pittway Corporation. Aerosol valve with filling means. 3,674,185, Cl. 222-402.160.
Evironment/One Corporation: *See*—
Van Luik, Frank W.; and Coffey, Peter E., 3,674,435.
Ewald, Ronald F. Self-aligning aerosol overcap and button. 3,674,184, Cl. 222-402.130.
Ewald, Ronald F., to Seaquist Valve Company; divison of and Pittway Corporation. Co-dispensing valve. 3,674,186, Cl. 222-402.210.
Eydieux, Marius, to Regie Nationale des Usines Renault. Milling cutters with detachable blades. 3,673,655, Cl. 29-105.000.
Ezekiev, Ezekiya Gueorguiev: *See*—
Tsvetkov, Krum Kostov; Ezekiev, Ezekiya Gueorguiev; Nikolov, Petko Petrov; and Otsetov, Vassil Christov, 3,674,991.
Fabre, Albert, to Rhone-Poulenc S.A. Tubular and porous fibres. 3,674,628, Cl. 161-178.000.
Facquet, Louis: *See*—
de Vaulchier Du Deschaux, Louis; de Fouchier, Alain; de Vaucelles, Emmanuel; and Facquet, Louis, 3,674,655.
Fagersta Bruks AB: *See*—
Hallstrom, Ingemar Gustaf Terje; Jarleborg, Martin Holger; and Tarnblom, Stig-Goran Harry, 3,674,570.
Fagersta Bruks Aktiebolag: *See*—
Gustafson, Manfred Wallace; and Sandrud, Torsten, 3,673,657.
Loqvist, Kaj R., 3,673,677.
Fahlbush, Hans Joachim, to Schmalbach-Lubeca-Werke Aktiengesellschaft. Fully opening cover of sheet metal for cans. 3,674,171, Cl. 220-54.000.
Fahr Bucher GmbH Gottmadingen: *See*—
Sauerbruch, Ernst; Scherrer, Donat; and Vogt, Willy, 3,674,400.
Fahrbach, Kurt Erich, to Siemens Aktiengesellschaft. Arrangement for establishing the speed of flow of blood. 3,675,192, Cl. 340-3.00d.
Fairfield, Louis R., Jr.; Van Vliet, Raymond A.; and McLauchlan, Thomas A., to Weyerhaeuser Company. Saw guides. 3,674,065, Cl. 143-160.00r.
Falay, Bernard: *See*—
Froumajou, Armand; and Falay, Bernard, 3,673,882.
Falenks, John, to Diversified Medical Corporation. Apparatus for automatic inflation of cavities of the body. 3,674,010, Cl. 128-2.00r.
Fang, Frank F.; and Lean, Eric G., to International Business Machines Corporation. Acoustic wave amplifier having a coupled semiconductor layer. 3,675,140, Cl. 330-5.500.
Faragasso, Frank. Sprinkler housing. 3,674,210, Cl. 239-204.000.
Faraghan, Joseph T. Variable speed drive. 3,673,880, Cl. 74-197.000.
Farbenfabriken Bayer Aktiengesellschaft: *See*—
Arlt, Dieter, 3,674,829.
Baumgartner, Siegfried; Kindler, Hubert; Lidl, Rolf; and Boden, Henrich, 3,674,398.
Boehmke, Gunther, 3,674,835.
Schnegg, Robert; Pelousek, Herbert; Dippolhofer, Robert; Wiegreffe, Wolfgang; Voelz, Hans-Georg; and Kienast, Gerhard, 3,674,747.
Siegel, Edgar, 3,674,771.

Vernaleken, Hugo; Court, Otto; and Weirauch, Kurt, 3,674,740.
Wirth, Wolf-Dieter; and Muller, Erwin, 3,674,837.

Farbwerke Hoechst Aktiengesellschaft vormals Lucius & Bruning: *See—*
Oberst, Hermann; Ebigt, Joachim; Duve, Gunther; and Schommer, Alfred, 3,674,625.

Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning: *See—*
Lindner, Fritz; Wallhausser, Karl Heinz; and Huber, Gerhard, 3,674,866.
Oberst, Hermann; Ebigt, Joachim; Duve, Gunther; and Schommer, Alfred, 3,674,624.
Scherer, Otto; and Stahler, Gerhard, 3,674,803.
Schinzel, Erich; Pintschovius, Ulrich; and Lebkucher, Karl Heinz, 3,674,781.
Stache, Ulrich; Radscheit, Kurt; Fritsch, Werner; Haede, Werner; and Lindner, Ernst, 3,674,779.

Farha, Floyd E., Jr.: *See—*
Box, E. O., Jr.; Drehman, Lewis E.; and Farha, Floyd E., Jr., 3,674,706.

Farhi, Edward H.: *See—*
Farhi, Raphael; and Farhi, Edward H., 3,673,731.

Farhi, Raphael; and Farhi, Edward H. Reversible aerodynamic disc and gyroscopic toy. 3,673,731, Cl. 46-47.000.

Farnand, Joseph Redmond; and Puddington, Ira Edwin, to Canadian Patents and Development Limited. Hollow spherical articles. 3,674,461, Cl. 75-.50r.

Faroudja, Yves C., to Data Memory, Inc. Time base correction system for video recording apparatus. 3,674,920, Cl. 178-5.4cd.

Farrar, Ralph C.: *See—*
Gaeth, Rudolf H.; and Farrar, Ralph C., 3,674,895.

Farwer, Alfward: *See—*
Becker, Werner; Farwer, Alfward; Frank, Georg; Reis, Bernhard; Rohf, Josef; and Auer, Rupert, 3,674,978.

Fasnacht, James J.: *See—*
Vanderbilt, Byron M.; and Fasnacht, James J., 3,674,542.

Fastener Corporation: *See—*
Doyle, Richard H., 3,673,922.

Fathauer, George H., to Hill, Harold, Jr., mesne. Impedance measuring circuit including means for automatically adjusting initial condition thereof. 3,675,120, Cl. 324-61.00r.

Fazio, James A.; and Wesbey, William H., to General Electric Company. Dark current clamp for television camera with a circular field of view permitting maximum utilization of vidicon target. 3,674,931, Cl. 178-7.1.

Federal Sign and Signal Corporation: *See—*
Wasson, Richard Z., 3,674,226.

Federal-Mogul Corporation: *See—*
Ladin, Eli M.; Kegerise, Harry L.; and Adams, John S., 3,674,357.
Secunda, Kenneth, 3,673,661.

Fedewitz, Anthony. High-lift snow shoe. 3,673,713, Cl. 36-2.5ab.

Fedorov, Svyatoslav Nikolaevich; and Zakharov, Valery Dmitrievich. Artificial anteria chamber lens. 3,673,616, Cl. 3-13.000.

Feeney, Brian P.: *See—*
Peters, Joseph, Jr.; and Feeney, Brian P., 3,674,909.

Fegley, Charles R.: *See—*
Abraham, Bruce C.; Fegley, Charles R.; and Lougher, George B., III, 3,674,141.

Feichtinger, Hans: *See—*
Gothel, Herbert; and Feichtinger, Hans, 3,674,692.

Feichtmayr, Franz: *See—*
Wuerstin, Franz; and Feichtmayr, Franz, 3,674,695.

Fekete, Frank; and McNally, John S. Unsaturated polyesters. 3,674,727, Cl. 260-22.00d.

Feldman, Martin; and Heiter, George Ludwig, to Bell Telephone Laboratories, Incorporated. Electromagnetically sensitive device and charge storage method of operation. 3,675,025, Cl. 250-211.00j.

Fendal Company: *See—*
Liautaud, Philip J., 3,673,610.

Ferguson, Hugo S., to Reel Vortex, Inc. Cross-flow mowing machine. 3,673,773, Cl. 56-13.300.

Fernex, Michel: *See—*
Rheiner, Alfred, Jr.; Fernex, Michel; and Herrero, Jose, 3,674,872.

Fernseh GmbH: *See—*
Flasche, Gunter, 3,675,062.
Legler, Ernst, 3,674,918.

Ferro Manufacturing Corporation: *See—*
Pickles, Joseph; and Fudala, Chester S., 3,674,238.

Ferro Manufacturing Crporation: *See—*
Pickles, Joseph, 3,673,891.

Fichtner, Roland H., to Electrohome Limited. Transistor power amplifier with DC output voltage stabilization. 3,675,142, Cl. 330-17.000.

Fifth Dimension Inc.: *See—*
Bitko, Sheldon S., 3,674,976.

Figge, Erwin E.; and Ho, Edward J., to Bell & Howell Company. Photographic system for step-motion projector. 3,674,348, Cl. 352-84.000.

Fikse, Tyman H., to Tyee Construction Company. Crane with telescopic boom. 3,674,157, Cl. 212-55.000.

Filachek, Lawrence A.; and Rakow, Marvin S., to Cities Service Oil Company. Antistatic additive for hydrocarbon fuels. 3,674,450, Cl. 44-66.000.

File, Harold Thomas, to Aspro-Nicholas Limited. Article sensing apparatus. 3,674,140, Cl. 209-73.000.

Filia, George J., to Sargent & Company. Work locator with insulation adjustment for crimping tool. 3,673,848, Cl. 72-410.000.

Fine, Max M. Liquid purifying system. 3,674,650, Cl. 202-176.000.

Finsterwalder, Klemens: *See—*
Finsterwalder, Ulrich; Finsterwalder, Klemens; and Stefaniak, Hans, 3,673,624.

Finsterwalder, Ulrich; Finsterwalder, Klemens; and Stefaniak, Hans, to Dyckerhoff & Widmann. Suspension bridge. 3,673,624, Cl. 14-19.000.

Firestone Tire & Rubber Company, The: *See—*
Halasa, Adel F., 3,674,760.
Thacker, Bernard L., Jr., 3,673,648.

Firmenich Incorporated: *See—*
Honey, Raymond; and Perkins, James Frank, 3,674,502.

Fisch, Willy: *See—*
Lohse, Friedrich; Schmid, Rolf; Fisch, Willy; and Batzer, Hans, 3,674,746.

Fischer, Richard, to Braun Aktiengesellschaft. Shearing head for dry shaver. 3,673,683, Cl. 30-34.100.

Fischer, Robert E.; Raiff, Lawrence C.; Seybold, James M.; and Zimmerle, Donald F., to National Cash Register Company, The. Document scanning and display system. 3,674,924, Cl. 178-6.800.

Fisher, Charles H. Methods for preparing valuable keto and hydroxy cyclic compounds. 3,674,880, Cl. 260-621.00r.

Fisher, Myron W.; and Hanessian, Stephen, to Parke, Davis & Company. Polyvalent immunizing agents and methods for their production. 3,674,863, Cl. 424-92.000.

Fitton, Peter; and Rick, Edward A., to Union Carbide Corporation. Halo(aryl)metal compounds and method of preparation. 3,674,825, Cl. 260-429.00r.

Flaherty, John J.; and Nerwin, Henry N., to Magnaflux Corporation. Non-destructive testing system having pattern recognition means. 3,673,860, Cl. 73-67.900.

Flasche, Gunter, to Fernseh GmbH. Method and apparatus for connecting to a Nesa layer. 3,675,062, Cl. 313-65.000.

Fleischmajer, Raul. Disposable wet compresses. 3,674,027, Cl. 128-268.000.

Fleissner, Heinz, to Vepa AG. Apparatus for the continuous finishing of knitted fabrics and hosiery goods. 3,673,822, Cl. 68-5.000.

Fletcher, Clive R., to Bakelite Xylonite Limited. Livestock container. 3,673,987, Cl. 119-19.000.

Flight Refuelling Limited: *See—*
Macgregor, Peter Stevens, 3,674,049.

Fluck, Eugene R.: *See—*
Bluhm, Herbert J.; and Fluck, Eugene R., 3,674,806.

Fluhr, Nils Allan, to Knut Arne Erik Rehnstrom. Seal. 3,673,927, Cl. 92-98.000.

Fogelman, Edward I., to Diamond Shamrock Corporation. Expandable electrodes. 3,674,676, Cl. 204-286.000.

Fogiel, Adolf Wojciech: *See—*
Aufdermarsh, Carl Albert, Jr.; and Fogiel, Adolf Wojciech, 3,674,721.

Fontaine, John Garfield. Captive air brake for vehicles. 3,674,321, Cl. 303-28.000.

Foote, J. B., Foundry Co., The: *See—*
Hauser, Hans, 3,673,889.

Forbro Design Corporation: *See—*
Nercessian, Sarkis, 3,675,114.

Ford, Duane B.: *See—*
Young, Bruce O.; Walker, Grant W.; Ford, Duane B.; and Seegmiller, Wan, 3,674,115.

Ford Motor Company: *See—*
Jackson, Paul Louis, 3,674,654.

Formisano, Mario; and Coppola, Salvatore, to I.C.B.S.P.A, Industria Chimica e Biologica. Method for the production of humic acids, humates, and of compositions wherein they are contained. 3,674,649, Cl. 195-104.000.

Forrer, Homer W., to Mead Corporation, The. Carrier for flanged articles. 3,674,136, Cl. 206-655.000.

Fortune, William S. Smoking habit-breaking aid apparatus. 3,674,037, Cl. 131-198.00a.

Foster, Alden W. Method of transporting oil or gas in frozen tundra. 3,674,086, Cl. 165-1.000.

Foster, Richard N.; and Butt, John B., said Butt assor. to said Foster. Enhancing reaction rates. 3,674,666, Cl. 204-164.000.

Fowler, Stanley B., to General Motors Corporation. Vehicle seat latch. 3,674,309, Cl. 297-379.000.

Fox, Homer M.: *See—*
Bjornson, Geir; and Fox, Homer M., 3,674,668.

Francini, Joseph Pirra; Braxton, James Lopez, Jr.; Lewis, Vera Gloria; McPherson, Frank Henderson; Rosenberg, Daniel; and Sekse, Torkjell, to Sperry Rand Corporation. Machine to read information from punched cards for the purpose of data processing said information and for the purpose of sorting, collating and merging said punched cards in accordance with said processed information. 3,674,988, Cl. 235-61.7.

Frank, Georg: *See—*
Becker, Werner; Farwer, Alfward; Frank, Georg; Reis, Bernhard; Rohf, Josef; and Auer, Rupert, 3,674,978.

Frankeny, Richard F.; and Tuttle, Joey K., to International Business Machines Corporation. Apparatus and method independently varying the widths of a plurality of pulses. 3,675,133, Cl. 328-55.000.

Franz, John E., to Monsanto Company. 2-Acyl-4-acyloxy-2,3,4,5-tetrahydro-1,2,4ooxadiazoles. 3,674,802, Cl. 260-307.00f.

Fraser, G. Frank, to Chevron Research Company. Portable lighter for firing oil field heaters and emulsion treaters. 3,674,413, Cl. 431-344.000.

Fratelli Morando & C. S.p.A.: *See—*
Bronzine, Bruno, 3,673,898.

Freborg, Lehner C.: *See—*
Elliott, Eugene R.; and Freborg, Lehner C., 3,675,041.

Frebraro, James. Carpet tack strip. 3,673,633, Cl. 16-16.000.

Freedman and Goodman: *See—*
Grosberg, Sam, 3,674,266.

Freel, John: *See—*
Pieters, William Johan Meindert; Freel, John; and Anderson, Robert Bernard, 3,674,707.

Freeland, Iris Mary: *See—*
Freeland, William, 3,674,151.

Freeland, William; deceased (by Freeland, Iris Mary; executrix), to U.S. Philips Corporation. Backflushing filter. 3,674,151, Cl. 210-298.000.

Freeman, Darrell L., to Nutter Engineering Company; division of Heat/Fluid Engineering Corporation. Clamp assembly. 3,674,246, Cl. 261-114.00r.

Freeman, Peter Frank Hilary, to Imperial Chemical Industries Limited. Pesticidally active compounds and compositions containing them. 3,674,877, Cl. 424-263.000.

Freis, John H. Culture collecting apparatus. 3,674,007, Cl. 128-2.000.

French, Allen D.: *See—*
Bakeman, Orville R.; and French, Allen D., 3,675,153.

French, John M.: *See—*
Hill, Robert C.; French, John M.; and Toepfer, Richard E., 3,675,019.

Frey, Hans-Hasso; and Liisberg, Sven, to Lovens Kemiske Fabrik Produktionsaktieselskab. 2-(Morpholinobenzyl)-anilides. 3,674,787, Cl. 260-247.20a.

Fried, John H.: *See—*
Edwards, John A.; Fried, John H.; and McCrae, William, 3,674,816.

Friel, Ronald Norman: *See—*
Castellano, Joseph Anthony; and Friel, Ronald Norman, 3,674,342.

Fries, Bernd: *See—*
Baumgartner, Siegfried; Fries, Bernd; Lidl, Rolf; and Zippe, Gunter, 3,674,408.

Frietzsche, Angelika: *See—*
Richter, Gerhard; Kroes, Magdalena; and Frietzsche, Angelika, 3,674,710.

Fritsch, Werner: *See—*
Stache, Ulrich; Radscheit, Kurt; Fritsch, Werner; Haede, Werner; and Lindner, Ernst, 3,674,779.

Fritts, Russell A.; and Nebold, Jerome I., to Black and Decker Manufacturing Company, The. Pressurized fluid device. 3,673,921, Cl. 91-299.000.

Froumajou, Armand; and Falay, Bernard, to Automobiles Peugeot and Regie Nationale des Usines Renault. Engine-drive unit having a converter and speed variator. 3,673,882, Cl. 74-199.000.

Fryatt, Leslie Alva: *See—*
Cooper, Michael Henry; and Fryatt, Leslie Alva, 3,673,904.

Fudala, Chester S.: *See—*
Pickles, Joseph; and Fudala, Chester S., 3,674,238.

Fuji Denki Kagaku Kabushiki Kaisha: *See—*
Kobayashi, Seihin; Torii, Michihiro; and Yamakawa, Fujio, 3,675,222.
Kobayashi, Seihin; Torii, Michihiro; and Suzuki, Koichiro, 3,675,223.
Tsuchida, Takashi; Hayase, Yoshiaki; and Fujisawa, Yoshirou, 3,674,561.

Fuji Photo Film Co., Ltd.: *See—*
Iijima, Yoo; Shimamura, Isao; Kondo, Tokiharu; and Haruhike, Iwano, 3,674,491.
Tamai, Yasuo; and Miyazuka, Hajime, 3,674,476.

Fuji Photo Film, Ltd.: *See—*
Shiba, Keisuke; Hinata, Masanao; Tsuji, Nobuo; and Sato, Akira, 3,674,499.

Fujii, Tatsuo: *See—*
Tsukamoto, Masaaki; Fujii, Tatsuo; and Ono, Shigeo, 3,675,179.

Fujimori, Akihiro: *See—*
Washimi, Koichi; Kanbayashi, Masaaki; Kanai, Toshio; and Fujimori, Akihiro, 3,674,679.

Fujisawa, Yoshirou: *See—*
Tsuchida, Takashi; Hayase, Yoshiaki; and Fujisawa, Yoshirou, 3,674,561.

Fujitsu Limited: *See—*
Ninomiya, Shoichi; Sakai, Masaaki; Oka, Sakae; and Kusunoki, Kikunobu, 3,675,224.

Fujiwara, Takashi: *See—*
Hayakawa, Shohei; Kanematsu, Yoshiko; and Fujiwara, Takashi, 3,674,842.

Fujiwara, Yuzo: *See—*
Moritani, Ichiro; and Fujiwara, Yuzo, 3,674,884.

Fukasawa, Noburu; and Hatori, Yukiyoshi, to Nissan Motor Company, Limited. Liquid-level drop alarming system. 3,675,227, Cl. 340-244.00r.

Fukuba, Hiroshi. Carpet sweeper auxiliary brush means. 3,673,625, Cl. 15-42.000.

Fukuda, Satoshi: *See—*
Tachikawa, Kyoji; Tanaka, Yoshiaki; and Fukuda, Satoshi, 3,674,553.

Fukuoka, Yohei: *See—*
Senoo, Saburo; Fukuoka, Yohei; and Sasaki, Katuyoshi, 3,674,851.

Furukawa, Yauhiro: *See—*
Komatsu, Youji,; Furukawa, Yauhiro; and Yokomizo, Takashi, 3,674,886.

Fuzesi, Stephen; and Lapkin, Milton, to Olin Corporation. Open-cell polyurethane foams prepared from oxyethylated starch-phosphorus-containing polyethers. 3,674,717, Cl. 260-2.5aa.

Gabbert, Ira: *See—*
Ellis, David R.; Michels, John; and Gabbert, Ira, 3,675,214.

Gacesa, Gerald R.: *See—*
Erikson, J. Alden; and Gacesa, Gerald R., 3,674,670.

Gaeth, Rudolf H.; and Farrar, Ralph C., to Phillips Petroleum Company. Polymerization of 1-olefins with multifunctional initiator systems. 3,674,895, Cl. 260-878.00b.

Gagarine, Dmitry M., to Deering Milliken Research Corporation. Process for imparting soil-releasing and anti-soil redeposition properties to textile materials. 3,674,548, Cl. 117-139.50a.

Gage, Frank H.; and Zabel, Marvin L., to Dyna-Jet Corporation, The. Washing apparatus. 3,674,211, Cl. 239-247.000.

Gaines, Albert L.: *See—*
Anthony, Andrew J.; Gaines, Albert L.; and Krawiec, Donald M., 3,674,635.

Gaiser, Conrad J. Detergent tablet of amorphous sodium silicate having inherent binding properties, containing a surfactant, and method of making such tablet. 3,674,700, Cl. 252-135.000.

Gakhar, Ved P., to General Electric Company. Dual load automatic washer. 3,673,823, Cl. 68-12.00r.

Gallien, Jacqueline: *See—*
Kalopissis, Gregoire; Gascon, Jean; Gallien, Jacqueline; Bugaut, Andree; and Gaston-Breton, Hubert, 3,674,414.

Galloway Company: *See—*
Galloway, Edwin J., 3,674,179.

Galloway, Edwin J., to Galloway Company. Telescoping dip tube assembly. 3,674,179, Cl. 222-94.000.

Gandrud, William Bentley: *See—*
Boyd, Gary Delane; Buehler, Ernest; and Gandrud, William Bentley, 3,675,039.

Garavelli, Giancarlo, to Heron Establishment. Device for making aerated soft drinks. 3,674,244, Cl. 261-18.00b.

Garlick, George F., to Holosonics, Inc., mesne. Geological mechanical computer. 3,673,688, Cl. 33-1.000.

Garlinghouse Brothers Manufacturing Co.: *See—*
Dening, Robert D.; and Garlinghouse, Leslie H., 3,673,931.

Garlinghouse, Leslie H.: *See—*
Dening, Robert D.; and Garlinghouse, Leslie H., 3,673,931.

Garrett Corporation, The: *See—*
Summer, James R., 3,674,124.

Garrett, Donald E.; and Zaloudek, Theodore V., to General Electric Company. Disabling circuitry, for automatic frequency hue control. 3,674,919, Cl. 178-5.40r.

Gascon, Jean: *See—*
Kalopissis, Gregoire; Gascon, Jean; Gallien, Jacqueline; Bugaut, Andree; and Gaston-Breton, Hubert, 3,674,414.

Gasser, Francois W.; and Girard, Pierre L., to Manufacture des Montres Rolex S.A. One-hour incremental watch setting device. 3,673,790, Cl. 58-63.000.

Gassner, Hans, to Kugelfischer George Schafer & Co. Method of machining a friction roller. 3,673,897, Cl. 82-1.00c.

Gaston-Breton, Hubert: *See—*
Kalopissis, Gregoire; Gascon, Jean; Gallien, Jacqueline; Bugaut, Andree; and Gaston-Breton, Hubert, 3,674,414.

Gaudry, Edouard: *See—*
Gaudry, Paul E.; Gaudry, Edouard; Descarries, Raymond; and Anderson, James, 3,673,628.

Gaudry, Paul E.; Gaudry, Edouard; Descarries, Raymond; and Anderson, James, to Consolidated Foods Corporation, mesne. Articulated handle and shampoo tank for a floor care machine. 3,673,628, Cl. 15-143.00a.

Gazuit, Georges, to NRM Corporation. Tire building drum. 3,674,604, Cl. 156-415.000.

Gebruder Junghans G.m.b.H.: *See—*
Scholz, Gunther, 3,673,792.

Gehl, Gerry J. W., Jr. Folding Christmas tree type of display stand. 3,674,612, Cl. 161-23.000.

Geib, Thomas E., to Weyerhaeuser Company. Abhesive pattern detector system. 3,675,015, Cl. 250-71.00r.

Geigy Chemical Corporation: *See—*
Troxler, Eduard; and Hausermann, Heinrich, 3,674,714.
Zergenyi, Janos; and Habicht, Ernst, 3,674,810.

Gencarelli, Richard A.: *See—*
Amidon, Roger W.; and Gencarelli, Richard A., 3,674,824.

General Applied Science Laboratories, Inc.: *See—*
Abele, Manlio G., 3,675,128.

General Electric Company: *See—*
Bakeman, Orville R.; and French, Allen D., 3,675,153.
Barkan, Philip, 3,674,964.

Barnett, Richard C.; Dark, Joe W.; and Schulze, James L., Sr., 3,674,005.
Beddows, Norman A.; Quigley, John A.; and Wielt, Warren P., 3,675,058.
Crowe, William P., 3,674,359.
Dounoucos, Angelo, 3,674,022.
Dutton, John C., 3,675,175.
Earing, Mason H., 3,675,081.
Fazio, James A.; and Wesbey, William H., 3,674,931.
Gakhar, Ved P., 3,673,823.
Garrett, Donald E.; and Zaloudek, Theodore V., 3,674,919.
Goossens, John C., 3,674,739.
Hurko, Bohdan; and Dills, Raymond L., 3,674,983.
Jordan, Thomas M., Jr., 3,674,927.
Kelley, Fred W., Jr., 3,675,110.
Kelling, Leroy U. C., 3,674,999.
Kelly, Jack L.; and Wiandt, Ronald K., 3,674,277.
Kreba, James Norton; and Kappus, Peter G., 3,673,802.
Lenz, Henry George, 3,675,056.
Mioduski, George T., 3,675,051.
Mullaly, Jerome R., 3,675,045.
Strout, Frederick D., 3,675,232.
Titus, Charles H.; and Schneider, Harold N., 3,674,912.

General Electric Company Limited, The: *See—*
Wayman, Cecil John, 3,675,235.

General Kinetics Incorporated: *See—*
Whysong, Dale C.; Leininger, Dale E.; and Young, Herbert D., 3,674,559.

General Mills, Inc.: *See—*
Schilling, Eugene D.; and Burchill, Phyllis I., 3,674,506.

General Motors Corporation: *See—*
Ackerman, Tracy R.; and Schickler, John F., 3,674,087.
Bennett, Ronald W.; Parker, Donald L.; and Shaw, Arthur R., 3,675,197.
Bradley, Thompson G.; and Swinkels, Dominicus A. J., 3,674,567.
Christman, Charles P., 3,675,187.
Cole, Edward N., 3,674,441.
Copeland, Charles R., 3,674,121.
Elliott, James O., 3,675,103.
Fowler, Stanley B., 3,674,309.
Jellison, Frank R.; Mason, John B.; and McQueen, Terry K., 3,674,283.
Johnson, Ralph S., 3,674,120.
Johnston, Richard W., 3,675,099.
Klimisch, Richard L., 3,674,423.
Kuehl, Paul B., 3,673,798.
Pryjmak, Bohdan I., 3,675,106.
Robbins, Samuel B., 3,675,101.
Rohde, Robert P.; Welsh, Clarence E.; and Engelhardt, Hans, 3,674,385.
Staker, William C., 3,675,160.
Wanlass, Bert R.; and Velavicius, Alfonsas, 3,674,296.

General Signal Corporation: *See—*
Auer, John H., Jr.; and Huffman, Jerry P., 3,675,190.

General Tire & Rubber Company, The: *See—*
Dailey, Charles R., Jr., 3,674,076.

Ger-Bro Corporation: *See—*
Geraci, Francis R., 3,674,289.

Geraci, Francis R., to Ger-Bro Corporation. Tri-hedral clip for steel construction. 3,674,289, Cl. 287-189.36b.

Gerbstadt, Frederick H.: *See—*
Trost, Joseph C.; Bock, Robert V.; Gerbstadt, Frederick H.; Graham, William J.; Miles, Wilson D.; and Questa, Charles R., 3,675,209.

Gerchow, Wilbur R., to Buhr Machine Tool Corporation, mesne. Plunge facing tool. 3,673,656, Cl. 29-105.00a.

Gerding, Charles C.: *See—*
Stawarski, Chester C.; Gerding, Charles C.; and Adams, Richard T., 3,673,869.

Gerlach, Glendon T.: *See—*
Stone, J. James, Jr.; Madden, Thomas J., Jr.; Gerlach, Glendon T.; and Keur, Robert I., 3,673,936.

Gerns, Fred R.: *See—*
Thomas, Robert M.; Gerns, Fred R.; and Sands, John L., 3,674,788.

Gerrard, A. J., & Company: *See—*
Koehler, Albert T.; Shideler, Paul J.; and Dohogne, Linus E., 3,673,950.

Gesellschaft zur Wiederaufarbeitung von Kernbrennstoffen m.b.H.: *See—*
Gutter, Heinrich, 3,674,196.

Geul, Herman R. Exhaust gas analyzer for internal combustion engines. 3,674,436, Cl. 23-232.00e.

Giannini, Mary Suzanne: *See—*
Aszalos, Adorjan; Robison, Robert S.; Kraemer, Nancy; Henshaw, Jo Ann; and Giannini, Mary Suzanne, 3,674,867.

Giardini, Dante S., to Bendix Corporation, The. Arrangement for internal form grinding portions of spherical surfaces. 3,673,739, Cl. 51-73.00r.

Giardini, Dante S.; and Szempruch, Robert S., to Bendix Corporation, The. Grinding method and apparatus. 3,673,740, Cl. 51-95.0wh.

Giardini, Dante S.; and Wieg, Heinrich J., to Bendix Corporation, The. Machine assembly. 3,673,743, Cl. 51-168.000.

Gibbons, Carl L., to Dow Chemical Company, The. Halogenated epoxides. 3,674,812, Cl. 260-348.00r.

Gibian, Heinz: *See—*
Philippson, Rainer; Hauser, Helmut; Gibian, Heinz; Kaspar, Emanuel; and Kessler, Hans-Joachim, 3,674,815.

Gifft, T. H., Co., Inc.: *See—*
Gifft, Thomas H., 3,674,923.

Gifft, Thomas H., to Gifft, T. H., Co., Inc. Facsimile system with improved scanning. 3,674,923, Cl. 178-6.60r.

Gilbert, Leslie Arthur, to Ray and Gilbert Proprietary Limited. Drafting machine. 3,673,691, Cl. 33-79.00r.

Gilbert, Ronald E.: *See—*
Anspon, Harry D.; Clampitt, Bert H.; and Gilbert, Ronald E., 3,674,761.

Gile, Richard H., to Richardson, Howe Scale Company. Motion detector for weighing apparatus. 3,674,097, Cl. 177-3.000.

Gillick, Jack W., to Park-Ohio Industries, Inc. Apparatus and method of inductively heating and quench hardening an elongated workpiece. 3,674,247, Cl. 266-4.00e.

Gilmour Manufacturing Company; division of: *See—*
Gilmour, Robert A., 3,674,138.

Gilmour, Robert A., to Gilmour Manufacturing Company; division of and Smith, R. M., Inc. Carded nozzle package. 3,674,138, Cl. 206-80.00r.

Giltrow, Jeremy Peter; Kinner, George Henry; and Lancaster, John Keith, to National Research Development Corporation. Carbon fibre filled composite materials. 3,674,689, Cl. 252-12.400.

Ginter, Thomas O.: *See—*
Nowak, Robert M.; and Ginter, Thomas O., 3,674,893.

Giolito, Silvio Louis, to Stauffer Chemical Company. Styrenated triaryl phosphate functional fluids. 3,674,697, Cl. 252-78.000.

Giolitti, Nicolo, to Olivetti, Ing., C., & C., S.p.A. Numerical data transfer device. 3,674,201, Cl. 235-61.0pc.

Giolitti, Nicolo; and Daly, Dante, to Olivetti, Ing., C., & C., S.p.A. Calculating machine. 3,674,202, Cl. 235-61.0pb.

Girard, Pierre L.: *See—*
Gasser, Francois W.; and Girard, Pierre L., 3,673,790.

Giuffre, Joseph C.: *See—*
Heilmayr, Peter F.; Kimbrell, Sol B.; and Giuffre, Joseph C., 3,674,388.

G.K.N. Screws & Fasteners Limited: *See—*
Turnbull John Hilton, 3,673,662.

Glaser, David. Crystal ball display system having touch controlled lights. 3,675,241, Cl. 340-366.

Glaser, Hermann: *See—*
Vogt, Wilhelm; Sennewald, Kurt; and Glaser, Hermann, 3,674,839.

Glass, Waldemar: *See—*
Kunke, Arthur; Reinhardt, Dieter; and Glass, Waldemar, 3,675,023.

Glastrusions, Inc.: *See—*
Goldsworthy, William Brandt, 3,674,601.

Glaverbel S.A.: *See—*
Plumat, Emile; and Toussaint, Francois, 3,674,454.

Glaze, Stanley George, to Hobson, H. M., Limited. Pressure ratio sensing. 3,675,225, Cl. 340-196.000.

Gleason, Thomas G., to Combustion Equipment Associates, Inc. Gas scrubber. 3,673,769, Cl. 55-223.000.

Gleason Works, The: *See—*
Pedersen, Harry, 3,674,280.

Globe Tool and Engineering Company, The: *See—*
Biddison, John M., 3,673,878.

Globus, Anatol; Duplex, Paul; and Vautier, Roger, to Agence Nationale de Valorisation de la Recherche (Anvar). Process and mill for grinding pulverulent materials, and the materials thus ground. 3,674,218, Cl. 241-46.060.

Glosten, Lawrence R. Convertible-float floating platform. 3,673,973, Cl. 114-.50d.

Gmunder, John: *See—*
Bormann, Gerhard; Gmunder, John; Wilkens, Heinrich; and Troxler, Franz, 3,674,801.

Goetz, Frederick J.: *See—*
Degginger, Edward R.; and Goetz, Frederick J., 3,674,878.

Goings, Harford E. Refuse and tissue holder. 3,674,191, Cl. 224-29.00r.

Goldberg, Herbert E., to American Optical Corporation. Assisted cardiovascular circulation. 3,674,018, Cl. 128-33.000.

Goldberg, Leonard. Parking field security device. 3,673,734, Cl. 49-35.000.

Goldberg, Leonard Z., to Lockheed Aircraft Corporation. Flange for conduit coupling. 3,674,291, Cl. 285-367.000.

Goldberg, Marvin E.: *See—*
Schwarz, Milton H.; and Goldberg, Marvin E., 3,674,631.

Goldberger, Max, to Pioneer Research, Inc. Propulsion method using catalytic decomposition of hydrazine. 3,673,801, Cl. 60-218.000.

Goldrick, Michael Richard; Kerwin, Robert Eugene; and Skinner, John George, to Bell Telephone Laboratories, Incorporated. Laminar photomask. 3,674,492, Cl. 96-68.000.

Goldsmith, Alfred Norton, to RCA Corporation. Three-dimensional television system. 3,674,921, Cl. 178-5.40r.

Goldsworthy, William Brandt, to Glastrusions, Inc. Augmented curing of reinforced plastic stock. 3,674,601, Cl. 156-380.000.

Gollan, Arye, to Hydronautics Incorporated. Continuous fluid-solid contact method and apparatus. 3,674,684, Cl. 210-33.000.

Gomez, Ray J.; and Sawa, Kenneth B., to Beckman Instruments, Inc. Bypass filter assembly and method of obtaining a filtered sample. 3,674,153, Cl. 210-409.000.

Gonon, Eugen, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Apparatus for the production of continuous lengths of foamed polystyrene. 3,674,387, Cl. 425-4.000.

Gooding, Chester M., to CPC International Inc. Production of high stability liquid vegetable oils. 3,674,821, Cl. 260-409.000.

Gooding, Otis E.; and Dixon, Alton E., to United States of America, Navy, means. Minimum shift keyed (MSK) phase measurement device. 3,674,934, Cl. 178-88.000.

Goodrich, B. F., Company, The: *See—*
Cameli, Nazzareno; Longi, Paolo; and Valvassori, Alberto, 3,674,754.

Goossens, John C., to General Electric Company. Organosilylamines reaction between organosilylamine and a silanol-containing organosilicon material. 3,674,739, Cl. 260-46.50g.

Gorbran, Ramsis; and Ofstead, Ronald F., to Minnesota Mining and Manufacturing Company. Photographic emulsions containing nonpolymeric amines. 3,674,497, Cl. 96-94.000.

Gordon, Paul C.: *See—*
Scarnato, Thomas J.; Gordon, Paul C.; Hunter, Stephen R.; Krage, Paul W.; and Zablocki, Richard A., 3,673,779.

Gordon, Peter L.: *See—*
Kunov, Hans, 3,673,979.

Gorecki, Thomas A.: *See—*
Loewenstein, Paul; and Gorecki, Thomas A., 3,673,667.

Gorling, Karl Goran, to Boliden Aktiebolag. Process for low temperature chlorination of roasted products from an iron sulphide roasting process prior to leaching out the non-ferrous metal present therein. 3,674,462, Cl. 75-9.000.

Gosney, William Milton: *See—*
Carbajal, Bernard G., III; Gosney, William Milton; and Hall, Lou H., 3,673,679.

Gostomski, Frank T. Cushioned support means. 3,674,104, Cl. 180-5.00r.

Gosudarstvenny Naucho-issledovatelsky Institut tsvetnykh metallov and Belgorodsky Kotlo-Stroitelny zavod: *See—*
Berlin, Zalman Leivikovich; Bagrov, Oleg Nikolaevich; Maslovsky, Gennady Vasilievich; Serkov, Anatoly Gavrilovich; and Yakimovich, Viktor Yakovlevich, 3,673,988.

Gotcher, Eugene D.: *See—*
Peisner, Israel D.; Stol, George H.; and Gotcher, Eugene D., 3,673,969.

Gothel, Herbert; and Feichtinger, Hans, to Ruhrchemie AG. Lubricants and power transmission fluids on the basis of carboxylic acid esters. 3,674,692, Cl. 252-56.00s.

Gottschall, Gernot, to Morat, Franz, G.m.b.H., Firma. Film-driving roller with device for stopping the drive mechanism if the film is broken. 3,674,192, Cl. 226-11.000.

Gould, Francis E.: *See—*
Shepherd, Thomas H.; and Gould, Francis E., 3,674,901.

Grace, W. R., & Co.: *See—*
Gray, Roland H., Jr., 3,674,556.
Gray, Roland H., Jr., 3,674,557.
Pieters, William Johan Meindert; Freel, John; and Anderson, Robert Bernard, 3,674,707.

Graf, Robert E.: *See—*
Deeg, Emil W.; and Graf, Robert E., 3,674,530.

Graham, William J.: *See—*
Trost, Joseph C.; Bock, Robert V.; Gerbstadt, Frederick H.; Graham, William J.; Miles, Wilson D.; and Questa, Charles R., 3,675,209.

Grammont, Paul D.: *See—*
Carbonnel, Jack V.; Grammont, Paul D.; and Werotte, Louis E., 3,674,728.

Grand-City Container Corporation: *See—*
Dorfmann, Oskar, 3,673,763.

Grandia, Johannes; and Rohr, Robert Lewis, to International Business Machines Corporation. Precision cutting apparatus and method of operation therefor. 3,674,004, Cl. 125-16.000.

Grandin, Friedrich-Hans: *See—*
Petersen, Ulrich; and Grandin, Friedrich-Hans, 3,673,836.

Grange, Kenneth H., to Maruzen Sewing Machine Co., Ltd. Sewing machine with combined accessory receptacle and auxiliary bed. 3,673,972, Cl. 112-258.000.

Grant Airmass Corporation: *See—*
Grant, Benton H., 3,674,019.

Grant, Benton H., to Grant Airmass Corporation. Dual layer cellular inflatable pad. 3,674,019, Cl. 128-33.000.

Grant, John M., to International Telephone and Telegraph Corporation. Image intensifier with electroluminescent phosphor. 3,675,028, Cl. 250-213.0vt.

Graser, Earl J., to Olinkraft, Inc. Neck thru safety lock. 3,674,137, Cl. 206-65.00e.

Grasshoff, J. Michael; and Taylor, Lloyd D., to Polaroid Corporation. Novel products and processes. 3,674,478, Cl. 96-3.000.

Graville, Brian Anthony, to Dominion Bridge Company Limited. Laydown electroslag welding process. 3,674,973, Cl. 219-73.000.

Gray Industries, Inc.: *See—*
Gray, Oscar S., 3,674,422.

Gray, Oscar S., to Gray Industries, Inc. Microwave treating apparatus. 3,674,422, Cl. 21-102.00r.

Gray, Roland H., Jr., to Grace, W. R., & Co. Method for drying glucose solutions. 3,674,556, Cl. 127-62.000.

Gray, Roland H., Jr., to Grace, W. R., & Co. Method for drying sugar solutions. 3,674,557, Cl. 127-62.000.

Great Lakes Chemical Corporation: *See—*
Thomas, Robert M.; Gerns, Fred R.; and Sands, John L., 3,674,788.

Greene, Richard M., to GTE Laboratories Incorporated. All-FET linear voltage amplifier. 3,675,143, Cl. 330-18.000.

Greening, Donald J.: *See—*
Allison, Arthur F.; Greening, Donald J.; and Mollgaard, Anton N., 3,675,104.

Gregory, David L., to Avco Corporation. Combination multiple wire termination block and wire stripper. 3,675,182, Cl. 339-98.000.

Gregory, George D.: *See—*
Snaper, Alvin A.; Gregory, George D.; and Munroe, Miles R., 3,675,220.

Griepentrog, Dal Frank, to RCA Corporation. Automatic beam current limiter. 3,674,932, Cl. 178007.50r.

Griesinger, William K.; Sorgenti, Harold A.; and Schell, George W., to Atlantic Richfield Company. Alkylation of benzene utilizing Fischer-Tropsch olefin-paraffin mixtures. 3,674,885, Cl. 260-671.00b.

Griffiths, James Edward, to Bell Telephone Laboratories, Incorporated. Gaseous dielectric materials. 3,674,696, Cl. 252-63.700.

Grinde, Jon W., to King Company, Inc. Lift boom assembly. 3,674,161, Cl. 214-130.00r.

Griswold, Augustus W.; and Tompkins, James R., to Sybron Corporation. Gas content of liquid determination. 3,673,853, Cl. 73-19.000.

Groenenboom, Maarten: *See—*
Arts, Mathieu Gerardus Henricus; Lucker, Jan Anna Antonius; and Groenenboom, Maarten, 3,674,674.

Groenewald, Hans E.: *See—*
Konecny, Jan; Haas, Jan T.; and Groenewald, Hans E., 3,674,224.

Grosberg, Sam, to Freedman and Goodman. Double-ended ball paddle. 3,674,266, Cl. 273-73.00r.

Grosseau, Albert, to Citroen S.A. (Automobiles Citroen, Berliet, Panhard). Vehicle suspension. 3,674,285, Cl. 280-124.00r.

Grosseau, Albert, to Societe Anonyme Automobiles Citroen. Methods of coating surfaces and in elements comprising such surfaces. 3,674,544, Cl. 117-93.1pf.

Growald, Bert; Dahlquist, John A.; and Marlor, Guy A., to Varian Associates. Electrically conductive transparent plastic material. 3,674,711, Cl. 252-500.000.

Gruber, Lothar: *See—*
Korner, Gerhard; Schmitz, Wolfgang; Dabringhausen, Friedhelm; and Gruber, Lothar, 3,674,957.

Gruenig, Rudolf; Berger, Erwin; and Sieber, Charles, to Hasler A.G. Selector and setting device for the synchronous operation of at least two multi-denominational counters in a machine such as a cash register capable of effecting printing operations. 3,674,200, Cl. 235-60.00r.

GTE Laboratories Incorporated: *See—*
Greene, Richard M., 3,675,143.

GTE Sylvania Incorporated: *See—*
Chiola, Vincent; and Dodds, Phyllis R., 3,674,464.

Gualdi, Giorgio: *See—*
Reni, Cesare; Gualdi, Giorgio; and Lugo, Luigi, 3,674,845.

Gubler, Kurt: *See—*
Rutz, Hans; and Gubler, Kurt, 3,674,874.

Guerard, Albert S. Process for freeze drying with carbon dioxide. 3,673,698, Cl. 34-5.000.

Guest, Ashley W., to Plessey Handel und Investments A.G. Electrical demodulation systems. 3,675,139, Cl. 329-104.000.

Guetta, Guy Claude. Call-number monitors for telephones. 3,674,941, Cl. 179-90.0an.

Gukelberger, Werner: *See—*
Neuhauser, Hans; Benz, Helmut; and Gukelberger, Werner, 3,673,919.

Gulbrasen, Earl A.; Tallman, Richard L.; Andrew, Kenneth F.; and Buzalski, Bruce T., to Westinghouse Electric Corporation. Photoflash lamp and multiple flashlamp system. 3,675,004, Cl. 240-1.3.

Guldenpfenning, Rolf, to Reichhold-Albert-Chemie Aktiengesellschaft. Method for producing water-dilutable epoxy ester resins containing copolymers of vinyl and/or vinylidene compounds. 3,674,731, Cl. 260-23.0ep.

Gulf Oil Corporation: *See—*
Merriam, Marshall F., 3,675,042.

Gulf Research & Development Company: *See—*
Anspon, Harry D.; Clampitt, Bert H.; and Gilbert, Ronald E., 3,674,761.

Gurkov, Konstantin Stepanovich: *See—*
Kostylev, Alexandr Dmitrievich; Gurkov, Konstantin Stepanovich; Tkach, Khaim Berkovich; and Lipovetsky, Lazar Moiseevich, 3,674,099.

Gustafson, Manfred Wallace; and Sandrud, Torsten, to Fagersta Bruks Aktiebolag. Device for clamping a cutting insert to a seat of a toolholder body. 3,673,657, Cl. 29-105.000.

Gustav Neuhauser Prazisionswerkzeugfabik O.M.G.: *See—*
Neuhauser, Hans; Benz, Helmut; and Gukelberger, Werner, 3,673,919.

Gutowski, Chester L., to Heinz, H. J., Company. Apparatus for transferring can lids through a partition subject to a pressure differential. 3,674,160, Cl. 214-17.00b.

Gutter, Heinrich, to Gesellschaft zur Wiederaufarbeitung von Kernbrennstoffen m.b.H. Centrifugal mixing and extraction apparatus. 3,674,196, Cl. 233-4.000.

Guzak, John, Jr., to SCM Corporation. High speed printer including changeable code means. 3,673,957, Cl. 101-93.
H & H Equipment Company: *See—*
McGee, Donald J., 3,674,249.
Haarbye, Fredrik O.; and Murphy, Peter C., to Mallory, P. R., & Co., Inc. Electrical contact material. 3,674,446, Cl. 29-195.000.
Haas, Jan T.: *See—*
Konecny, Jan; Haas, Jan T.; and Groenewald, Hans E., 3,674,224.
Haberlin, Richard J., to Polaroid Corporation. Novel photographic products and processes. 3,674,482, Cl. 96-29.000.
Habicht, Ernst: *See—*
Zergenyi, Janos; and Habicht, Ernst, 3,674,810.
Haede, Werner: *See—*
Stache, Ulrich; Radscheit, Kurt; Fritsch, Werner; Haede, Werner; and Lindner, Ernst, 3,674,779.
Hagelbarger, David W.: *See—*
Anderson, Robert V.; and Hagelbarger, David W., 3,675,240.
Hagen, William Dobson, to Dominion Bridge Company Limited. Structural steel conveyor line. 3,673,658, Cl. 29-155.005.
Hagino, Takuo: *See—*
Tani, Isamu; Otsuka, Masatomi; Osaki, Yoshiyasu; and Hagino, Takuo, 3,674,646.
Hahn, Richard L.; Stone, Roland L.; Tarrant, James R.; and Hunt, Lee D., to United States of America, Atomic Energy Commission. Fast-closing valve system for cyclotrons. 3,675,072, Cl. 315-111.000.
Haines, Paul Gordon: *See—*
Yochum, Daniel William; Haines, Paul Gordon; and Popoff, Ivan C., 3,674,701.
Hakka, Leo E.; Bata, George L.; and Hazell, John E., to Union Carbide Canada Limited. Detection device for gas mixtures. 3,674,439, Cl. 23-254.00r.
Halasa, Adel F., to Firestone Tire & Rubber Company, The. Method of producing butadiene-styrene copolymer. 3,674,760, Cl. 260-83.700.
Hales, John H. Manual steaming apparatus. 3,673,827, Cl. 68-222.000.
Hales, Kenneth Calvert; and Scrine, Gerald Robin, to Shipowners Refrigerated Cargo Research Association. Liquid nitrogen refrigeration system. 3,673,810, Cl. 62-158.000.
Hall, Lou H.: *See—*
Carbajal, Bernard G., III; Gosney, William Milton; and Hall, Lou H., 3,673,679.
Hall, William Bernard: *See—*
Strater, Kurt; Hall, William Bernard; Mihalick, Eugene Michael; and Stever, William Charles, 3,673,983.
Hallstrom, Ingemar Gustaf Terje; Jarleborg, Martin Holger; and Tarnblom, Stig-Goran Harry, to Fagersta Bruks AB. High-strength low alloy ferritic steel small-gauge wire. 3,674,570, Cl. 148-12.000.
Halmbrecht, William L.: *See—*
Welker, Robert H.; and Halmbrecht, William L., 3,673,737.
Hamamoto, Hiroshi: *See—*
Kimura, Takashi; Majima, Azusa; Hamamoto, Hiroshi; and Awano, Yoji, 3,674,472.
Hamann, Omer F., to Stromberg Datagraphix, Inc. Optical system for superimposing images. 3,673,933, Cl. 95-1.100.
Hamano, Goro, to Matsushita Electric Industrial Co., Ltd. Right shifting system with data stored in polish stack form. 3,674,997, Cl. 235-159.000.
Hamburger Flugzeugbau GmbH: *See—*
Konecny, Jan; Haas, Jan T.; and Groenewald, Hans E., 3,674,224.
Hameister, Harold L.; and Baszczuk, Andrew R., to Remington Arms Company, Inc. Profile shaping machine for firearm recoil pads and butt plates. 3,674,451, Cl. 51-127.000.
Hamilton, Billy Harold, to Bell Telephone Laboratories, Incorporated. Technique for synchronous parallel operation of static inverters. 3,675,037, Cl. 307-51.000.
Hammell, Kemper Martel, to AMP Incorporated. Alpha-numeric display. 3,675,242, Cl. 340-381.000.
Hanberg, Sanford M.: *See—*
Betlejewski, Frank W.; and Hanberg, Sanford M., 3,674,948.
Hancock, Ronald David: *See—*
Allum, Keith George; and Hancock, Ronald David, 3,674,768.
Hands, Edward, to Raytheon Company. Acoustic impedance matching system. 3,674,945, Cl. 179-110.00a.
Handy, Richard L., to Iowa State University Research Foundation, Inc. Method and apparatus for in situ measurement of soil creep strength. 3,673,861, Cl. 73-101.000.
Hanessian, Stephen: *See—*
Fisher, Myron W.; and Hanessian, Stephen, 3,674,863.
Hanig, Siegfried; and Langer, Alfred, to Ilseder Hutte, Firma. Liner for tunnel wall. 3,673,806, Cl. 61-45.00r.
Hansen, Gerhard. Apparatus for producing, filling and closing plastic containers. 3,674,405, Cl. 425-308.000.
Hansen, John Wilfred: *See—*
Duguay, Michel Albert; and Hansen, John Wilfred, 3,675,154.
Hansen, Neil W.; and Orenstein, Nathan, to United States of America, Navy. Search-lock system. 3,675,132, Cl. 325-423.000.
Hantusch, Gerald H.; Vincent, David A.; and Van Tongerloo, Eric H., to Microsystems International Limited. Heat dispersion from a semiconductor wafer by a multiplicity of unaligned minuscule heat conductive raised dots. 3,675,089, Cl. 317-234.
Harding, Philip A., to Electronic Memories and Magnetics Corporation. Magnetic core memory line sink voltage stabilization system. 3,675,221, Cl. 340-174.0tb.
Hardwick, John David: *See—*
Wright, David Ellis; and Hardwick, John David, 3,673,705.
Hardy, John C., to Angelica Corporation. Pouch system for hospital patients. 3,674,034, Cl. 128-379.000.
Harkenrider, Robert J.; and Moe, John L., to Waynco, Inc. Control circuit. 3,675,046, Cl. 307-252.00b.
Harmon, Sandra R.: *See—*
Blank, Fritz; Day, William C.; Harmon, Sandra R.; Toncic, Pauline F.; and Yu, Ruey J., 3,674,645.
Harper, James C., to Dresser Industries, Inc. Method and mobile marine platform apparatus having floating submerged mat stabilization. 3,673,974, Cl. 114-.50d.
Harris, Erik P.; Lean, Eric G.; and Powell, Carl G., to International Business Machines Corporation. Internal modulation of injection lasers using acoustic waves. 3,675,150, Cl. 331-94.500.
Harris, Leroy S., to K-G Industries, Inc. Material compacting apparatus. 3,674,397, Cl. 425-145.000.
Harris, Robert J.; and Lee, Irvin J., to Price, H. C., Co. Method for coating pipe. 3,674,546, Cl. 117-94.000.
Harris-Intertype Corporation: *See—*
Maier, Robert E., Jr.; and Moser, James R., 3,674,258.
Harrison, Stanley, to KEV Electronics Corporation. Shielding for a particle accelerator. 3,675,061, Cl. 313-63.000.
Hartman, Leonard; and Sciuto, Joseph, Jr., to Stile-Craft Manufacturers, Inc. Ball valve. 3,674,052, Cl. 137-625.210.
Hartmann, Clinton S.: *See—*
Jones, William Stanley; and Hartmann, Clinton S., 3,675,054.
Hartmann, Clinton S.; and Jones, William S. Cascaded F.M. correlators for long pulses. 3,675,163, Cl. 333-30.00r.
Haruhike, Iwano: *See—*
Iijima, Yoo; Shimamura, Isao; Kondo, Tokiharu; and Haruhike, Iwano, 3,674,491.
Haruna, Takashi; and Taniguchi, Kazutaka, to Nissan Motor Company, Limited. Trigger switch for motor vehicle safety devices. 3,674,951, Cl. 200-61.530.
Harvey, Donad M.: *See—*
Michatek, Chester W.; and Harvey, Donad M., 3,673,938.
Harvey, Donald M., to Eastman Kodak Company. Photographic apparatus. 3,673,939, Cl. 95-13.000.
Harvey, Donald M., to Eastman Kodak Company. Print stripping mechanism. 3,673,940, Cl. 95-13.000.
Harvey, Herbert C., Jr., to Tennessee Valley Authority. Green-wood fibrating means and method. 3,674,219, Cl. 241-152.00r.
Harwell, Earnest W. Tension device for wires, straps, and the like. 3,673,642, Cl. 24-68.00d.
Hasegawa, Goro; and Ito, Masaharu, to Canon Kabushiki Kaisha. Lens barrel. 3,674,343, Cl. 350-250.000.
Hashimoto, Hikotaka: *See—*
Yokotsuka, Tamotsu; Hashimoto, Hikotaka; and Iwaasa, Takashi, 3,674,644.
Hasler A.G.: *See—*
Gruenig, Rudolf; Berger, Erwin; and Sieber, Charles, 3,674,200.
Hasuo, Masayoshi: *See—*
Iwasaki, Koichiro; Yamaguchi, Kazuo; Kimura, Harutaka; Hasuo, Masayoshi; and Tanaka, Toru, 3,674,764.
Hatanaka, Tsutomu: *See—*
Tada, Fusao; Inamine, Seiei; and Hatanaka, Tsutomu, 3,674,897.
Hatcher, John C., to Cole Manufacturing Company. Earthworking apparatus. 3,673,970, Cl. 111-85.000.
Hatori, Yukiyoshi: *See—*
Fukasawa, Noburu; and Hatori, Yukiyoshi, 3,675,227.
Hauser, Hans, to Foote, J. B., Foundry Co., The. Differential. 3,673,889, Cl. 74-713.000.
Hauser, Helmut: *See—*
Philippson, Rainer; Hauser, Helmut; Gibian, Heinz; Kaspar, Emanuel; and Kessler, Hans-Joachim, 3,674,815.
Hausermann, Heinrich: *See—*
Troxler, Eduard; and Hausermann, Heinrich, 3,674,714.
Haven, Roger Lindsy, to Western Electric Company, Incorporated, mesne. Variable digital delay using multiple parallel channels and a signal-driven bit distributor. 3,675,049, Cl. 307-293.000.
Havlas, Jiri; and Sedlarik, Jaroslav, to Elitex Zavody textilniho strojirenstvi generalni reditestvi. Yarn feed control means. 3,673,649, Cl. 28-1.700.
Havranek, Milan; Zouhar, Drahomir; Dusik, Josef; Kucera, Jaromir; and Krejcirik, Jiri, to Elitex-Zavody textilniho strojirestvi, generalni. Knitting machines. 3,673,818, Cl. 66-57.000.
Hawkins, Donald B. Interior door lock. 3,674,297, Cl. 292-252.000.
Hawkins, Royal R., to Honeywell Inc. Indicating means for an automatic dispenser control system. 3,674,177, Cl. 222-52.000.
Hawley, John B., to Akron Spool and Manufacturing Co. Method of making a bobbin barrel. 3,674,069, Cl. 144-326.00r.
Hayakawa, Shohei; Kanematsu, Yoshiko; and Fujiwara, Takashi, to Shionogi & Co., Ltd. Hexahydroindane dicarboxylic acid derivatives. 3,674,842, Cl. 260-514.00r.
Hayase, Yoshiaki: *See—*
Tsuchida, Takashi; Hayase, Yoshiaki; and Fujisawa, Yoshirou, 3,674,561.
Hayashi, Juntaro: *See—*
Ikuo, Yorio; Okabayashi, Minoru; Ono, Keisuke; Mizugaki, Yoshikazu; and Hayashi, Juntaro, 3,674,129.
Hayashi, Yasunori: *See—*
Osaki, Keisuke; Egashira, Hiroshi; and Hayashi, Yasunori, 3,675,206.
Hayashi, Yoshimasa: *See—*
Nakajima, Yasuo; Hayashi, Yoshimasa; and Sugihara, Kunihiko, 3,673,993.

Haycock, Ernest W., to Shell Oil Company. Cathodic protection of closely spaced oil well casings. 3,674,662, Cl. 204-147.000.
Hayes, Robert R.: *See—*
Clingenpeel, William R.; Cain, Charles L.; Hungerford, Philip C., Jr.; and Hayes, Robert R., 3,674,085.
Hayes, Thomas: *See—*
Dacey, Paul F.; De Toma, Samuel; Hayes, Thomas; and Mc Namara, Matthew F., 3,673,712.
Hazell, John E.: *See—*
Hakka, Leo E.; Bata, George L.; and Hazell, John E., 3,674,439.
Heat/Fluid Engineering Corporation: *See—*
Freeman, Darrell L., 3,674,246.
Heckman, Paul J., Jr., to United States of America, Navy. Cable-less television system. 3,674,925, Cl. 178-6.800.
Hedman, Clarence L., Jr.; and Myrenne, Karl-Dieter S., to SCM Corporation. Liquid crystal display device having improved optical contrast. 3,674,341, Cl. 350-160.000.
Hedrick, John R., to Pevrick Engineering Co., Inc. Tool chuck assembly. 3,674,281, Cl. 279-30.000.
Hegenberger, John N., 15% to Loomis, Joseph W., Loomis, Joseph W. and 35% Lehner, Bruce A. Fly swatter. 3,673,730, Cl. 43-137.000.
Heiberger, Francis E., to Danly Machine Corporation. Digital control of press synchronization. 3,675,098, Cl. 318-85.000.
Heijenga, Berend, to Polaroid Corporation. Method and apparatus for shaping temple pieces for spectacles. 3,673,844, Cl. 72-298.000.
Heilhecker, Joe K.: *See—*
Lock, Everett H.; and Heilhecker, Joe K., 3,673,676.
Heilmayr, Peter F.; Kimbrell, Sol B.; and Giuffre, Joseph C., to Certain-Teed Products Corporation. Manufacture of plastic siding. 3,674,388, Cl. 425-72.000.
Heinz, H. J., Company: *See—*
Gutowski, Chester L., 3,674,160.
Heiter, George Ludwig: *See—*
Feldman, Martin; and Heiter, George Ludwig, 3,675,025.
Helmuth, Gene R.: *See—*
Asbelle, Charles C.; Arrigo, Michael F.; Hunting, Kenneth E.; and Helmuth, Gene R., 3,673,613.
Hendley, Dennis Alfred, to Decca Limited. Automatic steering systems. 3,673,977, Cl. 114-144.000.
Hendon, James D., 50% to Hendon, John C. Cotton harvesting bag. 3,674,073, Cl. 150-7.000.
Hendon, John C.: *See—*
Hendon, James D., 3,674,073.
Henkel & Cie G.m.b.H.: *See—*
Aggias, Zissis, 3,674,892
Henle, Robert A.: *See—*
Bossen, Douglas C.; Henle, Robert A.; Hsiao, Mu Y.; Maley, Gerald A.; and Pricer, W. David, 3,675,200.
Hensen, David, to Machinery and Gears Hansen. Series of gear speed reducers. 3,673,885, Cl. 74-421.00r.
Henshaw, Jo Ann: *See—*
Aszalos, Adorjan; Robison, Robert S.; Kraemer, Nancy; Henshaw, Jo Ann; and Giannini, Mary Suzanne, 3,674,867.
Herman, David L. Xerographic copying device. 3,674,361, Cl. 355-8.000.
Hermstein, Wolfgang; and Mollenbeck, Klaus, to Siemens Aktiengesellschaft. Device for measuring currents in a high voltage conductor by modulated radiated beams. 3,675,123, Cl. 324-96.000.
Heron Establishment: *See—*
Garavelli, Giancarlo, 3,674,244.
Herr, George E. Removable tamperproof fasening means. 3,673,912, Cl. 85-45.000.
Herrero, Jose: *See—*
Rheiner, Alfred, Jr.; Fernex, Michel; and Herrero, Jose, 3,674,872.
Herring, James M., Jr.: *See—*
Santos, Gerard R.; and Herring, James M., Jr., 3,674,107.
Herter, George L., to Herter's, Inc. Over-shot wad for shotshells. 3,673,965, Cl. 102-95.000.
Herter's, Inc.: *See—*
Herter, George L., 3,673,965.
Hester, Jackson B., Jr., to Upjohn Company, The. Process for preparing 1,3-dihydro-5-phenyl-2H-1,4-benzodiazepine-2-thiones. 3,674,777, Cl. 260-239.30d.
Heugebaert, Frans Clement: *See—*
Vrancken, Marcel Nicolas; Brinckman, Eric Maria; and Heugebaert, Frans Clement, 3,674,483.
Hewlett-Packard Company: *See—*
Cutler, Leonard S.; Holloway, Joseph H.; and Turner, Wilson R., 3,675,149.
Dukes, John N., 3,674,371.
Spangler, Richard M., 3,675,213.
Heyer, William T.; and Soukup, Dale F. Flush valve. 3,674,237, Cl. 252-32.000.
Heywang, Walter; and Sirtl, Erhard, to Siemens Aktiengesellschaft. Method of producing semiconductor components on a magnetic substrate. 3,674,552, Cl. 117-217.000.
Hickner, George B.: *See—*
Howard, Donald W.; and Hickner, George B., 3,674,320.
Hickner, George B.; Howard, Donald W.; and Suttle, Ward C., to Bendix Corporation, The. Anti-skid braking system utilizing pressure feedback. 3,674,318, Cl. 303-21.00a.
Highberg, Carle W., to Engelhard Hanovia, Inc. Method of polishing glass. 3,673,746, Cl. 51-283.000.
Higuchi, Noboru; Ogawa, Yutaka; and Watanabe, Akihiro, to NGK Insulators, Ltd. Method of manufacturing porcelain for electric insulators by controlling grain size. 3,674,519, Cl. 106-46.000.
Hill, Clifford W. Decorative lamp shades. 3,675,008, Cl. 240-108.000.
Hill, Harold, Jr., mesne: *See—*
Fathauer, George H., 3,675,120.
Hill, Herbert Charles, Jr.: *See—*
Rutledge, Nolan W.; Mercer, Ronald H.; and Hill, Herbert Charles, Jr., 3,673,982.
Hill, Robert C.; French, John M.; and Toepfer, Richard E., to Measurex Corporation. Apparatus for measuring the amount of a substance that is associated with a base material. 3,675,019, Cl. 250-83.30d.
Hille, Arvin A.: *See—*
Tupper, Myron D.; and Hille, Arvin A., 3,674,220.
Hills, Brian. Induction motors. 3,675,060, Cl. 310-172.000.
Hilti Aktiengesellschaft: *See—*
Chromy, Franz, 3,674,101.
Hinata, Masanao: *See—*
Shiba, Keisuke; Hinata, Masanao; Tsuji, Nobuo; and Sato, Akira, 3,674,499.
Hindersinn, Raymond R.: *See—*
Iliopulos, Miltiadis I.; and Hindersinn, Raymond R., 3,674,748.
Hirai, Kenichi: *See—*
Hozumi, Shiro; Hirai, Kenichi; Tanigawa, Yoshiyuki; Yoshida, Katuro; and Sugihara, Kanji, 3,673,666.
Hiraoka, Susumu: *See—*
Kurauchi, Noritaka; Tada, Shotaro; Shima, Hiroshi; Hiraoka, Susumu; Nagao, Taichiro; Koyama, Masahiro; Shiraishi, Satoshi; Shindo, Masuo; and Kobayashi, Yoshinobu, 3,674,990.
Hirata, Miyoshi: *See—*
Naito, Takeo; Hirata, Miyoshi; and Isoda, Sumiro, 3,674,833.
Hirooka, Masaaki: *See—*
Yamamoto, Keisaku; Takao, Hiroyoshi; Hirooka, Masaaki; and Oshima, Teruo, 3,674,755.
Hirose, Yoshio: *See—*
Ikeda, Shigeho; Ishizaki, Ayaaki; Hirose, Yoshio; and Shiro, Teruo, 3,674,639.
Hit Archery Co., Inc.: *See—*
Hitt, Otis H., 3,674,001.
Hitachi, Ltd.: *See—*
Kawasaki, Jun; and Uehara, Hiroshi, 3,675,219.
Hitachi Shipbuilding and Engineering Co., Ltd.: *See—*
Ikuo, Yorio; Okabayashi, Minoru; Ono, Keisuke; Mizugaki, Yoshikazu; and Hayashi, Juntaro, 3,674,129.
Hitt, Otis H., to Hit Archery Co., Inc. Archery bow combination with draw force multiplying means. 3,674,001, Cl. 124-24.000.
Hittmair, Paul: *See—*
Nitzsche, Siegfried; Kaiser, Wolfgang; Wohlfarth, Ernst; and Hittmair, Paul, 3,674,738.
Ho, Edward J.: *See—*
Figge, Erwin E.; and Ho, Edward J., 3,674,348.
Hobart Manufacturing Company, The: *See—*
Davis, Kenneth E., 3,673,852.
Hobrough, Gilbert L., to Hobrough Limited. Automatic orthophoto printer. 3,674,369, Cl. 356-2.000.
Hobrough Limited: *See—*
Hobrough, Gilbert L., 3,674,369.
Hobson, H. M., Limited: *See—*
Glaze, Stanley George, 3,675,225.
Hoegee, Robert A., to Shur-Lok Corporation. Tamper-proof two-way locking nut. 3,674,075, Cl. 151-21.00b.
Hoegger, Anton, to Muller, Hans. Method of regenerating filter aids. 3,674,146, Cl. 210-73.000.
Hoehn, Marvin M.: *See—*
Williams, Robert H.; and Hoehn, Marvin M., 3,674,774.
Hoekstra, Gerald B.; and Jacobs, Robert B., to Standard Oil Company. Process and catalyst for hydroprocessing a resid hydrocarbon. 3,674,680, Cl. 208-111.000.
Hoerner Waldorf Corporation: *See—*
Locke, Frank W., 3,674,133.
Hoffmann, Horst; Krauch, Carl Heinrich; Otto, Hans-Werner; and Volkert, Otto, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Reflective metal plate with photopolymerizable layer containing metal complex dye. 3,674,494, Cl. 96-86.00p.
Hoffmann-La Roche Inc.: *See—*
Edenhofer, Albrecht; and Spiegelberg, Hans, 3,674,799.
Rheiner, Alfred, Jr.; Fernex, Michel; and Herrero, Jose, 3,674,872.
Hogue, Robert M. Strobe flash apparatus. 3,675,073, Cl. 315-149.000.
Holland, Gerald F.: *See—*
Lombardino, Joseph G.; and Holland, Gerald F., 3,674,876.
Hollingworth, Richard Peck: *See—*
Anderson, John Ray; and Hollingworth, Richard Peck, 3,674,466.
Hollis, James E., to Bancroft Racket Company. Adjustable grip for an elongated handle of a game device. 3,674,267, Cl. 273-75.000.
Hollis, Samuel D.: *See—*
Vredenburgh, Walter A.; and Hollis, Samuel D., 3,674,723.
Holloway, Joseph H.: *See—*
Cutler, Leonard S.; Holloway, Joseph H.; and Turner, Wilson R., 3,675,149.
Holman, John G., to Roberts Consolidated Industries, Inc. Means and method for applying facing stripe to cores. 3,674,590, Cl. 156-252.000.

Holmer, Bernt Arne Gustaf, to Aktiebolaget Atomenergi. Appliance for interstitial radiation of organs in the body. 3,674,006, Cl. 128-1.200.
Holosonics, Inc., mesne: *See*—
Garlick, George F., 3,673,688.
Holzhfi, Don Earl, to Deere & Company. Impact mowing machine. 3,673,772, Cl. 56-13.100.
Holzman, Richard: *See*—
Curtiss, Robert H.; Holzman, Richard; and Lazarow, Seldan A., 3,673,955.
Honey, Raymond; and Perkins, James Frank, to Firmenich Incorporated. Non-ringing beverages containing poly(oxyethylene)-poly(oxypropylene)-poly (oxyethylene)copolymers. 3,674,502, Cl. 99-28.000.
Honeywell Inc.: *See*—
Cashin, William F.; and Mourning, James R., 3,673,867.
Engle, Gordon A., 3,674,969.
Hawkins, Royal R., 3,674,177.
Kuntz, Leland E., 3,674,094.
Paul, Ian Andrew, 3,675,050.
Power, Gerald P., 3,674,566.
Hooker Chemical Corporation: *See*—
Dittel, Friedrich; and Jorns, Peter, 3,674,699.
Whitesell, George, 3,674,672.
Hoover, Richard D.; and Kohler, George O., to Agri-Tech, Inc. High potency thyroidally active materials prepared by partial acid hydrolysis of idinated protein. 3,674,770, Cl. 260-119.000.
Horacek, Peter: *See*—
Crabtree, Ronald; and Horacek, Peter, 3,674,252.
Horbach, Stephen, to Electronic Associates Inc. Electrical coil and method of manufacturing same. 3,675,174, Cl. 335-299.000.
Hori, Kyoichi: *See*—
Otsuki, Susumu; Hori, Kyoichi; and Miyanohara, Isao, 3,674,651.
Horton, George F. Bracket for mounting boat accessory. 3,674,228, Cl. 248-4.000.
Hosono, Shinichi; and Kida, Kazuyoshi, to Teijin Limited. Method and apparatus for preparing filing in shuttleless loom. 3,674,057, Cl. 139-122.000.
Houdaille Industries, Inc.: *See*—
Barber, Joseph J., 3,675,107.
Roberts, Robert D., 3,674,112.
Houlihan, William J., to Sandoz-Wander, Inc. Dichloro trifluoromethyl phenyl lithium. 3,674,882, Cl. 260-665.00r.
Howard, Donald W.: *See*—
Hickner, George B.; Howard, Donald W.; and Suttle, Ward C., 3,674,318.
Howard, Donald W., to Bendix Corporation, The. Brake lining temperature probe. 3,674,114, Cl. 188-1.00a.
Howard, Donald W.; and Hickner, George B., to Bendix Corporation, The. Adaptive braking control system. 3,674,320, Cl. 303-21.00p.
Howard, Laurence M. Ornamental article. 3,674,616, Cl. 161-62.000.
Howe, Robert K., to Monsanto Company. Herbicidal use of substituted o-phenylenediamines. 3,674,460, Cl. 71-121.000.
Howells, Francis Thomas; and Ashe, Anthony Grenfell, to Shandon-Elliott Limited. Sequential processing apparatus. 3,674,040, Cl. 134-58.00r.
Howlett, George H.; and Howlett, James W., to Howlett Machine Works. Tendon anchorage. 3,673,644, Cl. 24-122.600.
Howlett, James W.: *See*—
Howlett, George H.; and Howlett, James W., 3,673,644.
Howlett Machine Works: *See*—
Howlett, George H.; and Howlett, James W., 3,673,644.
Hoyt, Edwin D.; and Welsh, Luther, to Rama Industrial Heater Co. Zone controlled cook oven. 3,674,982, Cl. 219-403.000.
Hozumi, Shiro; Hirai, Kenichi; Tanigawa, Yoshiyuki; Yoshida, Katuro; and Sugihara, Kanji, to Matsushita Electric Industrial Co., Ltd. Apparatus for assembling and securing electrical components by die compacting. 3,673,666, Cl. 29-203.0dt.
Hsiao, Mu Y.: *See*—
Bossen, Douglas C.; Henle, Robert A.; Hsiao, Mu Y.; Maley, Gerald A.; and Pricer, W. David, 3,675,200.
Huber, Gerhard: *See*—
Lindner, Fritz; Wallhausser, Karl Heinz; and Huber, Gerhard, 3,674,866.
Huber, Manfred; Klimek, Norbert; and Dee, Kenneth Herbert William, to English Numbering Machines Limited. High speed print mechanism with interposer arm for print hammer. 3,673,956, Cl. 101-93.
Huber, Walter E., to Dayco Corporation. Endless track. 3,674,322, Cl. 305-38.000.
Huffman, Jerry P.: *See*—
Auer, John H., Jr.; and Huffman, Jerry P., 3,675,190.
Huffman, Tommie R.: *See*—
Coleman, Michael G.; and Huffman, Tommie R., 3,675,064.
Hughes Aircraft Company: *See*—
Jacobson, Stanley I.; and Sansbury, John R., 3,674,227.
Hughes, William B., to Phillips Petroleum Company. Electrochemical production of nickel (I) complexes. 3,674,661, Cl. 204-73.00r.
Hujer, Friedrich: *See*—
Kohler, Roland; Nagel, Erich; Hujer, Friedrich; and Viehrig, Wolfgang, 3,674,365.
Hungerford, Philip C., Jr.: *See*—
Clingenpeel, William R.; Cain, Charles L.; Hungerford, Philip C., Jr.; and Hayes, Robert R., 3,674,085.
Hunt, Lee D.: *See*—
Hahn, Richard L.; Stone, Roland L.; Tarrant, James R.; and Hunt, Lee D., 3,675,072.
Hunt-Wesson Foods, Inc.: *See*—
Lane, Alan B., 3,674,504.
Hunter, James R.; Lazzarotti, Sebastion James; and Mann, Abe, to Burroughs Corporation. Transport and sorting mechanisms for an automatic conveyor. 3,674,143, Cl. 209-74.000.
Hunter, Stephen R.: *See*—
Scarnato, Thomas J.; Gordon, Paul C.; Hunter, Stephen R.; Krage, Paul W.; and Zablocki, Richard A., 3,673,779.
Hunting, Kenneth E.: *See*—
Asbelle, Charles C.; Arrigo, Michael F.; Hunting, Kenneth E.; and Helmuth, Gene R., 3,673,613.
Huppe, Justin: *See*—
Kunke, Arthur; Reinhardt, Dieter; and Glass, Waldemar, 3,675,023.
Hurko, Bohdan; and Dills, Raymond L., to General Electric Company. Smooth surface electric cooktop. 3,674,983, Cl. 219-462.000.
Huron Manufacturing Corporation: *See*—
Rink, Richard H., 3,675,229.
Hutchins, Burleigh M., Jr.: *See*—
Waters, James L.; Abrahams, Louis; and Hutchins, Burleigh M., Jr., 3,674,373.
Hutchinson, Frank J. Apparatus for loading bags with articles. 3,673,767, Cl. 53-385.000.
Huttenwerk Oberhausen AG: *See*—
Degenkolbe, Joachim; and Musgen, Bruno, 3,674,577.
Hy-Dynamic Co., The, mesne: *See*—
Smith, Robert M., 3,674,162.
Hydril Company: *See*—
Lewis, George E.; and Murman, Fernando, 3,674,123.
Murman, Fernando; and Lewis, George E., 3,674,053.
Hydronautics Incorporated: *See*—
Gollan, Arye, 3,674,684.
Hygena Limited: *See*—
Robinson, George Henry, 3,674,327.
Hytrek, Frederick Paul, to Du Pont de Nemours, E. I., and Company. Non-massing diaryl-p-phenylene diamines. 3,674,705, Cl. 252-400.000.
I'Anson, Thomas. Industrial chain and method of manufacturing same. 3,673,794, Cl. 59-35.000.
I.C.B.S.P.A. Industria Chimica e Biologica: *See*—
Formisano, Mario; and Coppola, Salvatore, 3,674,649.
Ichiki, Eiichi; Iida, Kazuo; Inoue, Yasuhiko; and Kondo, Yoshihiro, to Sumitomo Chemical Company, Limited. Aluminum plating process. 3,674,541, Cl. 117-62.000.
Ichimura, Nobuyoshi: *See*—
Suzuki, Yoshiro; Nagahara, Shigehiro; and Ichimura, Nobuyoshi, 3,674,520.
Ida, Keisuke: *See*—
Kubota, Tadao; and Ida, Keisuke, 3,674,382.
Ideal Toy Corporation: *See*—
Cooper, Julius; and Nielsen, Edwin A., 3,674,269.
Iemura, Toshio; Doi, Masaru; and Shimizu, Yoshiaki, to Sanyo Electric Co., Ltd. Magnetic transducer heads. 3,674,944, Cl. 179-100.20c.
Ierusalimskaya, Irina Nikolaevna: *See*—
Borkovsky, Gennady Mikhailovich; Tsukernik, Vitaly Borisovich; and Ierusalimskaya, Irina Nikolaevna, 3,675,194.
Iguchi, Takashi: *See*—
Takeda, Isao; Iguchi, Takashi; Tsuzuki, Katsuaki; and Nakano, Tooru, 3,674,639.
Iha, Kiyoshi, to Bell & Howell Company. Film cartridge support assembly for projectors. 3,674,347, Cl. 352-73.000.
Iida, Kazuo: *See*—
Ichiki, Eiichi; Iida, Kazuo; Inoue, Yasuhiko; and Kondo, Yoshihiro, 3,674,541.
Iijima, Yoo; Shimamura, Isao; Kondo, Tokiharu; and Haruhike, Iwano, to Fuji Photo Film Co., Ltd. Developing process. 3,674,491, Cl. 96-66.300.
Ikeda, Shigeho; Ishizaki, Ayaaki; Hirose, Yoshio; and Shiro, Teruo, to Ajinomoto Co., Inc. and Sanraku Ocean Co., Ltd. Method of producing L-glutamic acid by fermentation. 3,674,639, Cl. 195-28.00r.
Ikuo, Yorio; Okabayashi, Minoru; Ono, Keisuke; Mizugaki, Yoshikazu; and Hayashi, Juntaro, to Hitachi Shipbuilding and Engineering Co., Ltd. Overhead traveling sandslinger. 3,674,129, Cl. 198-44.000.
Iles, Frank. Pumps. 3,674,383, Cl. 417-476.000.
Iliopulos, Miltiadis I.; and Hindersinn, Raymond R., to Borg-Warner Corporation, mesne. Polyesters containing aminoalkylphosphonates. 3,674,748, Cl. 260-75.00p.
Illigen, Alfred; and Neugebauer, Walter, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Process for the pyrogenic making of highly dispersed silicon dioxide. 3,674,430, Cl. 23-182.000.
Illinois Tool Works Inc.: *See*—
Landuyt, John F., 3,675,243.
Ilseder Hutte, Firma: *See*—
Hanig, Siegfried; and Langer, Alfred, 3,673,806.
Imperial Chemical Industries Limited: *See*—
Averill, Frederick John; and Riley, Norman, 3,674,852.
Brooks, Martin Frederick; and Kerrigan, Vincent, 3,674,828.
Colchester, John Edward; Carey, John Gerard; and Taylor, Michael David, 3,674,797.
Freeman, Peter Frank Hilary, 3,674,877.
Komander, Alfons Anzelm, 3,674,527.
Porter, Kenneth; and Richardson, Brian, 3,674,744.

Rigby, Charles Herbert, 3,673,964.
IMS Limited, mesne: *See*—
Ogle, Robert W., 3,674,028.
Inaba, Shigebo; Akatsu, Mitsuhiro; and Yamamoto, Hisao, to Sumitomo Chemical Company, Ltd. 1-Hydroxyalkyl-2-aminomethylindole derivatives. 3,674,808, Cl. 260-326.150.
Inaba, Yoshinari: *See*—
Yamadai, Tadaaki; Kushida, Tadao; Konishi, Hiroshi; and Inaba, Yoshinari, 3,673,631.
Inagaki, Tokuichi: *See*—
Aono, Shigeo; Manaka, Nobuzi; and Inagaki, Tokuichi, 3,673,989.
Inamine, Seiei: *See*—
Tada, Fusao; Inamine, Seiei; and Hatanaka, Tsutomu, 3,674,897.
Industrial Problem Solves, Inc.: *See*—
Crook, Richard D., 3,673,668.
Industrie Pirelli S.p.A., mesne: *See*—
Caretta, Renato; and Pacciarini, Antonio, 3,674,899.
Inforex, Inc.: *See*—
Steranko, James J., 3,673,681.
Infrarodteknik AB: *See*—
Elaner, Nils Ake; and Nilson, Hans Erik, 3,674,513.
Ingestrom, Curt Holger: *See*—
Bokvist, Kjell; and Ingestrom, Curt Holger, 3,673,750.
Inomata, Isao: *See*—
Ueda, Isao; Kageyama, Takao; and Inomata, Isao, 3,675,165.
Inoue, Yasuhiko: *See*—
Ichiki, Eiichi; Iida, Kazuo; Inoue, Yasuhiko; and Kondo, Yoshihiro, 3,674,541.
Inpat Establishment: *See*—
Marchiorello, Giovanni, 3,673,736.
Institut Francais du Petrole des Carburants et Lubrifiants: *See*—
Derrien, Michel; and Le Page, Jean Francois, 3,674,888.
Institut Gornogo Dela Siberskogo otdelenia Akademii Nauk SSSR: *See*—
Kostylev, Alexandr Dmitrievich; Gurkov, Konstantin Stepanovich; Tkach, Khaim Berkovich; and Lipovetsky, Lazar Moiseevich, 3,674,099.
Institut Textile de France: *See*—
Parisot, Andre; and Meimoun, Daniel, 3,674,539.
Intercraft Industries Corporation: *See*—
Bell, Randall P.; and Vanderhoef, John P., 3,673,724.
Lazar, Burton A.; Bell, Randall P.; and Vanderhoef, John P., 3,673,723.
Interdata, Incorporated: *See*—
Ellis, David R.; Michels, John; and Gabbert, Ira, 3,675,214.
Interlake, Inc.: *See*—
Stahnke, Edward J., 3,674,972.
International Agri-Systems, Inc.: *See*—
Crane, Edward J., 3,673,637.
International Business Machines Corporation: *See*—
Arnold, Richard F.; Dauber, Philip S.; and Sussenguth, Edward H., 3,675,215.
Bossen, Douglas C.; Henle, Robert A.; Hsiao, Mu Y.; Maley, Gerald A.; and Pricer, W. David, 3,675,200.
Dauber, Philip S.; Robelen, Russell J.; and Wierzbicki, John R., 3,675,217.
Druschel, William O., 3,674,487.
Fang, Frank F.; and Lean, Eric G., 3,675,140.
Frankeny, Richard F.; and Tuttle, Joey K., 3,675,133.
Grandia, Johannes; and Rohr, Robert Lewis, 3,674,004.
Harris, Erik P.; Lean, Eric G.; and Powell, Carl G., 3,675,150.
James, Randell L., 3,675,216.
Kolpek, Robert A., 3,674,125.
Pickholtz, Raymond L., 3,675,131.
Raviv, Josef, 3,675,211.
Raviv, Josef; and Wesley, Michael A., 3,675,212.
Sechler, Robert F., 3,675,218.
Singh, Shanker, 3,675,001.
Woodall, Jerry M., 3,675,026.
International Fineblanking Corporation: *See*—
Smith, Roger K., 3,673,908.
International Harvester Company: *See*—
Scarnato, Thomas J.; Gordon, Paul C.; Hunter, Stephen R.; Krage, Paul W.; and Zablocki, Richard A., 3,673,779.
International Paper Company: *See*—
Allport, Walter F., 3,674,583.
Allport, Walter F., 3,674,607.
International Rubber Industries, Inc.: *See*—
Lucci, Donald E., 3,674,068.
International Standard Electric Corporation: *See*—
Bamberg, Paul, 3,675,130.
International Stretch Products, Inc.: *See*—
Sarmiento, Louis, 3,673,820.
International Telephone and Telegraph Corporation: *See*—
Erdmann, M. Otto, 3,674,215.
Grant, John M., 3,675,028.
Iowa State University Research Foundation, Inc.: *See*—
Handy, Richard L., 3,673,861.
Ippen, Erich Peter: *See*—
Ashkin, Arthur; and Ippen, Erich Peter, 3,674,335.
I.S.A.P. SpA.: *See*—
Padovani, Pietro, 3,674,168.
Ishii, Hirozi; and Okamoto, Koichi, to Nissan Motor Company, Limited. Method for bonding vanes in torque converter. 3,673,659, Cl. 29-156.8cf.
Ishizaki, Ayaaki: *See*—
Ikeda, Shigeho; Ishizaki, Ayaaki; Hirose, Yoshio; and Shiro, Teruo, 3,674,639.
Isoda, Sumiro: *See*—
Naito, Takeo; Hirata, Miyoshi; and Isoda, Sumiro, 3,674,833.
Isoya, Toshiro: *See*—
Seko, Maomi; Ogawa, Shinsaku; Komori, Ryozo; Asuma, Masaro; Isoya, Toshiro; and Sakai, Takamasa, 3,674,653.
Israel Atomic Energy Commission, State of: *See*—
Aladjem, Abraham, 3,675,021.
Israel, Henry M., to Raytheon Company. Resonant charging circuit. 3,675,116, Cl. 323-17.000.
Israel Mining Industries-Institute for Research and Development: *See*—
Waterman, Jacques Abraham; Shaham, Ilan; and Shorr, Leonard M., 3,674,756.
Istituto Farmacologico Serono S.p.A.: *See*—
Donini, Pietro, 3,674,865.
Itek Corporation: *See*—
Wyman, John E., 3,674,489.
Iten, Clemens A., to Morris, Philip, Incorporated. Method of joining two bodies in captive, independently rotatable assembly. 3,673,672, Cl. 29-443.000.
Iten, Paul Dominik; and Mottier, Francois, to Brown Boveri & Company Limited. Methods and means for measuring the velocities of localized portions of flowing media. 3,675,029, Cl. 250-218.000.
Ito, Katsunori: *See*—
Kato, Takaaki; Kawakubo, Mamoru; and Ito, Katsunori, 3,673,892.
Ito, Masaharu: *See*—
Hasegawa, Goro; and Ito, Masaharu, 3,674,343.
Ito, Michinobu: *See*—
Watanabe, Shigeru; and Ito, Michinobu, 3,673,745.
Iwaasa, Takashi: *See*—
Yokotsuka, Tamotsu; Hashimoto, Hikotaka; and Iwaasa, Takashi, 3,674,644.
Iwamoto, Minoru, to Ricoh Co., Ltd. Device for electrophotocopying machines for detecting whether a usable length of copy paper is left on a roll thereof. 3,675,228, Cl. 340-259.000.
Iwamoto, Shunsuke; and Kawasaki, Ryohei, to Omron Tateisi Electronics Co. Apparatus for detecting traffic information. 3,675,195, Cl. 340-38.00l.
Iwasa, Hitoo: *See*—
Teramoto, Iwao; Iwasa, Hitoo; Miyai, Yukio; and Takeshima, Masumi, 3,675,161.
Iwasaki, Koichiro; Yamaguchi, Kazuo; Kimura, Harutaka; Hasuo, Masayoshi; and Tanaka, Toru, to Mitsubishi Chemical Industries Limited. Process for the polymerization of olefins. 3,674,764, Cl. 260-88.20r.
Izumo, Masanori; and Yoshimura, Tatsushiro, to Daikin Kogyo Co., Ltd. Method for preparing polytetrafluoroethylene molding powder. 3,674,762, Cl. 260-87.500.
Jackson, George: *See*—
Sturgeon, George; and Jackson, George, 3,674,389.
Jackson, Paul Louis, to Ford Motor Company. Determination of oxygen in molten steel. 3,674,654, Cl. 204-1.00t.
Jacob, Jean-Baptiste, to C.I.T.-Compagnie Industrielle des Telecommunications and Societe Lannionaise d'Electronique. Expanded multi-stage time connection network. 3,674,938, Cl. 179-15.0aq.
Jacob, Louis, to Commissariat a l'Energie Atomique. Device for improving the optical qualities of a laser beam. 3,674,340, Cl. 350-157.000.
Jacobs, Robert B.: *See*—
Hoekstra, Gerald B.; and Jacobs, Robert B., 3,674,680.
Jacobson, Stanley I.; and Sansbury, John R., to Hughes Aircraft Company. Fragmenting cover. 3,674,227, Cl. 244-121.000.
Jacobson, Sydney; Knowles, Denis; and Parker, Derek, to Montague Burton Limited. Method of bonding an interlining to a garment using stray field dielectric heating. 3,674,592, Cl. 156-274.000.
Jacuzzi Research, Inc.: *See*—
Jacuzzi, Roy A., 3,674,020.
Jacuzzi, Roy A., to Jacuzzi Research, Inc. Pool hydromassage assembly. 3,674,020, Cl. 128-66.000.
Jadair, Incorporated: *See*—
Schmutzler, David L.; and Schmutzler, John H., 3,674,145.
Jaecklin, Andre, to Aktiengesellschaft Brown, Boveri & Cie. Optical wattmeter. 3,675,125, Cl. 324-96.000.
Jaeger: *See*—
Leyri, Claude, 3,673,786.
Jalbert, Armand F. Temp-a-check. 3,673,870, Cl. 73-349.000.
James, Jack L.: *See*—
Siedband, Melvin P.; Duffy, Philip A., Jr.; and James, Jack L., 3,675,020.
James, Randell L., to International Business Machines Corporation. No clock shift register and control technique. 3,675,216, Cl. 340-172.500.
Jamison, Robert W.; and Norcross, Paul A., to Union Oil Company of California. Vehicle position marking device. 3,675,199, Cl. 340-62.000.
Jammaud, Andre, to Societe Industrielle Honeywell Bull Societe Anonyme. Signaling and control apparatus slidably and swingably mounted on a supporting cabinet. 3,675,084, Cl. 317-101.0cb.
Janssen, Casper Johannes Gerardus Ferdinand: *See*—
Jonker, Hendrik; Janssen, Casper Johannes Gerardus Ferdinand; and Postma, Lambertus, 3,674,485.
Janssen, Heinrich: *See*—

Schmalfeld, Paul; Janssen, Heinrich; Bock, Burkhard; Peters, Werner; and Ahland, Erwin, 3,674,449.

Jaquish, John, to Trans-World Display Corporation. Multiple size package display and dispenser. 3,674,175, Cl. 221-92.000.

Jarleborg, Martin Holger: *See—*
Hallstrom, Ingemar Gustaf Terje; Jarleborg, Martin Holger; and Tarnbloom, Stig-Goran Harry, 3,674,570.

Jarva, Inc.: *See—*
Scaravilli, Joseph V., 3,674,314.

Jarvis, James G., to Eastman Kodak Company. Xerothermographic process. 3,673,961, Cl. 101-465.000.

Jayne, Max L.; and Pihlblad, Robert W., to Sylvania Electric Products, Inc. Means for polaring a connector assembly. 3,675,186, Cl. 339-186.00m.

Jeffery, Robert W.; Brown, Robert A., Jr.; and Cullen, Allen F., to Sperry Rand Corporation. Outboard drive unit for boats. 3,673,978, Cl. 115-35.000.

Jeffreys, Roy A.; and Thomas, David A., to Eastman Kodak Company. Photographic elements containing fluorescent brightening agents. 3,674,493, Cl. 96-72.000.

Jellison, Frank R.; Mason, John B.; and McQueen, Terry K., to General Motors Corporation. Suspension strut. 3,674,283, Cl. 280-124.00r.

Jendrisak, Joseph E.; and McKelvey, Harold E., to Shatterproof Glass Corporation. Glass cutting apparatus. 3,673,900, Cl. 83-11.000.

Jenkins, Francis Edward, to Du Pont de Nemours, E. I., and Company. Process for preparing microporous, open-celled cellular polyamide, polyester and polyacetal structures. 3,674,719, Cl. 260-2.50m.

Jenning, Doris E. Back scrubber. 3,674,374, Cl. 401-8.000.

Jennings, Peter H.: *See—*
Stanley, Robert W.; Ames, Horace L.; and Jennings, Peter H., 3,674,424.

Jessup, Richard J., to Udylite Corporation. Apparatus for electroplating workpieces. 3,674,673, Cl. 204-213.000.

Jezuit, Leslie J.; and Kollars, Harold R., to North American Rockwell Corporation. Dampening system for lithographic printing press. 3,673,959, Cl. 101-148.000.

Johannsmeier, Karl-Heinz. Out of contact optical alignment and exposure apparatus. 3,674,368, Cl. 355-78.000.

Johnson, Curtis C., to Battelle Development Corporation, The, mesne. Quantitative pulsed transilluminator and method of operation. 3,674,008, Cl. 128-2.00a.

Johnson, Gary L.: *See—*
La Barge, Robert G.; and Johnson, Gary L., 3,674,858.

Johnson, Henry V., to United States of America, Army. Buoy. 3,674,225, Cl. 244-31.000.

Johnson, Lowell E.: *See—*
Audiffred, Sidney J.; Johnson, Lowell E.; and Pearce, Shairyl I., 3,673,799.

Johnson, Martin Robert, to Prenihan A.G., mesne. Knit garment and method of manufacture. 3,673,821, Cl. 66-177.000.

Johnson, Ralph S., to General Motors Corporation. Auxiliary shock absorber damping valves. 3,674,120, Cl. 188-277.000.

Johnson, Ronald W.: *See—*
Artaud, Maurice H.; Johnson, Ronald W.; and Sampath, Prativadi I., 3,674,354.

Johnston, Richard W., to General Motors Corporation. Induction motor regenerative braking system. 3,675,099, Cl. 318-211.000.

Jones & Laughlin Steel Corporation: *See—*
Kuszaj, Alex Mark, 3,673,816.
Manka, Dan Paul, 3,673,854.
Paliwoda, Eugene J., 3,674,084.
Shellenberger, Donald J., 3,674,248.
Wlodek, Stanley Thaddeus, 3,674,445.

Jones, Alton R. Stereo lock. 3,673,828, Cl. 70-58.000.

Jones, Charles: *See—*
Larrinaga, John; and Jones, Charles, 3,674,384.

Jones, David Thomas; Jowett, George Edward; and Webster, Edward Ernest, to Sponcel Limited. Catamenial tampons or the like. 3,674,030, Cl. 128-285.000.

Jones, Edward Stephen: *See—*
Sweeney, Richard F.; Khan, Aziz Urrehman; Price, Alson K.; Jones, Edward Stephen; and Otto, Julian A., 3,674,800.

Jones, Frank D. Lloyd, to Deere & Company. Self-propelled agricultural machine. 3,673,775, Cl. 56-14.700.

Jones, Garth S.: *See—*
Dewey, Raymond D.; Mapes, Robert S.; and Jones, Garth S., 3,674,926.

Jones, Howard: *See—*
Shen, Tsung-Ying; Jones, Howard; Witzel, Bruce E.; and Walford, Gordon L., 3,674,844.

Jones, Philip Michael; and Walsh, Raymond Herbert, to United Kingdom Atomic Energy Authority. Nuclear reactor means for minimizing lateral vibrations. 3,674,636, Cl. 176-77.000.

Jones, Warren E.: *See—*
Kirkham, Jackie L.; and Jones, Warren E., 3,674,992.

Jones, William S.: *See—*
Hartmann, Clinton S.; and Jones, William S., 3,675,163.

Jones, William Stanley; and Hartmann, Clinton S., to Texas Instruments, Incorporated. Series connection of interdigitated surface wave transducers. 3,675,054, Cl. 310-9.800.

Jonker, Hendrik; Janssen, Casper Johannes Gerardus Ferdinand; and Postma, Lambertus, to U.S. Philips Corporation, mesne. Method of manfacturing electrically conducting metal layers. 3,674,485, Cl. 96-35.000.

Jonsson, Finn Lennart; Trolle, Stern; and von Platen, Baltzar Carl, to Etablissement Radiator. High-pressure apparatus. 3,674,403, Cl. 425-330.000.

Jonsson, Per Hjalmar, to Rederiaktiebolaget Nordstjernan. Chemical oxygen demand water analyzer. 3,674,370, Cl. 356-36.000.

Jordan, Thomas M., Jr., to General Electric Company. Video shading modulator with paraphase control signals applied respectively to variable impedance devices in series and in parallel with the video signal path. 3,674,927, Cl. 178-7.200.

Jordan, William Robert: *See—*
McCloskey, Fenimore G.; and Jordan, William Robert, 3,675,166.

Jorns, Peter: *See—*
Dittel, Friedrich; and Jorns, Peter, 3,674,699.

Joseph A. David, to Eutectic Corporation. Alloy. 3,674,471, Cl. 75-153.000.

Joseph, Louis. Spacer and stabilizer for insertion between adjacent convolutions of an automobile coil spring. 3,674,250, Cl. 267-61.000.

Jowett, George Edward: *See—*
Jones, David Thomas; Jowett, George Edward; and Webster, Edward Ernest, 3,674,030.

Judd, Frank Fuller; and Wilhart, Helmut, to Bell Telephone Laboratories, Incorporated. Self-oscillating switching regulator with secondary switching control signal to regulate switching frequency. 3,675,158, Cl. 331-109.000.

Judd, Frank Fuller; Lieberman, Jan Mark; and Wilhart, Helmut, to Bell Telephone Laboratories, Incorporated. Self-oscillating switching regulator with frequency responsive feedback loop gain control. 3,675,159, Cl. 331-109.000.

Jung, Lothar, to Amersil Inc. Furnace for making fused quartz hollow slugs. 3,674,904, Cl. 13-20.000.

Jungermann, Eric: *See—*
Tiefenthal, Harlan E.; Jungermann, Eric; Miller, Eugene J., Jr.; and Callahan, John J., 3,674,879.

Jurina, Olge Demidovna: *See—*
Bokov, Jury Sergeevich; Vikulina, Ninel Vladimirovna; Dogadkin, Boris Aristarkhovich; Erofeev, Boris Vasilievich; Larina, Anastasia Vasilievna; Lavrischev, Vadim Petrovich; Markov, Vladimir Vladimirovich; Naumova, Sofia Fadeevna; Jurina, Olge Demidovna; and Yarovaya, Galina Dmitrievna, 3,674,496.

Jursich, Myron J.: *See—*
Aitken, Thomas; Anderson, Donald R.; and Jursich, Myron J., 3,674,725.

Juve, Robert J., to Udylite Corporation, The. Work carrier accumulation mechanism. 3,674,127, Cl. 198-19.000.

K-G Industries, Inc.: *See—*
Harris, Leroy S., 3,674,397.

Kaasenbrood, Petrus J. C.; and van Nassau, Petrus J. M., to Stamicarbon N.V. Process for urea production in combination with ammonia synthesis. 3,674,847, Cl. 260-555.00a.

Kabushiki Kaisha Daini Seikosha: *See—*
Kurihara, Kazuo, 3,673,788.

Kabushiki Kaisha Ricoh: *See—*
Ando, Sadanao, 3,674,362.
Kubo, Keishi; and Sakai, Kiyoshi, 3,675,013.

Kabushiki Kaisha Towa Denki: *See—*
Watanabe, Takashi, 3,673,907.

Kabushiki Kaisha Toyota Chuo Kenkyusho: *See—*
Kimura, Takashi; Majima, Azusa; Hamamoto, Hiroshi; and Awano, Yoji, 3,674,472.

Kabushiki-Kaisha Tokai Rika Denki Seisakusho: *See—*
Mizuno, Tadasi, 3,673,829.

Kabushikikaisha Aichidenkikosakusho: *See—*
Yamamoto, Osamu, 3,673,682.

Kageyama, Takao: *See—*
Ueda, Isao; Kageyama, Takao; and Inomata, Isao, 3,675,165.

Kaiser Aluminum & Chemical Corporation: *See—*
Plichta, Dietmar G., 3,673,899.

Kaiser, Carl; and Zirkle, Charles L., to Smith Kline & French Laboratories. 1-(Benzoheterocyclic cyclopropylmethyl)-4-phenyl-4-piperidinols. 3,674,792, Cl. 260-293.570.

Kaiser, Rudolf, to Neue Argus Gesellschaft m.b.H. Shaft bearing sealed against pressure. 3,674,326, Cl. 308-36.100.

Kaiser, Wolfgang: *See—*
Nitzsche, Siegfried; Kaiser, Wolfgang; Wohlfarth, Ernst; and Hittmair, Paul, 3,674,738.

Kakumu, Ichizo; and Oshima, Susumu, to Toyoda Koki Kabushiki Kaisha. Apparatus for dressing grinding wheels. 3,674,003, Cl. 125-11.000.

Kaldor, Leslie M.: *See—*
Di Crispino, Joseph S.; and Kaldor, Leslie M., 3,673,862.

Kalnin, Ilmar L.; and Breckenridge, George J., to Celanese Corporation. Production of fiber reinforced composites. 3,674,581, Cl. 156-84.000.

Kalopissis, Gregoire; Gascon, Jean; Gallien, Jacqueline; Bugaut, Andree; and Gaston-Breton, Hubert, to l'Oreal. Dyeing human hair and composition for including an oxidation dye and coupler thereof. 3,674,414, Cl. 8-11.000.

Kalopissis, Gregoire; and Vanlerberghe, Guy, to Societe Anonyme dite: L'Oreal. Hair cosmetic compositions containing non-ionic surface active agents. 3,674,902, Cl. 424-70.

Kaminow, Ivan Paul; and Weber, Heinz Paul, to Bell Telephone Laboratories, Incorporated. Tunable laser in a sensitized transparent material including an internal resonator and optical guide. 3,675,157, Cl. 331-94.500.

Kampfer, Helmut; von Konig, Anita; Ranz, Erwin; von Rintelen, Harald; Mayer, Dietmar; and Sasse, Klaus, to Agfa-Gevaert Aktiengesellschaft. Photographic dry copying process. 3,674,479, Cl. 96-27.000.

Kampfer, Helmut; Von Konig, Anita; Ranz, Erwin; von Ritelen, Harald; Mayer, Dietmar; and Sasse, Klaus, to Agfa-Gevaert Aktiengesellschaft. Photographic dry copying process. 3,674,480, Cl. 96-29.000.

Kanai, Toshio: *See—*
Washimi, Koichi; Kanbayashi, Masaaki; Kanai, Toshio; and Fujimori, Akihiro, 3,674,679.

Kanamaru, Tsuneo: *See—*
Yamatodani, Saburo; and Kanamaru, Tsuneo, 3,674,642.

Kanbayashi, Masaaki: *See—*
Washimi, Koichi; Kanbayashi, Masaaki; Kanai, Toshio; and Fujimori, Akihiro, 3,674,679.

Kaneko, Tadataka: *See—*
Naomoto, Susumu; Kaneko, Tadataka; and Esaki, Hideya, 3,675,091.

Kanematsu, Yoshiko: *See—*
Hayakawa, Shohei; Kanematsu, Yoshiko; and Fujiwara, Takashi, 3,674,842.

Kapafar Business Trust Reg.: *See—*
Wahlen, Werner; and Blumber, Hans, 3,673,920.

Kappus, Peter G.: *See—*
Krebs, James Norton; and Kappus, Peter G., 3,673,802.

Karll, Robert E.; and Lee, Richard J., to Standard Oil Company. Mineral lubricating oil containing high molecular weight alkyl substituted phenolic sulfonamide. 3,674,691, Cl. 252-47.500.

Kaser, Alfred, to Aktiengesellschaft Brown, Boveri & Cie. Chip deformer and breaker for use with metal cutting tool. 3,673,653, Cl. 29-96.000.

Kasik, Robert L.; and Lukas, Anthony J., to Beatrice Foods Co. Production of cheese flavor. 3,674,508, Cl. 99-140.

Kaspar, Emanuel: *See—*
Philippson, Rainer; Hauser, Helmut; Gibian, Heinz; Kaspar, Emanuel; and Kessler, Hans-Joachim, 3,674,815.

Kasselmann, John T., to Bendix Corporation, The. Hydraulic rate gyro for an adaptive steering system. 3,673,875, Cl. 74-5.430.

Kato, Takaaki; Kawakubo, Mamoru; and Ito, Katsunori, to Nippondenso Kabushiki Kaisha. Kick-down control system for use in automatic transmission system of automobiles. 3,673,892, Cl. 074/870.

Kaufman, Jonas J. Hand truck for oil drums and the like. 3,674,164, Cl. 214-377.000.

Kautsky, George J.: *See—*
Richardson, Wallace L.; Kautsky, George J.; and Barusch, Maurice R., 3,674,826.

Kawai, Kazuo: *See—*
Yanagidaira, Hidetaka; Kawai, Kazuo; and Shintani, Sotokichi, 3,674,996.

Kawakubo, Mamoru: *See—*
Kato, Takaaki; Kawakubo, Mamoru; and Ito, Katsunori, 3,673,892.

Kawasaki, Jun; and Uehara, Hiroshi, to Hitachi, Ltd. Dynamic memory system having signal holding device. 3,675,219, Cl. 340-173.0rc.

Kawasaki, Ryohei: *See—*
Iwamoto, Shunsuke; and Kawasaki, Ryohei, 3,675,195.

Kawatetsu Kizai Kogyo Co., Ltd.: *See—*
Murashige, Hidekichi; Simakura, Masao; and Nakazawa, Kazuo, 3,673,754.

Kay, Garth: *See—*
Lilly, Malcolm Douglas; Kay, Garth, and; Wilson, Richard John Hugh; and Sharp, Alister Kimball, 3,674,767.

Kay Laboratories, Inc.: *See—*
Turner, Charles D., 3,674,134.

KDI-Bauer Corporation: *See—*
Bauer, Russell E., 3,674,380.

Kearney & Trecker Corporation: *See—*
Zankl, Frank, 3,673,918.
Zankl, Frank; and Lohneis, Earl R., 3,674,323.

Keefer, Dayle: *See—*
Adam, Robert; and Keefer, Dayle, 3,673,694.

Keeler Brass Company: *See—*
Keeler, Miner S., II, 3,674,229.
Van Ryn, Edwin; and Driesenga, Edwin J., 3,673,634.

Keeler, Miner S., II, to Keeler Brass Company. Shelving supports. 3,674,229, Cl. 248-188.000.

Kefalas A/S: *See—*
Schou, Jorgen Martin Dohm, 3,674,868.

Kegerise, Harry L.: *See—*
Ladin, Eli M.; Kegerise, Harry L.; and Adams, John S., 3,674,357.

Kehoe, Lawrence J.: *See—*
Schell, Raymond A.; and Kehoe, Lawrence J., 3,674,889.

Kelemen, Denis G., to Du Pont de Nemours, E. I., and Company. Metalizing composition including degassed platinum powders. 3,674,515, Cl. 106-1.000.

Keller, Albert Kent: *See—*
Larsen, Eric R.; Keller, Albert Kent; and Piepys, Raymond A., 3,674,664.

Keller, C.: *See—*
Wieligmann, Friedrich, 3,673,703.

Keller Manufacturing Co., Inc.: *See—*
Keller, William A., 3,673,893.

Keller, William A., to Keller Manufacturing Co., Inc. Method of making rake tine support. 3,673,893, Cl. 76-111.000.

Kelley, Fred W., Jr., to General Electric Company. Means for damping voltage oscillations in solid-state switching circuits. 3,675,110, Cl. 321-14.000.

Kelley, Raymond E. Adjustable trunk lid holder. 3,674,299, Cl. 292-262.000.

Kelling, Leroy U. C., to General Electric Company. Numerical function generator. 3,674,999, Cl. 235-152.

Kelly, Jack L.; and Wiandt, Ronald K., to General Electric Company. Velocity trip mechanism. 3,674,277, Cl. 274-1.00l.

Kendall, Don Leslie, to Texas Instruments, Inc. Computer controlled device testing and subsequent arbitrary adjustment of device characteristics. 3,674,995, Cl. 235-151.100.

Kenmotsu, Yoko: *See—*
Nagasawa, Taro; Tomita, Mamoru; Obayashi, Tomokazu; Tamura, Yoshitaka; and Kenmotsu, Yoko, 3,674,500.

Kennedy, David Rankine: *See—*
Shephard, Robert Basil; Clachan, Margaret Loudon; Kennedy, David Rankine; and Abbott, Terence Arnold, 3,674,531.

Kenyon, Kenneth H.: *See—*
Bergum, Bernard C.; and Kenyon, Kenneth H., 3,674,565.

Keogh, Raymond J.; and Wilczek, Frank J., to Photocircuits Corporation. Apparatus for making wire scribed circuit boards. 3,674,602, Cl. 156-380.000.

Kern, Joerg, to Ciba-Geigy Corporation. Heterocyclic compounds. 3,674,811, Cl. 260-338.000.

Kerr-McGee Chemical Corporation, mesne: *See—*
Baldwin, Roger A.; and Cheng, Ming T., 3,674,742.

Kerrigan, Vincent: *See—*
Brooks, Martin Frederick; and Kerrigan, Vincent, 3,674,828.

Kertesz, Imre: *See—*
Estes, Joseph F.; and Kertesz, Imre, 3,673,873.

Kerwin, Robert Eugene: *See—*
Goldrick, Michael Richard; Kerwin, Robert Eugene; and Skinner, John George, 3,674,492.

Kessler, Clarence W.: *See—*
Ackerman, Howard T.; and Kessler, Clarence W., 3,675,239.

Kessler, Hans-Joachim: *See—*
Philippson, Rainer; Hauser, Helmut; Gibian, Heinz; Kaspar, Emanuel; and Kessler, Hans-Joachim, 3,674,815.

Kessler, Lester A. Tool storage device. 3,674,155, Cl. 211-1.500.

Ketler, Albert E., Jr. Sea water battery with fiber-like metal cathode. 3,674,564, Cl. 136-100.00r.

Keur, Robert I.: *See—*
Stone, J. James, Jr.; Madden, Thomas J., Jr.; Gerlach, Glendon T.; and Keur, Robert I., 3,673,936.

KEV Electronics Corporation: *See—*
Harrison, Stanley, 3,675,061.

Keystone Consolidated Industries, Inc.: *See—*
Schill, John M., 3,674,329.

Khan, Aziz Urrehman: *See—*
Sweeney, Richard F.; Khan, Aziz Urrehman; Price, Alson K.; Jones, Edward Stephen; and Otto, Julian A., 3,674,800.

Khelghatian, Habet M.; and Poppe, Wassily, to Avisun Corporation. Metallized polyolefin compositions containing courmarone-indene resins and method of preparing. 3,674,536, Cl. 117-47.00a.

Khlopin, Mikhail Ivanovich: *See—*
Prudnikov, Pavel Alexeevich; Khlopin, Mikhail Ivanovich; and Shlyapnikov, Alexel Dmitrievich, 3,675,087.

Kida, Kazuyoshi: *See—*
Hosono, Shinichi; and Kida, Kazuyoshi, 3,674,057.

Kidde, Walter, & Company, Inc.: *See—*
Cirillo, John, 3,674,024.

Kiekhaefer, Elmer Carl. Snow vehicle anti-sway suspension system. 3,674,103, Cl. 180-5.00r.

Kienast, Gerhard: *See—*
Schnegg, Robert; Pelousek, Herbert; Dippolhofer, Robert; Wiegreffe, Wolfgang; Voelz, Hans-Georg; and Kienast, Gerhard, 3,674,747.

Kies, Helmut Gustav, to RCA Corporation. Non air-polluting corona discharge devices. 3,675,096, Cl. 317-262.00a.

Kikkoman Shoyu Co., Ltd.: *See—*
Yokotsuka, Tamotsu; Hashimoto, Hikotaka; and Iwaasa, Takashi, 3,674,644.

Kimberly-Clark Corporation: *See—*
Bates, John D.; and Olson, Virginia A., 3,674,029.
Mattes, William J., 3,674,617.
Roeder, Robert J., 3,674,595.
Werner, Edward E.; and Wollangk, Edward G., 3,674,026.

Kimbrell, Sol B.: *See—*
Heilmayr, Peter F.; Kimbrell, Sol B.; and Giuffre, Joseph C., 3,674,388.

Kimura, Harutaka: *See—*
Iwasaki, Koichiro; Yamaguchi, Kazuo; Kimura, Harutaka; Hasuo, Masayoshi; and Tanaka, Toru, 3,674,764.

Kimura, Takashi; Majima, Azusa; Hamamoto, Hiroshi; and Awano, Yoji, to Kabushiki Kaisha Toyota Chuo Kenkyusho. Method for producing iron base sintered alloys containing copper. 3,674,472, Cl. 75-221.000.

Kinberg, Benjamin: *See—*
Mayer, Richard J.; and Kinberg, Benjamin, 3,674,598.

Kindell, Colin David, to AMP Incorporated, mesne. Heat seal retaining clips. 3,673,643, Cl. 24-73.00b.

Kindell, Colin David; and Raynor, Terence Robert. Staking machine. 3,673,665, Cl. 29-203.00d.

Kindler, Hubert: *See—*
Baumgartner, Siegfried; Kindler, Hubert; Lidl, Rolf; and Boden, Henrich, 3,674,398.

King Company, Inc.: *See—*
Grinde, Jon W., 3,674,161.

King, Henry L.: *See—*
Ridgway, James S.; King, Henry L.; and Pickett, Oscar A., Jr., 3,674,752.

King, Laurence F., to Esso Research and Engineering Company. Polyvinyl chloride composition. 3,674,730, Cl. 260-23.0xa.

King, William: *See—*
Brown, Robert H.; Anderson, William A.; and King, William, 3,674,448.

Kingslow, William G., Jr., to Phillips Petroleum Company. Container labeling apparatus with gaseous airjet means. 3,674,606, Cl. 156-497.000.

Kinner, George Henry: *See—*
Giltrow, Jeremy Peter; Kinner, George Henry; and Lancaster, John Keith, 3,674,689.

Kirk, Colin John, to Martonair Limited. Magnetically operable device. 3,675,171, Cl. 335-232.000.

Kirk, Mahlon Randall, to Scott Paper Company. Paper coating composition coagulatable by heating. 3,674,726, Cl. 260-17.4st.

Kirkham, Arthur J. Clamping telescopic tubes. 3,674,294, Cl. 287-58.0ct.

Kirkham, Jackie L.; and Jones, Warren E. Converter for a toll verification system. 3,674,992, Cl. 235-92.0tc.

Kish, George R.; and Swanson, Kenneth B., to Midland-Ross Corporation. Pressure responsive mechanism. 3,674,954, Cl. 200-82.00d.

Kisling, James W., III, to Schlumberger Technology Corporation. Methods and apparatus for completing production wells. 3,674,091, Cl. 166-314.000.

Kitrilakis, Sotiris S., to Tecna Corporation. Oxygenator. 3,674,440, Cl. 23-258.500.

Klaue, Hermann. Full disc brake with rotating brake discs. 3,674,118, Cl. 188-72.2.

Kleer-Vu Industries, Inc.: *See—*
Bristol, Thomas R.; Lakin, Harold; and Renga, Fred L., 3,674,142.

Klein, Norman E., to Deering Milliken Research Corporation. Method and apparatus for positioning a continuous thread or cord on a support surface. 3,674,584, Cl. 156-173.000.

Klimek, Norbert: *See—*
Huber, Manfred; Klimek, Norbert; and Dee, Kenneth Herbert William, 3,673,956.

Klimisch, Richard L., to General Motors Corporation. Catalyst for nitrogen oxide reduction. 3,674,423, Cl. 23-2.00e.

Kline, John C.; and Kronman, Albert F., to Eclipse Sleep Products, Inc. Trapazoidal stabilizers for inner spring units. 3,673,619, Cl. 5-260.000.

Klingbeil, William G. Means for making shoe lasts. 3,674,063, Cl. 142-1.000.

Klockenbrink, Joseph M.; and Aydin, Kemal, to Path Computer Equipment Inc. Lamp triggering circuit. 3,675,076, Cl. 315-200.00r.

Klyamkin, Semen Solomonovich; and Kraichik, Jury Solomonovich. Direct-current power transmission line. 3,675,082, Cl. 317-20.000.

Knapsack Aktiengesellschaft: *See—*
Vogt, Wilhelm; Sennewald, Kurt; and Glaser, Hermann, 3,674,839.

Knechtel, Wilhelm Josef; and Schaffer, Detlef, to Canon Kabushiki Kaisha, mesne. Electrical charging device. 3,675,010, Cl. 250-49.5zc.

Knobloch, Ronald E.: *See—*
Doonan, Wendell M.; and Knobloch, Ronald E., 3,674,303.

Knowles, Denis: *See—*
Jacobson, Sydney; Knowles, Denis; and Parker, Derek, 3,674,592.

Knut Arne Erik Rehnstrom: *See—*
Fluhr, Nils Allan, 3,673,927.

Knutson, Carroll F.; and Boardman, Charles Robert, to CER Geonuclear Corporation. Method for effecting directional nuclear fracturing. 3,674,313, Cl. 299-13.000.

Kobayashi, Seihin; Torii, Michihiro; and Yamakawa, Fujio, to Fuji Denki Kagaku Kabushiki Kaisha. Frame structure for magnetic memory planes. 3,675,222, Cl. 340-174.0ma.

Kobayashi, Seihin; Torii, Michihiro; and Suzuki, Koichiro, to Fuji Denki Kagaku Kabushiki Kaisha. Magnetic memory plane. 3,675,223, Cl. 340-174.00a.

Kobayashi, Yoshinobu: *See—*
Kurauchi, Noritaka; Tada, Shotaro; Shima, Hiroshi; Hiraoka, Susumu; Nagao, Taichiro; Koyama, Masahiro; Shiraishi, Satoshi; Shindo, Masuo; and Kobayashi, Yoshinobu, 3,674,990.

Kock, Erhard, to Champion Spark Plug Company. Multiple color paint spray system. 3,674,205, Cl. 239-1.000.

Kocsis, Joseph; and Cauge, Thomas Peter, to Signetics Corporation. Surface controlled avalanche semiconductor device. 3,675,092, Cl. 317-235.00r.

Koehler, Albert T.; Shideler, Paul J.; and Dohogne, Linus E., to Gerrard, A. J., & Company. Automatic cotton bale transfer apparatus. 3,673,950, Cl. 100-7.000.

Koehler-Dayton, Inc.: *See—*
Miller, Merlin S.; and Russo, Ronald D., 3,674,148.

Koepnick, Paul J.: *See—*
Arganbright, Ned H.; Koepnick, Paul J.; Nelson Carl T.; and O'Brien, Arthur F., 3,673,949.

Kogelnik, Herwig Werner, to Bell Telephone Laboratories, Incorporated. Hologram generator using superposition of plane waves. 3,674,332, Cl. 350-3.500.

Kogelnik, Herwig Werner, to Bell Telephone Laboratories, Incorporated. Light wave coupling into thin film light guides with Bragg type gratings. 3,674,336, Cl. 350-96.0wg.

Kohashi, Tadao, to Matsushita Electric Industrial Co., Ltd. Energy responsive image conversion and amplification device. 3,675,075, Cl. 315-169.000.

Kohler, George O.: *See—*
Hoover, Richard D.; and Kohler, George O., 3,674,770.

Kohler, Roland; Nagel, Erich; Hujer, Friedrich; and Viehrig, Wolfgang, to Agfa-Gevaert Aktiengesellschaft. Photographic printing apparatus. 3,674,365, Cl. 355-40.000.

Koide, Tsuyoshi; and Othu, Ikuo, to Toyoda Koki Kaisha, t/a Toyoda Machine Works. Apparatus for preventing circumferential overspeeding of grinding wheel. 3,673,741, Cl. 51-134.50r.

Kokusai Denshin Denwa Kabushiki Kaisha: *See—*
Yanagidaira, Hidetaka; Kawai, Kazuo; and Shintani, Sotokichi, 3,674,996.

Koll, Robert J.: *See—*
Lukes, James J.; and Koll, Robert J., 3,674,881.

Kollars, Harold R.: *See—*
Jezuit, Leslie J.; and Kollars, Harold R., 3,673,959.

Kolpek, Robert A., to International Business Machines Corporation. Data system with printing, composing communications, and magnetic card processing facilities. 3,674,125, Cl. 197-19.000.

Komander, Alfons Anzelm, to Imperial Chemical Industries Limited. Pigment compositions. 3,674,527, Cl. 106-289.000.

Komatsu, Youji,; Furukawa, Yauhiro; and Yokomizo, Takashi, to Maruzen Oil Company Limited. Method of preventing double bond migration of mono-olefinic hydrocarbons in selective hydrogenation. 3,674,886, Cl. 260-677.00h.

Komori, Ryozo: *See—*
Seko, Maomi; Ogawa, Shinsaku; Komori, Ryozo; Asuma, Masaro; Isoya, Toshiro; and Sakai, Takamasa, 3,674,653.

Komuro, Toshio: *See—*
Tanaka, Katsunobu; Nara, Takashi; Misawa, Masanaru; and Komuro, Toshio, 3,674,641.

Kondelikova, Jaroslava: *See—*
Kralicek, Jaroslav; Kubanek, Vladimir; Solcova, Jitka; and Kondelikova, Jaroslava, 3,674,751.

Kondo, Tokiharu: *See—*
Iijima, Yoo; Shimamura, Isao; Kondo, Tokiharu; and Haruhike, Iwano, 3,674,491.

Kondo, Yoshihiro: *See—*
Ichiki, Eiichi; Iida, Kazuo; Inoue, Yasuhiko; and Kondo, Yoshihiro, 3,674,541.

Konecny, Jan; Haas, Jan T.; and Groenewald, Hans E., to Hamburger Flugzeugbau GmbH. Fan-type aircraft and hot-gas structure therefor. 3,674,224, Cl. 244-12.00b.

Konishi, Hiroshi: *See—*
Yamadai, Tadaaki; Kushida, Tadao; Konishi, Hiroshi; and Inaba, Yoshinari, 3,673,631.

Kono, Tteomi, to Minolta Camera Kabushiki Kaisha. Cutter device of rolled copy paper for electronic copying machines. 3,673,905, Cl. 83-175.000.

Koppers Company: *See—*
Carman, Kenneth K., 3,673,814.

Koppers Company, Inc.: *See—*
Wright, John, 3,673,813.

Korman, Nathaniel I., to Ventures Research & Development Group. Method and apparatus for evaluating color transparencies and the like. 3,674,364, Cl. 355-38.000.

Korner, Gerhard; Schmitz, Wolfgang; Dabringhausen, Friedhelm; and Gruber, Lothar, to Brown, Boveri & Cie Aktiengesellschaft. Gas blast switch. 3,674,957, Cl. 200-148.0bv.

Koster, Klaus, to Mount Hope Machinery Company. Sheet guiding and opening apparatus. 3,673,647, Cl. 26-54.000.

Kostylev, Alexandr Dmitrievich; Gurkov, Konstantin Stepanovich; Tkach, Khaim Berkovich; and Lipovetsky, Lazar Moiseevich, to Institut Gornogo Dela Siberskogo otdelenia Akademii Nauk SSSR. Device for making holes in the ground. 3,674,099, Cl. 175-20.000.

Kovac, Zlata. Electroless codeposition of nickel alloys. 3,674,516, Cl. 106-1.000.

Kovacevic, Radoslav. Digital clock mechanism. 3,673,787, Cl. 58-50.00r.

Koyama, Masahiro: *See—*
Kurauchi, Noritaka; Tada, Shotaro; Shima, Hiroshi; Hiraoka, Susumu; Nagao, Taichiro; Koyama, Masahiro; Shiraishi, Satoshi; Shindo, Masuo; and Kobayashi, Yoshinobu, 3,674,990.

Kraemer, Nancy: *See—*
Aszalos, Adorjan; Robison, Robert S.; Kraemer, Nancy; Henshaw, Jo Ann; and Giannini, Mary Suzanne, 3,674,867.

Krage, Paul W.: *See—*
Scarnato, Thomas J.; Gordon, Paul C.; Hunter, Stephen R.; Krage, Paul W.; and Zablocki, Richard A., 3,673,779.

Kraichik, Jury Solomonovich: *See—*
Klyamkin, Semen Solomonovich; and Kraichik, Jury Solomonovich, 3,675,082.

Kralicek, Jaroslav; Kubanek, Vladimir; Solcova, Jitka; and Kondelikova, Jaroslava, to Zavody Antonina Zapotockeho, narodni podnik. Method of manufacturing polyamides by alkaline polymerization of cyclic lactams. 3,674,751, Cl. 260-78.00l.

Krantz, Tore Samuel, to Telefonaktiebolaget L M Ericsson. Means for attaching a printed circuit card on a relay. 3,674,960, Cl. 200-168.00c.

Krauch, Carl Heinrich: *See—*
Hoffmann, Horst; Krauch, Carl Heinrich; Otto, Hans-Werner; and Volkert, Otto, 3,674,494.

Kraus, Gerard, to Phillips Petroleum Company. Carbon black blending in rubber. 3,675,009, Cl. 250-49.50r.

Krauss-Maffei Aktiengesellschaft: *See—*
Baumgartner, Siegfried; Kindler, Hubert; Lidl, Rolf; and Boden, Henrich, 3,674,398.
Baumgartner, Siegfried; Fries, Bernd; Lidl, Rolf; and Zippe, Gunter, 3,674,408.

Krawiec, Donald M.: *See—*
Anthony, Andrew J.; Gaines, Albert L.; and Krawiec, Donald M., 3,674,635.

Krebs, James Norton; and Kappus, Peter G., to General Electric Company. Fan engine with counter rotating geared core booster. 3,673,802, Cl. 60-226.

Krebs, Jimmie M., to Chicago Show Printing Company. Display assembly and element therefor. 3,674,156, Cl. 211-4.000.

Krejcirik, Jiri: *See—*
Havranek, Milan; Zouhar, Drahomir; Dusik, Josef; Kucera, Jaromir; and Krejcirik, Jiri, 3,673,818.

Krengel, Theodore H.; and Pool, Richard L., to Allied Tube & Conduit Corporation. Protective and supporting means for apparatus for continuously coating steel strip. 3,673,980, Cl. 118-6.000.

Kroeger, Jerry E., to Square D Company. Means for retaining a circuit breaker handle in on position while the circuit breaker contact arms are latched in off position. 3,674,962, Cl. 200-172.00a.

Kroes, Magdalena: *See—*
Richter, Gerhard; Kroes, Magdalena; and Frietzsche, Angelika, 3,674,710.

Kronman, Albert F.: *See—*
Kline, John C.; and Kronman, Albert F., 3,673,619.

Kropf, Frederic F., to Conveyor system for drive-in restaurants. 3,673,967, Cl. 104-88.000.

Krug, Charles C. Pull rope friction type exercising device. 3,674,261, Cl. 272-79.00a.

Kubanek, Vladimir: *See—*
Kralicek, Jaroslav; Kubanek, Vladimir; Solcova, Jitka; and Kondelikova, Jaroslava, 3,674,751.

Kubo, Keishi; and Sakai, Kiyoshi, to Kabushiki Kaisha Ricoh. Image-carrying film for use as an original for projection and its manufacturing method. 3,675,013, Cl. 250-65.00t.

Kubota, Tadao; and Ida, Keisuke, to Tokyo Shibaura Electric Co., Ltd. Hermetically sealed electric compressor. 3,674,382, Cl. 417-372.000.

Kucera, Jaromir: *See—*
Havranek, Milan; Zouhar, Drahomir; Dusik, Josef; Kucera, Jaromir; and Krejcirik, Jiri, 3,673,818.

Kuehl, Paul B., to General Motors Corporation. Turbocharged internal combustion engine. 3,673,798, Cl. 60-13.000.

Kuffer, Francois; and Strub, Dietrich. Check valve for drainage of fluid into the vascular system or into a body cavity for the treatment of hydrocephalus internus and externus. 3,674,050, Cl. 137-536.000.

Kugelfischer George Schafer & Co.: *See—*
Gassner, Hans, 3,673,897.

Kuhn, Heinz: *See—*
Stier, Otto; Kuhn, Heinz; and Vollmer, Udo, 3,674,083.

Kunke, Arthur; Reinhardt, Dieter; and Glass, Waldemar, to Huppe, Justin. Automatic control of venetian blinds in response to both heat and light being below respective threshold values. 3,675,023, Cl. 250-206.000.

Kunov assor. to: *See—*
Kunov, Hans, 3,673,979.

Kunov, Hans, said Kunov assor. to and Gordon, Peter L. Alcohol level indicator. 3,673,979, Cl. 116-129.000.

Kuntz, Leland E., to Honeywell Inc. Automatic slope controller. 3,674,094, Cl. 172-4.500.

Kurath, Paul, to Abbott Laboratories. Erythromycin derivatives. 3,674,773, Cl. 260-210.00e.

Kurauchi, Noritaka; Tada, Shotaro; Shima, Hiroshi; Hiraoka, Susumu; Nagao, Taichiro; Koyama, Masahiro; Shiraishi, Satoshi; Shindo, Masuo; and Kobayashi, Yoshinobu, to Sumitomo Electric Industries, Ltd. Moving object identification system. 3,674,990, Cl. 235-61.11e.

Kureha Kagaku Kogyo Kabushiki Kaisha: *See—*
Washimi, Koichi; Kanbayashi, Masaaki; Kanai, Toshio; and Fujimori, Akihiro, 3,674,679.

Kurihara, Kazuo, to Kabushiki Kaisha Daini Seikosha. Day-date jumper spring in calendar watch. 3,673,788, Cl. 58-58.000.

Kurokawa, Junji; Arai, Fumiaki; and Usui, Noriyuki, to Ricoh Co., Ltd. Light-sensitive sheet for use in electrophotography. 3,674,474, Cl. 96-1.500.

Kushida, Tadao: *See—*
Yamadai, Tadaaki; Kushida, Tadao; Konishi, Hiroshi; and Inaba, Yoshinari, 3,673,631.

Kusunoki, Kikunobu: *See—*
Ninomiya, Shoichi; Sakai, Masaaki; Oka, Sakae; and Kusunoki, Kikunobu, 3,675,224.

Kuszaj, Alex Mark, to Jones & Laughlin Steel Corporation. Coupling arrangement. 3,673,816, Cl. 64-23.000.

Kyowa Hakko Kogyo Co., Ltd.: *See—*
Tanaka, Katsunobu; Nara, Takashi; Misawa, Masanaru; and Komuro, Toshio, 3,674,641.

Kyritsis, William T.: *See—*
Annis, Rupert E., Jr.; and Kyritsis, William T., 3,674,401.

La Barge, Robert G.; and Johnson, Gary L., to Dow Chemical Company, The. Preparation of benzoyl peroxide. 3,674,858, Cl. 260-610.00d.

La Montagne, Joseph W. Fish lure. 3,673,726, Cl. 43-42.110.

Labbaye, Louis; and Bernard, Georges, to Merlin Gerin, Societe Anonyme. Three phase electric switching system having rectifier shunted contacts. 3,675,079, Cl. 317-11.00a.

Lackey, Jerry G.: *See—*
Nelson, Melvin A.; Lackey, Jerry G.; and Davies, Terence J., 3,675,022.

Lacy, James G.; and Byrne, John V., to Braun, Anton. Electrical apparatus for initiating combustion in free piston engines. 3,673,999, Cl. 123-149.00h.

Lacy, M. L., Ltd.: *See—*
Lacy, Mount Lee, 3,674,344.

Lacy, Mount Lee, to Lacy, M. L., Ltd. Light energy absorbing and filtering device for a motorcycle helmet. 3,674,344, Cl. 350-312.000.

Ladin, Eli M.; Kegerise, Harry L.; and Adams, John S., to Federal-Mogul Corporation. Clutch release bearing. 3,674,357, Cl. 308-233.000.

Lagow, Richard J.: *See—*
Margrave, John L.; Badachhape, Ramachandra B.; Wood, James L.; and Lagow, Richard J., 3,674,432.

L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude: *See—*
Le Mounier, Jean, 3,674,213.

Lakin, Harold: *See—*
Bristol, Thomas R.; Lakin, Harold; and Renga, Fred L., 3,674,142.

Lala, Louis A., to Amole, Inc., mesne. Silk screening apparatus. 3,673,954, Cl. 101-40.000.

Laliberte, Norman U., to American Optical Corporation. Producing polarizing optical devices and product thereof. 3,674,587, Cl. 156-245.000.

L'Aluminium Francais: *See—*
Baumann, Bernard, 3,674,605.

Lambrechts, Jan Bernard, to Agfa-Gevaert. Method of recording and transferring design indicia. 3,674,588, Cl. 156-230.000.

Lamm, Bo Robert: *See—*
Brandstrom, Arne Elof; Carlsson, Per Arvid Emil; Carlsson, Stig Ake Ingemar; Corrodi, Hans Rudolf; Ek, Lars; Lamm, Bo Robert; and Ablad, Bengt Arne, 3,674,840.

Lancaster, John Keith: *See—*
Giltrow, Jeremy Peter; Kinner, George Henry; and Lancaster, John Keith, 3,674,689.

Lancor, Joseph H., Jr., to Bell & Howell Company. Audio-visual recording and display methods and apparatus. 3,674,346, Cl. 352-12.000.

Landry, Robert J.; and Snitzer, Elias, to American Optical Corporation. Sensitizing luminescence of erbium with molybdenum. 3,675,155, Cl. 331-94.500.

Landuyt, John F., to Illinois Tool Works Inc. Electronic drip timing device. 3,675,243, Cl. 340-384.00e.

Lane, Alan B., to Hunt-Wesson Foods, Inc. Process for cooking bacon and other meat products using infra-red and microwave energy. 3,674,504, Cl. 99-107.000.

Langdon, Thomas Edward. Electrical contact assembly having damping means. 3,674,968, Cl. 200-166.00h.

Lange, Wilfried: *See—*
Volkmann, Dieter; and Lange, Wilfried, 3,673,923.

Langella, Dominick W. Insulator with conductor piercing clamp for insulated cable. 3,674,916, Cl. 174-169.000.

Langer, Alfred: *See—*
Hanig, Siegfried; and Langer, Alfred, 3,673,806.

Langham, J. Michael. Digital variable frequency oscillator. 3,675,146, Cl. 331-1.00r.

Lanham, Betty U.: *See—*
Lankford, Barre D.; and Lanham, Charles W., 3,675,181.

Lanham, Charles W.: *See—*
Lankford, Barre D.; and Lanham, Charles W., 3,675,181.

Lankford, Barre D.; and Lanham, Charles W.; deceased (by Lanham, Betty U.; administratrix), to Entron, Inc. Coaxial connector means affording alternate 90° seizure. 3,675,181. Cl. 339-32.00r.

Lapkin, Milton: *See—*
Fuzesi, Stephen; and Lapkin, Milton, 3,674,717.

Larina, Anastasia Vasilievna: *See—*
Bokov, Jury Sergeevich; Vikulina, Ninel Vladimirovna; Dogadkin, Boris Aristarkhovich; Erofeev, Boris Vasilievich; Larina, Anastasia Vasilievna; Lavrischev, Vadim Petrovich; Markov, Vladimir Vladimirovich; Naumova, Sofia Fadeevna; Jurina, Olge Demidovna; and Yarovaya, Galina Dmitrievne, 3,674,496.

Larrinaga, John; and Jones, Charles, to Curtis-Wright Corporation. Fluid seal for piston of rotary piston mechanism. 3,674,384, Cl. 418-120.000.

Larsen, Eric R.; Keller, Albert Kent; and Plepys, Raymond A., to Dow Chemical Company, The. Method of preparing chloroacetyl chloride. 3,674,664, Cl. 204-158.00r.

Larsen, Ronald L., to Conwed Corporation. Method for bias cutting a tubular net. 3,674,898, Cl. 264-146.000.

Larson, Leward M.: *See—*
Drown, George C., 3,675,198.
Larsson, Bertil Ivar Torsten. Lifting device. 3,674,240, Cl. 254-95.000.
Lassman, Benjamin, to Lassman, Benjamin & Son, Inc. Solid press molding apparatus. 3,674,406, Cl. 425-353.000.
Lassman, Benjamin & Son, Inc.: *See—*
Lassman, Benjamin, 3,674,406.
Lastochkin, Rostislav Ivanovich, deceased: *See—*
Sidorov, Oleg Pavlovich; Ryabtsev, Pavel Sergeevich; Lastochkin, Rostislav Ivanovich, deceased; Lastochkina, Nadezhda Andreevna; and Lastochkina, Tatyana Rostislavovna, 3,675,102.
Lastochkina, Nadezhda Andreevna: *See—*
Sidorov, Oleg Pavlovich; Ryabtsev, Pavel Sergeevich; Lastochkin, Rostislav Ivanovich, deceased; Lastochkina, Nadezhda Andreevna; and Lastochkina, Tatyana Rostislavovna, 3,675,102.
Lastochkina, Tatyana Rostislavovna: *See—*
Sidorov, Oleg Pavlovich; Ryabtsev, Pavel Sergeevich; Lastochkin, Rostislav Ivanovich, deceased; Lastochkina, Nadezhda Andreevna; and Lastochkina, Tatyana Rostislavovna, 3,675,102.
Latschbacher, Kajetan. Wood marking tags. 3,673,717, Cl. 40-2.000.
Laue, Hans-Jurgen Rainer; Bohm, Horst Otto; and Reddemann, Bernhard Hermann, to Metallgesellschaft Aktiengesellschaft. Vanadium base alloys containing niobium and titanium. 3,674,470, Cl. 75-134.00v.
Lavender, John F., to Lilly, Eli, and Company. Live attenuated rabies virus vaccine and process therefor. 3,674,862, Cl. 424-89.000.
Lavigne, Pierre. Composite moisture-tight structure of absorbent tissue bonded to an impermeable thermoplastic material. 3,674,613, Cl. 161-37.000.
Lavigne, Pierre, to Commissariat a l'Energie Atomique. Heat-to-electric power converter. 3,675,031, Cl. 290-1.000.
Lavis, Walter J. Removable cover for spray gun. 3,674,074, Cl. 150-52.00p.
Lavrischev, Vadim Petrovich: *See—*
Bokov, Jury Sergeevich; Vikulina, Ninel Vladimirovna; Dogadkin, Boris Aristarkhovich; Erofeev, Boris Vasilievich; Larina, Anastasia Vasilievna; Lavrischev, Vadim Petrovich; Markov, Vladimir Vladimirovich; Naumova, Sofia Fadeevna; Jurina, Olge Demidovna; and Yarovaya, Galina Dmitrievne, 3,674,496.
Law, John H., to United States of America, Health, Education and Welfare. Synthesis of a material with juvenile hormone activity. 3,674,818, Cl. 260-408.000.
Lawrence, Thomas Russell, to Bell Telephone Laboratories, Incorporated. Digital circuit demodulator for frequency-shift data signals. 3,674,935, Cl. 178-88.000.
Lazar, Burton A.; Bell, Randall P.; and Vanderhoef, John P., to Intercraft Industries Corporation. Interconnected hanging picture frames. 3,673,723, Cl. 40-152.100.
Lazarow, Seldan A.: *See—*
Curtiss, Robert H.; Holzman, Richard; and Lazarow, Seldan A., 3,673,955.
Lazzarotti, Sebastion James: *See—*
Hunter, James R.; Lazzarotti, Sebastion James; and Mann, Abe, 3,674,143.
Le Beck, Norman G.: *See—*
Marks, Joseph D.; Le Beck, Norman G.; and Allen, Glenn L., 3,674,181.
Le Mounier, Jean, to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude. Cutting head for thermochemical machining. 3,674,213, Cl. 239-425.000.
Le Page, Jean Francois: *See—*
Derrien, Michel; and Le Page, Jean Francois, 3,674,888.
Leahy, Thomas E., Jr.: *See—*
Rose, Henry J.; Turbak, Albin F.; and Leahy, Thomas E., Jr., 3,674,511.
Leaman, Frank H. Platinized plastic electrodes. 3,674,675, Cl. 204-290.00r.
Lean, Eric G.: *See—*
Fang, Frank F.; and Lean, Eric G., 3,675,140.
Harris, Erik P.; Lean, Eric G.; and Powell, Carl G., 3,675,150.
Lear Siegler, Inc.: *See—*
Daniel, David W.; and Anthony, Russell W., 3,673,887.
Lebag Leitungs-und Elektrobau AG: *See—*
Vogeli, Rudolf, 3,674,116.
Lebkucher, Karl Heinz: *See—*
Schinzel, Erich; Pintschovius, Ulrich; and Lebkucher, Karl Heinz, 3,674,781.
Leblond, Jean, to Uniroyal Englebert France S.A. Method of building an annular breaker. 3,674,582, Cl. 156-133.000.
Leblond, Jean, to Uniroyal Engelbert France S.A. Expansible and contractible transfer ring. 3,674,603, Cl. 156-394.000.
Lebre, Charles Jean Pierre. Power or manual drive cable traction apparatus. 3,673,877, Cl. 74-37.000.
Lee, George A.: *See—*
Cristol, Stanley J.; and Lee, George A., 3,674,665.
Lee, Irvin J.: *See—*
Harris, Robert J.; and Lee, Irvin J., 3,674,546.
Lee, Richard J.: *See—*
Karll, Robert E.; and Lee, Richard J., 3,674,691.
Legler, Ernst, to Fernseh G.m.b.H. Method and arrangement for the transmission of synchronizing information to color television apparatus. 3,674,918, Cl. 178-5.20r.
Lehmann, William Lester, to RCA Corporation. Capacitors of constant capacitance. 3,675,095, Cl. 317-261.000.
Lehner, Bruce A.: *See—*
Hegenberger, John N., 3,673,730.
Leininger, Dale E.: *See—*
Whysong, Dale C.; Leininger, Dale E.; and Young, Herbert D., 3,674,559.
Leitz, Wilfried, to Ciba-Geigy AG. Method of applying pilfer-proof closures. 3,673,761, Cl. 53-42.000.
Lejeune, Daniel, to Compagnie Generale des Etablissements Michelin raison sociale Michelin & Cie. Cast steel wheels for heavy-duty vehicles. 3,674,315, Cl. 310-65.000.
Lejeune, Lloyd M. Apparatus for preventing offshore oil well pollution. 3,674,150, Cl. 210-245.000.
Lemelson, Jerome H., to Triax Company, The. Load handling mechanism and automatic storage system. 3,674,159, Cl. 214-16.40a.
Lenz, Henry George, to General Electric Company. Hermetically sealed dynamoelectric machine. 3,675,056, Cl. 310-54.000.
Leonard, Gerald D., to Research-Cottrell, Inc. Jacketed precipitator apparatus. 3,673,768, Cl. 55-135.000.
Lerman, Frank; and Bartsch, Raymond C., to National Distillers and Chemical Corporation. Process for the preparation of pigmented polymer powders of controlled particle shape and size and size distribution and product. 3,674,736, Cl. 260-41.00r.
Letarte, Frank M. Storm door glazing bead. 3,674,082, Cl. 166-371.000.
Leucci, Gino. Shield for endoscopic instruments. 3,674,016, Cl. 128-4.000.
Leutwein, Manfred: *See—*
Streicher, Heinz; Riek, Siegfried; and Leutwein, Manfred, 3,674,351.
Lever Brothers Company: *See—*
Osborne, David Richard Duke, 3,674,850.
Levin, Ezra, to VioBin Corporation, mesne. Method of producing fat and edible solids from biological material using vapor heated solvent. 3,674,657, Cl. 203-49.000.
Levington, Henry John; and Clark, Charles Keith, to Associated Engineering Limited. Heat exchangers. 3,673,846, Cl. 72-326.000.
Levy, Stanley P., to Pichel Industries, Inc. Electronic lamp driving circuit for hand held lamp. 3,675,078, Cl. 315-289.000.
Lewis, George E.: *See—*
Murman, Fernando; and Lewis, George E., 3,674,053.
Lewis, George E.; and Murman, Fernando, to Hydril Company. Pig diverter. 3,674,123, Cl. 193-23.000.
Lewis, Isabelle J. Bookholder. 3,674,231, Cl. 248-451.000.
Lewis, Philip J.: *See—*
Bice, John R.; and Lewis, Philip J., 3,674,510.
Lewis, Vera Gloria: *See—*
Francini, Joseph Pirra; Braxton, James Lopez, Jr.; Lewis, Vera Gloria; McPherson, Frank Henderson; Rosenberg, Daniel; and Sekse, Torkjell, 3,674,988.
Leyburn, Derek; Montague, Bernard R.; and Mattila, Henry K., to Bell Canada. Telephone translator apparatus. 3,674,940, Cl. 179-18.0et.
Leymarie, Claude P. H., to Merlin Gerin, Societe Anonyme. Connecting device for an electronic apparatus carrying panel. 3,674,949, Cl. 200-51.100.
Leyri, Claude, to Jaeger. Timekeeping devices. 3,673,786, Cl. 58-28.00a.
Lezhava, Gurami Semenovich: *See—*
Libkind, Mark Samuilovich; and Lezhava, Gurami Semenovich, 3,675,119.
Liautaud, Philip J., to Fendal Company. Resilient headband for spectacles. 3,673,610, Cl. 2-14.00v.
Libbey-Owens-Ford Company: *See—*
Beckham, Robert R.; Walters, Emmett L.; Brown, Jack G.; De Rose, Kenneth M.; and Ryan, Joseph D., 3,673,981.
Niese, William F., 3,673,664.
Swillinger, Francis L., 3,674,456.
Welker, Robert H.; and Halmbrecht, William L., 3,673,737.
Libkind, Mark Samuilovich; and Lezhava, Gurami Semenovich. Twin reactor employed for voltage stabilization in power plants. 3,675,119, Cl. 323-48.000.
Lidl, Rolf: *See—*
Baumgartner, Siegfried; Kindler, Hubert; Lidl, Rolf; and Boden, Henrich, 3,674,398.
Baumgartner, Siegfried; Fries, Bernd; Lidl, Rolf; and Zippe, Gunter, 3,674,408.
Liebe, Werner: *See—*
von Konig, Anita; Liebe, Werner; and Timmler, Helmut, 3,674,481.
Lieberman, Jan Mark: *See—*
Judd, Frank Fuller; Lieberman, Jan Mark; and Wilhart, Helmut, 3,675,159.
Liedberg, Kurt Herman, to Atlas Copco Aktiebolag. Spray gun. 3,674,209, Cl. 239-143.000.
Lieder, Gaylerd M.: *See—*
Ayres, Richard H.; and Lieder, Gaylerd M., 3,673,759.
Lieffring, Gordon V. Vehicle wash apparatus. 3,673,626, Cl. 15-97.00r.
Liisberg, Sven: *See—*
Frey, Hans-Hasso; and Liisberg, Sven, 3,674,787.
Lilly, Eli, and Company: *See—*
Lavender, John F., 3,674,862.
Ludwig, Nelson H.; and White, William A., 3,674,869.
Spry, Douglas O., 3,674,775.
Webber, J. Alan, 3,674,784.
Williams, Robert H.; and Hoehn, Marvin M., 3,674,774.

Lilly Industries, Ltd.: *See—*
Evans, Delme, 3,674,871.
Lilly, Malcolm Douglas; Kay, Garth, and; Wilson, Richard John Hugh; and Sharp, Alister Kimball, to National Research Development Corporation. Novel polymeric materials containing triazinyl groups. 3,674,767, Cl. 260-89.100.
Lincoln, Andrew J.; and Menger, Karl S., to Sperry Rand Corporation. Apparatus for arithmetic operations by alerting the corresponding digits of the operands. 3,675,000, Cl. 235-168.000.
Linde Aktiengesellschaft: *See—*
Weiche, Hans-Joachim, 3,674,031.
Lindelow, Claes-Goran: *See—*
Mattsson, Mats Erik; Eriksson, Bjorn Sven Hilding; and Lindelow, Claes-Goran, 3,674,199.
Lindner, Ernst: *See—*
Stache, Ulrich; Radscheit, Kurt; Fritsch, Werner; Haede, Werner; and Lindner, Ernst, 3,674,779.
Lindner, Fritz; Wallhausser, Karl Heinz; and Huber, Gerhard, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Moenomycin and process for producing same. 3,674,866, Cl. 424-118.000.
Lindsay, George F.; and Whitehouse, Harper John, to United States of America, Navy. Field-delineated acoustic wave device. 3,675,052, Cl. 310-8.100.
Line, George Harry: *See—*
Dodd, John Alton, Jr.; and Line, George Harry, 3,674,488.
Lines, Jerry J. Convertible snowblower and lawn rake. 3,673,715, Cl. 37-43.00e.
Linne, William F.: *See—*
Weick, Louis F.; and Linne, William F., 3,673,796.
Lintz, Ervin E. Fishing float. 3,673,729, Cl. 43-43.110.
Liotta, Lance A. Aerial toy. 3,673,732, Cl. 46-74.00d.
Lipe Corporation: *See—*
Mead, Dennis E., 3,674,128.
Lipovetsky, Lazar Moiseevich: *See—*
Kostylev, Alexandr Dmitrievich; Gurkov, Konstantin Stepanovich; Tkach, Khaim Berkovich; and Lipovetsky, Lazar Moiseevich, 3,674,099.
List, Herbert A., to List Industries Inc. Locking mechanism for portable gate. 3,674,081, Cl. 160-161.000.
List Industries Inc.: *See—*
List, Herbert A., 3,674,081.
Little, Arthur D., Inc.: *See—*
Milgrom, Jack, 3,674,486.
Little, Arthur D., Inc., mesne: *See—*
Papanastassion, Zion B.; and Neumeyer, John L., 3,674,809.
Littlepage, Gertrude S. Wood coating composition comprising cholesterol, glyceride oil or squalene and a liquid fatty acid. 3,674,524, Cl. 106-243.000.
Litton Business Systems, Inc.: *See—*
Benson, William G., 3,674,943.
Livermore, Frederick C.; and Neathway, Graham Albert, to Northern Electric Company Limited. Thin-film resistor anodization. 3,674,659, Cl. 204-56.00r.
Lock, Everett H.; and Heilhecker, Joe K., to Esso Production Research Company. Method for forming tool assembly. 3,673,676, Cl. 29-473.100.
Locke, Frank W., to Hoerner Waldorf Corporation. Display tray. 3,674,133, Cl. 206-44.000.
Lockheed Aircraft Corporation: *See—*
Adams, Robert H., 3,675,141.
Goldberg, Leonard Z., 3,674,291.
Loewe Opta GmbH: *See—*
Dennewitz, Rolf Dictor, 3,675,074.
Loewen, Bruno F.: *See—*
Austin, Oliver K.; and Loewen, Bruno F., 3,674,437.
Loewenstein, Paul; and Gorecki, Thomas A., to Whittaker Corporation. Method for producing complex shapes by filled billet extrusion. 3,673,667, Cl. 29-423.000.
Lohneis, Earl R.: *See—*
Zankl, Frank; and Lohneis, Earl R., 3,674,323.
Lohr, Thomas E., to Allied Chemical Corporation. Vehicle safety assembly. 3,674,284, Cl. 280-150.0ab.
Lohse, Friedrich; Schmid, Rolf; Fisch, Willy; and Batzer, Hans, to Ciba Limited. High crystalline transition temperature elastomers from polyester polyurethanes. 3,674,746, Cl. 260-75.0np.
Lombardino, Joseph G.; and Holland, Gerald F., to Pfizer Inc. Benzothiazine dioxides as lipid regulating agents. 3,674,876, Cl. 424-246.000.
Long, Anthony Alfred Walter; and Nayler, John Herbert Charles, to Beecham Group Limited. p-Hydroxyampicillin and salts thereof. 3,674,776, Cl. 260-239.100.
Long, Clarice Cleland: *See—*
Long, J. Burton, 3,675,226.
Long, Eric L., to Cherry Electrical Products Corporation. Tilt switch with elongated switch blade mounted on a triangular pivot for wiping action. 3,674,966, Cl. 200-164.000.
Long, J. Burton; deceased (by Long, Clarice Cleland; executrix). Radio remote control for a slide projector. 3,675,226, Cl. 343-225.000.
Longi, Paolo: *See—*
Cameli, Nazzareno; Longi, Paolo; and Valvassori, Alberto, 3,674,754.
Loomis, Joseph W.: *See—*
Hegenberger, John N., 3,673,730.
Loqvist, Kaj R., to Fagersta Bruks Aktiebolag. Method for brazing dissimilar metals and composite articles produced thereby. 3,673,677, Cl. 29-473.100.
Lorber, Kurt. Paper clips. 3,673,641, Cl. 24-67.900.
l'Oreal: *See—*
Kalopissis, Gregoire; Gascon, Jean; Gallien, Jacqueline; Bugaut, Andree; and Gaston-Breton, Hubert, 3,674,414.
Morane, Bruno P., 3,674,180.
Loseke, Doris V. Riding capsule and the like. 3,674,260, Cl. 272-1.00r.
Loss, Michael. Cassette receptacle. 3,674,132, Cl. 206-1.00r.
Lougher, George B., III: *See—*
Abraham, Bruce C.; Fegley, Charles R.; and Lougher, George B., III, 3,674,141.
Loukes, David Gordon; and Edwards, Alan, to Pilkington Brothers Limited. Production of float glass having an oxidized metal-modified surface. 3,674,453, Cl. 04/26/72.
Louthan, Rector P., to Phillips Petroleum Company. Plasticized sulfur compositions. 3,674,525, Cl. 106-287.0sc.
Lovens Kemiske Fabrik Produktionsaktieselskab: *See—*
Frey, Hans-Hasso; and Liisberg, Sven, 3,674,787.
Lubrifiants: *See—*
Derrien, Michel; and Le Page, Jean Francois, 3,674,888.
Lucci, Donald E., to International Rubber Industries, Inc. Method of making blind joints for precise positioning of members. 3,674,068, Cl. 144-309.00l.
Lucifer S.A.: *See—*
Stampfli, Harald, 3,675,040.
Lucker, Jan Anna Antonius: *See—*
Arts, Mathieu Gerardus Henricus; Lucker, Jan Anna Antonius; and Groenenboom, Maarten, 3,674,674.
Ludemann, Ingo, to Nippon Gakki Seizo Kabushiki Kaisha. Piano sounding board assembly. 3,674,908, Cl. 84-212.000.
Ludlow Corporation: *See—*
Manasian, Arthur E.; Papenfuss, Carl J.; and Piekarski, William F., 3,674,139.
Ludwig, Nelson H.; and White, William A., to Lilly, Eli, and Company. Compositions for stabilizing trans-diethylstilbestrol. 3,674,869, Cl. 424-175.000.
Luedicke, Eduard; and Silver, Robert Steven, to RCA Corporation. Method of operating an information storage tube. 3,675,134, Cl. 328-124.000.
Lugo, Luigi: *See—*
Reni, Cesare; Gualdi, Giorgio; and Lugo, Luigi, 3,674,845.
Lukens Steel Company: *See—*
Bintzer, William W., 3,674,903.
Lukes, James J.; and Koll, Robert J., to Diamond Shamrock Corporation. Integrated process for the production of chlorinated hydrocarbons. 3,674,881, Cl. 260-654.00h.
Luksas, Anthony J.: *See—*
Kasik, Robert L.; and Luksas, Anthony J., 3,674,508.
Lyde, Derek Martin, to Albright & Wilson Limited. Electrodeposition of copper. 3,674,660, Cl. 204-52.00r.
Lyerly, William M.: *See—*
Cattermole, George R.; Cummings, Austin M.; and Lyerly, William M., 3,674,578.
Lyon, Richard K., to Esso Research and Engineering Company. Process for isomerizing hydrocarbons by use of high pressures. 3,674,681, Cl. 208-141.000.
Lyons, Richard J.; and Dabrowski, Jan, to United Merchants and Manufacturers, Inc. Textile spray composition. 3,674,418, Cl. 8-116.300.
Macdonald, Howard R., to Rohr Corporation. Method and apparatus for suppressing the noise of a fan-jet engine. 3,673,803, Cl. 60-226.00r.
Macgregor, Peter Stevens, to Flight Refuelling Limited. Air-to-air refuelling hose reels. 3,674,049, Cl. 137-355.200.
Machinery and Gears Hansen: *See—*
Hensen, David, 3,673,885.
Mack, Michael E., to United Aircraft Corporation. Superradiant traveling-wave dye laser. 3,675,151, Cl. 331-94.500.
MacKenzie, Gerald L.; and Mosher, Paul R., to United States of America, Navy. Hydrogen gas generating composition and method for the same. 3,674,702, Cl. 252-188.000.
Madden, Thomas J., Jr.: *See—*
Stone, J. James, Jr.; Madden, Thomas J., Jr.; Gerlach, Glendon T.; and Keur, Robert I., 3,673,936.
Mader, Peter Ernst. Lining device. 3,673,937, Cl. 95-12.000.
Magnaflux Corporation: *See—*
Flaherty, John J.; and Nerwin, Henry N., 3,673,860.
Magnepan Incorporated: *See—*
Winey, James M., 3,674,946.
Magnotto, Frank A. Instrument for marking pipe insulation for miter cuts. 3,673,689, Cl. 33-75.00r.
Mahoney, Michael. Universal screwdriver. 3,674,070, Cl. 145-50.00a.
Maier, Robert E., Jr.; and Moser, James R., to Harris-Intertype Corporation. Method and apparatus for feeding stacked sheet material. 3,674,258, Cl. 271-77.000.
Majima, Azusa: *See—*
Kimura, Takashi; Majima, Azusa; Hamamoto, Hiroshi; and Awano, Yoji, 3,674,472.
Makabe, Kazuo, to Daiichi Yakuhin Sangyo Kabushiki Kaisha. Compound of germanic acid and cysteine. 3,674,823, Cl. 260-429.00r.
Makarov, Valery Nikolaevich: *See—*

Voitsekhovsky, Bogdan Vyacheslavovich; Zuev, Alfred Alexandrovich; Plaxin, Vladimir Nikolaevich; and Makarov, Valery Nikolaevich, 3,673,849.

Malden, Peter James, to English Clays Lovering Pochin & Company Limited. Bleaching of clays. 3,674,558, Cl. 134-2.000.

Maley, Gerald A.: *See—*
Boosen, Douglas C.; Henle, Robert A.; Hsiao, Mu Y.; Maley, Gerald A.; and Pricer, W. David, 3,675,200.

Mallinckrodt Chemical Works: *See—*
Betz, Norman L.; and Stepaniuk, Nickolas J., 3,674,501.

Mallory, Glenn O., to Allied Research Products, Inc. Method of electroless deposition of a substrate and sensitizing solution therefor. 3,674,550, Cl. 117-212.000.

Mallory, P. R., & Co., Inc.: *See—*
Haarbye, Fredrik O.; and Murphy, Peter C., 3,674,446.

Manaka, Nobuzi: *See—*
Aono, Shigeo; Manaka, Nobuzi; and Inagaki, Tokuichi, 3,673,989.

Manasian, Arthur E.; Papenfuss, Carl J.; and Piekarski, William F., to Ludlow Corporation. Cotton bale cover. 3,674,139, Cl. 206-83.500.

Mandel, Mark. Rainbow kaleidoscope. 3,674,333, Cl. 350-5.000.

Mangin, Jean-Pierre, to Regie Nationale des Usines Renault and Automobiles Peugeot. Induction air temperature regulators. 3,673,995, Cl. 123-122.00d.

Mangold, James, to Societe Anonyme D.B.A. Hydraulic antiskid braking system. 3,674,317, Cl. 303-21.00f.

Manion, Jean P.; and Davies, Daniel J., to Allis-Chalmers Manufacturing Company. Process for increasing water repellency of cotton cloth. 3,674,667, Cl. 204-165.000.

Manjikian, Serop, to Universal Water Corporation. Reverse osmosis test cell. 3,674,152, Cl. 210-321.000.

Manka, Dan Paul, to Jones & Laughlin Steel Corporation. Method of operating gas analysis apparatus. 3,673,854, Cl. 73-23.000.

Mann, Abe: *See—*
Hunter, James R.; Lazzarotti, Sebastion James; and Mann, Abe, 3,674,143.

Mann, Robert C. Ankle support providing high bracing strength. 3,674,023, Cl. 128-166.000.

Mannesmann Aktiengesellschaft: *See—*
Petersen, Ulrich; and Grandin, Friedrich-Hans, 3,673,836.

Manning, Virgil B. Educational apparatus. 3,673,707, Cl. 35-35.00d.

Manoogian, Alex; and Pullen, Eric V., to Masco Corporation. Mixing valve. 3,674,048, Cl. 137-270.000.

Manufacture des Montres Rolex S.A.: *See—*
Gasser, Francois W.; and Girard, Pierre L., 3,673,790.

Manufacture Quenot Mabo: *See—*
Quenot, Andre, 3,673,692.

Mapes, Robert S.: *See—*
Dewey, Raymond D.; Mapes, Robert S.; and Jones, Garth S., 3,674,926.

Marand, Jean, to Ciba-Geigy Corporation. One piece coupler-aspirator-nozzle. 3,674,212, Cl. 239-308.000.

Marathon Oil Company: *See—*
Oleszko, Thaddeus J.; and Walker, Lynn P., 3,674,890.

Marcatili, Enrique Alfredo Jose, to Bell Telephone Laboratories, Incorporated. Beam coupling to and from thin film waveguide. 3,674,337, Cl. 350-96.0wg.

Marchiorello, Giovanni, to Inpat Establishment. Device for operating sliding doors. 3,673,736, Cl. 49-235.000.

Maremont Corporation: *See—*
McNally, Sellers B., 3,674,290.
Merck, James K., 3,673,780.

Margrave, John L.; Badachhape, Ramachandra B.; Wood, James L.; and Lagow, Richard J., to R. l. Patents, Inc. Superstoichlometric carbon monofluoride and methods for preparing stable carbon monofluorides of various stoichlometries. 3,674,432, Cl. 23-205.000.

Marion Laboratories, Inc.: *See—*
Mathison, Ian William, 3,674,791.

Markov, Vladimir Vladimirovich: *See—*
Bokov, Jury Sergeevich; Vikulina, Ninel Vladimirovna; Dogadkin, Boris Aristarkhovich; Erofeev, Boris Vasilievich; Larina, Anastasia Vasilievna; Lavrischev, Vadim Petrovich; Markov, Vladimir Vladimirovich; Naumova, Sofia Fadeevna; Jurina, Olge Demidovna; and Yarovaya, Galina Dmitrievne, 3,674,496.

Marks, Joseph D.; Le Beck, Norman G.; and Allen, Glenn L. Syringe and holder. 3,674,181, Cl. 222-179.500.

Marlor, Guy A.: *See—*
Growald, Bert; Dahlquist, John A.; and Marlor, Guy A., 3,674,711.

Martin, Edwin J., Jr.: *See—*
Owen, James Neal; Moberly, Raymond Ronald; Martin, Edwin J., Jr.; Yamada, Akemichi; and Thomas, Edmund C., 3,675,162.

Martinsen, Lyle J., to Practical Innovations, Inc. Peeling citrus fruit. 3,674,503, Cl. 99-100.000.

Martonair Limited: *See—*
Kirk, Colin John, 3,675,171.

Maruzen Oil Company Limited: *See—*
Komatsu, Youji,; Furukawa, Yauhiro; and Yokomizo, Takashi, 3,674,886.

Maruzen Sewing Machine Co., Ltd.: *See—*
Grange, Kenneth H., 3,673,972.

Marvin Shafer Co., Inc.: *See—*
Budzak, Steve, 3,674,259.

Marzocchi, Alfred, to Owens-Corning Fiberglas Corporation. Polyester reinforced elastomers. 3,674,724, Cl. 260-3.000.

Maschinenfabrik zum Bruderhaus G.m.b.H.: *See—*
Moesser, Wilhelm, 3,674,194.

Masco Corporation: *See—*
Manoogian, Alex; and Pullen, Eric V., 3,674,048.

Maslovsky, Gennady Vasilievich: *See—*
Berlin, Zalman Leivikovich; Bagrov, Oleg Nikolaevich; Maslovsky, Gennady Vasilievich; Serkov, Anatoly Gavrilovich; and Yakimovich, Viktor Yakovlevich, 3,673,988.

Mason, John B.: *See—*
Jellison, Frank R.; Mason, John B.; and McQueen, Terry K., 3,674,283.

Mason, John H.: *See—*
Economy, James; Wohrer, Luis C.; and Mason, John H., 3,674,894.

Massachusetts Institute of Technology: *See—*
Merrill, Edward W.; and Wong, Patrick Seck-lai, 3,673,612.
Montt, Michael R., 3,674,930.
Wilson, David G., 3,673,966.

Massari, Bernard J. Apparatus for cutting indicia from tape. 3,673,953, Cl. 101-19.000.

Massarotti, Luigi, to Atomjuboll S.r.l. Carburetor for internal-combustion engine. 3,674,245, Cl. 261-28.000.

Massey-Ferguson Services N.V.: *See—*
Thomas, Alfred W., 3,674,106.

Matejec, Reinhart, to Agfa-Gevaert Aktiengesellschaft. Process for the production of photographic images. 3,674,490, Cl. 96-48.00r.

Mathison, Ian William, to Marion Laboratories, Inc. Benzamido 2 lower alkyl decahydroisoquinolines. 3,674,791, Cl. 260-287.

Matlock, Charles W.: *See—*
McCarthy, Robert P.; and Matlock, Charles W., 3,674,620.

Matson, Carl G. Conveyor cleaner with elastomer spring. 3,674,131, Cl. 198-230.000.

Matsubara, Mitio; Yagyu, Shigeyuki; and Takeuchi, Satoru, to Shikoku Kasei Koygo Company Limited. Method of making a material for forming a wall surface. 3,674,533, Cl. 117-27.000.

Matsushita Electric Industrial Co., Ltd.: *See—*
Hamano, Goro, 3,674,997.
Hozumi, Shiro; Hirai, Kenichi; Tanigawa, Yoshiyuki; Yoshida, Katuro; and Sugihara, Kanji, 3,673,666.
Kohashi, Tadao, 3,675,075.
Mifune, Hideo; and Tani, Kenroku, 3,675,053.
Nagasawa, Masahiro, 3,675,088.
Naomoto, Susumu; Kaneko, Tadataka; and Esaki, Hideya, 3,675,091.
Sugaya, Hiroshi; and Nasu, Takuya, 3,674,942.
Suzuki, Takashi, 3,674,538.
Yoshiyama, Masami; Sato, Teruo; and Takeda, Hitoshi, 3,674,928.

Matsushita Electronics Corporation: *See—*
Naomoto, Susumu; Kaneko, Tadataka; and Esaki, Hideya, 3,675,091.
Teramoto, Iwao; Iwasa, Hitoo; Miyai, Yukio; and Takeshima, Masumi, 3,675,161.

Mattel, Inc.: *See—*
de Gelder, Jacob; Baginski, Albert R.; and Miller, Anthony D., 3,674,271.

Mattes, William J., to Kimberly-Clark Corporation. Cosmetic wipe. 3,674,617, Cl. 161-62.000.

Mattila, Henry K.: *See—*
Leyburn, Derek; Montague, Bernard R.; and Mattila, Henry K., 3,674,940.

Mattsson, Mats Erik; Eriksson, Bjorn Sven Hilding; and Lindelow, Claes-Goran, to Svenska Dataregister AB. Keyboard control means. 3,674,199, Cl. 235-26.000.

Matzuk, Alexander R.: *See—*
Ruyle, William V.; Sarett, Lewis H.; and Matzuk, Alexander R., 3,674,870.

Maxwell, Hugh W. Photographic processing apparatus. 3,673,944, Cl. 95-89.00r.

Mayer, Dietmar: *See—*
Kampfer, Helmut; von Konig, Anita; Ranz, Erwin; von Rintelen, Harald; Mayer, Dietmar; and Sasse, Klaus, 3,674,479.
Kampfer, Helmut; Von Konig, Anita; Ranz, Erwin; von Ritelen, Harald; Mayer, Dietmar; and Sasse, Klaus, 3,674,480.

Mayer, Endre A.: *See—*
Millman, William V.; and Mayer, Endre A., 3,674,045.

Mayer, Endre A., to Bendix Corporation, The. Opposing control vortex valve. 3,674,044, Cl. 137-81.500.

Mayer, Richard J.; and Kinberg, Benjamin. Apparatus for producing a three-dimensional work of art. 3,674,598, Cl. 156-345.000.

Mayer Rolf; and Reitinger, Johann, to Universitat Stuttgart. Electron beam deflection apparatus. 3,674,977, Cl. 219-121.0eb.

Mc Allister, Lindsay G., to Commonwealth of Australia, care of Secretary Department of Supply, The. Acoustic sounder. 3,675,191, Cl. 340-1.00r.

Mc Namara, Matthew F.: *See—*
Dacey, Paul F.; De Toma, Samuel; Hayes, Thomas; and Mc Namara, Matthew F., 3,673,712.

McCarthy, Robert P.; and Matlock, Charles W., to Butler Manufacturing Company. Reinforced plastic panel and method of making the same. 3,674,620, Cl. 161-133.000.

McCloskey, Fenimore G.; and Jordan, William Robert, to Columbus Electric Manufacturing Co. Switching devices. 3,675,166, Cl. 335-164.000.

McConnell, Bobby D.: *See—*

Clow, William L.; Benzing, Robert J.; and McConnell, Bobby D., 3,674,690.

McCormick, James Benjamin, to Miles Laboratories, Inc. Biological specimen processing and embedding apparatus. 3,674,396, Cl. 425-117.000.

McCrae, William: *See—*
Edwards, John A.; Fried, John H.; and McCrae, William, 3,674,816.

McGee, Donald J., to H & H Equipment Company. Pneumatic suspension axle return device. 3,674,249, Cl. 267-52.000.

McGowan, Kenneth J. J., to Avco Corporation. Trip-line system. 3,673,963, Cl. 102-38.000.

McGrath, William L., to Carrier Corporation. Air conditioning system. 3,674,203, Cl. 236-38.000.

McGraw-Edison Company: *See—*
Weinfurt, William J., 3,675,237.

McGregor, Arvin D.: *See—*
McKissick, John A.; and McGregor, Arvin D., 3,675,201.

McGregor, John Cameron, to Atomic Energy of Canada Limited. Nuclear reactor fuel element assembly. 3,674,638, Cl. 176-81.000.

McKelvey, Harold E.: *See—*
Jendrisak, Joseph E.; and McKelvey, Harold E., 3,673,900.

McKenzie, James G. Chromatic harmonica. 3,674,910, Cl. 84-377.000.

McKiernan, Dennis Lester, to Bell Telephone Laboratories, Incorporated. Gated-clock time measurement apparatus including granularity error elimination. 3,675,127, Cl. 324-186.000.

McKissick, John A.; and McGregor, Arvin D., to Burroughs Corporation. Threshold voltage determination system. 3,675,201, Cl. 340-146.3ag.

McLauchlan, Thomas A.: *See—*
Fairfield, Louis R., Jr.; Van Vliet, Raymond A.; and McLauchlan, Thomas A., 3,674,065.

McMinimy, Lawrence O., to Potlatch Forests, Inc. Method of laminating untreated wood to wood treated with fire-retardant material. 3,674,596, Cl. 156-321.000.

McMurray, Mitchell; Plouzek, Eugene A.; and Sturges, James R., to Caterpillar Tractor Company. Constant pressure seal. 3,674,279, Cl. 277-95.000.

McNally, John S.: *See—*
Fekete, Frank; and McNally, John S., 3,674,727.

McNally, Sellers B., to Maremont Corporation. Coupling. 3,674,290, Cl. 285-248.000.

McNamara, Thomas J.; and Sangster, Arlon G. Circuit for multi-speed two-phase motor. 3,675,100, Cl. 318-220.00r.

McPherson, Frank Henderson: *See—*
Francini, Joseph Pirra; Braxton, James Lopez, Jr.; Lewis, Vera Gloria; McPherson, Frank Henderson; Rosenberg, Daniel; and Sekse, Torkjell, 3,674,988.

McQueen, Terry K.: *See—*
Jellison, Frank R.; Mason, John B.; and McQueen, Terry K., 3,674,283.

McRae, James L. Apparatus for cutting and marking plate stock of the type used in building wall panels. 3,674,064, Cl. 143-46.00r.

McShan, C. Hunter. Motor incorporating torsional mode resonator. 3,675,055, Cl. 310-22.000.

Mead Corporation, The: *See—*
Forrer, Homer W., 3,674,136.

Mead, Dennis E., to Lipe Corporation. Feeder for cylindrical objects. 3,674,128, Cl. 198-33.0aa.

Measurex Corporation: *See—*
Hill, Robert C.; French, John M.; and Toepfer, Richard E., 3,675,019.

Mee, John D.: *See—*
Eldredge, Carl H.; and Mee, John D., 3,674,782.

Meimoun, Daniel: *See—*
Parisot, Andre; and Meimoun, Daniel, 3,674,539.

Mekatron Corporation: *See—*
Vardaman, Hunter W., 3,673,896.

Melott, Norman W., to Cook-Waite Laboratories, Inc. Sealing closure caps. 3,673,766, Cl. 53-335.000.

Melvin, William J., to Collins Radio Company. Differentially coherent phase shift keyed digital demodulating apparatus. 3,675,129, Cl. 325-320.000.

Menger, Karl S.: *See—*
Lincoln, Andrew J.; and Menger, Karl S., 3,675,000.

Menzi, Hans: *See—*
Bommer, Peter; and Menzi, Hans, 3,674,102.

Mercer, Ronald H.: *See—*
Rutledge, Nolan W.; Mercer, Ronald H.; and Hill, Herbert Charles, Jr., 3,673,982.

Mercier, Jacques H. Pressure vessel. 3,674,054, Cl. 138-30.000.

Merck & Co., Inc.: *See—*
Ruyle, William V.; Sarett, Lewis H.; and Matzuk, Alexander R., 3,674,870.
Sben, Tsung-Ying; Witzel, Bruce E.; and Walford, Gordon L., 3,674,843.
Shen, Tsung-Ying; Jones, Howard; Witzel, Bruce E.; and Walford, Gordon L., 3,674,844.
Shen, Tsung-Ying; Ruyle, William V.; Witzel, Bruce E.; and Walford, Gordon L., 3,674,875.

Merck, James K., to Maremont Corporation. Spindle control means for automatic yarn piecing apparatus. 3,673,780, Cl. 57-34.00r.

Mereen, Donald E.; and Barrett, Jack E. J., to Midwest Communications & Audio, Incorporated. System for selection and remote control with sequential decoding having plural decoding stages. 3,675,205, Cl. 340-147.000.

Mergy, James L., to Curwood, Inc. Thermo-formable plastic material for making semi-rigid plastic packages. 3,674,626, Cl. 161-165.000.

Merlin Gerin, Societe Anonyme: *See—*
Labbaye, Louis; and Bernard, Georges, 3,675,079.
Leymarie, Claude P. H., 3,674,949.

Merriam, Marshall F., to Gulf Oil Corporation. Apparatus for power transmission. 3,675,042, Cl. 307-147.

Merrill, Edward W.; and Wong, Patrick Seck-lai, to Massachusetts Institute of Technology. Non-thrombogenic materials and methods for their preparation. 3,673,612, Cl. 3-1.000.

Meseck, Eugene: *See—*
Wright, Edward L.; and Meseck, Eugene, 3,673,851.

Messer Griesheim G.m.b.H.: *See—*
Becker, Werner; Farwer, Alfward; Frank, Georg; Reis, Bernhard; Rohf, Josef; and Auer, Rupert, 3,674,978.

Metallgesellschaft Aktiengesellschaft: *See—*
Laue, Hans-Jurgen Rainer; Bohm, Horst Otto; and Reddemann, Bernhard Hermann, 3,674,470.

Metallgesellschaft Aktiengesellschaft and Bergwerks-Verban: *See—*
Schmalfeld, Paul; Janssen, Heinrich; Bock, Burkhard; Peters, Werner; and Ahland, Erwin, 3,674,449.

Mettler Instruments AG: *See—*
Bommer, Peter; and Menzi, Hans, 3,674,102.

Metz, Louis C., to Sperry Rand Corporation. Digital-to-synchro/resolver converter. 3,675,234, Cl. 340-347.0da.

Meyer, Gilbert R.; and Everett, Rollo J., to CPC International Inc. Low density starch hydrolysates. 3,674,555, Cl. 127-29.000.

Meyer, Harold E.: *See—*
White, Kenneth N.; and Meyer, Harold E., 3,674,328.

Miceli, James V. Vehicular locking device. 3,674,046, Cl. 137-384.200.

Michaelsen, Alfred L., to Westvaco Corporation. Method and apparatus for orthogonal variables. 3,673,865, Cl. 73-159.000.

Michatek, Chester W.; and Harvey, Donad M., to Eastman Kodak Company. Multiple function frame member for cameras. 3,673,938, Cl. 95-13.000.

Michel, Raymond S.; and Podhora, Fred W., to United Medical Laboratories Inc. Means for and method of transfering blood from a patient to multiple text tubes within a vacuum. 3,674,011, Cl. 128-2.00f.

Michels, John: *See—*
Ellis, David R.; Michels, John; and Gabbert, Ira, 3,675,214.

Michie, James C., III: *See—*
Deal, Joseph D., Jr.; and Michie, James C., III, 3,674,042.

Michiels, Marie-Jose-Suzanne and: *See—*
Phlipot, Georges A.; Michiels, Marie-Jose-Suzanne and; and de Villeneuve, Yolande-Paule Marie-Josephe, 3,674,745.

Microsystems International Limited: *See—*
Hantusch, Gerald H.; Vincent, David A.; and Van Tongerloo, Eric H., 3,675,089.

Midland-Ross Corporation: *See—*
Kish, George R.; and Swanson, Kenneth B., 3,674,954.

Midwest Communications & Audio, Incorporated: *See—*
Mereen, Donald E.; and Barrett, Jack E. J., 3,675,205.

Miehle, James A.; Pratt, David S.; and Rees, Robert M., to Varian Associates, mesne. Status system. 3,675,204, Cl. 340-147.00r.

Mienstaedt, Robert, to Deering Milliken, Inc. Control circuit arrangement for controlling parameters of a process and a comparison circuit arrangement for use in conjunction with the control circuit arrangements. 3,674,993, Cl. 235-150.100.

Mifune, Hideo; and Tani, Kenroku, to Matsushita Electric Industrial Co., Ltd. Ultrasonic wave microphone. 3,675,053, Cl. 310-8.200.

Mihalick, Eugene Michael: *See—*
Strater, Kurt; Hall, William Bernard; Mihalick, Eugene Michael; and Stever, William Charles, 3,673,983.

Miles Laboratories, Inc.: *See—*
McCormick, James Benjamin, 3,674,396.

Miles, Wilson D.: *See—*
Trost, Joseph C.; Bock, Robert V.; Gerbstadt, Frederick H.; Graham, William J.; Miles, Wilson D.; and Questa, Charles R., 3,675,209.

Milgrom, Jack, to Little, Arthur D., Inc. Photoresist material and method of forming printing plates and resulting product. 3,674,486, Cl. 96-35.100.

Miller, Anthony D.: *See—*
de Gelder, Jacob; Baginski, Albert R.; and Miller, Anthony D., 3,674,271.

Miller, Charlie D., to Carrier Corporation. Tube testing apparatus. 3,673,858, Cl. 73-40.50r.

Miller, Eugene J., Jr.: *See—*
Tiefenthal, Harlan E.; Jungermann, Eric; Miller, Eugene J., Jr.; and Callahan, John J., 3,674,879.

Miller, John H. Valve boxes. 3,674,169, Cl. 220-4.00r.

Miller, Merlin S.; and Russo, Ronald D., to Koehler-Dayton, Inc. Head conversion unit. 3,674,148, Cl. 210-152.000.

Miller, Richard G., to PPG Industries, Inc. Solution for depositing transparent metal films. 3,674,517, Cl. 106-1.000.

Miller, Richard H. Chair construction. 3,674,311, Cl. 297-440.000.

Miller, Robert E., to Monsanto Company. Protein cross-linked with phosphonitrillic halide. 3,674,509, Cl. 99-22.00n.

Millipore Corporation: *See—*
Danti, Bernard, 3,674,147.
Post, Arthur H., Jr.; Polinsky, Ronald J.; and Dwyer, James L., 3,674,678.
Millman, William V.; and Mayer, Endre A., to Bendix Corporation, The. Vortex valve fluid oscillator. 3,674,045, Cl. 137-81.500.
Minganti, Ernesto. Device for anchoring new-born babies umbilical cords until atrophy thereof. 3,674,032, Cl. 128-346.000.
Minialoff, Edward P. Fascia sections with interfitting parts for building walls. 3,673,748, Cl. 52-60.000.
Minks, Floyd M. High voltage ignition system transformer. 3,675,077, Cl. 315-209.00r.
Minnesota Mining and Manufacturing Company: *See—*
Gorbran, Ramsis; and Ofstead, Ronald F., 3,674,497.
Mitsch, Ronald A., 3,674,785.
Sagawa, Burt K., 3,673,962.
Minolta Camera Kabushiki Kaisha: *See—*
Kono, Tteomi, 3,673,905.
Mioduski, George T., to General Electric Company. Hand proximity alarm control circuit. 3,675,051, Cl. 307-308.000.
Mirick, William M., to Battelle Development Corporation, The. Correction fluid composition. 3,674,729, Cl. 260-23.0ar.
Mirrlees Blackstone Limited: *See—*
van-der-Ben, Charles Robert; and Pope, Joseph Albert, 3,674,576.
Misawa, Masanaru: *See—*
Tanaka, Katsunobu; Nara, Takashi; Misawa, Masanaru; and Komuro, Toshio, 3,674,641.
Mitchell, David F.; and Romanauskas, William A., to Sorvall, Ivan, Inc. Washing means for flexible bags in split enclosures. 3,674,197, Cl. 233-14.00r.
Mitchell, David S.; Bridge, Alan G.; and Scott, John W., to Chevron Research Company. Heavy oil conversion using fine particles. 3,674,682, Cl. 208-157.000.
Mitsch, Ronald A., to Minnesota Mining and Manufacturing Company. Certain fluorimino or azomethine containing compounds. 3,674,785, Cl. 260-243.00r.
Mitsubishi Chemical Industries Limited: *See—*
Iwasaki, Koichiro; Yamaguchi, Kazuo; Kimura, Harutaka; Hasuo, Masayoshi; and Tanaka, Toru, 3,674,764.
Yamawaki, Takeshi; Usami, Masakatsu; Suzuki, Tetsumi; and Uematsu, Takao, 3,674,759.
Mitsubishi Denki Kabushiki Kaisha: *See—*
Mitsui, Tsuneo; Baba, Jun-Ichi; and Yamada, Ikuo, 3,675,002.
Mitsubishi Electric Corporation: *See—*
Shunichiro, Nishizaki; and Akira, Fukami, 3,674,741.
Mitsubishi Kasei Kogyo Kabushiki Kaisha; a/k/a: *See—*
Yamawaki, Takeshi; Usami, Masakatsu; Suzuki, Tetsumi; and Uematsu, Takao, 3,674,759.
Mitsubishi Rayon Company Limited: *See—*
Miyamoto, Haruo; Uchida, Hideho; and Uehara, Masaru, 3,674,621.
Mitsui, Tsuneo; Baba, Jun-Ichi; and Yamada, Ikuo, to Tokyo Denryoku Kabushiki Kaisha and Mitsubishi Denki Kabushiki Kaisha. System for computing electric power flow. 3,675,002, Cl. 235-185.000.
Miyai, Yukio: *See—*
Teramoto, Iwao; Iwasa, Hitoo; Miyai, Yukio; and Takeshima, Masumi, 3,675,161.
Miyamoto, Haruo; Uchida, Hideho; and Uehara, Masaru, to Mitsubishi Rayon Company Limited. Process of making a sheet paper. 3,674,621, Cl. 162-146.000.
Miyanohara, Isao: *See—*
Otsuki, Susumu; Hori, Kyoichi; and Miyanohara, Isao, 3,674,651.
Miyata, Yasuo: *See—*
Nakamura, Naoya; and Miyata, Yasuo, 3,674,763.
Miyazuka, Hajime: *See—*
Tamai, Yasuo; and Miyazuka, Hajime, 3,674,476.
Mizugaki, Yoshikazu: *See—*
Ikuo, Yorio; Okabayashi, Minoru; Ono, Keisuke; Mizugaki, Yoshikazu; and Hayashi, Juntaro, 3,674,129.
Mizuno, Tadasi, to Kabushiki-Kaisha Tokai Rika Denki Seisakusho. Theft preventing devices in motor vehicles. 3,673,829, Cl. 70-252.000.
Mizzi, Joseph Michael. Cane harvester. 3,673,774, Cl. 56-13.900.
Mizzoni, Renat Herbert; and Blatter, Herbert Morton, to Ciba-Geigy Corporation. Certain-3-pyridine-sulfonamide derivatives. 3,674,794, Cl. 260-294.80f.
Moberly, Raymond Ronald: *See—*
Owen, James Neal; Moberly, Raymond Ronald; Martin, Edwin J., Jr.; Yamada, Akemichi; and Thomas, Edmund C., 3,675,162.
Modern Research Inc., mesne: *See—*
Davies, Ronald C., 3,675,036.
Moe, John L.: *See—*
Harkenrider, Robert J.; and Moe, John L., 3,675,046.
Moeller & Neumann GmbH: *See—*
Bier, Albert, 3,673,841.
Moesser, Wilhelm, to Strecker, Otto C., K.G.; and and Maschinenfabrik zum Bruderhaus G.m.b.H. Drawing press. 3,674,194, Cl. 226-187.000.
Mohri, Yohichi, to Nissan Motor Company, Limited. Fluid operated position selecting device. 3,673,926, Cl. 92-51.000.
Moll, Franz; Posse, Rolf-Fred; and Ringe, Werner, to Agfa-Gevaert Aktiengesellschaft. Preparation of silver dispersions for use in filter and antihalation layers. 3,674,703, Cl. 252-313.00r.
Moll, Hans Heinrich; and Ockl, Otto. Axle housing. 3,673,888, Cl. 74-607.000.
Mollenbeck, Klaus: *See—*
Hermstein, Wolfgang; and Mollenbeck, Klaus, 3,675,123.
Mollgaard, Anton N.: *See—*
Allison, Arthur F.; Greening, Donald J.; and Mollgaard, Anton N., 3,675,104.
Molloy, Kenneth H.; Ward, John P.; and Benson, Victor Mark, to Computer Systems Engineering, Inc. Traffic signal control system. 3,675,196, Cl. 340-40.000.
Monsanto Company: *See—*
Alt, Gerhard H., 3,674,459.
Arrant, Kearney D., 3,674,165.
Darlington, Walter A.; and Chupp, John P., 3,674,849.
Franz, John E., 3,674,802.
Howe, Robert K., 3,674,460.
Miller, Robert E., 3,674,509.
Mottus, Edward H.; and Ort, Morris R., 3,674,766.
Ridgway, James S.; King, Henry L.; and Pickett, Oscar A., Jr., 3,674,752.
Somich, Robert T., 3,674,708.
Timbie, Robert W., 3,673,783.
Monsanto Europe S.A., mesne: *See—*
Andros, Arthur A., 3,674,512.
Monsanto Research Corporation: *See—*
Stemniski, John R., 3,674,822.
Montagano, Anthony. Head rest attachment for wheel chairs. 3,674,310, Cl. 297-397.000.
Montague, Bernard R.: *See—*
Leyburn, Derek; Montague, Bernard R.; and Mattila, Henry K., 3,674,940.
Montague Burton Limited: *See—*
Jacobson, Sydney; Knowles, Denis; and Parker, Derek, 3,674,592.
Monti, Giancarlo, to Siai-Marchetti S.p.A. Helicopter rotor blade. 3,674,379, Cl. 416-226.000.
Montt, Michael R., to Massachusetts Institute of Technology. Video pointer. 3,674,930, Cl. 178-7.50r.
Moodie, Donald E., to Polaroid Corporation. Switch programming device with sequentially actuated switches. 3,674,965, Cl. 200-153.00r.
Moon, Edward Leslie: *See—*
Berkelhammer, Gerald; Asato, Goro; and Moon, Edward Leslie, 3,674,780.
Moore Business Forms, Inc.: *See—*
Dodgson, Hugh, 3,674,286.
Moore Company, The: *See—*
Moore, Junius T., Jr., 3,673,719.
Moore, Junius T., Jr., to Moore Company, The. Indicia plate with means for aligning same with a frame member. 3,673,719, Cl. 40-20.00r.
Moore, Ted R., to Cities Service Oil Company. Method for stimulating hydrocarbon-bearing formations. 3,674,089, Cl. 166-245.000.
Moran, Arthur Stone: *See—*
Schweizer, Max Norman; and Moran, Arthur Stone, 3,674,324.
Morane, Bruno P., to L'Oreal. Valve for simultaneously dispensing a plurality of pressurized fluids. 3,674,180, Cl. 222-145.000.
Morat, Franz, G.m.b.H., Firma: *See—*
Gottschall, Gernot, 3,674,192.
Morcaldi D', Rosario Forlano. Loop fabric structure. 3,673,915, Cl. 87-12.000.
Moreau, Glenn T.; and Bielefeldt, Irvin P., to Alco Standard Corporation. Fluxless brazing process. 3,673,678, Cl. 29-494.000.
Morgenstern, Dieter: *See—*
Dijkhuizen, Willem; Termin, Erich; Bleh, Otto; and Morgenstern, Dieter, 3,674,716.
Morinaga Milk Industry Co., Ltd.: *See—*
Nagasawa, Taro; Tomita, Mamoru; Obayashi, Tomokazu; Tamura, Yoshitaka; and Kenmotsu, Yoko, 3,674,500.
Moritani, Ichiro; and Fujiwara, Yuzo, to Ube Industries, Ltd. Process for the preparation of aromatic hydrocarbons containing monoethylenic unsaturated radicals. 3,674,884, Cl. 260-669.00r.
Moroney, John J.; and Tharp, Edwin B., to Torrington Company, The. Bearing. 3,674,325, Cl. 308-35.000.
Moronval, Gerard: *See—*
Richard, Gilbert; and Moronval, Gerard, 3,675,033.
Morris, Philip, Incorporated: *See—*
Iten, Clemens A., 3,673,672.
Rainer, Norman B., 3,674,683.
Rainer, Norman B.; and Wilson, Peter A., 3,674,722.
Morse, Theodore H., to Eastman Kodak Company. Control for bias of magnetic brush and method. 3,674,532, Cl. 117-17.500.
Moser, James R.: *See—*
Maier, Robert E., Jr.; and Moser, James R., 3,674,258.
Schneider, Alan A.; and Moser, James R., 3,674,562.
Mosher, Paul R.: *See—*
MacKenzie, Gerald L.; and Mosher, Paul R., 3,674,702.
Motoren- und Turbinen-Union Munchen GmbH: *See—*
Trappmann, Klaus, 3,674,377.
Motorola, Inc.: *See—*
Coleman, Michael G.; and Huffman, Tommie R., 3,675,064.
Mototani, Hideo: *See—*
Suzuki, Reiichi; Tahara, Tadasu; and Mototani, Hideo, 3,674,769.
Mottier, Francois: *See—*
Iten, Paul Dominik; and Mottier, Francois, 3,675,029.
Mottus, Edward H.; and Ort, Morris R., to Monsanto Company. Polymerization of ethylene and catalysts therefor. 3,674,766, Cl. 260-88.200.

Moulinage & Retorderie de Chavanoz, mesne: *See—*
Raschle, Josef, 3,673,782.
Mount Hope Machinery Company: *See—*
Koster, Klaus, 3,673,647.
Mourning, James R.: *See—*
Cashin, William F.; and Mourning, James R., 3,673,867.
Mowogrozki, Markus: *See—*
Russo, Paul; and Mowogrozki, Markus, 3,675,093.
Mozley, Richard Henry: *See—*
Muller, Leslie Dyne; Sayles, Charles Philip; and Mozley, Richard Henry, 3,674,144.
MSL Industries, Inc.: *See—*
Willis, Arnold L., 3,673,757.
Mte-Contactor Components Limited: *See—*
Olley, Norman Harry, 3,675,168.
Mullaly, Jerome R., to General Electric Company. Voltage responsive switch. 3,675,045, Cl. 307-235.000.
Muller, Erwin: *See—*
Wirth, Wolf-Dieter; and Muller, Erwin, 3,674,837.
Muller, Hans: *See—*
Hoegger, Anton, 3,674,146.
Muller, Leslie Dyne; Sayles, Charles Philip; and Mozley, Richard Henry. Gravity separation of granular materials. 3,674,144, Cl. 209-468.000.
Mulligan, William L., to Parks-Cramer Company. Remote crane motor control with variable direction and speed of movement. 3,675,097, Cl. 318-17.000.
Munroe, Miles R.: *See—*
Snaper, Alvin A.; Gregory, George D.; and Munroe, Miles R., 3,675,220.
Muntz, Frank F. Shaver with improved hair setup. 3,673,684, Cl. 30-34.200.
Murase, Yoshihiko, to Nippon Gakki Seizo Kabushiki Kaisha. Thermoplastic laminated structure. 3,674,109, Cl. 181-32.00r.
Murashige, Hidekichi; Simakura, Masao; and Nakazawa, Kazuo, to Kawatetsu Kizai Kogyo Co., Ltd. Lift up process. 3,673,754, Cl. 52-747.000.
Muratorio, Jorge R., to Celanese Corporation. Production of alpha-naphthyl methanesulfonate esters. 3,674,830, Cl. 260-456.00p.
Murman, Fernando: *See—*
Lewis, George E.; and Murman, Fernando, 3,674,123.
Murman, Fernando; and Lewis, George E., to Hydril Company. Replaceable bladder pulsation dampener. 3,674,053, Cl. 138-30.000.
Murphy, Peter C.: *See—*
Haarbye, Fredrik O.; and Murphy, Peter C., 3,674,446.
Musgen, Bruno: *See—*
Degenkolbe, Joachim; and Musgen, Bruno, 3,674,577.
Mutch, Robert Douglas, to Dominion Bridge Company Limited. Ingot and mold handling tongs. 3,674,302, Cl. 294-118.000.
Myers, Herman A. Liquid fuel operated automatic weapons. 3,673,917, Cl. 89-7.000.
Myers, William N., Jr., to American Micro-Systems, Inc., mesne. Frequency selecting system. 3,674,917, Cl. 178-2.00r.
Myrenne, Karl-Dieter S.: *See—*
Hedman, Clarence L., Jr.; and Myrenne, Karl-Dieter S., 3,674,341.
N. L. Industries, Inc., mesne: *See—*
Bronson, George E., 3,674,528.
Nagahara, Shigehiro: *See—*
Suzuki, Yoshiro; Nagahara, Shigehiro; and Ichimura, Nobuyoshi, 3,674,520.
Naganuma, Mitsuaki: *See—*
Akiyama, Susumu; and Naganuma, Mitsuaki, 3,674,929.
Nagao, Taichiro: *See—*
Kurauchi, Noritaka; Tada, Shotaro; Shima, Hiroshi; Hiraoka, Susumu; Nagao, Taichiro; Koyama, Masahiro; Shiraishi, Satoshi; Shindo, Masuo; and Kobayashi, Yoshinobu, 3,674,990.
Nagasawa, Masahiro, to Matsushita Electric Industrial Co., Ltd. Negative resistance device. 3,675,088, Cl. 317-234.00r.
Nagasawa, Taro; Tomita, Mamoru; Obayashi, Tomokazu; Tamura, Yoshitaka; and Kenmotsu, Yoko, to Morinaga Milk Industry Co., Ltd. Process of producing a meat-like texturized food product. 3,674,500, Cl. 99-17.000.
Nagel, Erich: *See—*
Kohler, Roland; Nagel, Erich; Hujer, Friedrich; and Viehrig, Wolfgang, 3,674,365.
Nagy, Charles S., to National Cash Register Company, The. Punch card controlled accounting machine. 3,674,989, Cl. 235-61.60r.
Naito, Takeo; Hirata, Miyoshi; and Isoda, Sumiro, to Daiichi Seiyaku Co., Ltd. Salts of ethyl o-(cyclohexylaminoalkanoylamino)-benzoate. 3,674,833, Cl. 260-470.000.
Nakajima, Yasuo; Hayashi, Yoshimasa; and Sugihara, Kunihiko, to Nissan Motor Company, Limited. Air-pollution preventive system for motor vehicles. 3,673,993, Cl. 123-119.00a.
Nakamura, Naoya; and Miyata, Yasuo, to Daikin Kogyo Co., Ltd. Process for curing fluoroelastomer. 3,674,763, Cl. 260-87.700.
Nakamura, Yasusi: *See—*
Ueda, Tadao; Sato, Kenji; and Nakamura, Yasusi, 3,674,426.
Nakano, Tooru: *See—*
Takeda, Isao; Iguchi, Takashi; Tsuzuki, Katsuaki; and Nakano, Tooru, 3,674,639.
Nakazawa, Kazuo: *See—*
Murashige, Hidekichi; Simakura, Masao; and Nakazawa, Kazuo, 3,673,754.
Nalco Chemical Company: *See—*
Aitken, Thomas; Anderson, Donald R.; and Jursich, Myron J., 3,674,725.
Wolfson, Leonard L., 3,674,457.
Naomoto, Susumu; Kaneko, Tadataka; and Esaki, Hideya, to Matsushita Electronics Corporation and Matsushita Electric Industrial Co., Ltd. Planar P-N junction with mesh field electrode to avoid pinhole shorts. 3,675,091, Cl. 317-235.00r.
Nara, Takashi: *See—*
Tanaka, Katsunobu; Nara, Takashi; Misawa, Masanaru; and Komuro, Toshio, 3,674,641.
Nasu, Takuya: *See—*
Sugaya, Hiroshi; and Nasu, Takuya, 3,674,942.
National Cash Register Company, The: *See—*
Ackerman, Howard T.; and Kessler, Clarence W., 3,675,239.
Bayless, Robert G.; Shank, Charles P.; Botham Ruth A.; and Werkmeister, Dennis W., 3,674,704.
Blose, James H.; and Talvalkar, Shashikant G., 3,674,535.
Cartmell, James V.; and Churchill, Donald, 3,674,338.
Clinchens, Richard M.; Stewart, John K., Jr.; and Ditmer, Robert W., 3,674,579.
Fischer, Robert E.; Raiff, Lawrence C.; Seybold, James M.; and Zimmerle, Donald F., 3,674,924.
Nagy, Charles S., 3,674,989.
Patel, Pravin K.; and Stone, Eliot, 3,674,554.
Schaab, Carl K.; Weyrauch, George T.; and Davis, Terry R., 3,674,589.
National Distillers and Chemical Corporation: *See—*
Lerman, Frank; and Bartsch, Raymond C., 3,674,736.
National Patent Development Corporation: *See—*
Shepherd, Thomas H.; and Gould, Francis E., 3,674,901.
National Research Development Corporation: *See—*
Giltrow, Jeremy Peter; Kinner, George Henry; and Lancaster, John Keith, 3,674,689.
Lilly, Malcolm Douglas; Kay, Garth, and; Wilson, Richard John Hugh; and Sharp, Alister Kimball, 3,674,767.
Pitteway, Michael Lloyd Victor, 3,675,230.
National Research Institute for Metals, Director of: *See—*
Tachikawa, Kyoji; Tanaka, Yoshiaki; and Fukuda, Satoshi, 3,674,553.
Naumova, Sofia Fadeevna: *See—*
Bokov, Jury Sergeevich; Vikulina, Ninel Vladimirovna; Dogadkin, Boris Aristarkhovich; Erofeev, Boris Vasilievich; Larina, Anastasia Vasilievna; Lavrischev, Vadim Petrovich; Markov, Vladimir Vladimirovich; Naumova, Sofia Fadeevna; Jurina, Olge Demidovna; and Yarovaya, Galina Dmitrievne, 3,674,496.
Nayler, John Herbert Charles: *See—*
Long, Anthony Alfred Walter; and Nayler, John Herbert Charles, 3,674,776.
Neale, Ronald G., to Energy Conversion Devices, Inc. Film deposited semiconductor devices. 3,675,090, Cl. 317-234.00r.
Neathway, Graham Albert: *See—*
Livermore, Frederick C.; and Neathway, Graham Albert, 3,674,659.
Nebold, Jerome I.: *See—*
Fritts, Russell A.; and Nebold, Jerome I., 3,673,921.
Nederlandse Maatschappij voor werken Buitengaats Netherlands Offshore Company N.V.: *See—*
Volbeda, Johan H., 3,673,808.
Neeb, Robert P.; and Patrick, Henry W., to Diazit Company Inc. Sheet separator for copying machines. 3,674,257, Cl. 271-64.000.
Nelson Carl T.: *See—*
Arganbright, Ned H.; Koepnick, Paul J.; Nelson Carl T.; and O'Brien, Arthur F., 3,673,949.
Nelson, Kenneth R., to Schlage Lock Company. Lock cylinder body and method of providing the same. 3,673,831, Cl. 70-373.
Nelson, Melvin A.; Lackey, Jerry G.; and Davies, Terence J., to United States of America, Atomic Energy Commission, mesne. Kerr cell system for modulating a laser beam. 3,675,022, Cl. 250-199.000.
Nelson, Roger John, to Deere & Company. Servo-control for an agricultural tractor hydraulic lift. 3,674,095, Cl. 172-7.000.
Nercessian, Sarkis, to Forbro Design Corporation. High current voltage/current regulator employing a plurality of parallel connected power transistors. 3,675,114, Cl. 323-9.000.
Nerwin, Henry N.: *See—*
Flaherty, John J.; and Nerwin, Henry N., 3,673,860.
Neubeck, William H., Jr., to Bloomer-Fiske, Inc. Loading table for use with continuous production of wieners. 3,674,163, Cl. 214-309.000.
Neudek, Rudolph Otto: *See—*
Rachlin, Joel R.; and Neudek, Rudolph Otto, 3,673,945.
Neue Argus Gesellschaft m.b.H.: *See—*
Kaiser, Rudolf, 3,674,326.
Neugebauer, Walter: *See—*
Illigen, Alfred; and Neugebauer, Walter, 3,674,430.
Neuhaus, Herbert M., to United States of America, Navy. Extrusion press and barrel, 3,674,407, Cl. 425-378.000.
Neuhauser, Hans; Benz, Helmut; and Gukelberger, Werner, to Gustav Neuhauser Prazisionswerkzeugfabik O.M.G. Apparatus for helically machining a blank of varying diameter. 3,673,919, Cl. 90-11.620.
Neumeyer, John L.: *See—*
Papanastassiou, Zion B.; and Neumeyer, John L., 3,674,809.
Newmont Exploration Limited: *See—*
Yannopoulos, John C., 3,674,463.
Newport News Shipbuilding and Dry Dock Company: *See—*
Deal, Joseph D., Jr.; and Michie, James C., III, 3,674,042.

NGK Insulators, Ltd.: *See—*
Higuchi, Noboru; Ogawa, Yutaka; and Watanabe, Akihiro, 3,674,519.
N.G.N. Limited: *See—*
Cooper, Michael Henry; and Fryatt, Leslie Alva, 3,673,904.
Nicholl, Thomas H. Induction charging device. 3,675,108, Cl. 320-2.000.
Niegisch, Walter D., to Union Carbide Corporation. Surface crystallized poly (2,2,4,4-tetramethyl-cyclobutanediol-1,3) carbonates. 3,674,623, Cl. 161-164.
Nielsen, Edwin A.: *See—*
Cooper, Julius; and Nielsen, Edwin A., 3,674,269.
Nielsen, Ole; and Beidil, Max. Method of manufacturing a foil material embossed on both sides, a roll nip and a machine for carrying out the method. 3,673,839, Cl. 72-196.000.
Nielson, Lonnie R., to Carlon Engineering Company, Incorporated. Expansible wrist band. 3,673,795, Cl. 59-80.000.
Nielson, Stephen M., to Texas Gulf Sulphur Company. Control of organic deposition in slurry heaters in potash crystallizer circuit. 3,674,442, Cl. 23-299.000.
Niese, William F., to Libbey-Owens-Ford Company. Locating device. 3,673,664, Cl. 29-203.00p.
Nikolov, Petko Petrov: *See—*
Tsvetkov, Krum Kostov; Ezekiev, Ezekiya Gueorguiev; Nikolov, Petko Petrov; and Otsetov, Vassil Christov, 3,674,991.
Nilson, Hans Erik: *See—*
Elsner, Nils Ake; and Nilson, Hans Erik, 3,674,513.
Ninomiya, Shoichi; Sakai, Masaaki; Oka, Sakae; and Kusunoki, Kikunobu, 50% to Fujitsu Limited and 50% to Nippon Telegraph and Telephone Public Corporation. Coincident-current magnetic core memory with combined inhibit and sense winding. 3,675,224, Cl. 340-174.0cr.
Nippon Electric Company, Limited: *See—*
Akiyama, Susumu; and Naganuma, Mitsuaki, 3,674,929.
Ueda, Isao; Kageyama, Takao; and Inomata, Isao, 3,675,165.
Nippon Gakki Seizo Kabushiki Kaisha: *See—*
Ludemann, Ingo, 3,674,908.
Murase, Yoshihiko, 3,674,109.
Suzuki, Nobuhiko, 3,675,173.
Nippon Kogaku K.K.: *See—*
Tsukamoto, Masaaki; Fujii, Tatsuo; and Ono, Shigeo, 3,675,179.
Nippon Telegraph and Telephone Public Corporation: *See—*
Ninomiya, Shoichi; Sakai, Masaaki; Oka, Sakae; and Kusunoki, Kikunobu, 3,675,224.
Nippondenso Kabushiki Kaisha: *See—*
Kato, Takaaki; Kawakubo, Mamoru; and Ito, Katsunori, 3,673,892.
Nissan Motor Company, Limited: *See—*
Aono, Shigeo; Manaka, Nobuzi; and Inagaki, Tokuichi, 3,673,989.
Aono, Shigeo, 3,673,994.
Fukasawa, Noburu; and Hatori, Yukiyoshi, 3,675,227.
Haruna, Takashi; and Taniguchi, Kazutaka, 3,674,951.
Ishii, Hirozi; and Okamoto, Koichi, 3,673,659.
Mohri, Yohichi, 3,673,926.
Nakajima, Yasuo; Hayashi, Yoshimasa; and Sugihara, Kunihiko, 3,673,993.
Sawada, Hiraki, 3,673,997.
Yamadai, Tadaaki; Kushida, Tadao; Konishi, Hiroshi; and Inaba, Yoshinari, 3,673,631.
Nistri, Ugo: *See—*
Pitzalis, Mario; Vargiu, Silvio; and Nistri, Ugo, 3,674,732.
Nitto Kasei Co., Ltd.: *See—*
Suzuki, Reiichi; Tahara, Tadasu; and Mototani, Hideo, 3,674,769.
Nitzsche, Siegfried; Kaiser, Wolfgang; Wohlfarth, Ernst; and Hittmair, Paul, to Wacker-Chemie G.m.b.H. Room temperature vulcanizable silicone rubber stocks. 3,674,738, Cl. 260-46.50g.
Noble, Frank Raymond, to English Clays Lovering Pichin & Company Limited. Clay. 3,674,521, Cl. 106-72.000.
Noltemeyer, Friedrich: *See—*
Reisacher, Josef; Noltemeyer, Friedrich; and Dziggel, Reiner, 3,674,000.
Noone, Thomas M., to Richardson Company, The. Composite material and process for preparing same. 3,674,547, Cl. 117-135.500.
Norcross, Paul A.: *See—*
Jamison, Robert W.; and Norcross, Paul A., 3,675,199.
Nordgren, Hans Elov. Device in foldable enclosures. 3,673,638, Cl. 24-19.000.
Nordstrom, John David, to Ashland Oil, Inc. Vinyl carbamyloxy carboxylates. 3,674,838, Cl. 260-482.00c.
Norling, Charles H.: *See—*
Edstrom, Woodrow O.; and Norling, Charles H., 3,673,669.
Nortec Computer Devices, Inc.: *See—*
Curtiss, Robert H.; Holzman, Richard; and Lazarow, Seldan A., 3,673,955.
North American Rockwell Corporation: *See—*
Estes, Joseph F.; and Kertesz, Imre, 3,673,873.
Jezuit, Leslie J.; and Kollars, Harold R., 3,673,959.
Northern Electric Company, Limited: *See—*
Chulak, William, 3,674,947.
Livermore, Frederick C.; and Neathway, Graham Albert, 3,674,659.
Northrop Corporation: *See—*
Vahlstrom, Richard E.; Nutten, Donald C.; and Bayne, Dennis R., 3,675,047.
Norton, Neil C. Method of preventing vapor lock during engine operation and of fuel leakage to carburetor after engine stoppage. 3,674,043, Cl. 137-12.000.
Nosal Vsevolod Vladimirovich: *See—*
Tselikov, Alexandr Ivanovich; Nosal Vsevolod Vladimirovich; and Verderevsky, Vadim Anatolievich, 3,673,840.
Novak, Opal B. Furnace register humidifier. 3,673,770, Cl. 55-234.000.
Novo Terapeutisk Laboratorium A/S: *See—*
Aunstrup, Knud; Andresen, Otto; and Outtrup, Helle, 3,674,643.
Nowak, Robert M.; and Ginter, Thomas O., to Dow Chemical Company, The. Thermosettable resins containing vinylester resin, polydiene rubbers and vinyl monomers. 3,674,893, Cl. 260-836.000.
NRM Corporation: *See—*
Gazuit, Georges, 3,674,604.
Nugent, Reginald F.; and Snyder, George P., to Time Research Laboratories, Inc. Apparatus for assembling stacks. 3,674,975, Cl. 219-85.000.
Nutten, Donald C.: *See—*
Vahlstrom, Richard E.; Nutten, Donald C.; and Bayne, Dennis R., 3,675,047.
Nutter Engineering Company; division: *See—*
Freeman, Darrell L., 3,674,246.
N.V. Chefaro Maatschappij: *See—*
van Driel, Hendrik, 3,674,855.
Nystrand, Ernst Daniel, to Paper Converting Machine Co., Inc. Apparatus for applying adhesive seams to webs. 3,674,608, Cl. 156-553.000.
Obayashi, Tomokazu: *See—*
Nagasawa, Taro; Tomita, Mamoru; Obayashi, Tomokazu; Tamura, Yoshitaka; and Kenmotsu, Yoko, 3,674,500.
Obenland, Clayton O.; Papetti, Stelvio; and Smith, Hampton D., Jr., to Olin Corporation. Sulfur-containing carborane derivatives and the method of preparation. 3,674,853, Cl. 260-606.5.
Oberst, Hermann; Ebigt, Joachim; Duve, Gunther; and Schommer, Alfred, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Vibration damped sandwich systems having interlayers of vinyl acetate/2-ethylhexyl acrylate/ dibutyl maleate/crotonic acid copolymers. 3,674,624, Cl. 161-165.000.
Oberst, Hermann; Ebigt, Joachim; Duve, Gunther; and Schommer, Alfred, to Farbwerke Hoechst Aktiengesellschaft vormals Lucius & Bruning. Vibration damped sandwich systems having interlayers of vinyl acetate/N-butyl acrylate/dibutyl maleate/ crotonic acid copolymers. 3,674,625, Cl. 161-165.000.
Obrador, Guillermo M. Apparatus for drying clothing. 3,673,702, Cl. 34-162.000.
O'Brien, Arthur F.: *See—*
Arganbright, Ned H.; Koepnick, Paul J.; Nelson Carl T.; and O'Brien, Arthur F., 3,673,949.
O'Brien, Kevin Christopher, to Bell Telephone Laboratories, Incorporated. Apparatus for use in measuring phase dispersion produced by apparatus or a system. 3,675,136, Cl. 328-133.000.
Ockl, Otto: *See—*
Moll, Hans Heinrich; and Ockl, Otto, 3,673,888.
O'Donnell, Thomas P. Brush handle comprising fencelike portions for fencing in its bristles, and the like. 3,673,630, Cl. 15-160.000.
Officine Alfieri Maserati: *See—*
Alfieri, Giulio, 3,673,990.
Offner, Abe, to Perkin-Elmer Corporation, The. Catoptric anastigmatic afocal optical system. 3,674,334, Cl. 350-55.000.
Ofstead, Ronald F.: *See—*
Gorbran, Ramsis; and Ofstead, Ronald F., 3,674,497.
Ogawa, Shinsaku: *See—*
Seko, Maomi; Ogawa, Shinsaku; Komori, Ryozo; Asuma, Masaro; Isoya, Toshiro; and Sakai, Takamasa, 3,674,653.
Ogawa, Yutaka: *See—*
Higuchi, Noboru; Ogawa, Yutaka; and Watanabe, Akihiro, 3,674,519.
Ogle, Robert W., to IMS Limited, meane. Multi-mix. 3,674,028, Cl. 128-272.000.
Ohshita, Masahide; and Tsukagoshi, Tsunehiro, to Pioneer Electronic Corporation. Manufacturing process for an InSb thin film semiconductor element. 3,674,549, Cl. 117-201.000.
Oimoen, Anders. Portable grinder. 3,673,744, Cl. 51-177.000.
Oka, Sakae: *See—*
Ninomiya, Shoichi; Sakai, Masaaki; Oka, Sakae; and Kusunoki, Kikunobu, 3,675,224.
Okabayashi, Minoru: *See—*
Ikuo, Yorio; Okabayashi, Minoru; Ono, Keisuke; Mizugaki, Yoshikazu; and Hayashi, Juntaro, 3,674,129.
Okamoto Chemical Industry Company Limited: *See—*
Esaka, Teruo, 3,674,495.
Okamoto, Koichi: *See—*
Ishii, Hirozi; and Okamoto, Koichi, 3,673,659.
Oleszko, Thaddeus J.; and Walker, Lynn P., to Marathon Oil Company. Quenching process for pyrolytically cracked hydrocarbons. 3,674,890, Cl. 260-683.000.
Olin Corporation: *See—*
Early, Robert M.; and Raes, Maurice C., 3,674,718.
Fuzesi, Stephen; and Lapkin, Milton, 3,674,717.
Obenland, Clayton O.; Papetti, Stelvio; and Smith, Hampton D., Jr., 3,674,853.
Vercoglio, John W., 3,673,845.
Olin Mathieson Chemical Corporation: *See—*
Pryor, Michael J.; and Anthony, William H., 3,674,569.
Rao, Velliyur Nott Padmanabha; Scott, John A.; and Surowiecki, Benjamin M., Jr., 3,674,827.
Olinkraft, Inc.: *See—*
Graser, Earl J., 3,674,137.
Olivetti, Ing., C., & C., S.p.A.: *See—*
Giolitti, Nicolo, 3,674,201.
Giolitti, Nicolo; and Daly, Dante, 3,674,202.
Olley, Norman Harry, 1/2 to Mte-Contactor Components Limited. Electrical relays. 3,675,168, Cl. 335-198.000.
O'Loughlin, James P., to Raytheon Company. Power supply providing synchronized energization of a load. 3,675,115, Cl. 323-6.000.
Olson, Virginia A.: *See—*
Bates, John D.; and Olson, Virginia A., 3,674,029.
Omark Industries, Inc.: *See—*
Tupper, Myron D.; and Hille, Arvin A., 3,674,220.
Omron Tateisi Electronics Co.: *See—*
Iwamoto, Shunsuke; and Kawasaki, Ryohei, 3,675,195.
Osaki, Keisuke; Egashira, Hiroshi; and Hayashi, Yasunori, 3,675,206.
Ono, Keisuke: *See—*
Ikuo, Yorio; Okabayashi, Minoru; Ono, Keisuke; Mizugaki, Yoshikazu; and Hayashi, Juntaro, 3,674,129.
Ono, Shigeo: *See—*
Tsukamoto, Masaaki; Fujii, Tatsuo; and Ono, Shigeo, 3,675,179.
Ono, Takeshi, to Aisin Seiki Kabushiki Kaisha. Zigzag sewing machine. 3,673,971, Cl. 112-158.000.
O'Rear, Cecil N. Double box dump trailer. 3,674,312, Cl. 298-8.00t.
Orenstein, Nathan: *See—*
Hansen, Neil W.; and Orenstein, Nathan, 3,675,132.
Ort, Morris R.: *See—*
Mottus, Edward H.; and Ort, Morris R., 3,674,766.
Orth, Hans. Injection molding machine for processing thermo plastic synthetic material having explosive charging and clamping units. 3,674,386, Cl. 425-1.000.
Osakeyhtio, A. Ahlstrom: *See—*
Evalahti, Osmo Rainer, 3,674,633.
Osaki, Keisuke; Egashira, Hiroshi; and Hayashi, Yasunori, to Omron Tateisi Electronics Co. Automatic ticket gate. 3,675,206, Cl. 340-149.00a.
Osaki, Yoshiyasu: *See—*
Tani, Isamu; Otsuka, Masatomi; Osaki, Yoshiyasu; and Hagino, Takuo, 3,674,646.
Osborne, David Richard Duke, to Lever Brothers Company. Substituted salicylanilides. 3,674,850, Cl. 260-559.00s.
Oshima, Susumu: *See—*
Kakumu, Ichizo; and Oshima, Susumu, 3,674,003.
Oshima, Teruo: *See—*
Yamamoto, Keisaku; Takao, Hiroyoshi; Hirooka, Masaaki; and Oshima, Teruo, 3,674,755.
Osplack, Joseph J.; and Osplack, Rodman J. Method of producing internal gearing. 3,673,660, Cl. 29-159.200.
Osplack, Rodman J.: *See—*
Osplack, Joseph J.; and Osplack, Rodman J., 3,673,660.
Ostby & Barton Co.: *See—*
Smith, James P., 3,675,189.
Ota, Keiichi. High-strength silicon steel. 3,674,468, Cl. 75-128.00a.
Otani, Akemasa. Iron scrap bundles. 3,674,444, Cl. 29-186.000.
Othu, Ikuo: *See—*
Koide, Tsuyoshi; and Othu, Ikuo, 3,673,741.
Otsetov, Vassil Christov: *See—*
Tsvetkov, Krum Kostov; Ezekiev, Ezekiya Gueorguiev; Nikolov, Petko Petrov; and Otsetov, Vassil Christov, 3,674,991.
Otsuka Kagaku Yakuhin Kabushiki Kaisha: *See—*
Tani, Isamu; Otsuka, Masatomi; Osaki, Yoshiyasu; and Hagino, Takuo, 3,674,646.
Otsuka, Masatomi: *See—*
Tani, Isamu; Otsuka, Masatomi; Osaki, Yoshiyasu; and Hagino, Takuo, 3,674,646.
Otsuki, Susumu; Hori, Kyoichi; and Miyanohara, Isao. Polymerization inhibition of acrylic acid. 3,674,651, Cl. 203-8.000.
Otto, Hans-Werner: *See—*
Hoffmann, Horst; Krauch, Carl Heinrich; Otto, Hans-Werner; and Volkert, Otto, 3,674,494.
Otto, Julian A.: *See—*
Sweeney, Richard F.; Khan, Aziz Urrehman; Price, Alson K.; Jones, Edward Stephen; and Otto, Julian A., 3,674,800.
Otto, Wolfgang Karl Ferdinand, to Deering Milliken Research Corporation. Process of annealing resin modified textile fabrics. 3,674,417, Cl. 8-115.500.
Outtrup, Helle: *See—*
Aunstrup, Knud; Andresen, Otto; and Outtrup, Helle, 3,674,643.
Ovelson, Kenneth Vernon. Test hole plug. 3,674,088, Cl. 166-192.000.
Owen, Calvin P. Pallet type packing system with a retractable walkway. 3,674,158, Cl. 214-16.1ce.
Owen, James Neal; Moberly, Raymond Ronald; Martin, Edwin J., Jr.; Yamada, Akemichi; and Thomas, Edmund C., to Wilcox Electric, Inc. Modulator for instrument landing system. 3,675,162, Cl. 337-23.000.
Owens-Corning Fiberglas Corporation: *See—*
Marzocchi, Alfred, 3,674,724.
Owens-Illinois, Inc.: *See—*
Shields, Dean W., 3,674,066.
Pacciarini, Antonio: *See—*
Caretta, Renato; and Pacciarini, Antonio, 3,674,899.
Padovani, Pietro, to I.S.A.P. SpA. Cupped trays made from a thin sheet of plastics material for round or pear-shaped fruits or horticultural products. 3,674,168, Cl. 217-26.500.
Padovani, Pietro. Pressure operated fastening means for containers. 3,674,295, Cl. 292-76.000.
Page, Richard W. Dental instrument operating system. 3,673,709, Cl. 32-22.000.
Paliwoda, Eugene J., to Jones & Laughlin Steel Corporation. Chill for direct casting of thin platelets. 3,674,084, Cl. 164-271.000.
Palka, Frank M.: *See—*
Ashley, James R.; and Palka, Frank M., 3,675,124.
Panigati, Pier L. Fluid operated sensor. 3,673,856, Cl. 73-37.500.
Panov, Alexei Alexandrovich: *See—*
Zykov, Vladimir Pavlovich; Panov, Alexei Alexandrovich; Prudnikov, Pavel Alexeevich; Khlopin, Mikhail Ivanovich; and Shlyapnikov, Alexel Dmitrievich, 3,675,087.
Papanastassion, Zion B.; and Neumeyer, John L., to Little, Arthur D., Inc., mesne. N-(2-fluoroethyl)-N-[2-(3-indole)ethyl] amines. 3,674,809, Cl. 260-326.150.
Papenfuss, Carl J.: *See—*
Manasian, Arthur E.; Papenfuss, Carl J.; and Piekarski, William F., 3,674,139.
Paper Converting Machine Co., Inc.: *See—*
Nystrand, Ernst Daniel, 3,674,608.
Papetti, Stelvio: *See—*
Obenland, Clayton O.; Papetti, Stelvio; and Smith, Hampton D., Jr., 3,674,853.
Parcell, Robert F., to Parke, Davis & Company. Oximes of 3,4-dimethoxyphenylpyruvic acid esters. 3,674,834, Cl. 260-471.00a.
Parisot, Andre; and Meimoun, Daniel, to Institut Textile de France. Method for processing cellulosic fibre material. 3,674,539, Cl. 117-56.000.
Park, Vernon K.: *See—*
Carter, Edward H., Jr.; Park, Vernon K.; and Seeger, Horst K., 3,674,765.
Park-Ohio Industries, Inc.: *See—*
Gillick, Jack W., 3,674,247.
Parke, Davis & Company: *See—*
Creger, Paul L., 3,674,836.
Fisher, Myron W.; and Hanessian, Stephen, 3,674,863.
Parcell, Robert F., 3,674,834.
Parker, Derek: *See—*
Jacobson, Sydney; Knowles, Denis; and Parker, Derek, 3,674,592.
Parker, Donald L.: *See—*
Bennett, Ronald W.; Parker, Donald L.; and Shaw, Arthur R., 3,675,197.
Parker, Fred W., to Du Pont de Nemours, E. I., and Company. Thermosetting acrylic enamel. 3,674,734, Cl. 260-31.20n.
Parker-Hannifin Corporation: *See—*
Davies, Robert H., 3,673,925.
Parks-Cramer Company: *See—*
Mulligan, William L., 3,675,097.
Parsons, Ronald W., to Allcock Laight and Westwood Limited. Expansible connector for joining tubes. 3,674,293, Cl. 287-56.000.
Pass, Arthur D. Abrading device for cleaning concave cylindrical surfaces. 3,673,747, Cl. 51-370.000.
Patel, Pravin K.; and Stone, Eliot, to National Cash Register Company, The. Formation of oxide coating on surface of a magnetic cobalt nickel alloy. 3,674,554, Cl. 117-237.000.
Path Computer Equipment Inc.: *See—*
Klockenbrink, Joseph M.; and Aydin, Kemal, 3,675,076.
Patrick, Henry W.: *See—*
Neeb, Robert P.; and Patrick, Henry W., 3,674,257.
Patton, Thomas H.: *See—*
Zagel, Samuel J.; and Patton, Thomas H., 3,675,006.
Paul, Bernt, to Siemens Aktiengesellschaft. Semiconductor type radiation detector. 3,675,018, Cl. 250-83.3or.
Paul, Ian Andrew, to Honeywell Inc. Control circuits for use in automatic control systems. 3,675,050, Cl. 307-304.000.
Paul, Jurgen: *See—*
Brugger, Franz; and Paul, Jurgen, 3,674,319.
Paz, Pascual S. Automatic occupied trip counting apparatus. 3,674,986, Cl. 235-30.00a.
Pearce, Shairyl I.: *See—*
Audiffred, Sidney J.; Johnson, Lowell E.; and Pearce, Shairyl I., 3,673,799.
Pearson, Anthony: *See—*
Pearson, William Michael; and Pearson, Anthony, 3,674,593.
Pearson, William Michael; and Pearson, Anthony, to Bondina Limited. Method of making a protective laminate having a interposed powdered layer. 3,674,593, Cl. 156-276.000.
Pease, Donald L.: *See—*
Baller, Ernst O.; Crandell, Melvin G.; Pease, Donald L.; and Witinski, Francis D., 3,674,363.
Pecorella, James. Multi-purpose carpet seam joining tool. 3,673,621, Cl. 7-8.000.
Pedersen, Harry, to Gleason Works, The. Self-cleaning chuck. 3,674,280, Cl. 279-2.000.
Peek, Henry L., to Allis-Chalmers Manufacturing Company. Circuit breaker with hydraulic operating mechanism for vacuum interrupter. 3,674,955, Cl. 200-82.000.
Peisner, Israel D.; Stol, George H.; and Gotcher, Eugene D., to Whitehead & Kales Company. Vehicle tie-down device. 3,673,969, Cl. 105-369.00a.
Pelousek, Herbert: *See—*

Schnegg, Robert; Pelousek, Herbert; Dippolhofer, Robert; Wiegreffe, Wolfgang; Voelz, Hans-Georg; and Kienast, Gerhard, 3,674,747.

Pennsylvania Industrial Chemical Corporation: *See—*
Vredenburgh, Walter A.; and Hollis, Samuel D., 3,674,723.

Penntube Plastics Company: *See—*
Ayella, Edmond R., 3,674,733.

Pennwalt Corporation: *See—*
Yochum, Daniel William; Haines, Paul Gordon; and Popoff, Ivan C., 3,674,701.

Penzel, Herbert W.: *See—*
Appleton, Norton A.; and Penzel, Herbert W., 3,675,007.

Pergaminos, Stavros. Method of making a filter for tobacco smoke. 3,674,540, Cl. 117-56.000.

Perkin-Elmer Corporation, The: *See—*
Offner, Abe, 3,674,334.

Perkins Engines Limited: *See—*
Stewart, William F., 3,673,651.

Perkins, James Frank: *See—*
Honey, Raymond; and Perkins, James Frank, 3,674,502.

Perkins Services N.V.: *See—*
Wilkinson, William H., 3,673,797.

Perl, Theodore. Light-proofed automatic radiographic cassette unloader-reloader. 3,675,014, Cl. 250-66.00.

Permutit Company Limited, The: *See—*
Arden, Thomas Victor; Borra, Albert George; and Clayton, Rolf Crowther, 3,674,685.

Persson, Leif R., to AB Billingsfors-Langed. Method of manufacturing a material similar to textile containing paper. 3,674,594, Cl. 156-299.000.

Peters, Joseph, Jr.; and Feeney, Brian P. Pitch change limiting device for stringed musical instruments. 3,674,909, Cl. 84-312.000.

Peters, Werner: *See—*
Schmalfeld, Paul; Janssen, Heinrich; Bock, Burkhard; Peters, Werner; and Ahland, Erwin, 3,674,449.

Petersen, George R., to Bowman, P. H., Company, Inc. Method of fabricating wood trusses. 3,673,671, Cl. 29-432.200.

Petersen, Ulrich; and Grandin, Friedrich-Hans, to Mannesmann Aktiengesellschaft. Method of rolling hollow stock. 3,673,836, Cl. 72-78.000.

Petrigalla, Andrew, to Smith, A. O., Corporation. Current sensing apparatus. 3,675,105, Cl. 318-356.000.

Petrolite Corporation: *See—*
Redmore, Derek, 3,674,804.

Petry, Robert K.; and Shortway, Harry A., to Congoleum Industries, Inc. Decorative surface coverings. 3,674,611, Cl. 161-63.000.

Petusky, Neil J., to Decision Data Corporation. Damping apparatus for a linear actuator device. 3,675,172, Cl. 335-257.000.

Pevrick Engineering Co., Inc.: *See—*
Hedrick, John R., 3,674,281.

Pfizer Inc.: *See—*
Beutel, Rolf Ernst; and Raaf, Helmut Wilhelm, 3,674,859.
Lombardino, Joseph G.; and Holland, Gerald F., 3,674,876.

Philip, Morris. Yarn creel and method of positioning yarn cones. 3,674,223, Cl. 242-131.000.

Philippson, Rainer; Hauser, Helmut; Gibian, Heinz; Kaspar, Emanuel; and Kessler, Hans-Joachim, to Schering AG. Unsaturated 22-guanidyl steroids. 3,674,815, Cl. 260-397.000.

Philips Petroleum Company: *See—*
Bjornson, Geir; and Fox, Homer M., 3,674,668.
Uraneck, Carl A.; and Trepka, William J., 3,674,753.

Phillips, Cecil E.; and Bennett, Fay M., to Saf-Pla Corporation. Tape and bandage cutter. 3,673,687, Cl. 30-294.000.

Phillips, Iris L.: *See—*
Phillips, Kenneth W.; and Phillips, Iris L., 3,674,911.

Phillips, John P. Electronic ignition. 3,673,998, Cl. 123-148.00e.

Phillips, Kenneth W.; and Phillips, Iris L. Drum body having integral mounting lugs for drumhead tensioning apparatus. 3,674,911, Cl. 84-411.000.

Phillips Petroleum Company: *See—*
Austin, Oliver K.; and Loewen, Bruno F., 3,674,437.
Box, E. O., Jr.; Drehman, Lewis E.; and Farha, Floyd E., Jr., 3,674,706.
Brady, Donnie G., 3,674,750.
Clay, Harris A., 3,674,887.
Gaeth, Rudolf H.; and Farrar, Ralph C., 3,674,895.
Hughes, William B., 3,674,661.
Kingslow, William G., Jr., 3,674,606.
Kraus, Gerard, 3,675,009.
Louthan, Rector P., 3,674,525.
Pritchard, James E., 3,674,915.
Spann, Donald C., 3,674,618.

Phlipot, Georges A.; Michiels, Marie-Jose-Suzanne and; and de Villeneuve, Yolande-Paule Marie-Josephe, to Eastman Kodak Company. Novel light-sensitive copolyesters. 3,674,745, Cl. 260-75.0va.

Phonocopy, Inc., mesne: *See—*
Salaman, Roy G.; and Picchiottino, John B., 3,674,922.

Photocircuits Corporation: *See—*
Burr, Robert Page, 3,674,914.
Keogh, Raymond J.; and Wilczek, Frank J., 3,674,602.

Picchiottino, John B.: *See—*
Salaman, Roy G.; and Picchiottino, John B., 3,674,922.

Pichel Industries, Inc.: *See—*
Levy, Stanley P., 3,675,078.

Pickard, Henry M. Hattersley. Electrically heated steam-raising autoclave. 3,674,981, Cl. 219-401.000.

Pickett, Oscar A., Jr.: *See—*
Ridgway, James S.; King, Henry L.; and Pickett, Oscar A., Jr., 3,674,752.

Pickholtz, Raymond L., to International Business Machines Corporation. Coherent single sideband phase locking technique. 3,675,131, Cl. 325-329.000.

Pickles, Joseph, to Ferro Manufacturing Crporation. Reclining seat adjuster. 3,673,891, Cl. 74-804.000.

Pickles, Joseph; and Fudala, Chester S., to Ferro Manufacturing Corporation. Tubular valve and body structure. 3,674,238, Cl. 251-309.000.

Piekarski, William F.: *See—*
Manasian, Arthur E.; Papenfuss, Carl J.; and Piekarski, William F., 3,674,139.

Pierce, Harold C. Boxed produce load. 3,673,812, Cl. 62-404.000.

Pieters, William Johan Meindert; Freel, John; and Anderson, Robert Bernard, to Grace, W. R., & Co. Regeneration of sulfur-poisoned Raney nickel catalyst. 3,674,707, Cl, 252-413.000.

Pihlblad, Robert W.: *See—*
Jayne, Max L.; and Pihlblad, Robert W., 3,675,186.

Pilkington Brothers Limited: *See—*
Loukes, David Gordon; and Edwards, Alan, 3,674,453.

Pinta Products, Inc.: *See—*
Pintarelli, Ralph, 3,673,815.

Pintarelli, Ralph, to Pinta Products, Inc. Easily clasped lock for earwire. 3,673,815, Cl. 63-12.000.

Pintschovius, Ulrich: *See—*
Schinzel, Erich; Pintschovius, Ulrich; and Lebkucher, Karl Heinz, 3,674,781.

Pioneer Electronic Corporation: *See—*
Ohshita, Masahide; and Tsukagoshi, Tsunehiro, 3,674,549.

Pioneer Research, Inc.: *See—*
Goldberger, Max, 3,673,801.

Pitteway, Michael Lloyd Victor, to National Research Development Corporation. Apparatus for decoding graphic-display information. 3,675,230, Cl. 340-324.00a.

Pittman, Allen G.; and Wasley, William L., to United States of America, Agriculture. Fluorinated alcohols and their esters. 3,674,820, Cl. 260-408.000.

Pittway Corporation: *See—*
Evesque, Roger A., 3,674,185.
Ewald, Ronald F., 3,674,186.

Pitzalis, Mario; Vargiu, Silvio; and Nistri, Ugo, to Societa Italiana Resine S.p.A. Rosin modified phenolic resins and method of preparing same. 3,674,732, Cl. 260-25.000

Place, Donald E., to Therm-O-Disc, Incorporated. Manual reset thermostat. 3,675,178, Cl. 337-348.000.

Plasse, Paul A., to Polaroid Corporation. Novel laminating media. 3,674,622, Cl. 161-160.000.

Plate, Geerardus G.; and Van Hattem, Nicolaas. Bag-making machine. 3,673,879, Cl. 74-125.500.

Plaxin, Vladimir Nikolaevich: *See—*
Voitsekhovsky, Bogdan Vyacheslavovich; Zuev, Alfred Alexandrovich; Plaxin, Vladimir Nikolaevich; and Makarov, Valery Nikolaevich, 3,673,849.

Plepys, Raymond A.: *See—*
Larsen, Eric R.; Keller, Albert Kent; and Plepys, Raymond A., 3,674,664.

Plessey Handel und Investments A.G.: *See—*
Guest, Ashley W., 3,675,139.

Pleuger, Friedrich-Wilhelm, to Pleuger Unterwasserpumpen GmbH. Submersible electric motor. 3,675,057, Cl. 310-68.00d.

Pleuger Unterwasserpumpen GmbH: *See—*
Pleuger, Friedrich-Wilhelm, 3,675,057.

Plichta, Dietmar G., to Kaiser Aluminum & Chemical Corporation. Workpiece reclaiming apparatus. 3,673,899, Cl. 83-4.000.

Plouzek, Eugene A.: *See—*
McMurray, Mitchell; Plouzek, Eugene A.; and Sturges, James R., 3,674,279.

Plumat, Emile; and Toussaint, Francois, to Glaverbel S.A. Ion exchange of glass with use of carbon dioxide. 3,674,454, Cl. 65-30.000.

Podhora, Fred W.: *See—*
Michel, Raymond S.; and Podhora, Fred W., 3,674,011.

Podmore, Alan William Ronald, to AMP Incorporated, mesne. Flat cable connector. 3,675,180, Cl. 339-17.00f.

Polanyi, Michael L., to American Optical Corporation. Fiberoptic catheter. 3,674,013, Cl. 128-2.05d.

Polaroid Corporation: *See—*
Coughlan, Edward H., 3,673,935.
Grasshoff, J. Michael; and Taylor, Lloyd D., 3,674,478.
Haberlin, Richard J., 3,674,482.
Heijenga, Berend, 3,673,844.
Moodie, Donald E., 3,674,965.
Plasse, Paul A., 3,674,622.

Polinsky, Ronald J.: *See—*
Post, Arthur H., Jr.; Polinsky, Ronald J.; and Dwyer, James L., 3,674,678.

Polyflon Corporation: *See—*
Russo, Paul; and Mowogrozki, Markus, 3,675,093.

Pomara, Johnny B., Jr., 1/2 to El Chico Corporation. Apparatus for measuring and dispensing particulate material. 3,674,178, Cl. 222-56.000.

Pool, Richard L.: *See—*
Krengel, Theodore H.; and Pool, Richard L., 3,673,980.

Pope, Joseph Albert: *See—*
van-der-Ben, Charles Robert; and Pope, Joseph Albert, 3,674,576.

Popoff, Ivan C.: *See—*
Yochum, Daniel William; Haines, Paul Gordon; and Popoff, Ivan C., 3,674,701.

Poppe, Wassily: *See—*
Khelghatian, Habet M.; and Poppe, Wassily, 3,674,536.

Porter, Donald E.; and Burkholder, Jack, to Water and Gas Plastics Products. Plastic valve. 3,674,235, Cl. 251-162.000.

Porter, Kenneth; and Richardson, Brian, to Imperial Chemical Industries Limited. Polycondensation in poly(tetrafluoroethylene) reactor. 3,674,744, Cl. 260-75.00m.

Posse, Rolf-Fred: *See—*
Moll, Franz; Posse, Rolf-Fred; and Ringe, Werner, 3,674,703.

Post, Arthur H., Jr.; Polinsky, Ronald J.; and Dwyer, James L., to Millipore Corporation. Electrophoretic apparatus. 3,674,678, Cl. 204-299.000.

Postma, Lambertus: *See—*
Jonker, Hendrik; Janssen, Casper Johannes Gerardus Ferdinand; and Postma, Lambertus, 3,674,485.

Potlatch Forests, Inc.: *See—*
McMinimy, Lawrence O., 3,674,596.
Pottenger, Charles R., 3,674,434.

Pottenger, Charles R., to Potlatch Forests, Inc. Method and apparatus for determining lignin content. 3,674,434, Cl. 23-230.00r.

Powell, Carl G.: *See—*
Harris, Erik P.; Lean, Eric G.; and Powell, Carl G., 3,675,150.

Power, Gerald P., to Honeywell Inc. Reserve battery having the electrolyte compartment moved by gas pressure. 3,674,566, Cl. 136-114.000.

Powers, John. Drainage system for body cavities. 3,674,033, Cl. 128-350.00r.

PPG Industries, Inc.: *See—*
Dean, Warren E.; and Dorsett, Charles M., 3,674,428.
Erikson, J. Alden; and Gacesa, Gerald R., 3,674,670.
Miller, Richard G., 3,674,517.
Vanderbilt, Byron M.; and Fasnacht, James J., 3,674,542

Practical Innovations, Inc.: *See—*
Martinsen, Lyle J., 3,674,503.

Pratt, David S.: *See—*
Michie, James A.; Pratt, David S.; and Rees, Robert M., 3,675,204.

Prenihan A.G., mesne: *See—*
Johnson, Martin Robert, 3,673,821.

Prete, John A.; and Raudat, John L., to Emhart Corporation. Apparatus for simultaneously loading groups of articles into packing cases. 3,673,756, Cl. 53-61.000.

Preysch, Fritz, to Rieter Machine Works, Ltd. Process for changing supply spools and finish wound cops on draw-twisting and draw-winding machines. 3,673,784, Cl. 57-156.000.

Price, Alson K.: *See—*
Sweeney, Richard F.; Khan, Aziz Urrehman; Price, Alson K.; Jones, Edward Stephen; and Otto, Julian A., 3,674,800.

Price, Alson K.; and Sukornick, Bernard, to Allied Chemical Corporation. Polyfluoroisoalkoxyalkyl pyridinium salts. 3,674,798, Cl. 260-297.00r.

Price, H. C., Co.: *See—*
Harris, Robert J.; and Lee, Irvin J., 3,674,546.

Pricer, W. David: *See—*
Bossen, Douglas C.; Henle, Robert A.; Hsiao, Mu Y.; Maley, Gerald A.; and Pricer, W. David, 3,675,200.

Prill, Arnold L.; and Tarkan, Stuart E., to Chromalloy American Corporation. Tungsten carbide dispersion in age-hardenable cupronickel. 3,674,575, Cl. 148-32.500.

Pritchard, James E., to Phillips Petroleum Company. Electrical cable having an ethylene-1-olefin copolymer as the dielectric material. 3,674,915, Cl. 174-102.00r.

Probat-Werke von Gimborn & Co. K.G.: *See—*
Schabbel, Roland, 3,673,700.

Process Services Inc.: *See—*
Yearout, James D.; and Tolbert, Richard E., 3,674,355.

Procopio, Antonio. Heel wedge for shoe. 3,673,714, Cl. 36-81.000.

Procter & Gamble Company, The: *See—*
Riemersma, Coenraad E., 3,674,221.

Proektnokonstruktorsky Institute Metallurgicheskogo Mashinostroeniya: *See—*
Tselikov, Alexandr Ivanovich; Nosal Vsevolod Vladimirovich; and Verderevsky, Vadim Anatolievich, 3,673,840.

Propst, Robert L. Furniture construction. 3,674,230, Cl. 248-188.800.

Prudnikov, Pavel Alexeevich: *See—*
Zykov, Vladimir Pavlovich; Panov, Alexei Alexandrovich; Prudnikov, Pavel Alexeevich; Khlopin, Mikhail Ivanovich; and Shlyapnikov, Alexei Dmitrievich, 3,675,087.

Prut, Alfred Iosifovich: *See—*
Alperovich, Viktor Borisovich; and Prut, Alfred Iosifovich, 3,673,866.

Pryjmak, Bohdan I., to General Motors Corporation. Electronic demand windshield wiper control. 3,675,106, Cl. 318-443.000.

Pryor, Michael J.; and Anthony, William H., to Olin Mathieson Chemical Corporation. Method of making a composite cable sheathing having an aluminum-silicon layer. 3,674,569, Cl. 148-11.50a.

Prytkov, Evgeny Fedorovich. Tubular incandescent lamp. 3,675,070, Cl. 313-279.000.

Puddington, Ira Edwin: *See—*
Farnand, Joseph Redmond; and Puddington, Ira Edwin, 3,674,461.

Pullen, Eric V.: *See—*
Manoogian, Alex; and Pullen, Eric V., 3,674,048.

Purcell, Chester L.; and Smarook, Walter H., to Union Carbide Corporation. Bonding with ammonium polymer salts. 3,674,896, Cl. 260-897.00b.

Purcell, Harold K.: *See—*
Schwartz, Leonard; Purcell, Harold K.; and Wieselman, Jerome J., 3,674,688.

Puxbaumer, Hans: *See—*
Schleppinghoff, Bernhard; Scherb, Helmut; and Puxbaumer, Hans, 3,674,883.

Quase, Harold G., to Underwater Storage, Inc. Storm sewage treatment. 3,674,687, Cl. 210-86.000.

Quenot, Andre, to Manufacture Quenot Mabo. Folding measuring instrument with improved linkage members. 3,673,692, Cl. 33-118.000.

Questa, Charles R.: *See—*
Trost, Joseph C.; Bock, Robert V.; Gerbstadt, Frederick H.; Graham, William J.; Miles, Wilson D.; and Questa, Charles R., 3,675,209.

Quigley, John A.: *See—*
Beddows, Norman A.; Quigley, John A.; and Wiehl, Warren P., 3,675,058.

R. I. Patents, Inc.: *See—*
Margrave, John L.; Badachhape, Ramachandra B.; Wood, James L.; and Lagow, Richard J., 3,674,432.

Raaf, Helmut Wilhelm: *See—*
Beutel, Rolf Ernst; and Raaf, Helmut Wilhelm, 3,674,859.

Racal-Mobilcal Limited: *See—*
Brown, Anthony R., 3,675,176.

Rachlin, Joel R.; and Neudek, Rudolph Otto. Ventilating air distributing channel. 3,673,945, Cl. 98-40.00d.

Radding, Jason D., to Crown Imports Co., Inc. Chair. 3,674,308, Cl. 297-345.000.

Radscheit, Kurt: *See—*
Stache, Ulrich; Radscheit, Kurt; Fritsch, Werner; Haede, Werner; and Lindner, Ernst, 3,674,779.

Raes, Maurice C.: *See—*
Early, Robert M.; and Raes, Maurice C., 3,674,718.

RAF Corporation: *See—*
Chang, Charles H.; and Randall, David I., 3,674,856.

Ragland, Douglas, to Texas Inventment Builders Co. Air diffuser. 3,673,946, Cl. 98-40.00d.

Ragault, Beatrice. Immersion heater element. 3,674,985, Cl. 219-523.000.

RAI Research Corporation: *See—*
Tuwiner, Sidney B., 3,674,669.

Raiff, Lawrence C.: *See—*
Fischer, Robert E.; Raiff, Lawrence C.; Seybold, James M.; and Zimmerle, Donald F., 3,674,924.

Rainer, Norman B., to Morris, Philip, Incorporated. Process for the removal of oil from the surface of a body of water. 3,674,683, Cl. 210-40.000.

Rainer, Norman B.; and Wilson, Peter A., to Morris, Philip, Incorporated. Microporous structure and method of making the same. 3,674,722, Cl. 260-2.50m.

Rajappa, Srinivasachari, to Ciba-Geigy Corporation. 6-Amino-4-oxo-4,5-dihydro-isothiazolo [5,4-d] pyrimidines. 3,674,786, Cl. 260-247.100.

Rakow, Marvin S.: *See—*
Filachek, Lawrence A.; and Rakow, Marvin S., 3,674,450.

Rama Industrial Heater Co.: *See—*
Hoyt, Edwin D.; and Welsh, Luther, 3,674,982.

Ramey, Leslie C. Windrow attachment for mowers. 3,673,778, Cl. 56-320.200.

Ramillon, Rene. Mounting of wheels on ski poles. 3,673,911, Cl. 85-36.000.

Ramnas Bruks Aktiebolag: *See—*
Svekssson, Stig, 3,673,646.

Ranco Incorporated: *See—*
Adams, Jay C.; and Cook, Russell E., 3,673,811.

Randall, David I.: *See—*
Chang, Charles H.; and Randall, David I., 3,674,856.

Randle, Walter N.; Spieth, Howard H.; and English, William D., to United States of America, Air Force. Portable liquid gas sampler system. 3,673,871, Cl. 73-421.00r.

Randolph, Robert W.; and Dare, Roy R., to ACF Industries, Incorporated. Draft key retainer lock for railway cars. 3,673,914, Cl. 85-5.00n.

Ranz, Erwin: *See—*
Kampfer, Helmut; von Konig, Anita; Ranz, Erwin; von Rintelen, Harald; Mayer, Dietmar; and Sasse, Klaus, 3,674,479.
Kampfer, Helmut; Von Konig, Anita; Ranz, Erwin; von Ritelen, Harald; Mayer, Dietmar; and Sasse, Klaus, 3,674,480.

Rao, Velliyur Nott Padmanabha; Scott, John A.; and Surowiecki, Benjamin M., Jr., to Olin Mathieson Chemical Corporation. Preparation of aromatic isocyanates. 3,674,827, Cl. 260-453.0pc.

Raphael, Leon. Instantaneous sinusoidal orthogonal converter. 3,675,137, Cl. 328-144.000.

Raschle, Josef, to Moulinage & Retorderie de Chavanoz, mesne. Magnetic false twist spindle. 3,673,782, Cl. 57-77.450.

Ratner, George I., to Automatic Close & Lock Corporation. Security locking device. 3,674,360, Cl. 312-222.000.

Ratouis, Roger: *See—*
Boissier, Jacques Robert; and Ratouis, Roger, 3,674,841.

Raudat, John L.: *See—*
Prete, John A.; and Raudat, John L., 3,673,756.

Rausch, John J.: *See—*
Van Thyne, Ray J.; and Rausch, John J., 3,674,571.
Van Thyne, Ray J.; and Rausch, John J., 3,674,572.
Van Thyne, Ray J.; and Rausch, John J., 3,674,573.
Van Thyne, Ray J.; and Rausch, John J., 3,674,574.

Raviv, Josef, to International Business Machines Corporation. Data compaction using modified variable-length coding. 3,675,211, Cl. 340-172.500.

Raviv, Josef; and Wesley, Michael A., to International Business Machines Corporation. Data compaction using variable-length coding. 3,675,212, Cl. 340-172.500.

Ray and Gilbert Proprietary Limited: *See—*
Gilbert, Leslie Arthur, 3,673,691.

Ray, Charles W. Sealing construction for gas mains and the like. 3,674,055, Cl. 138-89.000.

Raynor, Terence Robert: *See—*
Kindell, Colin David; and Raynor, Terence Robert, 3,673,665.

Raytheon Company: *See—*
Hands, Edward, 3,674,945.
Israel, Henry M., 3,675,116.
O'Loughlin, James P., 3,675,115.

RCA Corporation: *See—*
Athanas, Terry George, 3,674,551.
Bonnette, Richard Arthur, 3,673,652.
Caprarola, Leroy J., 3,674,568.
Castellano, Joseph Anthony; and Friel, Ronald Norman, 3,674,342.
Dodd, John Alton, Jr.; and Line, George Harry, 3,674,488.
Goldsmith, Alfred Norton, 3,674,921.
Griepentrog, Dal Frank, 3,674,932.
Kiess, Helmut Gustav, 3,675,096.
Lehmann, William Lester, 3,675,095.
Luedicke, Eduard; and Silver, Robert Steven, 3,675,134.
Strater, Kurt; Hall, William Bernard; Mihalick, Eugene Michael; and Stever, William Charles, 3,673,983.
Zuk, Borys, 3,675,144.

Reddemann, Bernhard Hermann: *See—*
Laue, Hans-Jurgen Rainer; Bohm, Horst Otto; and Reddemann, Bernhard Hermann, 3,674,470.

Rederiaktiebolaget Nordstjernan: *See—*
Jonsson, Per Hjalmar, 3,674,370.

Redmond John A.: *See—*
Emerson, William A.; and Redmond John A., 3,674,971.

Redmore, Derek, to Petrolite Corporation. Imidazoline phosphonic acids. 3,674,804, Cl. 260-309.600.

Reed, Everett E.; and Boynton, James S., to United Tool Processes Corporation. Valve-guide coring tool. 3,674,375, Cl. 408-103.000.

Reel Vortex, Inc.: *See—*
Ferguson, Hugo S., 3,673,773.

Rees, Robert M.: *See—*
Miehle, James A.; Pratt, David S.; and Rees, Robert M., 3,675,204.

Reese, Dale C. Method and apparatus for stimulating the flow of oil wells. 3,674,093, Cl. 166-299.000.

Regie Nationale des Usines Renault: *See—*
Eydieux, Marius, 3,673,655.
Froumajou, Armand; and Falay, Bernard, 3,673,882.
Mangin, Jean-Pierre, 3,673,995.
Richard, Gilbert; and Moronval, Gerard, 3,675,033.
Tixier, Michel, 3,673,837.

Reichhold-Albert-Chemie Aktiengesellschaft: *See—*
Guldenpfenning, Rolf, 3,674,731.

Reifschneider, Walter, to Dow Chemical Company, The. (Alkylthio)alkyl(thio)phenols. 3,674,857, Cl. 260-609.00f.

Reimers, Eberhart. Asynchronous generator device. 3,675,117, Cl. 322-31.000.

Reinhall, Rolf Bertil. Pulp fiberizing grinding plate. 3,674,217, Cl. 241-21.000.

Reinhardt, Dieter: *See—*
Kunke, Arthur; Reinhardt, Dieter; and Glass, Waldemar, 3,675,023.

Reis, Bernhard: *See—*
Becker, Werner; Farwer, Alfward; Frank, Georg; Reis, Bernhard; Rohf, Josef; and Auer, Rupert, 3,674,978.

Reisacher, Josef; Noltemeyer, Friedrich; and Dziggel, Reiner, to Daimler-Benz Aktiengesellschaft. Reciprocating piston internal combustion engine with a cylinder head and cylinder housing consisting of one block. 3,674,000, Cl. 123-193.000.

Reitinger, Johann: *See—*
Mayer Rolf; and Reitinger, Johann, 3,674,977.

Remington Arms Company, Inc.: *See—*
Hameister, Harold L.; and Baszczuk, Andrew R., 3,674,451.

Renga, Fred L.: *See—*
Bristol, Thomas R.; Lakin, Harold; and Renga, Fred L., 3,674,142.

Reni, Cesare; Gualdi, Giorgio; and Lugo, Luigi, to Societa Italiana Resine S.p.A. Method of producing aromatic carboxylic acids from alkylbenzenes. 3,674,845, Cl. 260-524.00r.

Rennick, Leonard E., to Sun Oil Company. Process for preparation of methylcyclopentane and methylcyclohexanecarboxylic acids and esters. 3,674,831, Cl. 260-468.0cb.

Republic National Bank of Dallas Irving Trust Company and Union Bank: *See—*
Coats, John C.; and Wilson, George W., III, 3,674,984.

Research-Cottrell, Inc.: *See—*
Leonard, Gerald D., 3,673,768.

Rethwish, William F., to Rohr Corporation. Non-tilting probe. 3,673,695, Cl. 33-174.001.

Revlon, Inc.: *See—*
Schwarz, Milton H.; and Goldberg, Marvin E., 3,674,631.

Reynolds, Carole A.: *See—*
Benjamin, Thaer L.; and Reynolds, Carole A., 3,674,270.

Reynolds Metals Company: *See—*
Arfert, Horst F. W., 3,673,835.
Brunner, Hans A.; and Vogeleer, George B., 3,673,834.
Dewey, Raymond D.; Mapes, Robert S.; and Jones, Garth S., 3,674,926.

Reynolds, R. J., Tobacco Company: *See—*
Bluhm, Herbert J.; and Fluck, Eugene R., 3,674,806.

Reynolds, Richard W. Sectionalized pontoon apparatus. 3,673,976, Cl. 114-61.000.

Rheiner, Alfred, Jr.; Fernex, Michel; and Herrero, Jose, to Hoffmann-La Roche Inc. Antimalarial compositions. 3,674,872, Cl. 424-229.000.

Rhiando, Maxwell Alvin Earl. Moulding apparatus. 3,674,395, Cl. 18-4.00p.

Rhone-Poulenc S.A.: *See—*
Commarmot, Roger, 3,674,236.
Fabre, Albert, 3,674,628.

Ricci, Vero; and Colalillo, Edward P. Traveling cylinder printer with platen roller driven in closed path. 3,673,960, Cl. 101-269.000.

Richard, Gilbert; and Moronval, Gerard, to Automobiles Peugeot and Regie Nationale des Usines Renault. Device for starting and stopping a diesel engine. 3,675,033, Cl. 290-38.000.

Richardson, Brian: *See—*
Porter, Kenneth; and Richardson, Brian, 3,674,744.

Richardson Company, The: *See—*
Noone, Thomas M., 3,674,547.

Richardson, Howe Scale Company: *See—*
Gile, Richard H., 3,674,097.

Richardson, Wallace L.; Kautsky, George J.; and Barusch, Maurice R., to Chevron Research Company. Antiknock tetramethyl lead concentrate. 3,674,826, Cl. 260-437.00s.

Richmon, Sidney. Automatic elevator stopping apparatus. 3,674,113, Cl. 187-29.00r.

Richmond Marine Limited: *See—*
Thorpe, David, 3,674,170.

Richter, Frederic A.: *See—*
Winsler, Robert J.; and Richter, Frederic A., 3,673,735.

Richter, Gerhard; Kroes, Magdalena; and Frietzsche, Angelika, to Siemens Aktiengesellschaft. Raney mixed catalyst. 3,674,710, Cl. 252-465.000.

Rick, Edward A.: *See—*
Fitton, Peter; and Rick, Edward A., 3,674,825.

Rick, Frank G. Cutting head for a chamfering tool. 3,673,654, Cl. 29-97.000.

Ricoh Co., Ltd.: *See—*
Iwamoto, Minoru, 3,675,228.
Kurokawa, Junji; Arai, Fumiaki; and Usui, Noriyuki, 3,674,474.

Ridgway, James S.; King, Henry L.; and Pickett, Oscar A., Jr., to Monsanto Company. Copolyamides from 1,6- or 2,6-naphthalene dicarboxylic acid. 3,674,752, Cl. 260-78.00r.

Riek, Siegfried: *See—*
Streicher, Heinz; Riek, Siegfried; and Leutwein, Manfred, 3,674,351.

Riemersma, Coenraad E., to Procter & Gamble Company, The. Dynamic stress-strain testing of ribbons of film. 3,674,221, Cl. 242-75.510.

Rieter Machine Works, Ltd.: *See—*
Preysch, Fritz, 3,673,784.

Rigby, Charles Herbert, to Imperial Chemical Industries Limited. Shotgun powder package. 3,673,964, Cl. 102-39.000.

Riley, Norman: *See—*
Averill, Frederick John; and Riley, Norman, 3,674,852.

Rimkus, Elsa: *See—*
Rimkus, Hans, 3,674,586.

Rimkus, Hans; deceased (Rimkus, Elsa; sole heir), to Siemens Aktiengesellschaft. Method for producing metal-to-ceramic junctions. 3,674,586, Cl. 156-196.000.

Ringe, Werner: *See—*
Moll, Franz; Posse, Rolf-Fred; and Ringe, Werner, 3,674,703.

Rink, Richard H., to Huron Manufacturing Corporation. Sensing control for a road building machine. 3,675,229, Cl. 340-267.00r.

Ripsco, William B.; and Dietrich, John W., to Whirlpool Corporation. Door latch and interlock. 3,673,824, Cl. 68-12.00r.

Ristic, Miodrag: *See—*
Welter, Clarence J.; and Ristic, Miodrag, 3,674,860.

RLR Chemical Company, Inc.: *See—*
Schwartz, Leonard; Purcell, Harold K.; and Wieselman, Jerome J., 3,674,688.

Robbins, Samuel B., to General Motors Corporation. Power window reversing unit. 3,675,101, Cl. 318-266.000.

Robelen, Russell J.: *See—*
Dauber, Philip S.; Robelen, Russell J.; and Wierzbicki, John R., 3,675,217.

Roberts, Bisset J. Vehicle ambulance. 3,674,167, Cl. 214-505.000.

Roberts Consolidated Industries, Inc.: *See—*
Holman, John G., 3,674,590.

Roberts, Robert D., to Houdaille Industries, Inc. Centralized lubrication system. 3,674,112, Cl. 184-6.100.

Roberts, Robert J. Electrically energized petroleum de-emulsifier. 3,674,677, Cl. 204-302.000.

Robertson Manufacturing Company, Inc.: *See—*
Robertson, Richard W., 3,673,722.

Robertson, Richard W., to Robertson Manufacturing Company, Inc. Frame construction for displaying pictures and the like. 3,673,722, Cl. 40-152.000.

Robinson, George Henry, to Hygena Limited. Furniture construction. 3,674,327, Cl. 312-257.00.

Robinson, Raymond E., to Blaw-Knox Foundry & Mill Machinery, Inc. Strip tension sensing device. 3,674,193, Cl. 226-100.000.

Robison, Robert S.: *See—*
Aszalos, Adorjan; Robison, Robert S.; Kraemer, Nancy; Henshaw, Jo Ann; and Giannini, Mary Suzanne, 3,674,867.

Robson, Harry Edwin, to Esso Research and Engineering Company. Process for preparing a synthetic crystalline zeolite. 3,674,425, Cl. 23-113.000.

Roche, Andre. Spray-gun control. 3,674,182, Cl. 222-193.000.

Roeder, Robert J., to Kimberly-Clark Corporation. Method for applying pressure sensitive adhesive to sanitary napkins. 3,674,595, Cl. 156-306.000.

Rogers, Kendal T.: *See—*
Spindt, Charles A.; and Rogers, Kendal T., 3,675,063.

Rohde, Robert P.; Welsh, Clarence E.; and Engelhardt, Hans, to General Motors Corporation. Fluid vane motor. 3,674,385, Cl. 418-177.000.

Rohf, Josef: *See—*
Becker, Werner; Farwer, Alfward; Frank, Georg; Reis, Bernhard; Rohf, Josef; and Auer, Rupert, 3,674,978.

Rohner, Friedbert R. Motion transforming device for producing a reciprocating motion. 3,673,876, Cl. 74-37.000.

Rohr Corporation: *See—*
Cadwell, Gilbert C., 3,673,833.
Macdonald, Howard R., 3,673,803.
Rethwish, William F., 3,673,695.

Rohr, Robert Lewis: *See—*
Grandia, Johannes; and Rohr, Robert Lewis, 3,674,004.

Rolatape Corporation: *See—*
Evans, Wallace D., Jr., 3,673,693.

Romanauskas, William A.: *See—*
Mitchell, David F.; and Romanauskas, William A., 3,674,197.

Romanuk, Miroslav; Slama, Karel; and Sorm, Frantisek, to Ceskoslovenska akademie ved. Process of preparing esters of 3,7,11-trimethyl-7,11-dichloro-2-dodecene-1-oic acid. 3,674,819, Cl. 260-408.000.

Romer, Gerhard. Method for compacting fodder or the like. 3,673,951, Cl. 100-38.000.

Ronson Corporation: *See—*
Cox, Ernest Francis, 3,674,980.
Troisoeufs, Pierre, 3,674,412.

Roos, Jan, to U.S. Philips Corporation, mesne. Thin tape or foil made of an electrically insulating synthetic material. 3,674,629, Cl. 161-214.000.

Rose, Henry J.; Turbak, Albin F.; and Leahy, Thomas E., Jr., to Tee-Pak, Inc. Treatment of sausage casing for easy peeling. 3,674,511, Cl. 99-176.000.

Rose, Henry J.; and Turbak, Albin F., to Tee-Pak, Inc. Oil modified cellulosic sausage casings. 3,674,523, Cl. 106-168.000.

Rose, Robert C., to Rosemount Engineering Company. Two-wire current transmitter employing a stabilized current source in one electrical circuit containing control means in series therewith for controlling a direct current amplifier contained in a parallel circuit. 3,675,122, Cl. 324-62.000.

Rosemount Engineering Company: *See—*
Rose, Robert C., 3,675,122.

Rosemount Inc.: *See—*
Serrano, Leonardo V., 3,674,963.

Rosenberg, Daniel: *See—*
Francini, Joseph Pirra; Braxton, James Lopez, Jr.; Lewis, Vera Gloria; McPherson, Frank Henderson; Rosenberg, Daniel; and Sekse, Torkjell, 3,674,988.

Rospatch Corporation: *See—*
Templeton, John Glenn, 3,674,614.

Roth-American, Inc.: *See—*
Tomalinas, William R., Jr., 3,674,262.

Rottmiller, Edmund H., to Stromberg Datagraphix, Inc. Image combining optical system. 3,673,932, Cl. 95-1.100.

Rowe International Inc.: *See—*
Scarnecchia, Gregory; and Scalera, Frank T., 3,674,173.

Ruehlemann, Herbert E.; and Wontorsky, Alexander, to Elco Corporation. Electrical connectors for distribution plate and rack and panel applications. 3,675,185, Cl. 339-126.0rs.

Ruekberg, Herbert S., to Continental Can Company, Inc. Apparatus for filling and adjusting the contents level in flexible containers. 3,674,060, Cl. 141-83.000.

Ruhrchemie AG: *See—*
Gothel, Herbert; and Feichtinger, Hans, 3,674,692.

Ruiz, Jose Antonio. Hinge that takes to pieces. 3,673,636, Cl. 16-175.000.

Rushton, John R., to Bell Telephone Laboratories, Incorporated. Method for applying metal contacts onto diode array. 3,674,498, Cl. 96-119.000.

Russo, Paul; and Mowogrozki, Markus, to Polyflon Corporation. Variable capacitor. 3,675,093, Cl. 317-249.00r.

Russo, Ronald D.: *See—*
Miller, Merlin S.; and Russo, Ronald D., 3,674,148.

Rutledge, Nolan W.; Mercer, Ronald H.; and Hill, Herbert Charles, Jr. Wire coating process and apparatus. 3,673,982, Cl. 118-641.000.

Rutz, Hans; and Gubler, Kurt, to Ciba-Geigy Corporation. Insecticidal and acaricidal compositions. 3,674,874, Cl. 424-273.000.

Ruyle, William V.: *See—*
Shen, Tsung-Ying; Ruyle, William V.; Witzel, Bruce E.; and Walford, Gordon L., 3,674,875.

Ruyle, William V.; Sarett, Lewis H.; and Matzuk, Alexander R., to Merck & Co., Inc. Phenyl benzoic acid compounds in compositions and methods for treating inflammation. 3,674,870, Cl. 424-230.000.

Ryabtsev, Pavel Sergeevich: *See—*
Sidorov, Oleg Pavlovich; Ryabtsev, Pavel Sergeevich; Lastochkin, Rostislav Ivanovich, deceased; Lastochkina, Nadezhda Andreevna; and Lastochkina, Tatyana Rostislavovna, 3,675,102.

Ryan, Joseph D.: *See—*
Beckham, Robert R.; Walters, Emmett L.; Brown, Jack G.; De Rose, Kenneth M.; and Ryan, Joseph D., 3,673,981.

Ryan, Patrick W.: *See—*
Verdol, Joseph A.; and Ryan, Patrick W., 3,674,743.

S. A. Monk Sutton-in-Ashfield Limited: *See—*
Swanwick, Barry Frederick; West, Ernest; and Cuthbertson, John Harry, 3,673,819.

S.A. Sodialox: *See—*
Catulle, Lyderic G., 3,673,674.

S.A. Telecommunications Radioelectriques et Telephoniques T.R.T.: *See—*
Bellanger, Maurice Georges; Daguet, Jacques Lucien; and Duong, Tuan Kiet, 3,674,937.

Saf-Pla Corporation: *See—*
Phillips, Cecil E.; and Bennett, Fay M., 3,673,687.

Safe Way Hydraulics, Inc.: *See—*
Stratman, Paul E., 3,674,051.

Sagawa, Burt K., to Minnesota Mining and Manufacturing Company. Lithographic duplicating method and lithoplate master therefor. 3,673,962, Cl. 101-467.000.

Sage, Stanley J., to American Optical Corporation. Blood coagulation detection device. 3,674,012, Cl. 128-2.10r.

Sagi, Zsigmond, to Bio-Medical Sciences, Inc. Device for holding and dispensing thermometers. 3,674,176, Cl. 221-135.000.

Sakai Chemical Industry Company Limited: *See—*
Tada, Fusao; Inamine, Seiei; and Hatanaka, Tsutomu, 3,674,897.

Sakai, Kiyoshi: *See—*
Kubo, Keishi; and Sakai, Kiyoshi, 3,675,013.

Sakai, Masaaki: *See—*
Ninomiya, Shoichi; Sakai, Masaaki; Oka, Sakae; and Kusunoki, Kikunobu, 3,675,224.

Sakai, Takamasa: *See—*
Seko, Maomi; Ogawa, Shinsaku; Komori, Ryozo; Asuma, Masaro; Isoya, Toshiro; and Sakai, Takamasa, 3,674,653.

Sakka, Toshikatsu; and Takano, Kiyoshi. Automatic DC voltage regulating system. 3,675,111, Cl. 321-18.000.

Salaman, Roy G.; and Picchiottino, John B., to Phonocopy, Inc., mesne. Synchronized or unsynchronized partial response binary signalling. 3,674,922, Cl. 178-6.000.

Salvo Tool & Engineering Company: *See—*
Bedker, Bruce D.; and Wunderlich, Frederich C., 3,673,832.

Sampath, Prativadi I.: *See—*
Artaud, Maurice H.; Johnson, Ronald W.; and Sampath, Prativadi I., 3,674,354.

Samson, Julie Marie, to Subbuteo Sports Games Limited. Random number selector. 3,674,275, Cl. 273-138.00r.

Samuelsson, Lars-Gunnar: *See—*
Wennergren, Johan Jakob; and Samuelsson, Lars-Gunnar, 3,674,632.

Sanchez, Anastacio V. Method of and apparatus for repairing deformed yieldable structures. 3,673,842, Cl. 72-293.000.

Sanderson, Dewey S. C. Cabinet for storing microscopic slides. 3,674,358, Cl. 312-126.000.

Sandoz A.G.: *See—*
Bormann, Gerhard; Gmunder, John; Wilkens, Heinrich; and Troxler, Franz, 3,674,801.
Entschel, Roland; and Steinemann, Willy, 3,674,772.

Sandoz Ltd.: *See—*
Bormann, Gerhard; Gmunder, John; Wilkens, Heinrich; and Troxler, Franz, 3,674,801.
Entschel, Roland; and Steinemann, Willy, 3,674,772.
Von Tobel, Hans, 3,674,783.

Sandoz-Wander, Inc.: *See—*
Buzzolini, Mario G., 3,674,807.
Houlihan, William J., 3,674,882.

Sandrud, Torsten: *See—*
Gustafson, Manfred Wallace; and Sandrud, Torsten, 3,673,657.

Sands, John L.: *See—*
Thomas, Robert M.; Gerns, Fred R.; and Sands, John L., 3,674,788.

Sangster, Arlon G.: *See—*
McNamara, Thomas J.; and Sangster, Arlon G., 3,675,100.

Sanraku Ocean Co., Ltd.: *See—*
Ikeda, Shigebo; Ishizaki, Ayaaki; Hirose, Yoshio; and Shiro, Teruo, 3,674,639.

Sansbury, John R.: *See—*
Jacobson, Stanley I.; and Sansbury, John R., 3,674,227.

Santos, Gerard R.; and Herring, James M., Jr., to Boothe Airside Systems, Inc., mesne. Hydraulic system for a vehicle. 3,674,107, Cl. 180-79.20r.

Sanyo Electric Co., Ltd.: *See—*
Iemura, Toshio; Doi, Masaru; and Shimizu, Yoshiaki, 3,674,944.

Sapers, Ira, to Arkansas Company, Inc. Cycloalkanone or alkyl aryl ketone assisting cationic dye and aromatic polyamide dyeing therewith. 3,674,420, Cl. 8-173.000.

Sarett, Lewis H.: *See—*
Ruyle, William V.; Sarett, Lewis H.; and Matzuk, Alexander R., 3,674,870.

Sargent & Company: *See—*
Filia, George J., 3,673,848.

Sarmiento, Louis, to International Stretch Products, Inc. Warp knit panty-type garment. 3,673,820, Cl. 66-177.000.

Sasaki, Katuyoshi: *See—*
Senoo, Saburo; Fukuoka, Yohei; and Sasaki, Katuyoshi, 3,674,851.

Sasaki, Shiro; and Shibata, Narajiro, to Toyo Rubber Industry Co., Ltd., The. Pneumatic tire with polyester casing, nylon breaker and stereo regular polybutadiene. 3,674,078, Cl. 152-330.000.

Sasse, Klaus: *See—*
Kampfer, Helmut; von Konig, Anita; Ranz, Erwin; von Rintelen, Harald; Mayer, Dietmar; and Sasse, Klaus, 3,674,479.
Kampfer, Helmut; Von Konig, Anita; Ranz, Erwin; von Ritelen, Harald; Mayer, Dietmar; and Sasse, Klaus, 3,674,480.

Satake, Toshihiko. System for preparing parboiled rough rice. 3,674,514, Cl. 99-237.00r.

Sato, Akira: *See—*
Shiba, Keisuke; Hinata, Masanao; Tsuji, Nobuo; and Sato, Akira, 3,674,499.

Sato, Kenji: *See—*
Ueda, Tadao; Sato, Kenji; and Nakamura, Yasusi, 3,674,426.

Sato, Masamichi. Electrodeposition. 3,674,543, Cl. 117-93.000.

Sato, Teruo: *See—*
Yoshiyama, Masami; Sato, Teruo; and Takeda, Hitoshi, 3,674,928.

Satz assor. to said Chernotsky: *See—*
Chernotsky, Alan; and Satz, Richard, 3,674,345.

Satz, Richard: *See—*
Chernotsky, Alan; and Satz, Richard, 3,674,345.

Sauer, Richard W.: *See—*
Statton, Gary L.; and Sauer, Richard W., 3,674,715.

Sauerbruch, Ernst; Scherrer, Donat; and Vogt, Willy, to Fahr Bucher GmbH Gottmadingen. Injection-molding machine with overhanging platen support. 3,674,400, Cl. 425-225.000.

Saunders, Barbara Joan. Hydraulically-operated trolley for hospital beds. 3,673,620, Cl. 5-63.000.

Saunders, Philip G., to Container Graphics Corporation. Creasing rules for cutting dies. 3,673,929, Cl. 93-58.20r.

Sawa, Kenneth B.: *See—*
Gomez, Ray J.; and Sawa, Kenneth B., 3,674,153.

Sawada, Hiraki, to Nissan Motor Company, Limited. Air-pollution preventing system. 3,673,997, Cl. 123-136.000.

Sayanagi, Kazuo, to Canon Kabushiki Kaisha. Stereoscopic photograph system using a stereoscopic attachment to a camera. 3,674,339, Cl. 350-130.000.

Sayles, Charles Philip: *See—*
Muller, Leslie Dyne; Sayles, Charles Philip; and Mozley, Richard Henry, 3,674,144.

Scalera, Frank T.: *See—*
Scarnecchia, Gregory; and Scalera, Frank T., 3,674,173.

Scaravilli, Joseph V., to Jarva, Inc. Gage scraper. 3,674,314, Cl. 299-86.000.

Scarnato, Thomas J.; Gordon, Paul C.; Hunter, Stephen R.; Krage, Paul W.; and Zablocki, Richard A., to International Harvester Company. Harvesting machine. 3,673,779, Cl. 56-503.000.

Scarnecchia, Gregory; and Scalera, Frank T., to Rowe International Inc. Column switching pivoted shelf merchanising machine. 3,674,173, Cl. 221-6.000.

Scazzola, Eugene. Vinificator. 3,673,947, Cl. 99-278.000.

Schaab, Carl K.; Weyrauch, George T.; and Davis, Terry R., to National Cash Register Company, The. Method of fabrication and reinforcing high solids-containing materials. 3,674,589, Cl. 156-245.000.

Schabbel, Roland, to Probat-Werke von Gimborn & Co. K.G. Coffee roasting plant with automatic sampling arrangement. 3,673,700, Cl. 34-89.000.

Schade, Kurt. Device for feeding palletes to a compression station of a roofing tile forming machine. 3,674,402, Cl. 425-306.000.

Schaffer, Detlef: *See—*
Knechtel, Wilhelm Josef; and Schaffer, Detlef, 3,675,010.

Schattner, Robert I. Method for regulating plant growth. 3,674,458, Cl. 71-77.000.

Schell, George W.: *See—*
Griesinger, William K.; Sorgenti, Harold A.; and Schell, George W., 3,674,885.

Schell, Raymond A.; and Kehoe, Lawrence J., to Ethyl Corporation. Preparation of olefins via PT-SN catalyst. 3,674,889, Cl. 260-681.000.

Scher, Herbert I.; and Ungar, Israel S., to Esso Research and Engineering Company. Embossing separator. 3,674,619, Cl. 161-119.000.

Scherb, Helmut: *See—*
Schleppinghoff, Bernhard; Scherb, Helmut; and Puxbaumer, Hans, 3,674,883.

Scherer, Otto; and Stahler, Gerhard, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. 2-0,0-Dithiophosphoryl methyl benzoxazole. 3,674,803, Cl. 260-307.00d.

Schering AG: *See—*
Philippson, Rainer; Hauser, Helmut; Gibian, Heinz; Kaspar, Emanuel; and Kessler, Hans-Joachim, 3,674,815.

Schering Corporation: *See—*
Sherlock, Margaret H.; and Sperber, Nathan, 3,674,832.

Scherrer, Donat: *See—*
Sauerbruch, Ernst; Scherrer, Donat; and Vogt, Willy, 3,674,400.

Schickler, John F.: *See—*
Ackerman, Tracy R.; and Schickler, John F., 3,674,087.

Schiff, Peter. Portable mechanical ventricular assistance device. 3,674,381, Cl. 417-234.000.

Schill, John M., to Keystone Consolidated Industries, Inc. Touch device for cabinet drawer or closure. 3,674,329, Cl. 312-319.000.

Schilling, Eugene D.; and Burchill, Phyllis I., to General Mills, Inc. Forming a filled edible casing. 3,674,506, Cl. 99-109.000.

Schinzel, Erich; Pintschovius, Ulrich; and Lebkucher, Karl Heinz, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Optical brighteners of the benzoxazole series. 3,674,781, Cl. 260-240.00d.

Schlage Lock Company: *See—*
Nelson, Kenneth R., 3,673,831.

Schlenker, Theodore R.: *See—*
Doran, Leo F.; and Schlenker, Theodore R., 3,673,817.

Schleppinghoff, Bernhard; Scherb, Helmut; and Puxbaumer, Hans, to Erdolchemie Gesellschaft mit beschrankter Haftung. Recovering cyclopentadiene values from C[05-fractions. 3,674,883, Cl. 260-666.00a.

Schlickeiser, Klaus, to Buhmann, Walter, Dipl. Ing., Elektro-Apparate-Bau GmbH. Text selection arrangement in automatic print-out devices. 3,675,207, Cl. 340-172.500.

Schlumberger Technology Corporation: *See—*
Cubberly, Walter E., Jr., 3,673,864.
Davis, Billy W., 3,675,193.
Kisling, James W., III, 3,674,091.
Urbanosky, Harold J., 3,674,090.

Schmalbach-Lubeca-Werke Aktiengesellschaft: *See—*
Fahlbush, Hans Joachim, 3,674,171.

Schmalfeld, Paul; Janssen, Heinrich; Bock, Burkhard; Peters, Werner; and Ahland, Erwin, to Metallgesellschaft Aktiengesellschaft and Bergwerks-Verban. Process of briquetting fine-grained cokes with caking coal in a plastic state. 3,674,449, Cl. 44-10.00r.

Schmid, Rolf: *See—*
Lohse, Friedrich; Schmid, Rolf; Fisch, Willy; and Batzer, Hans, 3,674,746.

Schmitz, Wolfgang: *See—*
Korner, Gerhard; Schmitz, Wolfgang; Dabringhausen, Friedhelm; and Gruber, Lothar, 3,674,957.

Schmutzler, David L.; and Schmutzler, John H., to Jadair, Incorporated. Method and apparatus for clarifying liquids. 3,674,145, Cl. 210-73.000.

Schmutzler, John H.: *See—*
Schmutzler, David L.; and Schmutzler, John H., 3,674,145.

Schnegg, Robert; Pelousek, Herbert; Dippolhofer, Robert; Wiegreffe, Wolfgang; Voelz, Hans-Georg; and Kienast, Gerhard, to Farbenfabriken Bayer Aktiengesellschaft. Process for the production of high molecular weight linear polyesters. 3,674,747, Cl. 260-75.00r.

Schneider, Alan A.; and Moser, James R., to Catalyst Research Corporation. Primary cells and iodine containing cathodes therefor. 3,674,562, Cl. 136-83.00r.

Schneider, Harold N.: *See—*
Titus, Charles H.; and Schneider, Harold N., 3,674,912.

Schneider-Simpson, Inc.: *See—*
Birtchet, Ralph D., 3,673,930.

Schoenbrunn, Erwin Frederick; and Sinha, Vinod Tarkeshwar, to American Cyanamid Company. Hydration of nitriles using metal salts of cation exchange resins. 3,674,848, Cl. 260-558.00r.

Scholl, Rolland D., to Caterpillar Tractor Company. Durable electrical switch. 3,675,169, Cl. 335-205.000.

Scholz, Gunther, to Gebruder Junghans G.m.b.H. Device for the magnetic arresting of a switch wheel of a timekeeping device. 3,673,792, Cl. 58-116.000.

Schommer, Alfred: *See—*
Oberst, Hermann; Ebigt, Joachim; Duve, Gunther; and Schommer, Alfred, 3,674,624.
Oberst, Hermann; Ebigt, Joachim; Duve, Gunther; and Schommer, Alfred, 3,674,625.

Schott, Dan J.: *See—*

Armstrong, James B.; Schott, Dan J.; and Warne, Leland C., 3,675,066.

Schou, Jorgen Martin Dohm, to Kefalas A/S. Crystalline fungimycin, a method of preparing same, compositions and use. 3,674,868, Cl. 424-122.000.

Schrotz, Kurt; and Becker, Werner. Labeling devices. 3,674,609, Cl. 156-577.000.

Schuierer, Manfred, to Bruckner-Apparatebau Michelstadt GmbH. Drum machine. 3,673,825, Cl. 68-20.000.

Schulz, Robert D., Jr. Integral tops and bowls for sinks and the like and methods of making the same. 3,673,617, Cl. 4-187.000.

Schulze, James L., Sr.: *See—*
Barnett, Richard C.; Dark, Joe W.; and Schulze, James L., Sr., 3,674,005.

Schur, Barbara Ellen. Board game apparatus. 3,674,274, Cl. 273-135.0ac.

Schwartz, Leonard; Purcell, Harold K.; and Wieselman, Jerome J., to RLR Chemical Company, Inc. Wrinkle removing product and process. 3,674,688, Cl. 252-8.800.

Schwarz, Milton H.; and Goldberg, Marvin E., to Revlon, Inc. Artificial hair. 3,674,631, Cl. 162-149.000.

Schwedhelm, Diether: *See—*
Dohmeier, Arnold; and Schwedhelm, Diether, 3,673,765.

Schweizer, Max Norman; and Moran, Arthur Stone. Self-lubricated shaft bearing for linear and rotary motion. 3,674,324, Cl. 308-6.00r.

Sciaky, Roberto: *See—*
Baldratti, Giuliana; Consonni, Alberto; and Sciaky, Roberto, 3,674,817.

Sciuto, Joseph, Jr.: *See—*
Hartman, Leonard; and Sciuto, Joseph, Jr., 3,674,052.

SCM Corporation: *See—*
Guzak, John, Jr., 3,673,957.
Hedman, Clarence L., Jr.; and Myrenne, Karl-Dieter S., 3,674,341.

Scott, John A.: *See—*
Rao, Velliyur Nott Padmanabha; Scott, John A.; and Surowiecki, Benjamin M., Jr., 3,674,827.

Scott, John W.: *See—*
Mitchell, David S.; Bridge, Alan G.; and Scott, John W., 3,674,682.

Scott Paper Company: *See—*
Kirk, Mahlon Randall, 3,674,726.

Scoville, Andrew E., to American Multi-Lert Corporation. Self-aligning motion detectors. 3,674,950, Cl. 200-61.480.

Scrine, Gerald Robin: *See—*
Hales, Kenneth Calvert; and Scrine, Gerald Robin, 3,673,810.

Seal Spout Europe S.p.A.: *See—*
Taddei, Carlo, 3,673,663.

Seaquist Valve Company; division of: *See—*
Evesque, Roger A., 3,674,185.

Seaquist Valve Company; divison of: *See—*
Ewald, Ronald F., 3,674,186.

Sechler, Robert F., to International Business Machines Corporation. Independent read-write monolithic memory array. 3,675,218, Cl. 340-173.0ff.

Secunda, Kenneth, to Federal-Mogul Corporation. Roller bearing assembly fixture. 3,673,661, Cl. 29-201.000.

Sedlarik, Jaroslav: *See—*
Havlas, Jiri; and Sedlarik, Jaroslav, 3,673,649.

Seeger, Horst K.: *See—*
Carter, Edward H., Jr.; Park, Vernon K.; and Seeger, Horst K., 3,674,765.

Seegmiller, Wan: *See—*
Young, Bruce O.; Walker, Grant W.; Ford, Duane B.; and Seegmiller, Wan, 3,674,115.

Sehnal, Jan: *See—*
Zaruba, Wenzel; and Sehnal, Jan, 3,673,874.

Seidel, Harold, to Bell Telephone Laboratories, Incorporated. Impedance-matching network. 3,675,164, Cl. 333-32.000.

Seko, Maomi; Ogawa, Shinsaku; Komori, Ryozo; Asuma, Masaro; Isoya, Toshiro; and Sakai, Takamasa, to Asahi Kasei Kogyo Kabushiki Kaisha. Method of the purification of catholytes. 3,674,653, Cl. 203-34.000.

Sekse, Torkjell: *See—*
Francini, Joseph Pirra; Braxton, James Lopez, Jr.; Lewis, Vera Gloria; McPherson, Frank Henderson; Rosenberg, Daniel; and Sekse, Torkjell, 3,674,988.

Self, James M., to Du Pont de Nemours, E. I., and Company. Moldable metal powder compositions. 3,674,526, Cl. 106-286.000.

Sellers, John. Loom and woven tape made therefrom. 3,674,058, Cl. 139-124.00a.

Sellet, Lucien, to Diamond Shamrock Corporation. Process of treating leather with alkoxylated Mannich compositions, and optionally tanning agents, and products thereof. 3,674,415, Cl. 8-94.210.

Selley, Wilbur-Webb, to Vactronics Incorporated. Simplified mounting arrangement. 3,674,287, Cl. 285-7.000.

Sells, Bertram C. Board game apparatus. 3,674,273, Cl. 273-134.0aa.

Sendor, Mortimer S., to Bookwrights, Inc. Apparatus for making plastic book covers. 3,674,399, Cl. 18-4.00c.

Sennewald, Kurt: *See—*
Vogt, Wilhelm; Sennewald, Kurt; and Glaser, Hermann, 3,674,839.

Senoo, Saburo; Fukuoka, Yohei; and Sasaki, Katuyoshi, to Asahi Kasei Kogyo Kabushiki Kaisha. Process for the preparation of aliphatic tertiary amides. 3,674,851, Cl. 260-561.00r.

Serata, Shosei. Method of controlling long term safety of underground entry system by regulating formation of stress envelopes. 3,673,807, Cl. 61-35.000.

Serkov, Anatoly Gavrilovich: *See—*
Berlin, Zalman Leivikovich; Bagrov, Oleg Nikolaevich; Maslovsky, Gennady Vasilievich; Serkov, Anatoly Gavrilovich; and Yakimovich, Viktor Yakovlevich, 3,673,988.

Serpas, Luis B.: *See—*
Ellers, Frederick S.; Small, Sam W.; and Serpas, Luis B., 3,674,062.

Serrano, Leonardo V., to Rosemount Inc. Measurement apparatus having non-contact electrical coupling to components on a moving surface. 3,674,963, Cl. 219-10.610.

Sevenska Dalaregister AB: *See—*
Skoog, Hilding G. A., 3,675,109.

Seybold, James M.: *See—*
Fischer, Robert E.; Raiff, Lawrence C.; Seybold, James M.; and Zimmerle, Donald F., 3,674,924.

Shaffer, John W., to Sylvania Electric Products, Inc. Photoflash lamp. 3,674,411, Cl. 431-93.000.

Shaham, Ilan: *See—*
Waterman, Jacques Abraham; Shaham, Ilan; and Shorr, Leonard M., 3,674,756.

Shaheen, John. Remote vehicle starting system. 3,675,032, Cl. 290-38.00c.

Shandon-Elliott Limited: *See—*
Howells, Francis Thomas; and Ashe, Anthony Grenfell, 3,674,040.

Shank, Charles P.: *See—*
Bayless, Robert G.; Shank, Charles P.; Botham Ruth A.; and Werkmeister, Dennis W., 3,674,704.

Shanni, Vincent: *See—*
Boassy, Emil J.; and Shanni, Vincent, 3,673,751.

Sharp, Alister Kimball: *See—*
Lilly, Malcolm Douglas; Kay, Garth, and; Wilson, Richard John Hugh; and Sharp, Alister Kimball, 3,674,767.

Shatterproof Glass Corporation: *See—*
Jendrisak, Joseph E.; and McKelvey, Harold E., 3,673,900.

Shaw, Arthur R.: *See—*
Bennett, Ronald W.; Parker, Donald L.; and Shaw, Arthur R., 3,675,197.

Sheets, Harry L.; and Booth, Robert W. Football blocking and tackling sled. 3,674,265, Cl. 273-55.00r.

Sheffield, Jackson George: *See—*
Sturgeon, George Mc Hardy; and Sheffield, Jackson George, 3,674,390.

Shell Oil Company: *See—*
Haycock, Ernest W., 3,674,662.
Stewart, Richard C.; and Creamer, Edward L., 3,674,469.

Shellenberger, Donald J., to Jones & Laughlin Steel Corporation. Closed end tuyere coil. 3,674,248, Cl. 266-41.000.

Shellman, Kenneth S., Sr. Table tennis paddle construction with improved handle means therefor. 3,674,268, Cl. 273-76.000.

Shen, James T. Ouchterlony technique apparatus. 3,674,438, Cl. 23-253.00r.

Shen, Tsung-Ying; Witzel, Bruce E.; and Walford, Gordon L., to Merck & Co., Inc. Substituted phenylsulfamyl salicylic acids and derivatives thereof. 3,674,843, Cl. 260-519.000.

Shen, Tsung-Ying; Jones, Howard; Witzel, Bruce E.; and Walford, Gordon L., to Merck & Co., Inc. Salicylic acid derivatives. 3,674,844, Cl. 260-519.000.

Shen, Tsung-Ying; Ruyle, William V.; Witzel, Bruce E.; and Walford, Gordon L., to Merck & Co., Inc. Treatment of inflammation. 3,674,875, Cl. 424-285.000.

Shephard, Robert Basil; Clachan, Margaret Loudon; Kennedy, David Rankine; and Abbott, Terence Arnold, to Bexford Limited. Synthetic polyester film assemblies. 3,674,531, Cl. 117-7.000.

Shepherd, Thomas H.; and Gould, Francis E., to National Patent Development Corporation. Surgical sutures. 3,674,901, Cl. 424-27.000.

Sherlock, Margaret H.; and Sperber, Nathan, to Schering Corporation. Cyclopropane carboxylic acid derivatives. 3,674,832, Cl. 260-469.000.

Sherritt Gordon Mines Limited: *See—*
Evans, David J. I.; and Weir, Donald Robert, 3,674,465.

Sherwood Medical Industries Inc.: *See—*
Burlis, Norbert W.; and Talonn, Daniel A., 3,674,404.

Shiba, Keisuke; Hinata, Masanao; Tsuji, Nobuo; and Sato, Akira, to Fuji Photo Film, Ltd. Silver halide photographic supersensitized emulsion. 3,674,499, Cl. 96-123.000.

Shibata, Narajiro: *See—*
Sasaki, Shiro; and Shibata, Narajiro, 3,674,078.

Shichijo, Yoshihisa; and Tsujihara, Mamoru, to Asahi Kasei Kogyo Kabushiki Kaisha. Treatment of cellulosic fabrics. 3,674,416, Cl. 8-116.300.

Shideler, Paul J.: *See—*
Koehler, Albert T.; Shideler, Paul J.; and Dohogne, Linus E., 3,673,950.

Shields, Dean W., to Owens-Illinois, Inc. Tree shear. 3,674,066, Cl. 144-34.00e.

Shikoku Kasei Koygo Company Limited: *See—*

Matsubara, Mitio; Yagyu, Shigeyuki; and Takeuchi, Satoru, 3,674,533.

Shima, Hiroshi: *See*—
Kurauchi, Noritaka; Tada, Shotaro; Shima, Hiroshi; Hiraoka, Susumu; Nagao, Taichiro; Koyama, Masahiro; Shiraishi, Satoshi; Shindo, Masuo; and Kobayashi, Yoshinobu, 3,674,990.

Shimadzu Seisakusho Ltd.: *See*—
Tsuda, Motohisa; and Yoshimura, Masao, 3,675,027.

Shimamura, Isao: *See*—
Iijima, Yoo; Shimamura, Isao; Kondo, Tokiharu; and Haruhike, Iwano, 3,674,491.

Shimizu, Yoshiaki: *See*—
Iemura, Toshio; Doi, Masaru; and Shimizu, Yoshiaki, 3,674,944.

Shindo, Masuo: *See*—
Kurauchi, Noritaka; Tada, Shotaro; Shima, Hiroshi; Hiraoka, Susumu; Nagao, Taichiro; Koyama, Masahiro; Shiraishi, Satoshi; Shindo, Masuo; and Kobayashi, Yoshinobu, 3,674,990.

Shinkawa, Yuichi. Process for manufacturing instant hamburger steak. 3,674,505, Cl. 99-108.000.

Shintani, Sotokichi: *See*—
Yanagidaira, Hidetaka; Kawai, Kazuo; and Shintani, Sotokichi, 3,674,996.

Shionogi & Co., Ltd.: *See*—
Hayakawa, Shohei; Kanematsu, Yoshiko; and Fujiwara, Takashi, 3,674,842.

Shipowners Refrigerated Cargo Research Association: *See*—
Hales, Kenneth Calvert; and Scrine, Gerald Robin, 3,673,810.

Shiraishi, Satoshi: *See*—
Kurauchi, Noritaka; Tada, Shotaro; Shima, Hiroshi; Hiraoka, Susumu; Nagao, Taichiro; Koyama, Masahiro; Shiraishi, Satoshi; Shindo, Masuo; and Kobayashi, Yoshinobu, 3,674,990.

Shiro, Teruo: *See*—
Ikeda, Shigeho; Ishizaki, Ayaaki; Hirose, Yoshio; and Shiro, Teruo, 3,674,639.

Shlyapnikov, Alexel Dmitrievich: *See*—
Zykov, Vladimir Pavlovich; Panov, Alexei Alexandrovich; Prudnikov, Pavel Alexeevich; Khlopin, Mikhail Ivanovich; and Shlyapnikov, Alexel Dmitrievich, 3,675,087.

Shoap, Stephen Davis, to Bell Telephone Laboratories, Incorporated. Serial gray-to-binary translator with clock transition timing. 3,675,236, Cl. 340-347.0dd.

Shorr, Leonard M.: *See*—
Waterman, Jacques Abraham; Shaham, Ilan; and Shorr, Leonard M., 3,674,756.

Shortway, Harry A.: *See*—
Petry, Robert K.; and Shortway, Harry A., 3,674,611.

Showa Zoki Co., Ltd.: *See*—
Watanabe, Shigeru; and Ito, Michinobu, 3,673,745.

Shunichiro, Nishizaki; and Akira, Fukami, to Mitsubishi Electric Corporation. Copolymer of poly(quinozolone and imide) and process for producing the same. 3,674,741, Cl. 260-47.0cp.

Shur-Lok Corporation: *See*—
Hoegee, Robert A., 3,674,075.

Shuto, Yoshitaka. Sectional golf bag. 3,674,072, Cl. 150-1.50r.

Siai-Marchetti S.p.A.: *See*—
Monti, Giancarlo, 3,674,379.

Sicard, Marcel Clarence, to AMF Incorporated. Filtration apparatus. 3,674,154, Cl. 210-456.000.

Siddall, John B., to Zoecon Corporation. Photochemical process for preparing a bicyclic lactone. 3,674,663, Cl. 204-158.00r.

Sidorov, Oleg Pavlovich; Ryabtsev, Pavel Sergeevich; Lastochkin, Rostislav Ivanovich, deceased; Lastochkina, Nadezhda Andreevna; and Lastochkina, Tatyana Rostislavovna; administrators. Dynamoelectric machine. 3,675,102, Cl. 310-266.000.

Sieber, Charles: *See*—
Gruenig, Rudolf; Berger, Erwin; and Sieber, Charles, 3,674,200.

Siedband, Melvin P.; Duffy, Philip A., Jr.; and James, Jack L., to CGR Medical Corporation, mesne. X-ray tube control circuitry. 3,675,020, Cl. 250-93.000.

Siegel, Edgar, to Farbenfabriken Bayer Aktiengesellschaft. Phenyl-azophenol dyestuffs. 3,674,771, Cl. 260-206.000.

Siemens Aktiengesellschaft: *See*—
Fahrbach, Kurt Erich, 3,675,192.
Hermstein, Wolfgang; and Mollenbeck, Klaus, 3,675,123.
Heywang, Walter; and Sirtl, Erhard, 3,674,552.
Paul, Bernt, 3,675,018.
Richter, Gerhard; Kroes, Magdalena; and Frietzsche, Angelika, 3,674,710.
Rimkus, Hans, 3,674,586.
Stadler, Georg; and Vogg, Erwin, 3,674,694.
Voelkl, Walter, 3,675,094.

Signetics Corporation: *See*—
Kocsis, Joseph; and Cauge, Thomas Peter, 3,675,092.

Silken, Howard. Doweling jig. 3,674,376, Cl. 408-115.000.

Silver, Robert Steven: *See*—
Luedicke, Eduard; and Silver, Robert Steven, 3,675,134.

Silverberg, Morton, to Xerox Corporation. Enclosed migration imaging system. 3,674,475, Cl. 96-1.300.

Silverberg, Morton, to Xerox Corporation. Methods and apparatus for operating paired corotrons of opposite polarity. 3,675,011, Cl. 250-49.5zc.

Simakura, Masao: *See*—
Murashige, Hidekichi; Simakura, Masao; and Nakazawa, Kazuo, 3,673,754.

Simco; a co-partnership consisting of: *See*—
Bauer, Eddie, 3,673,727.

Simms, James B. Cam operated fetachable carton handle. 3,674,300, Cl. 294-31.200.

Simon, Jean Ellen, to Colgate-Palmolive Company. Flexible film bag with tear strip for closure. 3,674,135, Cl. 206-58.000.

Singh, Shanker, to International Business Machines Corporation. Fast adder for multi-number additions. 3,675,001, Cl. 235-175.000.

Sinha, Vinod Tarkeshwar: *See*—
Schoenbrunn, Erwin Frederick; and Sinha, Vinod Tarkeshwar, 3,674,848.

Sirtl, Erhard: *See*—
Heywang, Walter; and Sirtl, Erhard, 3,674,552.

Sjostrom, Gosta; deceased (by Sjostrom, Ruth; and Sjostrom, Kjell; heirs). System for arresting the movement of objects travelling along a defined path. 3,674,117, Cl. 187-67.000.

Sjostrom, Kjell: *See*—
Sjostrom, Gosta, 3,674,117.

Sjostrom, Ruth: *See*—
Sjostrom, Gosta, 3,674,117.

SKF Kugellagerfabriken GmbH: *See*—
Breitenbach, Karl-Heinz, 3,673,781.

Skinner, John George: *See*—
Goldrick, Michael Richard; Kerwin, Robert Eugene; and Skinner, John George, 3,674,492.

Skoog, Hilding G. A., to Sevenska Dalaregister AB. Information transmitting device. 3,675,109, Cl. 321-2.000.

Slama, Karel: *See*—
Romanuk, Miroslav; Slama, Karel; and Sorm, Frantisek, 3,674,819.

Small, Sam W.: *See*—
Ellers, Frederick S.; Small, Sam W.; and Serpas, Luis B., 3,674,062.

Smarook, Walter H.: *See*—
Purcell, Chester L.; and Smarook, Walter H., 3,674,896.

Smiley, Yale H., to Uniroyal Ltd. Fabric packaging. 3,674,222, Cl. 242-77.100.

Smith & Wesson Chemical Company, Inc.: *See*—
Crewe, John Mervyn, 3,674,174.

Smith, A. O., Corporation: *See*—
Petrigalla, Andrew, 3,675,105.

Smith, Barton K.: *See*—
Bell, Jack T.; and Smith, Barton K., 3,673,764.

Smith, Hampton D., Jr.: *See*—
Obenland, Clayton O.; Papetti, Stelvio; and Smith, Hampton D., Jr., 3,674,853.

Smith, James I. Rotary blade apparatus. 3,673,776, Cl. 56-16.900.

Smith, James P., to Ostby & Barton Co. Electrical connector. 3,675,189, Cl. 339-221.00r.

Smith Kline & French Laboratories: *See*—
Kaiser, Carl; and Zirkle, Charles L., 3,674,792.

Smith, Peter B., to Dynamics Corporation of America. Standby power system. 3,675,112, Cl. 322-4.000.

Smith, R. M., Inc.: *See*—
Gilmour, Robert A., 3,674,138.

Smith, Robert M., to Hy-Dynamic Co., The, mesne. Rough terrain vehicle. 3,674,162, Cl. 214-138.00r.

Smith, Roger K., to International Fineblanking Corporation. Quick-change tooling for fineblanking presses. 3,673,908, Cl. 83-685.000.

SMW Atlanta, Inc., mesne: *See*—
Wells, Robert A.; and Strobe, Carl J., 3,674,172.

Snaper, Alvin A.; Gregory, George D.; and Munroe, Miles R., to Advaced Patent Technology, Inc. Planar random access ferroelectric computer memory. 3,675,220, Cl. 34-173.200.

Snitzer, Elias: *See*—
Landry, Robert J.; and Snitzer, Elias, 3,675,155.

Snyder, George P.: *See*—
Nugent, Reginald F.; and Snyder, George P., 3,674,975.

Snyder, Harold I.; and Trexler, Richard R. Plastic bandage or splint. 3,674,021, Cl. 128-90.000.

Snyder, John Sommerville, to Sybron Corporation. Systems involving division. 3,675,003, Cl. 235-196.000.

Societa Farmaceutici Italia: *See*—
Baldratti, Giuliana; Consonni, Alberto; and Sciaky, Roberto, 3,674,817.

Societa Italiana Resine S.p.A.: *See*—
Pitzalis, Mario; Vargiu, Silvio; and Nistri, Ugo, 3,674,732.
Reni, Cesare; Gualdi, Giorgio; and Lugo, Luigi, 3,674,845.

Societe Anonyme Automobiles Citroen: *See*—
Grosseau, Albert, 3,674,544.

Societe Anonyme D.B.A.: *See*—
Mangold, James, 3,674,317.

Societe anonyme dite: Compagnie Gervais-Danone: *See*—
Carasso, Daniel, 3,674,507.

Societe Anonyme dite: L'Oreal: *See*—
Bore, Pierre, 3,674,038.
Kalopissis, Gregoire; and Vanlerberghe, Guy, 3,674,902.

Societe Anonyme dite: Roussel-UCLAF: *See*—
Boissier, Jacques Robert; and Ratouis, Roger, 3,674,841.

Societe Industrielle Honeywell Bull Societe Anonyme: *See*—
Jammaud, Andre, 3,675,084.

Societe Lannionaise d'Electronique: *See*—
Jacob, Jean-Baptiste, 3,674,938.

Societe Nouvelle Spidem: *See*—
Diolot, Lucien, 3,673,843.

Societe Parisienne des Anciens Etablissements Barbier, Benard & Turenne: *See*—
Benard, Christian Louis Georges, 3,675,024.

Solcova, Jitka: *See*—
Kralicek, Jaroslav; Kubanek, Vladimir; Solcova, Jitka; and Kondelikova, Jaroslava, 3,674,751.

Sole, Lloyd H.: *See*—
Casey, Ernest D.; and Sole, Lloyd H., 3,673,629.

Soli, Giorgio, to United States of America, Navy. Bacterial lamp. 3,674,648, Cl. 195-127.000.

Solitron Devices, Inc.: *See*—
Edwards, Lon E., 3,675,148.

Somich, Robert T., to Monsanto Company. Boron phosphate catalyst. 3,674,708, Cl. 252-432.000.

Sorgenti, Harold A.: *See*—
Griesinger, William K.; Sorgenti, Harold A.; and Schell, George W., 3,674,885.

Sorm, Frantisek: *See*—
Romanuk, Miroslav; Slama, Karel; and Sorm, Frantisek, 3,674,819.

Sorvall, Ivan, Inc.: *See*—
Mitchell, David F.; and Romanauskas, William A., 3,674,197.

Soukup, Dale F.: *See*—
Heyer, William T.; and Soukup, Dale F., 3,674,237.

Southco, Inc.: *See*—
Barry, John K., 3,673,913.

Southiere, Bertrand, to Bombardier Limited. Chain tensioning device for snowmobile type transmission. 3,673,884, Cl. 74-242.11s.

Spacek, George Ctirad. Fuel consumption indicator. 3,673,863, Cl. 73-114.000.

Spangler, Richard M., to Hewlett-Packard Company. Stored data recall means for an electronic calculator. 3,675,213, Cl. 340-172.500.

Spann, Donald C., to Phillips Petroleum Company. Imitation sliver knit pile fabric. 3,674,618, Cl. 161-64.000.

Sperber, Nathan: *See*—
Sherlock, Margaret H.; and Sperber, Nathan, 3,674,832.

Sperry Rand Corporation: *See*—
Armstrong, James B.; Schott, Dan J.; and Warne, Leland C., 3,675,066.
Ashley, James R.; and Palka, Frank M., 3,675,124.
Caulfield, Henry John, 3,674,331.
Edstrom, Woodrow O.; and Norling, Charles H., 3,673,669.
Francini, Joseph Pirra; Braxton, James Lopez, Jr.; Lewis, Vera Gloria; McPherson, Frank Henderson; Rosenberg, Daniel; and Sekse, Torkjell, 3,674,988.
Jeffery, Robert W.; Brown, Robert A., Jr.; and Cullen, Allen F., 3,673,978.
Lincoln, Andrew J.; and Menger, Karl S., 3,675,000.
Metz, Louis C., 3,675,234.
Warne, Leland C., 3,675,065.

Spiegelberg, Hans: *See*—
Edenhofer, Albrecht; and Spiegelberg, Hans, 3,674,799.

Spieth, Howard H.: *See*—
Randle, Walter N.; Spieth, Howard H.; and English, William D., 3,673,871.

Spindt, Charles A.; and Rogers, Kendal T., to Stanford Research Institute. High current continuous dynode electron multiplier. 3,675,063, Cl. 313-104.000.

Spinski, Victor, to University of Delaware. Photographs on ceramic or ceramic-like srfaces. 3,674,484, Cl. 96-34.000.

Sponcel Limited: *See*—
Jones, David Thomas; Jowett, George Edward; and Webster, Edward Ernest, 3,674,030.

Spry, Douglas O., to Lilly, Eli, and Company. Cephalosporins via penicillin sulfoxide conversion. 3,674,775, Cl. 260-239.100.

Square D Company: *See*—
Kroeger, Jerry E., 3,674,962.
Stanback, Harris I., 3,675,085.

Squibb, E. R., & Sons, Inc.: *See*—
Aszalos, Adorjan; Robison, Robert S.; Kraemer, Nancy; Henshaw, Jo Ann; and Giannini, Mary Suzanne, 3,674,867.

Stache, Ulrich; Radscheit, Kurt; Fritsch, Werner; Haede, Werner; and Lindner, Ernst, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. 4-Chloro-3-oxo-14-hydroxy- or 4-chloro-3,14-dihydroxy-carda-4,20(22)-dienolides and process for their manufacture. 3,674,779, Cl. 260-239.570.

Stadler, Georg; and Vogg, Erwin, to Siemens Aktiengesellschaft. Manganese zinc-ferrite core. 3,674,694, Cl. 252-62.590.

Stahler, Gerhard: *See*—
Scherer, Otto; and Stahler, Gerhard, 3,674,803.

Stahnke, Edward J., to Interlake, Inc. Welded joint strapping machine. 3,674,972, Cl. 19-56.000.

Staiger, Ulrich, to Eastman Kodak Company. Viewer. 3,674,350, Cl. 353-27.000.

Staker, William C., to General Motors Corporation. Potential controlled oscillator. 3,675,160, Cl. 331-113.00r.

Stamicarbon N.V.: *See*—
Kaasenbrood, Petrus J. C.; and van Nassau, Petrus J. M., 3,674,847.
van Asperen, Pieter J.; and van der Loos, Jozef L. M., 3,674,658.

Stampfli, Harald, to Lucifer S.A. Electromagnetic system controlling a movable member through the agency of a magnetic field. 3,675,040, Cl. 307-133.000.

Stanback, Harris I., to Square D Company. Panel board for stacked electrical devices with sealing covers. 3,675,085, Cl. 317-106.000.

Standard Oil Company: *See*—
Hoekstra, Gerald B.; and Jacobs, Robert B., 3,674,680.
Karll, Robert E.; and Lee, Richard J., 3,674,691.

Standing, Arthur F., to Communications Satellite Corporation. Reduction of intermodulation products. 3,675,138, Cl. 328-163.000.

Stanford Research Institute: *See*—
Spindt, Charles A.; and Rogers, Kendal T., 3,675,063.

Stanley, Robert W.; Ames, Horace L.; and Jennings, Peter H., to Brenda Mines, Ltd. Process for purifying molybdenite concentrates. 3,674,424, Cl. 23-15.00w.

Stanway, Edward. Apparatus for the fluid treatment of fabrics in rope form. 3,673,826, Cl. 68-176.000.

Starnes, William H., Jr., to Esso Research and Engineering Company. 3,5 Dialkyl-4-hydroxy benzyl- trialkyl phosphonium chlorides and corresponding zwitterions. 3,674,854, Cl. 260-606.50f.

Startin, Kenneth John; and Ahmed, Kamal, to AMP Incorporated, mesne. Multiple cold crimp sleeve plug and socket. 3,675,188, Cl. 339-220.00r.

Statton, Gary L.; and Sauer, Richard W., to Atlantic Richfield Company. Solid soluble polymers from 4-vinylcyclohexene diepoxide. 3,674,715, Cl. 260-2.0ep.

Stauffer Chemical Company: *See*—
Giolito, Silvio Louis, 3,674,697.
Weil, Edward D., 3,674,698.

Stawarski, Chester C.; Gerding, Charles C.; and Adams, Richard T. Releasable supporting apparatus. 3,673,869, Cl. 73-343.00r.

Stefani, Hugo, Jr. Apparatus for passively exercising a person's abdominal muscles. 3,674,017, Cl. 128-25.00r.

Stefaniak, Hans: *See*—
Finsterwalder, Ulrich; Finsterwalder, Klemens; and Stefaniak, Hans, 3,673,624.

Steinemann, Willy: *See*—
Entschel, Roland; and Steinemann, Willy, 3,674,772.

Stemniski, John R., to Monsanto Research Corporation. Monomeric and polymeric bis (aryl-oxyaryl) tin compounds. 3,674,822, Cl. 260-429.700.

Stepaniuk, Nickolas J.: *See*—
Betz, Norman L.; and Stepaniuk, Nickolas J., 3,674,501.

Stephenson, Robert L., to Allied Chemical Corporation. Method and apparatus for filling vehicle gas bags. 3,674,059, Cl. 141-4.000.

Steranko, James J., to Inforex, Inc. Electrical circuit board wiring. 3,673,681, Cl. 29-626.000.

Sterling Drug Inc.: *See*—
Bailey, Denis M., 3,674,793.

Stern, Theodore J., to A.I.T. Industries, Inc. Edge control device for grinding machine. 3,673,738, Cl. 51-93.000.

Steury, Virgil H. Camper type vehicle and drive assembly for raising the top thereof. 3,674,305, Cl. 296-27.000.

Stever, William Charles: *See*—
Strater, Kurt; Hall, William Bernard; Mihalick, Eugene Michael; and Stever, William Charles, 3,673,983.

Stewart, Clarence K. Preparation of asphalt paving material. 3,674,242, Cl. 259-158.000.

Stewart, John K., Jr.: *See*—
Clinehens, Richard M.; Stewart, John K., Jr.; and Ditmer, Robert W., 3,674,579.

Stewart, Richard C.; and Creamer, Edward L., to Shell Oil Company. Welding electrode. 3,674,469, Cl. 75-124.000.

Stewart, William F., to Perkins Engines Limited. Crankshaft balance weights and method of assembly. 3,673,651, Cl. 29-6.000.

Stier, Otto; Kuhn, Heinz; and Vollmer, Udo, to Vollmer Werke Maschinenfabrik GmbH. Apparatus for providing a cutting tool with a cutting portion of a metal harder than a base metal of the cutting tool which carries the cutting portion. 3,674,083, Cl. 164-251.000.

Stile-Craft Manufacturers, Inc.: *See*—
Hartman, Leonard; and Sciuto, Joseph, Jr., 3,674,052.

Stoklasek, Antonin. Pneumatic stabilizing system for vehicles. 3,674,282, Cl. 280-124.00f.

Stol, George H.: *See*—
Peisner, Israel D.; Stol, George H.; and Gotcher, Eugene D., 3,673,969.

Stone, Eliot: *See*—
Patel, Pravin K.; and Stone, Eliot, 3,674,554.

Stone, J. James, Jr.; Madden, Thomas J., Jr.; Gerlach, Glendon T.; and Keur, Robert I., to Dick, A. B., Company. Image copying apparatus. 3,673,936, Cl. 95-12.000.

Stone, Ralph K., to United States Envelope Company. Filled and sealed easily opened bag and method of making same. 3,674,195, Cl. 229-66.000.

Stone, Roland L.: *See*—
Hahn, Richard L.; Stone, Roland L.; Tarrant, James R.; and Hunt, Lee D., 3,675,072.

Strack, Richard R., to American Optical Corporation. Method of fabricating illuminated fiber optics. 3,674,452, Cl. 65-4.000.

Strater, Kurt; Hall, William Bernard; Mihalick, Eugene Michael; and Stever, William Charles, to RCA Corporation. High capacity deposition reactor. 3,673,983, Cl. 118-48.000.

Stratman, Paul E., to Safe Way Hydraulics, Inc. Hydraulic coupler. 3,674,051, Cl. 137-614.040.

Strauss, Erwin S. Floating platform. 3,673,975, Cl. 114-43.500.

Strauss, Herbert S., to Duro-Test Corporation. Seal structures for electric discharge lamps. 3,675,068, Cl. 313-217.000.

Strecker, Otto C., K.G.; and: *See*—

Moesser, Wilhelm, 3,674,194.

Street, Frederick G.; and Buckwalter, Paul S. Disc puzzle. 3,674,276, Cl. 273-157.00r.

Streicher, Heinz; Riek, Siegfried; and Leutwein, Manfred, to Eastman Kodak Company. Reader for information carriers in sheet form. 3,674,351, Cl. 353-27.000.

Striplin, Charles D., to Weyerhaeuser Company. Machine for forming and sealing bliss style containers. 3,673,928, Cl. 93-36.300.

Strobe, Carl J.: *See—*
Wells, Robert A.; and Strobe, Carl J., 3,674,172.

Strobel, Walter. Die set; fixture and method of making dies. 3,673,902, Cl. 83-133.000.

Strolle, Clifford Hugh, to Du Pont de Nemours, E. I., and Company. Radiation curable epoxy coating composition and method of coating. 3,674,545, Cl. 117-93.310.

Stromberg Datagraphix, Inc.: *See—*
Artaud, Maurice H.; Johnson, Ronald W.; and Sampath, Prativadi I., 3,674,354.
Boyd, Sherman H., Jr., 3,674,591.
Hamann, Omer F., 3,673,933.
Rottmiller, Edmund H., 3,673,932.

Stromberg, Sanford E., to Textron Inc. Electrodeposition method and product. 3,674,671, Cl. 204-181.

Strong, John D. Achromatic doublet lens for infrared radiation. 3,674,330, Cl. 350-2.000.

Strout, Frederick D., to General Electric Company. Video generator for data display. 3,675,232, Cl. 340-324.00a.

Strub, Dietrich: *See—*
Kuffer, Francois; and Strub, Dietrich, 3,674,050.

Structural Fibers, Inc.: *See—*
Wiltshire, Arthur J., 3,673,673.
Wiltshire, Arthur J., 3,674,394.
Wiltshire, Arthur J., 3,674,599.

Struve, William Scott: *See—*
Aldridge, Gerald Richard; Ehrich, Felix Frederick; and Struve, William Scott, 3,674,814.

Stumpf, Gunter. Follower appliance for fabric folding machines. 3,674,253, Cl. 270-31.000.

Sturgeon, George; and Jackson, George, to British Iron and Steel Research Association, The. Apparatus for production of metal strip from metal powder. 3,674,389, Cl. 425-79.000.

Sturgeon, George Mc Hardy; and Sheffield, Jackson George, to British Iron and Steel Research Association, The. Production of metal strip from metal powder. 3,674,390, Cl. 425-79.000.

Sturges, James R.: *See—*
McMurray, Mitchell; Plouzek, Eugene A.; and Sturges, James R., 3,674,279.

Subbuteo Sports Games Limited: *See—*
Samson, Julie Marie, 3,674,275.

Sugaya, Hiroshi; and Nasu, Takuya, to Matsushita Electric Industrial Co., Ltd. Magnetic recording and reproducing apparatus of cassette type. 3,674,942, Cl. 179-100.22.

Sugihara, Kanji: *See—*
Hozumi, Shiro; Hirai, Kenichi; Tanigawa, Yoshiyuki; Yoshida, Katuro; and Sugihara, Kanji, 3,673,666.

Sugihara, Kunihiko: *See—*
Nakajima, Yasuo; Hayashi, Yoshimasa; and Sugihara, Kunihiko, 3,673,993.

Sukornick, Bernard: *See—*
Price, Alson K.; and Sukornick, Bernard, 3,674,798.

Sumitomo Chemical Company, Limited: *See—*
Ichiki, Eiichi; Iida, Kazuo; Inoue, Yasuhiko; and Kondo, Yoshihiro, 3,674,541.
Yamamoto, Keisaku; Takao, Hiroyoshi; Hirooka, Masaaki; and Oshima, Teruo, 3,674,755.

Sumitomo Chemical Company, Ltd.: *See—*
Inaba, Shigeho; Akatsu, Mitsuhiro; and Yamamoto, Hisao, 3,674,808.

Sumitomo Electric Industries, Ltd.: *See—*
Kurauchi, Noritaka; Tada, Shotaro; Shima, Hiroshi; Hiraoka, Susumu; Nagao, Taichiro; Koyama, Masahiro; Shiraishi, Satoshi; Shindo, Masuo; and Kobayashi, Yoshinobu, 3,674,990.

Summer, James R., to Garrett Corporation, The. Fail-safe inflatable slide. 3,674,124, Cl. 193-25.00b.

Sun Oil Company: *See—*
Rennick, Leonard E., 3,674,831.

Surface Technology Corporation: *See—*
Van Thyne, Ray J.; and Rausch, John J., 3,674,571.
Van Thyne, Ray J.; and Rausch, John J., 3,674,572.
Van Thyne, Ray J.; and Rausch, John J., 3,674,573.
Van Thyne, Ray J.; and Rausch, John J., 3,674,574.

Surowiecki, Benjamin M., Jr.: *See—*
Rao, Velliyur Nott Padmanabha; Scott, John A.; and Surowiecki, Benjamin M., Jr., 3,674,827.

Susseaguth, Edward H.: *See—*
Arnold, Richard F.; Dauber, Philip S.; and Sussenguth, Edward H., 3,675,215.

Suttle, Ward C.: *See—*
Hickner, George B.; Howard, Donald W.; and Suttle, Ward C., 3,674,318.

Suzuki, Akira: *See—*
Tomita, Tamaki; and Suzuki, Akira, 3,673,886.

Suzuki, Choken: *See—*
Tsuzuki, Akira; and Suzuki, Choken, 3,673,789.

Suzuki, Koichiro: *See—*
Kobayashi, Seihin; Torii, Michihiro; and Suzuki, Koichiro, 3,675,223.

Suzuki, Nobuhiko, to Nippon Gakki Seizo Kabushiki Kaisha. Presetting device for electronic musical instrument. 3,675,173, Cl. 335-268.000.

Suzuki, Reiichi; Tahara, Tadasu; and Mototani, Hideo, to Nitto Kasei Co., Ltd. Crystalline propylene polymer compositions of improved workability. 3,674,769, Cl. 260-93.700.

Suzuki, Takashi, to Matsushita Electric Industrial Co. Ltd. Heat-sensitive sheet. 3,674,538, Cl. 117-36.700.

Suzuki, Tetsumi: *See—*
Yamawaki, Takeshi; Usami, Masakatsu; Suzuki, Tetsumi; and Uematsu, Takao, 3,674,759.

Suzuki, Yoshiro; Nagahara, Shigehiro; and Ichimura, Nobuyoshi, to Asahi Glass Company Limited. Solder glass for adhering, sealing or coating. 3,674,520, Cl. 106-54.000.

Sveksson, Stig, to Ramnas Bruks Aktiebolag. Chain hook. 3,673,646, Cl. 24-230.5cr.

Svenska Dataregister AB: *See—*
Mattsson, Mats Erik; Eriksson, Bjorn Sven Hilding; and Lindelow, Claes-Goran, 3,674,199.

Swanson, Kenneth B.: *See—*
Kish, George R.; and Swanson, Kenneth B., 3,674,954.

Swanson, Raymond W. Releasable automatic fastener for a truck stake and like. 3,674,304, Cl. 296-43.000.

Swanwick, Barry Frederick; West, Ernest; and Cuthbertson, John Harry, to S. A. Monk Sutton-in-Ashfield Limited. Yarn carrier driver means for vee bed knitting machines. 3,673,819, Cl. 66-126.000.

Sweeney, Richard F.; Khan, Aziz Urrehman; Price, Alson K.; Jones, Edward Stephen; and Otto, Julian A., to Allied Chemical Corporation. Derivatives pyridinium of polyfluoroisoalkoxy-alkanamides. 3,674,800, Cl. 260-295.0am.

Swillinger, Francis L., to Libbey-Owens-Ford Company. Exit sealing drape for float glass bath. 3,674,456, Cl. 65-182.00r.

Swinkels, Dominicus A. J.: *See—*
Bradley, Thompson G.; and Swinkels, Dominicus A. J., 3,674,567.

Sybron Corporation: *See—*
Anderson, John Ray; and Hollingworth, Richard Peck, 3,674,466.
Griswold, Augustus W.; and Tompkins, James R., 3,673,853.
Snyder, John Sommerville, 3,675,003.

Sylvania Electric Products, Inc.: *See—*
Jayne, Max L.; and Pihlblad, Robert W., 3,675,186.
Shaffer, John W., 3,674,411.

Syntex Corporation: *See—*
Edwards, John A.; Fried, John H.; and McCrae, William, 3,674,816.
Throop, Lewis J., 3,674,778.

Szempruch, Robert S.: *See—*
Giardini, Dante S.; and Szempruch, Robert S., 3,673,740.

Szerejko, Walter J.: *See—*
Bock, Herbert G.; and Szerejko, Walter J., 3,673,762.

Szyfter, Bruno. Floatable breakwater element. 3,673,805, Cl. 61-5.000.

Tachikawa, Kyoji; Tanaka, Yoshiaki; and Fukuda, Satoshi, to National Research Institute for Metals, Director of. Superconductor and its manufacturing method. 3,674,553, Cl. 117-217.000.

Tada, Fusao; Inamine, Seiei; and Hatanaka, Tsutomu, to Sakai Chemical Industry Company Limited. Process for manufacturing trialkyl phosphites. 3,674,897, Cl. 260-976.000.

Tada, Shotaro: *See—*
Kurauchi, Noritaka; Tada, Shotaro; Shima, Hiroshi; Hiraoka, Susumu; Nagao, Taichiro; Koyama, Masahiro; Shiraishi, Satoshi; Shindo, Masuo; and Kobayashi, Yoshinobu, 3,674,990.

Taddei, Carlo, to Seal Spout Europe S.p.A. Machine for applying pouring spouts to containers. 3,673,663, Cl. 29-200.00a.

Tahara, Tadasu: *See—*
Suzuki, Reiichi; Tahara, Tadasu; and Mototani, Hideo, 3,674,769.

Takano, Kiyoshi: *See—*
Sakka, Toshikatsu; and Takano, Kiyoshi, 3,675,111.

Takao, Hiroyoshi: *See—*
Yamamoto, Keisaku; Takao, Hiroyoshi; Hirooka, Masaaki; and Oshima, Teruo, 3,674,755.

Takeda Chemical Industries, Ltd.: *See—*
Yamatodani, Saburo; and Kanamaru, Tsuneo, 3,674,642.

Takeda, Hitoshi: *See—*
Yoshiyama, Masami; Sato, Teruo; and Takeda, Hitoshi, 3,674,928.

Takeda, Isao; Iguchi, Takashi; Tsuzuki, Katsuaki; and Nakano, Tooru, to Asahi Kasei Kogyo Kabushiki Kaisha. Cultivation of hydrocarbon-consuming yeasts. 3,674,639, Cl. 195-28.00r.

Takeshima, Masumi: *See—*
Teramoto, Iwao; Iwasa, Hitoo; Miyai, Yukio; and Takeshima, Masumi, 3,675,161.

Takeuchi, Satoru: *See—*
Matsubara, Mitio; Yagyu, Shigeyuki; and Takeuchi, Satoru, 3,674,533.

Tallman, Richard L.: *See—*
Gulbrasen, Earl A.; Tallman, Richard L.; Andrew, Kenneth F.; and Buzalski, Bruce T., 3,675,004.

Talonn, Daniel A.: *See—*
Burlis, Norbert W.; and Talonn, Daniel A., 3,674,404.

Talvalkar, Shashikant G.: *See—*
Blose, James H.; and Talvalkar, Shashikant G., 3,674,535.

Tamai, Yasuo; and Miyazuka, Hajime, to Fuji Photo Film Co., Ltd. Process for producing photoconductive layer for electrophotography. 3,674,476, Cl. 96-1.800.

Tamura, Yoshitaka: *See—*
Nagasawa, Taro; Tomita, Mamoru; Obayashi, Tomokazu; Tamura, Yoshitaka; and Kenmotsu, Yoko, 3,674,500.

Tanaka, Edward Y.; Cossaart, Darrel D.; and Edwards, Norman B., to California Computer Products, Inc. Method of circuit board with solder coated pattern. 3,673,680, Cl. 29-626.000.

Tanaka, Katsunobu; Nara, Takashi; Misawa, Masanaru; and Komuro, Toshio, to Kyowa Hakko Kogyo Co., Ltd. Process for producing 5'-purine nucleotides. 3,674,641, Cl. 195-28.00n.

Tanaka, Toru: *See—*
Iwasaki, Koichiro; Yamaguchi, Kazuo; Kimura, Harutaka; Hasuo, Masayoshi; and Tanaka, Toru, 3,674,764.

Tanaka, Yoshiaki: *See—*
Tachikawa, Kyoji; Tanaka, Yoshiaki; and Fukuda, Satoshi, 3,674,553.

Tanenhaus, Martin, to United States of America, Navy. Fast laser projectile detection system. 3,675,030, Cl. 250-222.00r.

Tani, Isamu; Otsuka, Masatomi; Osaki, Yoshiyasu; and Hagino, Takuo, to Otsuka Kagaku Yakuhin Kabushiki Kaisha. Method for manufacturing protease. 3,674,646, Cl. 195-66.000.

Tani, Kenroku: *See—*
Mifune, Hideo; and Tani, Kenroku, 3,675,053.

Tanigawa, Yoshiyuki: *See—*
Hozumi, Shiro; Hirai, Kenichi; Tanigawa, Yoshiyuki; Yoshida, Katuro; and Sugihara, Kanji, 3,673,666.

Taniguchi, Kazutaka: *See—*
Haruna, Takashi; and Taniguchi, Kazutaka, 3,674,951.

Tarkan, Stuart E.: *See—*
Prill, Arnold L.; and Tarkan, Stuart E., 3,674,575.

Tarnblom, Stig-Goran Harry: *See—*
Hallstrom, Ingemar Gustaf Terje; Jarleborg, Martin Holger; and Tarnblom, Stig-Goran Harry, 3,674,570.

Tarrant, James R.: *See—*
Hahn, Richard L.; Stone, Roland L.; Tarrant, James R.; and Hunt, Lee D., 3,675,072.

Tauger, Mikhail Borisovich. Throttle divider of fluid medium flow. 3,674,047, Cl. 137-101.000.

Taylor, Lloyd D.: *See—*
Grasshoff, J. Michael; and Taylor, Lloyd D., 3,674,478.

Taylor, Michael David: *See—*
Colchester, John Edward; Carey, John Gerard; and Taylor, Michael David, 3,674,797.

Tecna Corporation: *See—*
Kitrilakis, Sotiris S., 3,674,440.

Tecnoma: *See—*
Ballu, Vincent Pierre Marie, 3,674,208.

Tee-Pak, Inc.: *See—*
Rose, Henry J.; Turbak, Albin F.; and Leahy, Thomas E., Jr., 3,674,511.
Rose, Henry J.; and Turbak, Albin F., 3,674,523.

Teijin Limited: *See—*
Hosono, Shinichi; and Kida, Kazuyoshi, 3,674,057.

Teitelbaum, Bernard R., to Bendix Corporation, The. Device for detecting leaks in vacuum or pneumatic pressure lines. 3,673,857, Cl. 3-40.50a.

Teledyne, Inc.: *See—*
Wells, Samuel G., 3,673,618.

Teleflex Products Limited: *See—*
Dove, Ernest Baker, 3,674,307.

Telefonaktiebolaget L M Ericsson: *See—*
Krantz, Tore Samuel, 3,674,960.

Telephon-und Telegraphen-Fabriks A.G.: *See—*
Wenzel, Kurt, 3,675,086.

Temple University: *See—*
Blank, Fritz; Day, William C.; Harmon, Sandra R.; Toncic, Pauline F.; and Yu, Ruey J., 3,674,645.

Templeton, John Glenn, to Rospatch Corporation. Unitary label assembly of interlinked labels. 3,674,614, Cl. 161-39.000.

Tennessee Valley Authority: *See—*
Harvey, Herbert C., Jr., 3,674,219.

Teramoto, Iwao; Iwasa, Hitoo; Miyai, Yukio; and Takeshima, Masumi, to Matsushita Electronics Corporation. Varactor-controlled PN junction semiconductor microwave oscillation device. 3,675,161, Cl. 332-16.00r.

Termin, Erich: *See—*
Dijkhuizen, Willem; Termin, Erich; Bleh, Otto; and Morgenstern, Dieter, 3,674,716.

Texas Gulf Sulphur Company: *See—*
Nielson, Stephen M., 3,674,442.

Texas Instruments, Incorporated: *See—*
Carbajal, Bernard G., III; Goaney, William Milton; and Hall, Lou H., 3,673,679.
Jones, William Stanley; and Hartmann, Clinton S., 3,675,054.
Kendall, Don Leslie, 3,674,995.
Wilson, Oran W., 3,674,712.

Texas Inventment Builders Co.: *See—*
Ragland, Douglas, 3,673,946.

Textol Systems, Inc.: *See—*
Zaruba, Wenzel; and Sehnal, Jan, 3,673,874.

Textron Inc.: *See—*
Stromberg, Sanford E., 3,674,671.

Thacker, Bernard L., Jr., to Firestone Tire & Rubber Company, The. No-twist entanglement of filament and apparatus therefor. 3,673,648, Cl. 28-1.400.

Tharp, Edwin B.: *See—*
Moroney, John J.; and Tharp, Edwin B., 3,674,325.

Thee, Alfred: *See—*
Brecker, Lawrence R.; and Thee, Alfred, 3,674,737.

Theer, Anton, to Agfa-Gevaert Aktiengesellschaft. Motion picture camera with automatically deactivatable fading means. 3,674,349, Cl. 352-91.000.

Thees, Richard, to U.S. Philips Corporation. Self starting synchronous motor having means for reducing negative torque to produce stable no load rotation. 3,675,059, Cl. 310-156.000.

Therm-O-Disc, Incorporated: *See—*
Place, Donald E., 3,675,178.

Thomas & Betts Corporation: *See—*
Bush, Harold Jesse, 3,673,894.
Eppler, Daniel, 3,674,392.

Thomas, Alfred W., to Massey-Ferguson Services N.V. Control for power take-off. 3,674,106, Cl. 180-53.000.

Thomas, David A.: *See—*
Jeffreys, Roy A.; and Thomas, David A., 3,674,493.

Thomas, Edmund C.: *See—*
Owen, James Neal; Moberly, Raymond Ronald; Martin, Edwin J., Jr.; Yamada, Akemichi; and Thomas, Edmund C., 3,675,162.

Thomas, Robert M.; Gerns, Fred R.; and Sands, John L., to Great Lakes Chemical Corporation. Dipyridylium quaternary dihalide halogen complexes. 3,674,788, Cl. 260-250.

Thompson, Don D., to Chevron Research Company. Dielectric constant measurement method. 3,675,121, Cl. 324-61.00r.

Thompson, Lloyd M. Radioactive macroaggregates of serum albumin. 3,674,900, Cl. 424-1.000.

Thornton, William S. Changeable sign. 3,673,720, Cl. 40-125.00r.

Thorpe, David, to Richmond Marine Limited. Storage containers for use in marine craft. 3,674,170, Cl. 220-18.000.

Throop, Lewis J., to Syntex Corporation. Preparation of 9,11-dichloro steroids. 3,674,778, Cl. 260-239.55d.

Tichy, Oscar A. W., to Whirlpool Corporation. Spin control for a washer-dryer. 3,674,419, Cl. 8-158.000.

Tiefenthal, Harlan E.; Jungermann, Eric; Miller, Eugene J., Jr.; and Callahan, John J., to Armour Industrial Chemical Company. Process for preparing chloro-substituted bishydroxyphenyl methanes. 3,674,879, Cl. 260-619.00a.

Tillander, Hans, to Astra-Meditec AB. Magnetically guidable catheter-tip and method. 3,674,014, Cl. 128-2.05r.

Timbie, Robert W., to Monsanto Company. Textile spindle mounting. 3,673,783, Cl. 57-135.000.

Time, Incorporated: *See—*
Chapman, Brian M., 3,674,367.

Time Research Laboratories, Inc.: *See—*
Nugent, Reginald F.; and Snyder, George P., 3,674,975.

Timmler, Helmut: *See—*
von Konig, Anita; Liebe, Werner; and Timmler, Helmut, 3,674,481.

Tingley, Frederick M., to United States of America, Air Force. Camera shutter. 3,673,942, Cl. 95-57.000.

Tirabassi, Benjamin John, to Bendix Corporation, The. Self-restoring energy absorbing stop. 3,674,251, Cl. 267-162.000.

Titus, Charles H.; and Schneider, Harold N., to General Electric Company. Cable connection for water cooler underground electrode. 3,674,912, Cl. 174-15.00c.

Tixier, Michel, to Regie Nationale des Usines Renault and Automobiles Peugeot. Methods and tools for finishing gear teeth by rolling. 3,673,837, Cl. 72-102.000.

Tkach, Khaim Berkovich: *See—*
Kostylev, Alexandr Dmitrievich; Gurkov, Konstantin Stepanovich; Tkach, Khaim Berkovich; and Lipovetsky, Lazar Moiseevich, 3,674,099.

Toepfer, Richard E.: *See—*
Hill, Robert C.; French, John M.; and Toepfer, Richard E., 3,675,019.

Tokyo Denryoku Kabushiki Kaisha: *See—*
Mitsui, Tsuneo; Baba, Jun-Ichi; and Yamada, Ikuo, 3,675,002.

Tokyo Shibaura Electric Co., Ltd.: *See—*
Kubota, Tadao; and Ida, Keisuke, 3,674,382.

Tolbert, Richard E.: *See—*
Yearout, James D.; and Tolbert, Richard E., 3,674,355.

Tomalinas, William R., Jr., to Roth-American, Inc. Playground apparatus. 3,674,262, Cl. 272-85.000.

Tomita, Mamoru: *See—*
Nagasawa, Taro; Tomita, Mamoru; Obayashi, Tomokazu; Tamura, Yoshitaka; and Kenmotsu, Yoko, 3,674,500.

Tomita, Tamaki; and Suzuki, Akira, to Toyda Koki Kabushiki Kaisha. Ball nut screw assembly. 3,673,886, Cl. 74-424.80r.

Tompkins, James R.: *See—*
Griswold, Augustus W.; and Tompkins, James R., 3,673,853.

Toms, Gerald Lance, to English Clays Lovering Pochin & Company Limited. Pigments. 3,674,529, Cl. 106-306.000.

Toncic, Pauline F.: *See—*
Blank, Fritz; Day, William C.; Harmon, Sandra R.; Toncic, Pauline F.; and Yu, Ruey J., 3,674,645.

Torii, Michihiro: *See—*
Kobayashi, Seihin; Torii, Michihiro; and Yamakawa, Fujio, 3,675,222.

Kobayashi, Seihin; Torii, Michihiro; and Suzuki, Koichiro, 3,675,223.

Torrington Company, The: *See—*
Moroney, John J.; and Tharp, Edwin B., 3,674,325.

Toseco International Limited: *See—*
Vuaroqueaux, Jean-Claude, 3,674,518.

Toussaint, Francois: *See—*
Plumat, Emile; and Toussaint, Francois, 3,674,454.

Townsend Engineering Company: *See—*
Beasley, Donald L., 3,674,071.

Toyda Koki Kabushiki Kaisha: *See—*
Tomita, Tamaki; and Suzuki, Akira, 3,673,886.

Toyo Rubber Industry Co., Ltd., The: *See—*
Sasaki, Shiro; and Shibata, Narajiro, 3,674,078.

Toyoda Koki Kabushiki Kaisha: *See—*
Kakumu, Ichizo; and Oshima, Susumu, 3,674,003.

Toyoda Koki Kaisha, t/a Toyoda Machine Works: *See—*
Koide, Tsuyoshi; and Othu, Ikuo, 3,673,741.

Trachtenberg, William, to Eastman Kodak Company. Toner concentration control apparatus. 3,674,353, Cl. 355-3.000.

Trans-World Display Corporation: *See—*
Jaquish, John, 3,674,175.

Trappmann, Klaus, to Motoren- und Turbinen-Union Munchen GmbH. Guide blading for turbo machines with adjustable guide vanes. 3,674,377, Cl. 415-147.000.

Trepka, William J.: *See—*
Uraneck, Carl A.; and Trepka, William J., 3,674,753.

Trexler, Richard R.: *See—*
Snyder, Harold I.; and Trexler, Richard R., 3,674,021.

Triax Company, The: *See—*
Lemelson, Jerome H., 3,674,159.

Triumph Werke Nurnberg AG: *See—*
Decker, Herbert; and Waldenburger, Hermann, 3,674,126.

Troisoeufs, Pierre, to Ronson Corporation. Attachment for storing flints. 3,674,412, Cl. 431-124.000.

Trolle, Stern: *See—*
Jonsson, Finn Lennart; Trolle, Stern; and von Platen, Baltzar Carl, 3,674,403.

Trondle, Alois. Compressed air operated apparatus for raising underwater deposits. 3,673,716, Cl. 37-61.000.

Trost, Joseph C.; Bock, Robert V.; Gerbstadt, Frederick H.; Graham, William J.; Miles, Wilson D.; and Questa, Charles R., to Burroughs Corporation. Autonomous multiple-path input/output control. 3,675,209, Cl. 340-172.500.

Troxler, Eduard; and Hausermann, Heinrich, to Geigy Chemical Corporation. Detergent composition containing fluorescent 1-pyrazolinylphenylsulphonyl-piperazines. 3,674,714, Cl. 252-543.000.

Troxler, Franz: *See—*
Bormann, Gerhard; Gmunder, John; Wilkens, Heinrich; and Troxler, Franz, 3,674,801.

Trust, Ida J.: *See—*
Eisenhauer, William A., 3,673,710.

TRW Inc., mesne: *See—*
Van Buren, Harold S., Jr., 3,674,233.

Tselikov, Alexandr Ivanovich; Nosal Vsevolod Vladimirovich; and Verderevsky, Vadim Anatolievich, to Vsesojuzny Naucho-Issledovatelsky and Proektnokonstruktorsky Institute Metallurgicheskogo Mashinostroeniya. Cold rolling pipe mill roller type rolling stand. 3,673,840, Cl. 72-208.000.

Tsuchida, Takashi; Hayase, Yoshiaki; and Fujisawa, Yoshirou, to Fuji Denki Kagaku Kabushiki Kaisha. Process for producing electrodes for rechargeable alkaline cells. 3,674,561, Cl. 136-29.000.

Tsuda, Motohisa; and Yoshimura, Masao, to Shimadzu Seisakusho Ltd. System for continuously varying the size of the field of an X-ray image intensifier tube. 3,675,027, Cl. 250-213.0vt.

Tsuji, Nobuo: *See—*
Shiba, Keisuke; Hinata, Masanao; Tsuji, Nobuo; and Sato, Akira, 3,674,499.

Tsujihara, Mamoru: *See—*
Shichijo, Yoshihisa; and Tsujihara, Mamoru, 3,674,416.

Tsukagoshi, Tsunehiro: *See—*
Ohshita, Masahide; and Tsukagoshi, Tsunehiro, 3,674,549.

Tsukamoto, Masaaki; Fujii, Tatsuo; and Ono, Shigeo, to Nippon Kogaku K.K. Variable zig-zag resistor with taps. 3,675,179, Cl. 338-190.000.

Tsukernik, Vitaly Borisovich: *See—*
Borkovsky, Gennady Mikhailovich; Tsukernik, Vitaly Borisovich; and Ierusalimskaya, Irina Nikolaevna, 3,675,194.

Tsuzuki, Akira; and Suzuki, Choken, to Citizen Watch Company Limited. Calendar timepiece with month advancement mechanism for 29,30, or 31 day months. 3,673,789, Cl. 58-58.000.

Tsuzuki, Katsuaki: *See—*
Takeda, Isao; Iguchi, Takashi; Tsuzuki, Katsuaki; and Nakano, Tooru, 3,674,639.

Tsvetkov, Krum Kostov; Ezekiev, Ezekiya Gueorguiev; Nikolov, Petko Petrov; and Otsetov, Vassil Christov, to DSO 'Avtomatizatsia I Priborostroene'. Automatic programming device for looms. 3,674,991, Cl. 235-92.0pd.

Tupper, Myron D.; and Hille, Arvin A., to Omark Industries, Inc. Chipper shredder. 3,674,220, Cl. 241-186.00r.

Turbak, Albin F.: *See—*
Rose, Henry J.; Turbak, Albin F.; and Leahy, Thomas E., Jr., 3,674,511.
Rose, Henry J.; and Turbak, Albin F., 3,674,523.

Turnbull John Hilton, to G.K.N. Screws & Fasteners Limited. Apparatus for tightening and locking a nut on a bolt. 3,673,662, Cl. 29-200.00b.

Turner, Charles D., to Kay Laboratories, Inc. Rupturable container. 3,674,134, Cl. 206-47.00a.

Turner, Wilson R.: *See—*
Cutler, Leonard S.; Holloway, Joseph H.; and Turner, Wilson R., 3,675,149.

Tuttle, Joey K.: *See—*
Frankeny, Richard F.; and Tuttle, Joey K., 3,675,133.

Tuwiner, Sidney B., to RAI Research Corporation. Concentration of electrolyte from dilute washings by electrodialysis in a closed system. 3,674,669, Cl. 204-180.00p.

Tyee Construction Company: *See—*
Fikse, Tyman H., 3,674,157.

Ube Industries, Ltd.: *See—*
Moritani, Ichiro; and Fujiwara, Yuzo, 3,674,884.

Uchida, Hideho: *See—*
Miyamoto, Haruo; Uchida, Hideho; and Uehara, Masaru, 3,674,621.

Udylite Corporation: *See—*
Jessup, Richard J., 3,674,673.

Udylite Corporation, The: *See—*
Juve, Robert J., 3,674,127.

Ueda, Isao; Kageyama, Takao; and Inomata, Isao, to Nippon Electric Company, Limited. Waveguide window for transmission or electromagnetic waves. 3,675,165, Cl. 333-98.00p.

Ueda, Tadao; Sato, Kenji; and Nakamura, Yasusi, to Asahidenka Kogyo Kabushiki Kaisha. Process for producing crystalline zeolite A. 3,674,426, Cl. 23-113.000.

Uehara, Hiroshi: *See—*
Kawasaki, Jun; and Uehara, Hiroshi, 3,675,219.

Uehara, Masaru: *See—*
Miyamoto, Haruo; Uchida, Hideho; and Uehara, Masaru, 3,674,621.

Uematsu, Takao: *See—*
Yamawaki, Takeshi; Usami, Masakatsu; Suzuki, Tetsumi; and Uematsu, Takao, 3,674,759.

Uffner, Melville W., to Air Products and Chemicals, Inc. Olefin extrusion compositions and method of preparing same. 3,674,757, Cl. 260-86.700.

UID Electronics Corporation: *See—*
Brevick, Arnold A., 3,674,953.
Wright, Thomas H., Jr., 3,674,961.

Ullmann, Christoph: *See—*
Canamero, Ernest V.; and Ullmann, Christoph, 3,673,760.

Unarco Industries, Inc.: *See—*
Bertram, Leroy W., 3,673,968.

Underwater Storage, Inc.: *See—*
Quase, Harold G., 3,674,687.

Ungar, Israel S.: *See—*
Scher, Herbert I.; and Ungar, Israel S., 3,674,619.

Union Carbide Canada Limited: *See—*
Hakka, Leo E.; Bata, George L.; and Hazell, John E., 3,674,439.

Union Carbide Corporation: *See—*
Bennett, Roswell J., 3,674,563.
Collins, Joseph John, 3,674,429.
Fitton, Peter; and Rick, Edward A., 3,674,825.
Niegisch, Walter D., 3,674,623.
Purcell, Chester L.; and Smarook, Walter H., 3,674,896.
Wheeler, Marshall L., Jr., 3,674,891.

Union Insulating Company, Inc.: *See—*
Arnold, William O., Jr., 3,673,670.

Union Oil Company of California: *See—*
Jamison, Robert W.; and Norcross, Paul A., 3,675,199.

Uniroyal Englebert France S.A.: *See—*
Leblond, Jean, 3,674,582.
Leblond, Jean, 3,674,603.

Uniroyal, Inc.: *See—*
Adams, Gerald E., 3,673,883.
Amidon, Roger W.; and Gencarelli, Richard A., 3,674,824.

Uniroyal Ltd.: *See—*
Smiley, Yale H., 3,674,222.

Unitec Industries, Inc.: *See—*
Cooke, Robert F., 3,674,110.

United Aircraft Corporation: *See—*
Mack, Michael E., 3,675,151.

United Gas-Industries Limited: *See—*
Wade, Kenneth R., 3,674,410.

United Kingdom Atomic Energy Authority: *See—*
Jones, Philip Michael; and Walsh, Raymond Herbert, 3,674,636.
Watson, Christopher John Hamilton, 3,674,634.

United Medical Laboratories Inc.: *See—*
Michel, Raymond S.; and Podhora, Fred W., 3,674,011.

United Merchants and Manufacturers, Inc.: *See—*
Lyons, Richard J.; and Dabrowski, Jan, 3,674,418.

United States Envelope Company: *See—*
Stone, Ralph K., 3,674,195.

United States of America
Agriculture: *See—*
Pittman, Allen G.; and Wasley, William L., 3,674,820.
Air Force: *See—*

Clow, William L.; Benzing, Robert J.; and McConnell, Bobby D., 3,674,690.
Dugger, Cortland O., 3,674,455.
Randle, Walter N.; Spieth, Howard H.; and English, William D., 3,673,871.
Tingley, Frederick M., 3,673,942.

Army: *See—*
Johnson, Henry V., 3,674,225.

Atomic Energy Commission: *See—*
Hahn, Richard L.; Stone, Roland L.; Tarrant, James R.; and Hunt, Lee D., 3,675,072.

Atomic Energy Commission, mesne: *See—*
Nelson, Melvin A.; Lackey, Jerry G.; and Davies, Terence J., 3,675,022.

Health, Education and Welfare: *See—*
Law, John H., 3,674,818.

Navy: *See—*
Asbelle, Charles C.; Arrigo, Michael F.; Hunting, Kenneth E.; and Helmuth, Gene R., 3,673,613.
De Simone, David N., 3,673,609.
Derderian, George; and De Clerk, Joseph L., 3,675,012.
Di Crispino, Joseph S.; and Kaldor, Leslie M., 3,673,862.
Hansen, Neil W.; and Orenstein, Nathan, 3,675,132.
Heckman, Paul J., Jr., 3,674,925.
Lindsay, George F.; and Whitehouse, Harper John, 3,675,052.
MacKenzie, Gerald L.; and Mosher, Paul R., 3,674,702.
Neuhaus, Herbert M., 3,674,407.
Soli, Giorgio, 3,674,648.
Tanenhaus, Martin, 3,675,030.

Navy, mesne: *See—*
Gooding, Otis E.; and Dixon, Alton E., 3,674,934.

United States Steel Corporation: *See—*
Emerson, William A.; and Redmond John A., 3,674,971.

United Tool Processes Corporation: *See—*
Reed, Everett E.; and Boynton, James S., 3,674,375.

United-Carr, Incorporated: *See—*
Vetter, Ottomar H., 3,675,184.

Universal Water Corporation: *See—*
Manjikian, Serop, 3,674,152.

Universitat Stuttgart: *See—*
Mayer Rolf; and Reitinger, Johann, 3,674,977.

University of Delaware: *See—*
Spinski, Victor, 3,674,484.

Upjohn Company, The: *See—*
Hester, Jackson B., Jr., 3,674,777.
Visser, Jeronimo, 3,674,647.

Uraneck, Carl A.; and Trepka, William J., to Philips Petroleum Company. Stabilization of polymer-alkali metal mercaptides. 3,674,753, Cl. 260-79.000.

Urbanosky, Harold J., to Schlumberger Technology Corporation. Methods for inhibiting the entrance of loose formation materials into a well bore. 3,674,090, Cl. 166-276.000.

U.S. Atomic Energy Commission under the provisions of 42 U.S.C. 2182: *See—*
Ensley, Donald L., 3,673,872.

U.S. Philips Corporation: *See—*
Freeland, William, 3,674,151.
Thees, Richard, 3,675,059.
Verhoeff, Jacobus, 3,675,202.
Yperman, Jean Michel Baudry Ghislain; and Belhomme, Charles, 3,674,713.

U.S. Philips Corporation, mesne: *See—*
Jonker, Hendrik; Janssen, Casper Johannes Gerardus Ferdinand; and Postma, Lambertus, 3,674,485.
Roos, Jan, 3,674,629.

Usami, Masakatsu: *See—*
Yamawaki, Takeshi; Usami, Masakatsu; Suzuki, Tetsumi; and Uematsu, Takao, 3,674,759.

USM Corporation: *See—*
Annis, Rupert E., Jr.; and Kyritsis, William T., 3,674,401.

Usui, Noriyuki: *See—*
Kurokawa, Junji; Arai, Fumiaki; and Usui, Noriyuki, 3,674,474.

Vactronics Incorporated: *See—*
Selley, Wilbur-Webb, 3,674,287.

Vahlstrom, Richard E.; Nutten, Donald C.; and Bayne, Dennis R., to Northrop Corporation. Precision pulse generator. 3,675,047, Cl. 307-260.000.

Valvassori, Alberto: *See—*
Cameli, Nazzareno; Longi, Paolo; and Valvassori, Alberto, 3,674,754.

van Asperen, Pieter J.; and van der Loos, Jozef L. M., to Stamicarbon N.V. Fillers for metallized polyamides. 3,674,658, Cl. 204-30.000.

Van Buren, Harold S., Jr., to TRW Inc., mesne. Hanger system. 3,674,233, Cl. 248-68.000.

van de Kerkhof, Lodevicus Lambertus Johannes, to AMP Incorporated, mesne. Round socket applicator. 3,673,847, Cl. 72-405.000.

Van Der Grinten N.V.: *See—*
Dols, Wilhelmus Emilius Maria, 3,673,985.

van der Loos, Jozef L. M.: *See—*
van Asperen, Pieter J.; and van der Loos, Jozef L. M., 3,674,658.

Van der Meulen, Johan: *See—*
Brants, Johannes Petrus; and Van der Meulen, Johan, 3,674,522.

van Driel, Hendrik, to N.V. Chefaro Maatschappij. Organic diacyl peroxides. 3,674,855, Cl. 260-607.00a.

Van Hattem, Nicolaas: *See—*
Plate, Geerardus G.; and Van Hattem, Nicolaas, 3,673,879.

Van Luik, Frank W.; and Coffey, Peter E., to Evironment/One Corporation. Low concentration constituent of gaseous mixture selective converter and detector. 3,674,435, Cl. 23-232.00r.

van Nassau, Petrus J. M.: *See—*
Kaasenbrood, Petrus J. C.; and van Nassau, Petrus J. M., 3,674,847.

Van Ryn, Edwin; and Driesenga, Edwin J., to Keeler Brass Company. Drawer pull. 3,673,634, Cl. 16-126.000.

Van Thyne, Ray J.; and Rausch, John J., to Surface Technology Corporation. Nitrided zirconium alloys. 3,674,571, Cl. 148-31.500.

Van Thyne, Ray J.; and Rausch, John J., to Surface Technology Corporation. Nitrided tantalum, columbium and vanadium-rich alloys. 3,674,572, Cl. 148-31.500.

Van Thyne, Ray J.; and Rausch, John J., to Surface Technology Corporation. Nitrided surface treated alloys. 3,674,573, Cl. 148-31.500.

Van Thyne, Ray J.; and Rausch, John J., to Surface Technology Corporation. Nitrided surface modified alloys. 3,674,574, Cl. 148-31.500.

Van Tongerloo, Eric H.: *See—*
Hantusch, Gerald H.; Vincent, David A.; and Van Tongerloo, Eric H., 3,675,089.

Van Vliet, Raymond A.: *See—*
Fairfield, Louis R., Jr.; Van Vliet, Raymond A.; and McLauchlan, Thomas A., 3,674,065.

van-der-Ben, Charles Robert; and Pope, Joseph Albert, to Mirrlees Blackstone Limited. Alloy cast iron. 3,674,576, Cl. 148-35.000.

Vanderbilt, Byron M.; and Fasnacht, James J., said Vanderbilt assor. to, Esso Research and Engineering Company, said Fasnacht assor. to and PPG Industries, Inc. Glass fibers sized with a composition comprising a vinylic aromatic-diolefin copolymer and a hydrolyzable silane. 3,674,542, Cl. 117-72.000.

Vanderhoef, John P.: *See—*
Bell, Randall P.; and Vanderhoef, John P., 3,673,724.
Lazar, Burton A.; Bell, Randall P.; and Vanderhoef, John P., 3,673,723.

Vanlerberghe, Guy: *See—*
Kalopissis, Gregoire; and Vanlerberghe, Guy, 3,674,902.

Vardaman, Hunter W., to Mekatron Corporation. Spiral actuated adjustable jaw wrench. 3,673,896, Cl. 81-165.000.

Vargiu, Silvio: *See—*
Pitzalis, Mario; Vargiu, Silvio; and Nistri, Ugo, 3,674,732.

Varian Associates: *See—*
Benz, Hanspeter, 3,674,998.
Growald, Bert; Dahlquist, John A.; and Marlor, Guy A., 3,674,711.

Varian Associates, mesne: *See—*
Miehle, James A.; Pratt, David S.; and Rees, Robert M., 3,675,204.

Varlonga, Giovanni. Metal forms having a particular shape for realizing suspended floors. 3,674,232, Cl. 249-23.000.

Varner, George C., to Deering Milliken Research Corporation. Method for producing endless reinforcements for vulcanized pneumatic tires. 3,674,079, Cl. 152-361.000.

Vastano, Alphonso N., to Volupte, Inc. Cosmetic container. 3,674,039, Cl. 132-82.

Vautier, Roger: *See—*
Globus, Anatol; Duplex, Paul; and Vautier, Roger, 3,674,218.

Vega, Fidel. Cigarette smoking means. 3,674,036, Cl. 131-7.000.

Vekony, Balazs. Garbage can lid lock. 3,674,298, Cl. 292-258.000.

Velavicius, Alfonsas: *See—*
Wanlass, Bert R.; and Velavicius, Alfonsas, 3,674,296.

Venable, Catherine M.: *See—*
Venable, Henry B.; and Venable, Catherine M., 3,674,183.

Venable, Henry B.; and Venable, Catherine M. Dispensing device. 3,674,183, Cl. 222-212.000.

Ventures Research & Development Group: *See—*
Korman, Nathaniel I., 3,674,364.

Vepa AG: *See—*
Fleissner, Heinz, 3,673,822.

Vercoglio, John W., to Olin Corporation. Tensile bending of metal panels or strip having inflatable passageways. 3,673,845, Cl. 72-318.000.

Verderevsky, Vadim Anatolievich: *See—*
Tselikov, Alexandr Ivanovich; Nosal Vsevolod Vladimirov ch; and Verderevsky, Vadim Anatolievich, 3,673,840.

Verdier, Henri, to Compagnie Generale des Etablissements Michelin raison sociale Michelin & Cie. Tire tread. 3,674,077, Cl. 152-209.000.

Verdier, Henri, to Compagnie Generale des Etablissements Michelin, raison Sociale Michelin & Cie. Wheel for high-speed cornering. 3,674,080, Cl. 152-375.000.

Verdol, Joseph A.; and Ryan, Patrick W., to Atlantic Richfield Company. Elastomers from polyhydroxy polydienes. 3,674,743, Cl. 260-73.00l.

Verhoeff, Jacobus, to U.S. Philips Corporation. Device for checking a group of symbols to which a checking symbol is joined and for determining this checking symbol. 3,675,202, Cl. 340-146.1aq.

Vernaleken, Hugo; Court, Otto; and Weirauch, Kurt, to Farbenfabriken Bayer Aktiengesellschaft. Process of producing polycarbonate. 3,674,740, Cl. 260-47.

Vetter, Ottomar H., to United-Carr, Incorporated. Combined cable clamp and seal for a backshell. 3,675,184, Cl. 339-103.0b.

Viaud, Jean-Luc: *See—*
Delafosse, Jacques; and Viaud, Jean-Luc, 3,674,637.

Viehrig, Wolfgang: *See—*
Kohler, Roland; Nagel, Erich; Hujer, Friedrich; and Viehrig, Wolfgang, 3,674,365.

Vikulina, Ninel Vladimirovna: *See—*
Bokov, Jury Sergeevich; Vikulina, Ninel Vladimirovna; Dogadkin, Boris Aristarkhovich; Erofeev, Boris Vasilievich; Larina, Anastasia Vasilievna; Lavrischev, Vadim Petrovich; Markov, Vladimir Vladimirovich; Naumova, Sofia Fadeevna; Jurina, Olge Demidovna; and Yarovaya, Galina Dmitrievne, 3,674,496.

Villanueva, Antonio R., 1/2 to Wren, Holvy. Game stick and method of manipulating it. 3,674,263, Cl. 273-1.00r.

Vincent, David A.: *See—*
Hantusch, Gerald H.; Vincent, David A.; and Van Tongerloo, Eric H., 3,675,089.

Vinson Industries, Inc.: *See—*
Vinson, Paul, 3,673,901.

Vinson, Paul, to Vinson Industries, Inc. Shuttle press. 3,673,901, Cl. 83-14.000.

VioBin Corporation, mesne: *See—*
Levin, Ezra, 3,674,657.

Virgo, James Russell, to British Steel Piling Company Limited, The. Drilling rigs. 3,674,098, Cl. 173-149.000.

Visser, Jeronimo, to Upjohn Company, The. Preparation of lincomycin analogues. 3,674,647, Cl. 195-80.00r.

Voelkl, Walter, to Siemens Aktiengesellschaft. Impregnated self-healing alternating voltage capacitor. 3,675,094, Cl. 317-258.000.

Voelz, Hans-Georg: *See—*
Schnegg, Robert; Pelousek, Herbert; Dippolhofer, Robert; Wiegreffe, Wolfgang; Voelz, Hans-Georg; and Kienast, Gerhard, 3,674,747.

Vogeleer, George B.: *See—*
Brunner, Hans A.; and Vogeleer, George B., 3,673,834.

Vogeli, Rudolf, to Lebag Leitungs-und Elektrobau AG. Fall-prevention safety device. 3,674,116, Cl. 188-67.000.

Vogelsberg, Walter H., to Wheaton Industries. Silicon controlled rectifier forward and reverse shift register. 3,675,044, Cl. 307-221.00b.

Vogg, Erwin: *See—*
Stadler, Georg; and Vogg, Erwin, 3,674,694.

Vogt, Wilhelm; Sennewald, Kurt; and Glaser, Hermann, to Knapsack Aktiengesellschaft. Production of glycerol acetates. 3,674,839, Cl. 260-491.000.

Vogt, Willy: *See—*
Sauerbruch, Ernst; Scherrer, Donat; and Vogt, Willy, 3,674,400.

Voitsekhovsky, Bogdan Vyacheslavovich; Zuev, Alfred Alexandrovich; Plaxin, Vladimir Nikolaevich; and Makarov, Valery Nikolaevich. Hydraulic press. 3,673,849, Cl. 72-448.000.

Volbeda, Johan H., to Nederlandse Maatschappij voor werken Buitengaats Netherlands Offshore Company N.V. Method of and apparatus for burying sub-sea pipelines, cables and the like. 3,673,808, Cl. 61-72.400.

Volkert, Otto: *See—*
Hoffmann, Horst; Krauch, Carl Heinrich; Otto, Hans-Werner; and Volkert, Otto, 3,674,494.

Volkmann, Dieter; and Lange, Wilfried. Control valve means for a percussion device actuated by compressed air. 3,673,923, Cl. 91-309.000.

Vollmer, Udo: *See—*
Stier, Otto; Kuhn, Heinz; and Vollmer, Udo, 3,674,083.

Vollmer Werke Maschinenfabrik GmbH: *See—*
Stier, Otto; Kuhn, Heinz; and Vollmer, Udo, 3,674,083.

Volupte, Inc.: *See—*
Vastano, Alphonso N., 3,674,039.

Von Beckmann, Helmut Rolf Erich: *See—*
Bencsics, Odon Steven; and Von Beckmann, Helmut Rolf Erich, 3,675,233.

von Konig, Anita: *See—*
Kampfer, Helmut; von Konig, Anita; Ranz, Erwin; von Rintelen, Harald; Mayer, Dietmar; and Sasse, Klaus, 3,674,479.
Kampfer, Helmut; Von Konig, Anita; Ranz, Erwin; von Ritelen, Harald; Mayer, Dietmar; and Sasse, Klaus, 3,674,480.

von Konig, Anita; Liebe, Werner; and Timmler, Helmut, to Agfa-Gevaert Aktiengesellschaft. Image receiving material for the silver salt diffusion process. 3,674,481, Cl. 96-29.000.

von Platen, Baltzar Carl: *See—*
Jonsson, Finn Lennart; Trolle, Stern; and von Platen, Baltzar Carl, 3,674,403.

von Rintelen, Harald: *See—*
Kampfer, Helmut; von Konig, Anita; Ranz, Erwin; von Rintelen, Harald; Mayer, Dietmar; and Sasse, Klaus, 3,674,479.

von Ritelen, Harald: *See—*
Kampfer, Helmut; Von Konig, Anita; Ranz, Erwin; von Ritelen, Harald; Mayer, Dietmar; and Sasse, Klaus, 3,674,480.

Von Tobel, Hans, to Sandoz Ltd. Phthaloc-anine compounds. 3,674,783, Cl. 260-242.000.

Vrancken, Marcel Nicolas; Brinckman, Eric Maria; and Heugebaert, Frans Clement, to Agfa-Gevaert. Reproduction method. 3,674,483, Cl. 96-33.000.

Vredenburgh, Walter A.; and Hollis, Samuel D., to Pennsylvania Industrial Chemical Corporation. Alkylphenol-aldehyde resins. 3,674,723, Cl. 260-3.000.

Vsesojuzny Naucho-Issledovatelsky: *See—*
Tselikov, Alexandr Ivanovich; Nosal Vsevolod Vladimirovich; and Verderevsky, Vadim Anatolievich, 3,673,840.

Vuaroqueaux, Jean-Claude, to Toseco International Limited. Refractory dressing method. 3,674,518, Cl. 106-38.270.

Wacker-Chemie G.m.b.H.: *See—*
Nitzsche, Siegfried; Kaiser, Wolfgang; Wohlfarth, Ernst; and Hittmair, Paul, 3,674,738.

Wade, Kenneth R., to United Gas-Industries Limited. Apparatus for controlling the operation of fuel burners. 3,674,410, Cl. 431-74.000.

Wahlen, Werner; and Blumber, Hans, to Kapafar Business Trust Reg. Apparatus for cutting slots or grooves in punch support plates or the like. 3,673,920, Cl. 90-58.00b.

Walbeck, Maude E. Golfing accessories holder. 3,674,189, Cl. 224-5.00c.

Waldenburger, Hermann: *See—*
Decker, Herbert; and Waldenburger, Hermann, 3,674,126.

Walford, Gordon L.: *See—*
Shen, Tsung-Ying; Witzel, Bruce E.; and Walford, Gordon L., 3,674,843.
Shen, Tsung-Ying; Jones, Howard; Witzel, Bruce E.; and Walford, Gordon L., 3,674,844.
Shen, Tsung-Ying; Ruyle, William V.; Witzel, Bruce E.; and Walford, Gordon L., 3,674,875.

Walker, Brian Allison, to Chrysler United Kingdom Limited. Windscreen washing devices. 3,674,967, Cl. 200-156.000.

Walker, Grant W.: *See—*
Young, Bruce O.; Walker, Grant W.; Ford, Duane B.; and Seegmiller, Wan, 3,674,115.

Walker, Lynn P.: *See—*
Oleszko, Thaddeus J.; and Walker, Lynn P., 3,674,890.

Walker, Robert R., Jr.: *See—*
Babb, Billy W., 3,674,288.

Wallhausser, Karl Heinz: *See—*
Lindner, Fritz; Wallhausser, Karl Heinz; and Huber, Gerhard, 3,674,866.

Walsh, Raymond Herbert: *See—*
Jones, Philip Michael; and Walsh, Raymond Herbert, 3,674,636.

Walters, Emmett L.: *See—*
Beckham, Robert R.; Walters, Emmett L.; Brown, Jack G.; De Rose, Kenneth M.; and Ryan, Joseph D., 3,673,981.

Walters, John: *See—*
Cavalucci, Ralph; and Walters, John, 3,673,706.

Wanlass, Bert R.; and Velavicius, Alfonsas, to General Motors Corporation. Closure dovetail arrangement. 3,674,296, Cl. 292-216.000.

Ward, John P.: *See—*
Molloy, Kenneth H.; Ward, John P.; and Benson, Victor Mark, 3,675,196.

Warne, Leland C.: *See—*
Armstrong, James B.; Schott, Dan J.; and Warne, Leland C., 3,675,066.

Warne, Leland C., to Sperry Rand Corporation. Planar gas discharge indicator. 3,675,065, Cl. 313-109.500.

Warner Electric Brake & Clutch Company: *See—*
Buisker, Raymond A., 3,674,122.

Warren, Edward L. Educational device employing polarized plastic material. 3,674,906, Cl. 35-4ll.00r.

Washburn, Frank R. Off-shore fire and pollution control system. 3,673,804, Cl. 61-1.00f.

Washimi, Koichi; Kanbayashi, Masaaki; Kanai, Toshio; and Fujimori, Akihiro, to Kureha Kagaku Kogyo Kabushiki Kaisha and Chiyoda Kako Kensetsu Kabushiki Kaisha. Process and apparatus for the thermal cracking of heavy hydrocarbon oils. 3,674,679, Cl. 208-48.000.

Wasley, William L.: *See—*
Pittman, Allen G.; and Wasley, William L., 3,674,820.

Wassell, George W., to Barry, Wright, Corporation, mesne. Record card book. 3,673,721, Cl. 40-104.070.

Wasson, Gene B. Attitude indicator. 3,673,696, Cl. 33-348.000.

Wasson, Gene B. Attitude indicator. 3,673,697, Cl. 33-348.

Wasson, Richard Z., to Federal Sign and Signal Corporation. Aircraft parking method and means. 3,674,226, Cl. 244-114.00r.

Watanabe, Akihiro: *See—*
Higuchi, Noboru; Ogawa, Yutaka; and Watanabe, Akihiro, 3,674,519.

Watanabe, Shigeru; and Ito, Michinobu, to Showa Zoki Co., Ltd. Automatic spring feed device for a spring grinder. 3,673,745, Cl. 51-215.0hm.

Watanabe, Takashi, to Kabushiki Kaisha Towa Denki. Rotary cutter. 3,673,907, Cl. 83-674.000.

Water and Gas Plastics Products: *See—*
Porter, Donald E.; and Burkholder, Jack, 3,674,235.

Waterman, Jacques Abraham; Shaham, Ilan; and Shorr, Leonard M., to Israel Mining Industries-Institute for Research and Development. Copolymerization of allyl fluoride. 3,674,756, Cl. 260-80.810.

Waters Associates, Inc.: *See—*
Waters, James L.; Abrahams, Louis; and Hutchins, Burleigh M., Jr., 3,674,373.

Waters, James L.; Abrahams, Louis; and Hutchins, Burleigh M., Jr., to Waters Associates, Inc. Differential refractometer. 3,674,373, Cl. 356-130.000.

Watson, Cbristopher John Hamilton, to United Kingdom Atomic Energy Authority. Plasma confinement apparatus. 3,674,634, Cl. 176-3.000.

Wayman, Cecil John, to General Electric Company Limited, The. Read-out circuits for electrical position-encoders. 3,675,235, Cl. 340-347.00p.

Waynco, Inc.: *See—*
Harkenrider, Robert J.; and Moe, John L., 3,675,046.

Webb, Richard V.; and Batesky, Donald C., to Eastman Kodak Company. Method of preparing poly(copperphthalocyanine). 3,674,805, Cl. 260-314.50r.

Webber, J. Alan, to Lilly, Eli, and Company. 3-Formyl cephalosporin sulfoxides. 3,674,784, Cl. 260-243.00c.

Weber, Edwin J., to Black and Decker Manufacturing Company, The. Blade mounting means. 3,673,777, Cl. 56-17.500.

Weber, Heinz Paul: *See—*
Kaminow, Ivan Paul; and Weber, Heinz Paul, 3,675,157.

Webster, Edward Ernest: *See—*
Jones, David Thomas; Jowett, George Edward; and Webster, Edward Ernest, 3,674,030.

Weiche, Hans-Joachim, to Linde Aktiengesellschaft. Method of and device for cryogenic surgery. 3,674,031, Cl. 128-303.100.

Weick, Louis F.; and Linne, William F., to Caterpillar Tractor Company. Anticipating air injection system for turbocharged engines. 3,673,796, Cl. 60-13.000.

Weil, Edward D., to Stauffer Chemical Company. Transmitting pressure in a hydraulic system. 3,674,698, Cl. 252-78.000.

Weinfurt, William J., to McGraw-Edison Company. Code transmitter having intermittent drive mechanism. 3,675,237, Cl. 340-357.000.

Weir, Donald Robert: *See—*
Evans, David J. I.; and Weir, Donald Robert, 3,674,465.

Weirauch, Kurt: *See—*
Vernaleken, Hugo; Court, Otto; and Weirauch, Kurt, 3,674,740.

Weissberg, Ernest. Emergency evacuation means for ski chairlifts. 3,674,111, Cl. 182-72.000.

Welch, Archibald H., to Converters Incorporated. Method and apparatus for fan-folded stacking. 3,674,254, Cl. 270-79.000.

Welker, Robert H.; and Halmbrecht, William L., to Libbey-Owens-Ford Company. Sheet edging apparatus. 3,673,737, Cl. 51-38.000.

Welle, Dieter, to Etimex Interplastic GmbH. Apparatus for producing and decorating hollow bodies made of thermoplastic material. 3,674,391, Cl. 425-109.000.

Weller, David Reis, to Bell Telephone Laboratories, Incorporated. Sample-and-hold circuit. 3,675,135, Cl. 328-151.000.

Wellman, James W., Jr. Magnetic clutch coupling for monitoring shaft rotation. 3,675,170, Cl. 335-207.000.

Wells Manufacturing Corporation: *See—*
Evans, David T., 3,673,903.

Wells, Robert A.; and Strobe, Carl J., to SMW Atlanta, Inc., mesne. Easy-opening containers. 3,674,172, Cl. 220-54.000.

Wells, Samuel G., to Teledyne, Inc. Folding bed arrangement. 3,673,618, Cl. 5-164.000.

Welsh, Clarence E.: *See—*
Rohde, Robert P.; Welsh, Clarence E.; and Engelhardt, Hans, 3,674,385.

Welsh, Luther: *See—*
Hoyt, Edwin D.; and Welsh, Luther, 3,674,982.

Welter, Clarence J.; and Ristic, Miodrag, to Diamond Laboratories, Inc. Anaplasmosis vaccines. 3,674,860, Cl. 424-88.

Welty, Albert B., Jr., to Esso Research and Engineering Company. Process for decomposing ammonium sulfate into ammonium bisulfate and ammonia. 3,674,427, Cl. 23-119.000.

Wendt, John S., Jr. Centrifugal separator with means controlling flow. 3,674,206, Cl. 233-19.00a.

Wennergren, Johan Jakob; and Samuelsson, Lars-Gunnar. Process for moisture stabilizing cellulosic sheet material using a polyoxyalkylene glycol and a polyoxyethylene-oxypropylene glycol block polymer. 3,674,632, Cl. 162-168.000.

Wenzel, Kurt, to Telephon-und Telegraphen-Fabriks A.G. Electrical element laminated in structure. 3,675,086, Cl. 317-230.000.

Werkmeister, Dennis W.: *See—*
Bayless, Robert G.; Shank, Charles P.; Botham Ruth A.; and Werkmeister, Dennis W., 3,674,704.

Werner, Edward E.; and Wollangk, Edward G., to Kimberly-Clark Corporation. Tampon insertion device. 3,674,026, Cl. 128-263.000.

Werner Lahara, Inc.: *See—*
Arganbright, Ned H.; Koepnick, Paul J.; Nelson Carl T.; and O'Brien, Arthur F., 3,673,949.

Werner, Lincoln Harvey, to Ciba-Geigy Corporation. Basic ethers of 1-hydroxyphenylbenacycloalkane-2-spirocycloalkyl derivatives. 3,674,796, Cl. 260-295.50a.

Werotte, Louis E.: *See—*
Carbonnel, Jack V.; Grammont, Paul D.; and Werotte, Louis E., 3,674,728.

Wesbey, William H.: *See—*
Fazio, James A.; and Wesbey, William H., 3,674,931.

Wesley, Michael A.: *See—*
Raviv, Josef; and Wesley, Michael A., 3,675,212.

West, Ernest: *See—*
Swanwick, Barry Frederick; West, Ernest; and Cuthbertson, John Harry, 3,673,819.

Westberg, Vernon C. Combined tachometer and maximum speed limiting device. 3,673,992, Cl. 123-118.000.

Western Electric Company, Incorporated: *See—*
Abraham, Bruce C.; Fegley, Charles R.; and Lougher, George B., III, 3,674,141.

Western Electric Company, Incorporated, mesne: *See—*
Haven, Roger Lindsy, 3,675,049.

Westinghouse Electric Corporation: *See—*
Gulbrasen, Earl A.; Tallman, Richard L.; Andrews Kenneth F.; and Buzalski, Bruce T., 3,675,004.

Westvaco Corporation: *See—*
Michaelsen, Alfred L., 3,673,865.

Weyerhaeuser Company: *See—*
Bell, Jack T.; and Smith, Barton K., 3,673,764.
Brookhyser, Byron B., 3,674,256.
Fairfield, Louis R., Jr.; Van Vliet, Raymond A.; and McLauchlan, Thomas A., 3,674,065.
Geib, Thomas E., 3,675,015.
Striplin, Charles D., 3,673,928.

Weyrauch, Adolf, to Zeiss, Carl,-Stiftung d.b.a., Carl Zeiss. Means for measuring position changes of two relatively movable members. 3,674,372, Cl. 356-169.000.

Weyrauch, George T.: *See—*
Schaab, Carl K.; Weyrauch, George T.; and Davis, Terry R., 3,674,589.

Wheaton Industries: *See—*
Vogelsberg, Walter H., 3,675,044.

Wheeler, Marshall L., Jr., to Union Carbide Corporation. Non-cross-linked olefinic siloxane-organic polymer graft copolymers. 3,674,891, Cl. 260-827.000.

Whirlpool Corporation: *See—*
Ripaco, William B.; and Dietrich, John W., 3,673,824.
Tichy, Oscar A. W., 3,674,419.

White, Donald A., to Digital Equipment Corporation. Universal bus arrangement for data processing systems. 3,675,083, Cl. 317-101.000.

White, Kenneth N.; and Meyer, Harold E. Slipjointed knockdown cabinet. 3,674,328, Cl. 312-263.000.

White, William A.: *See—*
Ludwig, Nelson H.; and White, William A., 3,674,869.

Whitehead & Kales Company: *See—*
Peisner, Israel D.; Stol, George H.; and Gotcher, Eugene D., 3,673,969.

Whitehouse, Harper John: *See—*
Lindsay, George F.; and Whitehouse, Harper John, 3,675,052.

Whitesell, George, to Hooker Chemical Corporation. Multiparameter process solution analyzer-controller. 3,674,672, Cl. 204-195.00r.

Whittaker Corporation: *See—*
Loewenstein, Paul; and Gorecki, Thomas A., 3,673,667.

Whyman, Barry Herbert Francis: *See—*
Desty, Denis Henry; and Whyman, Barry Herbert Francis, 3,674,409.

Whysong, Dale C.; Leininger, Dale E.; and Young, Herbert D., to General Kinetics Incorporated. Method of cleaning magnetic tape. 3,674,559, Cl. 134-9.000.

Wiandt, Ronald K.: *See—*
Kelly, Jack L.; and Wiandt, Ronald K., 3,674,277.

Wieg, Heinrich J.: *See—*
Giardini, Dante S.; and Wieg, Heinrich J., 3,673,743.

Wiegreffe, Wolfgang: *See—*
Schnegg, Robert; Pelousek, Herbert; Dippolhofer, Robert; Wiegreffe, Wolfgang; Voelz, Hans-Georg; and Kienast, Gerhard, 3,674,747.

Wieligmann, Friedrich, to Keller, C. Shrink-wrap film heating apparatus. 3,673,703, Cl. 34-225.000.

Wielt, Warren P.: *See—*
Beddows, Norman A.; Quigley, John A.; and Wielt, Warren P., 3,675,058.

Wierzbicki, John R.: *See—*
Dauber, Philip S.; Robelen, Russell J.; and Wierzbicki, John R., 3,675,217.

Wieselman, Jerome J.: *See—*
Schwartz, Leonard; Purcell, Harold K.; and Wieselman, Jerome J., 3,674,688.

Wiggins, E. B., Inc.: *See—*
Calisher, Jay V.; and Burbick, Ross E., 3,674,061.

Wilcox Electric, Inc.: *See—*
Owen, James Neal; Moberly, Raymond Ronald; Martin, Edwin J., Jr.; Yamada, Akemichi; and Thomas, Edmund C., 3,675,162.

Wilczek, Frank J.: *See—*
Keogh, Raymond J.; and Wilczek, Frank J., 3,674,602.

Wilhart, Helmut: *See—*
Judd, Frank Fuller; and Wilhart, Helmut, 3,675,158.
Judd, Frank Fuller; Lieberman, Jan Mark; and Wilhart, Helmut, 3,675,159.

Wilkens, Heinrich: *See—*
Bormann, Gerhard; Gmunder, John; Wilkens, Heinrich; and Troxler, Franz, 3,674,801.

Wilkinson, William H., to Perkins Services N.V. Compound power plant. 3,673,797, Cl. 60-13.000.

Williams, Francis A., to Eastman Kodak Company. Camera cocking mechanism. 3,673,941, Cl. 95-31.0ac.

Williams, Robert H.; and Hoehn, Marvin M., to Lilly, Eli, and Company. Pyrazomycin and process for production thereof. 3,674,774, Cl. 260-210.0ab.

Williamson, Donald E., to Cordis Corporation. Angiographic injector with pump motor starting control. 3,674,009, Cl. 128-2.00a.

Willis, Arnold L., to MSL Industries, Inc. Method of making pillows. 3,673,757, Cl. 53-21.0fw.
Wilmes, Raymond A., to Xerox Corporation. Electrostatic label printer. 3,674,352, Cl. 355-3.000.
Wilson, David G., to Massachusetts Institute of Technology. Electric guideway transportation system. 3,673,966, Cl. 104-1.000.
Wilson, George W., III: *See*—
Coats, John C.; and Wilson, George W., III, 3,674,984.
Wilson, Oran W., to Texas Instruments, Incorporated. Photoconductive detector material. 3,674,712, Cl. 252-501.000.
Wilson, Peter A.: *See*—
Rainer, Norman B.; and Wilson, Peter A., 3,674,722.
Wilson, Richard John Hugh: *See*—
Lilly, Malcolm Douglas; Kay, Garth, and; Wilson, Richard John Hugh; and Sharp, Alister Kimball, 3,674,767.
Wiltshire, Arthur J., to Structural Fibers, Inc. Method of inserting a flexible preform in a mold. 3,673,673, Cl. 29-451.000.
Wiltshire, Arthur J., to Structural Fibers, Inc. Sliding core means for the manufacture of fiber-reinforced plastic tanks. 3,674,394, Cl. 425-112.000.
Wiltshire, Arthur J., to Structural Fibers, Inc. Preform roller. 3,674,599, Cl. 425-80.000.
Windecker, Leo J., to Windecker Research, Inc. Method of making an aircraft wing structure. 3,674,585, Cl. 156-182.000.
Windecker Research, Inc.: *See*—
Windecker, Leo J., 3,674,585.
Winey, James M., to Magnepan Incorporated. Electromagnetic transducer. 3,674,946, Cl. 179-115.500.
Winn, James B., Jr., to Archilithic Co., The. Apparatus for dispensing catalyst coated fibers and cementitious material onto a surface. 3,674,600, Cl. 156-369.000.
Winn, John. Internal combustion engine. 3,673,991, Cl. 123-58.00a.
Winsler, Robert J.; and Richter, Frederic A., to Ardco, Inc. Glass panel refrigerator door. 3,673,735, Cl. 49-70.
Wiremold Company, The: *See*—
D'Aprile, Paul J., 3,674,056.
Wirtgen, Reinhard. Pole-pulling device. 3,674,239, Cl. 254-2.
Wirth, Wolf-Dieter; and Muller, Erwin, to Farbenfabriken Bayer Aktiengesellschaft. Polyesters which contain hydroxyl and carbon amide groups. 3,674,837, Cl. 260-482.00r.
Witinski, Francis D.: *See*—
Baller, Ernst O.; Crandell, Melvin G.; Pease, Donald L.; and Witinski, Francis D., 3,674,363.
Wittholz, Helge, to Dynamit Nobel Aktiengesellschaft. Rifled launching tube. 3,673,916, Cl. 89-1.816.
Witzel, Bruce E.: *See*—
Shen, Tsung-Ying; Witzel, Bruce E.; and Walford, Gordon L., 3,674,843.
Shen, Tsung-Ying; Jones, Howard; Witzel, Bruce E.; and Walford, Gordon L., 3,674,844.
Shen, Tsung-Ying; Ruyle, William V.; Witzel, Bruce E.; and Walford, Gordon L., 3,674,875.
Wlodek, Stanley Thaddeus, to Jones & Laughlin Steel Corporation. Vapor deposited zinc coated metallic substrates having organic coatings. 3,674,445, Cl. 29-195.000.
Wohlfarth, Ernst: *See*—
Nitzsche, Siegfried; Kaiser, Wolfgang; Wohlfarth, Ernst; and Hittmair, Paul, 3,674,738.
Wohrer, Luis C.: *See*—
Economy, James; Wohrer, Luis C.; and Mason, John H., 3,674,894.
Wolf, Milton; and Diebold, James L., to American Home Products Corporation. 2,10-Disubstituted-1,2,3,4-tetrahydrobenzo [b][1,6] naphthyridines useful as CNS depressants. 3,674,790, Cl. 260-286.00r.
Wolfe, Fred G., to Burroughs Corporation. Voice conference system. 3,674,936, Cl. 179-1.50r.
Wolfson, Leonard L., to Nalco Chemical Company. Control of microoganisms in industrial process waters. 3,674,457, Cl. 71-67.000.
Wollangk, Edward G.: *See*—
Werner, Edward E.; and Wollangk, Edward G., 3,674,026.
Wong, Patrick Seck-lai: *See*—
Merrill, Edward W.; and Wong, Patrick Seck-lai, 3,673,612.
Wontorsky, Alexander: *See*—
Ruehlemann, Herbert E.; and Wontorsky, Alexander, 3,675,185.
Wood, James L.: *See*—
Margrave, John L.; Badachhape, Ramachandra B.; Wood, James L.; and Lagow, Richard J., 3,674,432.
Woodall, Jerry M., to International Business Machines Corporation. Converter of electromagnetic radiation to electrical power. 3,675,026, Cl. 250-211.00j.
Worstell, Wayne C.; Cousins, Richard C.; and Cooley, Eugene A., to Dillingham Corporation. Winch braking mechanism. 3,674,119, Cl. 188-134.000.
Wren, Holvy: *See*—
Villanueva, Antonio R., 3,674,263.
Wright, David Ellis; and Hardwick, John David. Educational fluid flow system. 3,673,705, Cl. 35-19.00r.
Wright, Edward L.; and Meseck, Eugene, to Customline Control Products, Inc. Meter proving system. 3,673,851, Cl. 73-3.000.
Wright, George R. Carrier for rods with reels attached. 3,674,190, Cl. 224-5.00e.
Wright, John, to Koppers Company, Inc. Torsionally resilient shaft coupling. 3,673,813, Cl. 64-1.00v.
Wright, Thomas H., Jr., to UID Electronics Corporation. Insertable housing. 3,674,961, Cl. 200-168.00c.
Wszalek, Ferdinand J. Magnetic board game apparatus. 3,674,272, Cl. 273-130.00a.
Wuerstlin, Franz; and Feichtmayr, Franz, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Electrical insulating compositions based on olefin polymers. 3,674,695, Cl. 252-63.200.
Wunderlich, Frederich C.: *See*—
Bedker, Bruce D.; and Wunderlich, Frederich C., 3,673,832.
Wyatt, Glenn O., to Cities Service Company. Modification of feedstock oil with rubber in carbon black process. 3,674,433, Cl. 23-209.400.
Wyman, John E., to Itek Corporation. Photographic image amplifying with copper ions. 3,674,489, Cl. 96-48.000.
Xerox Corporation: *See*—
Baller, Ernst O.; Crandell, Melvin G.; Pease, Donald L.; and Witinski, Francis D., 3,674,363.
Egnaczak, Raymond K., 3,673,632.
Silverberg, Morton, 3,674,475.
Silverberg, Morton, 3,675,011.
Wilmes, Raymond A., 3,674,352.
Yagyu, Shigeyuki: *See*—
Matsubara, Mitio; Yagyu, Shigeyuki; and Takeuchi, Satoru, 3,674,533.
Yakimovich, Viktor Yakovlevich: *See*—
Berlin, Zalman Leivikovich; Bagrov, Oleg Nikolaevich; Maslovsky, Gennady Vasilievich; Serkov, Anatoly Gavrilovich; and Yakimovich, Viktor Yakovlevich, 3,673,988.
Yamada, Akemichi: *See*—
Owen, James Neal; Moberly, Raymond Ronald; Martin, Edwin J., Jr.; Yamada, Akemichi; and Thomas, Edmund C., 3,675,162.
Yamada, Ikuo: *See*—
Mitsui, Tsuneo; Baba, Jun-Ichi; and Yamada, Ikuo, 3,675,002.
Yamadai, Tadaaki; Kushida, Tadao; Konishi, Hiroshi; and Inaba, Yoshinari, to Nissan Motor Company, Limited. Windshield wipers for vehicles. 3,673,631, Cl. 15-250.420.
Yamaguchi, Kazuo: *See*—
Iwasaki, Koichiro; Yamaguchi, Kazuo; Kimura, Harutaka; Hasuo, Masayoshi; and Tanaka, Toru, 3,674,764.
Yamakawa, Fujio: *See*—
Kobayashi, Seihin; Torii, Michihiro; and Yamakawa, Fujio, 3,675,222.
Yamamoto, Hisao: *See*—
Inaba, Shigeho; Akatsu, Mitsuhiro; and Yamamoto, Hisao, 3,674,808.
Yamamoto, Keisaku; Takao, Hiroyoshi; Hirooka, Masaaki; and Oshima, Teruo, to Sumitomo Chemical Company, Limited. Process for copolymerizing alpha-monoolefins with or without a polyene, using catalyst comprising organoaluminum compound and vanadyl compound containing cyclic hydrocarbon group. 3,674,755, Cl. 260-80.780.
Yamamoto, Osamu, to Kabushikikaisha Aichidenkikosakusho. Can opener device. 3,673,682, Cl. 30-4.00r.
Yamatodani, Saburo; and Kanamaru, Tsuneo, to Takeda Chemical Industries, Ltd. Novel microbial acidic heteropolysaccharide and production thereof. 3,674,642, Cl. 195-28.00r.
Yamawaki, Takeshi; Usami, Masakatsu; Suzuki, Tetsumi; and Uematsu, Takao, to Mitsubishi Kasei Kogyo Kabushiki Kaisha; a/k/a Mitsubishi Chemical Industries Limited. Process of polymerizing conjugated dienes and catalyst. 3,674,759, Cl. 260-82.100.
Yanagidaira, Hidetaka; Kawai, Kazuo; and Shintani, Sotokichi, to Kokusai Denshin Denwa Kabushiki Kaisha. Conversion system using a conversion table. 3,674,996, Cl. 235-154.000.
Yannopoulos, John C., to Newmont Exploration Limited. Continuous gas-atomized copper smelting and converting. 3,674,463, Cl. 75-72.000.
Yarovaya, Galina Dmitrievne: *See*—
Bokov, Jury Sergeevich; Vikulina, Ninel Vladimirovna; Dogadkin, Boris Aristarkhovich; Erofeev, Boris Vasilievich; Larina, Anastasia Vasilievna; Lavrischev, Vadim Petrovich; Markov, Vladimir Vladimirovich; Naumova, Sofia Fadeevna; Jurina, Olge Demidovna; and Yarovaya, Galina Dmitrievne, 3,674,496.
Yates, Charles B., to Circuit Foil Corporation. Bonding treatment and products produced thereby. 3,674,656, Cl. 204-13.000.
Yates, Kenneth, 50% to Allison, Donald B. Temporary support for electrical outlet box. 3,674,913, Cl. 174-48.000.
Yearout, James D.; and Tolbert, Richard E., to Process Services Inc. Gas lubricated bearing. 3,674,355, Cl. 308-122.000.
Yenisey, Osman Metin, to Bell Telephone Laboratories, Incorporated. Pulse circuit for controlling pulse. 3,675,048, Cl. 307-261.000.
Yochum, Daniel William; Haines, Paul Gordon; and Popoff, Ivan C., to Pennwalt Corporation. Accelerator composition. 3,674,701, Cl. 252-182.000.
Yokomizo, Takashi: *See*—
Komatsu, Youji,; Furukawa, Yauhiro; and Yokomizo, Takashi, 3,674,886.
Yokotsuka, Tamotsu; Hashimoto, Hikotaka; and Iwaasa, Takashi, to Kikkoman Shoyu Co., Ltd. Production of novel acidstable and thermostable protease. 3,674,644, Cl. 195-62.000.
Yoshida, Katuro: *See*—
Hozumi, Shiro; Hirai, Kenichi; Tanigawa, Yoshiyuki; Yoshida, Katuro; and Sugihara, Kanji, 3,673,666.
Yoshimura, Masao: *See*—

Tsuda, Motohisa; and Yoshimura, Masao, 3,675,027.
Yoshimura, Tatsuhiro: *See*—
Izumo, Masanori; and Yoshimura, Tatsuhiro, 3,674,762.
Yoshiyama, Masami; Sato, Teruo; and Takeda, Hitoshi, to Matsushita Electric Industrial Co., Ltd. Scanning apparatus for electroluminescent crossed-grid panel. 3,674,928, Cl. 178-7.30d.
Young, Bruce O.; Walker, Grant W.; Ford, Duane B.; and Seegmiller, Wan, to Energy Absorption Systems, Inc. Liquid shock absorbing buffer. 3,674,115, Cl. 188-1.00b.
Young, Charles Gilbert, to American Optical Corporation. Compensator for a radial refractive-index gradient in a disc laser. 3,675,152, Cl. 331-94.500.
Young, Herbert D.: *See*—
Whysong, Dale C.; Leininger, Dale E.; and Young, Herbert D., 3,674,559.
Youngstown Sheet and Tube Company: *See*—
Cullen, Roy H.; and Elliott, Charles H., 3,673,785.
Yperman, Jean Michel Baudry Ghislain; and Belhomme, Charles, to U.S. Philips Corporation. Electric ceramic resistors having positive temperature coefficients and method of manufacturing same. 3,674,713, Cl. 252-520.000.
Yu, Ruey J.: *See*—
Blank, Fritz; Day, William C.; Harmon, Sandra R.; Toncic, Pauline F.; and Yu, Ruey J., 3,674,645.
Zabel, Marvin L.: *See*—
Gage, Frank H.; and Zabel, Marvin L., 3,674,211.
Zablocki, Richard A.: *See*—
Scarnato, Thomas J.; Gordon, Paul C.; Hunter, Stephen R.; Krage, Paul W.; and Zablocki, Richard A., 3,673,779.
Zagel, Samuel J.; and Patton, Thomas H., to Compco Corporation. Room lighting installation. 3,675,006, Cl. 240-9.00r.
Zakharov, Valery Dmitrievich: *See*—
Fedorov, Svyatoslav Nikolaevich; and Zakharov, Valery Dmitrievich, 3,673,616.
Zakrzewski, Zdzislaw. Fluid motors. 3,673,924, Cl. 91-462.000.
Zaloudek, Theodore V.: *See*—
Garrett, Donald E.; and Zaloudek, Theodore V., 3,674,919.
Zankl, Frank, to Kearney & Trecker Corporation. Vibration dampener for a machine tool. 3,673,918, Cl. 90-11.00r.
Zankl, Frank; and Lohneis, Earl R., to Kearney & Trecker Corporation. Machine tool guide way restraint. 3,674,323, Cl. 308-3.00a.
Zaruba, Wenzel; and Sehnal, Jan, to Textol Systems, Inc. Reciprocating linear actuator. 3,673,874, Cl. 74-25.000.
Zaugg, Roland. Device for unidirectionally blocking a ratchet wheel in a clockwork movement. 3,673,791, Cl. 58-86.000.
Zavody Antonina Zapotockeho, narodni podnik: *See*—
Kralicek, Jaroslav; Kubanek, Vladimir; Solcova, Jitka; and Kondelikova, Jaroslava, 3,674,751.
Zeiss, Carl: *See*—
Butscher, Karlheinz, 3,675,238.
Zeiss, Carl,-Stiftung d.b.a., Carl Zeiss: *See*—
Weyrauch, Adolf, 3,674,372.
Zemba, John W.: *See*—
Dunbar, Joseph E.; and Zemba, John W., 3,674,795.
Zeneski, Edmund A., to Barden Corporation, The. Cage for angular contact ball bearing. 3,674,356, Cl. 308-187.000.
Zergenyi, Janos; and Habicht, Ernst, to Geigy Chemical Corporation. 4-Chloro-5-(2-methylene-butyryl)-benzo(b) thiopene-2-carboxylic acids. 3,674,810, Cl. 260-330.500.
Zimmerle, Donald F.: *See*—
Fischer, Robert E.; Raiff, Lawrence C.; Seybold, James M.; and Zimmerle, Donald F., 3,674,924.
Zimmermann, Volker, to Brown, Boveri & Cie. Method and apparatus for multuplying analog electrical quantities. 3,674,994, Cl. 235-150.520.
Zippe, Gunter: *See*—
Baumgartner, Siegfried; Fries, Bernd; Lidl, Rolf; and Zippe, Gunter, 3,674,408.
Zirkle, Charles L.: *See*—
Kaiser, Carl; and Zirkle, Charles L., 3,674,792.
Zoecon Corporation: *See*—
Siddall, John B., 3,674,663.
Zohar, Itzchak. Last for shoe production. 3,673,623, Cl. 12-133.00r.
Zouhar, Drahomir: *See*—
Havranek, Milan; Zouhar, Drahomir; Dusik, Josef; Kucera, Jaromir; and Krejcirik, Jiri, 3,673,818.
Zuev, Alfred Alexandrovich: *See*—
Voitsekhovsky, Bogdan Vyacheslavovich; Zuev, Alfred Alexandrovich; Plaxin, Vladimir Nikolaevich; and Makarov, Valery Nikolaevich, 3,673,849.
Zuk, Borys, to RCA Corporation. Transmission gate and biasing circuits. 3,675,144, Cl. 330-40.000.
Zykov, Vladimir Pavlovich; Panov, Alexei Alexandrovich; Prudnikov, Pavel Alexeevich; Khlopin, Mikhail Ivanovich; and Shlyapnikov, Alexel Dmitrievich. Electrolytic capacitor and a method of manufacturing the same. 3,675,087, Cl. 317-230.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 4TH DAY OF JULY, 1972

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

American Machine & Foundry Co.: *See*—
Walsh, Richard D. Re. 27,416.
Bell Telephone Laboratories, Inc.: *See*—
Schoeffler, Max S. Re. 27,422.
Brown & Root, Inc.: *See*—
Rochelle, William R., Lochridge, and Desai. Re. 27,420.
Desai, Ardeshir: *See*—
Rochelle, William R., Lochridge, and Desai. Re. 27,420.
Egawa, Susumu, to Matsushita Electric Industrial Co., Ltd. Dynamic convergence device for three electron gun color television receiver. Re. 27,417, 7–4–72, Cl. 315—13.
Ericson, John A.: *See*—
Nadrich, John. Re. 27,419.
Honeywell Inc.: *See*—
Owens, Wiley H. Re. 27,421.
Hulbert, Richard W.: *See*—
Nies, Nelson P., and Hulbert. Re. 27,424.
Lochridge, Joe C.: *See*—
Rochelle, William R., Lochridge, and Desai. Re. 27,420.
Matsushita Electric Industrial Co., Ltd.: *See*—
Egawa, Susumu. Re. 27,417.
Mayne, William H., to Petty Geophysical Engineering Co. Method and apparatus for improving seismic impact signals. Re. 27,418, 7–4–72, Cl. 181—.5.
Nadrich, John, and J. A. Ericson. Closure for a bottom pour metallurgical ladle. Re. 27,419, 7–4–72, Cl. 222—548.
Nies, Nelson P., and R. W. Hulbert, to United States Borax & Chemical Corp. Zinc borate of low hydration and method for preparing same. Re. 27,424, 7–4–72, Cl. 23—59.
Owens, Wiley H., to Honeywell Inc. Pyrotechnic means for interrupting the light output of a flash bulb. Re. 27,421, 7–4–72, Cl. 250—201.
Petty Geophysical Engineering Co.: *See*—
Mayne, William H. Re. 27,418.
Riester, William C., to Trico Products Corp. Windshield cleaning system for motor vehicles. Re. 27,423, 7–4–72, Cl. 318—443.
Rochelle, William R., J. C. Lochridge, and A. R. Desai, to Brown & Root, Inc. Marine apparatus for supporting flexible elongate pipe means during underwater laying thereof. Re. 27,420, 7–4–72, Cl. 61—72.3.
Schoeffler, Max S., to Bell Telephone Laboratories, Inc. Automatic recall switching system. Re. 27,422, 7–4–72, Cl. 179—18.
Trico Products Corp.: *See*—
Riester, William C. Re. 27,423.
Walsh, Richard D., to American Machine & Foundry Co. Control mechanism for bowling pin spotting machine. Re. 27,416, 7–4–72, Cl. 273—43.
United States Borax & Chemical Corp.: *See*—
Nies, Nelson P., and Hulbert. Re. 27,424.

LIST OF PLANT PATENTEES

Howard Rose Co.: *See*—
McGredy, Samuel D. 3,226.
Jackson & Perkins Co.: *See*—
Kordes, Reimer. 3,228.
Kordes, Reimer 3,229.
Lens, Louis. 3,227.
Kordes, Reimer, to Jackson & Perkins Co. Rose plant. 3,228, 7–4–72, Cl. 15.
Kordes, Reimer, to Jackson & Perkins Co. Rose plant. 3,229, 7–4–72, Cl. 22.
Lens, Louis, to Jackson & Perkins Co. Rose plant. 3,227, 7–4–72, Cl. 20.
McGredy, Samuel D., to Howard Rose Co. Rose plant. 3,226, 7–4–72, Cl. 11.
Merrill, Grant. Peach tree. 3,230, 7–4–72, Cl. 43.
Pan-American Plant Co.: *See*—
Shoesmith, Leonard H. 3,224.
Shoesmith, Leonard H. 3,225.
Shoesmith, Leonard H., to Pan-American Plant Co. Chrysanthemum plant (Hostess). 3,224, 7–4–72, Cl. 76.
Shoesmith, Leonard H., to Pan-American Plant Co. Chrysanthemum plant (Copperplate). 3,225, 7–4–72, Cl. 79.

LIST OF DESIGN PATENTEES

Abbott Laboratories: *See*—
Swartzbaugh, Peter. 224,091.
Accurist S.A.: *See*—
Musy, Raymond. 224,131.
Acree, Julian J. Refuse can stand. 224,144, 7–4–72, Cl. D49—30.
Advance Metal Products, Inc.: *See*—
Kalendar, Herbert. 224,115.
Ammons, Jimmy W. Camper. 224,098, 7–4–72, Cl. D14—3.
Annichini, Luciano. Table lamp. 224,139, 7–4–72, Cl. D48—20.
Anzai, Shiro, M. Murata, T. Nishikawa, and T. Hanakata, to Canon Kabushiki Kaisha. Calculator tape cartridge. 224,116, 7–4–72, Cl. D26—14.
Ar-Ka-Mo Sporting Goods, Inc.: *See*—
Tremel, Raymond F., and Christian. 224,122.
Asahi Engineering Co., Ltd.: *See*—
Matsumoto, Rikio. 224,087.
Asahi Kogaku Kogyo Kabushiki Kaisha: *See*—
Goto, Kazuo. 224,164.
Bach, Walter H. Motion picture camera housing. 224,162, 7–4–72, Cl. D61—1.
Baierl, Martha L. H. Ski doll. 224,121, 7–4–72, Cl. D34—4.
Baranowski, Frank, Jr. Pressure regulator. 224,106, 7–4–72, Cl. D23—21.
Bell Telephone Laboratories, Inc.: *See*—
Genaro, Donald M., Kelly, McGarvey, and Stokes. 224,117.
Berg Mfg. Co., The: *See*—
Mastis, Victor. 224,107.
Berkey/Colortran Mfg., Inc.: *See*—
Hartz, George R. 224,118.
Blo/Data Corp.: *See*—
Raczak, Earl F. 224,102.
Blankenship, Arthur C., to Uniroyal, Inc. Pneumatic tire. 224,180, 7–4–72, Cl. D90—20.
Bloch, Jack, to Foster Grant Co., Inc. Pair of spectacles. 224,160, 7–4–72, Cl. D57—1.
Boganowski, Theodore D. Ski scooter. 224,125, 7–4–72, Cl. D34—15.
Briggs & Stratton Corp.: *See*—
Gordon, Douglas. 224,170.
Brown, William L., to Littelfuse, Inc. Fuse panel. 224,113, 7–4–72, Cl. D26—13.
Bryant, Helen H. Knapsack. 224,178, 7–4–72, Cl. D87—1.
Burandt, Corliss O., to Thexton Mfg. Co. Connector socket. 224,109, 7–4–72, Cl. D26—1.
Cadiou, Jean, to Societe Anonyme Automobiles Citroen. Automobile. 224,097, 7–4–72, Cl. D14—3.
Canon Kabushiki Kaisha: *See*—
Anzai, Shiro, Murata, Nishikawa, and Hanakata. 224,116.
Christian, Thomas C.: *See*—
Tremel, Raymond F., and Christian. 224,122.
Clement, Carl J., to Pholophysics, Inc. Combined data terminal and hard copy printer. 224,112, 7–4–72, Cl. D26—5.
Cleminshaw, Douglas R., and R. G. Wells, to R. E. Dietz Co. Vehicle auxillary lamp. 224,143, 7–4–72, Cl. D48—32.
Clifford, Arthur J. Tongue depressor. 224,173, 7–4–72, Cl. D83—12.
Corning Glass Works: *See*—
Mirow, Gregory. 224,136.
Cuva, Angelo C. Light socket holder. 224,085, 7–4–72, Cl. D8—259.
Cyr, Steve, and M. Whelan, to Standard Oil Co. Compartmented cover for a tray. 224,090, 7–4–72, Cl. D9—254.
Dart Industries, Inc.: *See*—
Swett, James B. 224,133.
Dietz, R. E., Co.: *See*—
Knapp, George A. 224,142.
Cleminshaw, Douglas R., and Wells. 224,143.
Dioptrix, Inc.: *See*—
Simpson, Lewis E. 224,166.
Doman, Donald W., to Kohler Co. Water closet. 224,108, 7–4–72, Cl. D23—65.
Duvall, Leroy F., and C. D. Stone, to The Quaker Oats Co. Expanded cereal food product. 224,077, 7–4–72, Cl. D1—1.
Eastman Kodak Co.: *See*—
Laughon, Thomas C. 224,165.
Electrohome Ltd.: *See*—
Griffin, Donald S. 224,159.
McQuarrie, Harvey K. 224,161.
Elixir Industries: *See*—
Sahm, Roland R. 224,149.
Sahm, Roland R. 224,150.
Foster Grant Co., Inc.: *See*—
Bloch, Jack. 224,160.
Frank, Randolph L. Inflatable sled. 224,127, 7–4–72, Cl. D34—15.

Fukda, Masahiro: *See*—
Mizukawa, Shigeo, and Fukda. 224,163.
Gaffney, James F. Gun support. 224,084, 7–4–72, Cl. D8—235.
Gaskins, Robert J. Combined mud flap support and tail light holder for trucks. 224,099, 7–4–72, Cl. D14—6.
Genaro, Donald M., T. J. Kelly, J. N. McGarvey, and R. R. Stokes, to Bell Telephone Laboratories, Inc. Videotelephone transceiver. 224,117, 7–4–72, Cl. D26—14.
Gilbert, Clifford W. Guitar. 224,154, 7–4–72, Cl. D56—901.
Glass, Marvin, & Associates: *See*—
Morrison, Howard J., and Glass. 224,124.
Glass, Marvin I.: *See*—
Morrison, Howard J., and Glass. 224,124.
Gordon, Douglas, to Briggs & Stratton Corp. Muffler. 224,170, 7–4–72, Cl. D77—1.
Goto, Kazuo, to Asahi Kogaku Kogyo Kabushiki Kaisha. Camera focussing handle. 224,164, 7–4–72, Cl. D61—1.
Griese, Elmer W., Jr., to National Can Corp. Carrying handle for a container or the like. 224,093, 7–4–72, Cl. D9—291.
Griffin, Donald S., to Electrohome Ltd. Television receiver. 224,159, 7–4–72, Cl. D56—4.
Hadlow, David M., to The Stanley Works, Drapery rod. 224,081, 7–4–72, Cl. D8—208.
Haeger Potteries, Inc., The: *See*—
Kaelke, Edwin K. 224,120.
Hanakata, Takamitsu: *See*—
Anzai, Shiro, Murata, Nishikawa, and Hanakata. 224,116.
Hancock, Glen C., and W. T. Young, to Shoney's South, Inc. Food bar. 224,171, 7–4–72, Cl. D80—2.
Harman-Kardon, Inc.: *See*—
Yurdin, Carl. 224,157.
Yurdin, Carl. 224,158.
Hartz, George R., to Berkey/Colortran Mfg., Inc. Combined battery pack and charger unit. 224,118, 7–4–72, Cl. D26—15.
Healthwear Underwear, Inc.: *See*—
Wise, Daniel. 224,078.
Hedstrom Co.: *See*—
Voytko, Charles L. 224,079.
Heimann, Richard F. Data display console. 224,110, 7–4–72, Cl. D26—5.
Hitachi Ltd.: *See*—
Matsumoto, Rikio. 224,087.
Holden, William R. Cigarette holder or similar article. 224,174, 7–4–72, Cl. D85—8.
Hooker, Russell H. Holder for pens and pictures. 224,168, 7–4–72, Cl. D74—5.
Huley, Peter. Tricycle. 224,126, 7–4–72, Cl. D34—15.
Hunter, George L. L. Radio cabinet. 224,156, 7–4–72, Cl. D56—4.
Huthsing, Charles K., Jr., deceased, by N. Evelyn Huthsing, executor. Bottle or similar article. 224,088, 7–4–72, Cl. D9—40.
Huthsing, N. Evelyn: *See*—
Huthsing, Charles K., Jr. 224,088.
Janome Sewing Machine Co., Ltd.: *See*—
Yamamoto, Yasuaki. 224,132.
Kaelke, Edwin K., to The Haeger Potteries, Inc. Floral vase or the like. 224,120, 7–4–72, Cl. D29—28.
Kalendar, Herbert, to Advance Metal Products, Inc. Control station for penumatic tube system. 224,115, 7–4–72, Cl. D26—13.
Kelly, Thomas J.: *See*—
Genaro, Donald M., Kelly, McGarvey, and Stokes. 224,117.
Kelley, James O.: *See*—
Propst, Robert L., and Kelley. 224,096.
Kidde, Walter, & Co., Inc.: *See*—
Sterner, Russell L. 224,128.
Sterner, Russell L. 224,129.
Knapp, George A., to R. E. Dietz Co. Vehicle marker light lens. 224,142, 7–4–72, Cl. D48—32.
Kohler Co.: *See*—
Doman, Donald W. 224,108.
Kostee, Frank, Sr. Tie-down device. 224,082, 7–4–72, Cl. D8—229.
Lapeyre, James M. Insert roll hold down. 224,151, 7–4–72, Cl. D55—1.
Lapeyre, James M., Insert roll hold down. 224,152, 7–4–72, Cl. D55—1.
Lapeyre, James M. Insert roll hold down. 224,153, 7–4–72, Cl. D55—1.
Larson, Ellis D. Component for railings, grill works, columns and the like. 224,095, 7–4–72, Cl. D15—1.
Laughon, Thomas C., to Eastman Kodak Co. Design for photofinishing console. 224,165, 7–4–72, Cl. D61—1.
Lawson, Bruce F. Pulling tool or similar article. 224,080, 7–4–72, Cl. D8—14.
Lee, Hue R. Multiple dwelling structure. 224,094, 7–4–72. Cl. D13—1.
Littelfuse, Inc.: *See*—
Brown, William L. 224,113.
Lohmann, Larry J.: *See*—
Mansur, Fred E., Lohmann, Wojcik, and Martel. 224,111.
Mahler, Kenneth. Mat. 224,138, 7–4–72, Cl. D44—31.
Mansur, Fred E., L. J. Lohmann, G. E. Wojcik, and R. A. Martel, to Owens-Illinois, Inc. Multiple gas discharge display device. 224,111, 7–4–72, Cl. D26—5.
Mark, Rebecca. Cosmetic vanity tray. 224,175, 7–4–72, Cl. D86—10.
Martel, Richard A.: *See*—
Mansur, Fred E., Lohmann, Wojcik, and Martel. 224,111.
Mastis, Victor, to The Berg Mfg. Co. Gladhand connector. 224,107, 7–4–72, Cl. D23—44.
Matsumoto, Rikio, to Asahi Engineering Co., Ltd., Sonyo Kako Co., Ltd., and Hitachi Ltd. Combined bottle and ice tray. 224,087, 7–4–72, Cl. D9—10.
McGarvey, John N.: *See*—
Genaro, Donald M., Kelly, McGarvey, and Stokes. 224,117.
McQuarrie, Harvey K., to Electrohome Ltd. Housing for a combined radio receiver and record player or similar article. 224,161, 7–4–72, Cl. D56—4.
Mead Johnson and Co.: *See*—
Wiethop, Robert R. 224,103.
Milan, Nicholas M. Height gauge. 224,146, 7–4–72, Cl. D52—6.
Miller, Herman, Inc.: *See*—
Propst, Robert L., and Kelley. 224,096.
Miller, M. Louis. Victory Engineering Corp. Digital thermometer. 224,147, 7–4–72, Cl. D52—7.
Mirow, Gregory, to Corning Glass Works. Plate or the like. 224,136, 7–4–72, Cl. D44—15.
Mizukawa, Shigeo, and M. Fukda. Motion picture camera. 224,163, 7–4–72, Cl. D61—1.
Mora, Robert T. Steering wheel rim. 224,100, 7–4–72, Cl. D14—30.
Morrison, Howard J., and M. I. Glass, to Marvin Glass & Associates. Child's riding vehicle. 224,124, 7–4–72, Cl. D34—15.
Mueller, Edward G., to George Risk Industries, Inc. Push-button switch. 224,114, 7–4–72, Cl. D26—13.
Murata, Minoru: *See*—
Anzai, Shiro, Murata, Nishikawa, and Hanakata. 224,116.
Musy, Raymond, to Accurist S.A. Case for a pendant watch. 224,131, 7–4–72, Cl. D42—8.
National Can Corp.: *See*—
Griese, Elmer W., Jr. 224,093.
Nishikawa, Tatsuo: *See*—
Anzai, Shiro, Murata, Nishikawa, and Hanakata. 224,116.
Owens-Illinois, Inc.: *See*—
Mansur, Fred E., Lohmann, Wojcik, and Martel. 224,111.
Pholophysics, Inc.: *See*—
Clement, Carl J. 224,112.
Pope, William K., to Uniroyal, Inc. Pneumatic tire. 224,181, 7–4–72, Cl. D90—20.
Proctor, Douglas Ben I. Sail boat hull. 224,167, 7–4–72, Cl. D71—1.
Propst, Robert L., and J. O. Kelley, to Herman Miller Inc. Cart. 224,096, 7–4–72, Cl. D14—3.
Purer, Phillip, to Victory-Puretec, Inc. Lamp. 224,140, 7–4–72, Cl. D48—20.
Quaker Oats Co., The: *See*—
Duvall, Leroy F., and Stone. 224,077.
Raczak, Earl F., to Blo/Data Corp. Automatic pipette. 224,102, 7–4–72, Cl. D16—2.
RDW Industries, Inc.: *See*—
Steidley, Roy B. 224,092.
Richter, Roy E. Wheel. 224,101, 7–4–72, Cl. D14—30.
Risk, George, Industries, Inc.: *See*—
Mueller, Edward G. 224,114.
Rubery, Owen & Co. Ltd.: *See*—
Rudd, Anthony C. 224,169.
Rudd, Anthony C., to Rubery, Owen & Co. Ltd. Internal combustion engine. 224,169, 7–4–72, Cl. D77—1.
Sahm, Roland R., to Elixir Industries. Architectural panel. 224,149, 7–4–72, Cl. D54—2.
Sahm, Roland R., to Elixir Industries. Architectural panel. 224,150, 7–4–72, Cl. D54—2.
Salsgiver, James C.: *See*—
Walter, Russell A., and Salsgiver. 224,148.
Sartell, Donald L. Twirling baton. 224,123, 7–4–72, Cl. D34—5.
Schmidt, Clarence E. Dialyzing unit. 224,172, 7–4–72, Cl. D83—1.
Scire, William M. Hockey souvenir. 224,119, 7–4–72, Cl. D29—28.
Sexton, Edward to The Third Eye, Inc. Lamp. 224,141, 7–4–72, Cl. D48—20.
Shoney's South, Inc.: *See*—
Hancock, Glen C., and Young. 224,171.
Simpson Co.: *See*—
Tyrell, Gilb T. 224,083.
Simpson, Charles H. Canister. 224,134, 7–4–72, Cl. D44—6.
Simpson, Lewis E., to Dioptrix, Inc. Microfiche viewer. 224,166, 7–4–72, Cl. D61—1.
Smith, Donald K. Fishing lure. 224,104, 7–4–72, Cl. D22—28.
Smith, Ralph G. Guitar body or similar article. 224,155, 7–4–72, Cl. D56—1.
Societe Anonyme Automobiles Citroen: *See*—
Cadiou, Jean. 224,097.
Sonyo Kako Co., Ltd.: *See*—
Matsumoto, Rikio. 224,087.
Spencer, Vivian S. Cosmetic mirror. 224,176, 7–4–72, Cl. D86—10.
Standard Oil Co.: *See*—
Cyr, Steve, and Whelan. 224,090.
Stanley Works, The: *See*—
Hadlow, David M. 224,081.
Steffen, Vincent B. Milk carton holder. 224,137, 7–4–72, Cl. D44—21.
Steidley, Roy B., to RDW Industries, Inc. Dispensing closure. 224,092. 7–4–72, Cl. D9—258.
Sterner, Russell L., to Walter Kidde & Co., Inc. Boom section for a telescopic crane boom. 224,128, 7–4–72, Cl. D41—1.
Sterner, Russell L., to Walter Kidde & Co., Inc. Telescopic crane boom. 224,129, 7–4–72, Cl. D41—1.
Stokes, Rembert R.: *See*—
Genaro, Donald M., Kelly, McGarvey, and Stokes. 224,117.
Stone, Charles D.: *See*—
Duvall, Leroy F., and Stone. 224,077.
Swanson, Keith N. Photographic timer. 224,130, 7–4–72, Cl. D42—7.
Swartzbaugh, Peter, to Abbott Laboratories. Dispensing top for a container. 224,091, 7–4–72, Cl. D9—257.
Swett, James B., to Dart Industries, Inc. Sink pad holder. 224,133. 7–4–72, Cl. D44—1.
Takeuchi, Kazutaka, to Tomy Kogyo Co., Ltd. Toy trackway. 224,089, 7–4–72, Cl. D34—015.

Taylor, George F. Sheller for peas or the like. 224,179, 7–4–72, Cl. D89—91.
Thexton Mfg. Co.: *See*—
Burandt, Corliss O. 224,109.
Third Eye, Inc., The: *See*—
Sexton, Edward. 224,141.
Tomy Kogyo Co., Ltd.: *See*—
Takeuchi, Kazutaka. 224,089.
Tremel, Raymond F., and T. C. Christian, to Ar-Ka-Mo Sporting Goods, Inc. Game board. 224,122, 7–4–72, Cl. D34—5.
Turturro, Michael A. Water filter or similar article. 224,105, 7–4–72, Cl. D23—4.
Tyrell, Gilb T., to Simpson Co. Holddown for anchoring wall studs in frame construction to building foundations. 224,033, 7–4–72, Cl. D8—233.
Uniroyal, Inc.: *See*—
Blankenship Arthur C. 224,180.
Pope, William K. 224,181.
Ussery, Cecil F., to Ussery Industries, Inc. Vending machine. 224,145, 7–4–72, Cl. D52—3.
Ussery Industries, Inc.: *See*—
Ussery, Cecil F. 224,145.
Victory Engineering Corp.: *See*—
Miller, M. Louis. 224,147.
Victory-Puretec, Inc.: *See*—
Purer, Phillip. 224,140.
Voytko, Charles L., to Hedstrom Co. High chair. 224,079, 7–4–72, Cl. D6—8.
Wallace, Robert S. Tape cassette box. 224,177, 7–4–72, Cl. D87—1.
Walter, Russell A., and J. C. Salsgiver. Thermometer. 224,148, 7–4–72, Cl. D52—7.
Watts Mfg. Co.: *See*—
Woodruff, Melvin. 224,135.
Wells, Robert G.: *See*—
Cleminshaw, Douglas R., and Wells. 224,143.
Whelan, Mark: *See*—
Cyr, Steve, and Whelan. 224,090.
Wiethop, Robert R., to Mead Johnson and Co. Vitamin tablet or similar article. 224,103, 7–4–72, Cl. D16—3.
Willis, Sheldon. Pin. 224,086, 7–4–72, Cl. D8—266.
Wise, Daniel, Healthwear Underwear, Inc. Purse for attachment to a bra. 224,078, 7–4–72, Cl. D2—400.
Wojcik, Gerald E.: *See*—
Mansur, Fred E., Lohmann, Wojcik, and Martel. 224,111.
Woodruff, Melvin, to Watts Mfg. Co. Covered bowl. 224,135, 7–4–72, Cl. D44—15.
Yamamoto, Yasuaki, to Janome Sewing Machine Co., Ltd. Food mixer. 224,132, 7–4–72, Cl. D44—1.
Young, W. Terry: *See*—
Hancock, Glen C., and Young. 224,171.
Yurdin, Carl, to Harman-Kardon, Inc. Combined radio-phonograph and tape player or similar article. 224,157, 7–4–72, Cl. D56—4.
Yurdin, Carl, to Harman-Kardon, Inc. Phonograph. 224,158, 7–4–72, Cl. D56—4.

CLASSIFICATION OF PATENTS

ISSUED JULY 4, 1972

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2
3R 3,673,609
14V 3,673,610
192 3,673,611

CLASS 3
1 3,673,612
4 3,673,615
13 3,673,616
27 3,673,613

CLASS 4
10 3,673,614
187 3,673,617

CLASS 5
63 3,673,620
164 3,673,618
260 3,673,619

CLASS 7
8 3,673,621

CLASS 8
11 3,674,414
94.21 3,674,415
115.5 3,674,417
116.3 3,674,416
3,674,418
158 3,674,419
173 3,674,420

CLASS 9
1T 3,673,622

CLASS 12
133R 3,673,623

CLASS 13
9 3,674,903
20 3,674,904

CLASS 14
19 3,673,624

CLASS 15
42 3,673,625
97R 3,673,626
104.06R 3,673,629
104.3SN 3,673,627
143A 3,673,628
160 3,673,630
250.42 3,673,631
316 3,673,632

CLASS 16
16 3,673,633
126 3,673,634
163 3,673,635
175 3,673,636

CLASS 17
11.1 3,673,637

CLASS 21
74R 3,674,421
102R 3,674,422

CLASS 23
2E 3,674,423
15W 3,674,424
59 Re.27,424
113 3,674,425
3,674,426
119 3,674,427
134 3,674,428
159 3,674,429
182V 3,674,430
205 3,674,431
3,674,432
209.4 3,674,433
230R 3,674,434
232E 3,674,436
232R 3,674,435
252R 3,674,437
253R 3,674,438
254R 3,674,439
258.5 3,674,440
288F 3,674,441
299 3,674,442

CLASS 24
16PB 3,673,639
19 3,673,638
30.5R 3,673,640
67.9 3,673,641
68D 3,673,642
73B 3,673,643
122.6 3,673,644
203 3,673,645
230.5CR 3,673,646

CLASS 26
54 3,673,647

CLASS 28
1.4 3,673,648
1.7 3,673,649
72.1 3,673,650

CLASS 29
6 3,673,651
25.16 3,673,652
96 3,673,653
97 3,673,654
105A 3,673,656
105 3,673,655
3,673,657
155R 3,673,658
156.8CF 3,673,659
159.2 3,673,660
182.8 3,674,443
186 3,674,444
195 3,674,445
3,674,446
196.6 3,674,447
197.5 3,674,448
200A 3,673,663
200B 3,673,662
201 3,673,661
203DT 3,673,666
203D 3,673,665
203P 3,673,664
254 3,673,668
423 3,673,667
428 3,673,669
432.2 3,673,670
3,673,671
443 3,673,672
451 3,673,673
464 3,673,674
469 3,673,675
473.1 3,673,676
3,673,677
494 3,673,678
571 3,673,679
626 3,673,680
3,673,681

CLASS 30
4R 3,673,682
34.1 3,673,683
34.2 3,673,684
142 3,673,685
168 3,673,686
294 3,673,687

CLASS 32
22 3,673,709

CLASS 33
1 3,673,688
75R 3,673,689
75 3,673,690
76 3,673,691
118 3,673,692
141R 3,673,693
174L 3,673,695
185R 3,673,694
348 3,673,696
3,673,697

CLASS 34
5 3,673,698
66 3,673,699
89 3,673,700
90 3,673,701
162 3,673,702
225 3,673,703

CLASS 35
8 3,673,704
19A 3,673,706
19R 3,673,705
35D 3,673,707
35G 3,674,905
37 3,673,708
44 3,673,710
48R 3,674,906
62 3,673,711
74 3,673,712

CLASS 36
2.5AB 3,673,713
81 3,673,714

CLASS 37
43E 3,673,715
61 3,673,716

CLASS 40
2 3,673,717
5 3,673,718
20R 3,673,719
104.07 3,673,721
125R 3,673,720
152 3,673,722
3,673,724
152.1 3,673,723

CLASS 42
1R 3,673,725

CLASS 43
42.11 3,673,726
42.5 3,673,727
42.51 3,673,728
43.11 3,673,729
137 3,673,730

CLASS 44
10R 3,674,449
66 3,674,450

CLASS 46
47 3,673,731
74D 3,673,732

CLASS 47
58 3,673,733

CLASS 49
35 3,673,734
70 3,673,735
235 3,673,736

CLASS 51
38 3,673,737
73R 3,673,739
93 3,673,738
95WH 3,673,740
101R 3,673,742
127 3,674,451
134.5R 3,673,741
168 3,673,743
177 3,673,744
215HM 3,673,745
283 3,673,746
370 3,673,747

CLASS 52
60 3,673,748
73 3,673,749
169 3,673,750
3,673,751
187 3,673,752
685 3,673,753
747 3,673,754
749 3,673,755

CLASS 53
21FW 3,673,757
22A 3,673,760
22B 3,673,758
29 3,673,759
42 3,673,761
61 3,673,756
86 3,673,762
183 3,673,763
187 3,673,765
335 3,673,766
374 3,673,764
385 3,67 3,767

CLASS 55
135 3,673,768
223 3,673,769
234 3,673,770
306 3,673,771

CLASS 56
13.1 3,673,772
13.3 3,673,773
13.9 3,673,774
14.7 3,673,775
16.9 3,673,776
17.5 3,673,777
320.2 3,673,778
503 3,673,779

CLASS 57
34R 3,673,780
58.89 3,673,781
77.45 3,673,782
135 3,673,783
156 3,673,784
161 3,673,785

CLASS 58
28A 3,673,786
50R 3,673,787
58 3,673,788
3,673,789
63 3,673,790
86 3,673,791
116 3,673,792
152R 3,673,793

CLASS 59
35 3,673,794
80 3,673,795

CLASS 60
13 3,673,796
3,673,797
3,673,798
54 3,673,799
54.5HA 3,673,800
218 3,673,801
226R 3,673,803
226 3,673,802

CLASS 61
1F 3,673,804
5 3,673,805
35 3,673,807
45R 3,673,806
72.3 Re.27,420
72.4 3,673,808

CLASS 62
6 3,673,809
158 3,673,810
3,673,811
404 3,673,812

CLASS 63
12 3,673,815

CLASS 64
1V 3,673,813
8 3,673,814
23 3,673,816
23.7 3,673,817

CLASS 65
4 3,674,452
30 3,674,453
3,674,454
134 3,674,455
182R 3,674,456

CLASS 66
57 3,673,818
126R 3,673,819
177 3,673,820
3,673,821

CLASS 68
5 3,673,822
12R 3,673,823
3,673,824
20 3,673,825
176 3,673,826
222 3,673,827

CLASS 70
58 3,673,828
252 3,673,829
352 3,673,830
373 3,673,831

CLASS 71
67 3,674,457
77 3,674,458
118 3,674,459
121 3,674,460

CLASS 72
35 3,673,832
56 3,673,833
57 3,673,834
3,673,835
78 3,673,836
102 3,673,837
187 3,673,838
196 3,673,839
208 3,673,840
245 3,673,843
248 3,673,841
293 3,673,842
298 3,673,844
318 3,673,845
326 3,673,846
405 3,673,847
410 3,673,848
448 3,673,849

CLASS 73
1R 3,673,850
3 3,673,851
15.4 3,673,852
19 3,673,853
23 3,673,854
37.5 3,673,856
40 3,673,855
40.5A 3,673,857
40.5R 3,673,858
67.8R 3,673,859
67.9 3,673,860
101 3,673,861
102 3,673,862
114 3,673,863
153 3,673,864
159 3,673,865
212 3,673,866
337 3,673,867
343R 3,673,868
3,673,869
349 3,673,870
421R 3,673,871
505 3,673,872
517 3,673,873

CLASS 74
5.43 3,673,875
25 3,673,874
37 3,673,876
3,673,877
125.5 3,673,878
3,673,879
197 3,673,880
198 3,673,881
199 3,673,882
233 3,673,883
242.11S 3,673,884
421R 3,673,885
424.8R 3,673,886
568R 3,673,887
607 3,673,888
681 3,673,890
713 3,673,889
804 3,673,891
870 3,673,892

CLASS 75
.5R 3,674,461
9 3,674,462
72 3,674,463
101R 3,674,464
108 3,674,465
109 3,674,466
124 3,674,469
126R 3,674,467
128A 3,674,468
134V 3,674,470
153 3,674,471
221 3,674,472

CLASS 76
111 3,673,893

CLASS 81
9.51 3,673,894
90A 3,673,895
165 3,673,896

CLASS 82
1C 3,673,897
2.5 3,673,898

CLASS 83
4 3,673,899
11 3,673,900
14 3,673,901
133 3,673,902
168 3,673,903
171 3,673,904
175 3,673,905
208 3,673,906
674 3,673,907
685 3,673,908

CLASS 84
1.01 3,674,907
212 3,674,908
312 3,674,909
377 3,674,910
403 3,673,909
411 3,674,911

CLASS 85
3R 3,673,910
5N 3,673,914
36 3,673,911
45 3,673,912
70 3,673,913

CLASS 87
12 3,673,915

CLASS 89
1.816 3,673,916
7 3,673,917

CLASS 90
11R 3,673,918
11.62 3,673,919
58B 3,673,920

CLASS 91
299 3,673,921
309 3,673,923
422 3,673,922
462 3,673,924

CLASS 92
51 3,673,926
98 3,673,927
128 3,673,925

CLASS 93
36.3 3,673,928
58.2R 3,673,929

CLASS 94
45A 3,673,931
45R 3,673,930

CLASS 95
1.1 3,673,932
3,673,933
11R 3,673,935
11 3,673,934
12 3,673,936
3,673,937
13 3,673,938
3,673,939
3,673,940
24 3,673,943
31AC 3,673,941
57 3,673,942
89R 3,673,944

CLASS 96
1.3 3,674,475
1.5 3,674,473
3,674,474
1.8 3,674,476
3,674,477
3 3,674,478
27 3,674,479
29 3,674,480
3,674,481
3,674,482
33 3,674,483
34 3,674,484
35 3,674,485
35.1 3,674,486
41 3,674,487
44 3,674,488
48R 3,674,490
48 3,674,489
66.3 3,674,491
68 3,674,492
72 3,674,493
86P 3,674,494
91N 3,674,496
91R 3,674,495
94 3,674,497
119 3,674,498
123 3,674,499

CLASS 98
40D 3,673,945
3,673,946

CLASS 99
2R 3,674,509
17 3,674,500
3,674,501
28 3,674,502
100 3,674,503
107 3,674,504
108 3,674,505

109 3,674,506
136 3,674,507
140R 3,674,508
154 3,674,510
176 3,674,511
178 3,674,512
217 3,674,513
237R 3,674,514
278 3,673,947
355 3,673,948
443 3,673,949

CLASS 100

7 3,673,950
38 3,673,951
98 3,673,952

CLASS 101

19 3,673,953
40 3,673,954
93C 3,673,955
3,673,956
3,673,957
122 3,673,958
148 3,673,959
269 3,673,960
465 3,673,961
467 3,673,962

CLASS 102

38 3,673,963
39 3,673,964
95 3,673,965

CLASS 104

1R 3,673,966
88 3,673,967

CLASS 105

369BA 3,673,968
369A 3,673,969

CLASS 106

1 3,674,515
3,674,516
3,674,517
38.27 3,674,518
46 3,674,519
47Q 3,674,530
54 3,674,520
72 3,674,521
90 3,674,522
168 3,674,523
243 3,674,524
286 3,674,526
287SC 3,674,525
289 3,674,527
300 3,674,528
306 3,674,529

CLASS 111

85 3,673,970

CLASS 112

158R 3,673,971
258 3,673,972

CLASS 114

.5D 3,673,973
3,673,974
43.5 3,673,975
61 3,673,976
144 3,673,977

CLASS 115

35 3,673,978

CLASS 116

129 3,673,979

CLASS 117

7 3,674,531
17.5 3,674,532
27 3,674,533
34 3,674,534
36.7 3,674,538
36.8 3,674,535
47A 3,674,536
49 3,674,537
56 3,674,539
3,674,540
62 3,674,541
72 3,674,542
93 3,674,543
93.1PF 3,674,544
93.31 3,674,545
94 3,674,546
135.5 3,674,547
139.5A 3,674,548
201 3,674,549
212 3,674,550
3,674,551
217 3,674,552
3,674,553
237 3,674,554

CLASS 118

6 3,673,980
3,673,981
48 3,673,983
416 3,673,984
637 3,673,985
641 3,673,982

CLASS 119

2 3,673,986
19 3,673,987

CLASS 122

7R 3,673,988

CLASS 123

32EA 3,673,989
52R 3,673,990
58A 3,673,991
118 3,673,992
119A 3,673,993
119B 3,673,994
122D 3,673,995
136 3,673,997
139AP 3,673,996
148E 3,673,998
149H 3,673,999
193CH 3,674,000

CLASS 124

24 3,674,001
30R 3,674,002

CLASS 125

11H 3,674,003
16R 3,674,004

CLASS 126

91A 3,674,005

CLASS 127

29 3,674,555
62 3,674,556
3,674,557

CLASS 128

1.2 3,674,006
2A 3,674,008
3,674,009
2F 3,674,011
2R 3,674,010
2 3,674,007
2.05D 3,674,013
2.05R 3,674,014
2.06F 3,674,015
2.1R 3,674,012
4 3,674,016
25R 3,674,017
33 3,674,018
3,674,019
66 3,674,020
90 3,674,021
142 3,674,022
166 3,674,023
234 3,674,024
263 3,674,025
3,674,026
268 3,674,027
272 3,674,028
285 3,674,029
3,674,030
303.1 3,674,031
346 3,674,032
350R 3,674,033
379 3,674,034

CLASS 130

10 3,674,035

CLASS 131

7 3,674,036
198A 3,674,037

CLASS 132

7 3,674,038
82 3,674,039

CLASS 134

2 3,674,558
9 3,674,559
58R 3,674,040

CLASS 136

23 3,674,560
29 3,674,561
83R 3,674,562
86A 3,674,563
100R 3,674,564
111 3,674,565
114 3,674,566
164 3,674,567
205 3,674,568

CLASS 137

1 3,674,041
3,674,042
12 3,674,043
81.5 3,674,044
3,674,045
101 3,674,047
270 3,674,048
355.2 3,674,049
384.2 3,674,046
536 3,674,050
614.04 3,674,051
625.21 3,674,052

CLASS 138

30 3,674,053
3,674,054
89 3,674,055
134 3,674,056

CLASS 139

122R 3,674,057
124A 3,674,058

CLASS 141

4 3,674,059
83 3,674,060
198 3,674,061
387 3,674,062

CLASS 142

1 3,674,063

CLASS 143

46R 3,674,064
160R 3,674,065

CLASS 144

34E 3,674,066
288A 3,674,067
309L 3,674,068
326R 3,674,069

CLASS 145

50A 3,674,070

CLASS 146

130 3,674,071

CLASS 148

11.5A 3,674,569
12 3,674,570
31.5 3,674,571
3,674,572
3,674,573
3,674,574
32.5 3,674,575
35 3,674,576
143 3,674,577

CLASS 149

2 3,674,578

CLASS 150

1.5R 3,674,072
7 3,674,073
52R 3,674,074

CLASS 151

21B 3,674,075

CLASS 152

209R 3,674,076
209 3,674,077
330 3,674,078
361 3,674,079
375 3,674,080

CLASS 156

5 3,674,579
13 3,674,580
84 3,674,581
133 3,674,582
166 3,674,600
167 3,674,583
173 3,674,584
182 3,674,585
196 3,674,586
230 3,674,588
245 3,674,587
3,674,589
252 3,674,590
272 3,674,591
274 3,674,592
276 3,674,593
299 3,674,594
306 3,674,595
321 3,674,596
331 3,674,597
345 3,674,598
380 3,674,601
3,674,602
394 3,674,603
415 3,674,604
479 3,674,605
497 3,674,606
511 3,674,607
553 3,674,608
577 3,674,609
579 3,674,610

CLASS 160

161 3,674,081
371 3,674,082

CLASS 161

23 3,674,612
37 3,674,613
39 3,674,614
49 3,674,615
62 3,674,616
3,674,617
63 3,674,611
64 3,674,618
119 3,674,619
133 3,674,620
160 3,674,622
164 3,674,623
165 3,674,624
3,674,625
3,674,626
175 3,674,627
178 3,674,628
214 3,674,629

CLASS 162

30 3,674,630
146 3,674,621
149 3,674,631
168 3,674,632
342 3,674,633

CLASS 164

251 3,674,083
271 3,674,084
333 3,674,085

CLASS 165

1 3,674,086
2 3,674,087

CLASS 166

192 3,674,088
245 3,674,089
271 3,674,092
276 3,674,090
299 3,674,093
314 3,674,091

CLASS 172

4.5 3,674,094
7 3,674,095
805 3,674,096

CLASS 173

149 3,674,098

CLASS 174

15C 3,674,912
48 3,674,913
68.5 3,674,914
102R 3,674,915
169 3,674,916

CLASS 175

20 3,674,099
69 3,674,100
389 3,674,101

CLASS 176

3 3,674,634
77 3,674,636
78 3,674,635
3,674,637
81 3,674,638

CLASS 177

3 3,674,097
256 3,674,102

CLASS 178

2R 3,674,917
5.2R 3,674,918
5.4CD 3,674,920
5.4R 3,674,919
3,674,921
6 3,674,922
6.6R 3,674,923
6.8 3,674,924
3,674,925
3,674,926
7.001 3,674,927
7.1DC 3,674,931
7.3D 3,674,928
7.3R 3,674,929
7.5R 3,674,930
3,674,932
69B 3,674,933
88 3,674,934
3,674,935

CLASS 179

1.5R 3,674,936
15AQ 3,674,938
15A 3,674,937
15.55R 3,674,939
18BA Re.27,422
18ET 3,674,940
90AN 3,674,941
100.2C 3,674,943
3,674,944
100.2Z 3,674,942
110A 3,674,945
115.5 3,674,946
175.2R 3,674,947

CLASS 180

5R 3,674,103
3,674,104
9.48 3,674,105
53 3,674,106
79.2R 3,674,107

CLASS 181

.5EC Re.27,418
31B 3,674,108
32R 3,674,109

CLASS 182

46 3,674,110
72 3,674,111

CLASS 184

6.1 3,674,112

CLASS 187

29R 3,674,113
67 3,674,117

CLASS 188

1A 3,674,114
1B 3,674,115
67 3,674,116
72.2 3,674,118
134 3,674,119
277 3,674,120

CLASS 192

52 3,674,121
113A 3,674,122

CLASS 193

23 3,674,123
25B 3,674,124

CLASS 195

28N 3,674,641
28R 3,674,639
3,674,640
3,674,642
62 3,674,643
3,674,644
66R 3,674,645
66 3,674,646
80R 3,674,647
104 3,674,649
127 3,674,648

CLASS 197

19 3,674,125
55 3,674,126

CLASS 198

19 3,674,127
33AA 3,674,128
44 3,674,129
195 3,674,130
230 3,674,131

CLASS 200

50C 3,674,948
51.1 3,674,949
61.48 3,674,950
61.53 3,674,951
61.64 3,674,952
77 3,674,953
82B 3,674,955
82D 3,674,954
144AP 3,674,959
144B 3,674,958
148BV 3,674,957
148A 3,674,956
148R 3,674,964
153R 3,674,965
156 3,674,967
164 3,674,966
166C 3,674,969
166H 3,674,968
168C 3,674,960
3,674,961
3,674,970
172A 3,674,962

CLASS 202

176 3,674,650

CLASS 203

8 3,674,651
11 3,674,652
34 3,674,653
49 3,674,657

CLASS 204

1T 3,674,654
1.5 3,674,655
13 3,674,656
30 3,674,658
52R 3,674,660
56R 3,674,659
73R 3,674,661
147 3,674,662
158R 3,674,663
3,674,664
163R 3,674,665
164 3,674,666
165 3,674,667
171 3,674,668
180P 3,674,669
181 3,674,670
3,674,671
195R 3,674,672
213 3,674,673
225 3,674,674
286 3,674,676
290R 3,674,675
299 3,674,678
302 3,674,677

CLASS 206

1R 3,674,132
44 3,674,133
47A 3,674,134
58 3,674,135
65E 3,674,137
65S 3,674,136
80R 3,674,138
83.5 3,674,139

CLASS 208

48 3,674,679
111 3,674,680
141 3,674,681
157 3,674,682

CLASS 209

73 3,674,140
74 3,674,141
3,674,142
3,674,143
468 3,674,144

CLASS 210

33 3,674,684
3,674,685
37 3,674,686
40 3,674,683
73 3,674,145
3,674,146
86 3,674,687
136 3,674,147
152 3,674,148
163 3,674,149
245 3,674,150
298 3,674,151
321 3,674,152
409 3,674,153
456 3,674,154

CLASS 211

1.5 3,674,155
4 3,674,156

CLASS 212

55 3,674,157

CLASS 214

16.1CE 3,674,158
16.4A 3,674,159
17B 3,674,160
130R 3,674,161
138R 3,674,162
309 3,674,163
377 3,674,164
396 3,674,165
501 3,674,166
505 3,674,167

CLASS 217

26.5 3,674,168

CLASS 219

10.61 3,674,963
10.79 3,674,971
56 3,674,972
73 3,674,973
85 3,674,974
3,674,975
86 3,674,976
121EB 3,674,977
121P 3,674,978
137 3,674,979
367 3,674,980
401 3,674,981
403 3,674,982
462 3,674,983
496 3,674,984
523 3,674,985

CLASS 220

4R 3,674,169
18 3,674,170
54 3,674,171
3,674,172

CLASS 221

6 3,674,173
87 3,674,174
92 3,674,175
135 3,674,176

CLASS 222

52 3,674,177
56 3,674,178
94 3,674,179
145 3,674,180
179.5 3,674,181
193 3,674,182
212 3,674,183
402.13 3,674,184
402.16 3,674,185
402.21 3,674,186
548 Re.27,419

CLASS 223

46 3,674,187

CLASS 224

5C 3,674,189
5E 3,674,190
5G 3,674,188
29R 3,674,191

CLASS 226

11 3,674,192
100 3,674,193
187 3,674,194

CLASS 229

66 3,674,195

CLASS 233

4 3,674,196
14R 3,674,197
19A 3,674,206
26 3,674,198

CLASS 235

3,674,199
30A 3,674,986
60R 3,674,200
61PB 3,674,202
61PC 3,674,201
61.1IE 3,674,990
61.6R 3,674,989
61.7 3,674,988
88 3,674,987
92PD 3,674,991

92TC 3,674,992
150.1 3,674,993
150.52 3,674,994
151.1 3,674,995
151.3 3,674,998
152 3,674,999
154 3,674,996
159 3,674,997
168 3,675,000
175 3,675,001
185 3,675,002
196 3,675,003

CLASS 236

38 3,674,203

CLASS 237

8 3,674,204

CLASS 239

1 3,674,205
69 3,674,207
77 3,674,208
143 3,674,209
204 3,674,210
247 3,674,211
308 3,674,212
425 3,674,213
526 3,674,214
548 3,674,215

CLASS 240

1.3 3,675,004
2 3,675,005
9R 3,675,006
11.2E 3,675,007
108 3,675,008

CLASS 241

18 3,674,216
21 3,674,217
46.06 3,674,218
152R 3,674,219
186R 3,674,220

CLASS 242

75.51 3,674,221
77.1 3,674,222
131 3,674,223

CLASS 244

12B 3,674,224
31 3,674,225
114R 3,674,226
121 3,674,227

CLASS 248

4 3,674,228
68 3,674,233
188 3,674,229
188.8 3,674,230
239 3,674,234
451 3,674,231

CLASS 249

23 3,674,232

CLASS 250

49.5ZC 3,675,010
3,675,011
49.5R 3,675,009
60 3,675,012
65T 3,675,013
66 3,675,014
71R 3,675,015
83.003 3,675,023
83.3D 3,675,019
83.3H 3,675,016
3,675,017
83.3R 3,675,018
93 3,675,020
106S 3,675,021
199 3,675,022
201 Re.27,421
208 3,675,024
211J 3,675,025
3,675,026
213VT 3,675,027
3,675,028
218 3,675,029
222R 3,675,030

CLASS 251

32 3,674,237
162 3,674,235
176 3,674,236
309 3,674,238

CLASS 252

8.8 3,674,688
12.4 3,674,689
25 3,674,690
47.5 3,674,691
56S 3,674,692
62.1 3,674,693
62.59 3,674,694
63.2 3,674,695
63.7 3,674,696
78 3,674,697
3,674,698
135 3,674,699
3,674,700
182 3,674,701
188 3,674,702
313R 3,674,703
316 3,674,704
400 3,674,705
412 3,674,706
413 3,674,707
432 3,674,708
454 3,674,709
465 3,674,710
500 3,674,711
501 3,674,712
520 3,674,713
543 3,674,714

CLASS 254

2R 3,674,239
95 3,674,240

CLASS 256

65 3,674,243

CLASS 259

15 3,674,241
158 3,674,242

CLASS 260

2EP 3,674,715
2.2R 3,674,728
2.5AB 3,674,716
2.5AC 3,674,721
2.5AQ 3,674,718
2.5AS 3,674,717
2.5BC 3,674,720
2.5M 3,674,719
3,674,722
3 3,674,723
3,674,724
9 3,674,725
17.4ST 3,674,726
22D 3,674,727
23AR 3,674,729
23EP 3,674,731
23XA 3,674,730
25 3,674,732
30.6R 3,674,733
31.2N 3,674,734
33.6AQ 3,674,735
41R 3,674,736
45.75K 3,674,737
46.5G 3,674,738
3,674,739
47CP 3,674,741
47XA 3,674,740
47P 3,674,742
73L 3,674,743
75NP 3,674,746
75UA 3,674,745
75M 3,674,744
75P 3,674,748
75R 3,674,747
77.5CH 3,674,749
77.5R 3,674,750
78L 3,674,751
78R 3,674,752
79 3,674,753
79.5B 3,674,754
80.78 3,674,755
80.81 3,674,756
82.1 3,674,759
83.7 3,674,760
86.7 3,674,757
87.3 3,674,761
87.5A 3,674,758
87.5 3,674,762
87.7 3,674,763
88.2R 3,674,764
88.2 3,674,765
3,674,766
89.1 3,674,767
91.3VA 3,674,768
93.7 3,674,769
119 3,674,770
206 3,674,771
207 3,674,772
210AB 3,674,774
210E 3,674,773
239.1 3,674,775
3,674,776
239.3D 3,674,777
239.55D 3,674,778
239.57 3,674,779
240D 3,674,781
240G 3,674,780
240.4 3,674,782
242 3,674,783
243C 3,674,784
243R 3,674,785
247.1 3,674,786
247.2A 3,674,787
250R 3,674,788
270 3,674,789
286R 3,674,790
287R 3,674,791
293.54 3,674,793
293.57 3,674,792
294.8E 3,674,795
294.8F 3,674,794
3,674,799
295AM 3,674,797
3,674,800
295.5S 3,674,796
297R 3,674,798
307D 3,674,803
307F 3,674,802
309.6 3,674,801
3,674,804
314.5R 3,674,805
326.15 3,674,808
3,674,809
326.5M 3,674,807
326.8 3,674,806
330.5 3,674,810
338 3,674,811
348R 3,674,812
348.5 3,674,813
396N 3,674,814
397 3,674,815
397.4 3,674,816
3,674,817
408 3,674,818
3,674,819
3,674,820
409 3,674,821
429K 3,674,824
429R 3,674,823
3,674,825
429.7 3,674,822
437S 3,674,826
453AL 3,674,829
453PC 3,674,827
453P 3,674,828
456P 3,674,830
468CB 3,674,831
469 3,674,832
470 3,674,833
471A 3,674,834
473G 3,674,836
473R 3,674,835
482C 3,674,838
482R 3,674,837
491 3,674,839
501.12 3,674,841
501.17 3,674,840
514R 3,674,842
519 3,674,843
3,674,844
524R 3,674,845
555A 3,674,847
558R 3,674,848
559S 3,674,849
3,674,850
561R 3,674,851
578 3,674,852
606.5B 3,674,853
606.5F 3,674,854
607A 3,674,855
3,674,856
609F 3,674,857
610D 3,674,858
619A 3,674,879
621R 3,674,880
632R 3,674,846
654H 3,674,881
665R 3,674,882
666A 3,674,883
669R 3,674,884
671B 3,674,885
677H 3,674,886
680E 3,674,887
681 3,674,889
681.5 3,674,888
683 3,674,890
827 3,674,891
835 3,674,892
836 3,674,893
875 3,674,894
878B 3,674,895
897B 3,674,896
976 3,674,897

CLASS 261

18B 3,674,244
28 3,674,245
114R 3,674,246

CLASS 264

146 3,674,898
315 3,674,899

CLASS 266

4E 3,674,247
41 3,674,248

CLASS 267

52 3,674,249
61 3,674,250
162 3,674,251

CLASS 269

55 3,674,252

CLASS 270

31 3,674,253
79 3,674,254

CLASS 271

29 3,674,255
63 3,674,256
64 3,674,257
77 3,674,258
84 3,674,259

CLASS 272

1R 3,674,260
79A 3,674,261
85 3,674,262

CLASS 273

1R 3,674,263
3,674,264
43A Re.27,416
55R 3,674,265
73R 3,674,266
75 3,674,267
76 3,674,268
86R 3,674,269
101 3,674,270
115 3,674,271
130A 3,674,272
134AA 3,674,273
135AC 3,674,274
138R 3,674,275
157R 3,674,276

CLASS 274

1L 3,674,277
39A 3,674,278

CLASS 277

95 3,674,279

CLASS 279

2 3,674,280
30 3,674,281

CLASS 280

124F 3,674,282
124R 3,674,283
3,674,285
150AB 3,674,284

CLASS 281

2 3,674,286

CLASS 285

7 3,674,287
24 3,674,288
174 3,674,292
248 3,674,290
367 3,674,291

CLASS 287

56 3,674,293
58CT 3,674,294
189.36B 3,674,289

CLASS 290

61 3,675,031
38C 3,675,032
38 3,675,033

CLASS 292

76 3,674,295
216 3,674,296
252 3,674,297
258 3,674,298
262 3,674,299

CLASS 294

31.2 3,674,300
82 3,674,301
118 3,674,302

CLASS 296

24C 3,674,303
27 3,674,305
43 3,674,304

CLASS 297

17 3,674,306
284 3,674,307
345 3,674,308
379 3,674,309
397 3,674,310
440 3,674,311

CLASS 298

8T 3,674,312

CLASS 299

13 3,674,313
86 3,674,314

CLASS 301

65 3,674,315

CLASS 302

3,674,316

CLASS 303

21CG 3,674,319
21A 3,674,318
21F 3,674,317
21P 3,674,320
28 3,674,321

CLASS 305

38 3,674,322

CLASS 307

9 3,675,034
10AT 3,675,035
3,675,036
3,675,037
66 3,675,038
88.3 3,675,039
133 3,675,040
141 3,675,041
147 3,675,042
205 3,675,043
221B 3,675,044
235 3,675,045
252B 3,675,046
260 3,675,047
261 3,675,048
293 3,675,049
304 3,675,050
308 3,675,051

CLASS 308

3A 3,674,323
6R 3,674,324
35 3,674,325
36.1 3,674,326
122 3,674,355
187 3,674,356
233 3,674,357

CLASS 310

8.1 3,675,052
8.2 3,675,053
9.8 3,675,054
22 3,675,055
54 3,675,056
68D 3,675,057
71 3,675,058
156 3,675,059
172 3,675,060
266 3,675,102

CLASS 312

126 3,674,358
214 3,674,359
222 3,674,360
257 3,674,327
263 3,674,328
319 3,674,329

CLASS 313

63 3,675,061
65 3,675,062
104 3,675,063
108D 3,675,064
109.005 3,675,065
109.5 3,675,066
174 3,675,067
217 3,675,068
268 3,675,069
279 3,675,070

CLASS 315

10 3,675,071
13C Re.27,417
111 3,675,072
149 3,675,073
159 3,675,074
169 3,675,075
200F 3,675,076
209R 3,675,077
289 3,675,078

CLASS 317

11A 3,675,079
13R 3,675,080
15 3,675,081
20 3,675,082
101CB 3,675,084
101 3,675,083
106 3,675,085
230 3,675,086
3,675,087
234R 3,675,088
3,675,089
3,675,090
235R 3,675,091
3,675,092
249R 3,675,093
258 3,675,094
261 3,675,095
262A 3,675,096

CLASS 318

17 3,675,097
85 3,675,098
211 3,675,099
220R 3,675,100
266 3,675,101
281 3,675,103
345 3,675,104
356 3,675,105
443 Re.27,423
3,675,106
601 3,675,107

CLASS 320

2 3,675,108

CLASS 321

3,675,109
14 3,675,110
18 3,675,111

CLASS 322

4 3,675,112
28 3,675,113
31 3,675,117

CLASS 323

6 3,675,115
9 3,675,114
17 3,675,116
48 3,675,119

CLASS 324

37 3,675,118
57 3,675,124
61R 3,675,120
3,675,121
62 3,675,122
96 3,675,123
3,675,125
168 3,675,126
186 3,675,127

CLASS 325

1 3,675,128
174 3,675,130
320 3,675,129
329 3,675,131
423 3,675,132

CLASS 328

55 3,675,133
124 3,675,134
133 3,675,136
144 3,675,137
151 3,675,135
163 3,675,138

CLASS 329

104 3,675,139

CLASS 330

5.5 3,675,140
13 3,675,141
17 3,675,142
18 3,675,143
40 3,675,144
124R 3,675,145

CLASS 331

1R 3,675,146
8 3,675,147
78 3,675,148
94 3,675,149
94.5 3,675,150
3,675,151
3,675,152
3,675,153
3,675,154
3,675,155
3,675,156
3,675,157
109 3,675,158
3,675,159
113R 3,675,160

CLASS 332

16R 3,675,161
23 3,675,162

CLASS 333

30R 3,675,163
32 3,675,164
98P 3,675,165

CLASS 335

164 3,675,166
179 3,675,167
198 3,675,168
205 3,675,169
207 3,675,170
232 3,675,171
257 3,675,172
268 3,675,173
299 3,675,174

CLASS 336

70 3,675,175
182 3,675,176

CLASS 337

66 3,675,177
348 3,675,178

CLASS 338

190 3,675,179

CLASS 339

17F 3,675,180
32R 3,675,181
98 3,675,182
103B 3,675,184
103R 3,675,183
126RS 3,675,185
186M 3,675,186
211 3,675,187
220R 3,675,188
221R 3,675,189

CLASS 340

1R 3,675,191
1 3,675,190
3D 3,675,192
10 3,675,193
15.5DP 3,675,194
38L 3,675,195
40 3,675,196
52A 3,675,197
58 3,675,198
62 3,675,199
146.1AQ 3,675,202
146.1F 3,675,200
146.3AG 3,675,201
146.3AQ 3,675,203
147R 3,675,204
147 3,675,205
149A 3,675,206
172.5 3,675,207
3,675,208
3,675,209

CLASSIFICATION OF PATENTS

	3,675,210	347P	3,675,235		CLASS 352	130	3,674,373	70	3,674,902	1	3,674,386
	3,675,211	357R	3,675,237	12	3,674,346	169	3,674,372	80	3,674,859	4	3,674,387
	3,675,212	365	3,675,239	31	3,674,345		CLASS 401	88	3,674,860	72	3,674,388
	3,675,213		3,675,240	73	3,674,347	8	3,674,374	89	3,674,861	79	3,674,389
	3,675,214	366	3,675,241	84	3,674,348		CLASS 408		3,674,862	80	3,674,390
	3,675,215	381	3,675,242	91	3,674,349	103	3,674,375	90	3,674,864	109	3,674,599
	3,675,216	384E	3,675,243		CLASS 353	115	3,674,376	92	3,674,863		3,674,391
	3,675,217		CLASS 343	27	3,674,350		CLASS 415	99	3,674,865	110	3,674,392
173FF	3,675,218	225	3,675,226		3,674,351	147	3,674,377	118	3,674,866	112	3,674,393
173RC	3,675,219		CLASS 350		CLASS 355		CLASS 416	122	3,674,867	115	3,674,394
173.2	3,675,220	2	3,674,330	3	3,674,352	177	3,674,378		3,674,868	117	3,674,395
174MA	3,675,222	3.5	3,674,331		3,674,353	226	3,674,379	175	3,674,869	145	3,674,396
174TB	3,675,221		3,674,332	5	3,674,354		CLASS 417	229	3,674,872	159	3,674,397
174S	3,675,223	5	3,674,333	8	3,674,361	92	3,674,380	230	3,674,870	166	3,674,398
174	3,675,224	55	3,674,334	10	3,674,362	234	3,674,381	246	3,674,876	225	3,674,399
196	3,675,225	96WG	3,674,335	14	3,674,363	372	3,674,382	250	3,674,873	244	3,674,400
244A	3,675,227		3,674,336	38	3,674,364	476	3,674,383	263	3,674,877	306	3,674,401
258B	3,675,233		3,674,337	40	3,674,365		CLASS 418	270	3,674,871	308	3,674,402
259	3,675,228	117	3,674,338	55	3,674,366	120	3,674,384	273	3,674,874	326	3,674,405
267R	3,675,229	130	3,674,339	77	3,674,367	177	3,674,385	285	3,674,875	330	3,674,404
324A	3,675,230	157	3,674,340	78	3,674,368		CLASS 424	330	3,674,878	353	3,674,403
	3,675,231	160R	3,674,342		CLASS 356	1	3,674,900		CLASS 425	378	3,674,406
	3,675,232	160	3,674,341	2	3,674,369	27	3,674,901			406	3,674,407
347DA	3,675,234	250	3,674,343	36	3,674,370						3,674,408
347DD	3,675,236	312	3,674,344	106	3,674,371						CLASS 431
347SY	3,675,238									1	3,674,409
										74	3,674,410
										93	3,674,411
										124	3,674,412
										344	3,674,413

CLASSIFICATION OF DESIGNS

D 1—	1	224,077	D14—	3	224,096			224,114		8	224,131		224,148		224,165
D 6—	8	224,079			224,097			224,115	D44—	1	224,132	D54—	2 224,149		224,166
D 8—	14	224,080			224,098		14	224,116			224,133		224,150	D71—	224,167
	208	224,081		6	224,099			224,117		6	224,134	D55—	1 224,151	D74—	5 224,168
	229	224,082		30	224,100		15	224,118		15	224,135		224,152	D77—	1 224,169
	233	224,083			224,101	D29—	28	224,119			224,136		224,153		224,170
	235	224,084	D16—	2	224,102			224,120		21	224,137	D56—	224,154	D80—	2 224,171
	259	224,085		3	224,103	D34—	4	224,121		31	224,138		224,155	D83—	1 224,172
	266	224,086	D22—	28	224,104		5	224,122	D48—	20	224,139		4 224,156		12 224,173
D 9—	10	224,087	D23—	4	224,105			224,123			224,140		224,157	D85—	8 224,174
	40	224,088		21	224,106		15	224,089			224,141		224,158	D86—	10 224,175
	254	224,090		44	224,107			224,124		32	224,142		224,159		224,176
	257	224,091		65	224,108			224,125			224,143		224,161	D87—	1 224,177
	258	224,092	D26—	1	224,109			224,126	D49—	30	224,144	D57—	1 224,160		224,178
	291	224,093		5	224,110			224,127	D52—	3	224,145	D61—	224,162	D89—	224,179
D02—	400	224,078			224,111	D41—	1	224,128		6	224,146		224,163	D90—	20 224,180
D13—	1	224,094			224,112			224,129		7	224,147		224,164		224,181
		224,095		13	224,113	D42—	7	224,130							

CLASSIFICATION OF PLANTS

P. —	11	03,226	P. —	20	03,227	P. —	22	03,229	P. —	43	03,230	P. —	76	03,224	P. —	79	03,225
P. —	15	03,228															

GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

(U.S. States, Territories and Armed Forces, the Commonwealth of Puerto Rico, and the Canal Zone)

Alabama	1	Kentucky	21	Oregon	41
Alaska	2	Louisiana	22	Pennsylvania	42
American Samoa	3	Maine	23	Puerto Rico	43
Arizona	4	Maryland	24	Rhode Island	44
Arkansas	5	Massachusetts	25	South Carolina	45
California	6	Michigan	26	South Dakota	46
Canal Zone	7	Minnesota	27	Tennessee	47
Colorado	8	Mississippi	28	Texas	48
Connecticut	9	Missouri	29	Utah	49
Delaware	10	Montana	30	Vermont	50
District of Columbia	11	Nebraska	31	Virginia	51
Florida	12	Nevada	32	Virgin Islands	52
Georgia	13	New Hampshire	33	Washington	53
Guam	14	New Jersey	34	West Virginia	54
Hawaii	15	New Mexico	35	Wisconsin	55
Idaho	16	New York	36	Wyoming	56
Illinois	17	North Carolina	37	U.S. Air Force	57
Indiana	18	North Dakota	38	U.S. Army	58
Iowa	19	Ohio	39	U.S. Navy	59
Kansas	20	Oklahoma	40		

(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

1 : 3,673,896	3,674,075	3,674,909	3,674,154	3,674,298	3,674,021
3,674,913	3,674,111	3,674,910	3,674,197	3,674,299	3,674,045
3,675,182	3,674,115	3,674,917	3,674,212	3,674,321	3,674,060
4 : 3,673,742	3,674,123	3,674,920	3,674,254	3,674,344	3,674,081
3,673,770	3,674,134	3,674,923	3,674,325	3,674,422	3,674,094
3,675,005	3,674,142	3,674,925	3,674,334	3,674,431	3,674,122
3,675,064	3,674,152	3,674,945	3,674,356	3,674,590	3,674,131
3,675,065	3,674,153	3,674,979	3,674,367	3,674,752	3,674,156
3,675,066	3,674,158	3,674,982	3,674,463	3,674,780	3,674,162
3,675,193	3,674,189	3,674,998	3,674,569	3,674,953	3,674,163
3,675,232	3,674,216	3,675,019	3,674,583	3,674,961	3,674,184
6 : Re.27,424	3,674,227	3,675,022	3,674,587	3,675,012	3,674,185
3,673,613	3,674,237	3,675,028	3,674,607	3,675,077	3,674,186
3,673,618	3,674,259	3,675,042	3,674,635	3,675,226	3,674,187
3,673,644	3,674,270	3,675,047	3,674,718	13 : 3,673,778	3,674,226
3,673,680	3,674,271	3,675,052	3,674,824	3,674,136	3,674,231
3,673,693	3,674,281	3,675,063	3,674,827	3,674,172	3,674,273
3,673,695	3,674,288	3,675,071	3,674,848	3,675,175	3,674,279
3,673,698	3,674,291	3,675,076	3,674,876	15 : 3,674,260	3,674,290
3,673,704	3,674,297	3,675,092	3,674,950	16 : 3,674,596	3,674,328
3,673,752	3,674,304	3,675,121	3,674,990	17 : 3,673,610	3,674,347
3,673,758	3,674,306	3,675,129	3,675,038	3,673,678	3,674,348
3,673,803	3,674,308	3,675,137	3,675,112	3,673,685	3,674,396
3,673,807	3,674,311	3,675,141	3,675,148	3,673,686	3,674,397
3,673,812	3,674,341	3,675,149	3,675,151	3,673,696	3,674,469
3,673,833	3,674,346	3,675,170	3,675,152	3,673,697	3,674,473
3,673,842	3,674,354	3,675,183	10 : 3,674,443	3,673,723	3,674,508
3,673,855	3,674,355	3,675,204	3,674,447	3,673,724	3,674,511
3,673,863	3,674,368	3,675,210	3,674,484	3,673,735	3,674,523
3,673,871	3,674,371	3,675,215	3,674,515	3,673,738	3,674,547
3,673,872	3,674,378	3,675,220	3,674,526	3,673,757	3,674,555
3,673,873	3,674,407	3,675,221	3,674,534	3,673,775	3,674,571
3,673,881	3,674,438	8 : 3,673,714	3,674,560	3,673,779	3,674,572
3,673,899	3,674,504	3,674,358	3,674,627	3,673,787	3,674,573
3,673,901	3,674,510	3,674,665	3,674,705	3,673,796	3,674,574
3,673,924	3,674,550	3,674,922	3,674,719	3,673,799	3,674,630
3,673,928	3,674,554	3,675,124	3,674,721	3,673,845	3,674,657
3,673,931	3,674,591	3,675,133	3,674,749	3,673,860	3,674,680
3,673,932	3,674,601	3,675,213	3,674,758	3,673,895	3,674,691
3,673,933	3,674,648	9 : 3,673,721	11 : 3,674,458	3,673,922	3,674,693
3,673,943	3,674,662	3,673,756	3,674,524	3,673,934	3,674,725
3,673,944	3,674,663	3,673,762	12 : 3,673,707	3,673,936	3,674,773
3,673,975	3,674,682	3,673,771	3,673,783	3,673,948	3,674,818
3,674,020	3,674,700	3,673,800	3,673,870	3,673,957	3,674,879
3,674,028	3,674,711	3,673,801	3,673,894	3,673,959	3,674,948
3,674,035	3,674,742	3,673,848	3,673,982	3,673,968	3,674,966
3,674,037	3,674,778	3,673,859	3,674,009	3,673,980	3,674,969
3,674,043	3,674,789	3,673,984	3,674,036	3,673,991	3,674,970
3,674,053	3,674,816	3,674,019	3,674,103	3,673,992	3,674,972
3,674,061	3,674,820	3,674,034	3,674,225	3,673,996	3,675,006
3,674,062	3,674,826	3,674,056	3,674,287	3,674,007	3,675,007

3,675,041
3,675,081
3,675,098
3,675,120
3,675,146
3,675,169
3,675,243
18 : 3,673,699
3,673,722
3,673,883
3,673,950
3,673,963
3,673,998
3,674,041
3,674,055
3,674,067
3,674,114
3,674,121
3,674,242
3,674,301
3,674,305
3,674,318
3,674,320
3,674,446
3,674,567
3,674,774
3,674,775
3,674,784
3,674,788
3,674,862
3,674,869
3,674,932
3,674,992
3,675,095
19 : 3,673,637
3,673,798
3,673,861
3,674,071
3,674,095
3,674,105
3,674,578
3,674,860
3,674,962
3,675,198
20 : 3,673,615
3,673,668
3,673,952
3,673,967
3,674,093
3,674,108
3,674,155
3,674,164
3,674,278
3,674,303
3,674,388
3,674,761
3,675,162
21 : 3,673,823
3,673,906
3,674,125
3,674,359
3,674,983
3,675,085
22 : 3,673,614
3,673,720
3,673,900
3,674,089
3,674,137
3,674,150
3,674,312
3,674,425
3,674,433
3,674,546
3,674,846
3,674,880
23 : 3,674,726
24 : 3,673,777
3,673,813
3,673,814
3,673,862
3,673,921
3,674,070
3,674,191
3,674,289
3,674,556
3,674,557
3,674,570
3,674,619
3,674,684
3,674,687
3,674,702
3,674,934
3,674,971
3,675,020
3,675,030
3,675,126
3,675,138
25 : 3,673,612
3,673,667
3,673,681
3,673,706
3,673,709
3,673,747
3,673,802
3,673,809
3,673,844

3,673,915
3,673,935
3,673,942
3,673,955
3,673,966
3,674,012
3,674,013
3,674,015
3,674,018
3,674,023
3,674,139
3,674,147
3,674,195
3,674,233
3,674,330
3,674,331
3,674,373
3,674,401
3,674,440
3,674,452
3,674,455
3,674,477
3,674,478
3,674,482
3,674,486
3,674,489
3,674,530
3,674,622
3,674,666
3,674,678
3,674,809
3,674,822
3,674,907
3,674,930
3,674,939
3,674,955
3,674,956
3,674,959
3,675,000
3,675,032
3,675,061
3,675,083
3,675,100
3,675,115
3,675,116
3,675,155
3,675,196
3,675,203
26 : 3,673,634
3,673,656
3,673,660
3,673,661
3,673,669
3,673,684
3,673,759
3,673,772
3,673,817
3,673,824
3,673,832
3,673,857
3,673,875
3,673,891
3,673,903
3,673,949
3,673,969
3,673,978
3,674,044
3,674,048
3,674,059
3,674,082
3,674,120
3,674,127
3,674,229
3,674,230
3,674,238
3,674,249
3,674,263
3,674,284
3,674,296
3,674,300
3,674,309
3,674,357
3,674,380
3,674,385
3,674,419
3,674,423
3,674,441
3,674,610
3,674,614
3,674,647
3,674,654
3,674,664
3,674,672
3,674,673
3,674,734
3,674,777
3,674,795
3,674,812
3,674,834
3,674,836
3,674,838
3,674,857
3,674,858
3,674,863
3,674,889
3,674,893

3,674,954
3,675,034
3,675,090
3,675,099
3,675,101
3,675,201
27 : Re.27,421
3,673,701
3,673,715
3,673,867
3,673,962
3,673,965
3,673,976
3,674,025
3,674,051
3,674,133
3,674,161
3,674,177
3,674,316
3,674,434
3,674,497
3,674,506
3,674,785
3,674,898
3,674,946
3,674,963
3,675,046
3,675,122
3,675,184
3,675,234
28 : 3,674,064
3,674,073
29 : 3,673,626
3,673,893
3,673,914
3,674,052
3,674,165
3,674,211
3,674,214
3,674,261
3,674,264
3,674,322
3,674,404
3,674,459
3,674,460
3,674,501
3,674,606
3,674,620
3,674,688
3,674,766
3,674,770
3,674,802
3,674,804
3,674,849
3,675,015
3,675,108
30 : 3,674,375
31 : 3,674,104
3,674,190
32 : 3,673,795
3,674,313
3,675,036
33 : 3,673,712
3,674,110
3,674,938
3,674,965
34 : Re.27,422
3,673,652
3,673,713
3,673,751
3,673,760
3,673,763
3,673,768
3,673,776
3,673,820
3,673,851
3,673,868
3,673,874
3,673,953
3,673,960
3,673,970
3,673,983
3,674,024
3,674,039
3,674,074
3,674,124
3,674,132
3,674,135
3,674,159
3,674,173
3,674,176
3,674,215
3,674,250
3,674,251
3,674,282
3,674,332
3,674,335
3,674,336
3,674,337
3,674,342
3,674,345
3,674,360
3,674,364
3,674,366
3,674,381
3,674,384

3,674,392
3,674,415
3,674,420
3,674,427
3,674,450
3,674,466
3,674,488
3,674,492
3,674,528
3,674,542
3,674,551
3,674,568
3,674,581
3,674,597
3,674,598
3,674,611
3,674,623
3,674,656
3,674,686
3,674,696
3,674,735
3,674,794
3,674,796
3,674,800
3,674,807
3,674,814
3,674,821
3,674,832
3,674,843
3,674,844
3,674,856
3,674,867
3,674,870
3,674,875
3,674,878
3,674,882
3,674,896
3,674,901
3,674,904
3,674,935
3,674,943
3,674,974
3,674,976
3,675,025
3,675,037
3,675,039
3,675,048
3,675,068
3,675,078
3,675,096
3,675,127
3,675,132
3,675,134
3,675,135
3,675,144
3,675,145
3,675,154
3,675,156
3,675,157
3,675,158
3,675,159
3,675,164
3,675,174
3,675,214
3,675,236
3,675,240
3,675,241
35 : 3,673,729
3,674,017
36 : Re.27,423
3,673,619
3,673,621
3,673,630
3,673,632
3,673,711
3,673,731
3,673,733
3,673,734
3,673,753
3,673,769
3,673,773
3,673,853
3,673,858
3,673,865
3,673,887
3,673,909
3,673,938
3,673,939
3,673,940
3,673,941
3,673,961
3,673,986
3,674,004
3,674,010
3,674,022
3,674,033
3,674,046
3,674,063
3,674,087
3,674,128
3,674,175
3,674,203
3,674,210
3,674,223
3,674,234
3,674,255

3,674,266
3,674,269
3,674,272
3,674,274
3,674,280
3,674,310
3,674,324
3,674,333
3,674,353
3,674,361
3,674,363
3,674,376
3,674,399
3,674,429
3,674,435
3,674,451
3,674,475
3,674,487
3,674,502
3,674,532
3,674,575
3,674,602
3,674,616
3,674,631
3,674,650
3,674,669
3,674,671
3,674,681
3,674,697
3,674,698
3,674,737
3,674,739
3,674,743
3,674,748
3,674,782
3,674,793
3,674,798
3,674,805
3,674,853
3,674,891
3,674,894
3,674,914
3,674,916
3,674,921
3,674,927
3,674,931
3,675,001
3,675,003
3,675,011
3,675,014
3,675,016
3,675,017
3,675,026
3,675,045
3,675,055
3,675,056
3,675,058
3,675,069
3,675,093
3,675,107
3,675,114
3,675,128
3,675,131
3,675,136
3,675,140
3,675,143
3,675,150
3,675,153
3,675,181
3,675,190
3,675,200
3,675,211
3,675,212
3,675,217
3,675,218
37 : 3,674,069
3,674,257
3,674,456
3,674,806
3,675,097
39 : Re.27,416
Re.27,419
3,673,642
3,673,664
3,673,673
3,673,710
3,673,730
3,673,732
3,673,737
3,673,739
3,673,740
3,673,743
3,673,746
3,673,749
3,673,797
3,673,811
3,673,852
3,673,878
3,673,889
3,673,908
3,673,910
3,673,925
3,673,929
3,673,954
3,673,981
3,674,001

3,674,066
3,674,076
3,674,085
3,674,112
3,674,148
3,674,166
3,674,205
3,674,221
3,674,247
3,674,268
3,674,283
3,674,314
3,674,338
3,674,394
3,674,467
3,674,535
3,674,537
3,674,563
3,674,579
3,674,589
3,674,599
3,674,676
3,674,690
3,674,704
3,674,720
3,674,729
3,674,736
3,674,760
3,674,881
3,674,906
3,674,911
3,674,924
3,674,989
3,675,035
3,675,103
3,675,105
3,675,106
3,675,160
3,675,166
3,675,178
3,675,187
3,675,197
3,675,239
40 : 3,673,850
3,674,092
3,674,188
3,674,235
3,674,246
3,674,437
3,674,525
3,674,661
3,674,668
3,674,706
3,674,750
3,674,753
3,674,887
3,674,915
3,675,009
41 : 3,673,687
3,673,708
3,674,011
3,674,119
3,674,220
3,674,374
42 : Re.27,420
3,673,609
3,673,617
3,673,627
3,673,633
3,673,654
3,673,675
3,673,694
3,673,725
3,673,816
3,673,854
3,673,869
3,673,880
3,673,913
3,673,917
3,674,002
3,674,016
3,674,027
3,674,068
3,674,084
3,674,086
3,674,107
3,674,138
3,674,141
3,674,143
3,674,160
3,674,167
3,674,183
3,674,193
3,674,206
3,674,207
3,674,248
3,674,258
3,674,262
3,674,276
3,674,277
3,674,292
3,674,406
3,674,411
3,674,448
3,674,464
3,674,498

3,674,516
3,674,517
3,674,536
3,674,545
3,674,562
3,674,564
3,674,566
3,674,580
3,674,645
3,674,652
3,674,670
3,674,675
3,674,701
3,674,715
3,674,723
3,674,727
3,674,733
3,674,757
3,674,790
3,674,792
3,674,831
3,674,885
3,674,903
3,674,912
3,674,936
3,674,964
3,674,975
3,674,988

3,675,004
3,675,044
3,675,110
3,675,113
3,675,118
3,675,172
3,675,185
3,675,186
3,675,199
3,675,208
3,675,209
3,675,242
44 : 3,674,267
3,674,717
3,674,724
3,675,049
3,675,189
45 : 3,673,611
3,673,622
3,673,780
3,674,079
3,674,417
3,674,418
3,674,548
3,674,584
3,674,618
3,674,993

46 : 3,675,229
47 : 3,674,219
3,674,243
3,674,791
3,674,987
3,675,072
48 : Re.27,418
3,673,676
3,673,679
3,673,767
3,673,785
3,673,804
3,673,815
3,673,828
3,673,864
3,673,946
3,673,974
3,674,005
3,674,090
3,674,091
3,674,149
3,674,178
3,674,228
3,674,265
3,674,432
3,674,445
3,674,585
3,674,600

3,674,677
3,674,708
3,674,712
3,674,765
3,674,854
3,674,895
3,674,905
3,674,984
3,674,995
3,675,043
3,675,051
3,675,054
3,675,163
3,675,216
49 : 3,673,827
3,674,294
3,674,442
3,674,503
50 : 3,674,097
51 : 3,673,640
3,673,648
3,673,672
3,673,689
3,673,766

3,673,834
3,673,835
3,674,042
3,674,113
3,674,559
3,674,683
3,674,722
3,674,919
3,674,926
3,674,999
3,675,117
52 : 3,673,912
3,673,945
3,673,973
3,674,323
3,674,565
53 : 3,673,671
3,673,688
3,673,727
3,673,744
3,673,764
3,673,793
3,673,794
3,673,930
3,674,008
3,674,065
3,674,157

54 : 3,674,256
3,673,670
3,673,719
3,674,428
3,674,825
55 : 3,673,639
3,673,726
3,673,728
3,673,890
3,673,902
3,673,918
3,674,026
3,674,029
3,674,096
3,674,145
3,674,169
3,674,179
3,674,181
3,674,352
3,674,457
3,674,595
3,674,608
3,674,612
3,674,617
3,674,626
3,674,667
3,674,958
3,675,008
3,675,073
3,675,104
3,675,205
3,675,237

Design Patents

2 : 224,149
4 : 224,134
6 : 224,083
224,085
224,092
224,099
224,100
224,101
224,105
224,112
224,118
224,130
224,135
224,140
224,141

224,150
224,156
224,162
224,166
224,172
224,174
224,177
8 : 224,121
9 : 224,081
224,175
12 : 224,086
224,115
224,171
13 : 224,094
224,179

17 : 224,077
224,088
224,093
224,107
224,113
224,120
224,124
18 : 224,103
19 : 224,137
20 : 224,155
224,176
22 : 224,151
224,152
224,153
25 : 224,106

224,110
224,119
224,160
26 : 224,096
224,111
224,127
224,146
224,154
224,180
224,181
27 : 224,109
29 : 224,122
31 : 224,114
224,125
34 : 224,117

224,147
36 : 224,080
224,136
224,142
224,143
224,157
224,158
224,165
224,168
37 : 224,178
39 : 224,091
224,138
224,148
40 : 224,084
224,098

224,144
42 : 224,078
224,079
224,102
224,128
224,129
44 : 224,133
48 : 224,104
224,145
49 : 224,095
53 : 224,082
55 : 224,090
224,108
224,123
224,170

Plant Patents

6 : 03,230

U.S. GOVERNMENT PRINTING OFFICE: 0—1972

OFFICIAL GAZETTE of the UNITED STATES PATENT OFFICE

July 11, 1972 Volume 900 Number 2

CONTENTS

	Page
Patent Notices	
Certificates of Correction for the Week of July 11, 1972	410
Erratum	410
Dedications	410
Disclaimers	410
Condition of Patent Applications	412
Reissue Patents Granted	413
Plant Patents Granted	415
Patents Granted	
General and Mechanical	416
Chemical	620
Electrical	713
Design Patents Granted	794
Index of Patentees	PI 1
Indices of Reissues, Plants, and Designs	PI 48
Classification of	
Patents (Including Reissues)	PI 51
Designs	PI 54
Geographical Index of Residence of Inventors	
Patents (Including Reissues)	PI 55
Designs and Plants	PI 57

The following are mailed under direction of the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402, to whom all subscriptions should be made payable and all communications addressed:

THE OFFICIAL GAZETTE (PATENTS SECTION), issued weekly, subscription $89.00 per annum, foreign mailing $22.25 additional; single copies $2.00 each.

THE OFFICIAL GAZETTE (TRADEMARK SECTION), issued weekly, subscription $17.00 per annum, foreign mailing $4.25 additional; single copies 40 cents each.

CIRCULARS OF GENERAL INFORMATION concerning PATENTS or TRADEMARKS, price 15 cents each.

PRINTED COPIES OF PATENTS are furnished by the Patent Office at 50 cents each; PLANT PATENTS in color, $1.00 each; copies of TRADEMARKS and DESIGN PATENTS at 20 cents each. Address orders to the Commissioner of Patents, Washington, D.C., 20231.

Printing authorized by Section 11(a)3 of Title 35, U.S. Code P.O.

PATENT OFFICE NOTICES

Certificates of Correction for the Week of July 11, 1972

Re. 27,271	3,624,280	3,634,185	3,643,932
Re. 27,314	3,624,616	3,634,212	3,643,973
3,528,395	3,624,971	3,634,365	3,644,076
3,573,511	3,625,223	3,634,436	3,644,160
3,574,226	3,625,700	3,634,440	3,644,179
3,590,224	3,625,882	3,634,485	3,644,264
3,591,093	3,625,945	3,634,491	3,644,360
3,591,195	3,626,022	3,634,687	3,644,381
3,591,416	3,626,033	3,634,882	3,644,431
3,592,222	3,626,242	3,634,919	3,644,466
3,598,324	3,626,400	3,634,923	3,644,496
3,598,346	3,627,053	3,635,011	3,644,622
3,599,682	3,627,092	3,635,237	3,644,624
3,599,968	3,627,551	3,635,426	3,644,940
3,602,050	3,627,575	3,635,836	3,645,144
3,603,527	3,627,579	3,635,860	3,645,243
3,607,341	3,627,682	3,635,972	3,645,251
3,607,489	3,627,688	3,636,006	3,645,643
3,607,589	3,627,697	3,636,010	3,645,681
3,607,742	3,627,698	3,636,052	3,645,705
3,607,784	3,627,766	3,636,103	3,645,781
3,607,828	3,627,831	3,636,165	3,645,842
3,608,067	3,627,921	3,636,194	3,645,845
3,609,325	3,627,989	3,636,338	3,645,861
3,609,933	3,628,038	3,636,431	3,645,930
3,610,343	3,628,196	3,637,660	3,645,956
3,610,553	3,628,231	3,637,726	3,646,015
3,610,664	3,628,305	3,637,746	3,646,022
3,610,822	3,628,363	3,638,305	3,646,240
3,611,137	3,628,500	3,638,316	3,646,380
3,611,145	3,628,985	3,638,498	3,646,429
3,611,995	3,629,220	3,638,534	3,646,521
3,612,004	3,629,397	3,638,595	3,646,552
3,612,397	3,629,420	3,638,657	3,646,645
3,612,819	3,629,681	3,639,080	3,646,690
3,613,006	3,629,842	3,639,082	3,646,811
3,613,199	3,629,972	3,639,088	3,646,937
3,613,549	3,630,005	3,639,243	3,646,987
3,614,200	3,630,165	3,639,327	3,647,481
3,614,363	3,630,194	3,639,357	3,647,540
3,614,616	3,630,369	3,639,446	3,647,597
3,615,659	3,630,499	3,639,572	3,647,760
3,615,877	3,630,501	3,639,838	3,647,772
3,616,111	3,630,662	3,639,859	3,647,864
3,616,159	3,630,716	3,640,000	3,649,624
3,616,367	3,630,756	3,640,044	3,649,675
3,616,373	3,630,762	3,640,182	3,650,410
3,616,740	3,631,065	3,640,208	3,650,734
3,617,246	3,631,108	3,640,387	3,650,748
3,617,843	3,631,162	3,640,682	3,650,773
3,617,862	3,631,396	3,640,750	3,650,848
3,617,891	3,631,427	3,640,933	3,650,956
3,618,782	3,631,456	3,640,984	3,651,059
3,619,236	3,631,533	3,641,122	3,651,121
3,619,545	3,631,706	3,641,248	3,651,157
3,620,497	3,631,935	3,641,420	3,651,186
3,620,577	3,631,981	3,641,457	3,651,240
3,621,096	3,632,377	3,641,546	3,651,317
3,621,313	3,632,448	3,641,601	3,651,531
3,621,384	3,632,470	3,641,833	3,651,671
3,621,906	3,632,546	3,641,930	3,651,768
3,622,169	3,632,585	3,642,114	3,652,463
3,622,989	3,632,658	3,642,526	3,652,674
3,623,371	3,632,998	3,642,529	3,652,742
3,623,392	3,633,009	3,642,559	3,653,165
3,623,543	3,633,012	3,642,659	3,653,247
3,623,583	3,633,340	3,642,800	3,653,335
3,623,603	3,633,457	3,642,861	3,653,358
3,624,112	3,633,476	3,642,918	3,656,103
3,624,214	3,633,745	3,643,844	
3,624,252	3,634,165	3,643,914	

Erratum

All references to Patent Number 3,671,732 to Knut Otto Sassmanshausen, for Lamp, appearing in the OFFICIAL GAZETTE of June 20, 1972, should be deleted as the application should not have been issued.

Dedications

2,847,675.—*Winfred M. Brooks*, West Orange, N.J. SEALING TOOL. Patent dated Aug. 19, 1958. Dedication filed Feb. 9, 1972, by the assignee, *E. J. Brooks Company*.

Hereby dedicates to the Public the term thereof remaining after Oct. 1, 1970.

2,902,308.—*Sigurd M. Moberg*, Pompton Plains, N.J. HAND-CLOSABLE SEAL. Patent dated Sept. 1, 1959. Dedication filed Feb. 9, 1972, by the assignee, *E. J. Brooks Company*.

Hereby dedicates to the Public the term thereof remaining after Oct. 1, 1970.

2,912,269.—*Sigurd M. Moberg*, Pompton Plains, N.J. HASP SEAL. Patent dated Nov. 10, 1959. Dedication filed Feb. 9, 1972, by the assignee, *E. J. Brooks Company*.

Hereby dedicates to the Public the term thereof remaining after Oct. 1, 1970.

2,980,462.—*Sigurd M. Moberg*, Pompton Plains, N.J. HAND-CLOSABLE DUAL SEAL. Patent dated Apr. 18, 1961. dedication filed Feb. 9, 1972, by the assignee, *E. J. Brooks Company*.

Hereby dedicates to the Public the term thereof remaining after Oct. 1, 1970.

3,197,413.—*Lloyd C. Wingerd*, Berkeley, Calif. PROCESS FOR ATOMIZING ASPHALT. Patent dated July 27, 1965. Dedication filed Mar. 20, 1972, by the assignee, *Chevron Research Company*.

Hereby dedicates the entire term of said patent to the People of the United States of America.

3,631,056.—*Kenneth Butler*, Old Lyme, Conn. BASIC ESTERS OF α-CARBOXY ARYL PENICILLINS. Patent dated Dec. 28, 1971. Dedication filed Mar. 2, 1972, by the assignee, *Pfizer Inc.*

Hereby dedicates to the Public the entire term of the above-identified patent.

Disclaimers

2,934,313.—*Herbert Allen*, Houston, Tex. GATE VALVE AND SEAT ASSEMBLY THEREFOR. Patent dated Apr. 26, 1960. Disclaimer filed Apr. 12, 1972, by the assignee, *Cameron Iron Works, Inc.*

Hereby enters this disclaimer to all claims of said patent.

3,343,978.—*Thomas J. Engelbach*, Middletown, N.J. ADHESIVE TRANSFERS. Patent dated Sept. 26, 1967. Disclaimer filed June 2, 1972, by the assignee, *Avery Products Corporation*.

Hereby enters this disclaimer to claims 1–5 and 7 of said patent.

3,399,277.—*William Eugene Davis* and *George Peter Lee*, Indianapolis, Ind. SIGNAL TRANSLATING CIRCUIT. Patent dated Aug. 27, 1968. Disclaimer filed Apr. 10, 1972, by the assignee *Radio Corporation of America*.

Hereby enters this disclaimer to all claims of said patent.

3,463,247.—*Harold T. Klein*, Bellevue, Wash. DRILL STEM BREAKOUT APPARATUS. Patent dated Aug. 26, 1969. Disclaimer filed Nov. 1, 1971, by the assignee, *James S. Robbins and Associates, Inc.*

Hereby enters this disclaimer to claim 14 of said patent.

3,470,118.—*Wolfgang C. Forster*, Middletown, N.Y. FLAME-RESISTANT POLYOL URETHANE FOAM COMPOSITION AND PROCESS OF PRODUCING THE SAME. Patent dated Sept. 30, 1969. Disclaimer filed Feb. 16, 1972, by the assignee, *Reichhold Chemicals, Inc.*

Hereby enters this disclaimer to claims 1 and 8 of said patent.

3,521,550.—*Donald W. Van Doorn* and *William C. Pease III*, Columbus, and *Jack L. Colquett*, Hamilton, Ga., *Jack H. Tinkler*, Phenix City, Ala., and *Ted E. Huguley*, Columbus, Ga. BALE STRAPPING APPARATUS. Patent dated July 21, 1970. Disclaimer filed Dec. 13, 1971, by the assignee, *Lummus Cotton Gin Company*.

Hereby enters this disclaimer to claims 1, 2, 3, 7, 10 and 12 of said patent.

3,553,076.—*Gerrit G. De Haas* and *Charles J. Lang*, Longview, Wash. NON-CATALYTIC PROCESS FOR THE PRODUCTION OF CELLULOSE FROM LIGNOCELLULOSIC MATERIALS USING ACETIC ACID. Patent dated Jan. 5, 1971. Disclaimer filed Apr. 3, 1972, by the assignee, *Weyerhaeuser Company*.

Hereby enters this disclaimer to claims 1, 3, 4, 5, 6, 7, 8, 9, 10, 12 and 13 of said patent.

3,556,889.—*Arne Y. Grahn*, Granby, Conn. VENTILATED RIB FOR GUN BARRELS AND METHOD OF INSTALLATION. Patent dated Jan. 19, 1971. Disclaimer filed Apr. 10, 1972, by the assignee, *The Poly-Choke Company, Incorporated*.

Hereby enters this disclaimer to claim 2 of said patent.

PATENT EXAMINING CORPS

R. A. WAHL, Assistant Commissioner
F. H. BRONAUGH, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF JUNE 27, 1972

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	5-18-71
GENERAL ORGANIC CHEMISTRY, GROUP 120—I. MARCUS, Director. Heterocylic; Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	1-21-71
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—L. J. BERCOVITZ, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	4-15-71
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. P. KENT, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	4-05-71
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—W. B. KNIGHT, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	3-01-71
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS AND RELATED ELEMENTS, GROUP 210—N. ANSHER, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Miscellaneous.	11-02-71
SECURITY, GROUP 220—R. L. CAMPBELL, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	3-03-71
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	7-21-71
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—W. L. CARLSON, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	6-23-71
PHYSICS, GROUP 280—R. L. EVANS, Director. Photography; Sound and Lighting; Indicators and Optics; Measuring and Testing; Geometrical Instruments.	5-05-71
DESIGNS, GROUP 290—R. L. CAMPBELL, Director. Industrial Arts: Household, Personal and Fine Arts.	2-05-71
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—A. BERLIN, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vechicles and Appurtenances; Railways and Railway Equipment; Brakes; Rigid Flexible and Special Receptacles and Packages.	6-07-71
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus: Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders Woodworking; Tools; Cutlery; Jacks.	6-01-71
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—A. RUEGG, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	4-12-71
HEAT, POWER AND FLUID ENGINEERING, GROUP 340—M. M. NEWMAN, Director. Power Plants; Combustion Engines; Fluid Motors; Pumps; Turbines; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Vaporizing; Temperature and Humidity Regulation; Machine Elements; Power Transmission; Fluid Handling; Lubrication; Joint Packing.	6-10-71
CONSTRUCTIONS, SUPPORTS, TEXTILES, CLEANING, GROUP 350—T. J. HICKEY, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Receptacles; Supports; Cabinet Structures; Centrifugal Separations; Cleaning; Coating; Pressing; Agitating; Foods; Textiles; Apparel and Shoes; Sewing Machines; Winding and Reeling.	4-20-71

Expiration of patents: The patents within the range of numbers indicated below expire during July 1972, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,712,131 to 2,714,206, inclusive
Plant Patents..... Numbers 1,404 to 1,407, inclusive

REISSUES

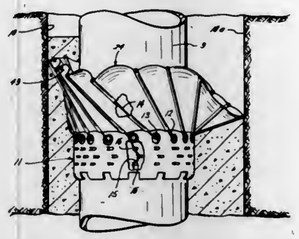
JULY 11, 1972

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

27,425
WELL BORE CLEANER AND CEMENT DISPERSER

Elmer D. Hall, Weatherford, and Jesse E. Hall, Jr., Houston, Tex., assignors to Weatherford Oil Tool Company, Inc., Houston, Tex.

Original No. 3,380,534, dated Apr. 30, 1968, Ser. No. 544,914, Apr. 25, 1966. Application for reissue Apr. 20, 1970, Ser. No. 29,778
Int. Cl. E21b *37/02*
U.S. Cl. 166—173 **6 Claims**



A collar received about a well casing has radially or tangentially projecting ribs or spines with intervening flexible webbing which is inclined and cupped by the flowing fluid to form generally helical, flow-directing passages which cause swirling of the fluid and forceful impinging of the fluid against the well bore for cleaning of the same.

27,426
LOW TEMPERATURE CURING NYLON-EPOXY-PHENOLIC ADHESIVE

James David Lincoln, Costa Mesa, and John F. Wasmund, San Clemente, Calif., assignors to Whittaker Corporation, Los Angeles, Calif.

No Drawing. Original No. 3,496,248, dated Feb. 17, 1970, Ser. No. 573,463, Aug. 19, 1966. Application for reissue Oct. 8, 1970, Ser. No. 79,303
Int. Cl. C08g *45/08*
U.S. Cl. 260—831 **13 Claims**

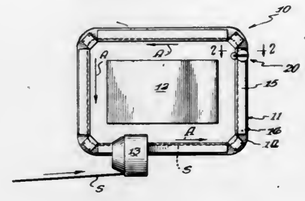
This patent describes a novel adhesive composition comprising an intimate homogeneous mixture of a nylon which is a polyamide formed from the reaction of hexamethylene diammonium adipate and hexamethylene diammonium sebacate with caprolactam, an epoxy resin which is a polyglycidyl ether of a polyhydric phenol, and a phenolic resin which is at least difunctional in phenolic hydroxyl groups prior to curing, said mixture being in the form of a film of substantially uniform thickness and weight per unit area.

27,427
FEED CHUTE BOOSTER FOR FLEXIBLE STRAP

John H. Leslie and Otis E. Hubbard, by Signode Corporation, Chicago, Ill., assignee

Original No. 3,468,241, dated Sept. 23, 1969, Ser. No. 706,298, Feb. 19, 1968. Application for reissue July 24, 1970, Ser. No. 57,993
Int. Cl. B65b *13/04*
U.S. Cl. 100—26 **12 Claims**

Booster mechanisms are disclosed to assist the push-feeding of flexible strap through strap chutes. Thin flexible strap of plastic or steel is fed through longer chutes by locating one or more boosters at spaced locations along the chute to subdivide the strap chute travel path into successive regions, each region being a substantial fraction of the total path. These different booster mechanisms are shown. In one form, a fixed motor drives a traction wheel that is nested within the chute and a cooperating idler wheel is mounted for movement between a feed position confronting the chute and a retracted position that allows clearance for stripping of the strap from the chute. In another form, a motor and a multi-

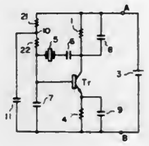


lobed traction wheel are mounted for joint movement between a feed position wherein the traction wheel is in confronting relation to the chute and a clearance position. The multilobed wheel loads the strap directly against the chute and produces an intermittent feeding action tending to vibrate and shake the strap so as to reduce friction. In a third embodiment, a pair of power-driven traction wheels cooperate to drive the strap, these wheels being of rubber, to permit a certain amount of skidding against the strap when tending to overdrive the strap. The booster traction wheels operate at slightly greater speed than the feed rate of the strapping machine.

27,428
CRYSTAL-CONTROLLED GROUNDED EMITTER OSCILLATOR

Fumio Watase, Tokyo, Japan, assignor to Tohoku Oki Electric Company

Original No. 3,462,710, dated Aug. 19, 1969, Ser. No. 693,919, Dec. 27, 1967. Application for reissue Jan. 22, 1971, Ser. No. 109,066
Claims priority, application Japan, Jan. 12, 1967 (utility model), 42/3,150
Int. Cl. H03b *5/36*
U.S. Cl. 331—116 R **3 Claims**



In a grounded emitter type transistor oscillator with its operating point set at a low source voltage means is pro-

vided to delay the shift of the operating point toward the saturation region when the source voltage is increased rapidly in a short time whereby to satisfy the condition for initiating oscillations.

27,429

ELECTRICAL CONNECTOR ASSEMBLY AND MOUNTING MEANS THEREFOR

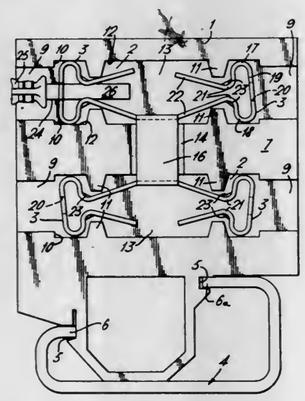
Hermanus Petrus Johannes Gilissen, Vlijmen, Netherlands, assignor to AMP Incorporated, Harrisburg, Pa.

Original No. 3,437,983, dated Apr. 8, 1969, Ser. No. 638,802, May 16, 1967. Application for reissue Mar. 9, 1970, Ser. No. 17,990

Claims priority, application Netherlands, May 20, 1966, 6606948; July 26, 1966, 6610496

Int. Cl. H01r *11/22*

U.S. Cl. 339—198 **11 Claims**



A connector having an insulating housing provided with a passageway in which an electrical contact is disposed. The passageway is provided with camming projections that cooperates with curved portions of the electrical contact so that extraction force on a contact member disposed in electrical engagement with the electrical contact is increased by movement of the curved portions of the electrical contact in engagement with the camming projections. The insulating housing is provided with means for releasably mounting the housing in a support rail.

27,430

PLUMBING FIXTURE AND METHOD OF MANUFACTURING THE SAME

Robert Wimmer, Linzer-Strasse 246, A4600 Wels, Austria

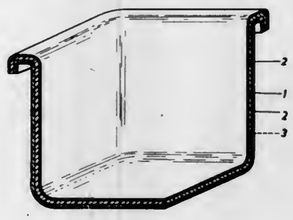
Original No. 3,356,253, dated Dec. 5, 1967, Ser. No. 393,926, Sept. 2, 1964. Application for reissue Aug. 7, 1970, Ser. No. 62,095

Claims priority, application Austria, Sept. 6, 1963, A 7,179/63

Int. Cl. B65d *25/14*

U.S. Cl. 220—64 **13 Claims**

A bath tub or similar plumbing fixture consisting of a polymethacrylate liner and an outer coating of glass-fiber reinforced cured polyester resin is produced by deep drawing polymethacrylate sheeting into the shape of the liner, spraying a coating of polyester resin on the outer



surface of the deep-drawn body, embedding glass fiber fabric in the sprayed coating, and curing the coating.

27,431

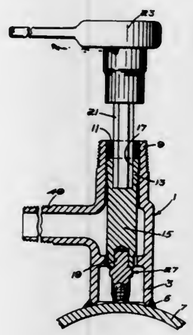
BITS FOR PIPE PUNCHES

Anker J. Nielsen, Jr., Holden, Mass., assignor to M. B. Skinner Company, Division of Textron Inc.

Original No. 3,411,527, dated Nov. 19, 1968, Ser. No. 560,209, June 24, 1966. Application for reissue Dec. 2, 1970, Ser. No. 94,638

Int. Cl. B23b *41/08*; F16e *41/04*

U.S. Cl. 137—318 **32 Claims**



A punch T welded to a gas main. Screw-threadedly engaged with the inside of the T is an elongated punching bit having a socket portion at one end for receiving an extension shaft of a ratchet wrench which rotates and feeds the bit into the gas main by means of a hollow punching end formed as a cam with two lobes on the end opposite the socket portion. Axially spaced from the punching end is a second cam of larger diameter also having two lobes for enlarging the punched hole by a swaging action. A beveled portion of larger diameter than the second cam and spaced axially further in from the punching end than the second cam serves as a valve for shutting off the flow of the gas via the T. The punching bit forms the hole

and enlarges it by a punching and swaging action as opposed to a cutting-by-chip-removal action. The thus punched coupon or slug works its way into the bore of the hollow punch end by cold flow of the metal and is packed so tightly in the bore that it is retained with certainty.

27,432

SOLVENT CLEANING SYSTEM

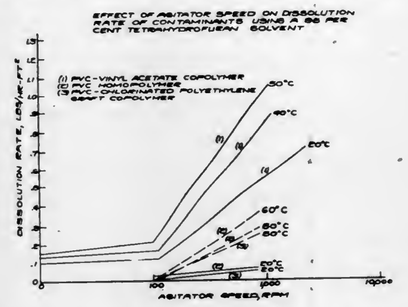
Archie P. Torrenzano, Springfield, Mass., and Richard T. Pincince, Warwick, R.I., assignors to Monsanto Company, St. Louis, Mo.

Original No. 3,475,218, dated Oct. 28, 1969, Ser. No. 506,818, Nov. 8, 1965. Application for reissue July 2, 1970, Ser. No. 52,147

Int. Cl. B08b *3/08, 7/00, 9/08*

U.S. Cl. 134—12 **2 Claims**

Process for removing polymeric materials from processing equipment involving contacting such materials with a tetrahydrofuran solvent while agitating so as to



effect solution of the polymeric materials in the solvent.

PLANT PATENTS

GRANTED JULY 11, 1972

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

3,231

CHRYSANTHEMUM PLANT

Walter H. Jessel, Jr., Doylestown, and William E. Duffett, Akron, Ohio, assignors to Yoder Brothers, Inc., Barberton, Ohio

Filed Nov. 12, 1970, Ser. No. 89,151

Int. Cl. A01h *5/00*

U.S. Cl. Plt.—78 **1 Claim**

1. A new and distinct variety of chrysanthemum characterized particularly as to uniqueness when compared with the parent cultivar Yellow Mandalay by its clear yellow color, its resistance to bronzing at low temperature finishes, its faster and more uniform response during high temperature periods, and its tendency to develop less longitudinal petal roll during low light, low temperature periods.

3,232

CHRYSANTHEMUM PLANT

Walter H. Jessel, Jr., Doylestown, and William E. Duffett, Akron, Ohio, assignors to Yoder Brothers, Inc., Barberton, Ohio

Filed Nov. 12, 1970, Ser. No. 89,152

Int. Cl. A01h *5/00*

U.S. Cl. Plt.—82 **1 Claim**

1. A new and distinct cultivar of chrysanthemum characterized particularly as to uniqueness as compared to the parent cultivar Mandalay by its darker red bronze color.

3,233

CHRYSANTHEMUM PLANT

Walter H. Jessel, Jr., Doylestown, and William E. Duffett, Akron, Ohio, assignors to Yoder Brothers, Inc., Barberton, Ohio

Filed Nov. 12, 1970, Ser. No. 89,153

Int. Cl. A01h *5/00*

U.S. Cl. Plt.—82 **1 Claim**

1. A new and distinct cultivar of chrysanthemum characterized particularly as to uniqueness when compared to the parent cultivar Mandalay by a deeper red flower color, three days later in response during high temperature periods, and a somewhat more incurved and ¼" smaller flower.

3,234

ROSE PLANT

William A. Warriner, Tustin, Calif., assignor to Jackson & Perkins Company, Medford, Oreg.

Filed Jan. 6, 1971, Ser. No. 104,525

Int. Cl. A01h *5/00*

U.S. Cl. Plt.—19 **1 Claim**

1. A new and distinct variety of rose plants of the hybrid tea class substantially as herein shown and described, characterized particularly as to novelty by the unique combination of a bud of Tyrian Purple opening to a flower of Persian Rose; a very strong fragrance of the "tea" type; and an unusual abundance of blooms.

3,235

ROSE PLANT

William A. Warriner, Tustin, Calif., assignor to Jackson & Perkins Company, Medford, Oreg.

Filed Jan. 7, 1971, Ser. No. 104,820

Int. Cl. A01h *5/00*

U.S. Cl. Plt.—23 **1 Claim**

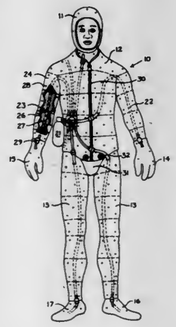
1. A new and distinct variety of rose plant of the floribunda class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of its similarity to Bridal Pink in plant habit and growth and its novel color of near white with a very faint pink overcast.

PATENTS

GRANTED JULY 11, 1972

GENERAL AND MECHANICAL

3,675,244
SELF-COMPENSATING THERMAL INSULATION GARMENTS
Kenneth E. Mayo, and Eugene K. Parker, both of Nashua, N.H., assignors to Sanders Nuclear Corp., Nashua, N.H.
Filed May 18, 1970, Ser. No. 38,151
Int. Cl. B63c *11/08*
U.S. Cl. 2—2.1 R **11 Claims**



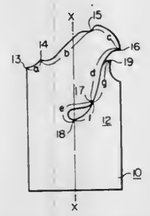
Self-compensating thermal insulating garments are found useful for protecting the body of a user from hostile temperature environments. The garments each comprise a plurality of compartments with each compartment having a heat insulating core of a flexible porous material. Outer and inner continuous resilient sheets span the compartments and preferably seal the cores against unwanted passage of gas and liquid in conjunction with barrier means for each compartment which form gas and water barriers. Preferably tubular means pass into and through the cores to deliver a gas at a predetermined pressure to maintain each of the compartments at predetermined internal pressures preventing compression of the compartments due to pressure differentials.

3,675,245
NOVELTY BATHING GARMENT
Harold E. Follett, 100 Reamer Avenue, Wilmington, Del.
Filed June 25, 1970, Ser. No. 49,781
Int. Cl. A41d *7/00*
U.S. Cl. 2—67 **7 Claims**



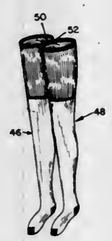
A novelty bathing garment is provided which gives a bather the appearance of wearing a sponge from the sea. The garment is composed of an outer layer of natural or artificial sponge and an inner layer next to the body of a bather of a fabric liner affixed to the inner surface of the sponge outer layer. The sponge outer layer is of a thickness such that a portion of the pores in the sponge layer extends nearly or completely through the layer making the inner fabric liner visible or nearly visible therethrough and the remaining pores giving the garment when worn by the bather the appearance the bather is wearing a sponge. Besides the natural color of sponge, the sponge outer layer can be of any color and/or of varying colors to give many decorative effects.

3,675,246
BLANK FOR FORMING A GARMENT
Mitsuru Ito, No. 1-456, Nishi-okubo, Shinjuku-ku, Tokyo, Japan
Filed Dec. 30, 1969, Ser. No. 889,131
Claims priority, application Japan, April 12, 1969, 44/27990; Aug. 27, 1969, 44/67198
Int. Cl. A41b *1/08*
U.S. Cl. 2—115 **1 Claim**



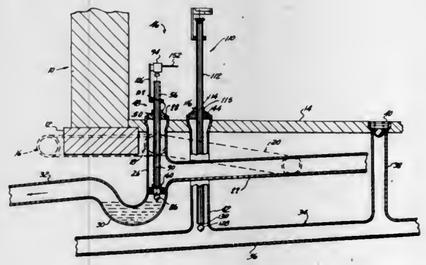
A construction of garment with front or breast portion and sleeve portions, the garment being obtained from a flattened tubular blank, with a minimum number of cutting operations, wherein proper balance as well as adequate fullness is assured at the breast region when joining one side of each of the sleeve portions to the associated sides of the front portion, thereby providing a bust cup in the finished garment.

3,675,247
METHOD FOR FABRICATING PANTY HOSE
John O. Ferrell, Randolph, N.C., assignor to Tights, Inc.
Filed Dec. 16, 1968, Ser. No. 784,017
Int. Cl. A41b *9/04*
U.S. Cl. 2—224 R **13 Claims**



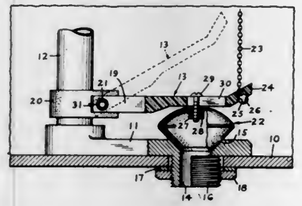
A method for fabricating combination knitted garments such as panty hose and the like wherein a pair of tubular members are shaped and connected in a continuous operation. The stockings of the pair are aligned in a contiguous relationship each with the other and simultaneously cut and sewn continuously along a predetermined path of travel, this cutting and sewing forming a U-shaped seam intermediate a single enlarged welt which defines the waist and crotch portion of a panty. Alternatively, a separate crotch fabric segment may be secured between an enlarged welt portion of each of the stocking members of the pair.

3,675,248
FLOOD CONTROL SYSTEM
Emil A. Gaj, 741 Charlesworth, Dearborn Heights, Mich.
Filed June 1, 1970, Ser. No. 41,907
Int. Cl. A47k *17/00*; E03d *11/00*
U.S. Cl. 4—1 **13 Claims**



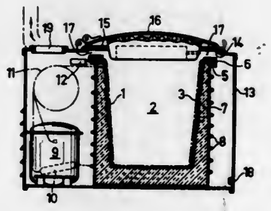
A flood control system for preventing the flooding of a house basement, and including a valve disposed within the seepage drain pipe, which upon actuation closes off the seepage drain pipe preventing water from backing up from the main sewer line through the drainage pipe and into the seepage drain tile, which is disposed adjacent the house foundation. Appropriate sensing means is preferably disposed within the sanitary drain pipe at a level below the drain tile for sensing water backed up therein from the main sewer line to actuate the valve and to close the seepage drain pipe. The sensing means may also be connected to a basement toilet for closing off the toilet when the water backs up, preventing the water from backing up through the toilet into the basement.

3,675,249
FLUSH VALVE ASSEMBLY
William J. Breen, 456 Lewis Place, Mineola, N.Y.
Filed June 11, 1970, Ser. No. 45,370
Int. Cl. E03d *1/34*
U.S. Cl. 4—57 P **2 Claims**



The present invention comprises a unitary flush valve assembly for use in the flush tanks of toilets and the like which combines effective valve sealing with low cost of manufacture and ease of installation. The valve assembly consists of a horizontal arm adjustably supporting the valve closure member at one end and having the other end bifurcated to establish a hinged connection with a supporting member mounted on the overflow pipe. Means are also provided to permit operation in tanks having canted valve seats, as well as means for adapting the supporting member to accommodate various sizes of overflow pipes.

3,675,250
CLOSET MEANS
Bigge Bengtson, Falkenberg, Sweden, assignor to TeBe-Elprodukter AB, Huskvarna, Sweden
Filed Feb. 9, 1971, Ser. No. 113,825
Claims priority, application Sweden, Feb. 10, 1970, 1662/70
Int. Cl. A47k *11/02*
U.S. Cl. 4—111 **6 Claims**



A closet means comprises a chair having an upwards pivotable seat ring and a closure for shutting the chair. Immediately below said ring there is provided a well-like chamber, the wall of which is thermally insulated and connected to a cooling system in such a way, that the wall of the chamber may be cooled down to about −15° C and that during such cooling heat is uniformly transferred to the seat ring, which is insulated from said wall by means of a ring of plastic or the like.

3,675,251
PORTABLE BATHING SHOWER
Harold Ruscher, Jr., R.D. 1, Box 224, Katonah, N.Y.
Filed Jan. 28, 1971, Ser. No. 110,429
Int. Cl. A47k *3/22*; E03b *11/00*
U.S. Cl. 4—151 **18 Claims**

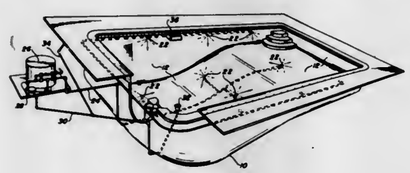
A container having an outlet opening in its upper end is suspended in an inverted position, and communicates with a shower head composed of a container having a perforated bottom, so that liquid within the container is discharged intermit-

tently to the shower head under control of Torricellian vacuum developed in the container, and the liquid is



discharged constantly from the shower head as a shower of the liquid. The device is well suited for use by campers.

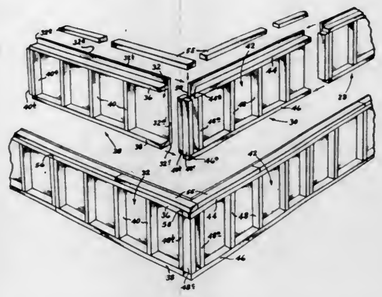
3,675,252
POP-UP HEAD FOR WATER JET-POOL CLEANING SYSTEM
George J. Ghiz, 221 E. Hayward, Phoenix, Ariz.
Continuation-in-part of Ser. No. 666,595, Sept. 11, 1967, Pat. No. 3,521,304. This application May 18, 1970, Ser. No. 38,468
Int. Cl. E04h 3/16; B08b 3/02, 9/00
U.S. Cl. 4—172.17 1 Claim



A swimming pool cleaning system comprising a pool structure having inner surfaces, and a plurality of rotating jet delivery means adapted to deliver jet streams of water substantially parallel to and in adjacent relation with the inner surfaces of the pool for washing and cleaning said inner surfaces; said means also provided with jet nozzles disposed at an acute angle to the rotating axis of the rotary jet delivery means to maintain deleterious matter in suspension in the water so that it may be carried away by the pool circulation system.

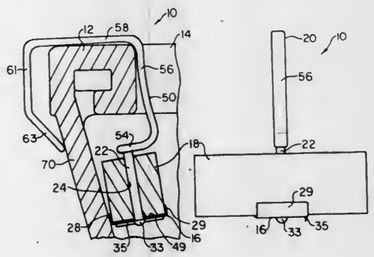
3,675,253
SWIMMING POOL CONSTRUCTION
Zarul I. Danzker, 1930 S.W. Orchid Place, Portland, Oreg.
Filed Jan. 4, 1971, Ser. No. 103,535
Int. Cl. E04h 3/16, 3/18
U.S. Cl. 4—172.19 10 Claims

A swimming pool constructed of wall modules disposed end-to-end to form the wall bounding the perimeter of the pool. The wall modules have interfitting stiffener structure functioning to make rigid the completed pool wall. Where the modules meet at a joint, bracing structure may be provided



which braces against inward as well as outward deflection of the wall modules.

3,675,254
TREATMENT DEVICE
Henry J. Brownstein, Chicago, Ill., assignor to Hysan Products Company, Chicago, Ill.
Filed Aug. 31, 1970, Ser. No. 68,382
Int. Cl. A61l 9/04
U.S. Cl. 4—231 5 Claims

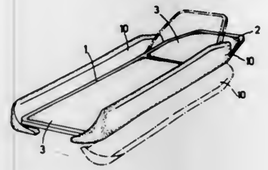


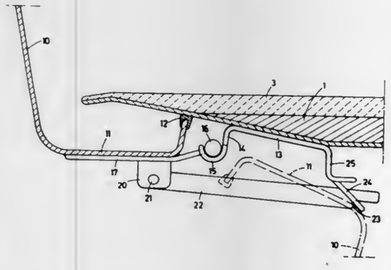
A treatment device is adapted to be supported from a supporting surface, such as a rim of a toilet bowl or other object to be treated, and includes a hook-shaped arm which clips onto the top edge of the toilet bowl rim and which has a base portion secured to the upper end of an elongated member extending downwardly through a central opening in a block of material composed of deodorizing, antiseptic, insecticide or other material and which is disposed within the toilet bowl when the arm is clipped onto the bowl and which is consumed upon exposure to ambient conditions. A channel-shaped supporting plate is snap fitted at the lower end of the elongated member and has a pair of upwardly projecting side walls to embrace the lower portion of the block.

3,675,255
BATH LITTER FOR THERAPEUTICAL TREATMENT
Hans A. V. Johansson, Treharadsvagen 45, Eslov, Sweden
Filed June 8, 1970, Ser. No. 44,074
Claims priority, application Sweden, June 11, 1969, 8281/69
Int. Cl. A61g 7/10
U.S. Cl. 5—82 8 Claims

A bath litter for therapeutical treatment of persons has a resting support with a pivotally mounted head portion which may be secured in different angular positions relative to the

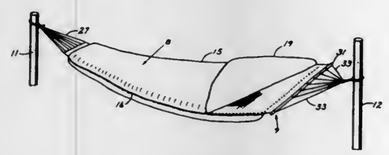
remainder of the resting support for supporting the upper part and head of a person's body, and at least one side piece extending lengthwise of the resting support which may be





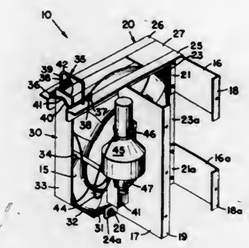
pivoted from an idle position below the level of the resting support about a longitudinal axis to an active position above the resting support.

3,675,256
SUSPENDIBLE SLEEPING COCOON
Robert A. Tallarico, 948 East 115th Place, Denver, Colo., and Don L. Goff, 616 South Sheild Street, Fort Collins, Colo.
Filed June 1, 1970, Ser. No. 41,915
Int. Cl. A45f 3/22
U.S. Cl. 5—120 10 Claims



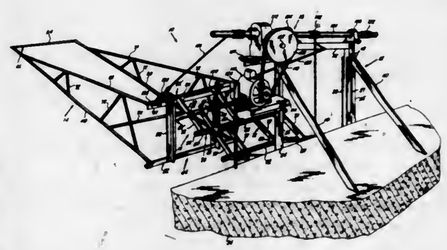
A combination sleeping bag and hammock has the body portion of the hammock encompassed by the sleeping bag with suspension lines attached to and projecting from the ends of the body portion for the suspended support thereof. A rectangular-type sleeping bag has the body portion of the hammock generally conforming in shape to the inner bottom section of the bag and is secured thereto and a mummy-type sleeping bag has a generally pod-shaped body portion attached at each end to a suspension line within the bag with the attached lines extending through opposite ends of the bag.

3,675,257
QUICK-RELEASE STORAGE OF A LIFE RING
Bernard F. Hagland, San Lorenzo, and Robert M. Salvarezza, Hillsborough, both of Calif., assignors to Coast Marine & Industrial Supply Inc., San Francisco, Calif.
Filed April 8, 1971, Ser. No. 132,272
Int. Cl. B63c 9/22
U.S. Cl. 9—14 9 Claims



A quick-release device for storing a ring buoy. Spacing and support means secure the device to a bulkhead extending transversely to the fore-and-aft line of a ship. A stationary frame supported by the spacing and support means provides a vertical end wall, a horizontal bottom portion having pivot means spaced from the end wall, and a horizontal upper portion. The ring buoy rests against the end wall and is held there normally by a swingable ramp pivoted to the pivot means with its center of gravity well beyond the pivot means on the opposite side thereof from the end wall. This ramp has a short bottom wall portion, an inclined portion, and an end portion, which during stowage is substantially vertical, and when it is vertical, it snugly holds the ring buoy, with the ring buoy resting on the ramp's bottom and inclined portions and against the end portion. The ramp means also has guide means for retaining the ring buoy in proper position so that it will not fall to one side. Latch and release means supported by said horizontal upper portion, holds the upper edge of the ramp when its end portion is in a vertical position. A simple upward pull releases the edge of the ramp, whereby it seeks its natural center of gravity and swings out around the pivot means and provides a ramp pathway projecting the ring buoy out and away from a vertical drop and causing it to describe a trajectory that frees it from the ship.

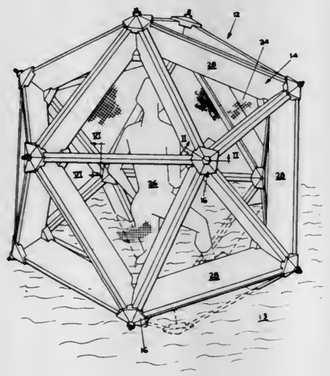
3,675,258
BOAT HOIST
Bradley M. Osmundson, 400 Broadway, Webster City, Iowa
Filed Oct. 22, 1970, Ser. No. 83,265
Int. Cl. B63b 23/02
U.S. Cl. 9—34 8 Claims



A boat hoist for launching a boat and for removing it from the water. This hoist includes a scissor-type extensible and

retractable arm assembly connected at one end to a support platform for a boat. The entire supporting structure for the hoist is mounted upon the shore and the other end of the scissor assembly is operatively secured to the shore mounted support. The extension of the scissor assembly projects the boat platform over the water and to a prescribed depth therein and the retraction of the arms elevates the boat platform from the water towards the shore support where the boat can be maintained in a docked position free of the water.

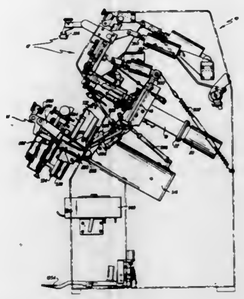
3,675,259
AQUATIC VEHICLE
David W. Gilchrist, 215 W. Water, Elmira, N.Y.
Filed Jan. 18, 1971, Ser. No. 107,348
Int. Cl. A63c 15/04
U.S. Cl. 9—310 G **21 Claims**



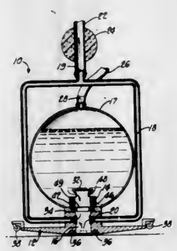
An aquatic vehicle for use by human beings for movement on the surface of the water. The vehicle is spherical in shape and formed from a plurality of buoyant regularly shaped panels which are joined together at the edges thereof. The panels are transparent to permit visibility from the vehicle and have means to permit flow of air into the vehicle. The panels are firm and weight supporting to permit the user of the vehicle to walk on the panels to rotate the vehicle, thereby moving the vehicle over the surface of the water. In certain embodiments, the edges of the panels extend outwardly forming paddles or water treads.

3,675,260
APPARATUS FOR APPLYING CEMENT BETWEEN A SHOE UPPER AND A SHOE INSOLE
Jacob S. Kamborian, West Newton; Allen C. Harriman, Brockton, and Karl F. Vornberger, Tewksbury, all of Mass., assignors to Jacob S. Kamborian, Boston, Mass.
Division of Ser. No. 528,430, Feb. 18, 1916, Pat. No. 3,422,474. This application Aug. 30, 1967, Ser. No. 664,475
Int. Cl. A43d 21/00
U.S. Cl. 12—12 **31 Claims**

There is disclosed herein a cement lasting machine having mechanism for applying cement to the periphery of an insole that is mounted to the bottom of a last and for wiping the margin of an upper located on the last against the insole to thereby cementatiously attach the upper margin to the insole.



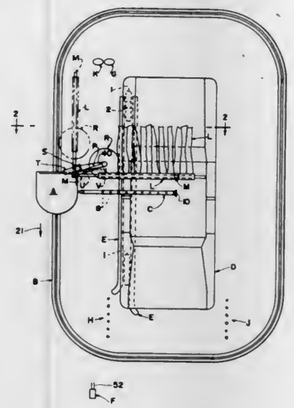
3,675,261
POOL CLEANING APPARATUS
Kenneth M. Burgess, 624 Barrington Avenue, Los Angeles, Calif., and Doland M. Burgess, 1060 El Medio Place, Los Angeles, Calif.
Filed July 6, 1970, Ser. No. 52,618
Int. Cl. E04h 3/20
U.S. Cl. 15—1.7 **9 Claims**



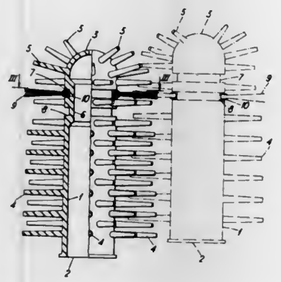
A pool cleaning apparatus for automatically cleaning swimming pools and the like which requires no operator supervision during the cleaning process. The apparatus comprises a vacuum head, a means for raising and lowering the vacuum head in the form of a float having a water inlet and a water outlet, valves for opening and closing the water inlet and water outlet, means for supplying air to the float, and means for maintaining a vacuum at the vacuum head.

3,675,262
AUTOMATIC VEHICLE WASHING APPARATUS WITH BRUSH FOR CLEANING THE VEHICLE SIDES
Frank A. Mello, 702 McLaughlin St., Richmond, Calif.
Filed June 15, 1970, Ser. No. 46,011
Int. Cl. B60s 3/06
U.S. Cl. 15—4 **6 Claims**

An automatic vehicle washing apparatus that includes a mobile carriage that travels around an endless track that encircles the stationary vehicle during the washing process. The carriage supports a spray arm that directs a heated liquid detergent under pressure and onto the exterior surfaces of the vehicle for cleaning it while the carriage makes one or more trips around the vehicle. The carrier makes an additional one or more trips around the vehicle with the same spray arm now delivering cold rinse water under pressure against the vehicle for rinsing off the detergent liquid. The carriage also swingably supports an auxiliary arm that carries a heavy fabric and this auxiliary arm is automatically swung into a position for placing the heavy fabric immediately in back of the spray arm during the spraying of the liquid detergent onto the vehicle so that it will be dragged over the vehicle and aid in removing dirt therefrom. I mount a brush-carrying arm on the auxiliary arm and provide novel means for swinging both the auxiliary arm and brush-carrying arm into operative position during the time the detergent liquid is sprayed onto the vehicle and for swinging the same two arms into inoperative position during the rinsing cycle. The brush is rotated and will aid in cleaning the sides, front and rear of the vehicle when the brush-supporting arm is in operative position.

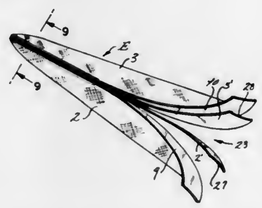


3,675,263
BRUSHES FOR CLEANING GLASSES AND OTHER DRINKING VESSELS
Charles Edward Durham, London, England, assignor to Clenaglass Electric Washer Limited, London, England
Filed April 6, 1971, Ser. No. 131,651
Claims priority, application Great Britain, April 6, 1970, 16,128/70
Int. Cl. A47l 15/38; B67c 1/08
U.S. Cl. 15—76 **9 Claims**



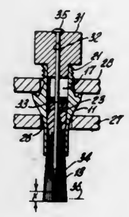
One kind of device for cleaning glasses, tankards and other drinking vessels comprises a central brush having an upright core made of rubber or rubber-like material with integrally formed radially projecting fingers and a group of similar brushes arranged around the central brush, all of the brushes preferably being rotated by a driving mechanism, although they may be stationary. Each of the brushes is provided, in addition to the radially projecting fingers, with a ring of closely spaced radially projecting bristles, the rings of bristles meshing with each other and preferably having their inner ends fixed to a rigid ring which is detachably fixed to the core of rubber or rubber-like material.

3,675,264
DENTIFRICE APPLICATOR
Duane L. Storandt, 8744 Rankin, Brentwood, Mo.
Filed July 13, 1970, Ser. No. 54,319
Int. Cl. A46b 5/04
U.S. Cl. 15—104.94 **4 Claims**



A dentifrice applicator incorporating a pair of panels connected along their top margins and a portion of their side margins for developing a finger pouch and hand grip extensions. Each panel is constructed of laminated material having an inner moisture impervious layer and an outer moisture absorptive layer; there being a dentifrice agent applied to the outer layer in the zone of said finger pouch. In usage, a user will insert an index finger within the finger pouch, grasp a hand grip extension and then insert the applicator within his mouth for cleaning his teeth, massaging his gums, and refreshing his mouth generally.

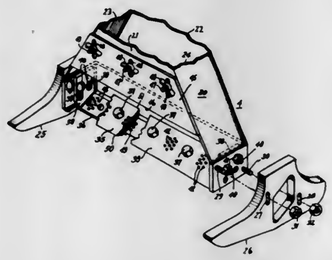
3,675,265
BRUSH CONSTRUCTION
William James Landen, Chesire, and Gunnar Lundquist, Kensington, both of Conn., assignors to The International Silver Company, Meridan, Conn.
Division of Ser. No. 692,416, Dec. 21, 1967. This application Dec. 12, 1969, Ser. No. 884,723
Int. Cl. A46b 3/02, 11/00
U.S. Cl. 15—193 **5 Claims**



The invention contemplates a brush in which a bundle of natural brush bristles is secured to a tubular retaining ferrule having a bore open at both ends. The root ends of the bristles are assembled within the bore, with the tip ends projecting outwardly as the applicator end of the brush. A guided pin is

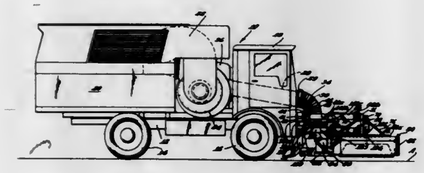
inserted on the central axis of the bundle to radially outwardly further compact the bristles in the bore, and to serve a molding function as a thermosetting resin is cured to hardness; the root ends are thereby bonded to each other and to the ferrule, and a smooth central passage is defined for pomade supply.

3,675,266
VACUUM TYPE DEBRIS COLLECTOR WITH SCRAPER BLADE
Gregory J. Murray, and Fred K. Tarrant, both of Saratoga Springs, N.Y., assignors to Tarrant Manufacturing Company
Filed Dec. 8, 1970, Ser. No. 96,144
Int. Cl. E01h 1/08
U.S. Cl. 15—340 **13 Claims**



A cleaning attachment to the suction hose or intake conduit of a debris collector includes a blade for scraping the ground and lifting debris into the suction path, the blade being adjustably supported in a shroud in a position to form a path for high velocity air at both the front and rear of the shroud to assist in conveying debris to the suction hose or conduit and a debris receiver. The cleaning attachment includes ground contacting members to facilitate movement over a surface to be cleaned and is pivotally mounted on a vehicle so that it can be raised to avoid obstacles and for rapid transit.

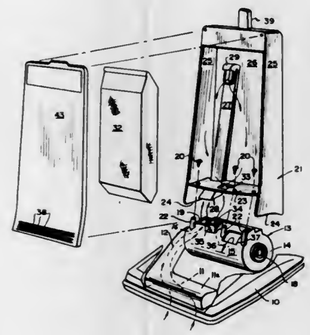
3,675,267
POWER VACUUM TRUCK
Vernon L. Klawitter, 1300 West Bartlett Road, Wichita, Kans.
Filed Dec. 15, 1969, Ser. No. 884,788
Int. Cl. A47l 5/00
U.S. Cl. 15—340 **14 Claims**



A mobile power vacuum truck includes a vacuum producing means having a pressure outlet to a collection box and a suction inlet communicating with a hood of a generally self-contained vacuum pick-up head assembly attached to the forward end of a street sweeper vehicle and movable laterally of the direction of travel of the vehicle. The sweeper pick-up head assembly includes a pair of counterrotating brooms tangentially intermeshing whereby sweepings are partially broken up and directed to a debris pick-up area centrally located behind and rearwardly of the brooms. A suction hood or enclosure overlies the brooms and has depending sides at least rearwardly and forwardly of the brooms. The rearward side converges to the opening of the vacuum suction passageway whereby the sweepings are conveyed to a collection box as the apparatus moves along.

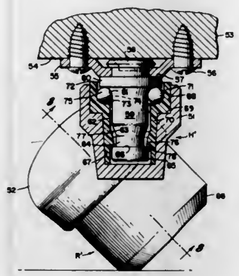
A vacuum cleaner having a nozzle, a motor-fan suction unit pivotably mounted on the nozzle about a horizontal axis, a dust bag enclosing housing of rigid construction mounted on the suction unit to be pivoted therewith and a rigid air passage conduit in the housing extending to the upper portion thereof for suspending a filter bag in the housing together with air inlet passages into the conduit and air outlet passages from the housing both of which are enclosed by the attaching of the housing to the suction unit.

3,675,268
VACUUM CLEANER
Erwin E. Nordeen, St. Paul, Minn., assignor to Whirlpool Corporation
Filed May 19, 1970, Ser. No. 38,803
Int. Cl. A47l 9/22
U.S. Cl. 15—350 **3 Claims**

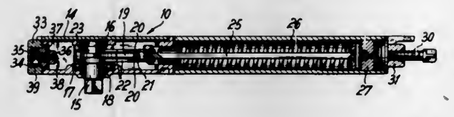


3,675,269
TILTED ROLLER CASTER
Jose Closa, Barcelona, Spain, assignor to Super Caster Corp., Miami, Fla.
Division of Ser. No. 740,658, June 27, 1968. This application April 2, 1970, Ser. No. 29,356
Int. Cl. B60b 33/08
U.S. Cl. 16—18 A **1 Claim**

This specification discloses a caster in which a roller is rotatably mounted on an axis disposed at 45° to the vertical with the upper portion of the roller being rotatably received in a downwardly opening housing and provided with an outwardly extending flange in the zone of overlapping portions of the roller and housing to exclude foreign matter from the latter and maintain frictional resistance to rotation at a minimum. The bottom wall of the roller is integrally joined to the cylindrical wall thereof by a bevelled or rounded structure that includes an annular groove extending upwardly with the groove defining a flexible rolling wall that will give under pressure. The bottom together with the inner wall of the groove are supported by a spider comprising six webs that are integrally joined to a central hub member, the bottom, and grooved wall structure aforesaid.



3,675,270
CLOSING DEVICE FOR DOORS AND ANALOGOUS STRUCTURAL ELEMENTS
Dietrich Jentsch, Ennepetal-Voerde, Germany, assignor to Firma Dorken & Mankel KG, Ennepetal-Voerde, Germany
Filed Aug. 15, 1969, Ser. No. 850,494
Claims priority, application Germany, Aug. 17, 1968, P 17 84 546.4
Int. Cl. E05f 3/10, 3/04; F05f 3/14
U.S. Cl. 16—53 **3 Claims**

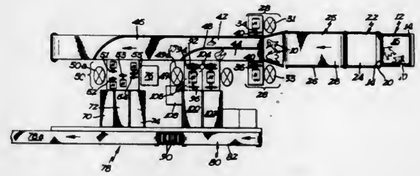


An elongated housing accommodates a slide means for longitudinal sliding movement in predetermined direction between a rest position and a working position. Biasing means permanently urges the slide means to its rest position. Connecting means connects the slide means with a structural element capable of performing movements between a closed and an open position to cause sliding movement of the sliding means towards its working position in response to movement of the structural element from the closed position. Braking means is operative for braking the movement of the slide means in response to the latter approaching its working position.

3,675,271
REVERSIBLE HINGE FOR REFRIGERATOR
Charles G. Fellwock, and Donald L. Tuley, both of Evansville, Ind., assignors to Whirlpool Corporation
Filed Oct. 30, 1969, Ser. No. 872,539
Int. Cl. E05d 7/02
U.S. Cl. 16—170 **9 Claims**

A top hinge structure for mounting a door on a cabinet such as a refrigerator cabinet so that with the same hinge plate and the same receiving means hingedly connecting the plate to the door the door may be mounted for either right-hand or left-hand opening and closing.

3,675,272
METHOD OF CUTTING AND PACKING POULTRY
Henry Nell Schacht, 2745 Quail Avenue, N, Minneapolis, Minn.
Filed Aug. 26, 1970, Ser. No. 66,976
Int. Cl. A22c 21/00
U.S. Cl. 17—52 **6 Claims**

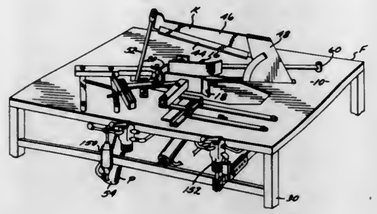


Chickens which have been eviscerated and chilled are transferred to a first handling station where they are cut in half transversely. They are then segregated into front and rear halves and transported via segregated channels to a second and a third handling station. The wings are removed at the second handling station and the legs are removed at the third handling station. The parts are then packed in plastic or fiber trays.

3,675,273
FISH BUTCHERING APPARATUS
Frank V. Vidjak, Long Beach, Calif., assignor to Star-Kist Foods, Inc., Terminal Island, Calif.
Filed Nov. 27, 1970, Ser. No. 93,066
Int. Cl. A22c 25/14
U.S. Cl. 17—61 **10 Claims**

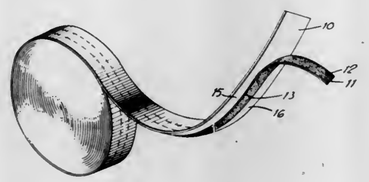
Fish butchering apparatus for separating a fish into a main loin section and a lower head and belly section. The apparatus includes a power-operated vertically movable knife which is urged towards and away from a horizontal table upon which a

fish is positioned. Means on the table cooperate to position a fish so that the knife will cut downwardly through such fish



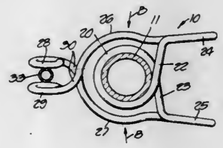
along a line extending approximately from the center of the eye to the vent regardless of the size of the fish.

3,675,274
NAPKIN
Alan J. Fried, 1359 Sussex Road, Teaneck, N.J., and Louis Fried, 280 Prospect Avenue, Hackensack, N.J.
Continuation-in-part of Ser. No. 46,858, June 17, 1970, abandoned. This application June 25, 1971, Ser. No. 156,882
Int. Cl. A45f 5/04
U.S. Cl. 24—67 R **4 Claims**



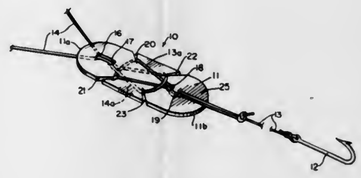
A roll or the like of tape adapted to be secured to a napkin to suspend or adhere same to its user, the tape having pre-existing pressure sensitive adhesive on both sides thereof and having a release strip (10) on one side thereof.

3,675,275
DOUBLE ACTION SPRING CLIP
Dennis Arblaster, 34081 La Serena, Dana Point, Calif.
Filed Jan. 29, 1971, Ser. No. 111,042
Int. Cl. A44b 21/00
U.S. Cl. 24—81 HS **19 Claims**



A double action, highly versatile clip formed from spring stock and including a pair of jaws and additionally, contracting coil-like clamping means which contracts against the support passing therethrough to anchor the clip firmly in any desired operating position thereon. The jaws and coil clamps are operable selectively at the user's option without releasing the clamping position of the other.

3,675,276
DEVICE FOR ATTACHING A FISH HOOK TO A FISHING LINE
Richard W. Nuse, Suite "O" 457 Washington, S.E., Albuquerque, N. Mex.
Filed Dec. 1, 1970, Ser. No. 94,013
Int. Cl. F16g 11/00
U.S. Cl. 24—130 **1 Claim**



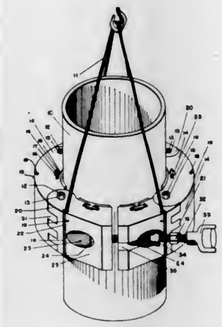
A device for fastening a snelled fish hook to a primary fishing line comprising a flat member in which are formed two pairs of slots and two pairs of holes. The slots of each pair converge toward each other and toward the center of the member from the longitudinal sides thereof and the holes are disposed one pair on each side of the center and along the longitudinal axis of the member.

3,675,277
BOLO CLASP
John W. Day, 551 South Memorial Drive, Tulsa, Okla.
Filed Oct. 11, 1966, Ser. No. 585,820
Int. Cl. A41d 25/14
U.S. Cl. 24—49 S **6 Claims**



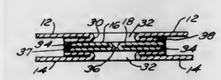
A bolo clasp comprising a base 3, means 9 carried by the base defining a pair of recesses that open toward the base, a clamping member 21 disposed between the base and each recess, and means 29 yieldably urging the clamping member away from the base and toward the recesses, said yieldable means comprising a coil compression spring disposed between the base and the clamping member.

3,675,278
COMBINATION ELEVATOR AND SPIDER
Thurman O. Powell, Box 453, Cross Plains, Callahan County, Tex.
Filed July 30, 1970, Ser. No. 59,558
Int. Cl. B21d 41/02
U.S. Cl. 24—249 DP **1 Claim**



Apparatus encircles, grips and holds plain end well casing being lowered into bore hole, or removed therefrom.

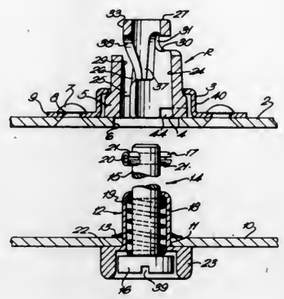
3,675,279
PIPED BUTTONHOLE CONSTRUCTION
James R. Moden, Barrington, R.I., assignor to AMH Corporation, Barrington, R.I.
Filed April 5, 1971, Ser. No. 130,921
Int. Cl. A44b 17/00
U.S. Cl. 24—202 **7 Claims**



A piped buttonhole construction comprising upper and lower layers having aligned openings therein and further having intermediate layers sandwiched therebetween, said intermediate layers extending from opposite sides of said openings to a point adjacent the center of said opening and then being reversely bent upon themselves to provide adjacent folded edges extending across said openings, and adhesive means securing opposite sides of said reversely bent intermediate layers to said upper and lower layers in an area adjacent to the periphery of said openings, whereby said finished buttonhole construction is completely devoid of any stitching.

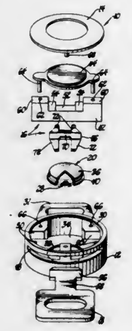
3,675,280
FASTENERS
Harry Herbert Winslade, Feltham, England, assignor to Inter-Locked Fasteners Limited, Twickenham, Middlesex, England
Filed Dec. 4, 1970, Ser. No. 95,033
Claims priority, application Great Britain, March 6, 1970, 10928/70; Oct. 30, 1970, 51,842/70
Int. Cl. A44b 17/00
U.S. Cl. 24—221 K **5 Claims**

A fastener receptacle is adapted to receive a rotatable stud having a shank with a pin-like lateral projection thereon and comprises a body with a bore which accommodates the stud shank. The wall of the receptacle is provided with a slot which defines a helical ramp up which the pin-like projection passes during the fastening operation, the pin-like projection being held, by spring-loading of the stud, in a detent at the end of the



ramp. Means are provided to attach the receptacle and stud to their respective panels or the like which are to be fastened together.

3,675,281
SEAT BELT BUCKLE ASSEMBLY
Robert L. Stephenson, Sterling Heights, Mich., assignor to Allied Chemical Corporation, Mt. Clemens, Mich.
Filed April 16, 1970, Ser. No. 29,161
Int. Cl. A44b 19/00
U.S. Cl. 24—230 **8 Claims**

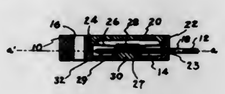


A seat belt buckle assembly including a housing in which a latch bar is movably disposed to be moved by a push button between a latched position for engaging a tongue and a release position for allowing the tongue to be removed from the housing. A leaf type spring normally urges the latch bar upwardly toward the latched position. The novelty resides in the utilization of a cup-shaped diaphragm disposed in sealing engagement with the bottom wall of the housing to define a chamber with the bottom wall of the housing. The bottom wall of the housing has a hole therein and the diaphragm includes a flap which normally is disposed over the hole for sealing the opening in response to a sudden rise in pressure in the chamber which in turn results from the application of a predetermined force urging the latch bar to the release position but which allows flow through the opening during the application of a lesser force urging the latch bar to the release position whereby the buckle assembly is prevented from unlatching or releasing the tongue in response to sudden impact or like force.

3,675,282
MECHANICAL FUSE

Stanley E. Summers, Woodland Hills, and Clyde W. Seltzer, Santa Ana, both of Calif., assignors to Ametek, Inc., New York, N.Y.

Filed Oct. 23, 1970, Ser. No. 83,367
Int. Cl. A44b 17/00
U.S. Cl. 24—230 SL 9 Claims

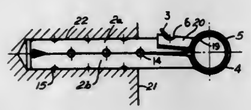


A mechanical fuse is described which links two members together in yieldable engagement permitting their separation when the separation forces exceed a predetermined value. The fuse comprises a female member having a housing with a slit in its wall for insertion of a tongue of the male member. A frustoconical spring washer is supported within the housing, and the washer supports a latch in the form of a button in its center aperture. The button is biased against the tongue of the male member and engages an aperture in this member. The sides of one or both of the aperture and button are bevelled so that a force applied to withdraw the tongue transmits a force component which compresses the spring washer. When this force component equals or exceeds the load of the washer, the washer withdraws and releases the tongue of the male member.

3,675,283
ATTACHMENT DEVICES FOR ELONGATE MEMBERS

Dragutin T. Gregorovic, 1, quai Marcellis, Liege, Belgium

Filed Oct. 2, 1970, Ser. No. 77,422
Int. Cl. A44b 21/00; F16l 3/12
U.S. Cl. 24—73 SA 10 Claims



A device for attaching an elongate member to a support surface comprises an anchoring part for penetrating a hole in the support surface and a clamping part for engaging the elongate member. The device is a one-piece item made from resilient strip material. The anchoring part has a generally elongate tubular shape and is connected at a trailing end to the clamping part. The clamping part includes two portions, each having a semi-circular cross-section in a direction at right-angles to the anchoring part. One portion is bendable to grip an elongate member between the portions. Means are provided for locking the one portion in the gripping position.

ERRATUM

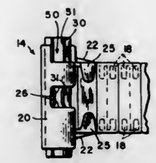
For Class 24—201 A see:
Patent No. 3,675,499

3,675,284
END ATTACHMENT FOR WATCH BANDS

Kurt A. Rieth, Warwick, R.I., assignor to Textron Inc., Providence, R.I.

Filed April 23, 1971, Ser. No. 136,747
Int. Cl. A44c 5/18
U.S. Cl. 24—265 B 5 Claims

An end attachment for watch bands which permits use of a watch band with wrist watches having different spacings between their attachment lugs. The attachment includes a generally tubular insert member which includes at least one outwardly biased, inherently resilient tab, at least one side of

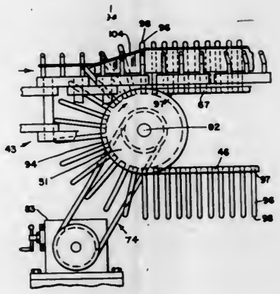


the tab comprising a cam surface inclined towards the end of the tab for facilitating insertion of the insert member into and withdrawal of the insert member from a generally tubular end member of the end attachment which has a slot intermediate its ends.

3,675,285
APPARATUS FOR CHANGING MESH SIZE OF NON-WOVEN NETTING

Lamar T. Atwood, and Lester Gidge, both of Nashu, N.H., assignors to Union Carbide Corporation

Division of Ser. No. 652,337, July 10, 1967, Pat. No. 3,605,220. This application Sept. 24, 1970, Ser. No. 75,043
Int. Cl. B32b 5/08; D04b 3/10
U.S. Cl. 28—1 CL 3 Claims



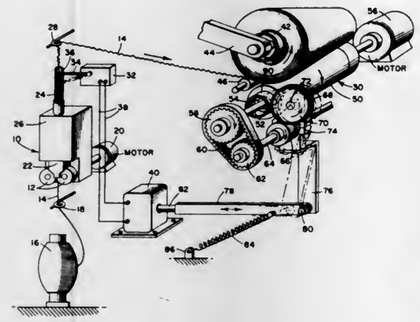
An apparatus and method for reducing the size of mesh in a non-woven, criss-cross, netting advancing along a path in a netting machine, the netting being carried by its selvedge loops on a pair of pin type carriers. A pair of endless transfer belts advance at a lesser speed than the netting, each positioned under one of the selvedge loop portions of the netting. The selvedge loop portions are either cut off the pin carrier and clamped against the transfer belts or lifted off the pins by elongated stripping fingers carried by the transfer belts, to advance therewith.

3,675,286
SYNCHRONIZING YARN WINDING TO STUFFER CRIMPER OUTPUT

Charles R. Cabello, Wilmington, Del., assignor to Joseph Bancroft & Sons Co., Wilmington, Del.

Filed Nov. 12, 1970, Ser. No. 88,931
Int. Cl. D02g 1/12
U.S. Cl. 28—1.7 11 Claims

Crimping yarn in a stuffer crimper and winding crimped yarn from the core produced by a substantially uniform rate of feed to the crimper is carried out with the sensed volume of the core utilized to selectively change the rate of crimped yarn winding onto a package support. The yarn winder has two drive means, on including an overrunning clutch through

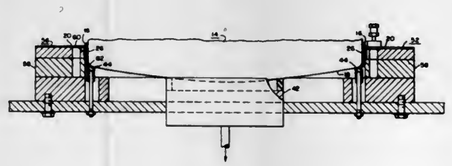


which yarn winding is normally carried out and the other including a friction roller which frictionally drives the yarn winder faster to overrun the overrunning clutch when an increased core of yarn is sensed in the crimper chamber.

3,675,287
METHOD FOR PROVIDING MOUNTING BRACKETS ON A CATHODE RAY TUBE INTEGRAL WITH THE IMPLOSION PROTECTION SYSTEM OF THE CATHODE RAY TUBE

Garth M. McLeod, Dundee; Clinton R. Copeland, and Gilbert N. Rieger, both of Elmira, all of N.Y., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Oct. 11, 1927, Ser. No. 80,080
Int. Cl. H01j 9/18
U.S. Cl. 29—25.13 2 Claims

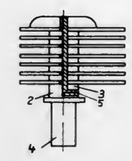


A method of providing mounting brackets on a cathode ray tube which utilizes an implosion protection system of the type comprising a rimband member positioned near the mold match line of the panel portion of the cathode ray tube. The rimband consists of two symmetrical half sections which are secured to the rear of the viewing area of the cathode ray tube by means of a tension band. The mounting lugs are provided on the rimband and are accurately positioned with respect to predetermined points located on the diagonals of the face plate of the cathode ray tube and referred to as the Z-points in the industry to insure that when the cathode ray tube is mounted within a cabinet or chassis that the cathode ray tube face plate will be accurately positioned with respect to a portion of the cabinet normally the bezel.

3,675,288
PROCESS OF MANUFACTURING A TRIMMER CAPACITOR

Alfred Tronser, 7541 Engelsbrand, Germany

Filed Sept. 23, 1970, Ser. No. 74,769
Int. Cl. H01g 13/00
U.S. Cl. 29—25.41 1 Claim

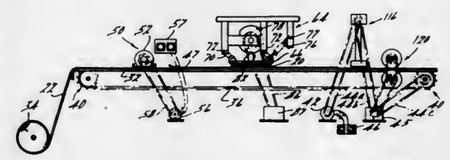


A single length of profiled stock is machined in a single operation with a single tool to form a rotor portion and a stator portion integral therewith. The rotor and stator portions are subsequently separated from each other by an axial cut and a transverse cut. The separated rotor and stator portions are assembled to form a trimmer capacitor.

3,675,289
APPARATUS AND METHOD FOR PREPARING PIPED COVERING MATERIALS

Alfred J. Mark, Newtonville, Ontario, Canada, assignor to Chrysler Corporation, Highland Park, Mich.

Filed May 27, 1970, Ser. No. 40,980
Int. Cl. B68g 13/02
U.S. Cl. 29—91 12 Claims



A method and apparatus for preparing upholstery covering including sharply defined pipes wherein rotary cutting blades are used to cut slits in a riser material; a fabric is subsequently placed over the riser material, pleated into the slits and sewed therein to the riser material to form a series of pipes in the covering.

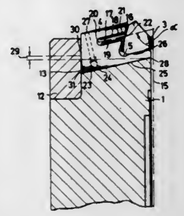
3,675,290
ADJUSTABLE TOOL HOLDER FOR RELEASABLE MILLING CUTTER BITS FOR USE IN REPLACEABLE-BIT MILLING CUTTER HEAD-TYPE MILLING MACHINE

Kurt Mayer, Tubingen, Germany, assignor to Montanwerke Water GmbH, Tubingen, Germany

Filed March 3, 1971, Ser. No. 120,667
Claims priority, application Germany, Sept. 2, 1970, P 20 43 453.1
Int. Cl. B26d 1/00
U.S. Cl. 29—96 10 Claims

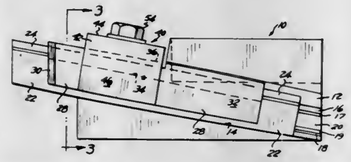
The milling cutter head has slots to receive bit holders; each holder is a plate-like body formed with an opening to hold the bit, and a pair of slits directed to the opening which define, therebetween, a tongue extending in the direction toward the opening into which the bit is inserted. By pressing the tongue toward or away from the slits, for example by means of a screw bearing against the side of the tongue, the position of the bit

with respect to the cutting plane can be adjusted. The holder is additionally formed with a bearing surface fitting on the milling head, the bearing surface having a screw which can be



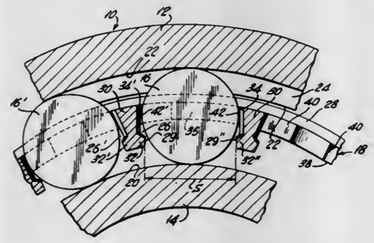
screwed to extend slightly therefrom and thus tip the entire holder about the front edge of the milling cutter head, to provide for angular adjustment.

3,675,291
COMBINATION CUT-OFF AND CHAMFER TOOL
Howard N. Girardin, Grosse Pointe, Mich., assignor to Empire Tool Company, Memphis, Mich.
Filed Feb. 19, 1971, Ser. No. 116,752
Int. Cl. B26d *1/04*
U.S. Cl. 29—97 **5 Claims**



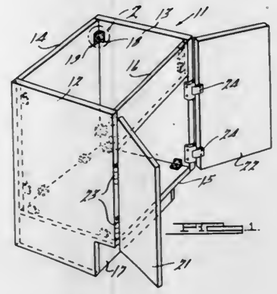
A combination cutoff and chamfer tool for mounting on a compound rest of a lathe or the like machine tool in which the chamfer tool is mounted adjacent to one side of the cutoff tool and both, cutoff tool and chamfer tool, are clamped together within the tool holder by means of a mechanical clamp device; the chamfer tool can be adjusted longitudinally relative to the cutting edge of the cutoff tool.

3,675,292
METHOD FOR MAKING A ROLLER BEARING RETAINER
James L. Vannest, New Britain, Conn., assignor to Textron Inc., Providence, R.I.
Division of Ser. No. 778,684, Nov. 25, 1968, Pat. No. 3,628,839. This application May 14, 1970, Ser. No. 48,734
Int. Cl. B21d *53/12*; B23p *13/04*
U.S. Cl. 29—148.4 C **10 Claims**



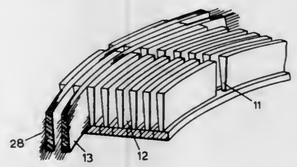
An economical machining method is described for manufacturing roller-bearing retainer rings wherein lubricating cavities are formed in the sides rimming the roller-element pockets, the roller pockets and lubrication concavities being conveniently machine-formed simultaneously with radially recessed roller supports.

3,675,293
METHOD OF LOCATING A BRACKET
Frank R. Hajduk, Lincoln Park, Mich., assignor to Regis Manufacturing Company
Filed March 23, 1970, Ser. No. 21,730
Int. Cl. B23p *13/00*; B23q *17/00*
U.S. Cl. 29—150 **5 Claims**



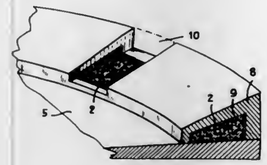
A cabinet assembly of the knockdown type embodying male and female brackets mounted contiguous to peripheral edges of members for affixing the members together in a snap together manner. A method and structure for locating the brackets relative to the respective members in preselected locations is employed. Additionally, the brackets embody improved resilient fingers for holding the brackets and members in an interlocked condition.

3,675,294
METHOD OF MAKING A BLADED ROTOR
Jack Palfreyman, and Henry Edward Middleton, both of Derby, England, assignors to The Secretary of State for Defense in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England
Continuation-in-part of Ser. No. 806,188, March 11, 1969, abandoned. This application Dec. 22, 1970, Ser. No. 100,563
Claims priority, application Great Britain, March 20, 1968, 13,498/68
Int. Cl. B21k *3/04*
U.S. Cl. 23—156.8 R **8 Claims**



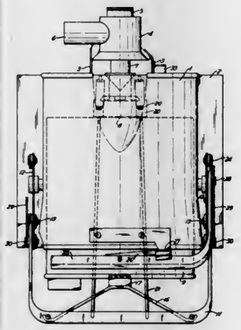
A bladed rotor is made by a method comprising forming a plurality of similar annular wall members into an annular assembly in which there is a circumferentially extending annular recess between each adjacent pair of annular wall members, and in which there are a plurality of angularly spaced apart axially extending slots which extend to the circumference of the assembly, filling each such annular recess with fibrous material, and securing in the said slots tanged root portions of aerofoil-shaped blades, the blades being formed of fibrous material and the fibers in the blades being bonded to the fibers in the recesses.

3,675,295
METHOD FOR THE FABRICATION OF RINGS FOR A WATCH DIAL
Gilbert Feller, Le Locle, Switzerland, assignor to Metalem S. A., Le Locle, Switzerland
Filed Oct. 12, 1970, Ser. No. 79,778
Claims priority, application Switzerland, Oct. 14, 1969, 15353/69
Int. Cl. B23p *13/00*; G04b *19/06*
U.S. Cl. 29—177 **11 Claims**



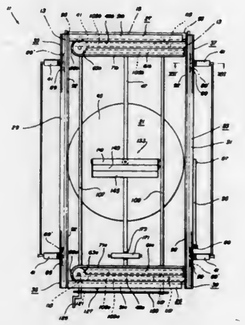
A method for the fabrication of rings or the like possessing decorative or indicator symbols or figures, for instance hour symbols or figures for small watches, which method comprises the steps of producing at least one substantially ring-shaped groove at the base of a metallic ring member, which base is hidden from the observer of the watch or article. Then at least one electrically non-conductive material is applied in such groove or grooves, and thereafter at the locations of the ring member where the symbols or figures are to be produced on the surface of such ring member which is disposed opposite the groove or grooves there is performed a material removal operation in order to expose the aforementioned electrically non-conductive material.

3,675,296
HOLDER FOR OXYGEN PRODUCING CANISTER
Layton A. Wise, Washington, Pa., assignor to Mine Safety Appliances Company, Pittsburgh, Pa.
Filed Sept. 25, 1970, Ser. No. 75,380
Int. Cl. B23p *19/00*, *19/04*
U.S. Cl. 29—200 P **8 Claims**



A receptacle is open at its bottom in order to receive an oxygen producing canister. A bail is disposed below the receptacle and has end portions extending upwardly along its opposite sides. The ends of the bail are pivotally connected to the receptacle to permit the bail to be swung backward out of the way of a canister that is being inserted up into or removed from the receptacle and to permit the bail to then be swung forward beneath a canister to support it in a standby position. There are means for guiding the ends of the bail upwardly along the sides of the receptacle. A handle straddles the receptacle and has a front portion extending across its lower part, the ends of the handle being pivoted to the receptacle above the bail. Links are pivotally connected to the handle and to the bail for lifting the bail when the handle is swung upwardly in order to raise a canister resting on the bail to operating position.

3,675,297
MACHINE FOR ASSEMBLING A PRE-HUNG DOOR UNIT
Tony E. Appleton, 4185 Parkchester, Memphis, Tenn.
Filed March 1, 1971, Ser. No. 119,594
Int. Cl. B23p *19/00*
U.S. Cl. 29—200 R **10 Claims**

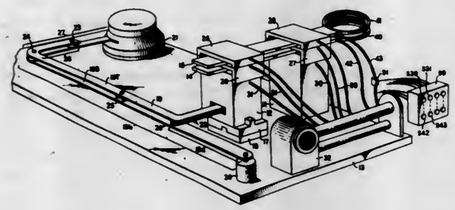


A machine for aligning and rigidly holding a plurality of lumber pieces selectively defining various size door jambs while a workman suitable secures these and other lumber pieces defining door frame structure one to the other and hingedly attaches a door thereto. The machine includes mechanically driven expandable frame structure for convenient adjustment thereof to facilitate assembling of various size pre-hung door units, pneumatic operable jamb-gripping structure for holding the jambs in an optimum arrangement while the workman secures the header thereto and subsequently completes the pre-hung door unit, and a pneumatic operable transverse bar jack for centrally supporting multiple doors having no door stop structure, e.g., bi-fold or double panel door units, in an optimum arrangement while the workman suitably secures these type doors to the door frame structure.

3,675,298
MICROMANIPULATOR FOR MULTILEVEL ASSEMBLY
Paul Charles Michaelis, Watchung, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Dec. 4, 1970, Ser. No. 95,057
Int. Cl. H05k *13/00*
U.S. Cl. 29—203 V **5 Claims**

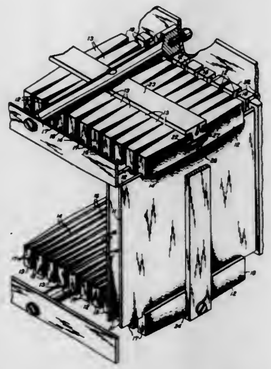
A micromanipulator for positioning a number of elements for multilevel assembly is achieved with a single displacement control mechanism. The mechanism functions to secure itself mechanically to ends of cantilever members to which the elements are secured, in turn, for manipulation. The arrangement may be thought of as a pair of ladders between corresponding

rungs of which planks are laid. Individual planks can be extended by a vacuum system which fixes selected ends of the



planks with respect to the two ladders and by moving one of the ladders.

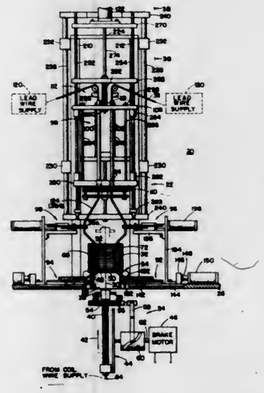
3,675,299
ARTICLE MOUNTING APPARATUS
Henry H. Sherrill, Jr., Winston-Salem, N.C., assignor to Western Electric Company, Incorporated, New York, N.Y.
Filed May 19, 1969, Ser. No. 825,893
Int. Cl. H02b *1/04*
U.S. Cl. 29—203 B 8 Claims



Articles, such as printed wiring boards, are retained between facing pairs of article retainers mounted on elongated guide tracks. The article retainers are made of a flexible material and have central portions of maximum thickness. Each article retainer is supported only at its thickest central portion by a single guide track. The article retainers locate the articles at desired spacings along the guide tracks. Pivotal flexing displacement of the article retainers permits non-uniform angular orientation of the retained articles, e.g., to compensate for misalignment between wiring board conductive paths and fixed connector assemblies.

3,675,300
LEAD WIRE INSERTING MECHANISM FOR STATOR WINDING APPARATUS
Paul H. Reust, and Donald R. Taube, both of Fort Wayne, Ind., assignors to Essex International Inc., Fort Wayne, Ind.
Filed Aug. 28, 1970, Ser. No. 67,950
Int. Cl. H02k *15/00, 15/06*
U.S. Cl. 29—205 C 22 Claims

Apparatus for inserting external lead wires in slot dynamoelectric machine stator core slots and for positioning coils in the slots over the lead wires thereby to anchor the same. Elongated tubes are provided having inner and outer ends with the lead wires extending therethrough. The inner tube ends are inserted in the bore of the core adjacent the slot entrances and the lead wires are advanced so that end portions extend outwardly from the inner tube ends and from one end of the core. First clamping members are provided movable laterally between extended positions in which they initially engage the lead wire end portions and retracted positions in which they pull the end portions laterally outwardly away from the bore. The tubes are then withdrawn from the bore to a retracted position with their inner ends spaced longitudinally from the other end of the core and with other lead wire portions extending between their inner ends and the core. Second

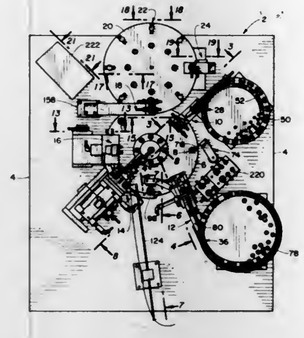


clamping members are provided movable laterally between extended positions in which they engage the other lead wire portions and retracted positions in which they pull the other lead wire portions laterally outwardly away from the bore, retraction of both clamping members thereby laterally pulling the respective lead wire portions outwardly away from the bore and seating the lead wires against the bottoms of the slots. With the lead wires thus clamped, coils are positioned in the slots over the lead wires therein, as by being directly wound in the slots by a gun-type coil winder. Following positioning of the coils in the slots over the external leads, the other lead wire portions are severed and lanced on either side thereof to provide strippable ends for the other lead wire portions and the end portions of the next lead wires.

3,675,301
APPARATUS FOR ASSEMBLY OF VALVES AND INSERTION INTO INFLATABLE ARTICLES
Kenneth L. McQuary, Marina, Calif.; George H. Karlin, 722 N. Rexford Drive, Beverly Hills, Calif., and Bert Lane, 713 Scenic View, Palm Springs, Calif., assignors to said Karlin and Lane, by said McQuary
Filed Jan. 11, 1971, Ser. No. 105,508
Int. Cl. B23p *19/04*
U.S. Cl. 29—208 B 26 Claims

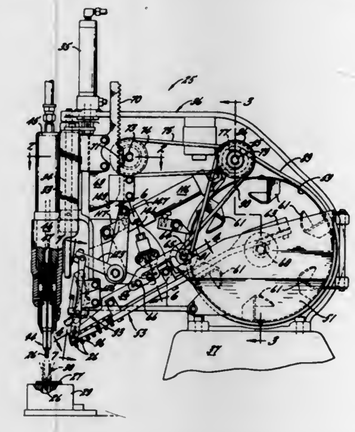
An apparatus for essentially automatic assembly of two-element valve members and for placement of the assembled valve members into inflatable articles such as, for example, balloons. Means are disclosed wherein the elements of the valve are carried through a plurality of successive work stations wherein the valve is assembled, and, in an exemplary embodiment, wherein a length of string is attached to a tab of one of the valve elements and wound around a spool portion thereof, and delivered into a receiving position so that a balloon neck may be manually placed around the valve and thereafter the balloon with the associated valve is removed and ready for

packaging or other disposition thereof. All of the work station operations are automatic with the exception of the inflatable



article placement and this is done manually to enable inspection and quality control.

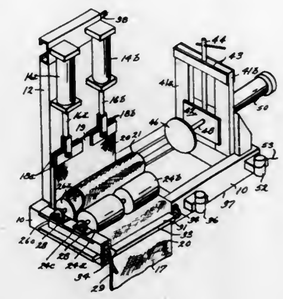
3,675,302
AUTOMATIC ASSEMBLY MACHINE
Paul H. Dixon, c/o Dixon Automatic Tool, Inc., 2300 23rd Avenue, Belvidere, Ill.
Filed Dec. 9, 1970, Ser. No. 96,329
Int. Cl. B23q *7/10*; B23p *19/04*
U.S. Cl. 29—211 30 Claims



Screws fed from a hopper to an elongated delivery track by a feeding drum are picked up one-by-one from the track by a transfer device and are delivered to a chuck which surrounds a power rotated and power reciprocated screwdriver for driving the screws into a workpiece.

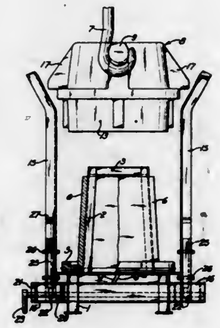
3,675,303
HOSE HOLDER AND COUPLING INSERTER MACHINE
Benjamin L. McKinnon, Atlanta, Ga., assignor to Equipment Sales Company, Inc., Atlanta, Ga.
Filed Oct. 28, 1969, Ser. No. 871,837
Int. Cl. B23p *19/04*
U.S. Cl. 29—237 8 Claims

An apparatus is described which grips the circumference of a hose or the like and holds same to allow a coupling or the like to be inserted therein or otherwise attached thereto. A flexible, web-like material is used as a means of constricting the longitudinal movement of the hose; the web-like material is tightened around a major portion of the circumference of



the hose, gripping it tightly. A thruster means is provided for forcing the coupling into an end of the hose. The thruster is mounted on a movable carriage which will allow it to be properly positioned in order to accommodate the length of hose and the length of coupling being used.

3,675,304
APPARATUS FOR LINING A HOT TOP CASING WITH INSULATING PANELS AND RING
Joseph Perri, Corapolis, Pa., assignor to The Susquehanna Corporation, Fairfax County, Va.
Continuation-in-part of Ser. No. 726,115, May 2, 1968, abandoned. This application July 2, 1969, Ser. No. 842,076
Int. Cl. B23p *19/00*
U.S. Cl. 29—238 9 Claims

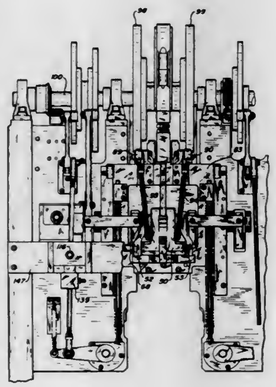


A hot top casing with a downwardly tapered pouring opening is lowered around an upwardly tapered stand of one or more inclined insulating panels and a ring to line the casing, with or without clips or attachment devices to hold the panels and ring in place.

3,675,305
METHOD AND APPARATUS FOR APPLYING PLASTIC GRIPS TO WIRE BAIL HANDLES

Raymond A. Heisler, 657 Dakota Trail, Franklin Lakes Township, N.J.

Continuation-in-part of Ser. No. 825,800, May 19, 1969, abandoned. This application Jan. 19, 1971, Ser. No. 107,622
Int. Cl. B23p *11/00, 19/04*
U.S. Cl. 29—439 30 Claims



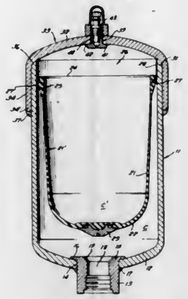
A method and apparatus for applying plastic grips to wire bail handles. This apparatus is used in combination with a wire bail-forming mechanism which feeds, cuts and forms wire into a wire bail for attachment to an eared container. The bail-forming apparatus has upper and lower dies which have their midportions contoured to receive and retain cut length of plastic tubing as a length of wire is inserted therethrough after which it is bent into a generally U-shaped bail. A grip transfer arm is mounted on the bail-forming mechanism and at its initial tubing-receiving limit of movement receives an advancing end of a length of tubing and as the arm is moved to its tube-delivering limit of movement the tubing is cut and then positioned in way of the advancing wire used to make the bail handle. The tubing advance mechanism has a check mechanism disposed to engage the tubing so as to permit only a forward movement of the tubing. This advance mechanism includes a movable gripping mechanism disposed to grip the tubing when moved to provide the advancing motion and to slide on the tubing when moved counterflow to the advancing motion. The delivery arm has means for cutting the length of tubing advanced into the desired length and a tubing retaining means for retaining and positioning the tubing as it is received and moved toward and into the dies of the bail-forming apparatus.

3,675,306
METHOD OF MAKING PRESSURE VESSEL

Edward M. Greer, Beverly Hills, Calif., assignor to Greer Hydraulics, Inc., Los Angeles, Calif.

Division of Ser. No. 657,621, Aug. 1, 1967, Pat. No. 3,500,866. This application May 29, 1969, Ser. No. 828,842
Int. Cl. B23k *31/02*
U.S. Cl. 29—487 3 Claims

This disclosure relates to the art of pressure vessels, more particularly of the type having a cylindrical container, one end of which is closed and has a port and the other end of which defines an open mouth. The container has a deformable bladder of resilient material positioned therein, said bladder having a large mouth with an annular metal supporting member secured thereto and extending outwardly therefrom, the free edge portion of said supporting member which is longitudinally spaced from the region where the bladder is



secured thereto, being fused to the mouth of the container. The container has suitable means closing the mouth thereof.

3,675,307
SOLDERING FLUXES

Rudolf Siegfried Strauss, and Peter David Teitz, both of London, England, assignors to Fry's Metals Limited, London, England

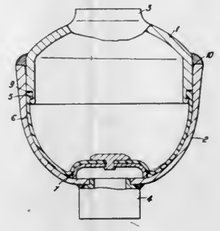
Filed Aug. 8, 1969, Ser. No. 848,701
Int. Cl. B23k *31/02, 35/36*
U.S. Cl. 29—495 11 Claims

A method of soldering or tinning in which the flux used consists of or contains a hydrohalide, other than a hydroiodide, of a monobasic amino acid or of an ester of such acid with an alcohol containing 1 to 10 carbon atoms.

3,675,308
METHOD FOR ASSEMBLING HYDRAULIC ACCUMULATORS

Helmut Ziegler, Muhlheim, Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed July 9, 1970, Ser. No. 53,339
Claims priority, application Germany, July 12, 1969, P 19 35 493.9
Int. Cl. B23p *19/04, 17/04, 11/00*
U.S. Cl. 29—422 1 Claim

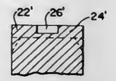


A method of assembling hydraulic accumulators of the bladder type having a casing formed from two open-mounted shells rigidly fitted together comprising the steps of fitting the bladder on the mouth of the inner shell, sliding the bladder and inner shell into the outer shell until the bladder fits closely against the inner surface of the outer shell, and rigidly connecting the shells in this position.

3,675,309
PROCESS FOR RECONDITIONING CYLINDER HEADS

Stanley B. Borkoski, Silver Spring, Md., assignor to Pre-heat Welding Co., Inc.

Filed Feb. 22, 1971, Ser. No. 117,613
Int. Cl. B22d *19/10*; B23p *7/00*
U.S. Cl. 29—401 8 Claims



A process for reconditioning cylinder heads of diesel engines, which have a transverse plate with an annular protrusion having a pair of spaced annular rings with a groove between them, including removing the rings to provide the protrusion with a flat annular surface and chamfered edges, placing on the flat annular surface of the protrusion a hollow cylindrical member which extends radially beyond the protrusion and annular surface, welding the annular member to the protrusion by fusing the extending portion of the annular member and causing it to flow into said chamfered edges, and machining a groove in said annular member.

3,675,310
SOLDERING METHOD

Alfred E. Schwaneke, Rolla; Wilbert L. Falke, St. James, and Orrin K. Crosser, Rolla, all of Mo., assignors to The United States of America as represented by the Secretary of the Interior

Filed April 20, 1971, Ser. No. 135,768
Int. Cl. B23k *31/02*
U.S. Cl. 29—492 15 Claims

Metallic members consisting essentially of copper or copper alloy, low carbon steel, stainless steel, nickel or nickel alloy, or any combination thereof, are joined together by initially coating the members to be joined with a thin layer of nickel, followed by application of solder consisting essentially of zinc or zinc alloy and appropriate fluxes containing metallic salts, at a temperature of about 320° to 500° C. The metallic members may also be joined by addition of nickel or nickel salts to the flux material so that the required thin nickel coating is obtained by a reaction during soldering such that the coating is deposited on the surface of the metallic members from the flux.

The thin layer of nickel, obtained as above, constitutes a "sacrificial metal coating" that is absorbed into the molten solder during soldering. The method of the invention is particularly useful in manufacture and repair of automobile radiators and utensils or appliances for home cooking.

3,675,311
THIN-FILM DIFFUSION BRAZING OF NICKEL AND NICKEL BASE ALLOYS

Robert R. Wells, Fullerton, Calif., assignor to Northrop Corporation, Beverly Hills, Calif.

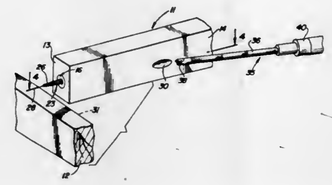
Filed July 2, 1970, Ser. No. 52,118
Int. Cl. B23k *31/02, 35/24*
U.S. Cl. 29—498 5 Claims

A method of joining nickel and nickel base alloys comprising a thin film of metal selected from a group consisting of titanium and niobium. Coating both sides of the film chosen with a metal selected from the group consisting of silver and gold, placing the coated film between the surfaces to be joined, pressing the surfaces together whereby the coated film forms an intermediate layer, and heating the film to at least a eutectic temperature to form a brazing liquid and holding for a period of time sufficient to obtain a ternary mixture of the metals utilized in the area between the surfaces joined.

3,675,312
METHOD FOR JOINING ABUTTING ELEMENTS BY CONCEALED MEANS

Patricio Herman, 1954 Tacoma Street, Cuyahoga Falls, Ohio

Division of Ser. No. 804,415, April 13, 1971, Pat. No. 3,574,510. This application May 21, 1970, Ser. No. 48,604
Int. Cl. B23p *19/00*
U.S. Cl. 29—526 4 Claims

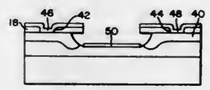


A concealed means for joining two abutting elements. The first element has at least an engaging surface and an access surface oriented angularly with respect to the engaging surface. An anchor means is secured within the engaging surface such that the axis thereof extends outwardly from the engaging surface. The second element also has an engaging surface that can be abutted to the engaging surface of the first element. The first element has an ingressive passage that opens through its access surface and communicates with the anchor means. The ingressive passage is oriented obliquely to the axis of the anchor means, and the actual fastening of the first and second elements is achieved by a screw means that extends through the anchor means of the first element and penetrates the engaging surface of the second element. Tightening and loosening the screw means is accomplished by driving means having a flexible shaft for negotiating the oblique intersection of the ingressive passage with the axis of the anchor means and for permitting actuation of the screw means by rotation of the shaft from exteriorly of the first element.

3,675,313
PROCESS FOR PRODUCING SELF ALIGNED GATE FIELD EFFECT TRANSISTOR

Michael C. Driver, Trafford, and Martin J. Geisler, Murrysville, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Oct. 1, 1970, Ser. No. 77,117
Int. Cl. B01j *17/00*; H01g *13/00*
U.S. Cl. 29—571 6 Claims



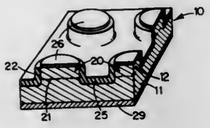
This disclosure relates to a process for preparing a self-aligned gate field effect transistor in which the source-drain spacing is automatically held to a minimum as a result of the processing steps.

3,675,314

METHOD OF PRODUCING SEMICONDUCTOR DEVICES

Clifford A. Levi, Billerica, Mass., assignor to Alpha Industries, Inc., Newton, Mass.

Continuation-in-part of Ser. No. 835,402, June 23, 1969, abandoned. This application March 12, 1970, Ser. No. 19,085
Int. Cl. B01j 17/00; H01l 5/00
U.S. Cl. 29—578 12 Claims



Method of manufacturing silicon mesa diodes from a wafer of silicon. The surface of the wafer is coated with a first layer of silicon nitride and a second layer of silicon oxide. By masking and etching procedures, silicon nitride is left only on the portions of the surface defining the mesas to be formed. The wafer is etched to form the mesas and then treated to form a passivating silicon oxide coating at all the exposed surfaces of the wafer. The silicon nitride is removed from the upper surfaces of the mesas and metal contacts are applied to these upper surfaces. The wafer is subsequently divided into discrete dice, each containing a mesa, and the dice are mounted in suitable enclosures.

3,675,315

METHOD FOR EXTRACTING WIRES FROM A CABLE BUNDLE

Charles W. Zebe, New Shrewsbury, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Aug. 22, 1969, Ser. No. 852,283
Int. Cl. B23p 19/02
U.S. Cl. 29—427 8 Claims



A method is disclosed for tracing and extracting unused cross-connection wires from a distributing frame by utilizing a tube having a detachable hollow conical head at the leading edge. One end of the dead wire or wire pair to be extracted is passed through the head and attached to a pull wire inside the tube. The head is inserted into the tube and the entire assembly is pushed along over the pull wire and the dead wire into the cable bundle until the dead wire is freed for extraction through the tube. A connection is provided on the tube for the application of pressurized air or smoke to aid in locating the leading end of the tube when an obstruction is encountered.

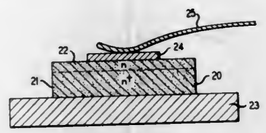
3,675,316

GROUP III-V SCHOTTKY BARRIER DIODES

Norman Nathan Axelrod, Summit, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Feb. 1, 1971, Ser. No. 111,307
Int. Cl. B01j 17/00; H01l 7/00
U.S. Cl. 29—576 10 Claims

A thin layer, with a relatively low active donor concentration (e.g. $<5 \times 10^{17}$ per cm^3), is produced in a slice of a Group III–V semiconductor material doped, with a Group VI dopant to a relatively high active donor concentration (e.g. $>10^{18}$ per cm) by maintaining the slice in a nonreacting atmosphere at an elevated temperature. The temperature is such that the equilibrium vapor pressure of the Group III constituent is



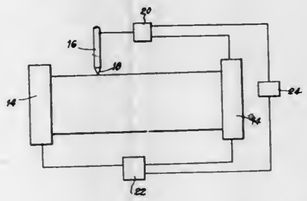
greater than the equilibrium vapor pressure of the Group V constituent. Such materials are used, for example, in the fabrication of mm-wave Schottky barrier mixer diodes.

3,675,317

METHOD FOR SPIRALLING ELECTRICAL RESISTORS

John P. Martin; Darrell J. Beninger, both of London, Ontario, and John R. Lemon, East London, Ontario, all of Canada, assignors to Welwyn Canada Limited, London, Ontario, Canada

Filed May 13, 1970, Ser. No. 36,965
Int. Cl. H01c 7/00, 17/00
U.S. Cl. 29—620 10 Claims



A method for manufacturing electrical resistors of the type comprising turns of conductive metal or alloy film formed on a cylindrical substrate with a spiral track free of the film defined between the turns. The substrate is first provided with a complete film, and the tip of a conductive stylus is then brought into engagement with the film adjacent one end of the substrate. Current is passed through the stylus whereby the film is heated in the area engaged by the tip and film vaporization occurs. Relative movement between the substrate and stylus will result in a continuous spiral track free of the film as a result of the vaporization. The changes in resistance which occur during the processing can be continuously measured so that the processing can be discontinued when a desired resistance value is reached.

3,675,318

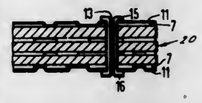
PROCESS FOR THE PRODUCTION OF A CIRCUIT BOARD

Hans-Hermann Merkenschlager, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich

Filed May 11, 1970, Ser. No. 35,959
Claims priority, application Germany, May 14, 1969, P 19 24 775.7
Int. Cl. H01b 13/00; H05k 3/00
U.S. Cl. 29—624 10 Claims

Production of multi-layered electrical circuit boards which have closely spaced circuit elements is accomplished by applying a solder-resistant lacquer coating to the outside surfaces of a plurality of conductor plates affixed together in juxtaposed relationship, producing bores through the plurality of circuit boards in a predetermined relationship to their circuitry placed thereon, depositing a first copper layer by currentless means upon the bore wall and the solder-resistant lacquer

coated surface, applying a galvanic-proof coating to the copper metal layer in predetermined areas leaving soldering eyes free of the galvanic-proof coating, galvanically coating the bores inclusive of the soldering eyes with a second copper



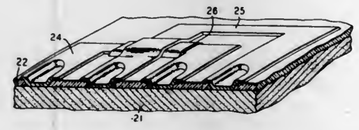
reinforcing layer, applying an etch-proof metal layer on the surface of said copper reinforcing layer, removing the galvanic-proof lacquer layer and the first copper layer by etching on the places not covered by the etch-proof metal layer.

3,675,319

INTERCONNECTION OF ELECTRICAL DEVICES

George Elwood Smith, Murray Hill, N.J., assignor to Bell Telephone Laboratories, Incorporated, N.J.

Filed June 29, 1970, Ser. No. 50,780
Int. Cl. H05k 3/06
U.S. Cl. 29—625 6 Claims



At least two overlapping or crossing levels of electrically isolated conductors are used to interconnect regions of a microelectronic device. To minimize shorts at regions of overlap or crossing, the lower conductor is provided with a pronouncedly trapezoidal cross section to facilitate maintenance of a uniform thickness of insulation between the two conductors. To achieve this cross section, the lower conductor is made of a material which etches slower in the thickness direction than in the direction normal thereto. Typically the lower conductor may be a binary metal alloy whose composition varies with thickness or polycrystalline silicon whose doping or crystalline disorder varies with thickness.

3,675,320

ELECTRIC CONTACT MEMBER

Takashi Watanabe, Shizuoka-ken, Japan, assignor to Kabushiki Kaisha Kawai Gakki Susakusho, Shizuoka-ken, Japan

Division of Ser. No. 756,238, Aug. 29, 1968, Pat. No. 3,555,497. This application May 6, 1970, Ser. No. 34,969
Claims priority, application Japan, Sept. 2, 1967, 42/56270
Int. Cl. H01r 9/00
U.S. Cl. 29—630 D 8 Claims



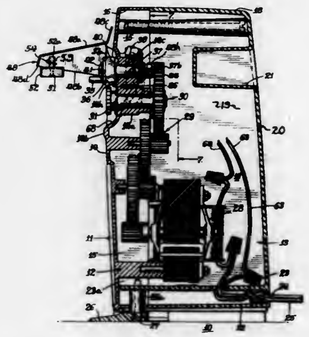
An electrical contact member is punched from a rolled sheet having a thick longitudinal section and an adjacent thin longitudinal section, the thick section forming a terminal portion on which a lead wire can be wrapped while the thin section forms a contact portion. The contact portion is bent to form a loop, and in the event that a pair of opposed contact portions are to be formed, they in turn are bent relative to the terminal portion such that their loops face one another.

3,675,321

AUTOMATIC ELECTRIC CAN OPENER

Robert W. Arel, Shorewood, and Donald R. Meyer, Thiensville, both of Wis., assignors to John Oster Manufacturing Co., Milwaukee, Wis.

Filed June 24, 1970, Ser. No. 49,258
Int. Cl. B67b 7/38
U.S. Cl. 30—4 R 11 Claims



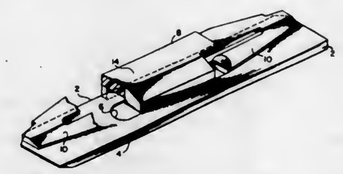
An automatic electric can opener including a shaft supported cutter, rotatable between angular positions comprising a retracted condition for loading of a can into position for opening, a ready position for commencing the power piercing engagement of the can lid, an operative cutting position for providing a peripheral cut around the can lid, and a holding position for retaining the opened can in supporting engagement on the opener until the can is manually removed. A combination lid lifter and switch actuator means is operatively associated with the cutter support shaft and a switch for energizing motor driven can rotating means in order to initiate an automatic can opening cycle commencing with the power piercing of the can lid, followed by the peripheral cutting of the can lid until completely severed from the can body and finally automatic shutdown of the can rotating means after the can is opened.

3,675,322

RAZOR BLADE ASSEMBLY

Roger L. Perry, Lynnfield Center, Mass., assignor to The Gillette Company, Boston, Mass.

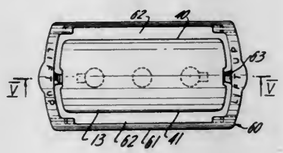
Filed May 25, 1970, Ser. No. 39,996
Int. Cl. B26b 21/40, 21/16
U.S. Cl. 30—32 3 Claims



A razor blade assembly for an injector razor, the assembly including a razor blade having a cutting edge, and a support

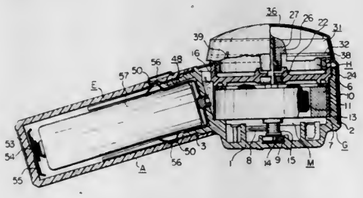
structure connected to the blade and removed from the cutting edge. The support structure is adapted to be received and retained by an injector razor.

3,675,323
DISPOSABLE PREASSEMBLED PLASTIC RAZOR
Paul A. Braginetz, Augusta County, Va., assignor to Philip Morris Incorporated, New York, N.Y.
Filed July 18, 1969, Ser. No. 834,356
Int. Cl. B26b 21/06, 21/40
U.S. Cl. 30—32 6 Claims



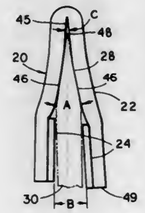
A disposable razor of the double edge blade type of molded plastic material permanently preassembled, designed particularly for use as a surgical preparation razor comprising a handle and bridge member and a cap member with the blade clamped between the two members, the cap having a plurality of pins extending through openings in the blade and bridge member having special complemental shapes adapted to insure correct alignment of the parts including a pair of pins riveted over the ends for securing the assembled relation, said cap member having integral therewith an outer frame arranged to protect the blade edges but readily broken off for use of the razor, and said bridge member having guard portions at the respective blade cutting edges of different character including different degrees of cutting edge exposure or shaving clearance for correspondingly different shaving conditions.

3,675,324
ELECTRIC DRY SHAVER
Norio Yamada; Yoshimasa Tanaka; Taisuke Ono, and Yoritaka Ikejima, all of Osaka, Japan, assignors to Matsushita Denko Kabushiki Kaisha, Osaka, Japan
Filed Feb. 4, 1970, Ser. No. 8,623
Claims priority, application Japan, May 7, 1969, 44/35446
Int. Cl. B67b 7/38
U.S. Cl. 30—43.6 1 Claim



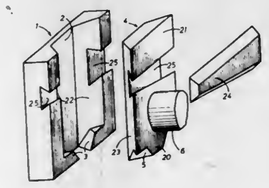
An electric dry shaver comprising a casing member including a cylindrical section closed at the bottom thereof and a tubular part extending peripherally therefrom, said cylindrical section containing therein a motor mechanism and a switch mechanism and said tubular part containing therein dry batteries and being encased with a covering member for gripping, and a shaver blade section mounted in the upper, open end of the cylindrical section. The motor and switch mechanisms are compactly packed in the cylindrical section and separated from the shaver blade section by means of a separator wall mounted in the open end of the cylindrical section. The separator wall including a peripheral wall provided on the inside with alternate smooth, sections and threaded sections and a stationary comb element having a skirt thereabout provided with external threads for attaching the comb to the threaded peripheral wall.

3,675,325
RAZOR EDGE SAFETY GUARD APPARATUS
Gunnar P. Michelson, 505 Sea Ranch Drive, Santa Barbara, Calif.
Filed July 6, 1970, Ser. No. 52,503
Int. Cl. B26b 21/54, 21/40
U.S. Cl. 30—90 16 Claims



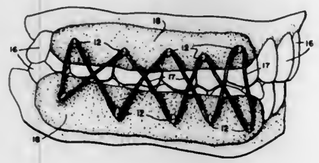
A safety guard for the cutting edge of a razor has a multiplicity of closely spaced apart relatively thin metal filament guard members fitted over the cutting edge of the razor or razor blade. The ends of the guard members on each side of the razor cutting edge are interconnected in close proximity to the cutting edge either by securing the ends to each other or by securing them to a respective elongated mounting strip. The safety guard is either permanently or removably secured to the razor.

3,675,326
ARRANGEMENT FOR RENDERING DETACHABLE THE INTERMEDIATE PARTS OF A FITTED DENTAL PROSTHESIS OR THE FIXED INTERMEDIATE PARTS OF A PARTIALLY REMOVABLE AND IRREMOVABLE PROSTHESIS OF THE DOLPER BAR TYPE
Paul Jules Rene Joseph Desmarets, Place Alber 3, 5430 Rochefort, Belgium
Filed March 13, 1970, Ser. No. 19,301
Claims priority, application Belgium, March 17, 1969, 71424
Int. Cl. A61c 13/22
U.S. Cl. 32—5 7 Claims



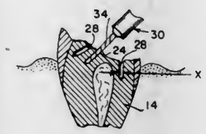
An arrangement for permitting the ready assembly and detachment of dental prosthesis including an attachment plate fastened to a dental post, a recess in the plate adapted to receive a slab upon which the intermediate portion of the prosthesis is mounted, and a co-operative locking rod for detachably locating and locking the plate and slab together, with all of the components having a coextensive surface which forms a sagittal part.

3,675,327
FILLED COLD-CURING ACRYLIC RESIN AS A SPLINTING MATERIAL
Eugene F. Huget, Rockville; Gerhard M. Brauer, Bethesda; John W. Kumpula, Rockville, and Simon Civjan, Silver Spring, all of Md., assignors to The United States of America as represented by the Secretary of the Army
Filed Jan. 13, 1970, Ser. No. 2,588
Int. Cl. A61c 13/00
U.S. Cl. 32—6 6 Claims



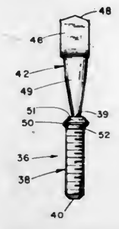
This disclosure describes a composition of matter made up of approximately 50 percent by weight calcium carbonate, approximately 50 percent by weight polymethylmethacrylate plus sufficient methyl methacrylate monomer to form a dough. This filled acrylic resin composition is useful in dental splinting methods. Also disclosed is a dental splinting method employing this filled acrylic resin composition in combination with interproximal pins and an elastic connector.

3,675,328
DENTAL ANCHOR
Bernard Weissman, 304 Ashland Place, Brooklyn, N.Y.
Filed Dec. 21, 1970, Ser. No. 99,900
Int. Cl. A61k 5/02
U.S. Cl. 32—15 9 Claims



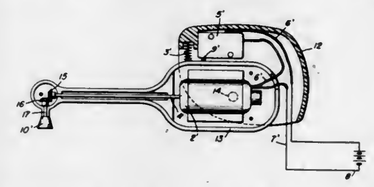
A dental anchor comprising an elongate member for anchoring a superstructure to a tooth. The elongate member includes at least two longitudinally spaced weakened portions which are defined by respective reduced thicknesses therein. Furthermore, the elongate member is provided with anchoring means or threaded portions spaced from one another by at least one of the weakened portions of reduced thickness. There is also provided a manipulating head which is spaced from one of the threaded portions by the other of the weakened portions of reduced thickness. The weakened portion of reduced thickness most remote from the manipulating head is of greater reduced thickness i.e., of lesser diameter than that of a weakened portion of reduced thickness most proximate the manipulating head. As a result, when the elongate member is inserted into a channel formed in the tooth, the threaded portion most remote from the manipulating head, severs automatically without overstressing the tooth thereby leaving the threaded portion most proximate the manipulating head in tact with the latter so that the latter threaded portion can be immediately inserted into a successive channel in the tooth without reloading the dental tool.

3,675,329
DENTAL ANCHORING PIN AND HEAD THEREFOR
Bernard Weissman, 304 Ashland Place, Brooklyn, N.Y.
Filed Jan. 20, 1971, Ser. No. 108,045
Int. Cl. A61k 5/02
U.S. Cl. 32—15 11 Claims



A dental anchor for securing a superstructure to a tooth understructure comprising an elongate member which integrally includes a self-threading anchoring portion for operative association with the tooth understructure. The elongate member further includes an enlarged headed anchoring portion for operative association with the superstructure to be mounted upon the understructure. The enlarged head acts to resist or enhance resistance to displacement of the superstructure relative to the understructure axially along the dental anchor. The elongate member is further integrally provided with a manipulating portion for permitting manipulation of the self-threading anchoring portion thereof. The manipulating portion is spaced from the enlarged headed anchoring portion by a weakened portion of reduced thickness the latter for permitting self-severing of the manipulating portion from the enlarged headed anchoring portion selectively.

3,675,330
POLISHING DEVICE
Myron E. Drapen, 3538 Woodbine Street, Chevy Chase, Md., and Ormond Lee Henry, 3924 Applewood Lane, Muskegan, Mich.
Filed Oct. 16, 1969, Ser. No. 866,994
Int. Cl. A61c 3/06; A46b 13/02
U.S. Cl. 32—59 3 Claims

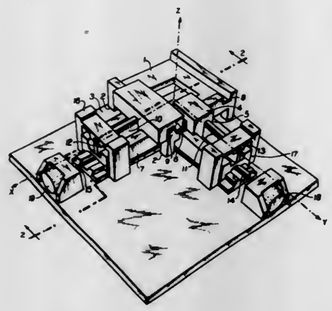


This invention relates to a polishing device comprising a casing, an electric motor within the casing and movable relative to the walls of the casing. The motor is biased by a spring to move in one direction. A switch, electrically connected to the motor, controls the flow of current thereto. The switch is provided with an actuating, spring-pressed button positioned in the path of movement of the motor. The shaft of the motor extends beyond the casing and carries a polishing element at its outer end. Pressure of the polishing element against the surface to be polished causes the motor to move against the force of the biasing spring and against the spring-pressed button to move the button to close the switch to energize the motor. When the pressure of the polishing element on the surface is relieved, the spring will move the motor away from the button and deenergize the motor to stop the rotation of the element. The type of motor and the voltage of the current supplied thereto are such that the motor will stall if the pressure on the polishing element exceeds a predetermined maximum pressure.

3,675,331
APPARATUS FOR THE MEASURABLE DISPLACEMENT OF AN OBJECT

Alfons Ernst, Traunreut, and Rudolf Hofling, Gauting, both of Germany, assignors to Dr. Johannes Heidenhain, Traunstein, Germany

Filed July 30, 1969, Ser. No. 846,137
Claims priority, application Germany, July 14, 1969, P 19 11 908.5
Int. Cl. G01b 21/20
U.S. Cl. 33—1 M 16 Claims

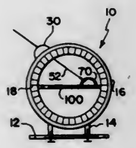


An apparatus for measurable displacement of an object in a plurality of coordinates by means of guide systems, which comprises an object carrier which is measurably displaceable. Guiding systems for the object carrier are separated from each other. Measuring systems are coordinated to the guiding systems and defining axes, and the working point is disposed on the object always in the section of the axes.

3,675,332
SPHERICAL MEASUREMENT DEVICE

Howard B. Miller, Hampton, and George E. Sweet, Yorktown, both of Va., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration

Filed Feb. 12, 1970, Ser. No. 10,827
Int. Cl. G01b 5/24
U.S. Cl. 33—1 SA 8 Claims

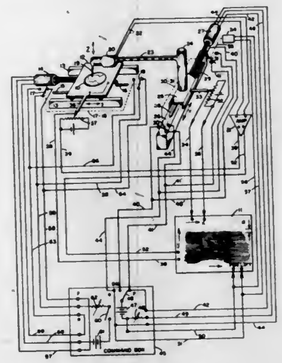


A measuring device having an elevational wheel mounted on an azimuth wheel with a spherical protractor supported by the elevation wheel in a manner such that a telescopic rod extending through the spherical protractor is capable of determining the distance of a point within a sphere from the surface of the sphere. In order to accomplish angular location of the inner surface a flat protractor can be adjustably mounted on the end of the measuring rod.

3,675,333
LINEAR THREE-DIMENSIONAL GAGING AND FORM MEASURING MACHINE

Gardner P. Wilson, Pasadena, Calif., assignor to Gould Inc., Chicago, Ill.

Filed April 8, 1970, Ser. No. 26,493
Int. Cl. B43l 13/10
U.S. Cl. 33—23 C 7 Claims

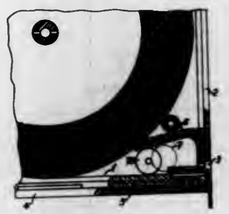


There is disclosed a device and method for the transposition of a three-dimensional X,Y,Z, axis relief configuration onto a two-dimensional X-Y-axis record surface. A stylus repeatedly scans the device, such as a coin, and a recorder pen repeatedly scans a record sheet in synchronism, each successive scan of the coin and recorder being offset slightly from the previous scan. When the stylus is moved in the Z or vertical direction by the surface of the coin the recorder pen is correspondingly moved in, for example, the Y direction, producing a two-dimensional picture of the coin with a three-dimensional appearance.

3,675,334
TAPE MEASURES

Andre Quenot, Besancon, France, assignor to Manufacture "Quenot Mabo,", Besancon, France

Filed May 25, 1970, Ser. No. 41,129
Claims priority, application France, May 29, 1969, 6917643
Int. Cl. G01b 3/10
U.S. Cl. 33—138 4 Claims

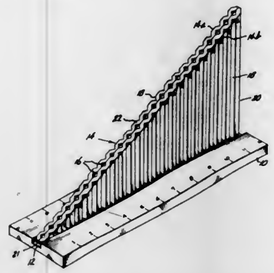


A locking device for a measuring tape which is automatically windable into a casing the device including a roller movably mounted within the casing and in an operative position in which it wedges the tape between a supporting surface and a surface inclined thereto. The roller is automatically removed from the operative position when the tape is pulled out and can be removed manually from the operative position by a push-button to allow rewinding of the tape.

3,675,335
WIRE CUTTING GAUGE

Mark Forster, 12556 25th Avenue, N.E., Seattle, Wash.

Filed Jan. 7, 1970, Ser. No. 1,224
Int. Cl. G01c 3/30, 5/02
U.S. Cl. 33—168 R 1 Claim



A wire cutting length gauge, used while wire is being cut in various groups of selected lengths, has multiple side by side holes of various depths to receive wire or tubing. After full insertion of the wire or tubing into a respective hole, a cutting location on the wire or tubing is determined, corresponding to the entry of the respective side by side hole. Each wire subsequently fully inserted in the same hole has its cutting location consistently determined at the same length.

3,675,336
METHOD FOR DRYING WOOD

Dallas S. Dedrick, Longview, Wash., assignor to Weyerhaeuser Company, Tacoma, Wash.

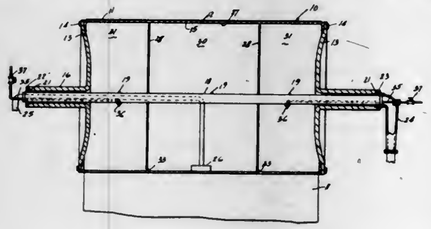
Continuation of Ser. No. 690,055, Dec. 13, 1967. This application July 17, 1969, Ser. No. 847,511
Int. Cl. F26b 1/00
U.S. Cl. 34—9.5 1 Claim

An improvement in the drying of wood which allows drying at an equal or faster than conventional rate with less degrade, fewer stresses, and less total shrinkage, comprising treating the wood prior to drying with a material capable of reducing the interfacial tension at the water-air boundaries in the cell structure of the wood. Preferably the wood is treated with an aqueous solution of a non-volatile surface active agent, such as an alkylarylsulfonate.

3,675,337
DRYER DRUM

Robert A. Daane, Rockford, Ill., assignor to Beloit Corporation, Beloit, Wis.

Filed Nov. 12, 1970, Ser. No. 88,930
Int. Cl. F26b 3/32
U.S. Cl. 34—41 8 Claims

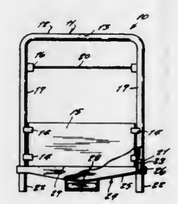


A drum structure for drying a sheet of material characterized by having means to control the heating profile along the length of the drum and thus control the amount of heat applied across the width of the web or paper being engaged by the drum. To control the heating profile, the rate of heat transfer of the heating medium such as steam is varied along the axial length of the drum by selectively mixing a non-condensible medium with the heating medium to reduce the rate of heat transfer. In one embodiment of the drum structure, the drum is provided with a plurality of sub-chambers formed by axially spaced interior partitions which sub-chambers enable control of the rate of heat transfer to the drum surface associated with each sub-chamber. In another embodiment, the inner surface of the drum is provided with axially spaced grooves and the drum has a second header for a non-condensible medium, which header has means to introduce the non-condensible medium to each groove to control the rate of heat transfer at the groove.

3,675,338
DRIP DRYER FOR DRIP DRY CLOTHING

John O. Maki, 4657 Frontenac, S., Seattle, Wash.

Filed Aug. 31, 1970, Ser. No. 68,218
Int. Cl. A47l 5/13
U.S. Cl. 34—239 3 Claims

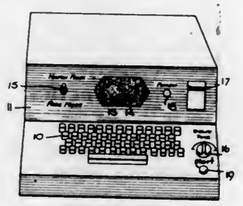


A drying rack for supporting drip dry type of clothing, the device comprising an assembly formed of a pair of upstanding inverted U-shaped metal tubings that are interconnected by horizontal tubes, the frames supporting in an upper portion a horizontally extending plastic mesh upon which sweaters can be supported, the interconnecting tubes supporting drip dry clothes that can be hung, a lower end of the assembly being enclosed by vertical splash shields and the bottom of the assembly having a drip pan for collecting dripping water from the clothing.

3,675,339
KEYBOARD TEACHING MACHINE

Joseph La Marca, 299 W. 12th Street, New York, N.Y.

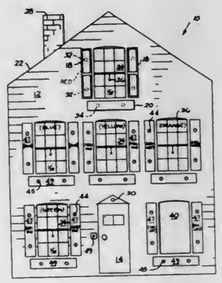
Filed Oct. 26, 1970, Ser. No. 83,839
Int. Cl. G09b 7/02
U.S. Cl. 35—6 7 Claims



A teaching machine for training students to acquire typewriter or other keyboard skills. The machine includes a display device adapted to visually present in random order characters of the type appearing on the keyboard, the presentation being made during a predetermined test cycle. In the "-

Match" mode of the machine, the student seeks to press a key corresponding to the character displayed, and only if he succeeds in effecting a match will this event be scored by a counter and a new character presented. In the "Pace" mode, the characters are continually presented during the test cycle at timed intervals, whether or not a match is effected, but only when a match is effected is the score counter advanced.

3,675,340
ELECTRO-MECHANICAL EDUCATIONAL APPARATUS
James E. Davis, 800 Evesham Avenue, Baltimore, Md.
Filed May 27, 1970, Ser. No. 40,901
Int. Cl. G09b 1/10
U.S. Cl. 35—9 D **4 Claims**

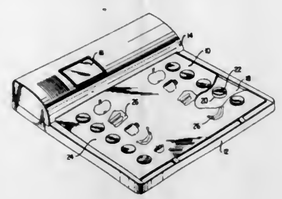


An electro-mechanical educational apparatus in the form of a solid tablet representing one side of a house, complete with detachable windows, shutters, and windowboxes. Each detachable window contains a magnet embedded in a unique position with respect to the window outline and adapted to actuate a magnetic switch embedded in the house in a corresponding position at the correct location for the particular window. The correct sequence of assembly of the windows is indicated by line or color markings on the house, by colors of changeable components such as the shutters, or by colors, numerals, words, or other keys on the window boxes, which are to be matched with corresponding indications on the windows.

Correct assembly is verified by depression of a manual switch which actuates a light or a doorbell as a reward for the accomplishment. Means are provided to help students grasp the windows and to prevent upside down or mis-oriented insertion of the windows. Other means are provided to prevent students from removing indicators which are intended to be semi-fixed.

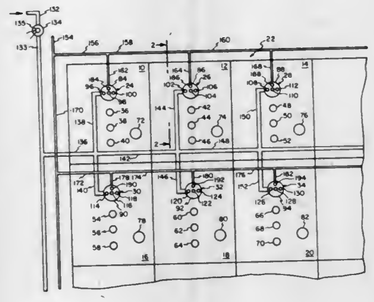
3,675,341
EDUCATIONAL DEVICE
Teruo Matsumoto, Tokyo, Japan, assignor to Epoch Company, Ltd., Tokyo, Japan
Filed Sept. 17, 1970, Ser. No. 73,079
Claims priority, application Japan, March 18, 1970, 45/22811
Int. Cl. G09b 7/02
U.S. Cl. 35—9 B **2 Claims**

An educational device featuring a playing board possessing electrical insulation characteristics, bearing two rows of indicia to be matched by the user and provided with selected cut-out portions defining coded answer means to the matching of indicia in opposite rows, a housing adapted to receive the playing board and including individual actuating mechanisms located adjacent each indicia, a signal system and electrical circuit means within the housing energizing the signal system



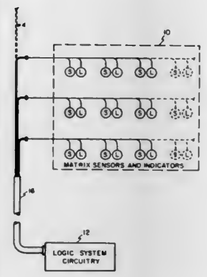
only as the actuating mechanisms adjacent matching indicia are operated by the user.

3,675,342
FIRE FIGHTING TRAINER
Hanns H. Wolff, Orlando, Fla., assignor to The United States of America as represented by the Secretary of the Navy
Filed March 9, 1971, Ser. No. 122,399
Int. Cl. G09b 9/00
U.S. Cl. 35—10 **9 Claims**



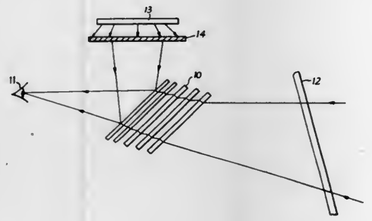
A fire fighting trainer comprising a matrix of adjacent fire simulation units of gas jets or lamps, each unit under the control of a processor circuit and sensor controls through which each of said units may be energized or de-energized to respective "on" and "off" conditions from a switch means through an activating circuit, to simulate an actual fire and through switch activating sensor means responsive to water spray or, in the alternative, to light rays to deactivate said actuating circuit and thereby said units. The processor also including a holding circuit and time delay means to permit automatic re-energizing of said activating circuit, indicating flashback, if the sensors are not activated for a selected time duration and otherwise to hold said activating circuit in de-energized condition. The processor circuit also including energy dissipation means for modifying the time period of said time delay means in accordance with the time interval between repeated sensor actuations prior to the establishment of a holding coil action and additional time delay means for simulating flashback from the effect of adjacent unextinguished units where all units are not extinguished in a given time period. A further aspect of the invention residing in the provision of multiple sensor means of selectively different sensitivity for each fire simulation unit to simulate progressive extinguishment of each simulation unit.

3,675,343
FIRE FIGHTING AND CONTROL SIMULATOR
Edmund Swiatosz, Maitland, and Walter S. Chambers, Winter Park, both of Fla., assignors to The United States of America as represented by the Secretary of the Navy
Filed April 26, 1971, Ser. No. 137,293
Int. Cl. G09b 9/00
U.S. Cl. 35—10 **6 Claims**



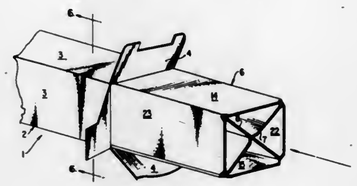
A simulator for training in fire fighting and control employing a plurality of modules arranged in a matrix of adjacent modules, each module employing a fire simulation unit, such as an electric lamp or gas burner energized to manually "on" condition with sensor and trigger circuit means for progressively deactivating the simulation units, time delay holding circuit means for maintaining deactivation of said units as the simulated fire is extinguished and interlocking logic circuitry with additional time delay means for limiting reflash capability of each "off" condition module fire simulation unit dependent upon the time duration of its exposure to "on" condition simulator units in adjacent modules.

3,675,344
CONTROLLED DEGRADATION OF A VISUAL SCENE
David Christopher Robert Williams, New Barnet, England, assignor to Thorn Electrical Components Limited, London, England
Filed Sept. 11, 1969, Ser. No. 857,153
Claims priority, application Great Britain, Sept. 11, 1968, 43,281/68
Int. Cl. B64g 7/00; G65h 9/08
U.S. Cl. 35—12 N **12 Claims**



Apparatus for controllably degrading a visual scene suitable for use as a fog simulator in an aircraft comprises at least one transparent sheet positioned between a light receptor such as a pilot's eye and a scene and angled with respect to light from the scene so that light from a diffuse source is reflected by the sheet or sheets towards the receptor. A stack of spaced, parallel transparent sheets may be used. The brightness of the diffuse source may be varied to compensate for variations in ambient light, or the height or attitude of the aircraft.

3,675,345
BLOCK STRUCTURE WITH A REINFORCING FILLER
Andrew M. Abrams, Spring Valley, N.Y., assignor to Union Camp Corporation, Wayne, N.J.
Filed Nov. 3, 1970, Ser. No. 86,507
Int. Cl. A63h 33/04
U.S. Cl. 35—69 **1 Claim**



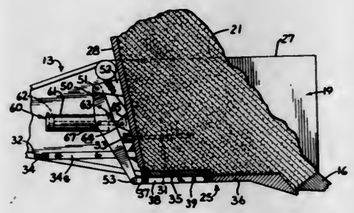
An educational block is formed by providing a light weight enclosed carton into which a reinforcing filler is inserted to give the block the necessary rigidity. The filler is formed by two blanks intersecting along an axis formed by the interfitting slots in the blanks, the filler presenting a cross-section of cruciform shape. The length of the filler is equal to the length of the carton. Each arm of the blank is folded along a score line extending from one end of the filler to the other end and parallel to the intersecting axis to form an end panel. The width of each end panel is so dimensioned that the panel extends from its score line to the score line of the adjacent arm when in folded position. The final cross-sectional shape of the assembled and folded blanks is that of a quadrilateral with its two intersecting diagonals. The end panels are dimensioned to be coextensive with the respective sides of the carton, whereby the sides of the carton maintain the folded portions of the blanks in their reinforcing position to form the filler formation which gives rigidity to the carton and block structure.

3,675,346
SANDAL
Kiyoichi Miyachi; Shinsuke Hashino, and Tomokazu Hongu, all of Fukuyama, Japan, assignors to Hiroshima Kasei, Ltd., Fukuyama-shi, Japan
Filed May 24, 1971, Ser. No. 146,313
Claims priority, application Japan, April 24, 1971, 46/31883
Int. Cl. A43b 3/12
U.S. Cl. 36—11.5 **7 Claims**



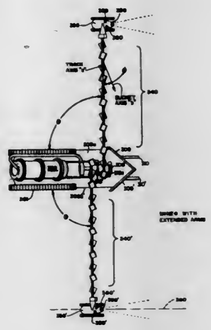
A sandal having a structure consisting of unfoamed surface layers, an internal closed-cell layer and intermediate open-cell layers. This improved sandal is produced by adding a foaming material comprising short lengths of fiber and a blowing agent to a thermoplastic resin, melting the resulting composition, forcing the melt into a fixed-cavity mold and cooling the melt to solidify.

3,675,347
EJECTOR AND FLOOR ACTUATING MEANS FOR SCRAPER
John F. Siewert, Peoria, and Dean A. Smith, Metamora, both of Ill., assignors to Westinghouse Air Brake Company, Pittsburgh, Pa.
Filed Jan. 19, 1971, Ser. No. 107,807
Int. Cl. E02f 3/85; B60p 1/16; E02f 3/64
U.S. Cl. 37—129 3 Claims



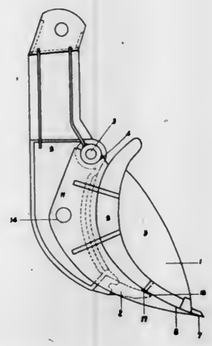
An actuating arrangement for a scraper having a movable ejector plate and movable floor section which includes a floating lever having its lower end coupled to the movable floor section and its upper end pivoted to the ejector plate and with an actuator interposed between the central portion of the lever and the ejector plate for automatic sequential movement of the floor section and ejector plate for discharge of the material in the scraper bowl.

3,675,348
SCRAPER BUCKET APPARATUS FOR DEEP SEA MINING SYSTEMS
Ernest Blaney Dane, Jr., 57 Taylor Road, Belmont, Mass.
Continuation-in-part of Ser. No. 754,191, Aug. 21, 1968, abandoned. This application June 1, 1971, Ser. No. 148,875
Int. Cl. E02f 3/14
U.S. Cl. 37—69 10 Claims



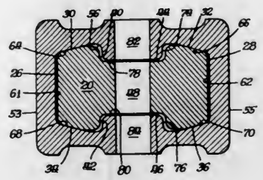
Scraper bucket apparatus for scraping loose ore sediment from a deep sea bed and delivering it to an undersea mining vehicle traveling the bed. The apparatus is embodied in a vertically flexible, long and foldable double tiered track carrying an endless chain with a series of scraper buckets attached that scrape the nodules and deliver them to the vehicle. To reduce crabbing, the buckets are skewed forward of the vehicle by an angle ϕ relative to the axis of the track. One end of the track is rotatably mounted on a tail sheave tractor driven along a course parallel to the vehicle and at a speed preferably to keep the track disposed at an angle of 90° relative to the negative of the vehicle's velocity vector.

3,675,349
RIPPING TOOL SUPPORTED SCOOP FOR EXCAVATOR
Dieter G. Luck, Johannesburg, South Africa, assignor to Orenstein and Koppel Limited, Johannesburg, South Africa
Filed June 25, 1970, Ser. No. 49,856
Claims priority, application South Africa, July 2, 1969, 69/4699
Int. Cl. E02f 3/76
U.S. Cl. 37—117.5 4 Claims



An excavator having a ripping tool secured thereto and a scoop detachably secured to and supported by the ripping tool, thereby avoiding the need to remove the ripping tool from the excavator when scoop operation is required.

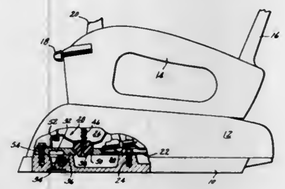
3,675,350
DIPPER TOOTH ASSEMBLY
Harry W. Mukahy, Lansing, and Thomas B. Russell, South Holland, both of Ill., assignors to AMSTED Industries Incorporated, Chicago, Ill.
Filed April 13, 1970, Ser. No. 27,489
Int. Cl. E02f 9/28
U.S. Cl. 37—142 A 3 Claims



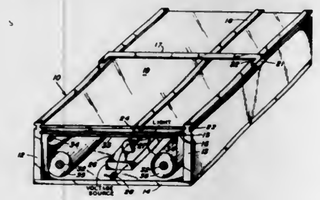
The assembly includes nonadjacent inclined wedging surfaces on a support in contact with similar surfaces in the cavity of a tooth capped over the support, and a resilient retainer pin to hold the wedging surfaces in contact.

3,675,351
STEAM IRON AND VALVE STRUCTURE
Arthur C. Downing, Ontario, Calif., assignor to General Electric Company
Filed Nov. 21, 1969, Ser. No. 878,840
Int. Cl. D06f 75/06
U.S. Cl. 38—77.83 2 Claims

The invention discloses a steam iron wherein the usual control valve, regulating water flow from the water tank to the steam generating cavity, is of a non-metallic, low heat conductive material such as ceramic to eliminate the steam dome and result in better and faster steaming.

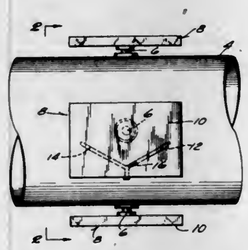


3,675,352
SONAR RANGE PREDICTION AND TACTICAL COMPUTER
Daniel Barron, 9326 Edmonston Road, Greenbelt, Md.
Filed Sept. 18, 1970, Ser. No. 73,321
Int. Cl. G09f 11/18
U.S. Cl. 40—31 3 Claims



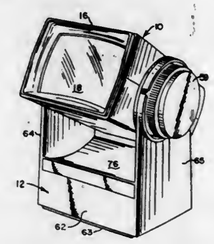
This disclosure is directed to a device for aiding a sonar operator in determining range to a target and then to utilize this information for determining optimum parameters for utilization of a particular tactic. The device includes environmental and equipment related information which is presented for ready observation though hand or mechanical operation of the device.

3,675,353
ADVERTISING SIGN FOR REVOLVING DRUM
Lee A. Miller, 927 Washington Blvd., Oshkosh, Wis., and Richard C. Zellmer, P.O. Box 75, Butte des Morts, Wis.
Filed Nov. 23, 1970, Ser. No. 91,900
Int. Cl. G09f 11/02
U.S. Cl. 40—51 3 Claims



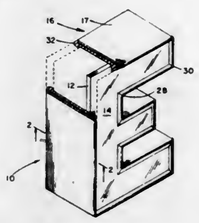
A drum rotatable on a generally horizontal axis (for example, a ready-mix concrete drum) is provided with one or more signs pivoted to its periphery and carrying an off-center weight which tends to hold the sign upright so that the legend thereon will be readable in all positions of the drum. Preferably, the weight is a liquid partially filling a tube tangent to the pivotal axis upon which the sign is mounted and so disposed with reference to the sign that the liquid can flow toward the bottom of the sign to hold the sign upright.

3,675,354
SLIDE VIEWER
Albert E. Webb, Glenview, Ill., assignor to General Aniline & Film Corporation, New York, N.Y.
Division of Ser. No. 718,581, April 3, 1968, abandoned. This application March 18, 1970, Ser. No. 20,746
Int. Cl. G09f 11/30
U.S. Cl. 40—63 A 1 Claim



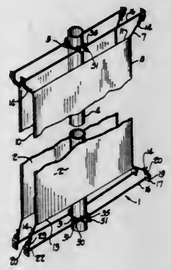
The viewer contains adjustable magnification means including a movably mounted lens shiftable in either direction along the optical axis by a manually operated control knob, thereby adapting the viewer to accommodate slides having image bearing or transparency portions of varying sizes. The viewer is swingably mounted in a U-shaped stand or support. The viewer may be swung to a plurality of operative positions and also to an inverted position wherein the exposed or fixed lens of the viewer is disposed between the legs of the U-shaped stand adjacent the bight portion thereof.

3,675,355
MOLDING STRIP
Victor Shanok, and Jesse P. Shanok, both of Brooklyn, N.Y., assignors to Glass Laboratories Company, Brooklyn, N.Y.
Filed Jan. 19, 1970, Ser. No. 3,732
Int. Cl. G09f 7/02
U.S. Cl. 40—125 R 5 Claims



This invention and this disclosure are directed to a molding strip and more particularly to a molding strip employed to support a translucent or transparent member. This disclosure is especially related to the use of the molding strip as a means of holding a translucent member wherein the strip is in a predetermined configuration, especially in the form of an alphabet letter outline. Thus, this invention's use resides primarily in the field of sign letters and mounting means therefor. The strip of this invention has a curved end to support an end of the translucent or transparent member and on the front viewable edge is provided with light-reflective material.

3,675,356
BANNER MOUNTING DEVICE
Harold J. Gilmoure, Shaker Heights, Ohio, assignor to Sales Promotion Products, Inc., Cleveland, Ohio
Continuation-in-part of Ser. No. 761,647, Sept. 23, 1968, Pat. No. 3,564,743. This application Nov. 18, 1970, Ser. No. 90,649
Int. Cl. G09f 3/18
U.S. Cl. 40—145 5 Claims



A bracket for a banner mounting device which includes transverse members which hold the banner tensioned in a taut position, said bracket having open slot means for engaging the transverse member intermediate its length and holding the same in position when in use, under tension and subject to external forces such as result or may result from wind, storm, rain and changing temperatures.

3,675,357
CATTLE IDENTIFICATION APPARATUS
Harry H. Magee, 1025 Lagonda Way, Danville, Calif.
Continuation-in-part of Ser. No. 794,516, Jan. 28, 1969, abandoned. This application Nov. 7, 1969, Ser. No. 874,740
Int. Cl. A01k 11/00
U.S. Cl. 40—300 1 Claim



An apparatus and process in which a bow tie shaped identification tag is fastened at its narrowed central portion through holes punched in the loose neck skin of a bovine.

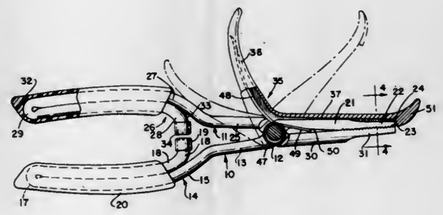
3,675,358
FISHING LURE
Ferris E. Jones, 943 Millbury, La Puente, Calif.
Filed Aug. 26, 1970, Ser. No. 67,153
Int. Cl. A01k 85/00
U.S. Cl. 43—42.09 4 Claims

A composite fishing lure having separable interfitting bar and body parts releasably joined in a manner which permits either part to be easily replaced by a corresponding part of different color, color pattern, weight, shape, and/or size, adapted for a wide variety of fishing conditions. The body part is of channel shape to receive the bar therein and coupling rings



are secured to each end of the bar for attaching a fishing line and hook thereto.

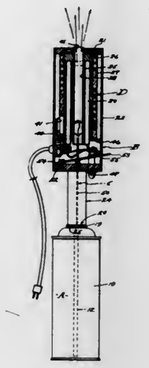
3,675,359
FISH MOUTH IMPLEMENTS
Richard J. Ohno, Branford, Conn., assignor to Sargent & Company, New Haven, Conn.
Filed Nov. 12, 1970, Ser. No. 88,638
Int. Cl. A01k 97/00; B25b 7/02
U.S. Cl. 43—53.5 14 Claims



This specification discloses several implements that are intended for use on the mouth of a fish for hook retrieving purposes. They are all characterized as being of the pliers type with each implement comprising two pivotally connected lever members. These lever members are of a steel rod having appreciable properties of elasticity and resiliency. One end of each rod is folded back upon itself to provide a handle skeleton of double thickness with the free ends of the rods bent into confronting end portions which cooperate as abutments for limiting the extent to which the handles may be compressed. Each handle skeleton is covered by a hand grip of plastic and each end portion is capped by a cup shaped member of plastic.

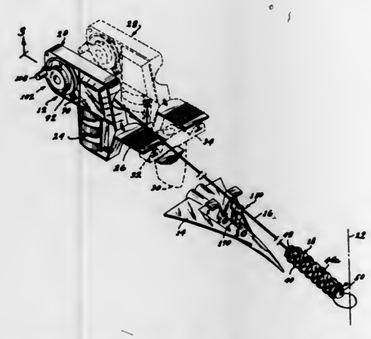
The present invention relates to implements that are intended for use with the mouth of a fish for the broad purpose of retrieving a hook therefrom or kindred purposes. The implements are all of the pliers type and the invention is concerned primarily with the construction of the lever elements which are pivotally connected and which provide handles on one side of the pivot.

3,675,360
FOG GENERATOR FOR INSECTICIDES AND THE LIKE
Ruth B. Pierce, 9077 East Fairview Avenue, San Gabriel, Calif.
Filed July 6, 1970, Ser. No. 52,174
Int. Cl. A01m 19/00
U.S. Cl. 43—129 33 Claims



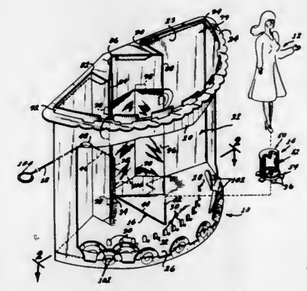
A gaseous fog generator connectably receiving aerosol containers charged with material to be liberated as a mist and subsequently treating said mist with a processing means applying heat thereto and which ensures thorough expansion of said material into the gaseous state. The aerosol container is attached to a shell for support and which accommodates the processing means that channels and which exposes mist nozzled therein to heat, while isolating the shell from said heat. A tubular control and delivery stem characterizes the invention, wherein this one member is both operable to depress the aerosol valve member for discharge of material and operable to transport said discharged material for liberation as a mist and subsequent processing before final delivery.

3,675,361
TOY SOUND PRODUCING FLIGHT SYSTEM
Floyd E. Schlau, Palos Verdes Estates; Denis V. Bosley, Palos Verdes Peninsula; Philip W. Crain, Redondo Beach, and Raymond J. Douglas, Lomita, all of Calif., assignors to Mattel, Inc., Hawthorne, Calif.
Filed Jan. 20, 1971, Ser. No. 108,114
Int. Cl. A63h 27/04
U.S. Cl. 46—1 H 8 Claims



A toy sound system, including a reel-sound amplification mechanism apparatus, a toy airplane, a hanger and a sound-inducing filament. Movement of the airplane suspended by the hanger from the filament causes a motion to be induced in the filament which in turn induces a movement of a diaphragm thereby amplifying the sound made. The reel apparatus allows the filament to be paid out to any desired length. The reel may then be locked to prevent further payout. Controlling the reel apparatus allows control of the descending airplane since the far end of the filament is connected to an anchor with a flexible connector which allows movement and yet is easy to attach, while providing a bumper against impact of the airplane and the anchor.

3,675,362
DOLL DISPLAY STAGE WITH MOVABLE DOLL SUPPORT
Jacob de Gelder, Torrance, and Gary E. Phillips, Encino, both of Calif., assignors to Mattel, Inc., Hawthorne, Calif.
Filed Dec. 9, 1970, Ser. No. 96,510
Int. Cl. A63h 7/00
U.S. Cl. 46—13 7 Claims

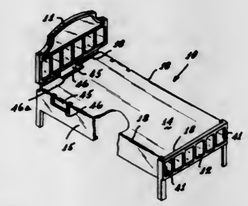


A stage for displaying a fashion doll, which is economical, capable of compact packaging, and easily used by a child, comprising a frame with a platform along which the doll can move. A cardboard strip with gear teeth formed along one edge extends in an arc across the stage platform, and a doll holder with gear teeth at its periphery engages the teeth of the strip, so that as the doll holder moves in an arc across the stage it rotates to display the front and back of clothes worn by the doll. The doll holder is rotatably mounted at the outer end of a long arm which can be moved by a child from the side of the stage to move the doll holder along the stage. The stage frame is formed by a wide strip of cardboard whose ends are joined, one portion of the strip forming a curved front wall of the stage and the rest forming the rear wall, so that the frame can be stored as a flat package.

3,675,363
FOLDABLE TOYS
Michael Colin Mills, Middlesex, N.J., assignor to Mattel, Inc., Hawthorne, Calif.
Filed Oct. 9, 1969, Ser. No. 865,112
Int. Cl. A63h 3/52
U.S. Cl. 46—15 1 Claim

A foldable toy for simulating full size structures such as furniture and houses. The device is formed of a suitable plastic in a unitary planar configuration and provided with integral hinge or fold lines and integral connecting or joining members

thus enabling the toy to be continuously folded into its intended folded configuration and unfolded back into its planar



configuration without damage to the fold lines and connecting or joining members.

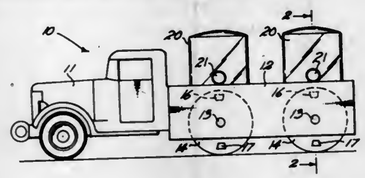
3,675,364
PIN WHEEL TOY
Arthur Halpern, New York, N.Y., assignor to M. I. Sales Co., Inc., New York, N.Y.
Filed March 1, 1971, Ser. No. 122,581
Int. Cl. A63h *33/40*
U.S. Cl. 46—58 10 Claims



This toy comprises a long handle having its upper end frictionally inserted in a radial socket integrally formed with a circular ring provided with a plurality of integral radial spokes, one of which extends to the socket. The radial spokes and the socket extend beyond the ring and carry forwardly extending pins on which plastic pin wheels are freely rotatably mounted. Ornamental cups are frictionally fitted on the pins to hold the pin wheels on said pins. A pin at the axis of the ring has a central pin wheel rotatably mounted thereon, which pin wheel is also kept from coming off the pin by a frictionally fitted cup.

3,675,365
MAGNETIC TOY
Ruben Silva, 1709 Church Street, Barstow, Calif.
Filed Aug. 5, 1970, Ser. No. 61,363
Int. Cl. A63h *33/26*
U.S. Cl. 46—239 7 Claims

This invention discloses a magnetic toy having wheels or other rotating member carrying varying magnetic fields and an encapsulated bar magnet above the wheels freely enclosed by a transparent tank enclosure. The varying magnetic fields are



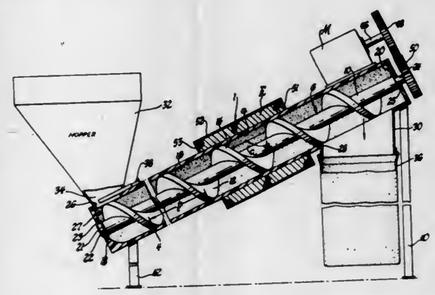
created by disposing two or more bar magnets parallel to the axis of the wheel and in reversed polarity.

3,675,366
REMOTELY CONTROLLABLE TOY TRANSPORTER FOR VEHICLES
Eijiro Tomiyama, Tokyo, Japan, assignor to Tomy Kogyo Co., Ltd., Tokyo, Japan
Filed April 5, 1971, Ser. No. 131,100
Int. Cl. A63h *33/26*
U.S. Cl. 46—244 A 9 Claims



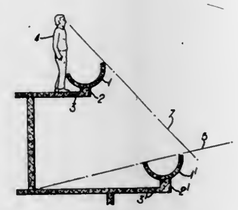
An electrically actuated and remotely controllable toy transporter for vehicles which comprises, in combination, a tractor trailer unit, a trailer adapted to travel with, or trail behind, the tractor trailer unit, and a manually operable electric remote-control device for remotely controlling the tractor and/or the trailer. One of the principal features of the present toy consists in that the trailer can be hooked up with and unhooked from the tractor by manipulation of the remote-control device. Also, another principal feature is that the trailer is equipped with electrically actuated and remotely controllable means for loading and unloading the vehicles.

3,675,367
APPARATUS FOR MAGNETICALLY TREATING SEEDS
Raymond D. Amburn, 11420 Canal Road, Sterling Heights, Mich.
Continuation-in-part of Ser. No. 740,572, June 27, 1968, abandoned. This application July 27, 1970, Ser. No. 58,484
Int. Cl. A01g *7/04*; A01c *1/00*
U.S. Cl. 47—1.3 64 Claims



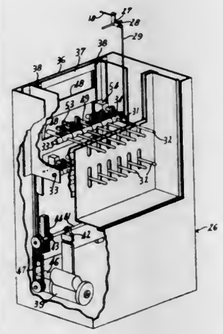
Apparatus for magnetically treating seeds comprising a magnet for producing a magnetic field and a conduit for seeds extending through the magnetic field and having a fixed directional relationship with respect to the magnetic field. The seeds are caused to roll and tumble as they pass through the magnetic field in the conduit so that each seed is oriented in a multiplicity of positions with respect to the magnetic field during its movement through the magnetic field to thereby reduce the exposure time necessary to induce magnetism in the seeds.

3,675,368
RAILING FOR TERRACES OR BALCONIES
Per Eirik Nustad, Oslo, Norway, assignor to A/S Selvaagbygg, Oslo, Norway
Filed Feb. 16, 1971, Ser. No. 115,471
Claims priority, application Norway, Feb. 16, 1970, 532/70
Int. Cl. A01g *9/02*
U.S. Cl. 47—34 5 Claims



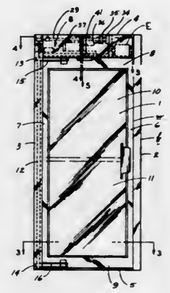
This disclosure relates to a balcony or terrace railing which doubles as a planter. The railing is so designed that it achieves maximum strength with minimum bulk.

3,675,369
APPARATUS FOR SELECTING AND CONTROLLING THE OPERATION OF CELL DOORS
Tommy L. Lentz, Trinity, and Alton L. Terry, Decatur, both of Ala., assignors to Decatur Iron and Steel Company
Filed March 3, 1971, Ser. No. 120,553
Int. Cl. E05f *15/14*, *17/00*
U.S. Cl. 49—20 6 Claims



Apparatus for remotely engaging and disengaging a cell door from operating mechanism therefor and for locking the door in closed or open position. Specifically, the apparatus comprises a remotely controlled electro magnetic selector associated with the door effective when energized to ready the door for movement by the drive mechanism. The improvement may be associated with manual selector devices without affecting the construction or operability of the latter.

3,675,370
AUTOMATIC BALANCED DOOR WITH CONCEALED DRIVE
John C. Catlett, Memphis, Tenn., assignor to James R. Gilson, Memphis, Tenn. and Sam Horwitz, Chicago, Ill., part interest to each
Filed June 1, 1970, Ser. No. 41,850
Int. Cl. E05d *15/28*; E05f *15/12*
U.S. Cl. 49—253 10 Claims

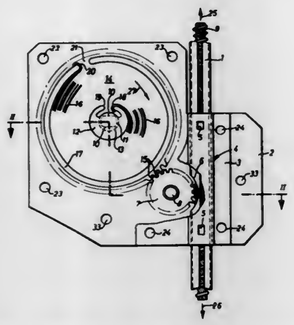


An automatic balanced door comprising in combination a door frame having a header, a door having a balanced hinge arrangement provided within said frame and including a main hinge shaft and a power operator provided within said header. Motion transmitting means located within said header connecting said power operator and said main hinge shaft. A latch assembly operable responsive to movement of the customary guide roller; said latch assembly being connected to the motor unit and being disposed within said header. A block demountably disposed upon said door leaf and carrying said guide roller for displacement from said door when the latter is caused to swing in a direction opposite from that intended.

3,675,371
SPRING CLOSEABLE WINDOW OPERATING MECHANISM
Hans Golde, Frankfurt (Main); Friedrich Herrmann, Dorsigheim; Herbert Keuth, Kilianstadten; Fritz Marr, Offenbach (Main), all of Germany, assignors to Firma H. T. Golde GmbH, Frankfurt Main, Germany
Filed June 18, 1970, Ser. No. 47,283
Claims priority, application Germany, June 20, 1969, P 19 31 471.7
Int. Cl. E05f *11/40*
U.S. Cl. 49—352 4 Claims

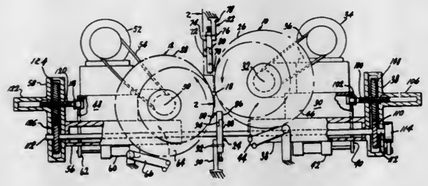
An operating mechanism, particularly for the windows of motor vehicles, includes a flexible threaded cable which is mounted in a tubular portion formed by two housing parts which are interconnected. The cable is engaged by a driving gear which is driven from a pinion gear which is affixed to a shaft for rotation therewith. The shaft is driven through a spline gear, for example, by a manually operated crank handle or by a driving motor. The pinion gear also meshes with a gear formed on the exterior of a spring pulley. The spring pulley houses at its interior a coil spring which is tensioned or wound

during the driving of the motor to move the window operating cable in an opening direction. During the driving of the cable



in an opposite closing direction the spring therefore unwinds and aids in the driving operation.

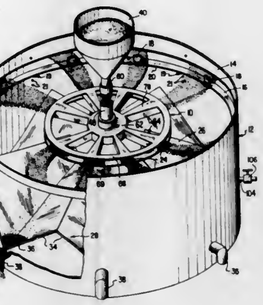
3,675,372
CLEARANCE GRINDING MACHINE
Anthony Kushigian, P.O. Box 512, 25804 Novi Road, Northville, Mich.
Filed Jan. 11, 1971, Ser. No. 105,182
Int. Cl. B24b *19/04*
U.S. Cl. 51—5 **15 Claims**



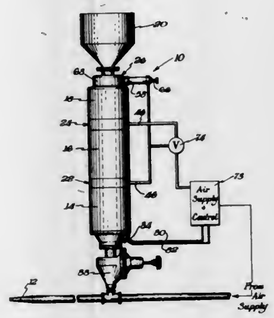
An automatic clearance grinding machine for helically fluted drills wherein a pair of opposed grinding wheels are arranged to simultaneously grind opposed lands of the drill. One grinding wheel is mounted with its rotational axis spaced above the drill axis by a vertical distance substantially equal to one-half the vertical distance between the drill axis and a pivoted diamond point used for dressing the wheel. The other grinding wheel is mounted with its rotational axis spaced below the drill axis by a distance substantially equal to one-half the vertical distance between the drill axis and a second pivoted diamond point used to dress the other wheel. Both diamond dressers are mounted at a location fixed relative to the drill axis. The two grinding wheels are mounted on respective horizontal slides. During a dressing operation, the slides move the grinding wheel axes along respective horizontal paths located substantially midway between the drill axis and the dresser associated with the respective wheel.

3,675,373
FREE PARTICLE IMPACT MACHINING PROCESS AND APPARATUS EMPLOYING THE SAME
David T. Putnam, Raleigh, N.C., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed May 28, 1970, Ser. No. 41,416
Int. Cl. B24c *3/00*
U.S. Cl. 51—9 **13 Claims**

An enclosed chamber carries a high speed rotating abrasive throwing wheel which discharges, by centrifugal force, abrasive particles through radially extending channels against a circumferential array of workpieces requiring machining, and positioned in the path of the high speed abrasive particles. The chamber is subjected to vacuum pressure or a low density atmosphere, with little aerodynamic loss due to windage effects on the high speed rotating wheel, low drag on the abrasive particles as they move freely from the channels to the work piece and no cushioning due to the entrapment of air between the particles and the workpiece.

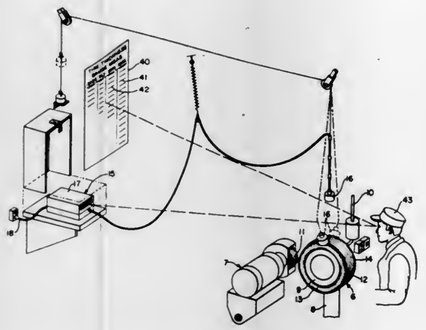


3,675,374
DIRECT PRESSURE TREATING DEVICE
Harvey H. Wilder, Hagerstown, Md., assignor to The Carborundum Company, Niagara Falls, N.Y.
Filed Nov. 9, 1970, Ser. No. 87,927
Int. Cl. B24c *3/00*
U.S. Cl. 51—12 **9 Claims**



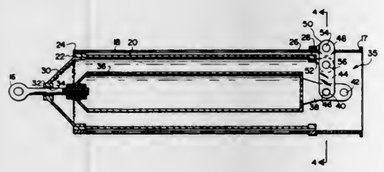
A direct pressure treating device includes a nozzle and a lower chamber communicating with the nozzle. A middle chamber is disposed between the lower chamber and an upper chamber, while the upper chamber communicates with a feed hopper. A first valve is arranged between the lower and middle chamber, a second valve is between the middle and upper chambers, and a third valve is between the upper chamber and feed hopper. At least one of these valve is diaphragm operated with the diaphragm being arranged in a closed housing and disposed in such a manner as to overcome the force of sealing means for thereby opening the valve.

3,675,375
METHOD FOR MEASURING THE THICKNESS OF BUFFED TIRES
Robert S. Enabnit, and Merritt W. Wolfe, both of Akron, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed March 11, 1971, Ser. No. 123,205
Int. Cl. B24b *1/00*
U.S. Cl. 51—281 R **25 Claims**



A method for measuring the buffed thickness of a tire being prepared for retreading. A metal proximity transducer, on the outer buffed surface of the tire, is periodically used to measure the distance between the transducer and a reference as a means for determining whether a sufficient amount of rubber has been removed and the remaining tire casing is ready for retreading.

3,675,376
THERMAL COMPENSATING STRUCTURAL MEMBER
Robert R. Belew, Huntsville, Ala., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration
Filed Feb. 12, 1971, Ser. No. 114,847
Int. Cl. E04c *3/00*; **G04b** *17/20*
U.S. Cl. 52—1 **7 Claims**



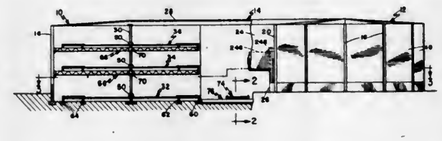
A structural member that remains near a constant length when subjected to varying thermal loads. The structure includes an outer bi-metallic housing composed of inner and outer concentrically spaced casings attached to one another at one of their ends and left free to expand and contract at the other of their ends. The casings are made of materials having different coefficients of expansion and therefore their lengths will vary with respect to one another as their thermal environment changes. A compensator strut is slidably mounted in the outer housing. A compensating drive linkage mounted on the free ends of the inner and outer casings so as to be rotated by relative movement between the casings is connected to the strut and causes sliding movement thereof to maintain the structure at a constant length when the components thereof change lengths due to expansion and contraction.

3,675,377
INFLATABLE-DEFLATABLE FLEXIBLE STRUCTURAL COMPONENT
Charles A. Suter, Stow, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Sept. 2, 1970, Ser. No. 69,076
Int. Cl. E04b *1/343*; **E04g** *9/08*; **B32b** *3/08*
U.S. Cl. 52—2 **3 Claims**



An inflatable-deflatable flexible structural component comprising a flexible foam core portion having a fabric covering, the fabric being sealed against loss of air by a flexible elastomeric coating.

3,675,378
MULTI-LEVEL AUTOMATIC STORAGE AND RECOVERY SYSTEM FOR AIRCRAFT
Malcolm A. Neumann, San Diego, and Arnold Hunsberger, Delizura, both of Calif., assignors to Cubic Corporation, San Diego, Calif.
Filed June 11, 1970, Ser. No. 45,310
Int. Cl. E04h *6/06*
U.S. Cl. 52—65 **8 Claims**

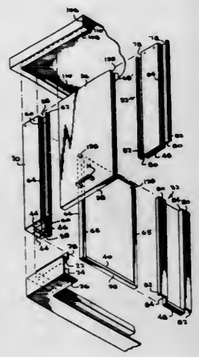


A storage facility having a plurality of multi-level, non-rotatable, support frames, and rotatable spider frames with circumferentially spaced aircraft storage stalls peripherally supported on the support frames for communication with an elevator that has a turntable for aligning an aircraft with a selected stall, and individual, aircraft-carrying, wheeled pallets being moved by a power tractor on rails by an automatic control system to and from an external loading dock to and from the selected stalls in a series of sequential steps that are initiated by coded signals identifying each aircraft with each stall.

3,675,379
WEATHERPROOF ENCLOSURE
Kenneth W. Lambert, Bridgewater, and Donald W. Krichbaum, Staunton, both of Va., assignors to Dunham-Bush, Inc., Harrisonburg, Va.
Filed June 5, 1970, Ser. No. 43,799
Int. Cl. E04h *1/12, 5/04*
U.S. Cl. 52—79 **13 Claims**

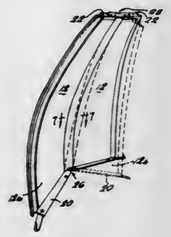
A weather-proof enclosure formed with a plurality of vertically extending posts and wall panel members in which the posts and wall panel members have mating groove and lug connections along each end and are overlapped at their upper end by a top cover member with all of the component connections being made from the interior of the enclosure in order that a weatherproof construction is achieved; another feature

of the invention resides in the top construction which is in the form of two portions joined along a transversely extending line by an L-shaped channel on one portion matingly receiving a



downwardly extending similarly shaped flange on the other portion with an elastomeric sealing member being located between the flanges.

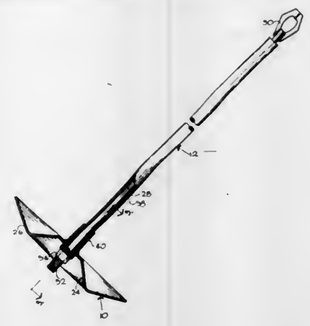
3,675,380
PREFABRICATED DOME-TYPE SHELTER
Charles W. Moss, Ann Arbor, Mich., assignor to Tension Structures Inc., Milan, Mich.
Filed April 27, 1970, Ser. No. 32,051
Int. Cl. E04b 1/32; E04h 1/02
U.S. Cl. 52—80 **6 Claims**



A shelter which has panels bowed and secured together in a stressed condition to define a dome-like building. An improved flexible joint is provided between the panels to aid in erecting and in retaining the structure together, and to provide a weather seal. A method of erecting the shelter and inserting the flexible joints in place is disclosed.

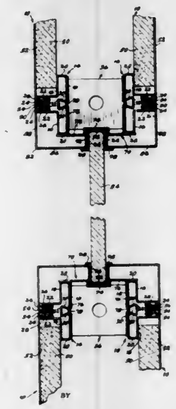
3,675,381
PROTECTION OF ANCHOR RODS AGAINST CORROSION
Gary Q. Watson, P. O. Box 283, Crane, Tex.
Filed Sept. 21, 1970, Ser. No. 73,872
Int. Cl. E02d 5/80
U.S. Cl. 52—166 **3 Claims**

Rods for connecting anchors to guy wires and the like are protected against corrosion by electrically insulating the rod



from the anchor and from the surrounding soil.

3,675,382
WALL STRUCTURE HAVING A WINDOW SUPPORT ASSEMBLY
Robert Paul Lickliter, Hamburg, and John F. Reeves, Tonawanda, both of N.Y., assignors to Flangeklamp Corporation, Buffalo, N.Y.
Filed March 10, 1970, Ser. No. 18,070
Int. Cl. E06b 1/18, 1/36
U.S. Cl. 52—214 **6 Claims**

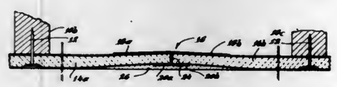


A window support assembly incorporated in a wall construction having a pair of elongated opposed panel connectors maintained in spaced apart relation by spacer clips. Window support clips interlock with the panel connectors at spaced intervals lengthwise thereof. Each support clip has a medial channel portion for receiving portions of window frame trim plates which define a groove for receiving an elastic sealing strip and the marginal edge portions of a window panel.

3,675,383
WALLBOARD CONSTRUCTION
John P. Paoletti, 306 Buddington Road, Huntington, Conn.
Filed April 15, 1970, Ser. No. 28,575
Int. Cl. E04b 2/70
U.S. Cl. 52—222 **5 Claims**

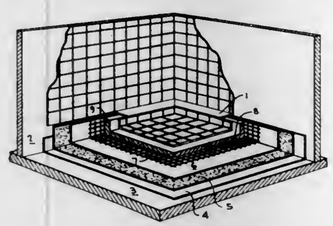
There is disclosed a type of wallboard construction wherein the butt joint between adjacent panels is formed between,

rather than on, the joists. The abutting edges are secured by a clip designed to bias the edges inwardly between the joists.



The resulting depression can be built up flush with the wall surface, thereby avoiding the ridge which normally results from taping edges abutting upon a joist.

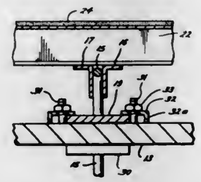
3,675,384
FLOORING CONSTRUCTION
Walter L. Knecht, 51 Cedar St., Wilkes-Barre, Pa.
Filed March 13, 1970, Ser. No. 19,383
Int. Cl. E04b 1/64
U.S. Cl. 52—250 **5 Claims**



A floor construction is provided which may be used as original installation or in the repair of leaking shower stalls, etc. The floor construction comprises a metal angle, placed at the bottom of the shower stall walls, and succeeding layers of asphalt mastic, waterproof fibrous material, wire lath, mortar and tile.

Also provided in connection with the repair of leaking shower stalls is a method for raising the drain so as to compensate for the raised level of the floor.

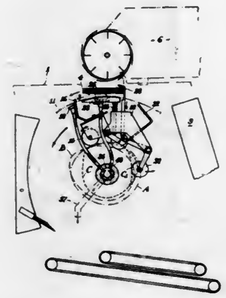
3,675,385
METHOD OF CONSTRUCTING PARKING GARAGE STRUCTURES
Charles S. Chan, Houston, Tex., assignor to Metallic Building Company, Houston, Tex.
Continuation-in-part of Ser. No. 808,854, March 20, 1969, abandoned. This application Feb. 16, 1970, Ser. No. 11,466
Int. Cl. E04h 6/08
U.S. Cl. 52—741 **1 Claim**



The structure includes a plurality of horizontal primary beams, a series of joists supported between the primary beams, and a metal deck formed by laying deck formed of beams or members across the joists in a side-by-side manner. Releasable clamping and fastening devices are used for fastening the joists to the primary beams and the deck to the joists

The joints between the deck members are waterproofed with a sealant material and a chemical-repellent waterproof friction coating is bonded to the upper surface of the metal deck. The invention also contemplates a metal deck arrangement which can be employed in a conventional concrete garage construction.

3,675,386
ARTICLE BANDING MACHINES
Victor Richard Seis, Sidcup, England, assignor to De La Rue Instruments Limited, London, England
Filed Oct. 14, 1970, Ser. No. 80,712
Claims priority, application Great Britain, Oct. 17, 1969, 51,194/69
Int. Cl. B65b 27/08, 57/06
U.S. Cl. 53—63 **12 Claims**

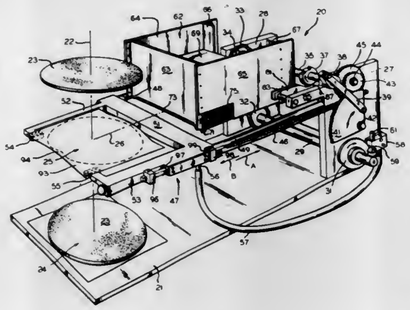


This invention relates to banding machines of the kind capable of automatically applying a wrapping band around a flat article or articles, e.g., stacks of banknotes, and may be integrated with machines for counting and delivering numbers of articles, e.g., banknotes, to a banding station. The banding machines comprises a platform, the working surface of which receives an article to be banded, means for feeding a band from a magazine and positioning the band adjacent to the platform, yieldably mounted support means adapted to move adjacent said platform, reciprocable constant-stroke gripper means adapted to transfer the article from the working surface to the support means with the band therebetween, and thereafter to move to the limit of its stroke thereby to grip both the article and the band, and means for bringing together and uniting the two ends of the band. The components of the machine preferably move in a rotary manner through band-loading, article-loading, band-uniting, and banded-article-delivery stations.

3,675,387
PAPER INTERLEAVER DEVICE
Henry N. Lekan, Chicago, Ill., assignor to Formax, Inc., Mokena, Ill.
Filed Nov. 18, 1970, Ser. No. 90,563
Int. Cl. B65b 25/08, 35/50, 41/06
U.S. Cl. 53—157 **17 Claims**

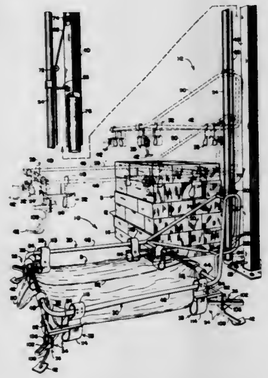
A device for interleaving individual thin, flexible sheets of paper or similar material with a series of relatively thick flat articles (e.g., hamburger patties) as those articles fall along a defined stacking path terminating at a stacking position, comprising a carriage with grippers for pulling each flexible sheet from a support and across a shaping member that bends the sheet sufficiently so that the sheet becomes self-supporting as a cantilever member. The carriage takes the sheet to an interleaving position on the stacking path, where one of the articles engages the sheet and carries it to the stacking position. The grippers release the cantilever sheet at about the time the sheet is engaged by the moving article; the carriage then

returns for the next sheet. The sheet supply may comprise a hopper with stacked pre-cut sheets, or may constitute a



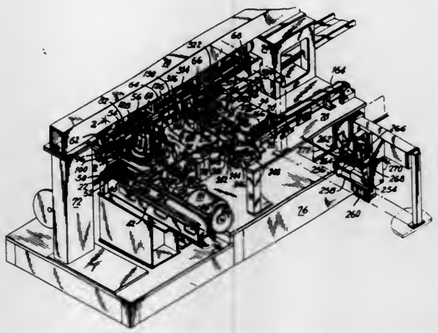
synchronized knife for cutting a sheet from a continuous web just prior to its engagement by the grippers.

3,675,388
LOAD BAGGING APPARATUS
Peter Lems, Wilmette, Ill., assignor to Signode Corporation, Chicago, Ill.
Filed March 8, 1971, Ser. No. 121,706
Int. Cl. B65b *43/28*
U.S. Cl. 53—187 9 Claims



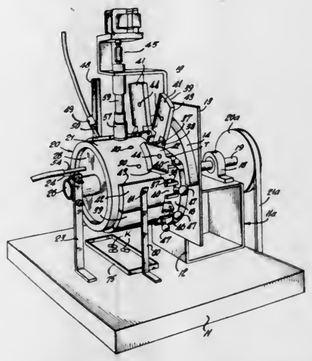
A semi-automatic apparatus for facilitating the application of an inverted plastic film bag to a rectangular stack of articles, the stack presenting irregular side faces. An open rectangular frame is mounted for vertical movement between approximate floor level and above-the-stack level. A bag loaded on the frame at floor level is carried upwardly with the frame, aligned vertically with the stack, and then pulled downwardly over the stack, as the frame descends, by means of a series of four jaw-type gripper units which are floatingly mounted at the corners of the frame and maintain the rim of the bag in an open condition. During descent of the frame a series of cams ride against the sides of the stack, compound their motion, and transmit it to the gripper units in such a manner that a clearance is at all times maintained between the open rim of the bag and the sides of the stack.

3,675,389
MACHINE FOR FILLING PREFORMED POUCHES
Lawrence James Uline, Lakewood, Ohio, assignor to Union Carbide Corporation, New York, N.Y.
Filed July 6, 1970, Ser. No. 52,483
Int. Cl. B65b *5/08*
U.S. Cl. 53—183 14 Claims



A machine for filling preformed pouches with a plurality of articles in a manner such that the relative position of the articles to each other and to the pouch is preserved during handling. The resulting packages are attractive and protect the packaged articles. Two rotating carousels are provided, one for pouches and the other for the articles to be packaged, with appropriate transfer mechanisms for delivering pouches to the first carousel, delivering articles to be packaged to the second carousel, transferring pouches from the first carousel to the articles of the second carousel, and transferring pouches with articles contained therein from the second carousel at an appropriate discharge station. Means are also provided for orienting the articles prior to packaging in a manner such that indicia contained on the labels of the articles are oriented to face in a predetermined desired direction.

3,675,390
CAPSULE FILLING APPARATUS
Leonard H. Austin, Lynbrook, N.Y., assignor to Ansaks Industries, Inc., Lynbrook, N.Y.
Filed July 31, 1970, Ser. No. 59,951
Int. Cl. B65b *1/06, 1/12*
U.S. Cl. 53—282 20 Claims



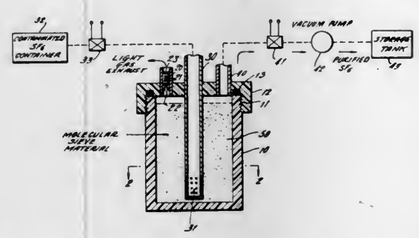
A capsule filling machine includes a rotating drum having circumferentially spaced single or longitudinal rows of first capsule openings and capsule opening arms having corresponding rows of second larger diameter capsule openings and pivoted to an end of the drum and having followers which cooperate with a cam to retract successive arms after a capsule feed station and advance the arms through a filling station and then to a closed position with first and second openings in adjacent alignment. Before the retraction of the arms closed capsules are fed to the second openings and suction is applied to the drum underface to separate and draw the capsule lower halves into the first openings. The arms are retracted to separate the capsules, the drum-carried capsules filled, the arms closed, the capsules closed by a pusher member entering the first opening while the second opening is blocked and ejector fingers then discharge the closed filled capsules from the drum and arms.

3,675,391
BREATHABLE WATERPROOF FABRIC
Lawrence Vincent Gallacher, Norwalk, Conn., assignor to American Cyanamid Company, Stamford, Conn.
Continuation-in-part of Ser. No. 820,761, May 1, 1969, abandoned. This application March 4, 1971, Ser. No. 121,094
Int. Cl. B01d *39/16, 49/00;*
U.S. Cl. 55—16 7 Claims



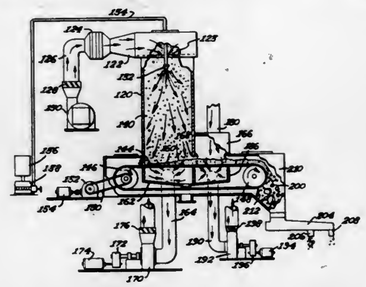
A breathable-waterproof material is given wherein an extensively fibrillated thermoplastic resin material is formed which permits high water vapor transmission levels while substantially precluding liquid water penetration.

3,675,392
ADSORPTION-DESORPTION METHOD FOR PURIFYING SF_6
David H. Reighter, Roslyn, Pa., assignor to I-T-E Imperial Corporation, Philadelphia, Pa.
Filed Jan. 30, 1970, Ser. No. 6,998
Int. Cl. B01d *53/14*
U.S. Cl. 55—25 3 Claims



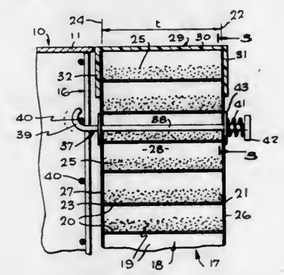
A clear, transparent container is filled with a molecular sieve of 10 angstrom pore size. A vacuum is drawn on the interior of the container to extract purified SF_6 therefrom. Contaminated SF_6 is then loaded into the evacuated sieve for the next purifying cycle. A light gas exhaust valve is provided at the top of the container. When the sieve is loaded with moisture and contaminants, the molecular sieve material is replaced.

3,675,393
DUST COLLECTING PROCESS
Reginald E. Meade, Stillwater, Minn., assignor to The Pillsbury Company, Minneapolis, Minn.
Continuation-in-part of Ser. No. 749,707, Aug. 2, 1968, abandoned. This application Feb. 20, 1970, Ser. No. 13,147
Int. Cl. B01d *46/00*
U.S. Cl. 55—96 11 Claims



Prior dust filters exhibit an undesirable back pressure across the filter screen after a short period of operation. In the present invention droplets of liquid are introduced to a moving stream of gas that contains dust. The droplets make the dust particles cohere in three ways: (a) by the wetting of their surfaces; (b) dissolving potentially tacky solubles contained in the dust; and (c) by the deposition of an adhesive contained in the droplets of liquid but insufficient liquid is introduced to cause the particles to coalesce. A porous collecting element such as a woven metal screen extends entirely across the air stream. The air stream is forced through the collecting element while the particles are in a tacky coherent condition. The mat of dust particles which forms on the surface of the collecting member is maintained in a highly porous condition because the bonds that form between the dust particles hold the particles apart. The mat of dust itself acts as the filter medium. It is self-supporting, often friable and offers much less resistance to the flow of gas than the same dust particles in an unbonded condition.

3,675,394
GAS SEPARATING DEVICE
Eugene L. Sterrett, 2835 Leticia Drive, Hacienda Heights, Calif.
Filed June 18, 1970, Ser. No. 47,230
Int. Cl. B01d *39/02, 46/30*
U.S. Cl. 55—518 17 Claims



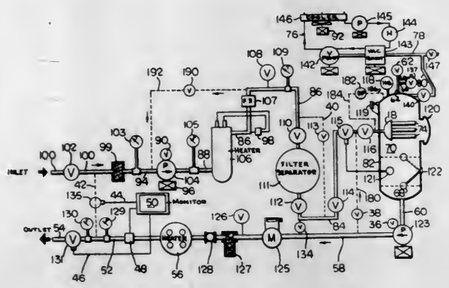
A device for separating one or more selected gases from a stream of air or another gas, said device including a cellular

honeycomb type structure having a large number of compartments or cells partially filled with a granular gas removing substance, with the granular material being retained in the cells by screening disposed across opposite ends thereof.

3,675,395
APPARATUS FOR THE PURIFICATION OF OILS AND THE LIKE

Leslie B. Baranowski, Cookeville, Tenn., assignor to Keene Corporation, New York, N.Y.

Division of Ser. No. 789,898, Jan. 8, 1969, Pat. No. 3,561,193. This application Oct. 9, 1970, Ser. No. 79,542
Int. Cl. B01d 19/00
U.S. Cl. 55—164 **2 Claims**

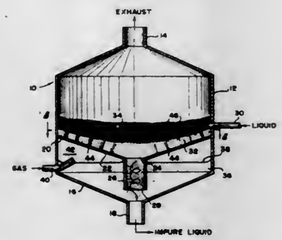


An apparatus providing for a process for the purification of electrical insulating liquids such as transformer oils, lubricating oils, and hydraulic oils containing water, air, and gases having the steps of transferring the oil to heater for raising the temperature of the oil approximately 40° F. above the inlet temperature, then passing the oil through a filter-separator for removing the free water and solid contaminant, then passing the oil through a vacuum degasifier for removing the remaining impurities such as gases, air, and water vapor, metering the purified oil and returning the oil to the place of intended use.

3,675,396
GAS PURIFIER UNIT

Alexandra S. Hawryluk, and John Hawryluk, both of Marlton, N.J., assignors to Control Research Products, Inc.

Continuation-in-part of Ser. No. 737,206, June 14, 1968, abandoned. This application May 5, 1970, Ser. No. 34,763
Int. Cl. B01d 47/00
U.S. Cl. 55—225 **11 Claims**

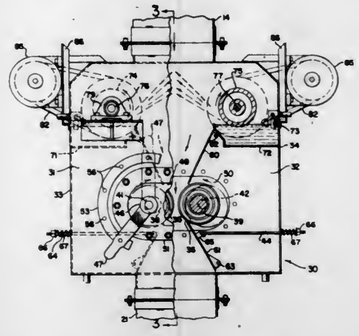


A gas purifier unit has a cross-sectionally disposed baffle and gas pocket assembly which supports an upper body of cleansing fluid above it and holds a gas pocket immediately below, the gas pocket being disposed above a lower body of cleansing fluid, and the upper surface of the baffle and gas pocket assembly having closely spaced openings through which angularly disposed streams of gas issue and pass upwardly through the upper body of cleansing liquid, losing impurities in their travel.

3,675,397
METHOD AND APPARATUS FOR REMOVING ENTRAINED DUST PARTICLES FROM A GASEOUS STREAM

James S. Deacon, 4492 Camellia Lane, North Olmsted, Ohio

Filed Dec. 9, 1970, Ser. No. 96,303
Int. Cl. B01d 47/10
U.S. Cl. 55—227 **6 Claims**

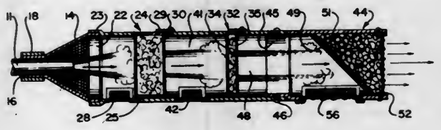


An apparatus for removing entrained solid particles from a gaseous stream using a wet-type dust collection system embodying the venturi principle. Water droplets are introduced into the particle laden gaseous stream upstream of the venturi throat by means of rotating drums having a lower surface portion immersed in a water trough. The rotating drums pick up water on their surfaces and propel small droplets tangentially outward in the form of a spray. The venturi throat is defined in part by a pair of rollers journaled for free rotation and having parallel axes spaced so that adjacent surfaces of the rollers define between them a restriction. The force of surface friction between the roller surfaces and the moving stream causes free rotation of the rollers thus reducing frictional resistance to stream flow and distributing erosion over a relatively large area.

3,675,398
EXHAUST FILTER ATTACHMENT

Lawrence P. Giarrizzo, c/o DeCesario 29 Jerome Ave., Hicksville, N.Y.

Filed Oct. 15, 1970, Ser. No. 81,092
Int. Cl. B01d 50/00
U.S. Cl. 55—316 **5 Claims**



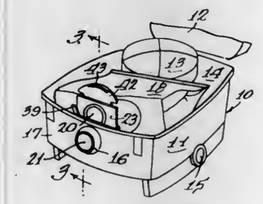
An exhaust filter attachment adapted to be attached to the exhaust pipe and carried rigidly thereon of any motored vehicle. This attachment is designed to filter all products of combustion leaving the vehicle, and to chemically treat the poisonous and health destructive gases; such as, the carbon monoxide and sulphur. The attachment comprises generally a

sleeve housing with a conical mesh member extending from the forward end of the sleeve housing, and having thereon an attaching sleeve that will be secured to the end of the exhaust pipe by a clamp ring. Air is drawn inwardly or injected by the exhaust action of the gases being expelled from the exhaust pipe, and the mixture will be forced through a series of removable filter members extending transversly of the flow of the gases within the tube. Each of the filter elements comprises rings with filter material disposed between mesh disc end closures. When the filtering elements have been used they can be replaced or cleaned. The filtering material in these elements is chemically treated to consume the poisonous gases, reacting therewith to convert them into non-harmful gases. A charcoal device attachment is provided to be mounted on the sleeve, at the end thereof, and has an incline disc supporting charcoal particles in various degrees of longitudinal extent from the bottom to the top of the filter device so as not to seriously impede the flow of gases at the trailing end of the filtering attachment. Adequate drain mesh screens are provided in the spaces between the filtering elements and the charcoal material to get rid of water accumulation, and to provide means through which a particle accumulation can be observed to determine cleaning.

3,675,399
VACUUM CLEANER

George A. Westergren, White Bear Lake, Minn., assignor to Whirlpool Corporation

Filed April 21, 1969, Ser. No. 817,762
Int. Cl. B01d 46/00
U.S. Cl. 55—357 **3 Claims**



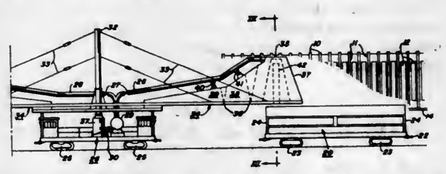
A vacuum cleaner that contains a dirt separating filter member such as a paper bag that is releasably attached to an adapter which itself is releasably supported on a bracket to provide air flow access into the filter member so that the adapter can be removed from the vacuum cleaner when it is desired to attach a filter member thereto or to remove a filter member therefrom.

3,675,400
COLLECTING HOOD FOR COKE-QUENCHING CARS

Wilhelm Kubsch, Dortmund-Derne, Germany, assignor to Hartung, Kuhn & Co., Maschinenfabrik GmbH, Dusseldorf, Germany

Filed April 14, 1970, Ser. No. 28,380
Claims priority, application Germany, April 21, 1969, P 19 20 130.0
Int. Cl. B01d 50/00; B05b 3/18
U.S. Cl. 55—385 **8 Claims**

Anti-pollution apparatus comprising a hood carried on a cantilever arm supported on a hood car mounted on tracks. The hood extends over a coke-quenching car mounted on the same tracks as the hood car and is connected to a suction and dust extraction device such that gases and dust which rise from the coke batch as it is pushed out of a horizontal by-product coke oven and into the quenching car will be conveyed to a gas-stream purifying device rather than being permitted to escape into the air. As the quenching car moves from the coke oven to a quenching station, the hood car and the hood carried thereby follows such that the hood con-

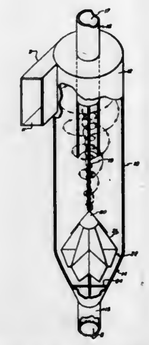


tinually covers the quenching car and prevents the escape of pollutants.

3,675,401
CYCLONES TO LESSEN FOULING

Ronald A. Cordes, Berkeley, Calif., assignor to Esso Research and Engineering Company

Filed April 13, 1970, Ser. No. 27,567
Int. Cl. B01d 45/16
U.S. Cl. 55—394 **5 Claims**

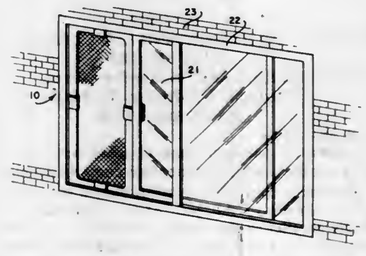


A cyclone separator especially useful for separating gases from solid materials which tend to cohere and foul conventional cyclones is described. The cyclone is provided with baffle means within the cyclone barrel below the natural vortex to reduce the residual spin of the gas-solid suspension below the natural vortex thereby lessening the tendency toward fouling.

3,675,402
ADJUSTABLE FILTER ASSEMBLY

John Howard Weed, 1600 S. Eads St., Arlington, Va.

Filed Nov. 20, 1970, Ser. No. 91,236
Int. Cl. B01d 39/08
U.S. Cl. 55—496 **1 Claim**



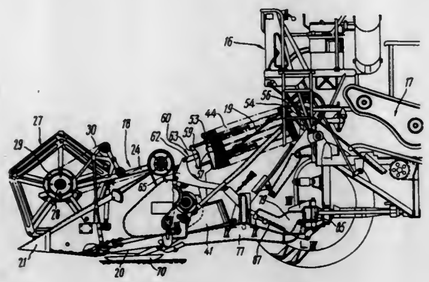
A frame assembly for a filter or the like which is adapted to be inserted in apertures of buildings such as windows or doors

or the like. The frame assembly is telescopically adjustable in two different directions for being accommodated by different size and shape apertures, and is provided with an elongate clamp at each telescopically adjustable portion for holding the adjustment and for rigidity and strength. A filtering material is disposed within the frame assembly and is provided with a retaining screen at each of its major surfaces.

3,675,403
FLAME RETARDANT AIR FILTER CONSTRUCTION WITH THERMOPLASTIC SCRIM
Angelo P. Raffo, Montreal, Quebec, Canada, assignor to Johnson & Johnson
Filed March 10, 1970, Ser. No. 18,315
Int. Cl. B01d *23/02*
U.S. Cl. 55—524 **5 Claims**

The invention provides a scrim material permitting the use of normally combustible tackifiers in filter devices, wherein the scrim is composed of an open-network structure with air pressure drop characteristics not exceeding 0.10 inch/water measured at 500 cfm per square foot of filter medium area.

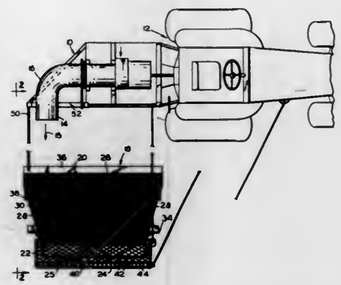
3,675,404
HILLSIDE COMBINE HARVESTER
Khanaan Ilich Izakson, Rostovskoi oblasti, ul. III Internatsionala, 92a, Taganrog, U.S.S.R.
Filed Jan. 6, 1970, Ser. No. 933
Int. Cl. A01d *75/28*
U.S. Cl. 56—209 **8 Claims**



A hillside combine harvester comprising a thresher including a header consisting of an inclined body and a platform pivotably connected to the latter; the pivotable connection providing for balancing of the platform on the inclined body and controlling motion thereof so as to enable the combine to operate under a wide range of hillside harvesting conditions.

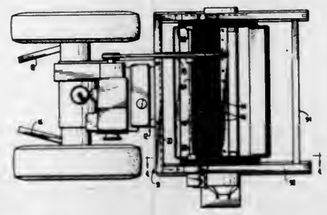
3,675,405
MACHINE FOR HARVESTING AND CLEANING NUTS AND THE LIKE
John L. Denton, Rte 2, Box 776, Roseburg, Oreg.
Filed Nov. 2, 1970, Ser. No. 86,021
Int. Cl. A01g *19/00*
U.S. Cl. 56—328 R **9 Claims**

Apparatus for harvesting and cleaning nuts and the like is mounted at the rear of a tractor and comprises a blower having a discharge conduit adapted to blow a stream of air in a direction normal to the path of travel of the tractor and generally parallel to the ground to entrain nuts and accompanying debris. A grid-like ramp is attached to the tractor and disposed in the air stream. A basket is mounted at the high end of the ramp and a backstop grid is positioned at the edge of the basket remote from the ramp. Nuts and debris entrained in the air stream are blown onto the ramp, the debris falling through the spaces in the grid while the nuts ride up the ramp and pass



into the basket. The backstop prevents nuts from being blown over the basket.

3,675,406
BERRY PICKING MACHINE
David C. Grant, and Byron A. Lamson, both of Addison, Maine
Filed Sept. 9, 1970, Ser. No. 70,789
Int. Cl. A01g *19/00*
U.S. Cl. 56—330 **9 Claims**

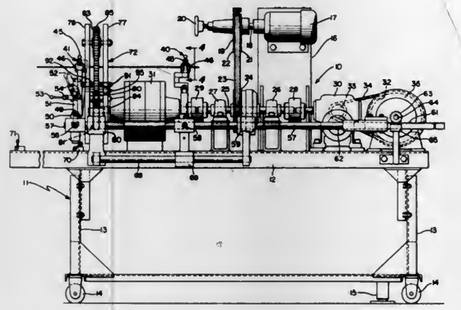


A hollow rotating drum in the form of a plurality of circumferentially spaced rows of picking fingers extend tangentially with their free ends in the direction of drum movement at the forward end of the wheeled vehicle. An endless conveyor belt extends through the center of a fixed hollow collecting tube, parallel to the axis of finger rotation with radial guide members extending inwardly from each of the rows of picking fingers adjacent their fixed ends to discharge the picked berries, through an opening in the collecting tube onto the conveyor belt. The conveyor belt discharges the picked berries into a container located at one end of the collecting tube.

3,675,407
MACHINE FOR SPLICING TIRE CORD
James F. LaRue, Cuyahoga Falls, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Oct. 9, 1970, Ser. No. 79,433
Int. Cl. B65h *69/06*
U.S. Cl. 57—22 **20 Claims**

A machine for splicing adjacent ends of textile cords suitable for reinforcing rubberized material used to build pneumatic tires. The machine has a pair of clamps for holding a couple of cord ends in tensioned, adjacent parallel relation, and a ring with a spool of thread for rotating in thread-wrapping relation around the cord ends, after the free end of the thread is knotted to the cord ends intermediate the clamps. The clamps are movable along an axis normal to the

plane of the ring when the ring rotates, such that the thread wraps in spiraling relation around the cord ends held between

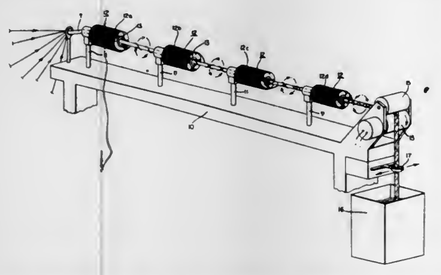


the clamps. The thread extending from the wrapped cord ends is then cut and tied to the cord ends to complete the splice.

3,675,408
POLYAMIDE FILAMENTS
Burno Marcio Pacini; Desmond Alfred Price, and Anil Chandrakant Parikh, all of Pontypool, England, assignors to Imperial Chemical Industries Limited, London, England
Filed Dec. 31, 1969, Ser. No. 889,455
Int. Cl. D02g *3/02*
U.S. Cl. 57—140 BX **6 Claims**

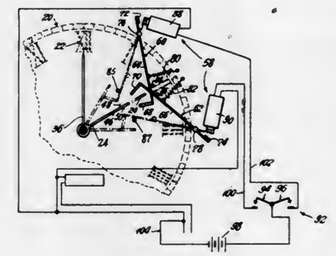
A linear terpolyamide derived from 80 percent by weight of hexamethylene diammonium adipate, 10 percent by weight of caprolactam and 10 percent by weight of hexamethylene diammonium isophthalate is especially useful for melt spinning into a side-by-side conjugate filament in which the other component is preferably polyhexamethylene adipamide. In order to obtain a satisfactory crimp permanence and hot water retraction, the filament, after drawing, is heat relaxed at a relax ratio greater than 1.3. A monofilament yarn has particular application in the manufacture of stockings.

3,675,409
COMPACT MULTI-FILAMENT TEXTILE TOW AND METHOD OF MAKING THE SAME
Nathan Rosenstein, West Hartford, Conn., assignor to Hartford Spinning (Canada) Ltd.
Filed Jan. 27, 1970, Ser. No. 6,080
Int. Cl. D01g *1/00*
U.S. Cl. 57—144 **12 Claims**



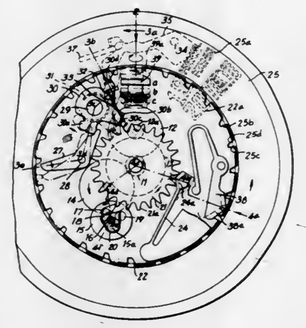
Multi-filament textile tow is rendered compact by continuously disposing wrapper yarns in generally helical paths around the tow, one such yarn being disposed in a clockwise manner and the other counter-clockwise.

3,675,410
REMOTE CONTROLLED CLOCK RESET DEVICE
Dana J. Blackwell, Naugatuck, Conn., assignor to The Lewis Engineering Company, Naugatuck, Conn.
Filed June 1, 1971, Ser. No. 148,717
Int. Cl. G04c *9/00*
U.S. Cl. 58—35 **12 Claims**



A clock setting mechanism for automatically and instantaneously shifting the hour hands of clocks forward or backward by a predetermined amount such as an hour for the purpose of complying with semi-annual changes between "Standard Time" and "Daylight Saving Time." In addition to the conventional clock drive mechanism including the friction drive which moves the hour hand, the clock is provided with power-operated driver members which normally are out of engagement with the hour hand assemblage. The hour hand normally turns in the conventional manner. When it is desired to advance or to set back the clock, this being done from a two o'clock (usually A.M.) position, the hour hand is engaged by one of the driver members, utilizing electromagnets and a remote switching control for this purpose, to effect a 1-hour, forward or backward adjustment as required by Daylight or Standard Time.

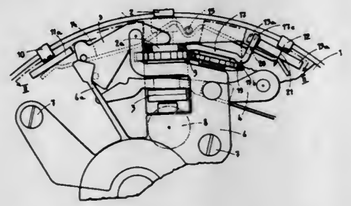
3,675,411
WORLD TIMEPIECE
Tadashi Sakuma, Matsudo, Japan, assignor to Kabushiki Kaisha Daini Seikosha, Tokyo, Japan
Filed Feb. 24, 1971, Ser. No. 118,334
Claims priority, application Japan, Feb. 27, 1970, 45/16452
Int. Cl. G04b *19/22*
U.S. Cl. 58—42.5 **9 Claims**



A timepiece capable of indicating the local time for localities in two to 24 time zones based on the universal time system and having a 24 hours indicating dial to make a single revolu-

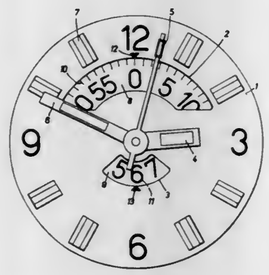
tion for each 24 hours and a locative rim indicating the geographical locations of 24 local time zones (cities). The twenty-four hours indicating dial can be independently shifted without affecting the home-base time reading or said locative rim when entering a new time zone and rotates with said locative rim during adjustment thereof.

3,675,412
TIME-PIECE WITH A CALENDAR INDICATOR AND CHRONOGRAPH MECHANISM
Paul-Louis Mouquin, Les Bioux, Switzerland, assignor to Valjoux S.A., Les Bioux Canton of Vaud, Switzerland
Filed July 6, 1971, Ser. No. 159,596
Int. Cl. G04b *19/24*
U.S. Cl. 58—58 **5 Claims**



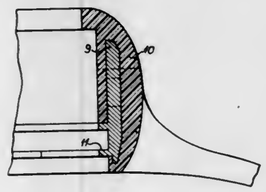
A time-piece with a calendar indicator, comprising a rocking bar oscillating in a plane perpendicular to the clockwork, coaxially with the driving shaft, a function of which is to reset time, this rocking bar carrying a pinion constantly in mesh with a pinion born by the shaft and being driven by a push-piece which permits moving it against the action of a return spring, in a position wherein its pinion meshes with a contrate gear of the calendar indicator in such a manner that, when pressure is applied to the push-piece, the working of the driving shaft permits the indicator to rotate in one or the other direction.

3,675,413
WATCH MOVEMENT HAVING TOTALIZERS
Josef Fluck, Grenchen, Switzerland, assignor to A Schild S.A., Grenchen (Canton of Soleure), Switzerland
Filed June 28, 1971, Ser. No. 157,489
Claims priority, application Switzerland, July 2, 1970, 10046/70
Int. Cl. G04f *7/04*
U.S. Cl. 58—74 **10 Claims**



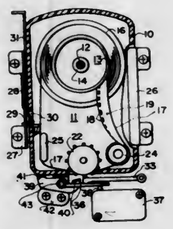
A watch movement operating regular time indicators and two totalizers mounted coaxially to the center of the watch capable of being returned to a zero position.

3,675,414
WRIST WATCHES
Gerard Cachelin, Le Locle, Switzerland, assignor to Fabrique d'Horlogerie Ch. TISSOT & Fils S.A., LeLocle, Switzerland
Filed Sept. 29, 1969, Ser. No. 861,962
Claims priority, application Switzerland, Oct. 2, 1968, 14743/68
Int. Cl. G04b *37/00*
U.S. Cl. 58—88 W **7 Claims**



A wrist watch comprising a watch case in which the watch movement is lodged, and a bracelet integral with a support for the watch, the bracelet and the support being made in one piece of synthetic material, and the said support surrounding the watch like a case rim.

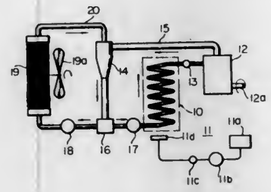
3,675,415
PROGRAM DEVICE FOR PRODUCING TIME SIGNALS AND THE LIKE
Reiji Sato, Kanagawa, Japan, assignor to Amano Corporation, Yokohama, Japan
Filed March 29, 1971, Ser. No. 128,965
Int. Cl. G04b *21/08*
U.S. Cl. 58—150 **7 Claims**



A program device for producing time signals and the like according to a program wherein an endless tape is mounted in a cassette which endless tape is adapted to be moved frame by frame by a sprocket wheel cooperating with a clock and formed with signal producing apertures in accordance with a timetable. When an associated operation lever is received in any one of the signal producing apertures, it closes a micoswitch to render external signal producing means operative.

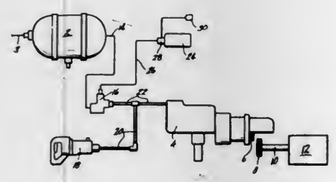
3,675,416
VAPOR POWER PLANT
Riichi Maeda, Yokohama, Japan, assignor to Nissan Motor Company Limited, Yokohama, Japan
Filed Sept. 10, 1970, Ser. No. 71,033
Claims priority, application Japan, Sept. 18, 1969, 44/73575
Int. Cl. F01k *25/08, 19/10*
U.S. Cl. 60—36 **2 Claims**

A vapor power plant driven with a working fluid vaporized from a liquid having a relatively freezing point such as trichloromonofluoromethane, comprising a working fluid circuit and a cooling fluid circuit both of which share limited common a passage with each other so that the same liquid can



be used both as a working medium for driving a prime mover of the power plant and as a cooling medium for cooling an exhaust from the prime mover.

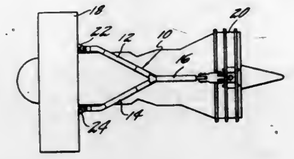
3,675,417
ENGINE STARTING SYSTEM WITH COMBINATION AIR RELAY AND CHECK VALVE
John Shum, Jr., Valley Station, Ky., assignor to Olin Corporation
Filed April 15, 1971, Ser. No. 134,286
Int. Cl. F02c *7/26*
U.S. Cl. 60—39.14 **4 Claims**



A valve assembly for use preferably with an engine starting system, the valve assembly including a housing providing a fluid flow path therethrough. A valve seat astride the flow path is disposed in the housing, and a valve head is mounted on a piston reciprocally mounted in the housing. The piston defines, with the housing, a control chamber and a reaction chamber, the latter of which communicates with the flow path downstream of the valve seat. Spring means biases the piston and valve head toward the valve seat so that the flow path is normally closed to fluid flowage therealong. Increased fluid pressure in the control chamber acts on the piston to open valve and thus the flow path, and comparatively high pressure downstream of the valve seat raises the pressure in the reaction chamber to force the valve head against the valve seat to prevent upstream flowage of the gases creating the high downstream pressure.

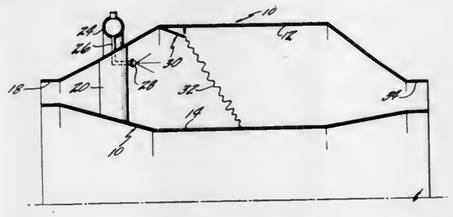
3,675,418
JET ENGINE FORCE FRAME
Carl Heinz Leukelt, and Cornelius Stephen Conklin, Jr., both of South Windsor, Conn., assignors to United Aircraft Corporation, East Hartford, Conn.
Filed Nov. 19, 1970, Ser. No. 90,971
Int. Cl. F02c *7/20*; B64d *27/10*
U.S. Cl. 60—39.31 **3 Claims**

Apparatus for transferring the axial forces present in the skin of a thin walled, hollow cylinder with little distortion of the skin is disclosed. The invention permits elimination of substantially all ovalization of a gas turbine jet engine case which results from transferring axial forces in the engine to a second



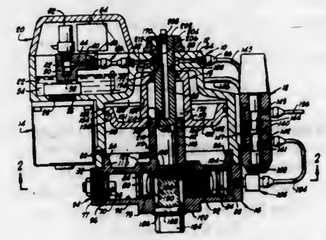
body; under some conditions backbone bending of the engine case is also reduced.

3,675,419
COMBUSTION CHAMBER HAVING SWIRLING FLOW
George D. Lewis, North Palm Beach, Fla., assignor to United Aircraft Corporation, East Hartford, Conn.
Filed Oct. 26, 1970, Ser. No. 84,088
Int. Cl. F02c *3/24*
U.S. Cl. 60—39.36 **9 Claims**



A combustion chamber is arranged so that swirling flow is formed therein to improve the manner and rate of burning above that which is normally obtainable. Swirl inducing means are provided at the entrance to the burner and flameholding means are provided around the outer circumference of the burner. Fuel is injected rearwardly of the swirl inducing means.

3,675,420
VALVE ACTUATOR
Ladd M. Adams, Norman, Okla., assignor to Baloa Corporation, Okla. City, Okla.
Filed Oct. 7, 1970, Ser. No. 78,816
Int. Cl. F15b *1/02*
U.S. Cl. 60—51 **20 Claims**



A valve actuator utilizing a power fluid and a biasing fluid for the opening and closing of a valve member of a valve assembly, wherein a portion of the power fluid is retained in an

accumulator assembly which is adapted to utilize the biasing fluid to move the power fluid to a valve member actuator to either open or close the valve member upon actuation of the valve actuator in such a manner that the valve assembly fail-safe in an opened or closed position.

3,675,421

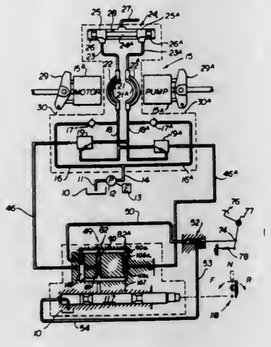
LOW EFFORT SHUTTLE BLOCK SELECTOR SPOOL MODIFICATION FOR THE MANUAL FEATHERING CONTROL AND OVERSPEED CONTROL FOR A HYDROSTATIC TRANSMISSION

Rodger W. Asmus, Downers Grove, Ill., assignor to International Harvester Company, Chicago, Ill.

Continuation of Ser. No. 14,725, Feb. 24, 1970, abandoned, which is a continuation of Ser. No. 731,472, May 23, 1968, abandoned. This application Nov. 5, 1970, Ser. No. 87,317

Int. Cl. F16d *31/02*

U.S. Cl. 60—53 R **24 Claims**



A hydraulic control system for a hydrostatic transmission in which are provided valving means which can be selectively positioned corresponding to forward, neutral or reverse drive of the transmission and including means for dumping excess fluid pressure from the fluid pressure circuit in order to prevent damage to the transmission and under certain conditions to prevent overspeeding of the transmission to further prevent damage. Means are provided whereby fluid flow in the hydrostatic loop can be by-passed from its normal drive path in the transmission, through the valve means provided.

3,675,422

FULL POWER BRAKING SYSTEM WITH SKID CONTROL AND REDUNDANT POWER STEERING

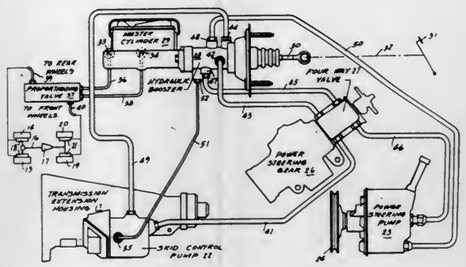
Gilbert H. Drutchas, and Hubert M. Clark, both of Birmingham, Mich., assignors to TRW Inc., Cleveland, Ohio

Filed Feb. 9, 1971, Ser. No. 114,006

Int. Cl. F15b *7/00*

U.S. Cl. 60—54.5 P **12 Claims**

Skid control and conventional braking functions are integrated in a single assembly while providing power means through the use of an auxiliary power source, the power steering pump, for braking modes where the main source of power braking, the skid control pump, is unable to provide the required power. In the event of failure, the power steering



pump is available for braking and, vice versa, the skid control pump is available for power steering.

3,675,423

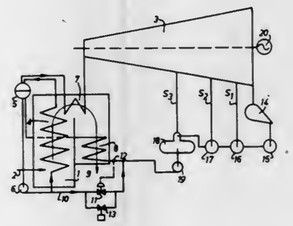
METHOD AND MEANS CUTTING OUT LOW TEMPERATURE CORROSION BY SULPHUR CONTAINING FUEL IN THE TERMINAL PARTS OF A STEAM GENERATOR IN THE ABSENCE OF AIR-HEATING MEANS

Jean Vidal, Ville D'Avray, and Jacques Lemoine, Paris, both of France, assignors to Stein Industrie, Paris, France

Filed May 13, 1970, Ser. No. 36,817

Int. Cl. F22d *5/00*

U.S. Cl. 60—107 **3 Claims**



To prevent corrosion in the economizers and the like structures at the output end of a steam generator burning sulphur-containing fuel and feeding a steam turbine, there is provided a channel connecting the input of the steam generator boiler with the input of the economizer so as to raise the temperature in the latter above corrosion temperature. A gate in said channel allows an adjustment of the flow of water through the latter and a by-pass for said gate allows a low basic permanent flow of water to pass through said channel, which flow can be stopped by a further gate.

3,675,424

NOZZLE FOR SHIP'S PROPELLER WITH WATER EJECTION ALONG THE TRAILING EDGE OF THE NOZZLE

Marinus Willem Cornelis Oosterveld, Bennekom, Netherlands, assignor to LIPS N.V.

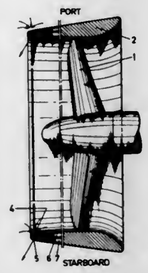
Filed May 18, 1970, Ser. No. 38,077

Claims priority, application Great Britain, May 19, 1969, 25,503/69

Int. Cl. B63h *11/02, 25/46*

U.S. Cl. 60—221 **4 Claims**

A Kort nozzle surrounding a ship's propeller has slots along the inner and outer sides of its trailing edge. Water can be selectively drawn into the inner slots and ejected from the outer slots, or vice versa, to augment the action of the nozzle



as an accelerating nozzle or as a decelerating nozzle. Alternatively, water can be drawn in and ejected selectively about the periphery of the nozzle to augment steering.

3,675,425

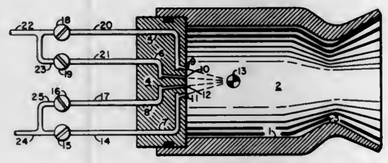
VARIABLE THRUST REACTION MOTOR WITH MULTIPLE SETS INJECTOR ORIFICES

Paul R. Scannell, Saratoga; Phil D. La Force, San Jose, and Wayne T. O'Connell, Oakland, all of Calif., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed July 11, 1966, Ser. No. 564,144

Int. Cl. F02k *9/02*

U.S. Cl. 60—258 **2 Claims**



A variable thrust fluid propellant rocket motor is provided with an injector supplied with first and second fuel and oxidizer feed lines, each line being equipped with variable flow valves. The injector is adapted to cause impingements of the first fuel and oxidizer streams on the second fuel and oxidizer streams. At low thrust levels, only the first streams are used. When higher thrust levels are required, flow of the second streams is initiated and impingement of the first streams on the second streams provides for mixing of the propellants.

3,675,426

METHOD AND MEANS FOR OPERATING A STEAM GAS PLANT INCLUDING A GAS TURBINE, A STEAM TURBINE WITH ITS STEAM GENERATOR AT THE DOWNSTREAM END

Jean Vidal, Ville D'Avray; Jean Parisot, and Jacques Lemoine, both of Paris, all of France, assignors to Stein Industrie, Paris, France

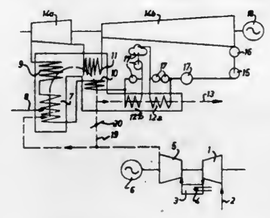
Filed May 13, 1970, Ser. No. 36,762

Int. Cl. F02c *7/02*; **F02g** *5/02*

U.S. Cl. 60—39.18 B **5 Claims**

Method and means for operating a steam gas plant including a gas turbine, and a steam turbine with its steam generator at the downstream end.

The method and means for improving the operation of a steam gas plant comprising a gas turbine the exhaust gases of which sustain the combustion of the burners of a steam generator, which latter feeds steam into a steam turbine. A fraction of the exhaust gases is diverted through an adjusting damper into the steam generator at a point where the temperature of the flue gases approximates that of said exhaust gases. Said point may lie beyond a reheater inserted for instance between two stages of the steam turbine and ahead of a heat exchanger.



3,675,427

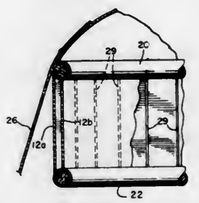
UNDERWATER STORAGE DEVICE

Charles M. Hix, Jr., Bryan, Tex., assignor to Arcadia Refining Company, Tyler, Tex.

Filed Nov. 25, 1969, Ser. No. 879,653

Int. Cl. B65g *5/00*

U.S. Cl. 61—.5 **8 Claims**



An underwater storage device for storing fluids lighter than water wherein a tank is formed of a cylindrical wall having a top closure and an open bottom so that the fluids will enter into the tank and pass upwards toward the top closure. The tank is adapted to be positioned in the water without any rigid restraints.

3,675,428

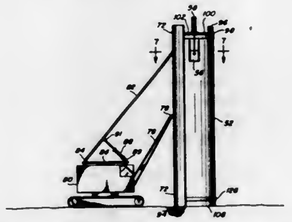
METHOD AND APPARATUS FOR WASTE DISPOSAL

James P. Watts, 6930 East Pinchot, Scottsdale, Ariz.

Filed Sept. 23, 1970, Ser. No. 74,601

Int. Cl. E02d *15/00*

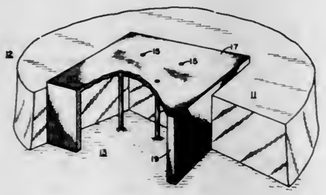
U.S. Cl. 61—35 **10 Claims**



A method and apparatus for waste disposal whereby an encased helical auger may be used sequentially for creating voids

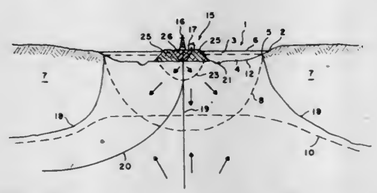
in the soil and for compacting waste material in said voids; dump bin and conveyor means for feeding waste material to said encased auger and means for scattering earthen material over a considerable area of the ground after it has been removed from the earth by said auger for covering voids previously filled with waste material.

3,675,429
ARCTIC ICE PLATFORM
Bertram T. Willman, Marsa Bregha, Libya, assignor to Esso Production Research Company
Filed April 3, 1970, Ser. No. 25,464
Int. Cl. E02d 27/04
U.S. Cl. 61—46 **6 Claims**



A method of forming a permanent offshore platform in areas where a mass of ice rests on the earth's surface in winter but thaws during more moderate weather. The platform is formed by insulating the surface of the ice proximate the drilling site to prevent any substantial thawing of the ice.

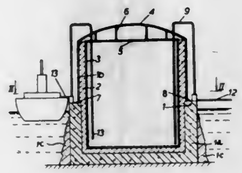
3,675,430
ARCTIC CONSTRUCTION AND DRILLING
Norman E. Haimila, Richardson, Tex., assignor to Atlantic Richfield Company, New York, N.Y.
Filed Feb. 5, 1970, Ser. No. 8,898
Int. Cl. E02d 21/00, 27/36
U.S. Cl. 61—46 **23 Claims**



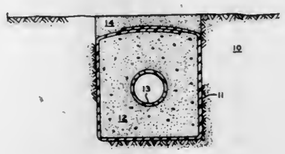
A method for constructing a working base in a permafrost area wherein the working base is located in bodies of water meeting certain requirements. A method for constructing a working base in a body of water and the working base itself.

3,675,431
OFF-SHORE STORAGE TANKS
Robert G. Jackson, Horncharch, England, assignor to Conch International Methane Limited, Nassau, Bahamas
Filed May 17, 1971, Ser. No. 143,872
Claims priority, application Great Britain, May 26, 1970, 26,035/70
Int. Cl. E02d 29/06; B65g 5/00; F25d 23/00
U.S. Cl. 61—46 **4 Claims**

An off-shore storage tank for liquefied gas has an outer shell, of which at least the lower part, which is immersed in the water, is made of solid concrete, sufficiently thick and heavy when in place to sink in the water even when empty, and is lined with thermal insulation such that in operation, when storing liquefied gas at cryogenic temperatures, the said lower part is maintained at a surface temperature below the freezing point of the water in which it is immersed so that a coating of frozen water is formed on the tank which acts as an additional seal for the concrete. Other features are that the upper part of the tank wall is sufficiently thinner than the lower part to provide an external annular step constituting a walkway around the tank, and the provision of tangential piers as part of the tank structure at points opposite to and adjacent the shore line. The tank is preferably made initially light enough in weight so that it can be floated to its location of use, then further concrete or other loading is added to sink the tank to the sea bed.



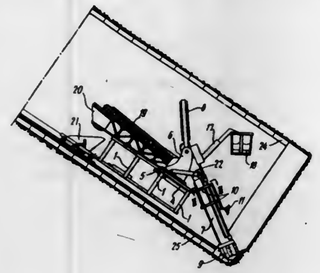
3,675,432
PIPELINE CONSTRUCTION
William A. Keene, Bartlesville, Okla., assignor to Phillips Petroleum Company
Filed Feb. 28, 1971, Ser. No. 110,451
Int. Cl. F16l 1/00
U.S. Cl. 61—72.1 **10 Claims**



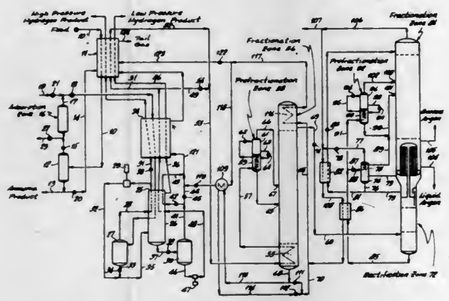
In order to insulate a pipeline from the earth in which it is buried, the pipe is surrounded by a mass of dry earth, sand and/or gravel and a water-impermeable membrane.

3,675,433
DEVICE FOR CONSTRUCTING MINES
Sergei Nikolaevich Silvestrov, ulitsa Baseinaya, 55, kv. 66; Moisei Mikhailovich Sinichkin, ulitsa Marata, 75, kv. 25; Grigory Ivanovich Shirokov, ulitsa Baseinaya, 55, kv. 51; Jury Filippovich Soloviev, Moskovsky prospekt, 186, kv. 127; Nikolai Demyanovich Silvestrov, ulitsa Baseinaya, 55, kv. 66, and Boris Zinovievich Amusin, ulitsa Dzerzhinskogo, 32, kv. 54, all of Leningrad, U.S.S.R.
Filed July 14, 1970, Ser. No. 54,736
Int. Cl. E01g 3/04
U.S. Cl. 61—84 **2 Claims**

The present invention relates to device for constructing mines, in which the mining member is mounted on a jib. This device is provided with a means which is also mounted on the jib and makes it possible to supply the facing elements to a required place of the face and to mount them thereat.



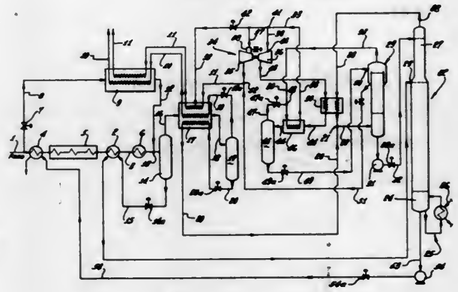
3,675,434
SEPARATION OF LOW-BOILING GAS MIXTURES
Duffer B. Crawford, Westfield, N.J., and Johannes C. Norenburg, New York, N.Y., assignors to Pullman Incorporated, Chicago, Ill.
Division of Ser. No. 657,662, Aug. 1, 1967, which is a continuation-in-part of Ser. No. 438,900, March 11, 1965, abandoned. This application Feb. 27, 1970, Ser. No. 15,012
Int. Cl. F25j 1/00, 3/08, 3/06
U.S. Cl. 62—23 **5 Claims**



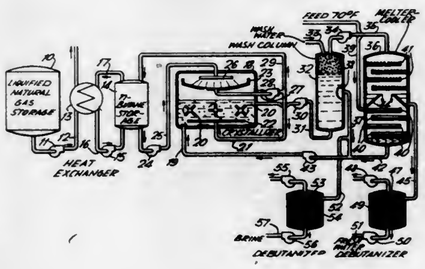
A process for the recovery of hydrogen from an ammonia synthesis purge gas comprising ammonia, hydrogen, nitrogen and methane wherein ammonia is first separated from the purge gas and the gas substantially free of ammonia is subsequently cooled to very low temperatures, e.g., −300°F., thereby obtaining a liquid phase and a hydrogen-rich gaseous phase.

3,675,435
LOW PRESSURE ETHYLENE RECOVERY PROCESS
Steven B. Jackson, Fullerton; Ernest Freireich, Los Angeles, and James D. Hammond, Alhambra, all of Calif., assignors to Fluor Corporation, Los Angeles, Calif.
Continuation-in-part of Ser. No. 800,875, Feb. 20, 1969. This application Nov. 7, 1969, Ser. No. 874,842
Int. Cl. F25j 3/02
U.S. Cl. 62—26 **16 Claims**

Process for the removal of methane from a hydrocarbon feed containing ethylene, methane and higher boiling hydrocarbons with minimum loss of ethylene. Methane is separated overhead from the feed in a separation zone at a first lower pressure; a first portion of this overhead vapor is expanded through an expansion motor producing an energy output, a second portion of the overhead vapor is compressed to a second pressure greater than the first pressure in a compressor driven by the motor output. The compressed vapor portion is then cooled to condense the major portion of the methane and the condensed methane is returned to the separation zone as reflux and recovering ethylene as bottoms from the separation zone. The methane vapor is recovered as fuel gas.



3,675,436
DESALINATION PROCESS
Neophytos Ganiaris, Riverdale, N.Y., assignor to Struthers Scientific and International Corporation
Filed Feb. 25, 1970, Ser. No. 14,047
Int. Cl. B01d 9/04
U.S. Cl. 62—58 **9 Claims**



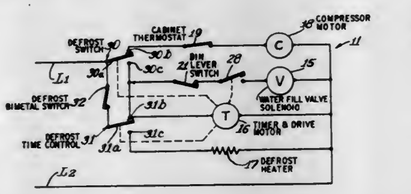
The freeze desalination of sea water is accomplished using the refrigeration potential released during the regassification of liquified natural gas. Sea water feed is cooled in an ice melter and feed cooler to near freezing, the feed is mixed with cold brine, and the feed is passed to a crystallizer wherein ice crystals are formed by direct contact with a refrigerant which has been cooled by the evaporation of the liquid natural gas. Ice crystals are separated from a slurry led from the crystallizer and the ice crystals are fed into the ice melter and feed cooler in which a refrigerant in a closed cycle condenses to melt ice and evaporates to cool feed. Fresh water is separated from condensed refrigerant in the ice melter and feed cooler. Refrigerant is stripped from the fresh water and brine passing from the system. In the crystallizer, gaseous refrigerant emerging from the feed is condensed by liquid refrigerant spraying into a tray suspended above the feed.

3,675,437

WATER FILL SHUT-OFF CONTROL FOR A DOMESTIC ICEMAKER

William J. Linstromberg, Evansville, Ind., assignor to Whirlpool Corporation

Filed June 18, 1970, Ser. No. 47,519
Int. Cl. F25d *21/00*; F25c *1/10*
U.S. Cl. 62—137 **7 Claims**



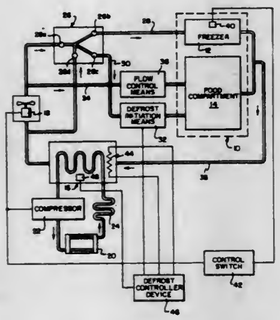
A control for shutting off an automatic ice maker in a refrigeration apparatus, such as a refrigerator-freezer. The ice maker apparatus is driven by an electric motor which is permitted to run continuously and thereby provide additional timing functions for other controls in the refrigeration apparatus. The ice maker mechanism is caused to be inoperative for purposes of providing ice bodies such as when the level of collected ice bodies in a storage bin reaches a preselected full level. The ice maker mechanism is made inoperative for providing ice by preventing delivery of water to the ice maker freezing mold under such conditions.

3,675,438

REFRIGERATOR WITH FLUID AMPLIFIER MEANS

Kazuo Takemasa, and Hitoshi Komada, both of Gunma, Japan, assignors to Sanyo Electric Co., Ltd., Osaka and Tokyo Sanyo Electric Co., Ltd., Gunma, Japan

Filed Aug. 7, 1970, Ser. No. 62,106
Claims priority, application Japan, Aug. 11, 1969, 44/63426; April 13, 1970, 45/31394
Int. Cl. F25d *21/06*
U.S. Cl. 62—156 **13 Claims**



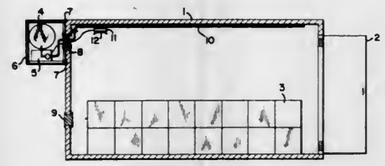
A refrigerator includes a first and second storage compartments evaporator means for refrigerating air, means for circulating the refrigerated air to both of the compartments and means for defrosting the evaporator. A fluid amplifier is provided in the refrigerated air circulating passage between air circulating means and the first compartment. The fluid amplifier includes a single inlet for receiving the refrigerated air from the outlet of air circulating means, a first outlet communicated with the first compartment and a second outlet communicated with the second compartment, and a control port communicated with the refrigerated air circulating passage downstream of evaporator means. The control port operates in response to a predetermined pressure drop in the refrigerated air flow to divert the flow of refrigerated air through the amplifier normally directed to the first outlet to the second outlet. Means is also provided which is responsive to the flow of refrigerated air from the second outlet of the fluid amplifier to initiate defrost operation by defrost means.

3,675,439

DETACHABLE CONTAINER REFRIGERATION SYSTEM

David Paul Maurer, Williamsville, N.Y., assignor to Union Carbide Corporation, New York, N.Y.

Filed Sept. 25, 1970, Ser. No. 75,563
Int. Cl. F25b *41/04*
U.S. Cl. 62—223 **5 Claims**



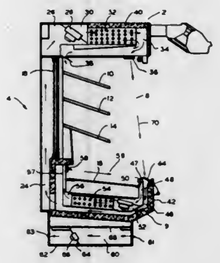
A cryogenic liquid spray refrigeration system detachably mounted on a portable product shipping container for intransit refrigeration of said container in which refrigeration system requires minimal alteration of said shipping container.

3,675,440

REFRIGERATED DISPLAY CASE

Fayez F. Ibrahim, Niles, Mich., assignor to Clark Equipment Company

Filed Dec. 3, 1970, Ser. No. 94,711
Int. Cl. A47f *3/04*
U.S. Cl. 62—256 **5 Claims**



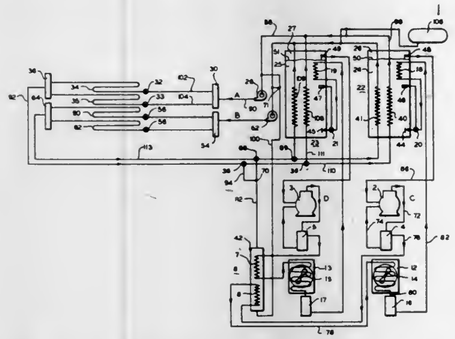
This is a refrigerated display case with a front opening for unimpeded access to the refrigerated area and a movable closure section rear opening to provide intermittent access to the refrigerated area. The case has a curtain of refrigerated air across the front access opening and air conduits along the side of he rear opening to provide recirculation of the refrigerated air. The case has a separate horizontal curtain of refrigerated air across the lower portion of the refrigerated space to provide two vertically adjacent zones of refrigeration within the refrigerated space. The case also has a curtain of nonrefrigerated air under the bottom of the refrigerated space to remove spillover cold air from the floor in front of the case.

3,675,441

TWO STAGE REFRIGERATION PLANT HAVING A PLURALITY OF FIRST STAGE REFRIGERATION SYSTEMS

Arthur Perez, Niles, Mich., assignor to Clark Equipment Company

Filed Nov. 19, 1970, Ser. No. 91,041
Int. Cl. F25b *47/00*
U.S. Cl. 62—278 **3 Claims**



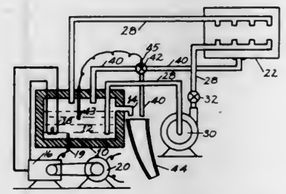
This is a two stage refrigeration plant consisting of a plurality of first stage change of phase refrigeration systems and one or more second stage liquid coolant circulation systems interconnected by heat exchange systems. One heat exchange system transfers heat from the brine or other liquid coolant circulating through one or more of the liquid coolant chilling elements in the second stage to the refrigerant in one or more of the evaporators of the first stage to thereby chill the liquid coolant and cool the associated space cooling elements. Another heat exchange system transfers heat from the hot refrigerant gas flowing between the compressor and condenser in one or more of the first stage refrigeration systems to the brine or other liquid in one or more of the second stage liquid coolant circulation systems to heat the liquid and thereby permit defrosting of the associated space cooling elements. One or more of the first stage refrigeration systems may be operated selectively at their most efficient capacity to satisfy the cooling requirements of one or more of the second stage liquid coolant circulation systems.

3,675,442

ATMOSPHERIC WATER COLLECTOR

Rollin J. Swanson, 6337 N. 22nd Street, Arlington, Va.

Filed Feb. 12, 1971, Ser. No. 114,763
Int. Cl. F25d *21/14*
U.S. Cl. 62—285 **6 Claims**



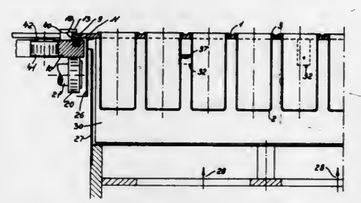
Apparatus including a fresh water cooling bath is provided for obtaining potable water from moisture-laden air. Mechanical refrigeration means intermittently cool the fresh water bath. Conduit means permit the fresh water in the bath to flow to and from a specially designed housing that chanels a flow of moisture-laden air. Vertically aligned condenser filaments are positioned within the housing and connected to the conduit means to provide condensing surfaces at a temperature below the dew point of the air in the housing. Distributing means are provided for either directing the condensed water, depending on its temperature, to the bath, or for directing the condensed water from the apparatus as output water.

3,675,443

TABLE FOR ROTATING FREEZING APPARATUS

Hans Gram, Vojens, Denmark, assignor to Brodrene Gram A/S

Filed June 1, 1970, Ser. No. 42,065
Claims priority, application Denmark, June 2, 1969, 2964
Int. Cl. F25c *1/10*
U.S. Cl. 62—345 **3 Claims**



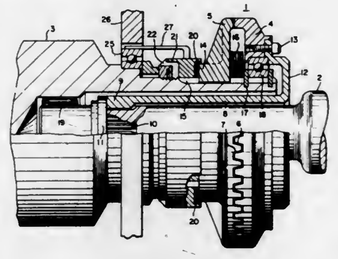
In a freezing apparatus comprising a rotatable horizontal annular plate supporting freezing pockets the inner and outer marginal portions of the plate are movable in the radial directions with respect to an inner and outer supporting ring respectively.

3,675,444

HIGH SPEED SHAFT DISCONNECT UTILIZING A FUSIBLE ELEMENT

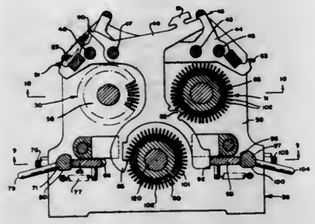
Edward R. Whipple, Erie, Pa., assignor to General Electric Company

Filed Nov. 3, 1970, Ser. No. 86,430
Int. Cl. F16d *9/00*
U.S. Cl. 64—28 R **8 Claims**



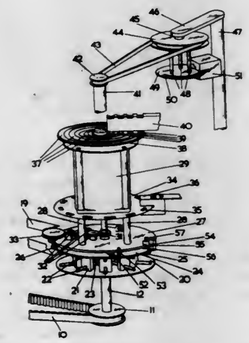
A disconnect arrangement for high speed generators such as those utilized in aircraft electrical systems includes a spring loaded face clutch which has the individual clutch members coupled to the driving and driven shafts. A fusible, low temperature element is positioned between one of the shafts and one of the clutch members to force the clutch members into engagement against the spring force. A friction arm is actuated in response to any one of a number of malfunctions to bring it into contact with a heat conducting member which bears against the fusible element. The heat generated by the friction between the arm and the member melts the disc allowing the spring to separate the clutch members and thereby disconnecting the generator shaft from the driving source.

3,675,445
PATTERN MECHANISM FOR CIRCULAR KNITTING MACHINES
James D. Meyer, Wyomissing, Pa., assignor to North American Rockwell Corporation, Pittsburgh, Pa.
Filed Sept. 25, 1970, Ser. No. 75,424
Int. Cl. D04b 15/74
U.S. Cl. 66—50 B 5 Claims



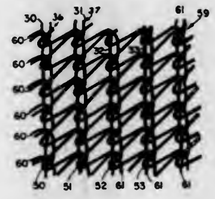
Jack selector means for controlling the operation of the needles of a multi-feed circular knitting machine to form design stitch patterns in tubular fabrics knitted on the machine, the selector means including a selector device at each feed having selector levers for selectively operating the jacks at the feed and a trick drum for controlling the operation of the selector levers, common means for operating the selector devices at a pair of the feeds, means for controlling the operation of the common means, a single control drum for controlling the active positions of the selector levers of the selector devices at the pair of feeds and means for controlling the operation of the single control drum. The selector devices and associated operating means for the pair of feeds are assembled into a common unit for ready attachment to and removal from the machine and means associated with the trick and control drums permit disengagement from and engagement of the drums with their operating means.

3,675,446
POSITIVE FEED SYSTEM FOR CIRCULAR KNITTING MACHINES
Albert Edward Cooke, Leicester, England, assignor to Trip-Lite Limited, South Wigston, England
Filed June 16, 1970, Ser. No. 46,736
Claims priority, application Great Britain, June 20, 1969, 31,214/69
Int. Cl. D04b 15/48
U.S. Cl. 66—132 T 11 Claims



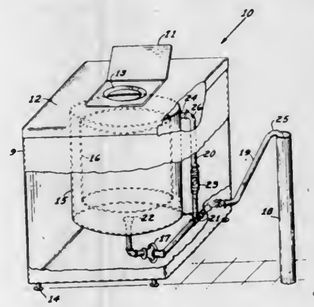
An adjustable positive yarn feed system comprises a variable diameter wheel used to drive a band, tape or the like by which positive feed is applied to a yarn or yarns, adjusting means for varying the wheel diameter a stepping motor for effecting incremental variation of the setting of the adjusting means, and a control device for actuating the stepping motor as and when required.

3,675,447
SIMULATED-WEAVE, WARP-KNIT FABRIC, AND METHOD FOR MAKING THE SAME
George E. Jackson, Charleston, W. Va., assignor to Union Carbide Corporation, New York, N.Y.
Filed June 26, 1970, Ser. No. 50,234
Int. Cl. D04b 23/10, 23/00
U.S. Cl. 66—192 13 Claims



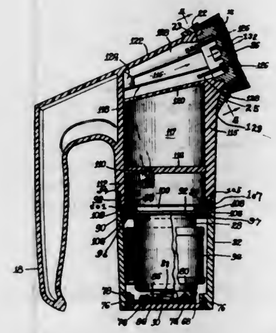
A warp-knit fabric is given a simulated weave appearance by chain stitching one set of warp yarns into wale-wise pillars and looping a portion of each chain stitch in a course wise direction from its pillar, over and around a chain stitch of another pillar in the same course, and back again to its pillar, thus producing "weft" portions in the chain stitch warp yarns. A second set of warp yarns are alternately overlaid and underlaid walewise of the weft portions to produce the simulated weave. The "weft" yarns and chain stitch yarns are one and the same and carried on a single guide bar. The chain stitch yarn forms chain stitches only on one pillar, or wale, and is carried course-wise to wrap around another chain stitch in another pillar, rather than forming a conventional chain stitch therein.

3,675,448
GRAVITY OVERFLOW TUBE FOR AUTOMATIC CLOTHES WASHER
John H. Smith, Rural Route 2, Washington, Ind.
Filed Oct. 26, 1970, Ser. No. 83,864
Int. Cl. D06f 39/08
U.S. Cl. 68—208 3 Claims



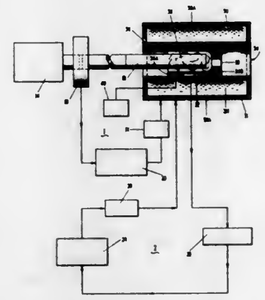
A tube for routing excess liquid in an automatic clothes washer to a suitable drain. A clothes washer having an outer tub positioned around an inner tub has a drain connected to an electric pump. A hose is connected to the outlet end of the pump providing for liquid drainage. A gravity overflow tube has a top end mounted to the top portion of the outer tub at a level above the hose. Excess water in the outer tub flows through the overflow tube by the force of gravity.

3,675,449
STEAMING APPARATUS WITH REMOVABLE BRUSH
Bernard B. Bluestein, Des Plaines, Ill., assignor to Sunbeam Corporation, Chicago, Ill.
Filed July 12, 1971, Ser. No. 161,741
Int. Cl. D06c 1/00; D06f 75/00
U.S. Cl. 68—222 10 Claims



A portable steamer for removing wrinkles from fabrics having a cylindrical tank for holding the water used in steaming is disclosed. A steam head is inserted in a steam outlet channel which is located above the cylindrical tank. A removable ring having a material-treating member, such as a brush, surrounds the periphery of the housing which encloses the steam head. The brush is held in place upon the housing of the steamer by two slightly resilient tabs which are integrally formed with the sides of the removable ring. Each of the tabs have an inwardly projecting locking block which is received in a corresponding locking recess in the exterior housing surface of the steam outlet channel portion of the housing.

3,675,450
HIDE PASTING MACHINE
Lando J. Schwaller; Albert J. Razal, and John G. White, all of Sheboygan, Wis., assignors to Akzona Incorporated, Asheville, N.C.
Filed March 23, 1971, Ser. No. 127,154
Int. Cl. C14b 1/00
U.S. Cl. 69—1 12 Claims



For pasting and slicking a hide or the like upon a plate, a wheel-equipped shaft is rotatably mounted in a support and carries at its outer end portion a pivotally mounted air cylinder having a piston stem carrying a slicking blade for stroking the hide, while a second air cylinder on the shaft has a piston stem connected to the first cylinder for moving it toward and away from the plate. The control mechanism operates valves for directing air to opposite ends of the cylinders in sequence for stroking and return movements and for locking the mechanism during the slicking stroke. The support may be slidably mounted in a mobile frame and may carry an operator's seat and power means for moving the frame independently of travel by the hide-carrying plate.

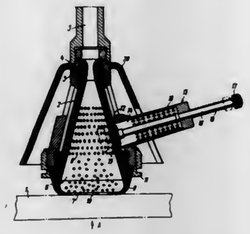
3,675,451
EXTRUSION SYSTEM
Sol Aisenberg, Natick, and James B. Dodge, Pepperell, both of Mass., assignors to Whittaker Corporation, Los Angeles, Calif.
Filed March 23, 1970, Ser. No. 21,702
Int. Cl. B21b 37/08; B21c 31/00
U.S. Cl. 72—20 9 Claims

A high pressure, high temperature extrusion apparatus generally includes a pressure means, such as a piston arrangement, for forcing an extrusion material such as a mixed metal powder, through a die which is maintained at a high temperature. A jacket surrounds and supports the die. A pressure responsive, feedback mechanism, control means surrounding the jacket which means are adapted to apply external force to the outer portions of the die, of a sufficient magnitude to counter-balance the inner extrusion forces.

3,675,452
DEVICE FOR SURFACE HARDENING OF PARTS

Jury Anatolievich Osmolovsky, Pisarevsky proezd, 3, kv. 47, Pushkino Moskovskoi Oblasti, and Anatoly Serafimovich Kizilyaev, ulitsa 8 Marta, 7, kv. 118, Ljubertsy Moskovskoi Oblasti, both of U.S.S.R.

Filed March 18, 1970, Ser. No. 20,662
Int. Cl. C21d 7/06
U.S. Cl. 72—53 2 Claims

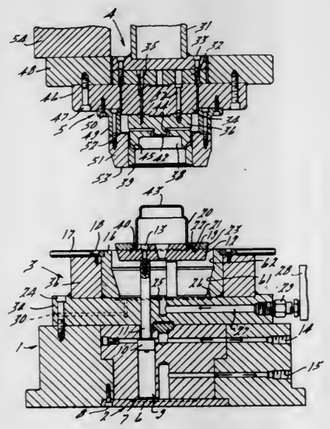


A device for hardening the surfaces of parts by means of plastic deformation. The device permits hardening bodies to be admitted by gravity into a chamber from an additional chamber by opening a valve which normally closes a hole between the two chambers. The valve is then closed and a stream of compressed air is admitted to propell the hardening bodies to harden the surface of parts. The hardening bodies can be caused to reenter the additional chamber upon completion of a hardening operation by opening the valve while the stream of compressed air is being applied.

3,675,453
MACHINE AND METHOD FOR MAKING PULLEY GROOVES OR THE LIKE

Karl Marsch, Burgermeister, Siegler, Strasse 9, 6842 Burstadt, Germany

Filed May 18, 1970, Ser. No. 38,023
Int. Cl. B21d 26/04
U.S. Cl. 72—58 7 Claims

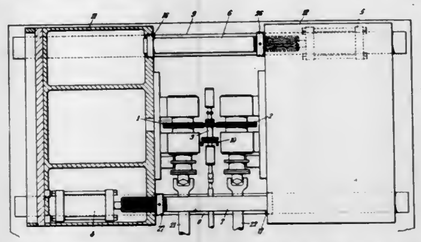


Pulley grooves are formed in a cylindrical wall by a machine and method wherein mechanical force in an axial direction along with outwardly directed hydraulic pressure are applied to the wall to deform it into the desired radial groove shape.

3,675,454
GEAR AND PROFILE ROLLING MACHINES

Leslie Raymond Pratt, West Haddon, near Rugby, England, assignor to Charles Churchill Limited, Birmingham, England

Filed May 26, 1970, Ser. No. 40,557
Claims priority, application Great Britain, June 2, 1969, 27,846/69
Int. Cl. B21h 9/00
U.S. Cl. 72—108 2 Claims

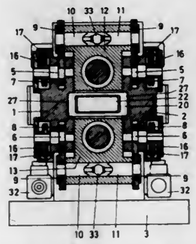


A gear rolling machine, comprising a pair of opposed rotatable forming rolls supported by heads, one of which is slidable and the other of which is slidable or fixed, and a pair of hydraulic cylinders, each fixed to one of the heads, the piston rod of each cylinder being attached to the opposite head and the piston rods extending parallel to and being spaced substantially symmetrically with respect to the load axis.

3,675,455
ROLL STAND WITH WORKING ROLLS SUPPORTED IN CHOCKS

Erich Bretschneider, Buderich, Germany, assignor to Siemag Siegener Maschinenbau G.m.b.H.

Filed Jan. 20, 1971, Ser. No. 107,921
Claims priority, application Germany, Jan. 22, 1970, P 20 02 745.6
Int. Cl. B21b 31/08, 31/16
U.S. Cl. 72—238 8 Claims



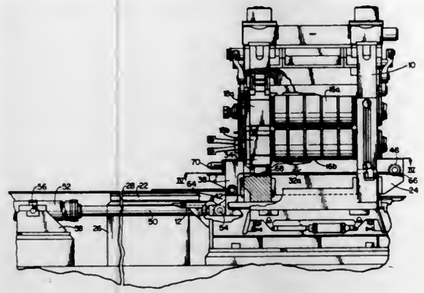
The invention relates to a roll stand, with working rolls supported in chocks, the rolling forces of which are absorbed by tension strap members adapted to act on said chocks and which are adjustable relative to each other for the purpose of adjusting the roll gap by means of eccentrics engaged in the tension strap members.

3,675,456
ROLL CHANGING APPARATUS

Donald Sieurin, Northboro, Mass., assignor to Morgan Construction Company, Worcester, Mass.

Filed Dec. 5, 1969, Ser. No. 882,677
Int. Cl. B21b 31/08
U.S. Cl. 72—239 11 Claims

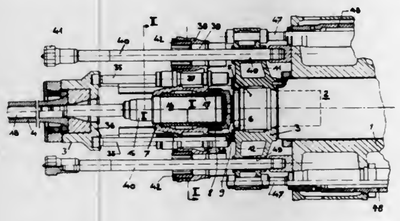
An apparatus for changing work rolls in a rolling mill. The apparatus includes a carriage assembly mounted on tracks for movement into and out of a roll housing through a housing window. The carriage assembly is adapted to receive and carry a roll package made up of a plurality of work rolls rotatably supported between bearing chocks. The tracks are so arranged that upon movement of the carriage assembly and roll package carried thereon into the housing, the carriage assembly is gradually lowered to transfer the roll package onto the housing, with the result that the roll package is solely supported by the housing when operatively contained therein.



3,675,457
METAL-TUBE EXTRUSION PRESS

Horst Hans Groos, Metzkausen, Germany, assignor to Schloemann Aktiengesellschaft, Duesseldorf, Germany

Filed Nov. 17, 1969, Ser. No. 877,146
Int. Cl. B21c 23/02
U.S. Cl. 72—265 3 Claims



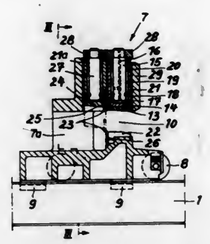
A metal-tube extrusion press, provided with a drive, arranged in the main extrusion piston, and movable independently towards the press ram, for the piercing mandrel, which is held in a piercing-mandrel crossbar axially displaceable in the crossbeam and which projects with lateral jibs or extensions from the crossbeam, and is axially adjustable relatively to the latter, wherein jibs or extensions, provided with abutments, can be secured relatively to the extrusion cylinder by means of abutment rods rigidly connected with the latter, with the abutments being rockable outwards in the jibs transversely to the direction of extrusion, out of reach of the abutments on the abutment rods.

3,675,458
HYDRAULIC SECTION-STRETCHING MACHINE

Dieter Veltjens, Osterath, Germany, assignor to Schloemann Aktiengesellschaft, Dusseldorf, Germany

Filed Jan. 20, 1970, Ser. No. 4,307
Claims priority, application Germany, Jan. 25, 1969, P 19 03 744.6
Int. Cl. B21d 43/28
U.S. Cl. 72—294 4 Claims

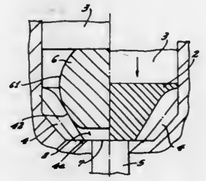
A hydraulic section-stretching machine, having a cylinder and piston co-operating with a stretching grip, a longitudinally movable but arrestable counter-grip having clamping jaws operative perpendicularly to the section-stretching axis, the counter-grip being provided with two C-shaped apertures in the same plane, perpendicular to one another, one facing the stretching grip to accommodate the section to be stretched, and the other facing the stretched material to be transported, and a severing means close to the clamping jaws, acting in a vertical plane perpendicular to the stretching axis.



3,675,459
METHOD FOR MANUFACTURING BEVEL GEARS

Fritz Dohmann, Rontgenstrasse 34, 851 Furth, Germany

Continuation-in-part of Ser. Nos. 788,434, Jan. 2, 1969, abandoned, and Ser. No. 15,807, March 2, 1970, abandoned. This application Feb. 3, 1971, Ser. No. 112,305
Int. Cl. B21k 1/30
U.S. Cl. 72—352 14 Claims



A method for manufacturing bevel gear is disclosed according to which a workpiece is prepared for placement into a suitable die and to have convex contour tangent to the cone defined by the root circles of the bevel gear to be made, the axial end face of the workpiece has diameter about equal to or smaller than the smallest root circle of the bevel gear.

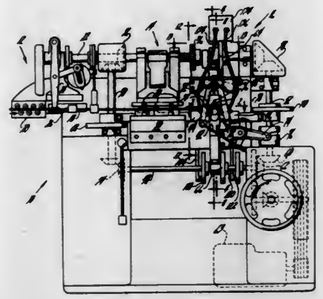
3,675,460
FOUR-SLIDE MACHINE WITH IMPROVED MANDREL FOR PRODUCING BEARINGS AND THE LIKE

Erman V. Cavagnero, Torrington, Conn., and Joseph F. Loftus, Springfield, Ohio, assignors to Torin Corporation, Torrington, Conn.

Division of Ser. No. 721,672, April 16, 1968. This application June 8, 1970, Ser. No. 44,483
Int. Cl. B21d 41/00
U.S. Cl. 72—399 8 Claims

A high production machine of the vertical four-slide type for intermittently advancing strip stock, severing blanks therefrom, forming the same into bearing races and welding end portions thereof together. The machine has a projecting horizontal mandrel with three work stations there along respectively for preforming, forming, and preheating and/or welding. A cut-off anvil, transfer pins, broaching tools, and an expandable mandrel section are provided all with rear motion

drive action and a welding mechanism is adapted for both preheat and weld operation adjacent the expandable mandrel sec-



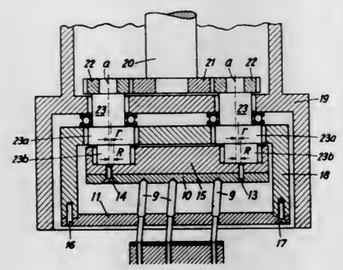
tion. A bearing race discharge track extends from the welding station to an induction furnace.

3,675,461

RIVET HEAD ARRANGEMENT FOR A WOBBLE RIVETING MACHINE

Claus Berndt, Werkhedstrasse 3, Biberist, Switzerland

Filed Oct. 5, 1970, Ser. No. 77,835
Claims priority, application Switzerland, Oct. 24, 1969, 15918/69
Int. Cl. B21j *15/12*
U.S. Cl. 72—406 8 Claims



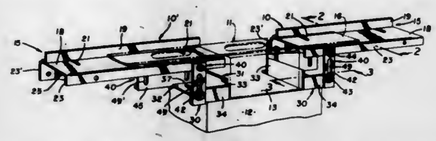
A rivet head arrangement for a wobble or tumble riveting machine comprising a plurality of identical wobble rivet tools, the axes of which are in substantial parallelism with one another. A drive member is engaged by the head end of the wobble rivet tools, each such head end being remote from the effective or working end of these wobble rivet tools. The drive member is capable of transmitting to the wobble rivet tools a force directed towards their working ends. Further, a drive mechanism imparts to this drive member a translatory circular movement such that all of the wobble rivet tools carry out wobble movements, the centers of which are situated at their working ends. Also there is provided a support member upon which the wobble rivet tools at least are then supported by means of an intermediate portion when such wobble rivet tools do not bear upon the rivet ends to be deformed or formed.

3,675,462

ADJUSTABLE STAMPING PRESS STOCK GUIDE

Lucien G. Ponce, 1346 Chestnut Boulevard, Cuyahoga Falls, Ohio

Filed Oct. 8, 1970, Ser. No. 79,211
Int. Cl. B21d *22/00, 43/16*
U.S. Cl. 72—428 4 Claims



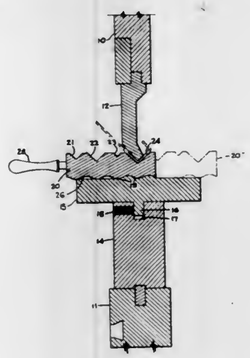
A stock guide for feeding stock to the die of a stamping press. The guide has a base member adjustably mounted on the anvil of the press adjacent to the stamping die and a guide table mounted for vertical adjustment on the base member, with an aligning bar adjustably mounted on the table.

3,675,463

SHIFTABLE PRESS BRAKE DIE

Frederick E. Munschauer, Jr., Eggertsville, and George H. Trautman, Jr., Kenmore, both of N.Y., assignors to Niagara Machine & Tool Works, Buffalo, N.Y.

Filed March 29, 1971, Ser. No. 128,692
Int. Cl. B21j *13/02*
U.S. Cl. 72—448 7 Claims



A press brake die for forming right angle bends in metal sheets wherein the die has several longitudinal parallel V-grooves of various depths to adapt the same for forming bends in sheets of various thicknesses. The under surface of the die and the upper surface of the die support have longitudinal complementary corrugations of a pitch equal to the spacing of the V-grooves of the die whereby the corrugations of the die and support may be interfitted with the die in various transverse positions to register any selected V-groove thereof with the punch carried by the ram of the press brake.

3,675,464

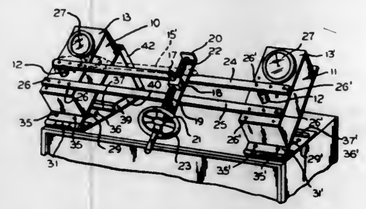
PORTABLE TESTING AND CHECKING APPARATUS WITH ADJUSTABLE MOUNTS

Kenneth R. Larson, Des Plaines, Ill., assignor to Snap-On Tools Corporation, Kenosha, Wis.

Filed Jan. 18, 1971, Ser. No. 107,037
Int. Cl. G01l *25/00*
U.S. Cl. 73—1 C 8 Claims

A torque wrench tester is mounted upon an adjustable bracket so that it may be changed from one angle to another

with respect to horizontal. The purpose is to check torque wrenches at a plurality of positions because their calibration may vary from one to another. The embodyment shown com-



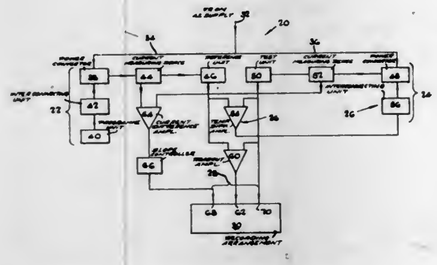
bines two torque wrench testers of different capacities connected by common spacer bars so that wrenches of different capacities may be tested.

3,675,465

APPARATUS AND METHOD FOR DIFFERENTIAL THERMAL ANALYSIS

Gunter Sommer, 169 Barkston Drive, Randburg, and Hans Walter Sander, 84 Shakespeare Road, Johannesburg, both of Republic of South Africa

Continuation of Ser. No. 750,623, Aug. 6, 1968, abandoned.
This application Oct. 7, 1969, Ser. No. 864,491
Int. Cl. G01n *25/00*
U.S. Cl. 73—15 B 11 Claims



A method of thermal analysis which includes the steps of controlling the temperatures of at least two units to correspond to a predetermined temperature program, and of measuring the power required by each unit to cause its temperature to correspond to the program.

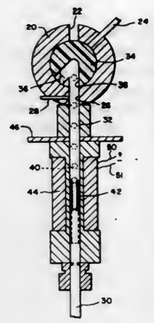
3,675,466

SAMPLING VALVE AND SYSTEM FOR THE DETECTION OF PREDETERMINED COMPOUNDS IN AIR

Amos Linenberg, Rehovot, Israel, assignor to Hydronautics-Israel, Ltd., Rehovot, Israel

Filed Aug. 19, 1970, Ser. No. 65,215
Int. Cl. G01n *1/22, 31/08*
U.S. Cl. 73—23.1 20 Claims

A sampling valve for use with a chromatographic column or any other appropriate detection device for enabling the detection of predetermined compounds in an ambient medium, such as air. The valve includes a housing member having a plurality of apertures therein for enabling respective communication with at least a carrier medium, the ambient medium and the chromatographic column. A movable valve body member is mounted within the housing and is provided with a plurality of apertures for selective communication with predetermined ones of the housing member apertures. A platinum gauze member is retained within a predetermined one of the valve body member apertures and is selectively exposed to the ambient medium. The valve body member is then moved and the platinum gauze member is heated to desorb the predetermined compound in the presence of the carrier medium, such



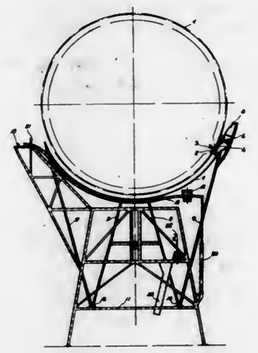
as helium, and the carrier medium together with the predetermined compound are passed through the chromatographic column to enable detection of the presence of the predetermined compound.

3,675,467

METHOD AND DEVICE FOR MEASURING THE TEMPERATURE OF MATERIAL IN A ROTATORY FURNACE

Bertel Myreen, Turku, Finland, assignor to Paraisten Kalkki Oy, Parainen, Finland

Filed May 27, 1970, Ser. No. 40,812
Claims priority, application Finland, June 3, 1969, 1663/69
Int. Cl. G01k *1/14, 13/12*
U.S. Cl. 73—351 8 Claims

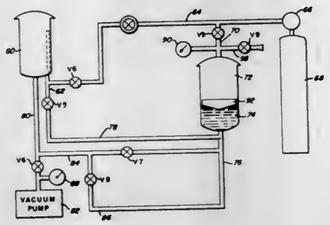


A small portion of the hot material in a rotatory furnace is poured out through an opening in the furnace wall during a period of the rotation into a measuring vessel and the temperature of the material is measured before any substantial cooling of the material has time to occur.

Transversely under the rotatory furnace are guiding rails movable between two positions. Connected to a stand on a base attached to the furnace is a device for opening and closing the furnace wall opening, and an upwardly open measuring vessel movable along the guides back and forth. In the measur-

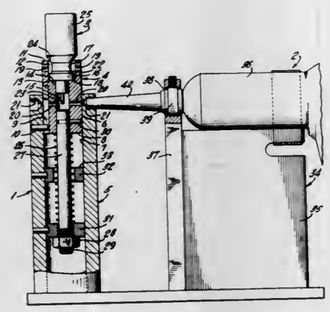
ing vessel are a thermocouple, an engaging dog attached to the furnace to displace the measuring vessel in synchronism with the furnace wall opening, and means for emptying the vessel before a new collection takes place.

3,675,468
LEAK TESTING APPARATUS AND METHOD
Vincent C. Caccamesi, Wilmington, and Aaron C. Der Marderosian, Marlboro, both of Mass., assignors to Raytheon Company, Lexington, Mass.
Filed Nov. 25, 1970, Ser. No. 92,624
Int. Cl. G01m 3/20
U.S. Cl. 73—40.7 6 Claims



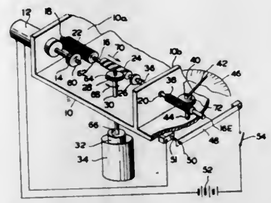
A method and apparatus for conditioning devices such as electronic components for fine and gross leak testing, the apparatus comprising means for introducing a fluid under pressure to the devices whereby the fluid will be forced into the interiors of leaky devices, and means for thereafter removing the fluid, while reclaiming same, whereupon the devices may be tested by conventional sniffing or weighing methods to determine those which leak.

3,675,469
APPARATUS FOR DETECTING AEROSOL LEAKAGE
Carl H. Macartney, Hatfield, and Joseph A. Bawduniak, Ambler, both of Pa., assignors to Merck & Co., Inc., Rahway, N.J.
Filed Nov. 25, 1970, Ser. No. 92,736
Int. Cl. G01m 3/04
U.S. Cl. 73—40.7 5 Claims



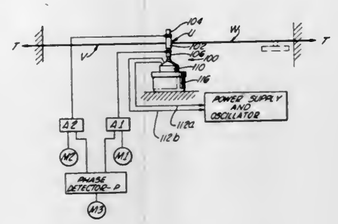
A device for inspecting aerosol units for leakage at the valve stem and the crimp between the container and the valve assembly. This device includes hollow support means to hold the aerosol unit and means to separate the valve stem portion and the crimp portion of said unit. This device also includes two apertures in the side wall of the support means, one of said apertures being above and the other being below the means to separate the valve stem portion of the aerosol unit from the crimp portion.

3,675,470
VISCOMETER
Toshihiko Ohno, Tokyo, Japan, assignor to Rion Kabushiki Kaisha, Tokyo, Japan
Filed April 24, 1970, Ser. No. 31,548
Int. Cl. G01n 11/16
U.S. Cl. 73—59 9 Claims



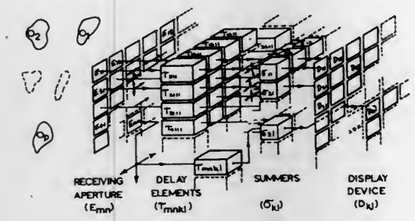
A rotor driven by a shaft rotated at a fixed speed is subject to the drag of a liquid the viscosity of which is to be measured to apply an axial thrust to the shaft. The shaft is axially displaced against the action of a helical spring and continues to be rotated at a position where the thrust balances the resilience of the spring. A pointer responds to the displacement of the shaft through a cylindrical rack and a pinion to indicate the viscosity of the liquid.

3,675,471
METHOD OF MEASURING VIBRATION CHARACTERISTICS OF STRUCTURES
Raymond R. Bouche, 4902 Indianola Way, La Canada, Calif.
Continuation-in-part of Ser. No. 629,532, April 10, 1967, Pat. No. 3,446,907. This application May 26, 1969, Ser. No. 827,556
Int. Cl. G01n 29/00
U.S. Cl. 73—67 13 Claims



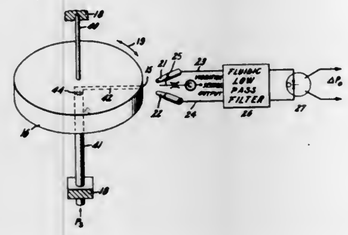
A testing device having a static mass equal to or less than the static mass of the structure to be tested in the local region of attachment, acting as a rigid mass at all frequencies, and having a measuring device portion which has a dynamic mass less than about ten times the least value of dynamic mass of the structure, is rigidly mounted on a test structure. The testing device is then vibrated and the resulting force which is applied to the test structure, the resulting acceleration of the test structure, and the phase angle between the force and acceleration are measured. The frequency of vibration is then varied and the above stated measurements are repeated. The testing device is then attached to a second point on the structure and the foregoing steps are repeated.

3,675,472
APPARATUS AND METHOD FOR IMAGES OF THE INTERIOR STRUCTURE OF SOLID OBJECTS
Leslie Kay; Maxwell Glynn Maginness, and Graham Bramwell Cook, all of Christchurch, New Zealand, assignors to National Research Development Corporation, London, England
Filed Dec. 11, 1969, Ser. No. 884,137
Claims priority, application New Zealand, Dec. 12, 1968, 154,800
Int. Cl. G01n 29/00
U.S. Cl. 73—67.5 R 5 Claims



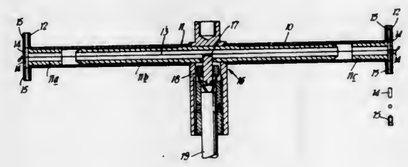
The interior structure of objects, for example metal or tissues, is examined by insonifying the object and detecting reflected ultrasonic waves in a large receiving transducer at positions spaced at half wave-lengths of the highest insonification frequency from each other. The receiving positions are scanned and the received signals converted to digital form and processed to simulate the effect of an ultrasonic lens and the processed signals then displayed. Random spatial sampling of the positions may be effected to reduce the amount of data.

3,675,473
OPEN-LOOP FLUIDIC ANALOG ACCELEROMETER
Robert A. Kantola, and Willis A. Boothe, both of Scotia, N.Y., assignors to General Electric Company
Division of Ser. No. 642,116, May 29, 1967, Pat. No. 3,540,268. This application July 18, 1969, Ser. No. 871,177
Int. Cl. G01h 1/10; G01p 15/02
U.S. Cl. 73—70.1 4 Claims



Apparatus for sensing acceleration and generating an analog-type pressurized fluid signal proportional to the magnitude of the associated acceleration event. A friction-free spring-mass device in the form of a flexure-mounted inertial mass includes a hollow, elongated spring member of the cantilever beam type having a first end rigidly fixed in position and a second unsupported end upon which the acceleration-sensitive inertial mass is mounted for sensing linear motion acceleration. The hollow portion of the spring member issues a fluid jet from the second unsupported end directed at fluid receivers, the flexure of the spring member causing distribution of the jet between the receivers in proportion to the magnitude of the acceleration. Angular motion acceleration is sensed by utilizing a cylindrical inertial mass connected along its longitudinal axis to two torsional spring members rigidly fixed in position at their far ends such that the cylindrical mass is subject to rotation in the presence of an angular motion acceleration.

3,675,474
STRAIN GAUGES
Roger Drury Browne, London; Laurence Henry McCurrich, Berkshire; John David Parkinson, London, and Edward Charles Heffer, Middlesex, all of England, assignors to Taylor Woodrow Construction Limited, Southall, Middlesex, England
Filed March 7, 1969, Ser. No. 805,182
Claims priority, application Great Britain, March 8, 1968, 11,556/68
Int. Cl. G01b 5/30
U.S. Cl. 73—88 E 7 Claims

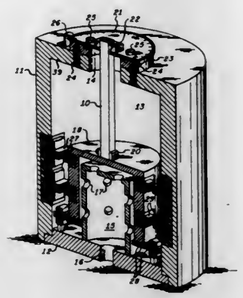


A strain gauge incorporating a length of wire maintained under a predetermined tension and an electric magnetic device for plucking the wire at substantially the mid point of its length, the wire being disposed in a hollow spacer tube assembly comprising an outer tube formed of a material such as ebonite which while being longitudinally compressible nevertheless has a lateral stiffness sufficient to withstand forces which may normally be expected to be applied thereto when in use, and an inner tube or liner of brass or other equivalent material made up of at least two axially aligned lengths of tube so arranged that at least one gap or space will be present in the overall length of said inner tube or liner.

3,675,475
MATERIAL TESTING DEVICE FOR THE CONTINUOUS MEASUREMENT OF STRESS RELAXATION
Warren D. Weinstein, Huntington Station, N.Y., assignor to Sperry Rand Corporation
Filed May 25, 1970, Ser. No. 40,032
Int. Cl. G01b 7/16
U.S. Cl. 73—89 3 Claims

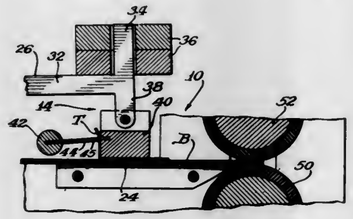
An apparatus in which one end of a material test specimen is affixed to a calibrated plate on a stationary housing and the other end is affixed to a rotatable element within the housing. A calculated stress is applied to the test specimen by rotating the calibrated plate through a specific angular displacement. An electromagnetic spring field applies a torque proportional to rotational displacement of the test specimen. The angular displacement is sensed by an electromagnetic pick-off which controls a torque motor that applies a sufficient torque to the rotatable element to maintain it at a null position. Any stress relaxation within the specimen results in movement of the rotatable element. Such movement is sensed by the electromagnetic pick-off which generates an error signal that is

applied to the torque motor which returns the rotatable element to its null position. The error signal is a measure of the



stress relaxation within the material and is routed to a recorder.

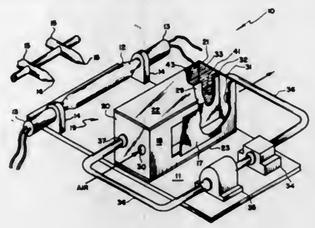
3,675,476
INK BLEED TESTER
Paul C. Zapfe, Green Bay, Wis., assignor to Fort Howard Paper Company
Filed June 5, 1970, Ser. No. 43,703
Int. Cl. G01n *33/34, 33/36*
U.S. Cl. 73—150 **6 Claims**



A device for testing printed fibrous material, such as paper napkins and the like for resistance to ink bleed. The device includes a base and a support on the base for receiving the material to be tested while pressure is applied to the material, when it is stationary, for determining bleed resistance of the fibrous test material as it is undergoing static pressure. Means are also provided for pulling adjacent material through the receiving means while pressure is being applied to the test material, so as to determine the resistance of the test material to dynamic pressure or rubbing.

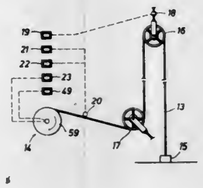
3,675,477
TESTING METHOD AND DEVICE USING FILTERED ULTRA VIOLET RADIATION
Richard A. Allen, Lincoln, Mass., assignor to Avco Corporation, Cincinnati, Ohio
Filed Oct. 29, 1970, Ser. No. 85,207
Int. Cl. G01b *19/08*; H01j *5/16*
U.S. Cl. 73—150 **6 Claims**

This invention relates in general to an improved and efficient technique for providing ultra violet radiation and particularly to an apparatus which incorporates this ultra violet radiation as a source for testing color fastness or fading characteristics of various materials simulating the suns's properties. The ultra violet radiation is limited to a narrow effec-



tive region by the use of specially selected liquid and glass filters spaced from the light source.

3,675,478
APPARATUS FOR FACILITATING THE DESCENT OF WELL TOOLS THROUGH DEVIATED WELL BORES
Horace A. Nystrom, Houston, Tex., assignor to Schlumberger Technology Corporation, New York, N.Y.
Division of Ser. No. 821,187, May 2, 1969, Pat. No. 3,554,284.
This application April 30, 1970, Ser. No. 33,416
Int. Cl. E21b *47/00*
U.S. Cl. 73—152 **5 Claims**

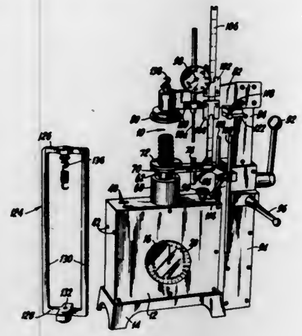


In the preferred embodiment of the new and improved apparatus disclosed herein, a well tool is dependently suspended from an electrical logging cable that is uniquely constructed to withstand limited axial compressive loading without undue lateral bending. In this manner, by selectively moving the suspension cable downwardly from the surface, corresponding axial compressive forces are developed in the lower portion of the cable, which forces are, in turn, imposed on the well tool for assisting its continued descent through substantially-deviated well bore intervals. The new and improved apparatus also includes signaling means for providing indications at the surface that these forces are moving the well tool in relation to the well bore.

3,675,479
SPRING TESTER
Harold C. R. Carlson, 3457 Weidner Avenue, Oceanside, N.Y.
Filed Sept. 10, 1970, Ser. No. 71,038
Int. Cl. G01n *3/26*; G01l *1/04*
U.S. Cl. 73—161 **6 Claims**

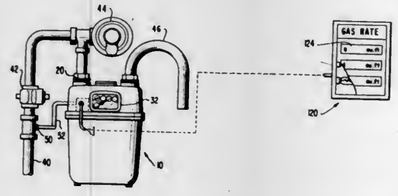
A spring tester is provided with an easily changeable and readily adjustable load cell assembly for indicating the force exerted by a spring. A second indicator provides a measurement of the deflection of a spring under a given load. In combination with the load cell assembly, means in the form of an adjustable force gage positioned intermediate the sample under test and the load cell are provided for measuring the compression or extension of a spring at a given force. Com-

pensating means are provided for the force gage. The apparatus also includes quickly adjustable, manually operated



means for measuring the force of a spring at two different compressed lengths.

3,675,480
PRESSURE DEMAND METER FOR FLUID FLOW MEASUREMENT
Stephen Lew Feldman, Baltimore, Md., assignor to Envirometrics, Inc.
Continuation-in-part of Ser. No. 17,073, March 6, 1970. This application June 11, 1970, Ser. No. 45,329
Int. Cl. G01f *1/02*
U.S. Cl. 73—199 **8 Claims**



The meter includes a quantity meter, pressure measuring device and a register. The outputs of the pressure measuring device and quantity meter are correlated to provide a numerical readout at the register proportional to the pressure of the fluid in the fluid line and a quantity of flow whereby demand on the fluid system is reflected in the quantity readout.

3,675,481
MOLDED PLASTIC FLOWMETER
James W. Phillips, Michigan City, Ind., assignor to Dwyer Instruments, Inc
Continuation-in-part of Ser. No. 722,931, April 22, 1968. This application Dec. 7, 1970, Ser. No. 95,472
Int. Cl. G01f *1/00*
U.S. Cl. 73—209 **14 Claims**

A flowmeter with the tapered tube and conduit fittings specially formed as a one-piece plastic construction to retard breakage and to minimize fragmentation. A sectionally formed mounting plate assembly has pipe threaded bushings mounted to insert into and thereby connect with the conduit fittings and integral flowmeter tube. The mounting plate is sectionally formed so that it can expand and contract with expansion and contraction of the flowmeter tube. The mounting

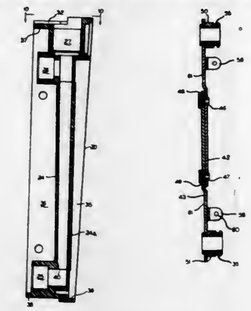
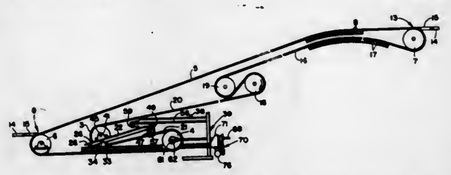


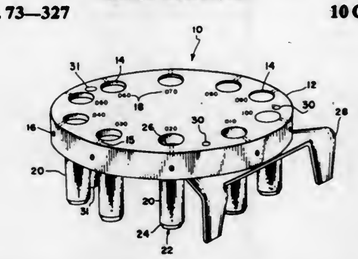
plate takes much of the piping connection strains without transmitting these to the flowmeter tube.

3,675,482
AUTOMATIC TENSION SENSING APPARATUS FOR BELT CONVEYOR
John H. Hewitt, Tallmadge, Ohio, assignor to Goodyear Tire & Rubber Company, Akron, Ohio
Filed Oct. 14, 1970, Ser. No. 80,636
Int. Cl. G01l *5/06*
U.S. Cl. 73—144 **8 Claims**



A sensitive measurement of tension in a belt is provided by movement of a belt carrying pulley mounted on a pivoted arm extending from the pivot to a position beyond the pulley where a calibrated spring permits limited movement of the arm in opposition to belt forces on the pulley. The movement of the arm actuates limit switches which are operatively connected to a take-up pulley mechanism for maintaining the desired tension in the belt.

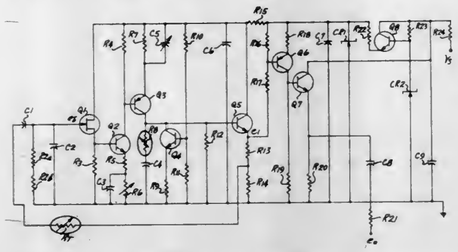
3,675,483
WATER SURFACE DEPTH INSTRUMENT
Quinton C. David, IV, 1364 N. Queen Street, Hampton, Va.
Filed Feb. 23, 1971, Ser. No. 117,984
Int. Cl. G01f *23/02*
U.S. Cl. 73—327 **10 Claims**



An instrument for measuring the depth of liquid on a planar surface having particular application to measuring the depth

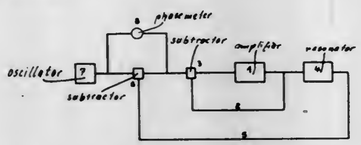
of water on an airport runway. The instrument can be set on the runway in depth variations of 0.01 inch and less surface and will give an immediate reading of the depth of water covering the runway.

3,675,484
APPARATUS FOR TEMPERATURE MEASUREMENT
Arthur M. Pederson, Mercer Island, Wash., assignor to The Battelle Development Corporation, Columbus, Ohio
Filed June 5, 1970, Ser. No. 43,827
Int. Cl. G01k 1/08, 7/24, 13/02
U.S. Cl. 73—362 AR **17 Claims**



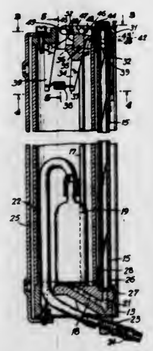
An improved apparatus for temperature measurement which minimizes sensing element self-heating error and instrument ambient heating error when used as an oceanographic thermometer includes a frequency-selective network having a thermistor as a temperature sensing element thereof. The network is connected in the feedback loop of an AC amplifier whose output voltage is stabilized by an automatic gain control circuit at a predetermined, low value. In one embodiment, the output voltage is connected to the apparatus output terminal through an isolation circuit, and the AGC circuit comprises a second thermistor in shunt with the output voltage. In a second, improved embodiment, the output voltage is amplified by a second amplification stage and applied to a level detector circuit and to an isolation circuit from which the apparatus output is taken. The level detector in turn controls the impedance of a field effect transistor in shunt with the output voltage. The requirements for a successful oceanographic thermometer design are discussed and related in detail to the embodiments noted, and the performance of working models of each embodiment with regard to these requirements is set forth.

3,675,485
METHOD AND APPARATUS FOR MEASURING VARIATIONS IN A QUANTITY WITH RESPECT TO A KNOWN REFERENCE VALUE
Julien M. Loeb, Cloud, France, assignor to Compagnie Generale De Ceophysique, Paris, France
Filed June 18, 1969, Ser. No. 834,397
Claims priority, application France, June 19, 1968, 15535
Int. Cl. G01v 7/00
U.S. Cl. 73—382 **7 Claims**



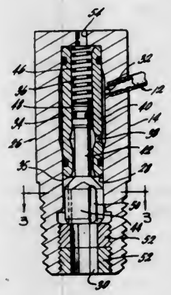
A method is provided for measuring the deviations of a quantity from the standard value for the same quantity, in the presence of stray interferences of greater amplitude and higher frequency than the variations to be measured. The procedure for effecting the method consists essentially in measuring the instantaneous values of the aforesaid quantity; eliminating all instantaneous values falling outside of a limited region of amplitude variations of the aforesaid quantity, inside of which the standard value of the quantity is located; determining the average, in time, of the instantaneous values situated within said region; and determining the difference between the average and the standard value of the aforesaid quantity, which difference constitutes the deviation sought. Apparatus is also provided for the application of the method to vibrating-wire gravimetry.

3,675,486
INSTRUMENT WITH REPLACEABLE TUBE
Irving A. Speelman, Roslyn Heights, N.Y., assignor to Propper Manufacturing Co., Inc., Long Island City, N.Y.
Filed April 16, 1970, Ser. No. 29,186
Int. Cl. G01l 7/18; A61b 5/02
U.S. Cl. 73—401 **6 Claims**



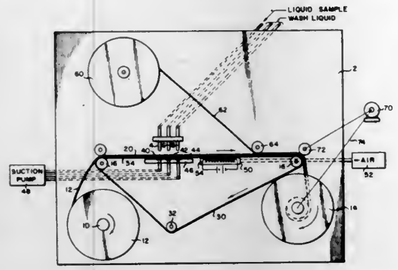
A sphygmomanometer having a replaceable measuring tube which has its lower end received in a seat and its upper end received in a cap which presses the measuring tube into the seat. The cap is spring-biased into engagement with the top of the measuring tube and the cap may be raised by means of a normally hidden lever to release the measuring tube for removal and replacement.

3,675,487
SAFETY MECHANISM FOR PRESSURE GAUGE
Otto Mueller, 13 Byfield Lane, Dearborn, Mich.
Filed Sept. 14, 1970, Ser. No. 71,843
Int. Cl. G01l 7/04
U.S. Cl. 73—414 **2 Claims**



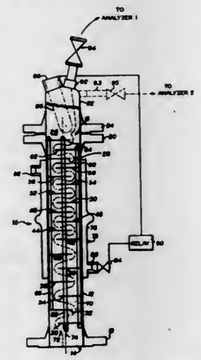
Apparatus for limiting the maximum pressure to which a pressure gauge can be subjected. A spring biased differential pressure valve is maintained in a normally opened position in the inlet fitting of the pressure gauge so that the gauge will be protected from exposure to pressures in excess of its rated capacity.

3,675,488
APPARATUS FOR TRANSPORT AND STORAGE OF LIQUID SPECIMENS FOR RADIO-IMMUNOASSAY FOR INSULIN
Josef Karel Viktora, Hyattsville, and Albert Jozel Baukal, Silver Spring, both of Md., assignors to The Research Foundation of the Washington Hospital Center, Washington, D.C.
Filed Sept. 11, 1969, Ser. No. 857,034
Int. Cl. G01n 1/00
U.S. Cl. 73—421 R **2 Claims**



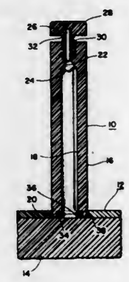
Samples from a number of individual liquid specimens containing varying and unknown amounts of insulin are made radioactive and are sequentially supplied to a continuously moving paper strip to impregnate the strip with separate spaced specimens along its length, which are then washed and dried. Cellophane tape is continuously adhesively united to the strip bearing the impregnated and dried specimens and the composite strip and tape are stored in a roll from which the strip may be taken for examination and analysis of the separate specimens.

3,675,489
APPARATUS FOR THE DRAWING OF SAMPLES OF GASEOUS MIXTURES TO BE ANALYZED
Francesco Garilli, Catania, and Michelangelo Marino, Augusta (Siracusa), both of Italy, assignors to Montecatini Edison S.p.A., Milan, Italy
Filed Sept. 18, 1970, Ser. No. 73,462
Int. Cl. G01n 1/22
U.S. Cl. 73—421.5 R **8 Claims**



An apparatus for drawing samples of gaseous mixtures to be analyzed, such as the gaseous mixtures present at the outflow of a cracking furnace, includes a plurality of baffles arranged longitudinally inside a hollow columnar passageway so as to provide a serpentine pathway for the gaseous mixture flowing therethrough. A thermoregulator, which comprises a sleeve or jacket through which a temperature controlling fluid such as air or steam flows, surrounds the columnar passageway substantially along its length to regulate the temperature therewithin. A thermometer located at the head of the passageway, near a sampling duct through which the desired gaseous mixture is passed to an analyzer, controls the flow of fluid within the thermoregulator by sensing the temperature of the passing mixture so as to maintain this temperature at a desired value. This value is dependent on the fraction desired for analysis. Solid particles contained in a mixture are deposited on the baffles as the mixture flows through the serpentine pathway. Self-washing of these baffles is accomplished by condensation of the higher boiling fractions.

3,675,490
DETECTION SYSTEM FOR INSECTICIDES
Arnold W. Blomquist, St. Paul, Minn., assignor to Sci-Med, Inc., Minneapolis, Minn.
Filed June 8, 1970, Ser. No. 44,136
Int. Cl. G01n 1/04
U.S. Cl. 73—425 **5 Claims**



The invention relates to a kit for obtaining samples in solution form of spills of suspected organo-phosphorous insecticides. An essential part of the kit is a small sponge saturated with a solvent such as chloroform. The sponge is attached to a tubular handle and, in operation, the sponge is pressed down on a small quantity of the suspected insecticide which becomes dissolved into the solvent to form a solution containing the suspected insecticide. Upon lifting the sponge a portion of the solution is drawn into the sponge. A portion of the solution drawn into the sponge is caused to be directed into and retained in the bore of the handle where it is then available for analysis.

3,675,491
DEVICE FOR WITHDRAWING SAMPLES
Philippe Robert Guillet, Joinville Le Pont, France, assignor to L'Oreal, Paris, France
Filed Nov. 27, 1970, Ser. No. 92,989
Claims priority, application France, Jan. 14, 1970, 7001231
Int. Cl. G01n 1/12
U.S. Cl. 73—425.4 R **7 Claims**

A device for withdrawing samples comprises a sample chamber provided with a lid spring biassed to close the

chamber. The chamber is removably attached to a supporting tube by means of a collar fixed to the tube, and a rod slidably



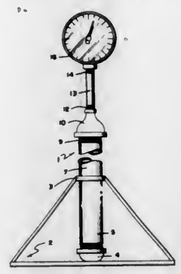
mounted in the tube cooperates with a lever attached to the lid so that the lid may be opened by operating the rod.

3,675,492
MEASURING SYRINGE
Luis H. Tejera, Central Islip, N.Y., assignor to Mallinckrodt Chemical Works, St. Louis, Mo.
Filed June 10, 1970, Ser. No. 45,133
Int. Cl. G01n *1/14*
U.S. Cl. 73—425.6 16 Claims



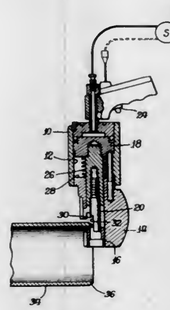
A measuring syringe having an elongated plastic body including a narrow elongated passage opening into one end of the body which removably receives a hollow disposable tip for drawing and expelling a liquid into the tip by means of an elongated piston slidable in the passage. A second enlarged passage in the upper body section which opens into the opposite end of the body slidably receives an actuating stem whose bottom is connected to the piston and whose top projects from the body and is provided with an apertured flange for finger operation. A predetermined quantity of liquid may be drawn and expelled; the quantity being measured by stop members projecting from the actuating stem to be engageable with a stop surface on the body in the second passage. During manufacture, the stem is formed with a plurality of stops spaced along its length and corresponding to different quantities of liquid to be measured. To accomodate the stop members, an elongated slot is formed through one side wall of the body which receives the stop members and also provides visibility thereto.

3,675,493
GROUT EXPANSION PRESSURE METER AND METHOD FOR USING SAME
David G. Hicks, 202 Jones Valley Drive S.W., Huntsville, Ala., and Lawrence P. Varner, 714 Pettus St., Selma, Ala.
Filed May 4, 1970, Ser. No. 33,999
Int. Cl. G01l *7/00*; G01d *21/00*
U.S. Cl. 73—432 R 2 Claims



The invention relates to a grout expansion pressure meter and the method for its use. Grout containing a fluidifier is poured into a container and the pressure is measured at various time intervals by means of a pressure gage placed on the container.

3,675,494
PIPE TESTING
John H. Becque, Glen Ellyn, Ill., assignor to AMSTED Industries Incorporated, Chicago, Ill.
Filed Sept. 23, 1970, Ser. No. 74,559
Int. Cl. G01n *3/28*
U.S. Cl. 73—432 R 4 Claims

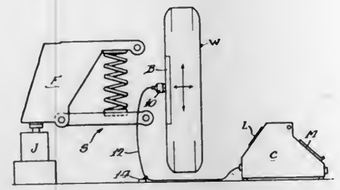


A small segment is sheared from the end of a cast iron pipe and examined for cracks. An uncracked specimen indicates ductile pipe, whereas a cracked specimen indicates that the pipe does not meet American Standards Association standards.

3,675,495
WHEEL BALANCING APPARATUS
Charles W. MacMillan, Rock Island, Ill., assignor to Applied Power Industries, Inc.
Filed Feb. 25, 1970, Ser. No. 14,073
Int. Cl. G01m *17/02*
U.S. Cl. 73—466 9 Claims

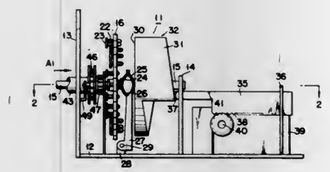
Method and apparatus for balancing vehicle wheels by stroboscopic light balancing means wherein the vehicle wheel

is freely suspended and driven up to high speed, the vibrations of the rotating wheel are sensed, and the stroboscopic light is flashed on the wheel in timed relationship to the vibrations thereof to given an indication of the location of the imbalance causing the vibration; characterized by improved pick-up means consisting essentially of a housing adapted to be adhered to a part of the vehicle that is normally stationary but which vibrates responsively to the vibrations caused by wheel



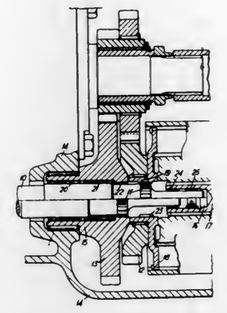
imbalance, and accelerometer means mounted in said housing having a plane of sensivity adapted to be disposed in the vertical direction for picking up static imbalance and in the horizontal direction for picking up dynamic imbalance; and further characterized by derivation of signals from said accelerometer means at a position remote from the rotating wheel, coupling each derived signal to a pulse counter for determining wheel speed, and determining wheel imbalance at a pre-selected speed.

3,675,496
CHANNEL SELECTING DEVICE
Atsuhiro Yasuda, Kawasaki, and Koichi Kobayashi, Yokohama, both of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan
Filed Aug. 25, 1970, Ser. No. 66,827
Claims priority, application Japan, Aug. 26, 1969, 44/80497; March 10, 1970, 44/22710
Int. Cl. F16h *35/18*
U.S. Cl. 74—10.6 13 Claims



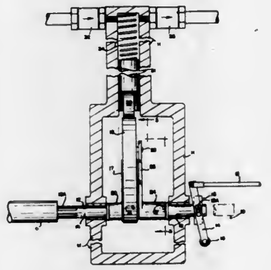
A channel selecting device for UHF television channels comprises a channel selecting shaft, a channel selecting cylinder axially slidably mounted on the channel selecting shaft and having a helical cam surface on one side, means for stepwisely rotating the channel selecting shaft and channel selecting cylinder, a plurality of circumferentially and equally spaced apart fine tuning screws, fine tuning means for selectively operating one of the screws to move it in the axial direction in accordance with the axial movement of the selectively operated fine tuning screw and with the circumferential displacement of the helical cam surface and channel selector operating means normally urged against one side surface of the channel selecting cylinder to follow the axial movement thereof.

3,675,497
SLIDING SHAFT POWER TAKE OFF SPEED CHANGE
Alfred William Thomas, Earl Shilton, England, assignor to Massey-Ferguson Services N.V., Curacao, Netherlands Antilles
Filed Jan. 15, 1971, Ser. No. 106,823
Claims priority, application Great Britain, Jan. 24, 1970, 3,557/70
Int. Cl. F16h *37/00*; F16d *11/04*, *1/06*
U.S. Cl. 74—15.4 11 Claims



Apparatus is provided for the purpose of driving a power-take-off shaft at one of two speeds the change of speed being effected by moving the shaft and its bearing housing longitudinally of the shaft so that a gear on the shaft meshes with one or other of two drive gears, the arrangement being that the housing is retained in one or other of the two positions by a spring urged ball locking device which can be easily unlocked to permit such movement.

3,675,498
TIMED VARIABLE OUTPUT PUMP
Charles H. Cuda, 9405 N.W. 9th Ave., Vancouver, Wash.
Filed Aug. 24, 1970, Ser. No. 66,426
Int. Cl. F16h *25/08*
U.S. Cl. 74—55 4 Claims

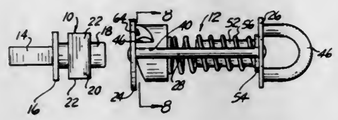


A pump having a piston of variable stroke driven by a pair of cooperating eccentrics both of which are adjustably carried

by a single driven shaft. The shaft is provided with helical grooves within which ride followers for positioning of the eccentrics upon axial shaft movement. The outer eccentric functions as a cam to drive a follower and pump piston. The eccentricity of the outer eccentric may be varied by moving the outer eccentrics center progressively towards the axis of the shaft to adjust the stroke of the pump piston.

3,675,499
COUPLING

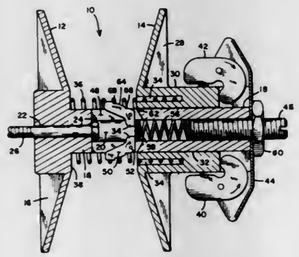
Andre Marosy, 24731 Kipling, Oak Park, Mich.
Continuation-in-part of Ser. No. 795,501, Jan. 31, 1969, Pat. No. 3,540,087, and a continuation-in-part of Ser. No. 782,176, Dec. 9, 1968, Pat. No. 3,540,091. This application Sept. 18, 1970, Ser. No. 73,346
Int. Cl. A44b *17/00*
U.S. Cl. 24—201 A **8 Claims**



A quick connect and disconnect coupling particularly adapted for connecting chains, wires, cables or other members together. The coupling generally comprises a male member and a female member with the female member including a slide member urged by a spring toward an end plate. The male member includes laterally extending flanges and the end plate has a slotted opening for receiving the male member. Locking the members together is accomplished by inserting the male member through the opening and against the slide member to move the slide member away from the end plate, rotating the male member and then releasing the male member to release the spring to thereby clamp the flanges of the male member between the slide member and the end plate.

3,675,500
STEPWISE MOVABLE V-BELT DRIVE PULLEY

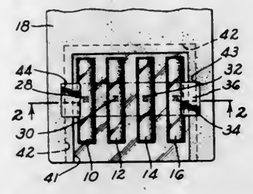
Robert V. Albertson, 2100 Shady Wood Road, Minneapolis, Minn.
Filed Nov. 4, 1970, Ser. No. 86,848
Int. Cl. F16h *55/52*
U.S. Cl. 74—230.17 E **6 Claims**



A V-belt drive pulley transmission having a pulley with a fixed flange and an axially movable flange cooperating to form a variable diameter pulley for effecting a change in the "gear ratio" of the transmission. The displacement of the axially movable flange is a function of the rotational speed of the pulley. Further, a multi-step detent device comprising a spring biased pivotally mounted lever with detents therein is disposed between the fixed and the axially movable flange so that the displacement of the movable flange occurs in discrete steps to produce a "shifting" effect between low gear and high gear.

3,675,501
DISPOSABLE THERMOMETER

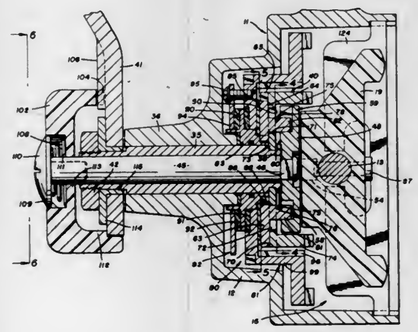
Hendrik De Kanter, Santa Ana, Calif., assignor to De Kanter-American Quality, Lake Arrowhead, Calif.
Filed March 19, 1971, Ser. No. 126,049
Int. Cl. G01k *11/08*
U.S. Cl. 73—358 **7 Claims**



A disposable thermometer comprising a series of separate sealed chambers. A temperature-sensitive material fills each chamber and each is adapted to change from a solid to a liquid state when exposed to heat above a different predetermined temperature. A quantity of magnetic metal particles is suspended in each temperature-sensitive material. The particles in each chamber initially are poled in a common direction along different, substantially parallel lines so as to rapidly repel each other and move from parallel alignment as the temperature-sensitive material in which they are suspended begins to change to a liquid state thereby providing an accurate and visual indication that the thermometer has been exposed to heat above the predetermined temperature associated with the temperature-sensitive material.

3,675,502
SELECTIVELY MANUAL OR AUTOMATIC SHIFT CONTROL FOR A TWO SPEED DRIVE IN A FISHING REEL

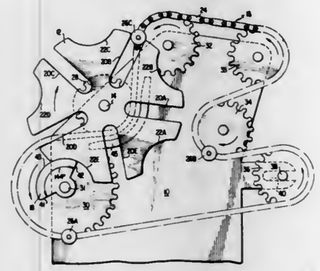
Thomas F. Sarah, Akron, Ohio, assignor to Shakespeare of Arkansas, Inc., Fayetteville, Ark.
Filed March 8, 1971, Ser. No. 121,696
Int. Cl. F16h *3/08*
U.S. Cl. 74—369 **15 Claims**



A variable drive for fishing reels, the drive providing high and low speed transmission ratios with either manual or automatic selection therebetween. Each speed ratio has a corresponding gear train operatively connected between a driving and a driven shaft. The two gear trains each have a driving gear carried on the driving shaft. The first and second driving gears mesh with corresponding first and second pinions carried on the driven shaft. The first pinion is connected to rotate only with said driven shaft, but the second pinion is mounted so as to be movable with respect to the driven shaft. A unidirectional clutch means operatively connects the two pinions so that the first pinion can overrun the second pinion but not vice versa. In one embodiment the first driving gear is rotatably carried on, and the second driving gear is affixed to, the driving shaft. In this embodiment a latch means selectively interconnects the first and second driving gears. When the gears are not interconnected by the latch means the ratio of the drive train incorporating the second driving gear is obtained, and when the two driving gears are interconnected the ratio of the drive train incorporating the first driving gear is obtained. In the other embodiment the first driving gear is an assembly having a collar-like hub portion rotatably carried on the driving shaft and a slip-clutch coupler, adjustable for the torque loading at which it slips, operatively connecting the hub portion to a gear portion. As in the first mentioned embodiment, a first latch means is operative between the second driving gear and the gear portion of the first driving gear assembly to control the manual selection of one or the other gear trains. In addition, a second latch means is operative between the second driving gear and the hub portion of the first driving gear assembly to incorporate the slip-clutch coupler within the drive train and thereby establish automatic selection of the transmission ratio in response to retrieval resistance. A cam means coordinately controls the latch means.

3,675,503
CHAIN DRIVEN INDEXING GENEVA MECHANISM

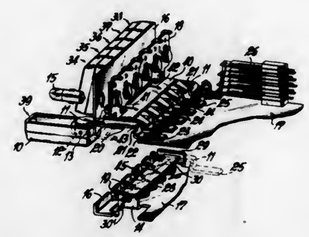
Pravin M. Upadhyay, Phillipsburg, N.J., assignor to Bell and Howell Company, Phillipsburg, N.J.
Filed Dec. 24, 1970, Ser. No. 101,303
Int. Cl. F16h *55/04, 27/04*; B23q *17/02*
U.S. Cl. 74—436 **17 Claims**



A mechanism wherein a chain drive rotates a geneva wheel is disclosed. A plurality of roller bearings are mounted on the chain drive and coact with driving slots formed in the geneva wheel. A cam that periodically registers with indexing indentations formed in the geneva wheel for locking the geneva wheel in predetermined positions is also disclosed. The chain drive is moved by an arrangement of sprockets, one of which rotates about the same axis as does the geneva wheel. The cam is mounted on another of these sprockets and rotates therewith. The position of one of the sprockets relative to the other sprockets is adjustable so as to control tension on the chain drive.

3,675,504
SEQUENTIAL KEY LOCKING AND RELEASING ARRANGEMENT

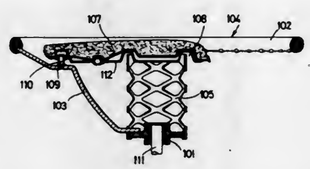
Eduard Schuh, Villingen, Germany, assignor to Kienzle Apparate GmbH, Villingen, Schwarzwald, Germany
Filed April 27, 1971, Ser. No. 137,860
Claims priority, application Germany, April 29, 1970, P 20 21 007.5
Int. Cl. G05g *11/00*
U.S. Cl. 74—483 PB **10 Claims**



A taximeter is to be set to different operational conditions by corresponding keys. It is required that a certain starting condition, namely the condition "vacant" is first obtained by operation of a "vacant" key, before any other condition is selected, which is accomplished by locking all keys in a normal inoperative position, except the "vacant" key which, when actuated, unlocks all other keys for subsequent operation.

3,675,505
SAFETY STEERING WHEEL FOR POWER VEHICLES

Bodo Henning, Braunschweig, Germany, assignor to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Germany
Filed Jan. 22, 1970, Ser. No. 4,855
Claims priority, application Germany, March 12, 1969, P 19 12 528.1
Int. Cl. B62d *1/04*
U.S. Cl. 74—552 **2 Claims**



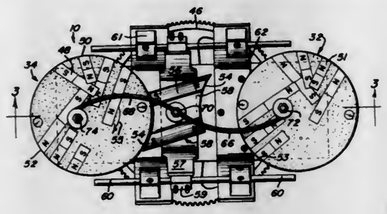
A safety steering wheel is provided with a deformable member constructed from a flat sheet of metal having rhombic shaped holes cut therein by rolling the latter to form a cylinder. The deformable member is disposed atop the hub of the wheel between the hub and the operator and it is capable of being deformed laterally as well as axially to absorb shocks.

3,675,506
MAGNETIC ROTOR ASSEMBLY

Nick A. Leone, Lohrville, Rte. 1, Redgranite, Wis.
Continuation-in-part of Ser. No. 625,804, March 24, 1967, abandoned. This application July 14, 1970, Ser. No. 54,804
Int. Cl. G05g *1/00*
U.S. Cl. 74—572 **9 Claims**

A magnetic flywheel assembly in which a pair of drivingly interconnected rotors produce reciprocatory movement of a

magnetic member to mechanically and magnetically vary the torque exerted on each rotor during each rotational cycle. The reciprocatory member is slidably mounted between the rotors



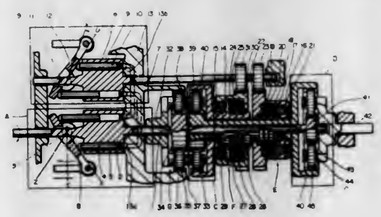
and connected by links and crankpins to the rotors. Magnetic elements are carried by the reciprocatory member and the rotors.

3,675,507

HYDRAULIC TRANSMISSION MECHANISM FOR HEAVY ROLLING STOCKS AND THE LIKE

Toshio Takekawa, Higashi-machi, Japan, assignor to Takekawa Tekko Kabushiki Kaisha, Mizuho-Ku, Nagoya, Japan

Filed June 22, 1970, Ser. No. 48,107
Claims priority, application Japan, Oct. 3, 1969, 44/79095
Int. Cl. F16h *47/04*
U.S. Cl. 74—687 **4 Claims**



A hydraulic transmission mechanism for heavy rolling stocks and the like, which provides a steplessly variable speed change ratio, while ensuring a very high output torque at a reduced speed. An assembly of a hydraulic pump and a hydraulic motor is connected to the input shafts of the transmission, and the output shaft of the transmission is operatively connected to both the input and output shaft from the hydraulic motor, in a selective manner, through two clutch assemblies and at least two differential gear means.

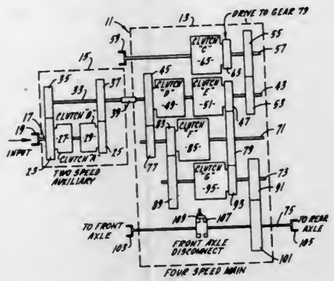
3,675,508

POWERSHIFT TRANSMISSION

Wallace J. Blank, Oshkosh, Wis., assignor to Oshkosh Truck Corporation, Oshkosh, Wis.

Filed Sept. 4, 1970, Ser. No. 69,588
Int. Cl. F16h *3/02, 3/08*
U.S. Cl. 74—74.5 **6 Claims**

An eight speed vehicle transmission including a four speed main gear box and a two speed splitter gear box located on the input side of the four speed gear box. The four speed main gear box is detachable from the two speed splitter gear box for use with lighter weight vehicles. The transmission includes oil actuated multiple disk, power shift clutches for actuating constant mesh spur gears. The clutches are operated in sequentially selected combinations by means of hydraulic fluid under pressure regulated by solenoid operated pilot valves. The solenoids are operated by relays through means of a selector switch. The range shift in the four speed main transmission is obtained by the use of two single clutch packs on the third shaft is used for the low range torque with the torque with the torque multiplication taken on the output side of this clutch. The high range torque is handled by the single clutch pack on



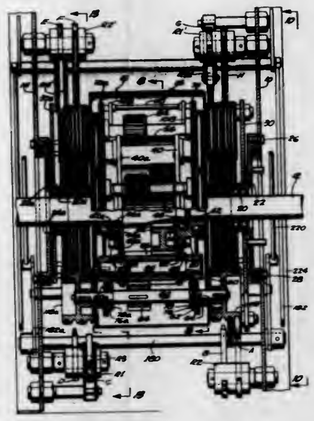
the fourth shaft. The output shaft of the main gear box has connections for rear and front axles. The output torque to the front axle is controlled by a torque limiter. Front axle drive disconnect means are also provided.

3,675,509

STEPLESSLY VARIABLE SPEED CHANGER

Louis Hubertus Widdershoven, Kerkrade, Netherlands, assignor to N. V. Nederlandsche Steenkolenmijnen "Wilhelmina-Sophia," , Spekholzerheide (Kerjrade-West), Netherlands

Filed Aug. 5, 1970, Ser. No. 61,182
Int. Cl. F16h *3/44*
U.S. Cl. 74—793 **17 Claims**



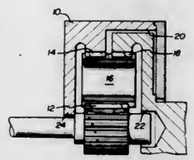
The invention is a steplessly variable or adjustable speed transmission for varying the ratio of speed of drive from one shaft to another. There is a planetary system which includes a sun gear on the output shaft. There are four planetary gears equally spaced around the shafts which are driven in circular orbits around the shafts. Carried also by the planetary system are additional gears providing driving relationships between the planetary gears and the sun gear. On the shafts of the planetary gears are grooved drive pulleys. Flexible lines or belts attached at their ends are wrapped around the pulleys. When the input shaft drives the pulleys in their orbits, the pulleys have traction with the belts so that the pulleys are driven about their axes and through the planetary gear trains they drive the sun gear on the output shaft. The shafts of the planetary gears which also carry the grooved pulleys are carried by eccentric wheels or discs which are rotatable so that the radial distance of the grooved pulleys from the center line of the input and output shafts can be varied, for changing the speed ratio.

3,675,510

SPEED REDUCER

Anderson Duggar, Jr., 4350 Delemere Blvd., Royal Oak, Mich.

Filed Oct. 12, 1970, Ser. No. 79,817
Int. Cl. F16h *1/36*
U.S. Cl. 74—801 **5 Claims**



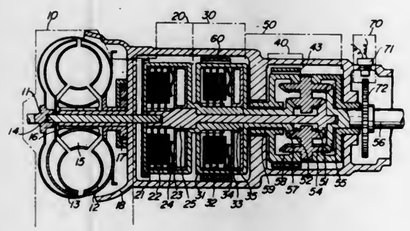
A speed reduction planetary transmission comprises an input sun gear, a series of planet gears meshing with the sun gear and a fixed ring gear, and an output ring gear. The number of teeth on the two ring gears differs by a very small number. The planets are free-floating and constructed to resiliently yield along their diametral dimension, to permit assembly in spite of an intentional interference fit between the gears. This eliminates backlash and distributes the load equally among all the planets. A modified embodiment utilizes a stepped planet gear, part of which meshes with an idler sun gear.

3,675,511

AUTOMATIC TRANSMISSION SYSTEM

Hisato Wakamatsu, Kariya-shi; Hisasi Kawai, Toyohashi-shi; Shin Ito, and Seitoku Kubo, both of Toyota-shi, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota-shi, Japan and Nippondenso Kabushiki Kaisha, Kariya-shi, Aichi-ken, Japan

Filed Nov. 7, 1969, Ser. No. 874,934
Claims priority, application Japan, Feb. 28, 1969, 44/15742
Int. Cl. B60k *21/00*
U.S. Cl. 74—866 **6 Claims**



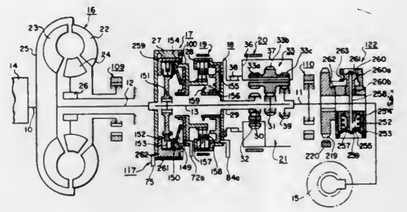
An automatic transmission system having means for electrically detecting the load on the engine and the speed of the vehicle, an electronic control device operative by receiving the detected signals to issue speed changing instructions best suited for the particular speed changing condition, and a hydraulic actuating circuit for operating the actuators in response to the speed changing instructions to thereby change the gear ratio.

3,675,512

CONTROL MECHANISM FOR AUTOMATIC SPEED CHANGE ASSEMBLY

Koichiro Hirozawa, Kariya, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya City, Japan

Filed May 25, 1970, Ser. No. 40,236
Claims priority, application Japan, May 23, 1969, 44/40489
Int. Cl. B60k *21/00*; F16h *47/00, 3/74*
U.S. Cl. 74—869 **4 Claims**



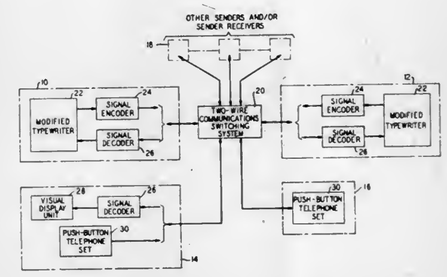
In an automatic speed change mechanism wherein the speed is changed by selectively engaging and disengaging a plurality of fluid operated friction devices, the line pressure is varied in accordance with the amount of torque being applied to a power transmission member, said power transmission member controlling a line pressure regulating valve for regulating said line pressure in proportion to the value of the transmitted torque applied to the power transmission member of the automatic speed change mechanism.

3,675,513

COMMUNICATIONS SYSTEM FOR ALPHANUMERIC INFORMATION EMPLOYING AUDIO TONE SIGNALLING

James Loton Flanagan, Warren; James Hughes Kronmeyer, Jersey City, and John Richard Nelson, Somerville, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed July 24, 1970, Ser. No. 58,074
Int. Cl. H04m *11/00*
U.S. Cl. 179—84 VF **11 Claims**

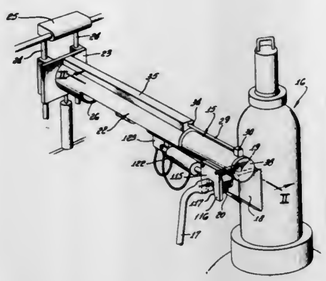


A communications system for exchanging alphanumeric information between remote stations, employing station apparatus (e.g., modified typewriters) capable of generating and responding to an audio tone code. The system is compatible with use of a push-button telephone instrument as an alternative sending station.

3,675,514
COMPOSITE POWER APPLYING MEANS

Raymond W. Walker, Huntington Beach, Calif., assignor to Deep Oil Technology, Inc., Long Beach, Calif.

Filed Dec. 17, 1970, Ser. No. 99,030
Int. Cl. B25b *17/00, 21/00*
U.S. Cl. 81—57.11 13 Claims

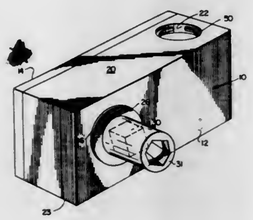


A composite power applying means to facilitate the making of a pipe connection in which a rotatable collar means is arranged to cause advancement or retraction of a pipe extending through the collar means which has external teeth engageable by cooperable means on said power means. The composite power means normally transmits rotative forces to the collar means, as by a worm gear, and is selectively operable to impart a reciprocal linearly directed force independently of the rotative force against the external teeth on the collar means for the purpose of effectively tightening or loosening a pipe connection under favorable or unfavorable working conditions, such as subsea well installations.

3,675,515
HIGH ENERGY IMPACT WRENCH ASSEMBLY

Louis L. Berg, Denham Springs, La., assignor to Creative Tool Company, Denham Springs, La.

Filed Sept. 30, 1970, Ser. No. 76,731
Int. Cl. B25b *13/06, 19/00*
U.S. Cl. 81—121 11 Claims

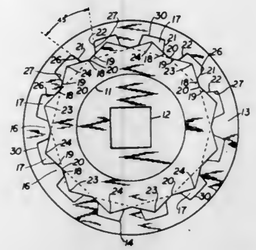


A wrench assembly operated by a high energy impact for use on large nuts or bolts. The assembly includes a heavy housing and a lever mounted for limited rotation within the housing. Gripping means for engaging and transmitting torque to the nuts or bolts project outwardly of the housing from the axis of rotation of the lever. The tang of the lever is located adjacent an opening in the top wall of the housing so that a power hammer can be positioned over the opening to impart blows through the opening to the tang and to transmit high turning forces to the gripping means.

3,675,516
WRENCH SPLINES, SPLINE DRIVES AND SIMILAR COUPLERS

Raymond G. Knudsen; James W. Price, and Gene E. Olson, all of Kenosha, Wis., assignors to Snap-On Tools Corporation, Kenosha, Wis.

Continuation-in-part of Ser. Nos. 321,955, Nov. 6, 1963, Pat. No. 3,273,430, and Ser. No. 589,153, Sept. 14, 1966, abandoned, and a continuation of Ser. No. 580,496, Sept. 19, 1966, Pat. No. 3,495,485. This application April 10, 1968, Ser. No. 742,987
Int. Cl. B25b *13/06*
U.S. Cl. 81—121 10 Claims

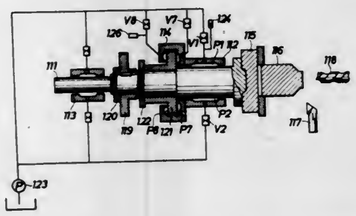


The invention involves multisided and specially shaped jaws or splines in wrench sockets or other rotary drivers or couplers configurated around an internal periphery to present uniformly spaced flat driving sides, jaws, or flanks for flat surface-to-surface engagement to impart torque turning loads to complemental flat multifaced externally polygonal fastener faces or driven coupler elements rather than to the corners thereof, and to accommodate hexagon, double hexagon, triple square, and complementally fluted or fluted or multi-splined nuts and the like. The internal and radially extending peripheral splines are configurated to present specially angulated engaging jaw sides or flanks with intervening and alternately spaced complemental grooves for flat surface engagement with the sides of either hexagon, double hexagon, triple square, or complementally splined nuts or the like without any corner engagement therewith.

3,675,517
ADAPTIVE AND NUMERICAL CONTROL MACHINE TOOL

Izumui Tadayoshi, Kawasaki, Japan, assignor to Tekko Kabushiki Kaisha Ikegai, Tokyo, Japan

Filed Feb. 19, 1971, Ser. No. 116,927
Claims priority, application Japan, Feb. 23, 1970, 45/1539; Feb. 23, 1970, 45/5396; March 23, 1970, 45/24323
Int. Cl. B23b *7/00*
U.S. Cl. 82—2 B 5 Claims



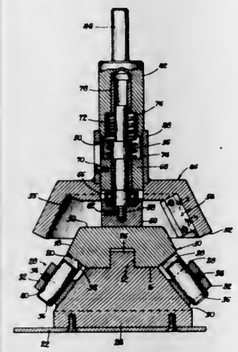
A numerically controlled machine tool with optimum adaptive control mechanism capable of properly altering the cutting section area and stopping of the cutting operation by

self-correction of the commands from pre-arranged reference program upon detection of a signal indicating a cutting force exceeding the reference limits and representing an abnormal pocket pressure and being derived as an electric output from a mechano-electric transducer during continuous checking of the pocket pressures of a hydrostatic bearing which support the cutting force being applied to the cutting tool throughout its cutting operation.

3,675,518
STOPPER RENEWAL DEVICE

Andrew G. Germain, Medina, and William G. Dressel, Elk Grove Village, both of Ill., assignors to Amsted Industries Incorporated, Chicago, Ill.

Filed Aug. 10, 1970, Ser. No. 62,361
Int. Cl. B23b *3/06*
U.S. Cl. 82—1 B 5 Claims

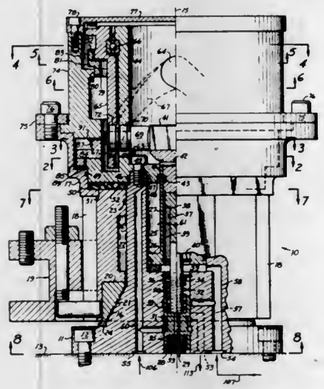


A base supports the underside of the stopper, and the cutter is rotatably mounted on a shaft having a head to clamp the stopper against the base during the cutting operation.

3,675,519
TWO POSITION TOOL HOLDER

Stuart McCullough, Covina, Calif., assignor to Textron Inc., Covina, Calif.

Filed Aug. 13, 1970, Ser. No. 63,545
Int. Cl. B23b *29/32*
U.S. Cl. 82—36 A 10 Claims

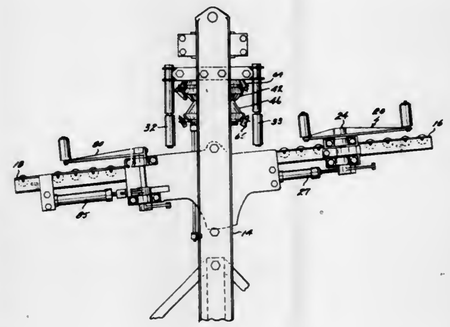


A tool holder according to the present disclosure includes a spindle adapted to be mounted to a machine. Housing means is journaled by the spindle for movement between first and second angular positions. Mount means carried by the housing means supports a work tool, and drive means is provided for rotating the housing between the first and second angular positions. Clamp means is provided for preventing relative rotation of the housing and the spindle when the housing means is in either its first or second angular position. Preferably, the drive means includes a hydraulic actuator which may comprise a rotor attached to the housing and a piston disposed for reciprocal movement along the axis of the tool holder. Cam and cam follower means is provided for relative operation between the rotor and piston so that when the piston moves between first and second axial positions, the rotor is rotated to drive the housing between its first and second angular positions. Indexing means is provided for accurately indexing the first and second angular positions of the housing, which means comprises a set of stops.

3,675,520
TIRE AWLING APPARATUS

Karl W. Klose, Findlay, Ohio, assignor to Cooper Tire & Rubber Company, Findlay, Ohio

Filed Jan. 28, 1970, Ser. No. 6,455
Int. Cl. B26f *1/34*
U.S. Cl. 83—2 3 Claims



An apparatus for automatically awling tires to permit easy escape of trapped gases which may have been enclosed or developed interiorly of the casing during manufacture or result from permeation from the inner chamber through the tubeless liner during the life of the tire. The apparatus automatically advances and centers a tire on the apparatus, after which it is vertically positioned and inflated preparatory to awling. After inflation, the apparatus automatically awls both sides of the tire simultaneously in a plurality of locations, after which the tire is deflated and ejected from the apparatus.

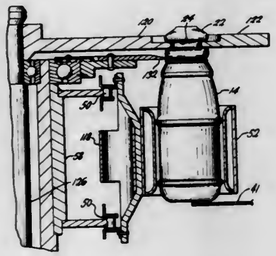
3,675,521
ARTICLE TRIMMER

William E. Ziegler, Ann Arbor, Mich., assignor to Hoover Ball and Bearing Company, Saline, Mich.

Filed May 28, 1970, Ser. No. 41,272
Int. Cl. B23b *3/04, 5/14*
U.S. Cl. 82—101 18 Claims

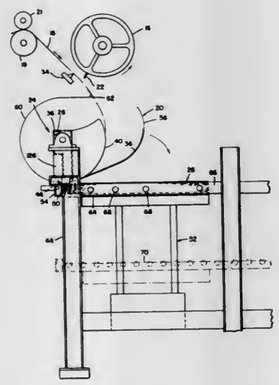
Apparatus for trimming the flash from the necks of molded hollow plastic articles. The flash on the upper end of each of the articles is formed to define a dome having an annular groove coaxial with the neck of the article. Stationary guide means and movable guide means penetrate the grooves in the domes so as to transport the articles while simultaneously rotating them about their axes. A cutting tool is provided for

severing the flash from the rotating article. Carrier means are provided for translating the articles in upright positions from a



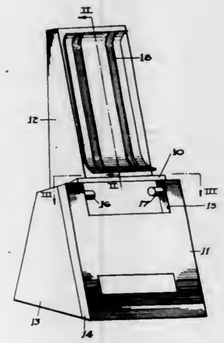
loading station to the trimming station and from the trimming station of an unloading station.

3,675,522
METHOD AND APPARATUS FOR STACKING SHEETS
Harold Robert Hull, San Leandro, Calif., assignor to Hexcel Corporation, Dublin, Calif.
Filed May 13, 1970, Ser. No. 36,818
Int. Cl. B65h *29/32*
U.S. Cl. 83—14 **11 Claims**



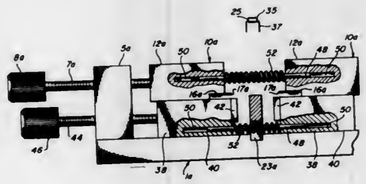
A method for stacking and aligning sheets, as during the manufacture of unexpanded honeycomb blocks, in which a long strip of the sheet material is moved towards and past a shear and grasped so that the lateral position of the sheet material strip determines the lateral position of the grasped sheet material portion. Thereafter a section of the sheet material including the grasped portion is severed and the severed section is moved from the shear to above the stack in alignment with the sheets previously deposited on the stack and the sheet is released for placement on the stack.

3,675,523
PAPER CUTTER
Milton Alden, Needham, Mass., assignor to Alden Research Foundation, Brockton, Mass.
Filed June 3, 1970, Ser. No. 42,947
Int. Cl. B26d *5/08*
U.S. Cl. 83—167 **9 Claims**



The invention consists of a paper cutter having an endless belt to which is attached a cutting blade.

3,675,524
APPARATUS FOR OPENING PACKAGES OF LAMINATED CONSTRUCTION
Larry R. Coleman, Phoenix, Ariz., assignor to Honeywell Information Systems Inc.
Filed Aug. 27, 1970, Ser. No. 67,343
Int. Cl. B26d *7/02*
U.S. Cl. 83—459 **7 Claims**

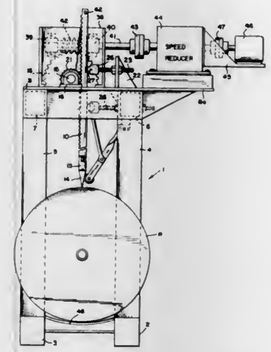


An apparatus is disclosed which provides means for holding a package in proper alignment with a shear while the apparatus is adjusted to open the package.

3,675,525
MACHINE FOR CUTTING ROLLS OF SHEET MATERIAL
William C. Ellison, Route 2, Box 1006-B, Chester, Va.
Filed Aug. 21, 1970, Ser. No. 66,027
Int. Cl. B26d *5/08*
U.S. Cl. 83—629 **8 Claims**

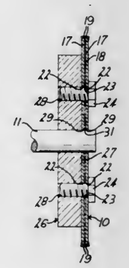
Machine for cutting rolls of sheet material, in particular paper, prior to reworking. A heavy knife with horizontally-disposed cutting edge is forced downwardly in guided translation to make a radial cut in the roll. The knife is carried by a

pair of vertical racks which are synchronously forced



downwardly by a motor, acting through speed-reducing means.

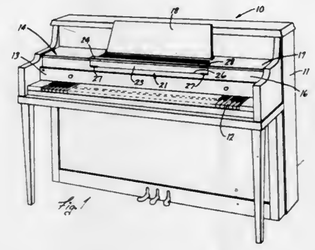
3,675,526
SAW ASSEMBLY FOR SHEET MATERIAL
William R. Bush, 431 Portercrest Drive, Graysville, Ala.
Filed July 27, 1970, Ser. No. 58,562
Int. Cl. B23d *45/10;* **B26d** *1/14*
U.S. Cl. 83—676 **3 Claims**



Saw assembly having thin disc member with cutting teeth on periphery and back-up disc secured to side. Cutting teeth project outwardly of back-up disc. Disc member and back-up disc secured to flat surface of rotatable member for rotation therewith.

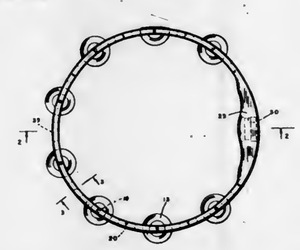
3,675,527
PIANO CONSTRUCTION
George H. Reeder, Jr., Rte. No. 3, South Haven, Van Buren County, Mich.
Filed July 17, 1970, Ser. No. 55,742
Int. Cl. G10c *3/02*
U.S. Cl. 84—180 **6 Claims**

A fold-out light structure for illuminating the music rack of a piano and having an L-shaped support structure disposed in front of the music rack and comprising a portion of the piano shelf when in the closed position. The support structure has a light mounted on one of the interior walls thereof and is pivotably connected to the vertical portion of the shelf which extends upwardly from the rear of the keyboard, whereby the support structure is pivotably movable outwardly away from the shelf to permit the light to illuminate the music rack located adjacent the rear of the shelf. A switch is preferably disposed for energizing the light, which switch may be auto-



matically actuated when the support is moved to the open position.

3,675,528
TAMBOURINE
Edmund J. Brick, Bergenfield, N.J., assignor to Thomas J. Brick, Bergenfield; Theresa A. Roberts, Saddle Brook, N.J. and William E. Young, Stamford, Conn., part interest to each
Filed Jan. 19, 1971, Ser. No. 107,630
Int. Cl. G10d *13/02*
U.S. Cl. 84—418 **6 Claims**

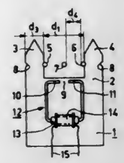


A tambourine having the usual arrangement of pairs of jingles, has a handgrip molded into one inner sidewall portion of the frame. Through the sidewall of the tambourine at the grip portion is formed an aperture in which is mounted a bearing or pair of bearings sized so as to enable a performer to position the tambourine on a finger such as an index finger of the performer and to spin or rotate the tambourine around the bearings. A dimple recess formed on the outer side of the frame of the tambourine and opposite the aperture provides an additional support for the tambourine during substantially horizontal rotation. The tambourine shown is preferably a two-piece molded frame of plastic which, as it is assembled, is retained by aligning pins as well as other pins upon which are mounted the jingles. Recesses are formed in the aperture and sized to retain the outer races of the bearings when said bearings are mounted in the aperture of the assembled frame.

3,675,529
ELECTROMECHANICAL TRANSDUCER FOR TUNING INDIVIDUAL STRINGS OF A MUSICAL INSTRUMENT
Albertus Cornelis Van Der Woord, Delft, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Nov. 13, 1970, Ser. No. 89,389
Claims priority, application Netherlands, Nov. 27, 1969, 6917828
Int. Cl. G10g *7/02*
U.S. Cl. 84—455 **5 Claims**

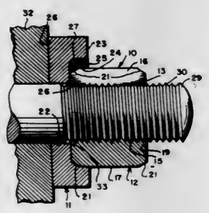
An electromechanical transducer for converting the move-

ments of a vibrating string into electric vibrations for use in tuning the string and provided with a forked member which



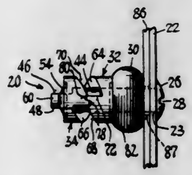
may be clamped between two strings and converts the vibrations of a third string.

3,675,530
QUICK RELEASE NUT
Michel N. Victor, 176 Crestview Drive, Pittsburgh, Pa.
Filed March 17, 1970, Ser. No. 20,362
Int. Cl. F16b *37/08*
U.S. Cl. 85—33 **2 Claims**



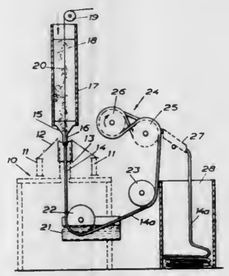
A U-shaped nut having a recess provided with a semi-circular threaded inner end and an outer portion defined by parallel wall surfaces spaced apart a distance greater than the diameter of the threaded inner end, to enable the nut to move transversely into engagement with a conventional bolt, at any point along the length of the bolt, for meshing the nut thread with the bolt thread, and a washer slidably fitting on the bolt and having a depression in one side thereof in which the nut is received and confined against lateral movement relative to the bolt. Said depression of the washer and the nut have complementary surfaces disposed in abutting engagement when the nut is fully seated in the depression to prevent lateral sliding or rocking movement of the nut relative to the bolt.

3,675,531
RELEASABLE PANEL FASTENER
Kenneth G. Lehman, Easton, Conn., assignor to Norco, Inc., Ridgefield, Conn.
Filed May 21, 1970, Ser. No. 39,480
Int. Cl. F16b *13/06*
U.S. Cl. 85—70 **9 Claims**



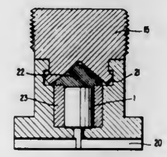
A releasable stud-type fastener adapted to be turnable in and extend through an opening of a panel and project therefrom at right angles so as to be receivable in an aligned opening of another panel which has a larger hole or opening. The fastener comprises a smooth-shanked headed stud having at one end a slotted or flatted head or enlargement adapted to be engaged by a tool for the purpose of turning the stud after it occupies the aligned holes of the panels with its head in engagement with the one panel. On its shank the stud carries a soft rubber bushing or sleeve having a normal outside diameter small enough to pass through the larger opening of the second panel but too large to pass through the first panel which can thereby be gripped between the rubber sleeve and stud head. In addition to the rubber sleeve on the stud shank there are two annular or rotary cam collars having facing camming surfaces which are engageable with each other to move the collars apart in response to relative rotary motion. The back end of one of the cam collars (which is turnable on the stud) is engaged with one end of the (also turnable) rubber sleeve, and the other cam collar is drivingly affixed to the small end of the stud. The outside diameters of the cam collars are also small enough to pass through the large hole of the second panel. Normally the cam collars and rubber sleeve hold the stud perpendicular to the face of the first panel. To secure the two panels together, that with the large hole is slipped over the cam collars and the rubber bushing and brought against the panel on which the fastener is mounted. The fastener stud is then turned by an appropriate tool such as a screwdriver or wrench. This drives or turns the affixed cam collar, and causes relative turning movement between the collars whereby they separate in such a manner that the rubber bushing is axially compressed and enlarged radially. The radial enlargement makes its outside diameter or circumference larger than the large hole through which it was passed (in the second mentioned panel), whereby the latter will now be securely gripped and held tightly against the first panel. Small interlocking shoulders on the cam surfaces of the cam collars maintain the same in their locking position separated from each other and expanding the rubber bushing. To release the panels, the stud head is merely turned in the opposite direction, forcing opposite relative turning of the cams to occur, which enable them to move toward each other, this being accompanied by restoration of the rubber sleeve to its normal diametric size whereby the panel with the large opening can now be readily slipped from the sleeve and cam collars so as to be released from the other panel.

3,675,532
PROCESS FOR MAKING FLOATABLE CARDS
Jan Hendrik Platou, Birkelundsbk. 76, Paradis, Near Bergen, Norway
Division of Ser. No. 712,445, March 12, 1968, Pat. No. 3,578,763. This application June 19, 1970, Ser. No. 59,798
Int. Cl. D04c *1/12*
U.S. Cl. 87—1 **6 Claims**



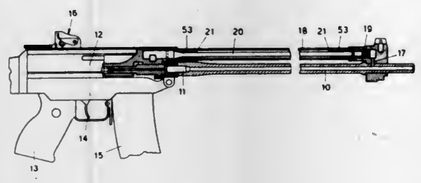
A flexible floatable cord for use in fishing nets, trawls and the like, which comprises a braided sleeve, a core of continuous filament threads incorporated therein and particles of an expanded plastic material disposed between said sleeve and said core, said particles being only attached to one another and to the sleeve and the core and forming a continuous cord in which the core is embedded. Further a process and an apparatus for producing said flexible floatable cord.

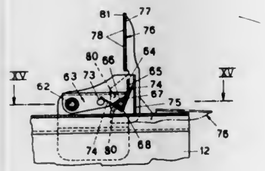
3,675,533
FASTENING MEANS SEVERABLE BY IGNITION OF AN EXPLOSIVE CHARGE
Heinz Gawlick, Boenerstrasse 32, Furth, and Hellmut Bendler, Virchowstrasse 6, Nurnberg, both of Germany
Filed April 23, 1969, Ser. No. 818,520
Claims priority, application Germany, April 22, 1968, P 17 71 211.7
Int. Cl. F16b *19/04*
U.S. Cl. 89—1 B **6 Claims**



A threaded fastener having means for effecting a severing thereof at a predetermined location upon the electrical ignition of an explosive charge, wherein an explosive cartridge is disposed within the body of the threaded fastener to cause a shearing off of the fastener at the desired location without destroying the external threaded portion of the fastener.

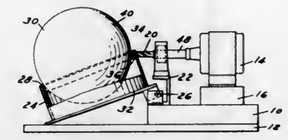
3,675,534
AUTOMATIC RIFLE
Pier Carlo Beretta, Gardone Val Trompia, Italy, assignor to Fabbrica D'Armi P. Beretta S.p.A., Gardone Val Trompia (Brescia), Italy
Filed April 21, 1970, Ser. No. 30,492
Claims priority, application Italy, April 29, 1969, 16212 A/69





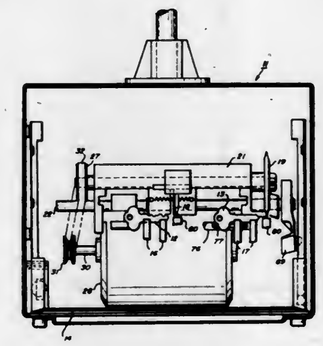
An automatic rifle is disclosed, of the type which exploits the pressure of the explosion gases for cocking the bolt, the improvement consisting in a simplified arrangement for the guiding tube in which the gas-actuated plunger or piston is slidably housed. A limited number of component parts ensures a longer service life for the rifle and the assembling and disassembling operations are considerably facilitated. An improved sighting arrangement is also disclosed.

3,675,535
APPARATUS FOR REMOVING EXCESS OF MATERIAL PROJECTING FROM THE TRUE PERIPHERY OF A BOWLING BALL WITHOUT MODIFYING SUCH TRUE PERIPHERY
Chester W. Jerome, 19997 Orleans, Detroit, Mich.
Filed Nov. 12, 1970, Ser. No. 88,677
Int. Cl. B23c *3/04*
U.S. Cl. 90—11 R **2 Claims**



An improved method of and improved apparatus for removing all undesirable material projecting outwardly beyond the true round periphery of a bowling ball. There are many bowlers who desire to have the finger openings changed after they have made use of a ball for a period of time. This change in the position, size and/or relationship of finger openings is generally accomplished by plugging up one or more of the openings in the ball and then relocating or reboring openings to meet the bowler's desire. In carrying out this process it is frequently done by filling up the original finger opening with a plug driven thereinto or by filling the same with material allowed to harden therein. In order to be sure of filling the opening completely for the modification or relocation thereof, it is common practice to overfill the same so that an excess of material will normally project outwardly beyond the true round periphery of the ball and then to remove the excess of said material to be sure the true round periphery is maintained. This disclosure relates to a most desirable method of removing such excess quickly, accurately and without disturbing the true periphery of the ball.

3,675,536
KEY CUTTING MACHINE
Philip C. Hungerford, Jr., Cleveland; John L. Gereby, Wickliffe, and Robert H. Richens, Bedford Heights, all of Ohio, assignors to Cole National Corporation
Filed Nov. 27, 1970, Ser. No. 93,145
Int. Cl. B23c *1/16*
U.S. Cl. 90—13.05 **23 Claims**



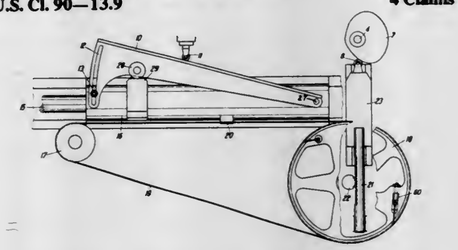
A key cutting machine as disclosed which is semi-automatic operation in that the master key to be copied and a blank key are mounted in vises, a door is closed, the machine is turned on and it automatically cuts a key blank in accordance with

the master key, brushes the key to remove any burr and then the machine shuts itself off. The door may then be opened and the keys removed from the vises.

3,675,537
CONTROL ARRANGEMENTS FOR AN AUTOMATIC MACHINE TOOL

Alfred Schmermund, 62 Kornerstrasse, 5820 Gevelsberg, Germany

Filed Oct. 8, 1970, Ser. No. 79,159
Claims priority, application Great Britain, Oct. 23, 1969, 52038/69
Int. Cl. B23c 1/18
U.S. Cl. 90—13.9 **4 Claims**



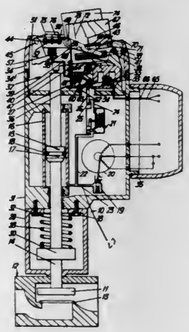
This invention relates to a control arrangement for an automatic tool having a linear profiled master cam which is mounted on a movable carrier with its linear profile inclined at a predetermined angle to the direction of displacement of the carrier. The linear profile is sensed by a main follower which is coupled to control means for controlling a milling tool operating on a rotating workpiece. A composite auxiliary cam is rotated with the workpiece and an auxiliary follower cooperating with the composite auxiliary cam is coupled to the carrier to control the displacement thereof, whereby the control of the milling tool is so dependent on the shape of the composite auxiliary cam as to cause the tool to form the workpiece with a cam profile corresponding to that of the composite cam.

Preferably, the predetermined angle may be adjusted to vary the size of the cam profile formed on the workpiece compared with that of the composite auxiliary cam.

3,675,538
HYDRAULIC CONTROL SYSTEM

William Fredrick Keller, Covina, and Frank Francis Domyan, North Hollywood, both of Calif., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Division of Ser. No. 855,937, Sept. 8, 1969, Pat. No. 3,620,185. This application Oct. 12, 1970, Ser. No. 80,113
Int. Cl. F01b 31/12; F15b 13/16
U.S. Cl. 91—1 **3 Claims**

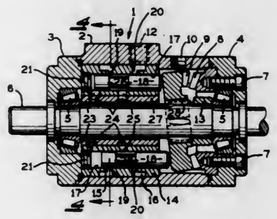


An hydraulic system having calibration, bandwidth, and dash pot controls with indicators for each, and a dash pot adjustment.

3,675,539
HYDRAULIC MOTOR

Theodore S. Zajac, and Hal E. George, both of Rocky River, Ohio, assignors to Parker-Hannifin Corporation, Cleveland, Ohio

Filed Aug. 7, 1970, Ser. No. 61,968
Int. Cl. F04b 13/04
U.S. Cl. 91—477 **14 Claims**



An axial piston hydraulic motor of the type wherein the motor drive shaft and cylinder block are coaxial characterized in that the pistons react against a nutating gear which progressively meshes with a gear having a different number of teeth, one gear being non-rotatable in the motor housing and the other gear being non-rotatable on the drive shaft whereby the drive shaft and housing are relatively rotated during each nutation of the nutating gear through an angle depending on the difference in the number of teeth of said gears. The motor herein is further characterized in that each piston as it reciprocates in its bore constitutes a three-way valve to alternately communicate an angularly displaced piston bore with the pressure inlet and return ports in the housing via passages in the cylinder block communicating with said ports and with such angularly displaced piston bore.

3,675,540
DIAPHRAGM

Eiji Murata, and Kohuku Ito, both of Tokyo, Japan, assignors to Honeywell Inc., Minneapolis, Minn.

Filed July 18, 1969, Ser. No. 842,943
Claims priority, application Japan, July 19, 1968, 43/61899
Int. Cl. F01b 19/00
U.S. Cl. 92—98 **1 Claim**

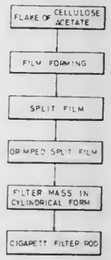


A diaphragm unit having a diaphragm support plate that is subject to corrosion and a corrosive resistant metal sheet that covers an aperture formed by an inner wall of the diaphragm support plate to protect it from corrosion. The sheet is seam welded to the support plate while the aforementioned inner wall, the space between the inner wall and the outermost wall of the support plate and the edge of the outermost wall are held in a tightly adhered to manner with one another.

3,675,541
PROCESS OF MAKING A TOBACCO SMOKE FILTER FROM A SPLIT FILM OF CELLULOSE ACETATE

Soichi Tokitomo, Tokyo; Masakazu Honda; Fumio Nakayama, both of Toyama, and Keisiro Ueno, Otake, all of Japan, assignors to Mitsubishi Rayon Company Limited and Mitsubishi Acetate Company Limited, Tokyo, Japan

Continuation-in-part of Ser. No. 687,351, Dec. 1, 1967, abandoned. This application June 2, 1970, Ser. No. 42,625
Claims priority, application Japan, Dec. 13, 1966, 41/81636
Int. Cl. B29d 7/24; B32b 31/08; D04h 3/16
U.S. Cl. 93—1 C **7 Claims**

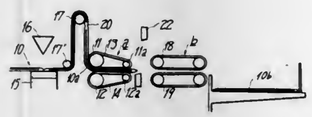


A cellulose acetate film is subjected to stretch operations which are carried out under conditions such that highly oriented molecular chains are created therein and then to splitting whereby a netlike configuration composed of numerous stem fibers and branch fibers linking adjacent stem fibers is obtained. A tobacco smoke filter is formed from the split acetate film after additional treatments including crimping.

3,675,542
METHOD OF MANUFACTURING BAGS

Yasuhiro Torigoe, c/o Taiyo Shokai Co. Ltd., No. 16, 15, 4 chome Kitakoiwa Edogawa, Tokyo, Japan

Filed July 1, 1970, Ser. No. 51,472
Claims priority, application Japan, July 5, 1969, 44/52813
Int. Cl. B31b 49/04
U.S. Cl. 93—35 R **1 Claim**

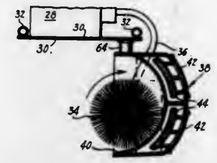


The present invention provides a method of manufacturing bags from a strip-like bag material of a thermoplastic synthetic resin and is characterized by having the heat-sealing of the bag material and the severing of the heat-sealed portions performed in two separate steps to thereby secure the smooth transfer of the bag material so that the bag manufacturing efficiency may be enhanced.

3,675,543
AUTOMATIC RAKER

John M. Neal, 512 Yolo Avenue, Oroville, Calif.

Filed Jan. 18, 1971, Ser. No. 107,044
Int. Cl. E01c 23/00
U.S. Cl. 94—39 **3 Claims**

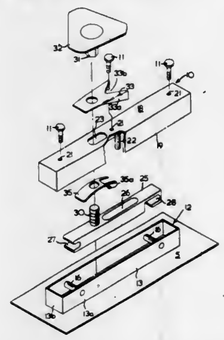


A rotatable brush and heater pivotally mounted beneath a frame for movement over the ground.

3,675,544
QUICK COUPLER ASSEMBLY

Francesco Zochil, 10 Cortina Crescent, Hamilton, Ontario, Canada

Filed Dec. 22, 1970, Ser. No. 100,576
Int. Cl. F01c 19/22
U.S. Cl. 94—45 A **5 Claims**



A coupling device primarily for use in attaching trowelling blades to the arms of a cement finishing machine. The coupling allows for ready removal and attachment of the blades, allows for reversal of their position through 180°, and in particular provides a dirt excluding seal around the movable parts of the device. The coupling includes upper and lower parts, one of which has a wall the periphery of which seals against the other part, and the interlocking coupling parts are disposed within this wall thus being protected from ingress of dirt. The interlocking parts include catch elements on the lower part, and a locking bar slidable in the upper part to engage the catch elements and which is also movable by handle operated screw means towards and away from the upper part so that when the catch elements are engaged the two parts can be tightly fastened together by turning the handle to draw the locking bar inwardly towards the upper part.

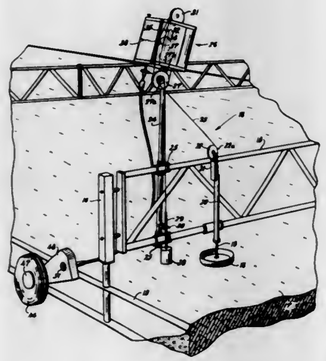
3,675,545
SURFACE ELEVATION PROFILE MEASURING DEVICE

John E. Anderson, and Homer Dayle Sinnett, both of Lincoln, Nebr., assignors to State of Nebraska

Filed Nov. 26, 1969, Ser. No. 880,162
Int. Cl. E01c 23/01; G01b 5/28
U.S. Cl. 94—46 **8 Claims**

For use in combination with the slip form paver, a device for detecting, measuring and recording surface irregularities of

freshly formed pavement still in a plastic condition. A counterweighted pan float lightly engages the pavement surface and responds to irregularities by reciprocal movement as the paver advances over the grade surface. The pan is suspended from an interconnecting truss structure of the trailing forms of



the paver which provides a mobile reference plane parallel to the grade engaging surfaces of the trailing forms and paver. A chart recorder driven by a grade engaging wheel provides a continuous, permanent record of the surface irregularities detected by the pan float.

3,675,546

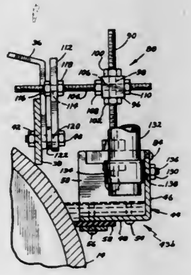
FREE FLOW WATER SYSTEM FOR ASPHALT ROLLERS

Arthur A. Smith, 1863 Baylor Street, Union City, Calif.

Filed Oct. 15, 1970, Ser. No. 80,929

Int. Cl. E01c *19/26*

U.S. Cl. 94—50 **9 Claims**



An open-sided trough is mounted for vertical and horizontal adjustment with respect to each roller of a conventional asphalt paving machine, a segment of the roller closing the open side of the trough. A rubber blade forms part of the bottom of the trough. The vertical adjustment enables the operator to keep the trough level to retain water therein while operating the machine on a grade; the horizontal adjustment permits compensation for blade wear from rubbing contact with the roller, as well as applying the proper amount of blade pressure to the roller.

3,675,547

PHOTOGRAPHING SYSTEM FOR USE WITH A FLASH DEVICE

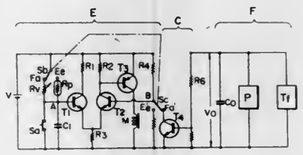
Takashi Uchiyama; Tadashi Ito, both of Kanagawa-ken, and Mutsuhide Matsuda, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed June 16, 1970, Ser. No. 46,732

Claims priority, application Japan, June 23, 1969, 44/49790; Nov. 20, 1969, 44/93176

Int. Cl. G01j *1/46*

U.S. Cl. 95—10 CT **21 Claims**



A photographing system for use with a flash device comprising a flash-auto mechanism (FA mechanism) including an electronic timer circuit for exposure control a power capacitor for storing charges, a power supply circuit for charging said power capacitor, a control circuit for detecting said charges stored in said power capacitor and for adjusting said flash-auto mechanism in accordance with said charge across said power capacitor, and a discharge circuit connected across said capacitor and including a discharge lamp for triggering said discharge lamp to operate said system.

3,675,548

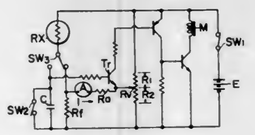
EXPOSURE TIME INDICATING DEVICE FOR PHOTOGRAPHIC CAMERAS EQUIPPED WITH AN ELECTRONICALLY CONTROLLED SHUTTER

Tomio Kikuchi, Tokorozawa-shi, and Kiyoyuki Arai, Gyodashi, both of Japan, assignors to Kabushiki Kaisha Koparu, Tokyo-to, Japan

Filed Nov. 12, 1969, Ser. No. 875,761

Int. Cl. G03b *7/08*

U.S. Cl. 95—10 CT **7 Claims**



An exposure time indicating device for cameras equipped with an electronically controlled shutter, comprising a meter adapted to be connected to the output terminals of a bridge network formed with four arms, viz. a light-sensitive element, a resistor and bias resistors, said bridge network being arranged so that said resistor is switched over to a capacitor and that said meter is switched over to a switching means such as a transistor by a changeover switch, respectively, to form an automatic exposure control circuit. Said exposure time indicating device will indicate the exposure time controlled by said automatic exposure control circuit through a pointer caused to swing from one position to another by the current flowing through said bridge network.

3,675,549

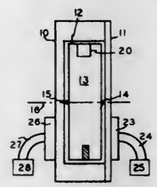
VERTICAL REFERENCE PENDULUM

Robert S. Adair, Austin, Tex., assignor to The United States of America as represented by the Secretary of the Navy

Filed Feb. 4, 1971, Ser. No. 112,538

Int. Cl. G03b *17/24*

U.S. Cl. 95—1.1 **9 Claims**



The invention disclosed herein provides a pendulum mounted in a housing with an optical read-out system to operate in conjunction with a photographic device for recording the pitch and roll of a submerged camera.

3,675,550

DEVICE FOR CORRECTING THE OPEN APERTURE RATIO OF INTERCHANGEABLE LENSES IN A CAMERA SELF-CONTAINING A TTL EXPOSURE METER

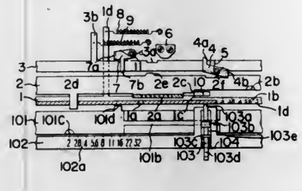
Sunao Ishizaka, Tokyo, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed April 9, 1970, Ser. No. 26,986

Claims priority, application Japan, April 18, 1969, 44/29642; April 18, 1969, 44/29641

Int. Cl. G03b *17/14, 9/07*

U.S. Cl. 95—10 C **9 Claims**



The lens must be mounted in a position corresponding to the largest aperture of the lens. An exposure control member, which is associated with the meter, is rotatably mounted on the camera body. The member is connected to the f-stop adjusting ring. The lens barrel has an abutment which, at its extended position, prevents incorrect mounting of the lens. The interconnection between the f-stop ring and the exposure control member is spaced from the abutment by a distance relative to the maximum aperture of the lens.

3,675,551

FILM STORAGE CHAMBER

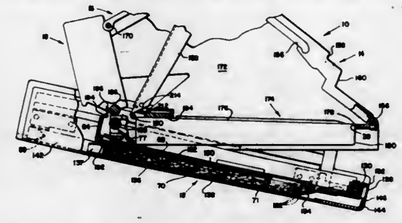
Edwin H. Land, Cambridge, and Irving Erlichman, Wayland, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed May 11, 1970, Ser. No. 36,251

Int. Cl. G03b *19/02, 17/52*

U.S. Cl. 95—11 R **28 Claims**

A camera having a variable volume film storage chamber which is generated from within the confines of the camera by moving sections of the camera into a position wherein film units can be sequentially exposed, processed and individually viewed between exposures. The storage chamber is defined in part by a wall of the camera which is adapted to be moved away from the remainder of the camera. In the case of a folding type camera, one end of an erecting link functions as a cam to engage a cam follower on the movable wall to move the wall away from the remainder of the camera as the erecting link guides sections of the camera into an extended, operative position. In the case of a non-folding type of camera, a manually operated button is actuated to move a plurality of cams in a direction to move a wall of the camera away from the remainder of the camera to generate the storage chamber



and to make the camera fully operative. In both types of cameras, springs are connected between the movable wall and the remainder of the camera for moving the wall toward the remainder of the camera when the user folds the folding type camera or when he again actuates the aforementioned button on the non-folding type of camera. Movement of the wall toward the remainder of the camera is limited only by the thickness of the stack of exposed film units contained therein, thereby minimizing the compactness of the camera when in the non-operative position.

3,675,552

CAMERA WITH ADJUSTMENT-INDICATING LOCATION

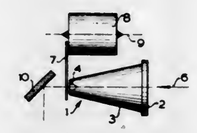
Friedrich Papke, Braunschweig, Germany, assignor to Voigtlander Aktiengesellschaft, Braunsweig, Germany

Filed Sept. 22, 1969, Ser. No. 859,681

Claims priority, application Germany, July 1, 1969, P 19 33 260.6

Int. Cl. G03b *17/20*

U.S. Cl. 95—11 V **3 Claims**



A camera which is provided in the region of its viewfinder with a location where an indication of the adjustment of the camera can be read. For this purpose the camera is provided with a light-conducting body having a light-receiving surface to receive light from the exterior of the camera and a light-discharging surface from which light moves beyond this body to be seen by the operator. This light-discharging surface of the light-conducting body has a configuration which enables it to form in itself the structure for indicating the adjustment of the camera.

3,675,553

METHODS OF INTEGRAL PHOTOGRAPHY

Leslie Peter Dudley, Los Angeles, Calif., assignor to Dudley Optical Laboratories, Inc., Beverly Hills, Calif.

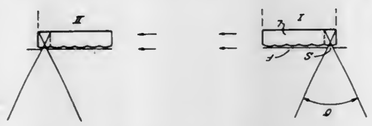
Division of Ser. No. 747,996, July 26, 1968, Pat. No. 3,613,539. This application Oct. 12, 1970, Ser. No. 79,776

Int. Cl. G03b *35/04*

U.S. Cl. 95—18 P **6 Claims**

Photographs of the integral type, exhibiting the effect of parallax about both horizontal and vertical axes, are recorded on a spherically lenticulated film, or on a spherically lenticu-

lated screen-film combination, by means of a modified type of camera. Light is admitted to the film by way of a rectangular aperture in the front of the camera instead of through the usual photographic objective lens. If the camera is held stationary during an exposure, the resulting photograph is pseudoscopic instead of stereoscopic. A feature of the present invention involves lateral movement of the camera during an exposure with the effect that the resulting photograph is stereoscopic instead of pseudoscopic.

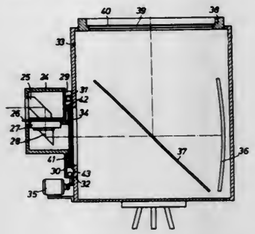


3,675,554

DEVICE FOR RECORDING AND REPRODUCING STEROSCOPIC IMAGES

Maurice Bonnet, Puteaux, France, assignor to Etablissement Public: Agence Nationale De Valorisation De La Recherche Anvar

Filed March 8, 1971, Ser. No. 121,766
Claims priority, application France, March 13, 1970, 7009031
Int. Cl. G03b *35/08*
U.S. Cl. 95—18 P 8 Claims



The device allows one to photograph an object and to reproduce it by giving to the observer the feeling of seeing this object true-to-life and full-size. The device consists of an optical unit having at least an objective which forms, in each position taken by the unit, the image of an object being on an optical system directing the rays to a frame holding a cylindrical lenticular element film coated with a sensitive layer recording successively all composite images thus transmitted and which, during reproduction, will allow an observer to view a relief image of the object under the same conditions as a direct and actual view of this object. Such a device can be used for relief photography.

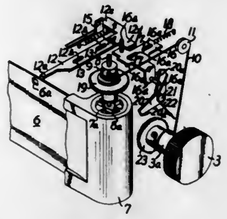
3,675,555

FILM LOCKING DEVICE IN CAMERA

Masao Mori, Osaka, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed April 24, 1970, Ser. No. 31,543
Claims priority, application Japan, May 9, 1969, 44/42796
Int. Cl. G03b *1/04, 1/62*
U.S. Cl. 95—31 FM 7 Claims

A device comprises a film winding shaft, a winding knob disposed separately from the winding shaft, a cord or chain operatively connecting the shaft to the knob and a member for sensing the perforation of a film. In operative relationship with the perforation sensing member, locking members function to prevent rotation of the film winding shaft and winding knob upon completion of film winding.

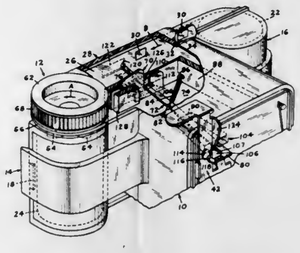


3,675,556

DOUBLE EXPOSURE PREVENTION SYSTEM AND CAMERA

Venerio J. Rigolini, Brooklyn, N.Y., assignor to Whitehouse Products, Inc., Brooklyn, N.Y.

Filed Oct. 2, 1970, Ser. No. 77,439
Int. Cl. G03b *19/04*
U.S. Cl. 95—31 FL 6 Claims



A camera having a compact metering device to control film advancement and a double exposure prevention system which permits operation of the shutter when there is no film in the camera, but blocks the shutter's operation when the camera is loaded with film until an unexposed portion of the film is advanced to the point where it is suitably framed for taking a picture. A metering pawl moves rearwardly in the camera under the influence of a tension spring to permit operation of the shutter when the camera is unloaded. When the camera is loaded with film the member is engaged either with the film or with the film cartridge through a perforation in the film, thus preventing the camera from being operated until the film is suitably advanced to ready the camera for taking a picture.

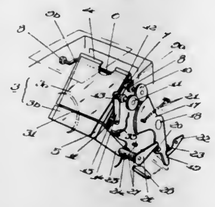
3,675,557

MIRROR MOVING MECHANISM FOR SINGLE-LENS REFLEX CAMERAS

Junichi Yokozato, and Shigeru Kurihara, both of Tokyo, Japan, assignors to Zenza Bronica Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 28, 1969, Ser. No. 828,463
Claims priority, application Japan, June 5, 1968, 43/38125
Int. Cl. G03b *19/12*
U.S. Cl. 95—42 4 Claims

A single-lens reflex camera wherein the device which reflects light against the focussing screen consists of a single mirror which is pivotable at a point close to its upper edge or of two discrete mirrors which are pivotable in opposite directions with reference to each other. The single mirror is pivotable from a position at an angle of 45° with reference to the optical axis to a position in which its reflecting surface faces the focussing screen by pivoting and by simultaneously moving rearwardly and upwardly so as to permit the placing of the lens close to the plane of an unexposed film frame. If the light is reflected by two discrete mirrors, one of the mirrors is movable in the same way as the single mirror or about a fixed pivot axis, and the other mirror is pivotable to a concealed position behind an internal wall of the camera body. The single mirror or the two discrete mirrors can automatically return to operative positions upon completion of each exposure or they can be held in inoperative positions during the interval between the completion of an exposure and the next following transport of film or as long as desired.

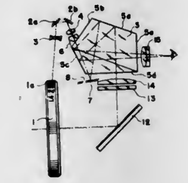


3,675,558

OPTICAL SYSTEM FOR A SINGLE LENS REFLEX CAMERA

Yoshio Kuramoto, Sakai-shi, and Shotaro Inagaki, Okazaki-shi, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Oct. 10, 1969, Ser. No. 865,453
Claims priority, application Japan, Oct. 19, 1968, 43/91391
Int. Cl. G03b *19/12*
U.S. Cl. 95—42 2 Claims



A single lens reflex camera in which an external scale for adjusting the focus or shutter of a camera is visible with the object image in a viewfinder. Between the scale and a viewfinder there are provided a pentagonal prism and a convergent lens for forming a real image of the scale at the viewfinder eyepiece.

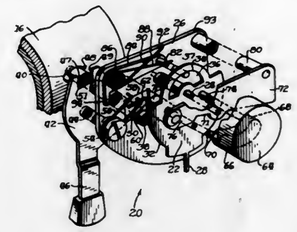
3,675,559

PENDULOUS TYPE RANGEFINDER FOR OPTICAL INSTRUMENT

Stanley R. Freeland, Glenview, Ill., assignor to Bell & Howell Company, Chicago, Ill.

Filed Dec. 31, 1969, Ser. No. 889,761
Int. Cl. G03b *3/00*
U.S. Cl. 95—44 C 14 Claims

A pendulous type rangefinder for a camera is provided that can be adjusted either manually or automatically without having to either engage or disengage the manual adjustment with the pendulous member of the rangefinder. The rangefinder includes an objective lens system having a focusing element and comprises a pendulous member supported on the camera housing for selective conditioning between a free-swinging first condition and a retained second condition, a cam surface on the pendulous member, and a focusing element positioning means frictionally engageable with the cam surface for moving the focusing element. Means are provided for continuously urging the positioning means toward the cam surface, and a manual control extending externally of the camera housing and always engaged with the pendulous member permits force applied to the manual control to be directly transmitted to the pendulous member for directly moving the pendulous member at all times.

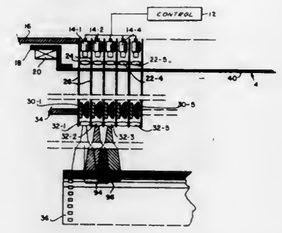


3,675,560

PHOTOGRAPHIC TYPE-COMPOSING

Louis M. Moyroud, c/o Photon, Inc., 355 Middlesex Avenue, Delray Beach, Fla.

Filed Aug. 13, 1970, Ser. No. 63,490
Claims priority, application Great Britain, Aug. 15, 1969, 40,888/69
Int. Cl. B41b *15/00, 21/12*
U.S. Cl. 95—4.5 R 6 Claims



A high speed straight matter photocomposing machine for projecting proportionately-spaced character images on an image-receiving surface in order to compose lines of type of graphic arts quality at computer print-out speeds.

3,675,561

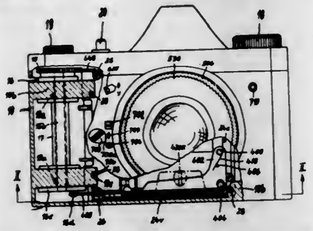
PHOTOGRAPHIC CAMERA WITH FOCAL PLANE SHUTTER AND INTERCHANGEABLE OBJECTIVE SHUTTER

Gerhard Schwarz, Munich, Germany, assignor to Compur-Werk Gesellschaft mit beschrankter Haftung & Co., Munich, Germany

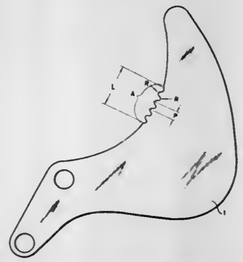
Filed April 7, 1971, Ser. No. 131,872
Claims priority, application Germany, April 9, 1970, P 20 17 032.5
Int. Cl. G03b *9/00*
U.S. Cl. 95—53 E 13 Claims

A photographic camera having a focal plane shutter and also having an interchangeable objective unit including an objective shutter, together with electronic control means for controlling the operations of both shutters. A simple change-over switch enables the user to select which of the two shutters

will be effective to control any particular exposure. The camera may also be used with a simple objective unit not having an objective shutter therein, and in that case an interlock insures that the change-over switch will be set for effective operation of the focal plane shutter.

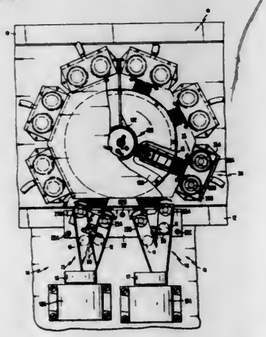


3,675,562
IRIS DIAPHRAGM FOR A CAMERA
Noriaki Sanada, Tokyo, and Masaharu Ito, Kawasaki, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed June 24, 1970, Ser. No. 49,459
Claims priority, application Japan, June 28, 1969, 44/51746
Int. Cl. G03b 9/06
U.S. Cl. 95—64 R 8 Claims



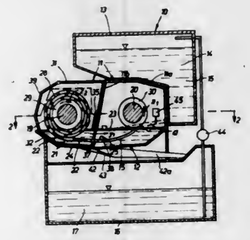
An iris diaphragm for a camera which is characterized in forming at least a part of one side of each diaphragm blade constituting a diaphragm aperture in a nonlinear, concavo-convex shape so that the generation of glare is reduced.

3,675,563
SEMICONDUCTOR PROCESSING APPARATUS
Claude G. Metreaud, Fishkill, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Jan. 15, 1970, Ser. No. 3,162
Int. Cl. G03d 5/04
U.S. Cl. 95—89 R 28 Claims



Apparatus for processing semiconductor wafers including an indexing turntable having a plurality of sets of radially slidable pickup heads connected thereto, the sets of pickup heads cooperating with a plurality of sets of process stations spaced about the turntable whereby the wafers held by one of the pickup heads of a set are moved into and out of alternate ones of the process stations during the process cycle. The apparatus also includes air slide conveyors for moving wafers into and out of registration with the vacuum type pickup heads, and also includes apparatus which enables, after one rotation of the turntable, the wafers processed in one group of process stations to be recycled into and out of the group of process stations not theretofor entered.

3,675,564
PHOTOGRAPHIC DEVELOPING APPARATUS
Werner Michaelis, Kelterstrasse 45, 7053 Rommelshausen, Germany
Filed July 13, 1970, Ser. No. 54,248
Claims priority, application Germany, July 24, 1969, P 19 37 591.8
Int. Cl. G03d 1/02
U.S. Cl. 95—90 15 Claims

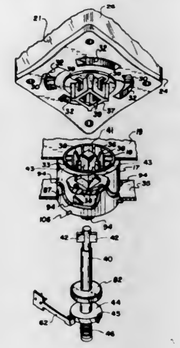


An apparatus for developing photographic material comprising a treating container having a trough-shaped bottom part and containing two horizontal spools for alternately winding up beltlike conveying means for the photographic material to be developed, wherein one of these spools is located within a removable container part forming a loading magazine which has an opening through which the conveying means may pass, and wherein this removable container part when connected to the other part of the container engages with and forms a part of the trough-shaped bottom part of the container which is filled with the treating liquid which is circulated therethrough.

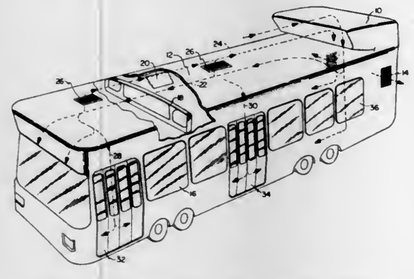
3,675,565
PHOTOGRAPHIC APPARATUS
Armin B. Pagel, Janesville, Wis., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed April 7, 1970, Ser. No. 26,275
Int. Cl. G03b 15/035
U.S. Cl. 95—11 L 5 Claims

The disclosure relates to the provision of a camera with a mechanism which operates automatically prior to each film exposure to index a so-called flashcube or other multiple lamp flashbulb unit until the mechanism detects the arrival of an unfired bulb at a predetermined firing position. In contrast to previously known related devices which require the flashbulb unit to be installed before the film is advanced in preparation for the corresponding exposure, the invention allows the automatic indexing operation to be performed regardless of whether the flashbulb unit is installed before or after such film advancement has occurred. Means are also disclosed whereby

such a mechanism is capable of performing repetitively between successive film advancing operations so that a replacement flashbulb unit can be indexed automatically after the mechanism has already indexed the previous flashbulb unit and has failed to detect the presence of any usable bulb therein.



3,675,566
VEHICLE BODY HEATING AND VENTILATING
John McHugh, Gorsey Lane Farm, Mawdsley, Lancashire, and Gerald Fowler, 5 Marsden Close, Eccleston, Lancashire, both of England
Filed July 3, 1968, Ser. No. 742,275
Claims priority, application Great Britain, July 5, 1967, 30,981/67; July 5, 1967, 30,982/67
Int. Cl. B60h 1/24
U.S. Cl. 98—2.07 1 Claim

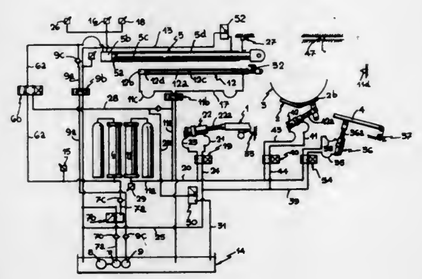


A passenger vehicle having ducts formed within a roof between the latter and a lining, so that the vehicle will be ventilated and means are provided to deliver air above the windshield to be demisted and defrosted.

3,675,567
MEAT INJECTION APPARATUS
Jack J. Rejsa, Minneapolis, and James A. Meyer, Saint Louis Park, both of Minn., assignors to The Pillsbury Company, Minneapolis, Minn.
Filed June 8, 1970, Ser. No. 44,297
Int. Cl. A23l 3/34
U.S. Cl. 99—257 5 Claims

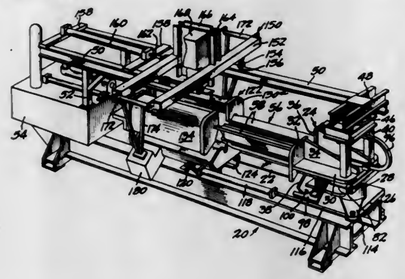
Apparatus for injecting seasoning and flavoring liquids into poultry meat composed of a storage reservoir or hydraulic accumulator from which fluid is pumped at a pressure between about 1,000 and 5,000 psi to injection nozzles under the control of a solenoid valve. Each solenoid valve is turned rapidly on and off by an electronic timer. As the nozzles are moved at the same speed of the meat to be injected, a high velocity jet of liquid lasting 0.1 to 0.5 seconds is shot from the nozzle into the meat and is dispersed in the tissue.

3,675,568
PRESS ASSEMBLY FOR COMPACTING AND BINDING WIRE COILS
Ghislain Antoine Jean-Marie Marteiee, Liege, Belgium, assignor to Cockerill-Ougree-Providence et Esperance-Longdoz, en abrege "Cockerill,", Seraing-lez-Liege, Belgium
Filed July 28, 1970, Ser. No. 58,936
Claims priority, application Belgium, July 28, 1969, 737.690
Int. Cl. B65b 13/02
U.S. Cl. 100—7 3 Claims



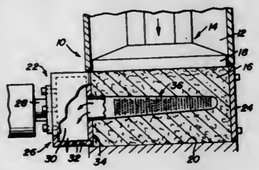
A press for compacting and binding wire coils on a spool which incorporates a medium pressure and a high pressure hydraulic fluid pump in conjunction with a low pressure and a medium pressure oil-pneumatic accumulator for operating the hydraulic jacks for compressing and binding the wire coils and removing the bound coils from the compressing mechanism. The invention utilizes a plurality of pressure controls for actuating electric control valves to selectively connect either of the hydraulic pumps to the hydraulic cylinders when higher pressure and fluid flow are required, or the oil-pneumatic accumulators to the hydraulic cylinders when lower pressure and little fluid flow is required, in order to obtain the most efficient operation of the press.

3,675,569
ROD COIL PRESS
Herman L. Moor, Chicago, Ill., assignor to Braner Engineering, Inc., Chicago, Ill.
Filed Oct. 5, 1970, Ser. No. 78,006
Int. Cl. B65b *13/02*
U.S. Cl. 100—7 19 Claims



A rod coil press having a coil carrying arm swinging to and from loading, compacting and unloading positions. The arm is Y-shaped in cross section and one part thereof is extensible to a coil-diameter-controlling position and retractable to a coil-release position. A compactor unit shifts toward and from the arm which interfits therewith in compacting position. A strapping assembly is shiftable between retracted and operative positions and has a plurality of strapping mechanisms. Strap guides are carried by the coil carrying arm and the compactor unit and cooperate with the strapping mechanisms to apply a plurality of straps through the eye of the coil and around the exterior of the coil to be tensioned and sealed by the strapping mechanisms.

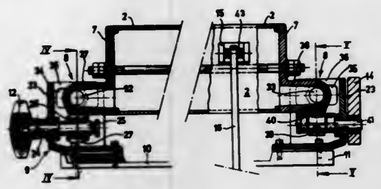
3,675,570
COMPRESSION DEVICE
Philip G. Mersfelder, P.O. Box 21, Helena, Calif.
Substitute for Ser. No. 729,630, May 16, 1968, abandoned. This application Dec. 28, 1970, Ser. No. 102,222
Int. Cl. B30b *9/00, 9/02, 15/32*
U.S. Cl. 100—90 10 Claims



A compression device incorporating an ejection ram having an air extracting needle associated therewith for introduction into the substance being compressed. The air extracting needle is communicated with the atmosphere and provides a flow path for the entrained air within the material during the compression thereof.

3,675,571
SCREEN PRINTING MACHINE FOR PRINTING IN MULTICOLOR A HORIZONTALLY ADVANCED WEB
Jacobus G. Vertegaal, Boxmeer, Netherlands, assignor to Stork Amsterdam N.V., Amstelveen, Netherlands
Filed June 30, 1970, Ser. No. 51,042
Claims priority, application Netherlands, July 9, 1969, 6910511
Int. Cl. B41f *15/04*
U.S. Cl. 101—115 9 Claims

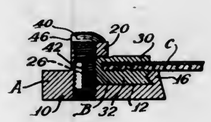
A screen printing machine for multi-color printing on a web which is advanced horizontally on a supporting blanket includes parallel frame halves across which are mounted bridges. Each bridge has stencil holders for journaling the ends of cylindrical thin-walled screen stencils with there being one bridge for each stencil and the bridges extending parallel to the respective stencils. At least one end of a stencil is provided with a gear which meshes with a driving gear mounted in the frame half and protruding upwardly therefrom. The bridge is mounted on a frame half by means of a structure which permits adjustment of the bridge vertically longitudinally and transversely thereof so as to position accurately the stencil with respect to the advancing web.



3,675,572
GRAVURE PRINTING PLATE MAKING PROCESS
Earl J. Gosnell, Rochester, and Jerry H. Taylor, Webster, both of N.Y., assignors to Burroughs Corporation, Detroit, Mich.
Continuation-in-part of Ser. No. 791,115, Jan. 14, 1969, abandoned. This application Dec. 21, 1970, Ser. No. 100,411
Int. Cl. B41c ; B41n
U.S. Cl. 101—401.1 6 Claims

A method for quickly making an intaglio or gravure printing plate through the use of near infrared irradiation. A pattern of protuberances or grooves is formed on a surface of near infrared transparent, moldable plastic, glass, or quartz which is not deformable at the temperature used in practicing the invention. This gravure matrix can be in the form of a sheet, endless belt, or plate. The information to be reproduced can be printed, written, or drawn in highly near infrared absorbing material on a copy sheet, which can be of paper, for example, or other substantially infrared transparent or reflective material. The copy sheet is assembled with the infrared absorbing material in contact with a base plate sheet of transparent, unoriented, near infrared non-absorbing plastic, which in turn is placed on the gravure matrix. Under uniform pressure of 5 to 50 p.s.i. the assembly is exposed briefly to near infrared energy. The base plate sheet will have formed therein an exact reproduction of the copy material in the form of a multiplicity of cells or grooves. This gravure printing plate can then be mounted according to known procedures on an offset gravure printing device.

3,675,573
BLANKET BAR AND ADAPTER BAR ASSEMBLY FOR PRINTING BLANKET
Ronald W. Hawks, Des Plaines, Ill., assignor to Roberts & Porter, Inc.
Filed Sept. 1, 1970, Ser. No. 68,728
Int. Cl. B41f *27/12*
U.S. Cl. 101—415.1 3 Claims



An assembly for attaching a printing blanket on a press cylinder of an offset printing press.

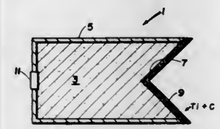
An adapter bar and blanket bar are provided with cooperating features which provide interlocking engagement for quick and easy mounting by way of a quick release locking means.

3,675,574
EXPLOSIVE DEVICE
Andre Jules Pierre Moreau, Yonne, France, assignor to Societe: Etablissements Davey Bickford Smith & Cie Societe Anonyme Francaise, Saint Maur Rouen, France
Filed Oct. 26, 1970, Ser. No. 83,840
Claims priority, application France, Nov. 28, 1969, 6941252
Int. Cl. F42b *3/12*
U.S. Cl. 102—24 11 Claims



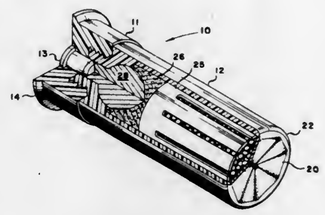
The invention is concerned with an explosive device for seismological marine reconnaissance, the device comprising a tubular casing containing the explosive charge and a detonator in which the detonator is provided with a plastics closure plug the plug being extended so that it projects beyond the end of the detonator and engages in the bottom opening in the casing containing the charge so as to seal the same against the ingress of seawater. To increase the sealing action the bottom end of the casing may comprise a conical portion terminating in a cylindrical neck, the extended end of the aforesaid plug having a flange for co-operation with the said conical end of the casing.

3,675,575
CORUSCATIVE SHAPED CHARGE HAVING IMPROVED JET CHARACTERISTICS
Robert A. Bailey, Rockville, and Arve Michelsen, Silver Spring, both of Md., assignors to The United States of America as represented by the Secretary of the Navy
Filed May 23, 1969, Ser. No. 828,450
Int. Cl. F42b *1/02*
U.S. Cl. 102—24 HC 5 Claims



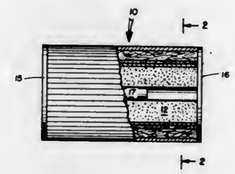
The present invention provides a high penetration shaped charge coruscative ordnance device which produces a slug-free jet of improved effective length, thereby maximizing penetration and enhancing vaporific effects. Substantially, the invention improves the length of the jet by utilizing a powdered stoichiometric mixture of coruscative reactants such as Ti+C in a pressed conical liner. Additionally, jet density may be improved by inclusion of a high density material in the mixture.

3,675,576
RELOADABLE TWO-PIECE SHOTGUN CARTRIDGE
Charles D. Whitney, Pasadena, Calif., assignor to Colorado Business Development Corporation
Filed Feb. 18, 1970, Ser. No. 12,323
Int. Cl. F42b *7/06*
U.S. Cl. 102—44 4 Claims



A 2-piece, all plastic, reloadable shotgun cartridge contains the conventional elements of a shotgun cartridge, i.e., shot, wadding, primer and a powder charge. A crimp step makes for easier crimping; a self-locking feature is provided by serrations; and powder reloading can be easily accomplished from both ends of the shell casing portion of the cartridge.

3,675,577
ROD WARHEAD
Hyman M. Sternberg; Dante Placesi, Jr., both of Silver Spring, and Howard Katz, Rockville, all of Md., assignors to The United States of America as represented by the Secretary of the Navy
Filed June 30, 1964, Ser. No. 380,117
Int. Cl. F42b *13/48*
U.S. Cl. 102—67 10 Claims

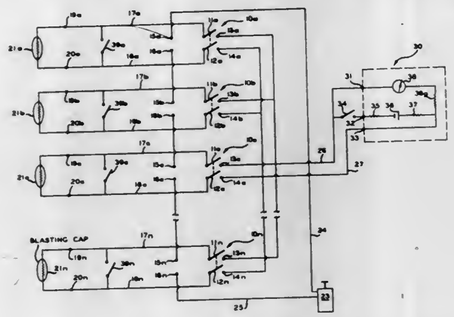


1. An explosive warhead comprising,
inner and outer metallic cylinders concentrically disposed about a common axis,
first and second annular bodies of explosive material concentrically disposed about said axis,
said first body being disposed within the inner cylinder,
said second body being positioned radially between said cylinders in contact with one of said cylinders and being radially spaced from the other cylinder, and
means connected to the first body for igniting the first body of explosive material prior to the detonation of the second body of explosive material.

3,675,578
APPARATUS FOR TESTING AND DETONATING BLASTING CAPS
Gary D. Douglas, and Billy J. Eaves, both of Clinton, Okla., assignors to Phillips Petroleum Company
Filed Jan. 28, 1970, Ser. No. 6,405
Int. Cl. F42b *5/08, 9/08, 21/38*
U.S. Cl. 102—70.2 3 Claims

Apparatus is provided for testing individually a plurality of

blasting caps and for detonating such caps simultaneously. A plurality of double-pole, double-throw switches to serve to



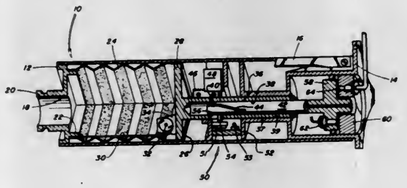
connect the blasting caps selectively to a circuit continuity meter or to a detonating device.

3,675,579

PRESSURE ACTUATED SAFETY AND ARMING DEVICE

Sherman L. Min, Upper Marlboro, Md., assignor to The United States of America as represented by the Secretary of the Navy

Filed Feb. 25, 1970, Ser. No. 17,993
Int. Cl. F42b 9/08
U.S. Cl. 102—70.2 1 Claim



A safety and arming device having a spring biased bellows inflatable under air pressure of a predetermined magnitude. A tube is connected to the bellows and a stud is fixed to the inside of the tube. A shaft having a helical slot formed therein fits into the tube with the stud extending into the helical slot and an arming rotor is fixed to the end of the shaft. Under air pressure of a predetermined magnitude, the bellows expands and moves the tube which causes the stud, which is fixed to the inside of the tube and riding in the helical slot, to rotate the shaft and thereby rotate the arming rotor. A gear rack connected to the outside of the tube is in engagement with an escapement mechanism to limit the rate of travel of the bellows to preclude premature arming under the influence of shocks.

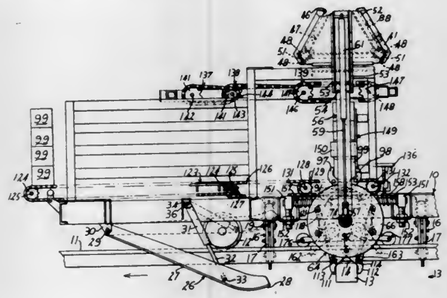
3,675,580

APPARATUS FOR REPLACING OLD CROSS TIE WITH NEW CROSS TIE

Royce G. Kershaw, Montgomery, Ala., assignor to Kershaw Manufacturing Company, Inc.

Filed Jan. 18, 1971, Ser. No. 107,163
Int. Cl. E01b 29/06
U.S. Cl. 104—9 9 Claims

Rotatable turret carried by transverse frame adapted for lateral movement relative to supporting frame extending longitudinally of railroad track. Cross tie grippers on turret engage old and new ties concomitantly to extract old tie and extract new tie from source of supply while rails elevated. Turret rotated after old tie extracted to release old tie at location removed from point of extraction then rotated to position new



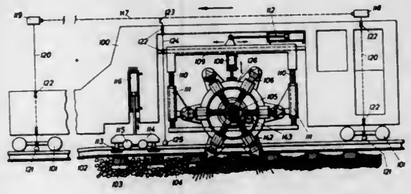
tie at point of extraction of old tie. Transverse frame then moved inwardly to insert new tie and rails then lowered. Tie plate grippers engage opposite sides of tie plates while rails elevated and release tie plates upon lowering rails onto new tie.

3,675,581

MOBILE TRACK TAMPING MACHINE

Franz Plasser, and Josef Theurer, both of Johannesgasse 3,, Vienna 1, Austria

Filed July 13, 1970, Ser. No. 54,470
Claims priority, application Austria, July 24, 1969, 7177/69
Int. Cl. E01b 27/16
U.S. Cl. 104—12 22 Claims



A rotatable tamping tool carrier mounts a series of successive vibratory tamping tools extending in a vertical plane parallel to the track like spokes in a wheel about an axis of rotation extending transversely of the track. The tamping tool ends extend in a circle passing through the cribs beneath the tamping tool carrier whereby successive tamping tools continuously and successively tamp the ballast in successive cribs and under successive ties as the mobile track tamping machine, on which the carrier is mounted, continuously advances along the track.

3,675,582

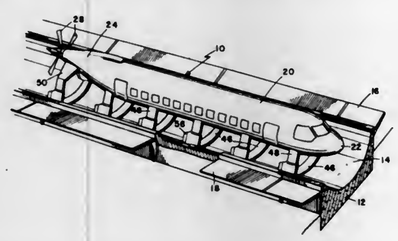
MASS TRANSPORTATION SYSTEM

Peter F. Girard, La Mesa, and John M. Peterson, San Diego, both of Calif., assignors to Teledyne Ryan Aeronautical Company, San Diego, Calif.

Filed Aug. 5, 1970, Ser. No. 61,311
Int. Cl. B61b 13/08
U.S. Cl. 104—23 R 14 Claims

A high speed mass transportation system, in which a train unit rides in an arcuately concave, narrow guideway and is

aerodynamically supported on airfoils conforming to the arcuate form of the guideway. The center mass of the vehicle is below the center of radius of the guideway, which provides a self-stabilizing and automatic banking action in high speed turns, so that passengers are not subjected to lateral accelerations. The airfoils are spaced several inches above the



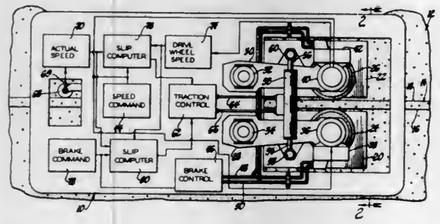
guideway at cruising speed, so that the surface finish of the guideway is not unduly critical and cost is minimized. Retractable wheels are provided for supporting the train unit at low speeds and on flat surfaces. Propulsion may be by means of direct thrust, such as a propeller, or by electrical drive means, such as a linear induction motor.

3,675,583

SPEED AND SLIP CONTROLLED TRACTION DRIVE

Albert J. Sobey, Bloomfield Hills, and Richard H. Donlon, Troy, both of Mich., assignors to Transportation Technology, Inc., Madison Heights, Mich.

Filed Oct. 29, 1969, Ser. No. 872,021
Int. Cl. B60v 3/04; B61c 15/08; B61f 9/00
U.S. Cl. 104—23 FS 13 Claims



A controlled traction vehicle gripping drive and brake system including a vehicle supported relative to a roadway having a fixed central vertical rail, a pair of drive-brake wheels mounted on the vehicle for rotation about vertical axes, and hydraulic control means for varying the caliper loading between the wheels and the faces of the rail to control wheel slip under vehicle cruise, acceleration, and deceleration conditions.

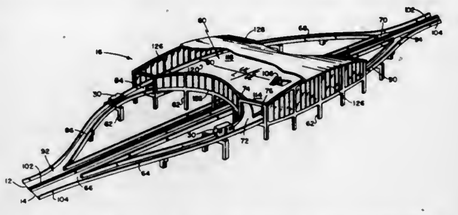
3,675,584

TRANSPORTATION SYSTEM

Edwin F. Hall, Sharon, Mass., assignor to Alden Self-Transit Systems Corporation, Bedford, Mass.

Filed June 1, 1970, Ser. No. 41,955
Int. Cl. B61b 1/02; E01f 1/00
U.S. Cl. 104—28 2 Claims

A station arrangement in a transportation system that has two parallel travel arteries and has four distinct service areas. A station access path extends from each travel artery and divides into two station service paths at a junction. Each station service path passes a corresponding station service area and then merges with a service path from the other access path to



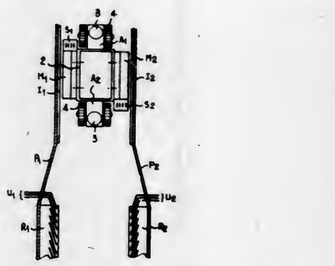
form an exit path which in turn merges with the corresponding travel artery.

3,675,585

HANDLING CONVEYORS HAVING SELF-PROPELLED TROLLEYS

Albert Wiart, Sannois, and Simon Cynober, Paris, both of France, assignors to Jeumont-Schneider, Paris, France

Filed Mar. 15, 1971, Ser. No. 123,967
Claims priority, application France, March 17, 1970, 7009480
Int. Cl. H02k 41/02
U.S. Cl. 104—148 LM 4 Claims



A process which relates more particularly to handling of conveyors having off-level sections in their path. The process is characterized in that in every section which is other than level, at least one of the side armatures of the conveyor is omitted and replaced by an a.c. energized auxiliary linear motor field. While a self-propelled trolley is moving in the section other than level, at least one of the fields of the trolley, namely the field corresponding to the omitted side armature, is disconnected from its energizing a.c. circuit by appropriate means and simultaneously connected to variable impedances so as to behave like an armature in relation to the auxiliary field, the impedances behaving like armature impedances, so that the system lakes the form of an auxiliary variable-speed linear motor associated with each off-level section. The auxiliary linear motor provides the power or extra power for driving or retarding the trolley while the same is travelling in the off-level, the trolley speed in the off-level section thus being maintained substantially equal to the trolley speed in the level zones.

3,675,586

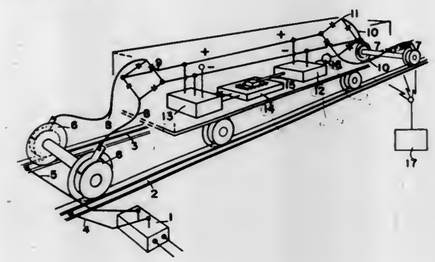
CONTROL SYSTEM FOR DUAL RAIL MODEL ELECTRIC VEHICLES

Albert G. Haddad, 7806 Corregidor Road, Armed Forces Staff College, Norfolk, Va.

Filed Sept. 19, 1969, Ser. No. 859,371
Int. Cl. B60l 15/14
U.S. Cl. 104—149 6 Claims

A dual rail model electric vehicle control system including a transmitter for sending signals to a receiver mounted on the

vehicle. The receiver is connected to a servo motor which, in turn, is connected to a double pole rheostat, whereby the direction and amount of current flowing to the vehicle electric drive motor may be remotely controlled. A double power



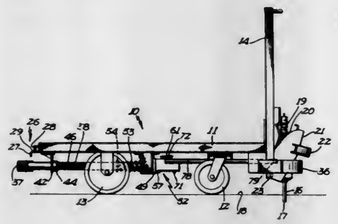
pick-up is connected to the vehicle wheels which conduct the current from the rails to a double bridge rectifier arrangement, the output of which is connected to the receiver and rheostat.

3,675,587

TOW LINE TRUCK AND BUMPER SYSTEM

Stanley L. Zetterlund, Easton, Pa., and Robert O. Skogen, Faribault, Minn., assignors to Nutting Truck and Caster Company, Faribault, Minn.

Filed Sept. 28, 1970, Ser. No. 76,054
Int. Cl. B65g *17/42*
U.S. Cl. 104—172 BT **11 Claims**



A truck for tow line use is provided with an improved movable bumper construction. A preferred form of such movable bumper construction includes a longitudinally extending shaft on such bumper, means supporting the shaft for longitudinal movement between first and second positions, means normally urging the shaft and bumper toward one of said positions, and latching means for selectively locking the movable bumper in each of its first and second positions. The specific latching means includes at least one angularly movable locking washer through which a bumper shaft projects, the washer being angularly movable between a position in which the shaft is freely movable in either direction, and at least one position inclined to the axis of the shaft for locking engagement to prevent movement of the shaft in one direction.

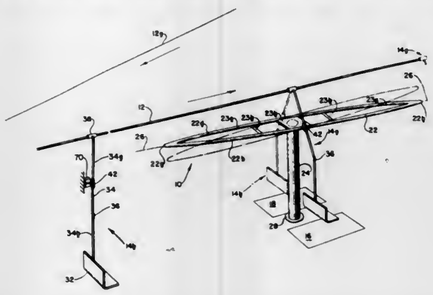
3,675,588

SKI LIFT APPARATUS

Paul E. Gaynor, 174 Lowell St., Arlington, Mass.

Filed May 5, 1970, Ser. No. 34,851
Int. Cl. B61b *11/00*
U.S. Cl. 104—173 **12 Claims**

A ski lift employs an endless cable loop with chairs, T-bars or the like suspended from the cable by way of hangers. A loading station selector is located below one run of the cable loop near the bottom thereof and the loading stations for the lift are located at each side of the selector midway along its length. Another similar selector is stationed at the top of the slope. Each selector has two operative positions. When it is in one position, an oncoming chair is diverted sideways to one side of the cable run so that it passes through one loading sta-



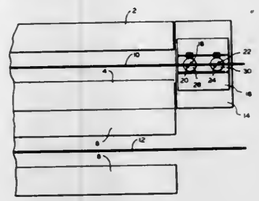
tion. After this chair leaves its loading station, the selector switches to its other operative position, whereupon the next oncoming chair is diverted sideways to the other side of the cable run so that it passes through the other loading station. This process is repeated with successive oncoming chairs being guided alternately to the two loading stations.

3,675,589

TRANSFER CAR GUIDANCE SYSTEM

Calvin W. Hunter, Battle Creek, Mich., assignor to Clark Equipment Company

Filed Feb. 17, 1971, Ser. No. 115,947
Int. Cl. B60s *13/02*; **B61j** *1/10*; **B65g** *65/02*
U.S. Cl. 104—247 **7 Claims**



A transfer guidance system for a self-propelled stacker having means to raise and rotate a gripping guidance plate on the stacker to place guidance rolls in contact with a guidance rail and thus guide the stacker along the rail.

3,675,590

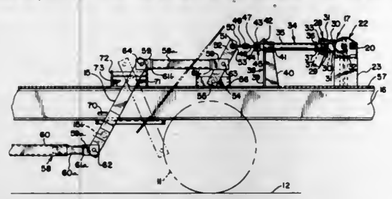
DOOR OPERATING MECHANISM

James J. Schuller, Dolton, Ill., assignor to Pullman Incorporated, Chicago, Ill.

Filed Dec. 12, 1969, Ser. No. 884,424
Int. Cl. B61f *9/00*
U.S. Cl. 105—240 **14 Claims**

This invention relates to a railroad hopper door operating mechanism which incorporates a reciprocating scissor drive in opening and closing railway car hopper doors. In particular, the mechanism utilizes a manually operated scissors link means which converts rotation of a transverse reversely threaded shaft into longitudinal movement of an input drive link which through a lost motion connection transmits forces to the output drive link to the door operating levers for open-

ing and closing of the hopper car doors and yet isolates damaging forces from the scissors link means. The input drive



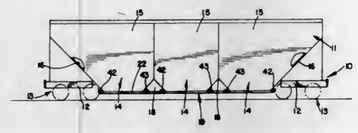
versus output drive construction produces a force couple arrangement to inhibit accidental opening of the doors.

3,675,591

CHAIN ACTUATED RAILWAY HOPPER GATE

Ernest J. Nagy, and William R. Shaver, both of Munster, Ind., assignors to Pullman Incorporated, Chicago, Ill.

Filed June 1, 1970, Ser. No. 42,369
Int. Cl. B61d *7/02*, *7/20*, *7/26*
U.S. Cl. 105—253 **9 Claims**



A hopper car including a plurality of longitudinally spaced discharge openings forming a trough type discharge arrangement having converging slope sheets which provide a plurality of spaces separating the discharge openings. A discharge gate arrangement includes a closure gate for each of the discharge openings, the gate comprising a plurality of individual sections which are sequentially movable into the spaces between the discharge openings to an out-of-the-way open position with the sections vertically stacked within said spaces. The spaces provided between the discharge openings also support, on a frame structure therein, rotatable shafts including reel means or pulley arrangements about which chains are trained, the said chains being connected to one of the gate sections for sequentially moving the sections between the open and closed positions. Another shaft is positioned adjacent each opening provided at opposite ends of the car to which the chains of one of the pulleys within the space are connected for operating the movement of the discharge gates. During the opening of each gate, the shaft is rotated so that the chain winds around the pulley and during the initial opening a high torque is exerted on the first gate section to move the same and the speed of the initial movement is comparatively slow. As the chain further winds onto the pulley, the gate sections are moved more rapidly and less torque is exerted by virtue of the chain winding. The converse is achieved when it is desired to close the gate; the other cooperating shaft and pulley initially exert a high operating torque to move the first section of the gate and as the chain winds about the last mentioned pulley the diameter increases lessening the torque and increasing the speed of operation.

3,675,592

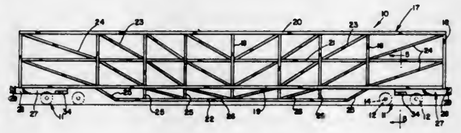
TRUSS-TYPE CARGO CARRYING VEHICLE

Norman E. Bateson, Munster, Ind., and William L. Pringle, Grosse Pointe Shores, Mich., assignors to Pullman Incorporated, Chicago, Ill.

Filed Aug. 20, 1970, Ser. No. 65,461
Int. Cl. B60p *3/06*
U.S. Cl. 105—368 R **24 Claims**

A truss structure includes upper and lower beams with vertical interconnecting beams on which cargo of any type may be suspended. The truss structure is adapted to be supported on horizontally spaced wheel suspensions, such as is common in over-the-highway vehicles, or it may be disposed in and be connected to structural components in aircraft wherein the truss structure supports the cargo and provides a primary structural component of both modes of transportation.

In a railway car a relatively narrow upright truss structure is supported at its opposite ends on trucks. The truss structure is provided at opposite ends with short sill sections which contain coupler housings supporting conventional couplers. At opposite ends of the truss structure horizontal stabilizing members extend laterally outwardly of the truss structure and are adapted to be connected to conventional single or double



axle trucks in conventional fashion. The narrow truss structure is the sole structural support of the car and provides on opposite sides thereof, between the trucks, a free and unencumbered space to which ready access may be had by suitable powered handling devices which may lift cargo into position to be connected and suspended on opposite sides from said truss structure.

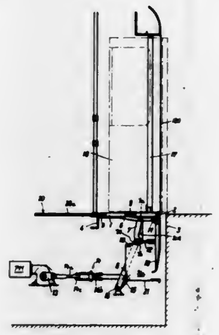
A modified embodiment comprises a railway car which includes a pair of truss sections which have outer ends supported on single axle trucks, and adjacent inner ends supported on double axle trucks by means of an articulated connector assembly.

3,675,593

STAIRWAY FOR RAIL-MOUNTED CONVEYANCES

Franz Tonne, Dusseldorf; Werner Brand, Bergisch Neukirchen; Benno Wolowitz, Dusseldorf-Gerresheim, all of Germany, assignors to Waggonfabrik Verdingen A.G., Dusseldorf, Germany

Filed Dec. 11, 1969, Ser. No. 884,179
Int. Cl. B61d *23/02*
U.S. Cl. 105—447 **14 Claims**



A stairway for use in streetcars or subway cars wherein a portion of the floor constitutes the uppermost step and is spaced inwardly from a lowermost step which is fixedly secured to the chassis. An auxiliary step which has two hingedly connected panels is movable between a first position in which the two panels constitute an extension of the uppermost step and overlie the lowermost step so that the floor can be

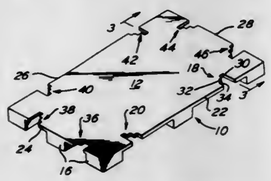
reached from a relatively high subway platform, and a second position in which one of the panels extends downwardly from the uppermost step and the other panel extends horizontally between the levels of the uppermost and lowermost steps to constitute an intermediate step whereby the stairway is ready to be used on streetcars to permit boarding from a low street curb.

3,675,594
DRAFTING TABLE
Victor J. Kritske, Sheboygan, Wis., assignor to Mayline Company, Inc., Sheboygan, Wis.
Filed Nov. 10, 1969, Ser. No. 875,059
Int. Cl. A47f 5/12
U.S. Cl. 108—2 8 Claims



The drafting table includes a base, a pair of support brackets pivotally mounted on the base, and a drafting board mounted on the brackets for both vertical and angular adjustment. The drafting board includes a plurality of identical metal sections, a working sheet overlying the sections, and a peripheral metal frame. The metal sections have interfitting means integral therewith for holding the sections together. The interfitting means includes a depending tongue element of generally uniform width and a downwardly diverging groove element.

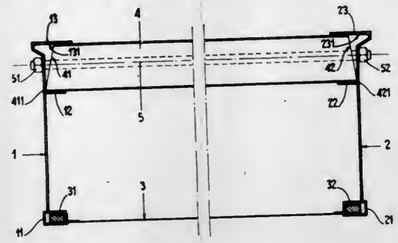
3,675,595
PALLET
Matthew A. Sullivan, Elkins Park, Pa., assignor to Sullifoam, Inc., Willow Grove, Pa.
Filed April 20, 1970, Ser. No. 29,812
Int. Cl. B65d 19/00
U.S. Cl. 108—51 6 Claims



A pallet for supporting loads of various sizes. The pallet includes a pallet bottom having load supporting surface having notch means on at least two sides thereof. Each notch means has a plurality of band contact surfaces at varying distances from its respective side of the load supporting surface to permit tight banding of various size loads. A pallet top may be provided for further securing the load and to permit stacking of the pallets.

3,675,596
LOAD-CARRYING PALLET
Francois Colas, Bourg La Reine, France, assignor to Cegedur GP, Paris, France
Division of Ser. No. 779,740, Nov. 29, 1968, Pat. No. 362,869.
This application May 11, 1970, Ser. No. 48,710
Int. Cl. B65d 19/00
U.S. Cl. 108—51 12 Claims

A pallet for supporting materials comprising a pair of end sections of similar construction formed of a vertically disposed end plate, a pair of flanges extending inwardly substantially perpendicularly from the upper end portion of the end plate in vertically spaced apart parallel relation and a slideway in the form of a tubular section on the lower end portion of each of the end plates, a panel dimensioned for its ends to be received



between the respective flanged pairs of the end plates and a base plate extending across the pallet with the ends of the base plate received in engagement within the slideways and means for securing the elements in their assembled relationship to form the pallet.

3,675,597
TABLE TOP SUPPORT
Trygve R. Oddsen, 136 W. Water View St., Northport; Gustav A. Oddsen, Frost Creek Drive, Locust Valley, and Leo Edelson, 1015 Old Post Road, Mamaroneck, all of N.Y.
Filed May 20, 1969, Ser. No. 826,092
Int. Cl. A47b 9/02
U.S. Cl. 108—136 7 Claims

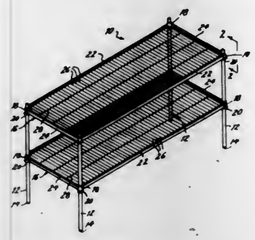


Vertical adjustable support for a table top utilizing a spring assembly to counterbalance the table top at any of an infinite number of levels and to cooperate with a compressive locking mechanism actuated by a conveniently positioned simple manual control member to effect a stable, rigid columnar structure at selected adjusted height levels of the table top.

3,675,598
ADJUSTABLE SHELVING
Sol Kesilman; Milton Kravitz, both of Cheltenham, and Hyman B. Penn, Glenside, all of Pa., assignors to William Hodges & Co., Inc., Philadelphia, Pa.
Filed Nov. 4, 1970, Ser. No. 86,665
Int. Cl. A47b 9/00
U.S. Cl. 108—144 8 Claims

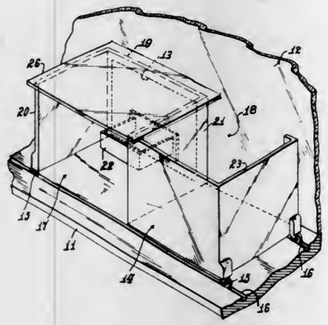
Adjustable shelving pieces supported on uprights, each piece of shelving including shelf collars at the corners thereof, each upright being provided with a shelf support that is

secured to the upright by a tightening screw, the outer surface of the shelf support tapering outwardly downwardly, said shelf collar having an interior surface that also tapers outwardly



downwardly with said shelf collar being placed about said shelf support in a snug fit and held in place by said shelf support.

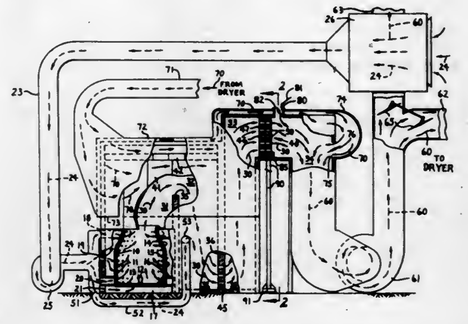
3,675,599
DRIVE-IN WINDOW UNIT
Edgar E. Shively, 1080 Hamlin St., Gary, Ind.
Filed April 22, 1971, Ser. No. 136,379
Int. Cl. E06b 9/00
U.S. Cl. 109—11 8 Claims



A drive-in window unit embodying a frame having separate cash and merchandise compartments selectively movable into place rearwardly of a window opening.

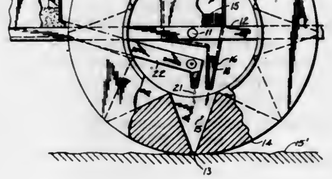
3,675,600
RECIRCULATING DRYER SYSTEM
Allen J. Jones, Fall Creek, Oreg., assignor to Michel Lumber Company, Lake Oswego, Oreg.
Continuation-in-part of Ser. Nos. 25,974, April 6, 1970, Pat. No. 3,598,067, and Ser. No. 56,447, July 20, 1970, and Ser. No. 87,806, Nov. 9, 1970. This application Jan. 21, 1971, Ser. No. 108,527
Int. Cl. F23g 7/00
U.S. Cl. 110—8 R 13 Claims

Combustion gases from a waste wood fired furnace are circulated through a wood veneer dryer or lumber dry kiln and returned to a mixing chamber for exposure to the hot gases leaving the furnace, causing incineration of volatile hydrocarbons and wood fiber picked up by the gas stream in its passage over the veneer or lumber. The only exhaust from the system is located between the outlet from the high temperature mixing chamber and the gas inlet to the dryer. This arrangement insures the incineration of all combustibles before they are



vented to atmosphere or returned to the dryer so that no pollutants are discharged into the atmosphere and no potentially explosive substances are passed into the dryer.

3,675,601
SEED DISPENSING APPARATUS
Lester R. Schlievert, Rte. 2, Box 165, Curtis, Ohio
Filed Aug. 17, 1970, Ser. No. 64,307
Int. Cl. A01c 7/18
U.S. Cl. 111—51 1 Claim

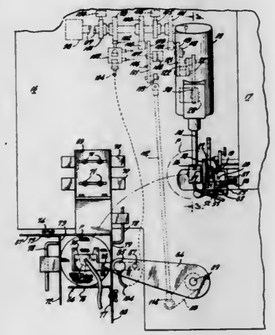


A device consisting of a wheel and hopper arrangement for properly dropping seed in an orderly spaced way. This device includes a wheel having radially spaced apart openings, the wheel being affixed to an axle on a frame of a vehicle, the frame supporting a seed hopper and a sand hopper, the sand being placed with the seed upon the soil to allow easy breakthrough of the seedlings.

3,675,602
AUTOMATIC EMBLEM SEWING APPARATUS
Angelo Pirrello, Kearny, N.J., assignor to Clinton Industries, Inc., Hackensack, N.J.
Filed June 30, 1970, Ser. No. 51,197
Int. Cl. D05b 33/00
U.S. Cl. 112—121.29 16 Claims

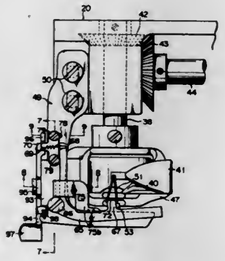
An apparatus for automatically applying finishing stitches around the borders of emblems includes a sewing machine with an automatic needle positioner, a vacuum pickup mechanism for transferring an emblem from a stack thereof to the sewing station, and an emblem guide mechanism including a servomotor-driven feed wheel laterally spaced from the sew-

ing machine feed dog and controlled by an emblem edge sensor positioned rearwardly of the needle position. A stitch chain cutter actuated by the sewing machine trails the edge sensor and a stitch chain sensor trails the knife. A network controls the sequence of operations to raise the feed wheel and machine foot piece, transfer an emblem from the stack to the sewing station, to lower the wheel and foot piece, to start the sewing machine to advance the emblem with the last emblem attached thereto by a stitch chain and to apply stitches



thereto, to continue the sewing following the sensing of the chain for a predetermined interval to form an overlap of the stitching trailing and leading ends, the connecting chain being cut and the last emblem discharged, to raise the foot piece and speed up the wheel for a predetermined period to swing the sewn emblem from the sewing station while forming a stitch chain, to stop the machine with the needle raised, to raise the feed wheel and to repeat the cycle. The machine is disabled upon thread breakage, improper label positioning and a pressure rise in the vacuum.

3,675,603
SEWING MACHINE CONVERTIBLE FROM LOCK STITCH TO CHAIN STITCH
Chikao Yamashita, Aichi-ken, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya-shi, Japan
Filed May 19, 1970, Ser. No. 38,734
Claims priority, application Japan, May 23, 1969, 44/40464
Int. Cl. D05b *1/14*
U.S. Cl. 112—168 **7 Claims**



A lock stitch sewing machine concurrently capable of carrying out chain stitching, namely, performing lock stitching when fitted with a throat plate adapted for said stitching and chain stitching when provided with another throat plate suitable for said stitching.

3,675,604
GARMENT CUTTING AND STACKING METHOD
Wade W. Frost, Vidalia, Ga., assignor to Oxford Industries, Inc., Atlanta, Ga.
Filed Oct. 8, 1970, Ser. No. 79,031
Int. Cl. D05b *1/00*
U.S. Cl. 112—262 **6 Claims**



A garment cutting and stacking method and apparatus for use in combination with a sewing machine where the center plait of a shirt is applied to the front panel of the shirt in the shirt making process. The center plait is positioned on the shirt panel so that its ends overlie the leading and trailing edges of the panel, and as the pieces are stitched together and moved from the sewing machine, the leading and trailing ends of the center plait are cut so that they are approximately coextensive with the leading and trailing edges of the shirt panel. A stacker is responsive to the passage of the trailing edge of the shirt panel from the sewing machine to grasp and stack the shirt panel at a position remote from the sewing machine.

3,675,605
SHIP OR BOAT HULL CONSTRUCTION
Hugh S. Knerr, 9-24th Ave., Isle of Palms, S.C.
Filed July 29, 1970, Ser. No. 59,316
Int. Cl. B63b *1/10*
U.S. Cl. 114—61 **11 Claims**

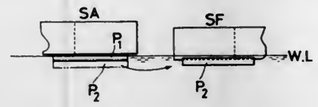


A hull for ships or boats comprised of two elongated demi-hulls integrally joined together generally along the centerline of the hull whereby each of the demi-hulls has a keel disposed along the length thereof on either side of the centerline of the hull. The keels extend from a point adjacent the bow of the hull downwardly and outwardly along the length thereof to a point intermediate of the hull from where the keels extend upwardly and outwardly to a point adjacent the stern of the hull. The keels and the demi-hulls are in continual diverging orientation with respect to each other throughout substantially the length of the hull, providing the hull with a generally inverted V-shaped diverging configuration along the bottom thereof.

3,675,606
METHOD OF CONSTRUCTING MARINE FLOAT STRUCTURES
Isoe Takezawa; Masataro Muto, and Koichi Hori, all of Nagasaki, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan
Filed May 26, 1970, Ser. No. 40,520
Claims priority, application Japan, June 5, 1969, 44/44198
Int. Cl. B63b *9/00*
U.S. Cl. 114—65 R **2 Claims**

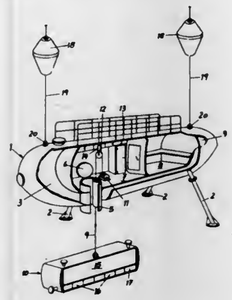
A method of constructing a marine float structure, such as a large-sized ship structure, is accompolished by assembling a number of divided ship portions on a ship building base. The

first divided portion is transported on the water surface by means of a composite pontoon which is so constructed that each individual portion thereof can be separated from the other up and down or forwardly and backwardly. Then the composite pontoon is caused to sink down in the water so that said first divided portion of the ship can float of its own accord on the water surface. Subsequently the second divided portion of the ship is transported on the water surface using the same



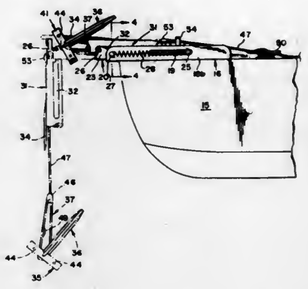
pontoon as mentioned above. A part of the composite pontoon is separated from the remaining body and allowed to sink down in the water while said second divided portion of the ship is held by the remaining portion of the pontoon. The separated part of the pontoon is used to float said first divided portion of the ship on the water surface, thereby combining both divided portions of the ship in a single unit on the water surface.

3,675,607
METHOD AND APPARATUS FOR CONTROLLING DEPTH OF SUBMERGENCE OF AN UNDERWATER VEHICLE
Jurgen Dorschel, Oberhausen, Germany, assignor to Deutsche Babcoak & Wilcox Aktiengesellschaft, Oberhausen, Germany
Filed Feb. 25, 1970, Ser. No. 13,900
Claims priority, application Germany, Feb. 27, 1969, P 19 09 823.8
Int. Cl. B63g *8/00*
U.S. Cl. 114—16 R **16 Claims**



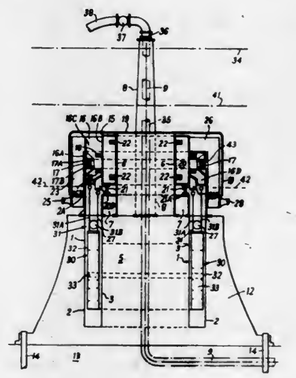
A method and apparatus for controlling the depth of submergence of an underwater vehicle is described. The vehicle is formed of two separate components. A first component is a submergible main housing enclosing human life sustaining quarters in open pressure communication with a surrounding body of water. The second component is in the form of a submergible depth control body of a predetermined underwater weight. The depth control body is suspended from the house with a retractable cable. The submergible housing is provided with tanks whose air to water ratio is controlled to bring the buoyancy of the housing below the underwater weight of the depth control body. Precise depth control of the underwater housing is obtained by controlling the length of the cable. The life sustaining quarters of the vehicle are supported with material, such as fresh water or electrical storage batteries and the like, stored in a container in the second component.

3,675,608
ANCHOR CARRIER AND GUIDE
James E. Webb, 13809 Hershie St., Houston, Tex.
Continuation-in-part of Ser. No. 52,261, July 7, 1970, Pat. No. 3,635,187. This application April 27, 1971, Ser. No. 137,805
Int. Cl. B63b *21/22*
U.S. Cl. 114—210 **7 Claims**



The device serves, on pulling in the anchor cable, to first register the anchor shank in a tube which, with the anchor dropped, is pivotally suspended from the forward end of a channel member which is slidably mounted in a fixed channel member on the bow of a small boat. Resilient means normally urges the slidable channel member forward. When the anchor is in fully retrieved position the said tube registers in the slidable channel and the latter is held, against the force of the resilient means, in its rearmost position by the tautened cable. Upon release of the cable, the resilient means forces the slidable channel to its extreme forward position and the momentum thereof causes the tube to slide forward and simultaneously to pivot downward while the anchor shank slides out of the tube.

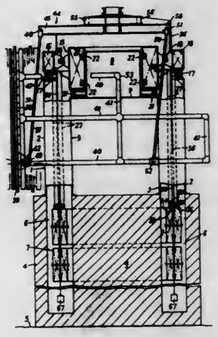
3,675,609
MOORING STRUCTURE
Walter Kohring, Angle View, Pilgrim's Way, West Humble, Dorking, Surrey, England
Filed March 18, 1971, Ser. No. 125,646
Claims priority, application Great Britain, March 19, 1970, 13,263/70
Int. Cl. B63b *35/00, 21/52*
U.S. Cl. 114—230 **14 Claims**



A mooring structure particularly such a structure as will allow a single vessel to be moored thereto in open water and will accommodate surging movements of the vessel. The top

of the mooring structure is covered by a downwardly opening shield which allows the structure to be totally submerged and filled with a lubricant such as oil, an oil/water interface being maintained at a level above the lower edge of the shield. A further feature comprises a weight structure resisting the surging movements, the weight structure being in the form of a vessel filled with heavy flowable material.

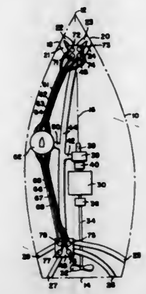
3,675,610
MOORING STRUCTURE IN COMBINATION WITH A FENDER
Walter Kehring, Angle View, Pilgrim's Way, West Humble, Dorking, Surrey, England
Filed March 18, 1971, Ser. No. 125,645
Claims priority, application Great Britain, March 19, 1970, 13,263/70
Int. Cl. B63b *21/00*
U.S. Cl. 114—230 **10 Claims**



A mooring structure in combination with a fender, the mooring structure comprising a fixed element supporting a rotatable head having first and second relatively rotatable parts, a weight structure supported by a plurality of pairs of ropes, the ropes of each pair being respectively connected to the first and second parts so that relative rotation of the parts lifts the weight structure by increasing the angle between the ropes of each pair to provide an increasing restoring force, movement of the fender causing such relative rotation of the parts and adjustment means for adjusting the effective lengths of the ropes to adjust the device to form a 'soft' fender or a 'hard' fender.

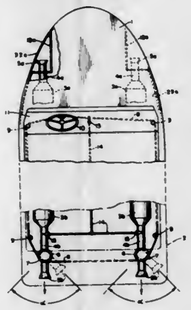
3,675,611
JET STEERING BOAT
John P. Glass, c/o Cava Industries 79 La Grange Ave., Essington, Pa.
Filed Feb. 27, 1970, Ser. No. 14,985
Int. Cl. B63h *11/00*
U.S. Cl. 115—12 R **13 Claims**

A boat has a plurality of water-jet nozzles mounted at the bow and stern to assist in steering the boat especially when docking. The water-jet nozzles also provide auxiliary drive to propel the boat at slow speeds. A pump supplies water to the water-jet nozzles, and a control mechanism operates the



valves to move the boat forward, aft, sideways, and to rotate it clockwise and counterclockwise.

3,675,612
DRIVING, STEERING AND BRAKING SYSTEM FOR BOATS
Dieter Pfeiffer, Am braunen Berg 10, Hinsbach, Germany
Filed March 12, 1970, Ser. No. 19,017
Claims priority, application Germany, March 13, 1969, P 19 12 780.1
Int. Cl. B63h *11/00*
U.S. Cl. 115—12 R **5 Claims**

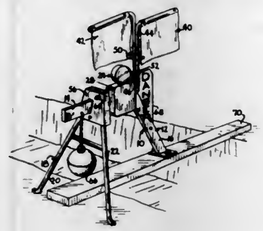


System for boats having compressed-air means for providing propulsive power by way of nozzles, of which swingable ones are provided in the stern and optional, stationary ones in the bow. Articulated conduit sections allow the stern nozzles to be swung about considerable angles, thereby controlling the direction of movement of the boat, while speed control may be provided through conventional throttle means which are operable independently from steering means which act upon the swinging movement of the nozzles. The nozzles in the bow can be used for braking forward movement and to provide rearward movement of the boat; they may be closed by flaps when not in use.

3,675,613
COLLAPSIBLE SIGNAL ASSEMBLY
Louis F. Sayles, 909 Rebideaux St., St. Joseph, Mo.
Filed May 28, 1970, Ser. No. 41,221
Int. Cl. E01f *9/10*
U.S. Cl. 116—63 P **7 Claims**

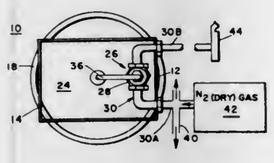
A collapsible signal assembly has components removably secured to the base of the assembly in a manner to prevent

unauthorized removal of the components. The securing means for all but a "key" component are blocked from removal by



the close presence of an adjacent component, and the securing means for the "key" component is protectively covered by a lockable guard.

3,675,614
FLUID LEVEL ALARM DEVICE FOR TANKS AND THE LIKE TO MINIMIZE SPILLS OF OIL AND OTHER ENVIRONMENTAL POLLUTANTS
John T. Ward, 5707 W. Rockburn Hill, Elkridge, Md., and Allen B. Keller, 2914 Ontario Ave., Baltimore, Md.
Filed Nov. 6, 1970, Ser. No. 87,427
Int. Cl. G01f *23/00*
U.S. Cl. 116—118 **6 Claims**



A gas operated audible alarm device is provided to signal the advent of an overflow condition in oil tanks and the like to minimize the hazards of environmental pollution from oil and chemical spills during tank filling operations. The device has a float operated pneumatic valve positioned at a predetermined upper limit of fluid level in a receiving tank, which valve controls the passage of an inert gas from a supply source to a gas operated whistle or horn. A multiplicity of such alarm devices are adapted to be actuated from a common supply header to monitor an entire field or complex of receiving tanks.

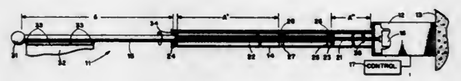
3,675,615
AUTOMATIC FLAGPOLE
Gene Stangarone, Thornton; Frank A. Cassara, Chicago, and Eugene F. Dupont, Toluca, all of Ill., assignors to Automatic Flag Poles, Inc.
Filed Dec. 1, 1970, Ser. No. 94,080
Int. Cl. G09f *17/00*
U.S. Cl. 116—173 **4 Claims**

An automatic flagpole which has a hollow interior in which the flag is stored and which has a continuous halyard and a driving mechanism for moving the halyard. The flagpole has a halyard exit at the top thereof and a lanyard entrance intermediate the length of the pole large enough to allow entrance of the flag whereby the flag may be drawn into the interior of the pole for storage, the halyard having an inboard reach interior of the pole extending from the midpoint entrance to a



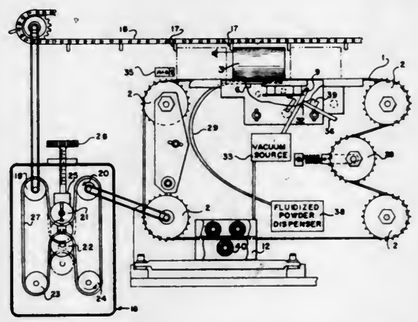
sheave mechanism atop the pole so that the flag is stored interiorly of the pole above the midpoint entrance.

3,675,616
FLAG STORAGE AND DISPLAY DEVICE
George L. McInnis, 291 Brighton St., Belmont, Mass.
Filed Aug. 18, 1971, Ser. No. 172,630
Int. Cl. G09f *17/00*
U.S. Cl. 116—173 **17 Claims**



A mechanism for extending a shaft with a flag furled thereon from a stored position and unfurling the flag for display and alternatively for furling the flag and retracting the shaft to place the flag in a protected position.

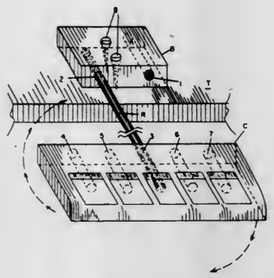
3,675,617
PIGMENTED OUTSIDE SIDE STRIPER
Robert A. Winkless, Oak Lawn, Ill., assignor to Continental Can Company, Inc., New York, N.Y.
Continuation-in-part of Ser. No. 767,582, Oct. 3, 1968, abandoned. This application Nov. 16, 1970, Ser. No. 89,922
Int. Cl. B05c *11/00*
U.S. Cl. 118—2 **20 Claims**



A device for side striping cans which uses a single belt hav-

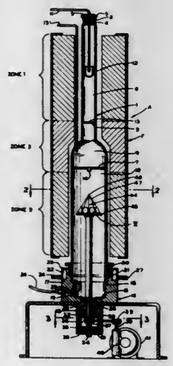
ing slots of can length along its middle. The slot gives good edge resolution to each can and avoids leakage of the side stripe material into the interior of the can.

3,675,618
FINGERPRINTING APPARATUS
Jay R. Lezak, 29149 Emery Road, Chagrin Falls, Ohio
Filed Jan. 20, 1972, Ser. No. 181,101
Int. Cl. B41k *1/00*
U.S. Cl. 118—31.5 **1 Claim**



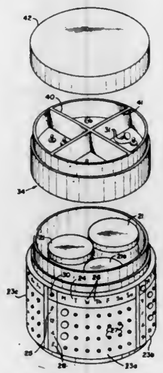
Finger printing apparatus includes a square block has two holes, one of which goes completely through the block, the other hole only part way. A metal rod, which is inserted into the center back edge of a fingerprint card-holder. The block is affixed to a table top used for fingerprinting. When the card-holder, with the rod is placed into the short hole in the block, it permits the card-holder to rotate. This rotation then allows the card-holder to roll around the finger in the taking of fingerprints, instead of rolling the finger in a half circle to get a complete set of prints. The other hole in the block allows the card-holder to be used in a fixed position without any rotation, if desired.

3,675,619
APPARATUS FOR PRODUCTION OF EPITAXIAL FILMS
John W. Burd, Chesterfield, Mo., assignor to Monsanto Company, St. Louis, Mo.
Division of Ser. No. 602,242, Dec. 16, 1966, Pat. No. 3,511,723. This application Feb. 25, 1969, Ser. No. 813,374
Int. Cl. C23c *11/00*
U.S. Cl. 118—48 **3 Claims**



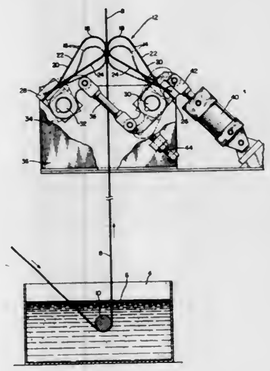
A vertically extending reaction system has seriatim, reaction, mixing and deposition chambers. The substrate support forms the bottom wall of the deposition chamber, is rotating, pyramidal in form and includes a flange extending laterally from the bottom thereof.

3,675,620
MEANS FOR RECORDING MEDICINAL DOSAGES
Michel M. Baustin, 5469 Kings Highway, Brooklyn, N.Y.
Filed Aug. 12, 1970, Ser. No. 63,179
Int. Cl. G09f *9/00*
U.S. Cl. 116—121 **6 Claims**



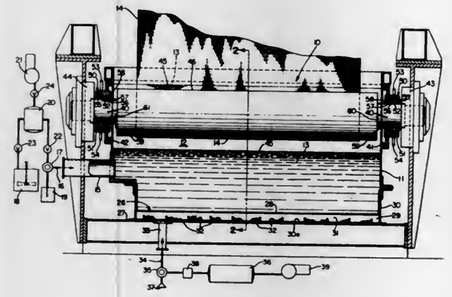
A means for keeping a record of the times at which medicinal dosages are taken in which indicia to record such dosage are arranged in columns and rows opposite the times at which the dosages are to be taken.

3,675,621
DEVICE FOR REMOVING EXCESS LIQUID COATING FROM A MOVING FABRIC
Theodore F. Griffin, Barberton, and Grover W. Rye, Cuyahoga Falls, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed July 24, 1970, Ser. No. 58,029
Int. Cl. B05c *11/04*
U.S. Cl. 118—122 **17 Claims**



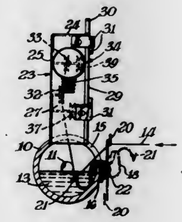
A pair of specially configured scraper blades mounted for rotating into and out of compressive wiping engagement with a fabric, previously dipped in a liquid coating, to remove excess liquid from the fabric. An air cylinder, or spring, is utilized to maintain curved lips of the scraper blades in predetermined compressive relation with the moving fabric.

3,675,622
DIP TANK USED IN COATING FABRIC
Theodore F. Griffin, Barberton, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Aug. 3, 1970, Ser. No. 60,481
Int. Cl. B05c *3/12*
U.S. Cl. 118—421 **20 Claims**



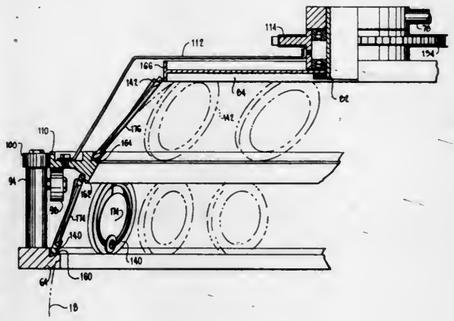
A dip tank for holding liquid adhesive used for increasing the adhesion or bond between fabric and rubberized material used in the production of pneumatic tires. A rubber bag is secured adjacent the bottom of the tank and inflated and deflated to control the level of the liquid within the tank. A roller for directing the fabric into dipping relation with liquid in the tank, is disposed in fixed relation within the tank and journalled for rotation in a pair of bearings disposed in sealed relation outside the tank, such that the liquid cannot seep into the bearings and eventually wear them out or destroy them to hamper rotation of the roller.

3,675,623
YARN HANDLING APPARATUS
Lewis A. Taylor, Wilmington, Del., assignor to Enterprise Machine and Development Corp.
Filed March 11, 1970, Ser. No. 18,510
Int. Cl. B05c *3/00*
U.S. Cl. 118—423 **10 Claims**



Apparatus is provided for handling yarns to be bulked by taking them from a treating area, such as a liquid reservoir, passing them into a housing means that contains at least one guide that is positioned so that any material thrown off the traveling yarn is not thrown toward or onto the oncoming yarn, the yarn so removed of material then being passed into a jet for bulking, the inlet end of the jet being in conduit relationship with the housing means and the separated material being conducted back to the reservoir, the housing means being in conduit relationship with the reservoir. In one embodiment, there is located on a wall of the housing a screen which breaks streams of liquid directed against it into small droplets, reducing spray.

3,675,624
APPARATUS FOR ROTATING WORK FOR THIN FILM DEPOSITION
Barney D. Hunts, Los Altos Hills, and William O. Lyon, Sunnyvale, both of Calif., assignors to The Singer Company, New York, N.Y.
Filed Aug. 6, 1970, Ser. No. 61,532
Int. Cl. B05c *11/14*
U.S. Cl. 118—503 **4 Claims**



Each carrier in a plurality of tiers of hoop-like carriers for individual silicon wafers is rotated about its own translating axis as the carrier is orbited about a central source of evaporant material. Carrier support means includes at least a three track system. The tracks are vertically spaced from one another and horizontally disposed about a common axis. Each carrier is supported on a lower track and rests on the next upper track. Rotation of either track of a cooperating pair imparts the compound motion.

3,675,625
ANIMAL LITTER
Timothy A. Miller, Ferguson, and Larry R. Hanselman, Affton, both of Mo., assignors to Ralston Purina Company, St. Louis, Mo.
Filed July 9, 1970, Ser. No. 53,642
Int. Cl. A01k *29/00*
U.S. Cl. 119—1 **9 Claims**

An improved animal litter has been developed which selectively adsorbs an odor control agent so that the fragrant pleasing aroma of said agent is no longer obvious or apparent or lost during extended periods of time, but is capable of being selectively deadsorbed by the presence of moisture, as in urine or fecal material and released to mask any offensive odors.

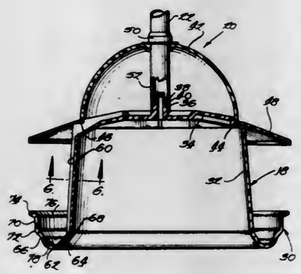
3,675,626
METHOD FOR GROWING OYSTERS
Russell J. Down, Holmes Landing Road, Cape May Court House, Cape May County, N.J.
Filed June 9, 1970, Ser. No. 44,776
Int. Cl. A01k 61/00
U.S. Cl. 119—4 1 Claim

A method of growing oysters on annular rings by first placing and vertically suspending the rings on a horizontal support



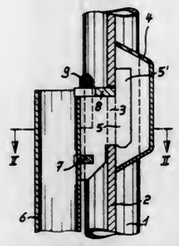
in an oyster seed growing marine habitat, than suspending the rings horizontally on support lines in a vertical stack where the oysters grow to maturity.

3,675,627
POULTRY WATERER
Lawrence A. Myers, Milford, Ind., assignor to Chore-Time Equipment, Inc., Milford, Ind.
Filed April 24, 1970, Ser. No. 31,486
Int. Cl. A01k 07/00
U.S. Cl. 119—72 11 Claims



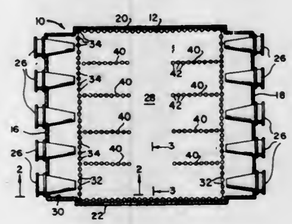
A poultry waterer having a main body member providing an annular trough and adapted to be hung from a centrally located water supply pipe, the body member including channel means for directing water from the pipe to the trough, and a hood member disposed over the body member for preventing roosting of the birds on the waterer and dust or dirt collection in the water.

3,675,628
WALL ELEMENTS FOR STEAM GENERATORS
Rudolf Selbold, Gummersbach, Germany, assignor to L. & C. Steinmuller, G.m.b.H., Gummersbach, Germany
Filed Oct. 15, 1970, Ser. No. 81,045
Claims priority, application Germany, Oct. 16, 1969, P 19 52 140.5
Int. Cl. F22b 37/24
U.S. Cl. 122—6 R 12 Claims



A wall section of a steam generator, in which the wall section is provided with passage means therethrough through which supporting means are detachably introduced for holding a platform for installation and repair purposes.

3,675,629
MINIMIZATION OF NITROGEN OXIDES IN COMBUSTION PRODUCTS
William D. Stevens, North Caldwell, N.J., assignor to Foster Wheeler Corporation, Livingston, N.J.
Filed Sept. 28, 1970, Ser. No. 76,111
Int. Cl. F22b 21/00
U.S. Cl. 122—235 R 8 Claims

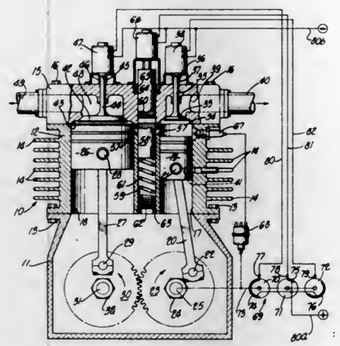


Fluid which is heated in a furnace having several rows of burners is directed through tubes aligned in rows between the burner rows to minimize the concentration of nitrogen oxides in the combustion products.

3,675,630
ENGINE
Cleo C. Stratton, 2123 Kern St., San Bernardino, Calif.
Filed July 2, 1970, Ser. No. 51,820
Int. Cl. F02b 13/22
U.S. Cl. 123—70 R 4 Claims

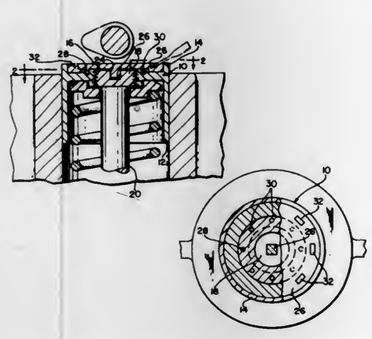
An internal combustion engine in which a power generating cylinder has a piston drivingly coupled with a piston in a combustible fluid compressing cylinder by means of gears connected with a power delivery shaft and which are adjustable to vary the timed operating relationship at which the pistons reach their respective dead center positions, the compressing

cylinder having a valve controlled inlet for a combustible fluid which is precompressed therein and delivered through an interconnecting valve controlled passage to the power generating cylinder into the space above the piston therein where it is confined under pressure and ignited after the piston in the



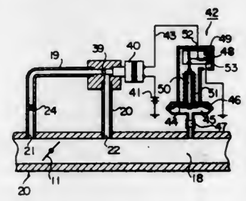
power generating cylinder has passed and is moving away from its dead center position. Electrically energizable solenoids are provided for operating the respective valves in timed relationship as determined by timing switching means synchronized with the rotation of the power delivery shaft.

3,675,631
ADJUSTABLE CAM FOLLOWER
William J. Hixson, 4220 N.E. 90th St., Seattle, Wash.
Filed June 3, 1970, Ser. No. 43,037
Int. Cl. F01l 1/20; F16h 53/06
U.S. Cl. 123—90.52 6 Claims



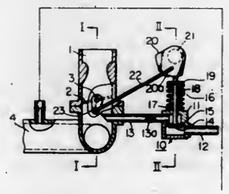
A preferred form of follower includes an inverted cup-shaped body that fits over a valve stem of an overhead cam engine and includes a threaded central bore which receives a threaded plug. The bottom surface of the plug engages the valve stem and the top of the plug is provided with a square bore. A cap fits over the body and plug and is provided with a downwardly depending square boss that is fitted into the bore of the plug. The cap is provided with slots engageable by a screwdriver to rotate the cap and thus screw the plug axially inward or outward of the body to adjust the clearance between the cam and the valve stem. A plurality of circumferentially spaced locking holes are provided to be selectively engaged by a pin depending downwardly from the cap. A second form of the invention includes an inverted cup-shaped body having an upwardly extending threaded boss. A cap overlies the body and is provided with a mating threaded bore. A recess is provided in the cap for rotating the cap and providing access to a set screw inserted through the cap for locking engagement with the threaded boss.

3,675,632
INTAKE MANIFOLD VACUUM CONTROL SYSTEM
Yasuo Nakajima, Yokosuka, Japan, assignor to Nissan Motor Company Limited, Yokohama, Japan
Continuation of Ser. No. 808,259, March 18, 1969, abandoned. This application April 2, 1971, Ser. No. 130,835
Int. Cl. Fo2m 7/12; F02d 9/00
U.S. Cl. 123—97 B 3 Claims



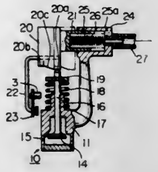
System for reducing the amount of hydrocarbons contained in the exhaust gases emitted from an automotive gasoline-powered engine having a carburetor of variable venturi type during the deceleration of the automobile. The hydrocarbon content of the engine exhaust gases is reduced during the deceleration by lowering the vacuum at the intake manifold of the engine through introduction of a proper amount of air-fuel mixture into the intake manifold by way of an additional bypass passage and under the control of a specially constructed valve.

3,675,633
AIR-POLLUTION PREVENTIVE SYSTEM FOR MOTOR VEHICLES
Yasuo Nakajima, Yokosuka, and Yoshimasa Hayashi, Yokohama, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan
Filed Jan. 13, 1970, Ser. No. 2,572
Claims priority, application Japan, Jan. 20, 1969, 44/3497; March 22, 1969, 44/21281
Int. Cl. F02m 25/06
U.S. Cl. 123—119 A 3 Claims



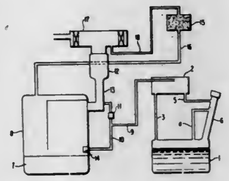
An air-pollution preventive system for use with motor vehicle internal combustion engines for effectively reducing the concentration of nitrogen oxides in the exhaust gases emitted from the engines during the city-road driving of the motor vehicle comprises means for recirculating the exhaust gases

from the exhaust manifold into the intake manifold only when the vacuum in the intake manifold is lower than a predetermined lever concurrently with the throttle valve of the carburetor being within a predetermined range of open positions. The means for recirculating the exhaust gases comprises a



recirculating passage, a valve for opening and closing the passage, and a double-action cam which is both axially movable in response to intake manifold vacuum conditions and angularly displaced in response to movement of the throttle valve to open the valve.

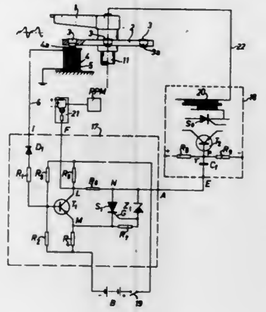
3,675,634
DEVICE FOR CONTAINING AND SUBSEQUENTLY CONSUMING THE FUEL VAPORS ESCAPING TO THE ATMOSPHERE FOR AN INTERNAL COMBUSTION ENGINE
Yasuo Tatsutomi, Hiroshima, and Tetsuo Noma, Kure, both of Japan, assignors to Toyo Kogyo Co., Ltd., Hiroshima, Japan
Filed Sept. 24, 1970, Ser. No. 75,062
Claims priority, application Japan, Sept. 24, 1969, 44/76502
Int. Cl. F02m *59/00*
U.S. Cl. 123—136 **3 Claims**



A system for containing and subsequently consuming the fuel vapors escaping to the atmosphere from an internal combustion engine in which a vapor tube of a condense tank connected to a fuel tank is connected to a connection tube connecting the crankcase to an inlet manifold, and having a valve which opens only during engine operation. A canister is connected between the crankcase and an air cleaner.

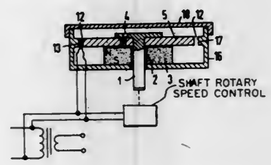
3,675,635
ELECTRONIC IGNITION DEVICE FOR INTERNAL COMBUSTION ENGINES
Toni Graser, Sonnenhofstrasse, 8340 Hinwil/Zurich, and Joseph Hirs, 164, Usterstrasse, 8621 Wetz.kon/Zurich, both of Switzerland, assignors to said Graser, by said Hirs
Filed May 18, 1970, Ser. No. 38,340
Claims priority, application Switzerland, May 21, 1969, 7869/69
Int. Cl. F02p *1/00*
U.S. Cl. 123—148 E **13 Claims**

An electronic ignition device for internal combustion engines comprises an ignition distributor having a distributor arm and an ignition circuit connected on the output side with the contact of the distributor arm. The ignition circuit is controlled without contacts by a magnetic pick-up having a rotating armature fixed for rotation with the distributor arm. The armature is formed by a disk carrying a number of permanent magnets corresponding to the number of permanent magnets corresponding to the number of cylinders of the internal combustion engine, the magnets being equally spaced in circumferential direction and disposed at the same radial distance from the axis of rotation of the disk. An induction coil with a



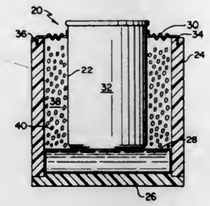
soft iron core is disposed at one side of said disk. Upon rotation of the disk with the permanent magnets the exposed pole faces on said side of the disk pass across the end face of the soft iron core. This disposition allows the magnetic pick-up to be mounted within the usual ignition casing equipped with a conventional mechanical interrupter of existing internal combustion engines.

3,675,636
IGNITION DEVICE FOR INTERNAL COMBUSTION ENGINES
Paul Hini, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany
Filed Dec. 9, 1969, Ser. No. 883,456
Claims priority, application Germany, Dec. 10, 1968, P 18 13 591.6
Int. Cl. F02p *1/00*
U.S. Cl. 123—148 E **9 Claims**



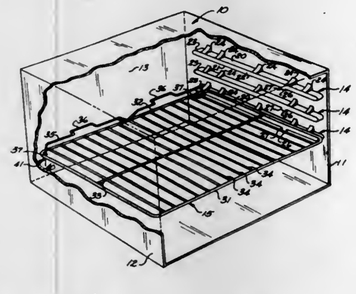
Ignition device for an internal combustion engine having a spark gap ignitable by the secondary voltage of a transformer in accordance with mechanically controlled, brief variations in the primary voltage of the transformer includes a magnetic field-dependent resistance connectible to the primary coil of the transformer, permanent magnet means displaceable relative to the resistance, and yoke means comprising a circuit for magnetic flux from the permanent magnet means, the circuit being continuously maintainable irrespective of the displaced position of the permanent magnet means, the resistance being intermittently connectible in the circuit in the course of displacement of the permanent magnet means.

3,675,637
HEAT EXCHANGE CONTAINER
Cebern B. Trimble, 1100 Westridge Road, Dayton, Ohio
Filed July 28, 1970, Ser. No. 58,886
Int. Cl. F24j *1/00*
U.S. Cl. 126—263 **4 Claims**



A heat exchange container for use in effecting a temperature change in consumable products is disclosed. Inner and outer containers are connected at one end by a flexible member and define chambers for separating the consumable products from the reaction chamber. The heat exchange occurs through the interaction of a solid chemical mixture and a liquid chemical. The liquid chemical is separated from the solid chemical by an independent container secured within the outer container.

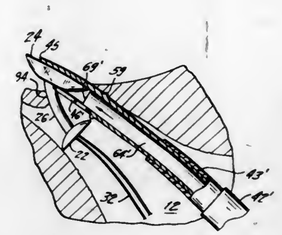
3,675,638
RUNNER CONSTRUCTION FOR OVEN RACK
Albert L. Baltz, Millstadt, and Elmer E. Voeke, Belleville, both of Ill., assignors to Eagle Range and Manufacturing Company, Belleville, Ill.
Filed Dec. 7, 1970, Ser. No. 95,730
Int. Cl. F24c *15/16*
U.S. Cl. 126—339 **1 Claim**



This rack and runner construction includes opposed runners attached to the sidewall of an oven compartment and having inclined bearing glides spaced along their length, each pair of horizontal runners receiving a rack in sliding engagement. Each rack includes rear guide elements cooperating with associated horizontal runners to limit upward and outward movement of the rack.

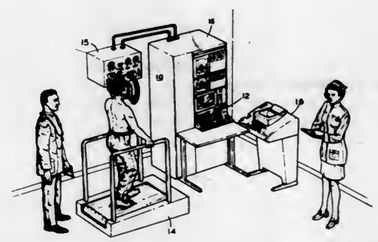
3,675,639
DEVICE FOR AND METHOD OF TEMPORARY STERILIZING A FEMALE
Hugo S. Cimber, 22 Seven Gables Road, Staten Island, N.Y.
Filed May 11, 1970, Ser. No. 35,995
Int. Cl. A61f *5/46*; **A61b** *19/00, 17/34*
U.S. Cl. 128—1 **23 Claims**

A female is temporarily sterilized by blocking the entrance to the uterus at the oviduct exit by means of a plug comprising (a) a blocking plate, which blocks the uterus entrance, (b) a plug positioning plate, which is passed through the wall of the uterus and (C) a stem which joins the blocking and positioning plates. For emplacing the plug, the shaft which carries the plug to its blocking position has a cutting blade at its forward end



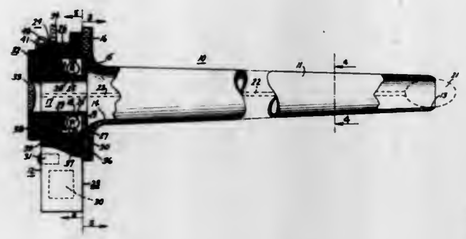
which cuts an opening through the wall of the uterus through which the positioning plate of the plug is then passed. The plug is then ejected from the support rod, which is thereafter withdrawn. Dye may be pumped into the uterus to facilitate observation of the process.

3,675,640
METHOD AND APPARATUS FOR DYNAMIC HEALTH TESTING EVALUATION AND TREATMENT
James D. Gatts, 4625 E. Louisiana, Apt. 201, Denver, Colo.
Filed April 9, 1970, Ser. No. 26,817
Int. Cl. A61b *5/02*
U.S. Cl. 128—2.05 R **11 Claims**



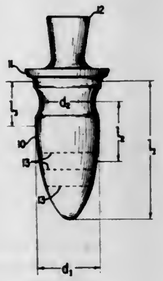
Method and apparatus for a dynamic health testing, evaluation and treatment comprising the recordation of test data from large numbers of individuals to establish dynamic physical performance norms for patients of many varied types. Historical data is taken from a patient which, in conjunction with a physical examination, is used to establish a specific theoretical dynamic physical performance norm for that particular patient and the recommended loading for the dynamic health testing machine. The patient is placed on the exercise machine which is under a programmed load based upon the basic data and numerous parameters of the patient's state of health are monitored under dynamic conditions. The monitored information is continuously fed back to correct the programmed load to protect the patient against overstress. The patient's performance is then compared with his own theoretical norm and treatment is recommended consistent with the patient's age and health which would lead toward the achievement of the dynamic physical performance norm.

3,675,641
SPECULUM INSTRUMENT AND ISOLATED LIGHT MEANS THEREFOR
John M. Flore, Troy, N.Y., assignor to Bio-Analytical Laboratories, Inc.
Filed Nov. 21, 1969, Ser. No. 878,655
Int. Cl. A61b 1/06
U.S. Cl. 128—6 13 Claims



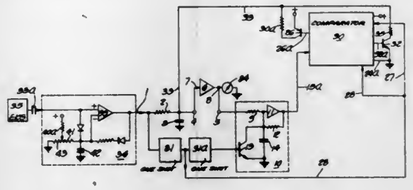
A speculum instrument with improved lighting means therefore is disclosed wherein the speculum barrel, which may be a single use disposable material, tapers to become increasingly larger at its proximal end. A smaller cylindrical sleeve member having a light transmitting flange or wall at one end, has the flange affixed into the larger proximal end of the barrel with the sleeve extending therefrom, to define an annular contamination isolated area with the flange directed towards the distal end of the barrel. A handle member containing a light source releasably engages the speculum barrel and provides lamp means in the isolated area to direct light through the barrel. An obturator in the barrel may be withdrawn through the sleeve.

3,675,642
RECTAL CONE FOR USE IN POSTOPERATIVE TREATMENT
Peter Herent Lord, 38 Burkes Road, Beaconsfield, Buckinghamshire, England
Filed July 23, 1970, Ser. No. 57,517
Int. Cl. A61m 29/00; A61b 17/00; A61f 5/00
U.S. Cl. 128—1 5 Claims



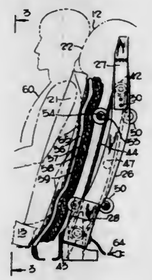
A rectal cone is disclosed which is used in postoperative treatment following a marked enlargement of the anal canal during the operative procedure and which presents a peripheral surface having critical characteristics of configuration and dimension for accomplishing physiological benefits and convalescence with minimum discomfort.

3,675,643
CARDIAC TACHOMETER
Horst Fundstuck, and Shmuel Elazar, both of Camarillo, Calif., assignors to Statham Instruments, Inc., Oxnard, Calif.
Filed Sept. 4, 1970, Ser. No. 69,796
Int. Cl. A61b 5/04
U.S. Cl. 128—2.06 F 6 Claims



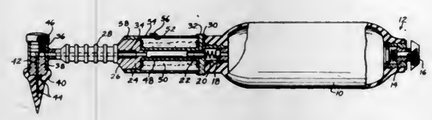
This application relates to means for measuring and recording the frequency of repetitive events which may be subject to large changes in frequency, and is particularly useful in connection with the measuring and recording of heartbeats. This is accomplished by generating a train of pulses responsive to events of interest, establishing a dc potential responsive to the frequency of said train of pulses, generating a linear sawtooth pulse whose amplitude is responsive to the frequency of the applied pulses and to said dc potential, comparing said amplitude of said sawtooth pulses with a reference voltage, and modifying said dc potential responsive to the difference between said reference voltage and said sawtooth pulse amplitude, and providing means responsive to the magnitude of said dc potential to indicate the frequency of the pulses of interest.

3,675,644
MASSAGE APPARATUS
Joseph F. Laskowitz, c/o Con-Vex-O Chair & Lounge Co., Inc. 2634 Hord Ave., St. Louis, Mo.
Filed Feb. 2, 1970, Ser. No. 7,770
Int. Cl. A61h 1/00
U.S. Cl. 128—58 3 Claims



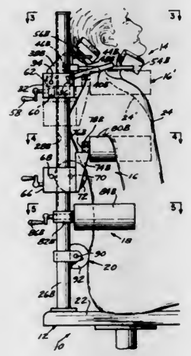
A massaging apparatus is housed in a chair and includes a frame having side members, to each of which are mounted upper and lower rotatable sprockets. A pair of endless chains are mounted for rotation about associated upper and lower sprockets, and a plurality of transverse shafts, carrying massaging rollers, extend between the chains. The shafts, which are attached to each chain by means of adaptor links, orbit continuously with the chains. The chair housing the apparatus provides a body support, engaged by the massaging rollers, and a removable pillow permits the thickness of the body support to be varied during massaging and non-massaging use of the chair.

3,675,645
DENTAL HYGIENE DEVICE
David Samiran, 148 Northwest Road, Westfield, Mass.; Robert O. Cooling, 15 White Oaks Drive, Longmeadow, Mass., and Melvin G. Fitch, 29 Mary Lyon Drive, South Hadley, Mass.
Filed May 25, 1970, Ser. No. 40,223
Int. Cl. A61h 7/00
U.S. Cl. 128—62 A 2 Claims



A device for use in oral and dental hygiene, wherein a tooth engaging element in the form of a bristle brush, or rubber-like member, is mounted on a hand graspable holder and the holder is arranged to supply fluid under pressure to the tooth engaging element, either from a pressurized source or by means of a manually operable bulb in fluid communication with the tooth engaging element. The specification also discloses an arrangement whereby the tooth engaging element can be rotated if so desired.

3,675,646
TRACTION CRADLE APPLIANCE
Joseph D. Corcoran, 33 Farmstead Lane, Brookville, N.Y.
Continuation-in-part of Ser. No. 771,261, Nov. 20, 1968, Pat. No. 3,596,655. This application Aug. 31, 1970, Ser. No. 68,121
Int. Cl. A61h 1/02
U.S. Cl. 128—75 2 Claims



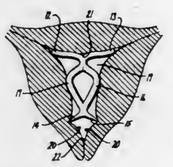
Traction cradle appliance for the extension of traction of the cervical-upper-dorsal area of the spine. A cradle in which the head may rest is provided. Means are further provided for applying pressure to the occipital area and to both sides of the jaw area. Shoulder restraining means for maintaining stability of the shoulders while upward pressure is exerted on the jaw-occipital area.

3,675,647
INTRAUTERINE CONTRACEPTIVE DEVICE
Bruce B. Pharriss, Cupertino, and Max Anliker, Portola Valley, both of Calif., assignors to Alza Corporation
Filed Aug. 5, 1970, Ser. No. 61,141
Int. Cl. A61f 5/46
U.S. Cl. 128—130 8 Claims



Intrauterine contraceptive device is an integral filamentary body with a substantially sinusoidal flexible stem. At its leading end, the stem terminates in a pair of laterally extending flexible arms and, at its trailing end, terminates in a pair of laterally and axially rearwardly extending relatively inflexible arms, shorter in length than the arms at the leading end. Trailing arms serve to anchor the device relative to the cervix while the leading arms, as well as the stem, are free to conform to changes in position caused by muscular contractions of the uterus.

3,675,648
INTRAUTERINE CONTRACEPTIVE DEVICE
Bruce B. Pharriss, Cupertino, and Max Anliker, Portola Valley, both of Calif., assignors to Alza Corporation
Filed Aug. 5, 1970, Ser. No. 61,069
Int. Cl. A61f 5/46
U.S. Cl. 128—130 8 Claims

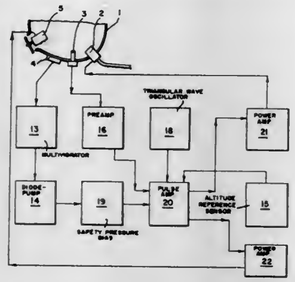


Intrauterine contraceptive device is an integral filamentary body with a flexible closed ovoid loop stem. At its leading end, the stem terminates in a pair of laterally extending flexible arms and, at its trailing end, terminates in a pair of laterally and axially rearwardly extending relatively inflexible arms, shorter in length than the arms at the leading end. Trailing arms serve to anchor the device relative to the cervix while the leading arms, as well as the stem, are free to conform to changes in position caused by muscular contractions of the uterus.

3,675,649
ELECTRONICALLY CONTROLLED OXYGEN REGULATORS
Edgar William James Basham, Dowencourt, and Kenneth Wilfrid Tizard, Wokingham, both of England, assignors to Westland Aircraft Limited, Yeovil, England
Continuation-in-part of Ser. No. 586,171, Oct. 12, 1966, abandoned. This application Aug. 21, 1970, Ser. No. 65,962
Int. Cl. A62b 7/02
U.S. Cl. 128—142 R 9 Claims

A regulator apparatus for breathable gas includes an oxygen supply valve and an expiratory/air inlet valve mounted in the

wall of a mask or other breathing chamber. A differential pressure sensor and an oxygen partial pressure sensor are also mounted on the mask and generate electrical signals in accordance with conditions in the mask. The differential pressure signal, which varies with the breathing of the user, is passed, along with the variable partial pressure signal, into an electronic control circuit which controls the operation of the valves in accordance with the breathing cycle and the oxygen



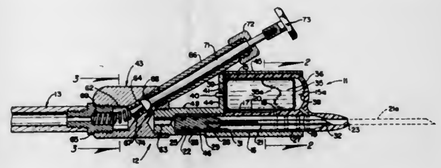
partial pressure so as to maintain proper breathable gas conditions in the mask. When less than 100 percent oxygen supply is needed, the expiratory/air inlet valve and the oxygen valve are opened for appropriate relative time intervals during an inspiration so as to pass oxygen and diluting air into the mask in appropriate ratios. Altitude responsive elements are incorporated to bias the control circuit appropriately in accordance with increasing altitude, this biasing, of course, resulting in modification of the operation of the valves.

3,675,650
DIVING HELMET
Frank F. Domyan, 4648 Camellia Ave., Studio City, Calif.; Joseph C. Lantz, 10252 Bouvais Road, and Richard D. Sibley, 10631 Larry Drive, both of Anaheim, Calif.
Filed Jan. 25, 1971, Ser. No. 109,331
Int. Cl. A62b *18/04*
U.S. Cl. 128—142.7 **7 Claims**



A diving helmet includes a cylindrical portion with a dome shaped top for the head and neck of a user. An air line is attached to a fitting adjacent the dome shaped top and to one side and rear thereof while a slight glass is held in a protrusion extending forwardly from the cylindrical portion. The cylindrical portion terminates in a rim designed to fit over the shoulders, front chest and rear torso of the user, and the rim is weighted with lead weights. The cylindrical portion dome and rim are preferably formed of fiberglass and in the rim the fiberglass completely surrounds the lead. On the under side of the rim on each side thereof there is attached as by gluing flexible pockets consisting of water inpenetrateable leaves stitched together so that one leaf will remain glued to the bottom of the rim while the other leaf is free to open under the pressure of air within the helmet when it is not in use but to close against the other leaf when contacted by the shoulders of a user. The leaves increase the volume of air within the helmet when not in use to provide floatation, but the volume is decreased when in use so that the helmet will remain in place without the necessity of straps.

3,675,651
FLUID-POWERED APPLICATOR FOR MEDICAMENTS
Louis C. Meyer, Box 434 Rte. 01, Morrison, Colo.
Filed Feb. 25, 1970, Ser. No. 14,027
Int. Cl. A61m *5/00*
U.S. Cl. 128—215 **14 Claims**



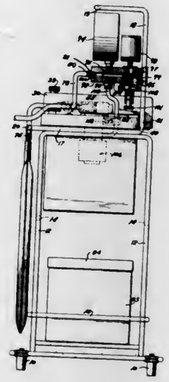
A power-actuated medicament applicator device includes a pressure cylinder and an injection needle or like applicator tool with a piston portion worked by pressure in the cylinder to drive the needle into the skin and then force a quantity of medicament carried in an accompanying container through the piston. The piston is carried in a normally retracted position in the cylinder and will extend through a restricted opening in an end wall thereof. The container for the medicament is located adjacent the cylinder and is carried in a rupturable ampule made of a flexible material. Flow passages between the pressure cylinder and container are arranged so that once the piston has moved to its extended position the container is pressurized to compress the ampule and medicament is forced from the container and through the needle or other applicator tool.

3,675,652
THROAT SWAB HOLDER
Taylor L. McPherson, 44043 N. Heaton Ave., Lancaster, Calif.
Filed Dec. 31, 1970, Ser. No. 103,038
Int. Cl. A61m *35/00*
U.S. Cl. 128—269 **6 Claims**



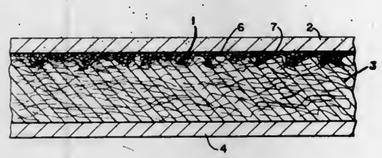
An improved throat swab holder for use by an attendant or by the patient himself, and which is capable of removably supporting a wad of absorbent cotton, or the like, the absorbent cotton being saturated with an appropriate medicament. THe swab holder of the invention is constructed to have a shape appropriate for its easy insertion into the throat of the patient, and to have no sharp ends or edges. The swab holder is formed of a continuous wire which is looped at one end to form a handle or finger grip, and which is looped at the other end to form a means for holding a wad of absorbent cotton, or the like, in a locked position.

3,675,653
WOUND DRAINAGE EQUIPMENT
Charles L. Crowley, Hatboro; James R. Groshoiz, Strafford, both of Pa., and Charles G. Hutter, III, Colorado Springs, Colo., assignors to Air-Shields, Inc., Hatboro, Pa.
Filed Aug. 15, 1969, Ser. No. 850,440
Int. Cl. A61m *1/00*
U.S. Cl. 128—278 **7 Claims**



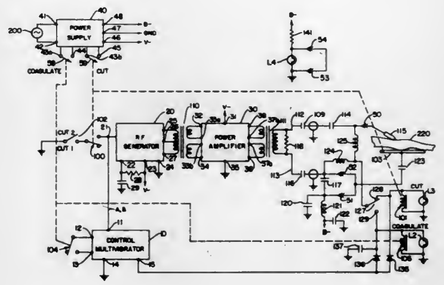
Pump provides for disposable drainage of body fluids by means of peristaltic action. Separate drainage kit comprises bag for collection of fluids. Tube leading from bag to catheter has a collapsible wall section having sufficient resilience so that periodic collapsing by rotatable pump element creates sufficient negative pressure within the tube to pump fluids to the bag. Slot loading and unloading of the tube is provided.

3,675,654
DISPOSABLE ARTICLE WITH MOSITURE-ACTUATED INDICATING AGENT
Joseph S. Baker; Mario S. Marsan, and Robert C. Duncan, all of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio
Filed April 1, 1970, Ser. No. 24,573
Int. Cl. A61f *13/16*
U.S. Cl. 128—287 **7 Claims**



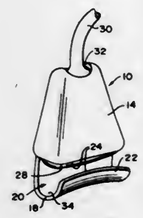
Disposable diapers, sanitary napkins, bandages and the like articles, comprising an absorbent pad disposed on a translucent back sheet of water impervious material are provided with a moisture-actuated indicating agent therebetween. The indicating agent comprises either a small amount of finely divided water-soluble dye having a high dye strength or such a due admixed with a finely divided diluent masking agent, such as talcum powder. The indicating agent is dry and adheres to the pad surface facing the back sheet and the back sheet surface facing the pad by mechanical and electrostatic action. When the absorbent pad of the disposable article and the indicating agent become wet in use the resulting due solution between the pad and sheet is visible through the translucent back sheet to provide indication of wetness.

3,675,655
METHOD AND APPARATUS FOR HIGH FREQUENCY ELECTRIC SURGERY
Weldon Rex Sittner, Westport, Conn., assignor to Electro Medical Systems, Inc., Englewood, Colo.
Filed Feb. 4, 1970, Ser. No. 8,549
Int. Cl. A61b *17/36;* **A61n** *3/00*
U.S. Cl. 128—303.14 **11 Claims**



A method and apparatus for electric surgery includes generating oscillations of high frequency electric energy of substantially constant amplitude, controlling the duration of and spacing in time between each series of oscillations generated and applying the generated energy through an electrode for the purpose of making surgical incisions and coagulating blood at the point of incision. A common generator serves as a source of the electric energy for different surgical procedures, the duration and spacing between each series of oscillations being closely controlled according to their intended application and in such a way as to minimize power requirements and the possible hazards of use either to the doctor or to the patient.

3,675,656
FLUID OPERATABLE HEMOSTAT
Salomon Hakim, Carrera 13, No. 48-26, Bogota, Colombia
Filed May 26, 1969, Ser. No. 827,859
Int. Cl. A61b *17/12, 17/00*
U.S. Cl. 128—325 **2 Claims**

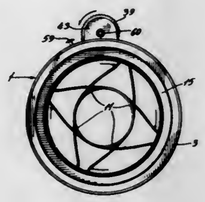


A quickly attached and operated hemostat for controllably occluding a blood vessel comprises an inflatable bladder mounted in or on a housing which includes a rigid open channeled jaw against which the bladder may be expanded. The jaw is of a configuration preferably saddle shaped, rendering it openly receptive to a blood vessel.

3,675,657
TOURNIQUET

Oscar Gauthier, Ville Brossard, Province of Quebec, Canada, assignor to Clobel Inc., L'Ange-Gardien, Co. Rouville, Quebec, Canada

Filed July 14, 1969, Ser. No. 841,445
Int. Cl. A61b 17/12; A61f 5/42
U.S. Cl. 128—327 6 Claims

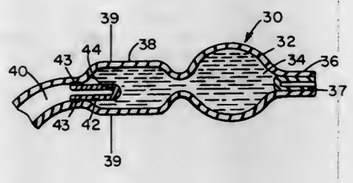


A tourniquet in the form of a ring in which the inner wall is a membrane of latex rubber forming a toroidal chamber with its support. Inside the chamber, there are provided a series of strings, each having one end secured to the support of the ring while the other end is secured to a toothed annular member inside the chamber. A pinion operable from outside the ring, is in mesh with this toothed member so that when rotated in one direction, the strings act on the inner rubber wall to expand it inwardly and thus close the ring opening.

3,675,658
CATHETER WITH VALVED FLUID RESERVOIR

Glenn N. Taylor, Barrington, Ill., assignor to The Kendall Company, Boston, Mass.

Continuation-in-part of Ser. No. 767,296, June 14, 1968. This application Sept. 3, 1970, Ser. No. 69,343
Int. Cl. A61m 25/00
U.S. Cl. 128—349 BV 2 Claims



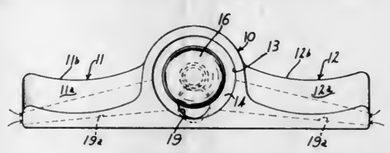
In a self-inflating catheter provided with a reservoir of fluid under pressure, the reservoir is provided with internal slit valves, opening by distortion under digital pressure, to control the flow of inflating fluid.

3,675,659
PERINEAL HEATING DEVICE

Gilder L. Wideman, Birmingham, Ala., assignor to Don Green; Bruce L. Gordon and L. Clark Gravlee, Birmingham, Ala.

Filed March 10, 1971, Ser. No. 122,824
Int. Cl. A61n
U.S. Cl. 128—395 6 Claims

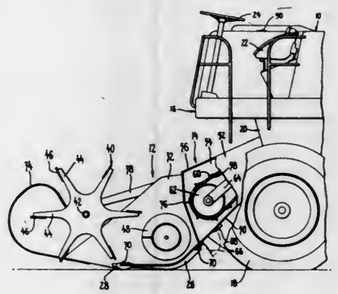
A perineal heating device embodying a centrally disposed, open ended generally cylindrical portion carrying the heat source, such as an incandescent lamp. Leg rests or lateral wings extend outwardly from the central portion and are formed integrally therewith. An opening may be provided through the rear wall of the cylindrical portion or through the lateral wings so that air is thermally induced through the opening or openings and exists forwardly into contact with the patient's body.



3,675,660
COMBINE STONE TRAP DOOR

Joseph C. F. Girodat, Mississauga, Ontario, Canada, assignor to Massey-Ferguson Industries Limited, Toronto, Ontario, Canada

Filed May 3, 1971, Ser. No. 139,428
Int. Cl. A01f 12/10
U.S. Cl. 130—27 JT 4 Claims



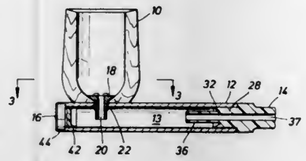
A stone trap door, in the path of feed of crop material, in a combine harvester is held in a closed position by a latch control by a solenoid. The solenoid is energized to open the stone trap door by an electronic rock detection circuit. The rock detection circuit includes a piezoelectric ceramic disc attached to the bottom of the table to detect vibrations induced in the bottom of the table by material conveyed along the bottom of the table toward the trap door. The piezoelectric ceramic disc produces an output signal which varies in frequency and amplitude depending upon the frequency and amplitude of the vibrations induced in the bottom of the table. The output signal passes through a band pass amplifier and a peak detector which filter out all the output signals except those produced by rocks or other hard objects. The signal produced by rocks or other hard objects is then amplified to energize the solenoid and open the stone trap door.

3,675,661
SMOKING PIPE

William R. Weaver, 1616 Radford Street, El Paso, Tex.

Filed March 18, 1970, Ser. No. 20,659
Int. Cl. A24f 01/08
U.S. Cl. 131—212 R 3 Claims

A smoking pipe is described having a condensing chamber for collecting and trapping tar, nicotine, water and other condensate resulting from the products of combustion. The condensing chamber is formed inside of the tubular stem of the pipe. A mouthpiece is detachably connected to the stem with a fluid-tight connection to prevent the condensate from leaking out of the condensing chamber. An extension of the mouthpiece projects inside the condensing chamber to prevent the bitter condensate from passing through the smoke bore inside the mouthpiece and into the mouth of a smoker.

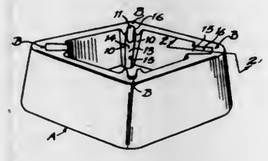


Condensate in the smoking chamber is prevented from leaking into the tobacco-receiving bowl by means of a center-bored screw which extends from the bowl of a substantial distance inside the condensing chamber.

3,675,662
CIGARETTE RECEPTACLE AND EXTINGUISHER

Ralph W. Askins, 515 S. Barranca, Apt. 5, Cavina, Calif.

Continuation-in-part of Ser. No. 773,150, Nov. 4, 1968, abandoned. This application May 4, 1970, Ser. No. 34,074
Int. Cl. A24f 19/14
U.S. Cl. 131—235 R 12 Claims

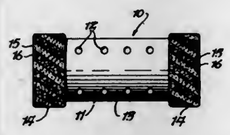


An extinguisher with opposed side walls and a backwall to support a cigarette in a standing position, with a pocket at the bottom to receive and extinguish the burning end, and with top and front openings joined in a continuous slot through which the cigarette can be initially received and later flipped out of the pocket with a forwardly tilting movement.

3,675,663
HAIR ROLLER

Sam S. Calandra, 141 Greenfield Drive, Tonawanda, N.Y.

Filed Oct. 23, 1969, Ser. No. 868,700 The portion of the term of this patent subsequent to Oct. 28, 1986, has been disclaimed.
Int. Cl. A45d 2/36
U.S. Cl. 132—40 5 Claims

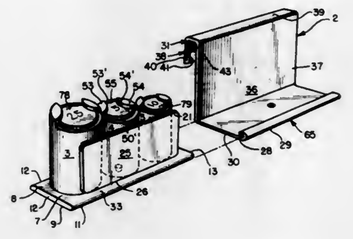


A hair roller construction comprising an elongated mandrel having a longitudinal axis and a central hair receiving portion, and first and second spaced bands flanking the hair receiving portion, the bands including alternate strips of hook and pile fabric extending in a spiral direction relative to the longitudinal axis, and extending over onto the end portions of the mandrel.

3,675,664
COIN HOLDER WITH REMOVEABLE MOUNTING BRACKET

George J. Kitowski, 5500 N. Neenah Ave., Chicago, Ill.

Filed May 5, 1970, Ser. No. 34,714
Int. Cl. G01d 1/00
U.S. Cl. 133—6 10 Claims

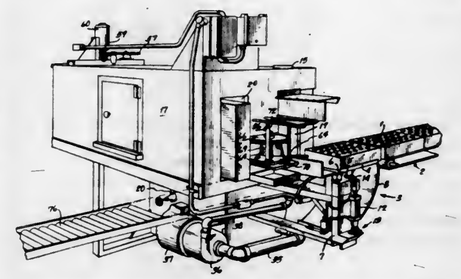


A coin holder for multiple coin denominations comprising different diameter tubes to fit for example quarters, dimes and nickels with springs therein for urging the coins upwardly against stops, the tubes being of graduated height so that the user may identify the coins by feel. The holder has a mounting bracket which is adaptable to hang on the car ash tray and at least one of the springs in one of the tubes is arranged to urge a releasable locking element into engagement with the bracket in addition to urging the coins in the particular tube upwardly. The tubes are tangentially arranged at the front side of the holder to develop a finger accommodation space between the back sides of the tubes and a mounting bracket to facilitate assembly and disassembly of the parts.

3,675,665
CASE WASHING MACHINE

Howard M. Sadwith, Plainfield, N.J., assignor to Industrial Washing Machine Corporation, Matawan, N.J.

Filed Jan. 15, 1965, Ser. No. 425,701
Int. Cl. B08b 3/02, 9/08
U.S. Cl. 134—46 8 Claims

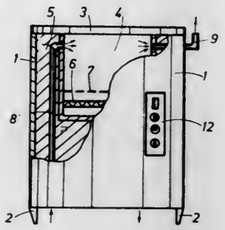


A washing machine for washing reuseable cases, containers and the like includes loading platform for automatically receiving the containers and transferring the containers into an enclosed washing area which includes jets for washing the containers. The machine also includes a rinsing area which is seperated from the washing area by a partition and a reversing platform for transferring the containers from the washing area to a rinsing area so the containers may there be rinsed. The machine further includes a conveyor to automatically remove the washed and rinsed containers from the rinsing area and from the washing machine itself.

3,675,666
APPARATUS FOR CLEANING METALLIC PARTS

Gerardo Cama, Barcelona, Spain, assignor to Coltex, S.L., Barcelona, Spain

Filed April 11, 1968, Ser. No. 720,524
Claims priority, application Spain, April 13, 1967, 129471
Int. Cl. B08b 3/08, 3/10
U.S. Cl. 134—105 2 Claims

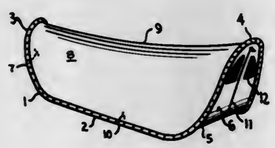


Apparatus for cleaning metallic components employed in fabricating plastic synthetic materials of any material adhering to or impregnating the components which includes a tank disposed in an insulated casing and electrical resistances capable of developing temperatures of 100° C. within the tank located adjacent the bottom thereof. A grating above the resistances supports and prevents the components from directly engaging the resistances in and the components are submerged in a treatment solution of chemical substances the tank. Upon activating the resistances, a reaction of the substances causes the dissolution of the material adhering to or impregnating the components thereby fully cleaning the components.

3,675,667
SELF-ERECTING TENT

Jack V. Miller, 700 N. Auburn Avenue, Sierra Madre, Calif.

Filed Sept. 25, 1970, Ser. No. 76,515
Int. Cl. A45f 1/00
U.S. Cl. 135—1 R 9 Claims



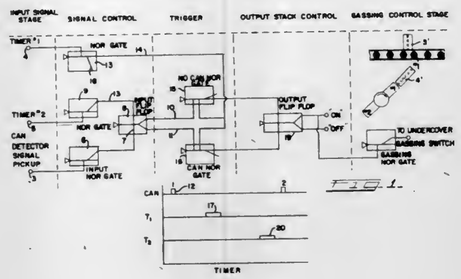
A tent supported entirely by a single resilient member of closed geometry, so shaped that it maintains the tent covering material in an inhabitable shape by keeping the material under constant biaxial membrane stress. The support member is sufficiently flexible to be manually formable into a series of superimposed loops whereby the tent is collapsed into a generally discbshaped flat volume.

3,675,668
METHOD AND FLUIDIC CONTROL SYSTEMS FOR OPERATING A CAN CLOSING MACHINE

James J. La Rocca, La Grange, and Blase J. Bartolomeo, Calumet City, both of Ill., assignors to Continental Can Company, Inc., New York, N.Y.

Continuation of Ser. No. 720,239, April 10, 1969, abandoned.
This application Jan. 22, 1971, Ser. No. 108,953
Int. Cl. F15c 1/12
U.S. Cl. 137—1 22 Claims

A fluidic control system for operating a can closing machine of the type having one or two end stacks. This system has the property that the output of the system is determined by a timer on the machine and operates at a specific point in the system memory during a particular time interval in the machine cycle.

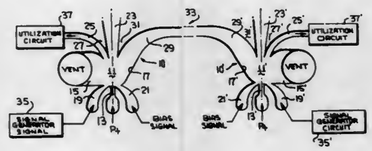


Thus, variations in the spacing between cans entering the closing machine are permissible. This machine operates rapidly by use of fluidic interface valves.

3,675,669
BI-DIRECTIONAL FLUIDIC ELEMENTS AND CIRCUITS

Peter Bauer, Germantown, Md., assignor to Bowles Fluidics Corporation, Silver Spring, Md.

Filed Jan. 26, 1970, Ser. No. 5,483
Int. Cl. E03b 1/00; F17d 1/00; F15c 1/14
U.S. Cl. 137—1 12 Claims



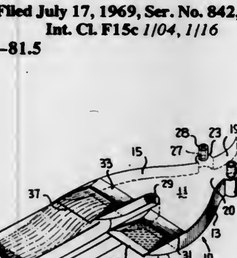
A bi-directional fluidic element includes an input-output passage which conducts incoming signals into interacting relationship with a fluid stream to deflect the latter in one sense towards an output passage. Outgoing signals deflect the fluid stream in an opposite sense to cause fluid to flow through the input-output passage in a direction opposite that of incoming signals.

3,675,670
LIQUID TRANSPORTING TANK FOR TANK CARS

Osamu Ogawa, Utsunomiya-shi, Tochigi, Japan, assignor to Fugi Heavy Industries, Ltd.

Filed July 16, 1970, Ser. No. 55,547
Claims priority, application Japan, Nov. 14, 1969, 44/91254
Int. Cl. F17d 1/00
U.S. Cl. 137—1 4 Claims

A liquid transporting tank for tank cars which has a first pipe for introducing liquid into the bottom of the tank car and a second pipe for removing liquid from the top of the tank car. Hoses interconnect the outlet pipe of a preceding car to the inlet pipe of a subsequent car so that both cars may be filled through the inlet to the preceding car.



3,675,671
PROCESS FOR TRANSPORTATION OF WAXY CRUDE OILS

William M. Sweeney, Wappingers Falls, and David Lee Alexander, Fishkill, both of N.Y., assignors to Texaco Inc., New York, N.Y.

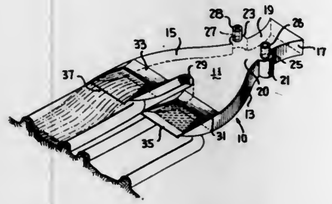
Filed Dec. 28, 1970, Ser. No. 102,052
Int. Cl. F17d 1/16
U.S. Cl. 137—13 8 Claims

An improved process for the transportation of waxy crude oils through pipelines, in particular North African crudes, which comprises introducing into the pipeline a low-pour point, low-sulfur crude oil blend comprising about 70 to about 90 percent by volume of a high-pour point, low-sulfur, waxy crude, and about 30 to about 10 percent by volume of a low-wax, low-pour crude, together with an effective pour depressant amount of an oil-soluble ethylene-vinyl fatty acid ester copolymer. The pipeline flow characteristics of the blend of the crudes are distinctly superior to the high-pour point, low-sulfur, waxy crude forming the major portion of the blend or the high-pour point, waxy crude with the same pour point depressant. In another aspect, this invention relates to the composition comprising the blended crudes together with the oil-soluble copolymer and to a process for preparing such compositions.

3,675,672
FLUIDIC IRRIGATION

Peter A. Freeman, Baltimore, Md., assignor to Bowles Fluidics Corporation

Filed July 17, 1969, Ser. No. 842,599
Int. Cl. F15c 1/04, 1/16
U.S. Cl. 137—81.5 33 Claims

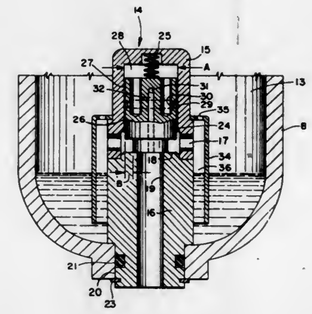


Fluidic techniques and elements are disclosed for performing various irrigation functions, including sequential filling of irrigation ditches by automatic operation of fluidic diverter elements. A novel diverter element is disclosed which is operable either as a switching or proportional type fluidic amplifier, and includes a weir formed at the downstream end of its output passages and a vortex chamber projecting outwardly from its interaction region for converting part of the power stream flow to vortical flow which augments aspiration of ambient control fluid. In a further aspect of the invention, hard cut-off of liquid flow is achieved with a roller curtain gate comprising a flexible sheet adapted to be selectively rolled or unrolled over a flow opening. Also disclosed is a fluidic control for a siphon whereby venturi action in a fluidic element is employed to create a suction force which initiates siphon flow. A number of fluidic level sensing schemes are disclosed for controlling sequential irrigation ditch filling, and fluidic techniques are disclosed which compensate for environmental factors in the level detection schemes.

3,675,673
AUTOMATIC DRAIN VALVE

William C. Nilges, Kalamazoo, Mich., assignor to Parker-Hannifin Corporation, Cleveland, Ohio

Filed Sept. 25, 1970, Ser. No. 75,570
Int. Cl. F16t 1/00
U.S. Cl. 137—187 9 Claims



An automatic drain valve for an air line filter and the like which discriminates between fluids of different viscosities, i.e., air and water, said valve being characterized in that the drain valve member thereof is seated when exposed to the lower viscosity fluid (air) and is unseated when exposed to the higher viscosity fluid (water) by reason of the difference in pressure drop across restrictor means through which the fluids flow. The valve herein is further characterized in that it has a downwardly extending inlet passage which opens near the bottom of the filter bowl and which is so arranged that when the water level in the filter bowl rises to the upper portion of the inlet passage to effect unseating of the drain valve member, the air pressure acting on the water in the filter bowl will cause drainage of the water from the filter bowl until the water level drops down to the lower open end of the inlet passage.

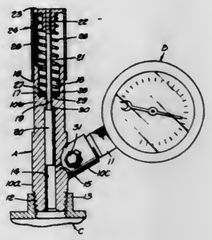
3,675,674
CONNECTION FITTING DEVICE WITH CLEAN-OUT

Donald J. Brown, La Crescenta, Calif., assignor to Morehouse Industries, Inc., Fullerton, Calif.

Filed Sept. 15, 1970, Ser. No. 72,452
Int. Cl. F16k 5/22
U.S. Cl. 137—244 3 Claims

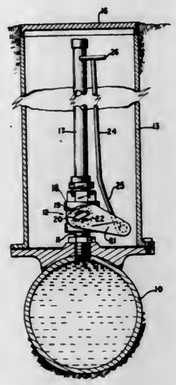
A connection fitting for mounting a pressure gauge or the like comprising a generally Y-shaped tubular body in which a straight body portion is threaded at one end for connection

with a fluid source, the body having a branch portion for mounting the gauge, and with a reciprocable clean-out plunger in the straight body portion having an actuating part extending from the opposite end of the straight body portion,



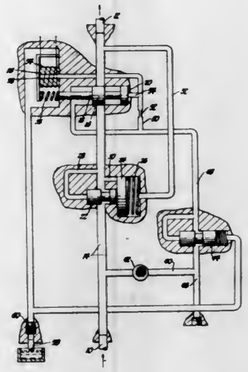
whereby the clean-out plunger can be moved across the inner end of the branch portion and into the fluid inlet flow path leading to the branch portion for keeping the same free of occluding media.

3,675,675
BALL VALVE WITH ARM OPERATOR
William W. Wedge, Fairfield, Conn., assignor to Wedge, Incorporated, Bridgeport, Conn.
Filed July 8, 1970, Ser. No. 53,158
Int. Cl. F16l 5/00
U.S. Cl. 137—368 3 Claims



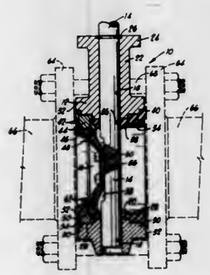
A ball valve mounted on an underground water main has a pivotable operating shaft extending laterally outwardly thereof and an arm is mounted on the outer end of the shaft. A substantially vertically positioned rod extends upwardly toward the surface of the ground and has its lower end bent outwardly at angle of about 30° from the vertical. This bent end is pivotally connected to the end of the arm which is disposed at a slight angle below the horizontal when the valve is closed. Pulling of the rod upwardly will open the valve and pushing the rod downwardly will close the valve.

3,675,676
POWER TRANSMISSION
Maurice J. O'Connor, Farmington, and Donald J. Davidson, Keego Harbor, both of Mich., assignors to Sperry Rand Corporation, Troy, Mich.
Filed April 9, 1971, Ser. No. 132,698
Int. Cl. F16k 31/12
U.S. Cl. 137—501 7 Claims



An electrically controlled hydraulic flow control valve has a nozzle and flapper valve acting as a pilot control for a shiftable main throttle valve. A pressure compensating valve responsive to the pressure drop across the main throttle keeps the flow rate constant, independent of inlet and outlet pressures. Pilot control fluid is supplied by a pressure reducing valve which maintains constant pressure on a small area servomotor, biasing the throttle valve toward closed position. The flapper valve receives control fluid from the reducing valve through a fixed orifice and by means of a feedback connection with the throttle valve, maintains the latter in a position corresponding to the energization of the solenoid.

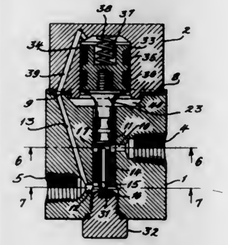
3,675,677
DISC VALVE WITH MOLDED-IN-PLACE LINER AND REPLACEABLE SEAT
Domer Scaramucci, 3245 S. Hattie, Oklahoma City, Okla.
Filed April 2, 1970, Ser. No. 25,040
Int. Cl. F16k 1/22
U.S. Cl. 137—375 9 Claims



A disc valve having an elastomer lining molded-in-place therein shielding the valve body from the fluid being handled and forming seals around the valve stem. The disc of the valve is of the off-set type and engages a replaceable seat. Dual seats

are also disclosed. The combination of the valve body in a surrounding operating housing supporting the valve operator is also disclosed.

3,675,678
HIGH PRESSURE REGULATOR
Robert F. Lamping, St Louis County, Mo., assignor to Modern Engineering Company, Inc., St. Louis, Mo.
Filed Dec. 8, 1969, Ser. No. 883,005
Int. Cl. F16k 31/365
U.S. Cl. 137—505.22 6 Claims

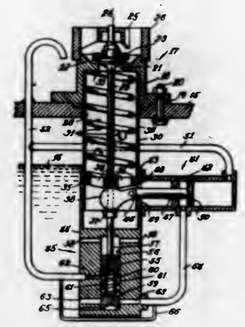


Gas pressure regulator for reducing relatively high storage pressure (e.g., 6,000 p.s.i.) to a conventional (e.g., 2,500 p.s.i. or less) working pressure, in which the means controlling fluid flow between input and output includes a differential area valve, the larger area of which is exposed to the input pressure, and the lesser area of which is exposed to the input pressure, with an area of intermediate size exposed to the pressure of a relatively fixed volume of gas acting on the differential valve in major degree counter to the action of the output pressure on the larger area of the differential area valve. The pressure on said fixed volume is adjusted upward by manually admitting more gas from the input, and adjusting downward by manually releasing gas therefrom either to the output side or to the atmosphere. A coil spring adds to the force applied by the gas at the larger area of the differential valve, thereby tending to maintain closed the passage between input and output; and a valve controlling flow from input to output has input pressure applied to it in such manner as to add the force on said differential valve, tending to open the passage between input and output.

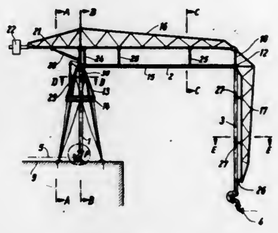
3,675,679
PRESSURE RELIEF VALVE CONSTRUCTION FOR RAILWAY TANK CARS AND THE LIKE
Frederick William Schwartz, Jr., Clarendon Hills, Ill., assignor to Jamesbury Corp., Worcester, Mass.
Continuation-in-part of Ser. No. 91,907, Nov. 23, 1970, abandoned. This application Dec. 29, 1970, Ser. No. 102,443
Int. Cl. F16k 31/12
U.S. Cl. 137—587 24 Claims

Conventional spring type pressure relief valves used on fluid pressure containing tanks function at a single, preset tank internal pressure and provide a fixed orifice and flow area for discharging tank contents.

When an essentially conventional spring type pressure relief valve opens and remains open for a significant period of time it may be implied that an emergency condition exists, probably due to excessive heat input as from a fire, and that tank internal pressure exceeds the valve set-to-discharge pressure. This invention identifies the emergency condition by means of the time-dwell of the valve in open position, and actuates a secondary mode of valve operation which provides (a) reduced set-to-discharge pressure compatible with tank shell strength at the elevated temperature produced by the fire condition and (b) additionally provides increased discharge capacity to allow sufficient flow to attain a reduced tank internal pressure level.



3,675,680
JOINTED DELIVERY EQUIPMENT FOR FLUIDS, PARTICULARLY LOW TEMPERATURE LIQUIDS
Josef Frohlich, Dusseldorf-Rath, Germany, and Jacob Leguyt, Dordrecht, Netherlands, assignors to Mannesmann Aktiengesellschaft, Dusseldorf, Germany
Filed Oct. 12, 1970, Ser. No. 79,992
Claims priority, application Germany, Jan. 13, 1970, P 20 02 147.0; Oct. 15, 1969, P 19 53 108.9
Int. Cl. B67d 5/00
U.S. Cl. 137—615 12 Claims

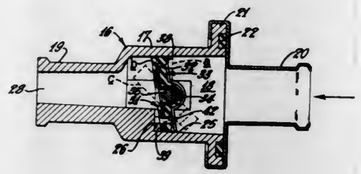


A tower-boom system for transfer of fluids in which the conduit means is relieved from bearing weight.

3,675,681
THREE-POSITION BUTTERFLY VALVE
Frank E. Obermaier, Park Ridge, Ill., assignor to Eaton Corporation, Cleveland, Ohio
Filed Aug. 3, 1970, Ser. No. 60,259
Int. Cl. F16k 1/22, 1/52
U.S. Cl. 137—625.3 6 Claims

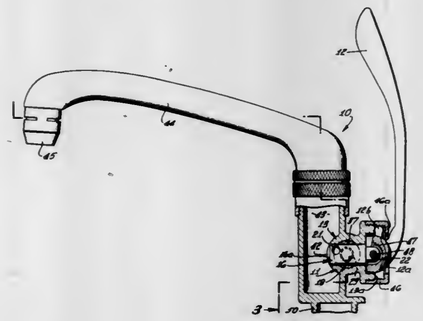
A butterfly fluid flow valve having a full-on, full-off, and an intermediate flow position. The intermediate flow position is provided by a bleed port formed in the butterfly element which can be closed off by contact of the butterfly element

with a transverse wall portion formed within the valve body. The sealing lip of the butterfly element is adapted to seal



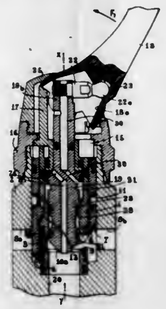
against the interior wall of the valve body in the intermediate flow position to leave only the bleed port open.

3,675,682
SELF-SEALING MIXTURE VALVE UNIT FOR SINGLE-HANDLED SINK OR LAVATORY FIXTURE
John K. Lyon, Pasadena, Calif., assignor to Price-Pfister Brass Mfg. Co., Pacoima, Calif.
Filed Nov. 16, 1970, Ser. No. 89,559
Int. Cl. F16k *11/02, 19/00*
U.S. Cl. 137—625.17 **12 Claims**



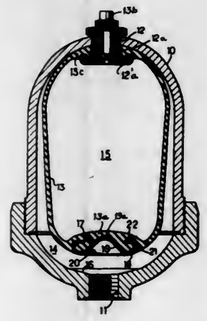
The mixing valve unit comprises a generally cylindrical valve body made of flexible material capable of conforming to companion structures whereby the body itself seals against companion structures under the influence of fluid pressure. The body has a pair of large diameter inlets at opposite ends whereby thin cylindrical walls of the valve body remain. The inlets respectively terminate at their inner ends at spaced flexible convex walls. The inside concave surfaces of the walls complement each other to form a transverse bore into which is fitted a relatively rigid valve control member or stem. The stem has flow control holes both opening into a central chamber, the flow control holes being registrable with small ports in the flexible walls. Angular movement of the stem controls proportion and axial movement controls volume, all in a well known cylindrical coordinate mixing valve system. The body is removably inserted into a simple cylindrical bore of a casting. The thin cylindrical walls of the valve body flex to achieve seals with the casting while the central arcuate walls flex to achieve seals with the valve stem.

3,675,683
MIXING FAUCET
Yves Chapou, 21 Cours Marigny, Vincennes, Val de Marne, France
Filed Oct. 28, 1970, Ser. No. 84,595
Claims priority, application France, Nov. 5, 1969, 6937974
Int. Cl. F16k *11/02, 31/60*
U.S. Cl. 137—637.4 **3 Claims**



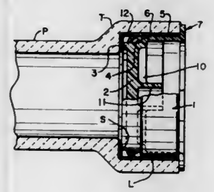
Warm water and cold water mixing faucet of the type comprising a rotary control plug provided with two gaskets having different inclinations in relation to the axis of said plug so that one gasket cuts off completely the cold water inlet while the other permits a maximum ingress of warm water, and vice-versa. In this faucet, these two gaskets consist of a single flange-shaped gasket comprising two portions having opposite inclinations, and surrounding the control plug in a zone registering with the warm water and cold water inlet orifices, disposed at a same level but in diametrally opposite positions. Said plug is formed with a lateral opening level with said orifices which communicates with an inner bore constituting the outlet duct for the mixed water.

3,675,684
PRESSURE VESSEL
Jacques H. Mercier, Paris; Fernand Copine, Cergy, and Carlo Corbellini, Paris, all of France, assignors to Oiaer Patent Company, Grand Duchy, Luxembourg, by said Copine and Corbellini
Filed March 4, 1970, Ser. No. 16,353
Claims priority, application France, March 18, 1969, 6907649
Int. Cl. F16l *55/04*
U.S. Cl. 138—30 **5 Claims**



The present invention relates to a pressure reservoir having a rigid container with a deformable bladder therein dividing the container into two variable volume chambers, each adapted to receive fluid under pressure. A port is provided in communication with one of said chambers and valve means are associated with said port to close the latter. The valve means is controlled by deformation of the bladder upon expansion thereof when fluid is discharged through said port. The valve means is conformed so that a suction effect will be created due to the flow of fluid through said port, which will cause the valve means accurately to center on a fixed seat associated with the port to close the latter and prevent extrusion of the bladder.

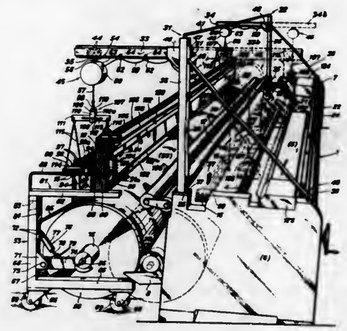
3,675,685
PIPE STOPPER FOR BELL AND SPIGOT TYPE OF TILE
Charles Potter, Lakewood, Ohio, assignor to Amvit, Cleveland, Ohio
Filed Sept. 8, 1970, Ser. No. 70,112
Int. Cl. F16l *55/10*
U.S. Cl. 138—89 **6 Claims**



A pipe stopper is receivable in the bell of a bell and spigot pipe for plugging the bell passage. It is a molded plug of stiff set plastic having a cylindrical peripheral face which is spaced from its inner end and a peripheral seating face extending therefrom entirely to the inner end of the plug. An abrupt generally radially extending shoulder extends between the adjacent ends of the faces. The plug is free from any shoulders or surfaces facing toward, and aligned with, faces or shoulders facing toward the inner end. An elastomeric gasket having an inner face resiliently engaging the seating face in embracing relation is provided. It has a radial cross section such that it cannot roll about its circumferential axis and thus off of the end of seating face. The gasket fits in sealing relation to the seating face and the surrounding inner wall of the pipe bell in which the plug is installed. The main advantage is that the plug is of a shape that can be molded readily in a very simple mold, and yet, in combination with a proper gasket, seals effectively.

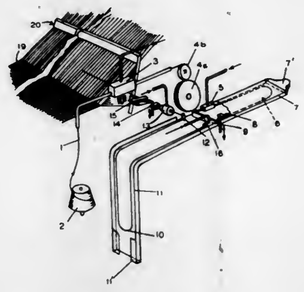
3,675,686
APPARATUS FOR MOUNTING A HARNESS IN A WEAVING MACHINE
Josef Steiner, Winterthur, and Adolf Widmer, Rickenbach-Sulz, both of Switzerland, assignors to Sulzer Brothers Ltd., Winterthur, Switzerland
Filed May 20, 1970, Ser. No. 39,125
Claims priority, application Switzerland, May 22, 1969, 7796/69
Int. Cl. D03j *1/14;* **D02h** *13/38*
U.S. Cl. 139—1 **6 Claims**

The beams are pivotally mounted on the uprights which are secured to the weaving machine so as to lift and transport the harness containing the stop motion droppers, heald shafts and reed via the lifting gear means from the conveying device to a position within the weaving machine. The components of the



harness are then put in place in the machine in the respective operative positions.

3,675,687
MECHANISM FOR PREPARING AND PRESENTING SINGLE THREAD LENGTHS TO A WEFT DEVICE OF A WEAVING LOOM
Geert Jan Vermeulen, and Antonius Martinus Barten, both of Deurne, Netherlands, assignors to N.V. Machinefabriek L. The Strake, Deurne, Netherlands
Filed Feb. 23, 1971, Ser. No. 118,043
Claims priority, application Netherlands, March 30, 1971, 7003645
Int. Cl. D03d *47/34*
U.S. Cl. 139—127 P **2 Claims**

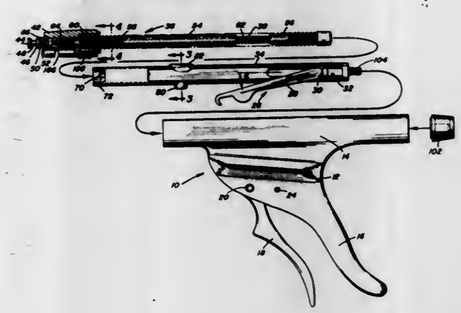


A pneumatic thread preparing and presenting mechanism which is suitable for handling low twisted yarns in that the thread in its path from the storage cone to the weaving shed is exposed to relatively low tensions.

3,675,688
INSTRUMENT FOR LIGATING, SUTURING AND DIVIDING ORGANIC TUBULAR STRUCTURES
Graham W. Bryan, Ridgefield, and David T. Green, Norwalk, both of Conn., assignors to United States Surgical Corporation, Baltimore, Md.
Filed April 27, 1970, Ser. No. 32,247
Int. Cl. B21f *15/00*
U.S. Cl. 140—93 D **16 Claims**

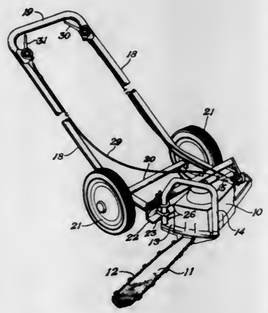
A medical instrument and associated cartridge for ligating an organic tubular structure, for suturing this structure in two places with a pair of sterilized staples and for dividing the tu-

bular structure intermediate the suturing staples. The instrument is provided with a variable cam so that the ligating, suturing and dividing stages are all performed with uniform effort from the operating surgeon. The instrument is also provided with a counter for indicating the number of staples



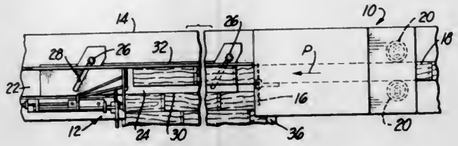
remaining in the cartridge. The novel cartridge ensures that the stapled and severed tubular structures are ejected from the instrument after the operation, operates smoothly without binding, and includes a lock which holds the elements of the cartridge in fixed positions during all stages of transit.

3,675,689
WHEELED CARRIER FOR CHAIN SAW
Monroe C. Rice, 1101 W. Lowden, Fort Worth, Tex.
Filed Dec. 14, 1970, Ser. No. 97,606
Int. Cl. B27b *17/02*
U.S. Cl. 143—32 N **5 Claims**



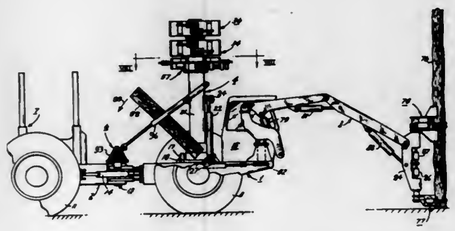
A wheeled carrier for supporting a conventional portable chain saw having a transverse handle near the front of the engine housing and a rearwardly projecting handle having a throttle trigger projecting therefrom. The saw is detachably mounted on the carrier at three points and the guide bar and cutting chain thereon project laterally from the carrier close to the ground. The throttle trigger is operated by cable control mounted on the carriage frame, and if the saw includes manual means for oiling the cutting chain, a similarly mounted cable control is provided for that purpose.

3,675,690
END STOP ASSEMBLY FOR AN AUTOMATIC CUT-OFF SAW
Ruben F. Chapa, 6411 Rosemead, Pico Rivera, Calif.
Filed Nov. 6, 1970, Ser. No. 87,383
Int. Cl. B27b *27/02, 31/08*
U.S. Cl. 143—46 F **9 Claims**



An end stop assembly for an automatic timber cut-off saw including an ejector plate having an extended position for receiving the cut-off leading end of each timber and movable through an ejection stroke after cut-off to eject the cut-off end from cutting position. The stop assembly has a stop movable along the timber infeed path for arresting each incoming timber in cutting position and actuating a saw central switch upon retraction of the stop by each timer, and means actuated by the ejector plate for moving the stop to and retaining the stop in extended position upon movement of the plate to extended position and releasing the stop upon retraction of the stop.

3,675,691
TREE HARVESTING APPARATUS
John J. Denovan, and John Kurelek, both of Brantford, Ontario, Canada, assignors to Koehring-Waterous, Ltd., Brantford, Ontario, Canada
Filed Sept. 3, 1969, Ser. No. 854,971
Int. Cl. A01g *23/02*
U.S. Cl. 144—3 D **4 Claims**



A telescopic tower is mounted on a mobile chassis and carries equipment for producing logs from a tree that has been severed at its base from the ground and transferred to a raised position adjacent the top of the contracted tower. An upstroke of a reciprocable upper part of the tower delimbs the butt end of the raised tree to desired log length, and a downstroke lowers the tree a corresponding distance. After a log has been cut from the lowered tree, the operating cycle is repeated as needed to process the usable remainder of the tree into logs. The tower is leanable to one side to let the slash fall to the ground rather than on the chassis of the apparatus.

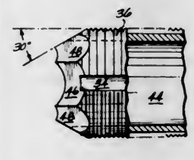
3,675,692
METHODS OF MAKING ARTICLES FROM FIBER BOARD
Graham Wilton Jeans, 77 Butterfield Road, Wheathampstead, England
Filed March 24, 1970, Ser. No. 22,207
Int. Cl. B27d *1/08*; **B27m** *3/18*; **B27h** *1/00*
U.S. Cl. 144—317 **2 Claims**



This invention provides a method of making furniture from flat sheets of fiberboard

In accordance with the method a flat sheet of fiberboard is cut to a particular shape and then softened preferably by immersion in a liquid. The cut and softened sheet is then bent to a required three-dimensional shape and is fixed in that shape by drying.

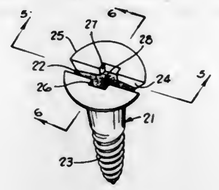
3,675,693
CHIPPER CUTTER AND HOLDERS THEREFOR
Thomas I'Anson, 4014 Hunts Point Road, Bellevue, Wash.
Filed Sept. 24, 1970, Ser. No. 75,154
Int Cl. B27g *13/04*
U.S. Cl. 144—241 **6 Claims**



When installed on the cylindrical cutter surface of the chipper drum, the cutter presents a knife having an arcuate cutting edge thereon, the relatively concave face of which is described by a surface of revolution, and the relatively convex face of which has a plurality of facets described by angularly successive pairs of dihedral planes passing through the concave face of the edge at acute angles thereto, so that the edge is scalloped in outline. The knife is formed on an annular blade having a plurality of such knives at angularly spaced locations thereabout; and the blade is defined by one end edge portion of an elongated tubular element which is installed in either a socket-like holder or a saddle-like holder, having means thereon whereby the element can be alternately releasably interlocked with the holder in a relative longitudinal position presenting one knife, or released and rotated to present another knife, in the same or a different such position.

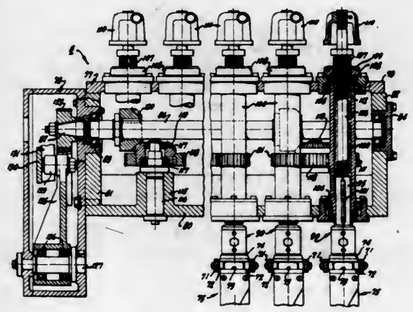
3,675,694
SCREW AND SCREW DRIVER COMBINATION
John W. Barlow, 263 Brighton Ave., San Francisco, Calif.
Filed Jan. 13, 1971, Ser. No. 106,045
Int. Cl. B25b *15/02*
U.S. Cl. 145—50 A **3 Claims**

The disclosure relates to the combination with a screw of a screwdriver containing laterally extending keys on the shank thereof affording a flex coupling between the screw head and the screwdriver with the keys of the driver removably fitting keyways of the cone-shaped head of the screw during use and materially compensating for misalignment as well as eliminating the bouncing of the blade of the driver from the screw slot,



thus requiring only minimum pressure to maintain positive coupling.

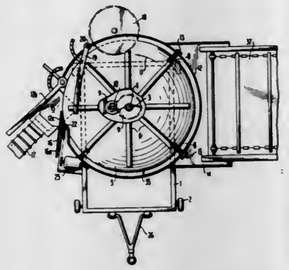
3,675,695
DRUPE PITTER
Konrad E. Meissner, Lafayette, and Etheride R. McClelland, Livermore, both of Calif., assignors to Filper Corporation, San Ramon, Calif.
Division of Ser. No. 814,118, April 7, 1969, Pat. No. 3,583,456. This application March 1, 1971, Ser. No. 119,684
Int. Cl. A23n *3/00*
U.S. Cl. 146—28 A **8 Claims**



A pitter for removing whole or half pits from clingstone drupe halves in which relative movement between a drupe half and a member on the pitter toward each other, from a spaced position, is effected, until said member engages the planar surface of the drupe half around the exposed pit, and thereafter, continued movement in the same direction automatically actuates a mechanism that causes pit engaging elements on said member to engage the side of the pit adhered to the pit cavity, and to apply yieldable outward pressure on the pit to tension the fibers holding the pit in said pit cavity. At the same time such pressure is applied said elements are revolved relative to the pit to break the tensioned fibers and to rotate the pit relative to the peach half when adhesion is weakened, and said member and elements are thereafter automatically actuated to withdraw and to release the detached pit from the half, and to restore the member to its spaced position preparatory to another pitting operation.

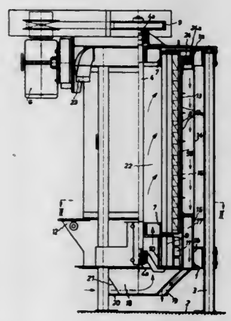
The invention also includes the provision of a plurality of pitters operatively connected with a single source of power for simultaneously pitting a row of drupe halves employing the above structure and for simultaneously positioning and removing successive rows of drupe halves to and from said pitting position.

3,675,696
PROCESS FOR BREAKING UP A MASS OF PRODUCE
Ernst Weichel, Bahnhofstrasse 1,, Heiningen Ueber Goeppingen, Germany
Division of Ser. No. 549,546, May 12, 1966, Pat. No. 3,545,511. This application July 22, 1970, Ser. No. 57,218
Int. Cl. B26d 4/00; A01f 29/00; B65g 65/00
U.S. Cl. 146—225 16 Claims



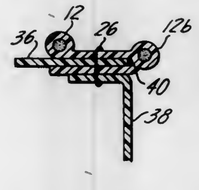
Method for intermediate storage and separation of a mass of stalk or leaf-type crops, including feeding the crops into a receptable, the base of which is rotating and causes the mass to be set into rotation about a vertical axis, continuously severing from the peripheral rim of the mass layers or skeins of predetermined dimensions, the severing be effected at least in a substantially vertical cutting plane by means of a driven cutting element or a fixed cutting element, and removing the separated layers or skeins in a direction substantially tangential to the mass within the receptable, said removal being effected, either continuously or batch-wise, along the side of the vertical cutting element which faces away from the rotational axis of the mass within the receptacle.

3,675,697
GRAIN CLEANING MACHINE
Roman Muller, Niederuzwil, Switzerland, assignor to Gebruder Buhler AG, Gallen, Switzerland
Filed Oct. 15, 1970, Ser. No. 81,082
Claims priority, application Switzerland, Oct. 15, 1969, 15454/69
Int. Cl. B02c 9/00; B02b 3/08; B02c 11/64
U.S. Cl. 146—253 7 Claims



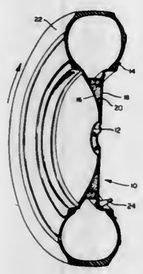
A machine for cleaning grain or the like which is of the type incorporating a vertically oriented centrifuge possessing a rotor simultaneously constructed as an air blower and a substantially cylindrical jacket having openings or recesses which surrounds the rotor. The grain which is to be cleaned is upwardly conveyed from below along the centrifuge to an outlet, and the impurities together either with water and air or air alone fall in an annular compartment bounded at the inside by the cylindrical jacket, downwardly into a funnel-shaped housing portion located below the centrifuge. This housing portion possesses a throughflow or throughpassage communicating with the aforesaid annular compartment and additionally possesses an inlet for air communicating with the internal space of the centrifuge. Beneath the housing portion there is arranged a collecting basin leading to a first withdrawal means, there also being provided a second withdrawal means which, when the machinery operates so as to carry out a dry treatment, is coupled by means of a suitable connection member in flow communicating fashion with the throughflow or throughpassage means.

3,675,698
PROTECTIVE PIPING FOR GOLF BAGS
Loman H. LeGoff, Morrisville, Pa., assignor to Acushnet Company
Filed July 27, 1970, Ser. No. 58,370
Int. Cl. A63b 55/00
U.S. Cl. 150—1.5 R 5 Claims



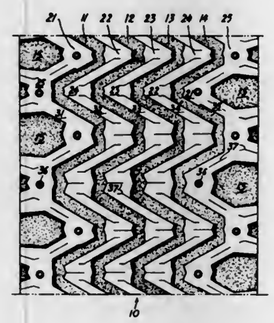
A new and useful piping for seams in golf club bags is disclosed. The piping protects the stitch which joins the two pieces at the seam and at the same time enhances the appearance of the golf bag.

3,675,699
WHEEL ASSEMBLY WITH TIRE COOLING MEANS
Luke Ralph Ocone, Philadelphia, Pa., assignor to Pennwalt Corporation
Filed Feb. 27, 1970, Ser. No. 15,172
Int. Cl. B60b 19/06
U.S. Cl. 152—153 1 Claim



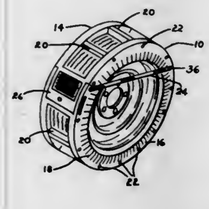
A wheel assembly has an enclosed and evacuated chamber extending between its hub and rim. Within the chamber is a liquid which is propelled toward the outer periphery of the assembly by centrifugal force during rotation thereof. Heat from the tire is ultimately transferred to the liquid to vaporize the same, and consequently cool the tire. Because the chamber is evacuated, the vapor rapidly moves inwardly toward the hub. Ambient air contacting the external surfaces of the assembly condenses the vapor, and centrifugal force propels the condensate toward the outer periphery once again. This process is continuously repeated.

3,675,700
SNOW TIRE
Henri Verdier, Beauregard-L'Eveque, France, assignor to Compagnie Generale Des Etablissements Michelin raison sociale Michelin & Cie, Clermont-Ferrand (Puy-de-Dome, France
Filed July 23, 1970, Ser. No. 57,594
Claims priority, application France, July 28, 1969, 6925816; June 1, 1970, 7020094
Int. Cl. B60c 11/16
U.S. Cl. 152—209 5 Claims



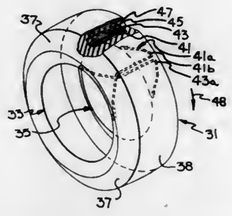
The tread of a snow tire is formed with a plurality of spaced-apart blocks in relief succeeding one another in the longitudinal direction and additional elements in relief connecting the spaced-apart blocks.

3,675,701
AUXILIARY TIRE TRACK
George E. Garrison, 6035 18th S. W., Seattle, Wash.
Filed June 30, 1970, Ser. No. 51,063
Int. Cl. B60c 27/20
U.S. Cl. 152—225 8 Claims



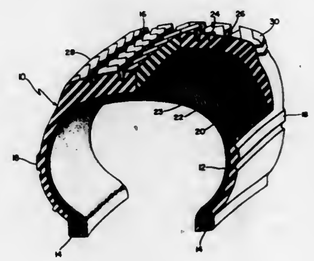
A tire encircling track for increasing the grip of a motor vehicle tire on a road surface comprising a pair of molded flexible rim portions interconnected by transversely extending rib portions to form an adjustable track adapted to encircle a motor vehicle tire. An adjustable self-locking connecting means for holding the ends of the track together and for holding the track itself on the motor vehicle tire is also provided. An additional restraint is provided to hold the track on the vehicle tire prior to locking of the connecting means. In another embodiment, the entire track is molded as a single flexible unit.

3,675,702
PNEUMATIC TIRE CARCASS CONSTRUCTION
Charles F. Schroeder, Toledo, Ohio, assignor to Owens-Corning Fiberglas Corporation
Filed April 1, 1969, Ser. No. 811,930
Int. Cl. B60c 5/00, 9/06, 13/00
U.S. Cl. 152—354 9 Claims



Unique carcass constructions and tires containing same, the carcass featuring variant cord angles depending upon the location of the cord in the carcass, are disclosed herein together with novel sheet-like candidate materials for carcass plies and methods of making such sheet-like materials featuring these variant angles.

3,675,703
BIAS-BELTED PNEUMATIC TIRE
George T. Watts, North Canton, and Robert W. Yeager, Akron, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Sept. 23, 1970, Ser. No. 74,574
Int. Cl. B60c 9/18
U.S. Cl. 152—361 9 Claims



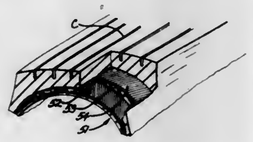
A bias-belted pneumatic tire having a pair of belt plies, the radially inner ply of said belt plies having a lower modulus of elasticity than the radially outer ply of said pair of belt plies.

The foregoing abstract is not to be taken as limiting the invention of this application, and in order to understand the full nature and extent of the technical disclosure of this application, reference must be made to the accompanying drawing and the following detailed description.

3,675,704
TIRE CONSTRUCTIONS

Alfred Marzocchi, Cumberland; Gustav E. Benson, Edgewood, and Robert E. Leach, Cumberland, all of R.I., assignors to Owens-Corning Fiberglas Corporation

Division of Ser. No. 706,160, Feb. 16, 1968, Pat. No. 3,523,472. This application May 8, 1970, Ser. No. 48,707
Claims priority, application Belgium, Feb. 17, 1967, 39909
Int. Cl. B60c 9/12, 7/00
U.S. Cl. 152—361 4 Claims

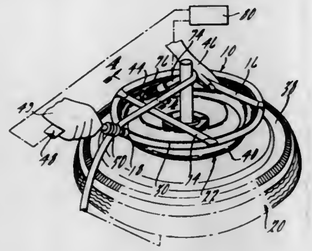


Tire constructions featuring glass reinforcement in the form of a tread reinforcing band, in the form of load supporting stiff toroidal hoops, in the form of a spiral wrap for organic cord plies and/or in the form of a plurality of non-woven plies of mutually parallel cords.

3,675,705
TIRE BEAD SEATING AND INFLATION APPARATUS

Lee M. Carless, Grosse Pointe Woods, Mich., assignor to B & J Manufacturing Company, Glenwood, Ill.

Filed Nov. 16, 1970, Ser. No. 89,952The portion of the term of this patent subsequent to Jan. 5, 1988, has been disclaimed.
Int. Cl. B60c 25/12
U.S. Cl. 157—1.1 13 Claims



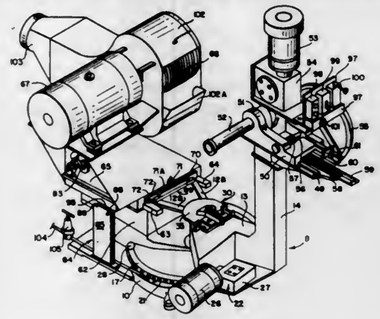
Apparatus for seating the beads and inflating tubeless tires on a vehicle wheel is provided. The apparatus for seating the tire beads comprises an annular tube having orifice means for injection of air under pressure peripherally around the tire through the space between the wheel rim and the tire bead. The inflation apparatus comprises means for connecting air under pressure to the conventional tire valve. Means are provided to control the simultaneous injection of air into the tire from the bead seating apparatus and through the conventional tire valve. In one embodiment, the apparatus is integrated into a conventional tire mounting and de-mounting device.

3,675,706
TIRE BUFFING MACHINE

William S. Cahill, Danville, Va., assignor to Cahill Manufacturing Company, Inc., Danville, Va.

Filed April 14, 1971, Ser. No. 133,862
Int. Cl. B29h 21/08
U.S. Cl. 157—13 15 Claims

A machine for buffing a tire of any desired size and width includes a tire support mounted on a base for oscillation around an axis perpendicular to the base and for sliding movement in a plane parallel to the base. A cutting means is mounted on the base for sliding movement in a plane parallel to the base towards the tire. A template with a one to one ratio with

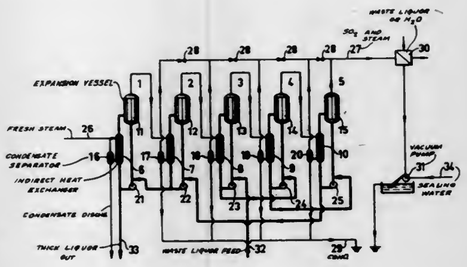


respect to the desired tire contour is mounted on the tire support to oscillate therewith, and a template follower connected to the cutting means for movement therewith is urged into contact with the template.

3,675,707
PROCESS AND DEVICE FOR RECOVERING SULFUR DIOXIDE FROM WASTE SULFITE LIQUOR

Per-Erik Andersson, Sundsvall, and Carl Arne Berghohm, Nynashamn, both of Sweden, assignors to Svenska Cellulosa Aktiebolaget, Sundsvall, Sweden

Filed Dec. 8, 1969, Ser. No. 882,881
Claims priority, application Sweden, Dec. 9, 1968, 16784/68
Int. Cl. B01d 1/26, 1/100; D21c 11/02, 11/12, 11/14
U.S. Cl. 159—20 4 Claims



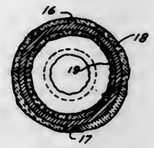
Sulphite waste liquor is concentrated in a plural effect evaporator, the so-removed vent steam containing SO_2 is cooled at low pressure and the condensate discharged; and the resulting gas rich in SO_2 is compressed to atmospheric pressure in a vacuum pump requiring little or no sealing water.

3,675,708
METHOD OF MAKING ACCURATE CORES

William S. Blazek, Alliance, Ohio, assignor to TRW Inc., Cleveland, Ohio

Filed Dec. 16, 1970, Ser. No. 98,571
Int. Cl. B22c 9/02
U.S. Cl. 164—35 6 Claims

Method for making shell-type cores which involves joining together a plurality of core patterns which when joined provide a hollow composite pattern, each of the patterns having ribs extending therealong. The composite pattern is invested in a ceramic mold making material to form outer and inner ceramic shells about the composite pattern. A portion of the outer shell is then removed to expose at least a portion of the

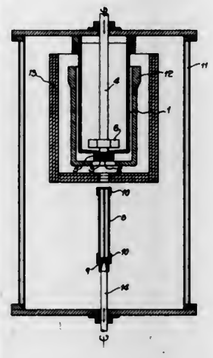


ribs. Upon melting out of the pattern, the discontinuity created by the presence of the ribs causes the outer shell to come apart and leaves the inner shell intact. The inner shell which is in the configuration of the desired core is then fired to provide a rigid shell-type core.

3,675,709
APPARATUS FOR MANUFACTURING SEMICONDUCTOR SUBSTANCES FROM GERMANIUM-SILICON OR MOLYBDENUM-SILICON

Manfred Vogerl; Hilmar Duxer, both of Munich, Bavaria; Manfred Roder, Neukatzwang/B., Nurnberg, Bavaria, and Wolfgang Dietz, Munich, Bavaria, all of Germany, assignors to Consortium Fur Elektrochemische Industrie G.m.b.H., Bavaria, Germany

Filed Aug. 14, 1969, Ser. No. 850,010
Claims priority, application Germany, Aug. 16, 1968, P 17 69 979.5
Int. Cl. B22d 25/00, 39/00
U.S. Cl. 164—335 4 Claims

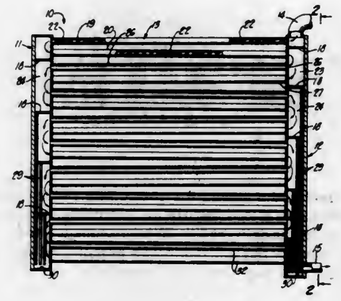


A method and apparatus for manufacturing semiconductor bodies from germanium-silicon or molybdenum-silicon in which a homogeneous melt of the substance under treatment is made in a melting vessel which has a capillary opening in the bottom. A vertically movable receiver, such as a crucible, is mounted beneath the capillary opening, and a piston is movable up and down in the melting vessel above said capillary opening to press drops of the molten substance in said vessel out through said opening and into the receiver where said substance is solidified in crystalline form. The method and apparatus insure that the dropping sequence of said drops causes each consecutive drop to enter the receiver before the preceding drop has fully solidified.

3,675,710
HIGH EFFICIENCY VAPOR CONDENSER AND METHOD

Roderick E. Ristow, 1441 W. 190th St., Gardena, Calif.

Continuation-in-part of Ser. No. 825,496, May 19, 1969, abandoned. This application March 8, 1971, Ser. No. 121,755
Int. Cl. F28b 1/00
U.S. Cl. 165—1 9 Claims

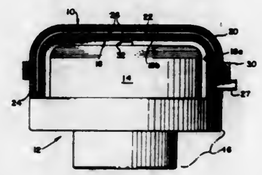


Apparatus for and method of condensing hot vapor at increased efficiency wherein the initial flow path for hot vapor is so related to that in downstream areas as to provide relatively high velocity contact of hot vapor with the heat exchange wall, thereby to promote heat transfer. Provision for drainage of condensate at closely spaced intervals facilitates condensate removal and enables the vapor to have wiping contact with a maximum interior surface area of the heat exchange wall. If tubes of similar size are employed throughout, control of vapor velocity is obtained by selecting a varying number of tubes in parallel at different flow levels and additionally by causing the vapor to flow in a spiral path to increase its velocity and wiping contact with the heat exchange surfaces.

3,675,711
THERMAL SHIELD

Donald J. Bilinski, Dover; Lawrence S. Galowin, Upper Saddle River, and Michael Napolitano, Mendham, all of N.J., assignors to The Singer Company, New York, N.Y.

Filed April 8, 1970, Ser. No. 26,641
Int. Cl. F28d 15/00
U.S. Cl. 165—32 2 Claims

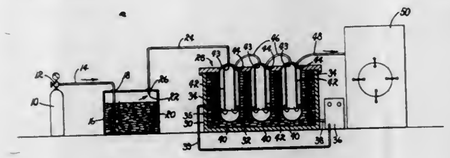


A thermal shield consisting of a pair of walls forming an enclosed space. A heat exchange fluid is disposed in the space between the walls and is maintained at a working temperature whereby it changes in phase in response to changes in temperature along one of the walls.

3,675,712
METHOD FOR CONTROLLING VAPOR CONTENT OF A GAS

T. O. Paine, Administrator of the National Aeronautics and Space Administration with respect to an invention of; Billy G. Moser, Chico, and Robert F. Landel, Altadena, both of Calif.

Filed Dec. 16, 1969, Ser. No. 885,521
Int. Cl. F24f 3/14
U.S. Cl. 165—3 1 Claim

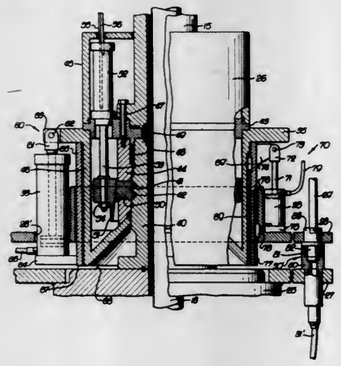


A method and a system for controlling vapor content of a gas, particularly suited for use in controlling the relative humidity of the gas delivered to an environmental test chamber, characterized by the utilization of a pressurized source of gas operatively coupled with an hermetically sealed system including a saturation tank containing a vaporific liquid, having an inundated gas intake port and an elevated gas discharge port, coupled with a condenser including a plurality of series-connected condenser units seated in a chilled bath and maintained at a selected temperature whereby a gas first is caused to become saturated with a vapor of the liquid contained within the saturation tank and then selectively dried at the condenser as selected quantities of the vapor are removed by condensation as the gas is delivered therethrough, a feature of the invention being the use of a saturation tank for completely saturating the gas with a vapor followed by a selective cooling of the gas to achieve a condensation of selected quantities of the vapor, whereby the final vapor content of the gas is a function of its temperature.

3,675,713
METHOD AND APPARATUS FOR SEPARATING SUBSEA WELL CONDUIT COUPLINGS FROM A REMOTE FLOATING VESSEL

Bruce J. Watkins, Palos Verdes Estates, Calif., assignor to Regan Forge and Engineering Company, San Pedro, Calif.

Filed March 30, 1970, Ser. No. 23,864
Int. Cl. F21b 33/035
U.S. Cl. 166—.6 4 Claims



A plurality of hydraulic drive means, each including a piston, piston rod and cylinder for driving the associated piston rod relative to the associated cylinder upon introduction of hydraulic fluid under pressure, are provided at a subsea well conduit coupling having hydraulically actuated latching means therein including latching dogs cammed out of latching engagement upon pulling of the conduit upwardly when the latching means is deactivated, means are provided for mounting each of such drive means to one of the coupling members, means are provided for introducing hydraulic fluid from the floating vessel above the well and coupling into each of the drive means for driving the associated piston rod relative to the associated cylinder and an annular drive ring mounted about said one of said coupling members is connected to each of the hydraulic drive means so that upon actuation thereof the drive ring is moved coaxially down about said one coupling member into engagement with the other of said coupling members and, on continued actuation of such hydraulic drive means, said drive ring separates the coupling members by forcing them in coaxial but opposite directions, the associated latching means dogs being cammed out of latching position and the coupling members being released to allow raising of the subsea conduit and consequent release of the vessel from the subsea well. Additional hydraulic drive means are also provided in association with an additional drive ring mounted coaxially about and slidable relative to the aforementioned drive ring for disconnecting hydraulic line coupling portions connected to said additional drive ring preparatory to releasing the main coupling members and raising the associated marine conductor or conduit.

3,675,714
RETRIEVABLE DENSITY CONTROL VALVE

George L. Thompson, 3265 W. Andrews St., Fresno, Calif.

Filed Oct. 13, 1970, Ser. No. 80,340
Int. Cl. F21b 33/00
U.S. Cl. 166—224 10 Claims

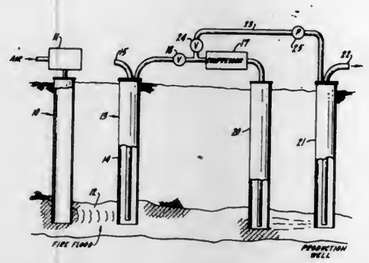


Retrievable valve apparatus for lightening oil being gas lifted through a tubing string. The apparatus includes a valve body having a fishing neck which projects upwardly within the tubing string and valve means proper carried by the body for selectively communicating the tubing string interior with a pressurized gas supply to inject gas into the oil upwardly past the fishing neck in response to a predetermined pressure of oil lifted in the tubing string above the apparatus, the valve body being provided with a port to pass the pressurized gas into the body when the body is selectively positioned within the string.

3,675,715
PROCESSES FOR SECONDARILY RECOVERING OIL

Frank N. Speller, Jr., Tyler, Tex., assignor to Forrester A. Clark, Boston, Mass.

Filed Dec. 30, 1970, Ser. No. 102,824
Int. Cl. F21b 43/24
U.S. Cl. 166—256 6 Claims



A secondary recovery process for oil wet sands using underground combustion to produce a makeup effluent gas containing carbon dioxide. The effluent gas is mixed with a wet casing head gas enriched by ethane plus hydrocarbons and the mixture is injected into the reservoir at relatively low pressures to promote oil flow toward a production well. The enriched injected gas mixture reduces the oil's adhesion to the sand and promotes oil flow. The production well is maintained under a vacuum pressure so as to pull the injected mixture through the formation. The mixture is recovered and reinjected. The production well vacuum pulls ethane plus hydrocarbons from the oil at the formation face to enrich the casinghead gas.

3,675,716
HEAT-STABLE CALCIUM-COMPATIBLE WATERFLOOD SURFACTANT

Robert F. Farmer, III, and Jimmie B. Lawson, both of Houston, Tex., assignors to Shell Oil Company, New York, N.Y.

Filed March 9, 1970, Ser. No. 17,898
Int. Cl. E21b 43/22
U.S. Cl. 166—275 5 Claims

A waterflood oil recovery process, in which a surfactant system (comprising an aqueous, oil or two-phase liquid solution or dispersion of a mixture of petroleum sulfonate and alkoxylated alcohol sulfate surfactants) is injected into a reservoir to displace oil, is improved by using a sulfate surfactant that contains at least one chain-branching substituent on a carbon atom alpha or beta to the sulfate group. In a reservoir that is relatively hot, the improved process provides good oil-displacement efficiency and polyvalent metal ion compatibility in addition to improved stability towards hydrolytic decomposition of the sulfate surfactant.

3,675,717
METHOD OF GRAVEL PACKING WELLS

William C. Goins, Jr., and Bruce B. McGlothlin, both of Houston, Tex., assignors to Gulf Research & Development Company

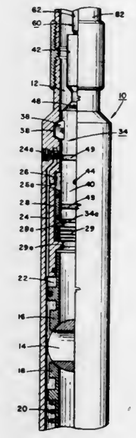
Filed Jan. 13, 1971, Ser. No. 106,238
Int. Cl. E21b 43/04
U.S. Cl. 166—278 11 Claims

A method of gravel packing a well in an overpressured formation in which a gravel-carrying liquid is formed by mixing finely divided solid particles of a weighting agent with the liquid. The weighting agent is either soluble in, or can be made soluble by, a liquid that has no appreciable effect on the gravel. Gravel is suspended in the mixture of gravel-carrying liquid and weighting agent and the resultant suspension used in conventional techniques for forming gravel packs. After formation of the gravel pack, a liquid is passed through the gravel pack to dissolve the weighting agent and remove it from the gravel pack. Calcium carbonate and iron oxide are two of the preferred weighting agents that can be used. Hydrochloric acid is a preferred liquid for removal of those weighting agents from the gravel pack.

3,675,718
CONDUCTING OPERATIONS IN A WELL THROUGH A NORMALLY CLOSED VALVE

William E. Kanady, Houston, Tex., assignor to Esso Production Research Company

Filed Sept. 11, 1970, Ser. No. 71,553
Int. Cl. F21b 23/04
U.S. Cl. 166—297 10 Claims



An operation is conducted in a well below a normally closed valve therein having a full open bore therethrough which involves running a tubular member having a passageway therethrough into the well from a reel at the earth's surface and releasably connecting the tubular member to the normally closed valve. Fluid pressure introduced through the tubular member from the earth's surface or before the valve is introduced to the well is provided to open the valve and thereafter a well operation is performed through the full open bore and below the valve. The well operation may include a workover operation such as acidizing, cementing, stimulating, sand consolidation, perforating, and the like.

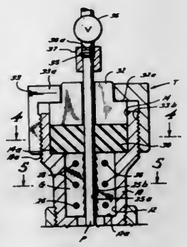
3,675,719
TUBING HANGER ASSEMBLY AND METHOD OF USING SAME

Damon T. Slator, and Archie W. Pell, both of Houston, Tex.

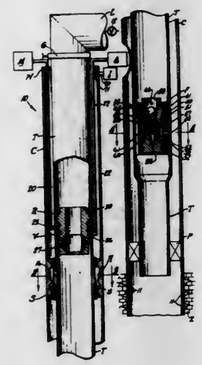
Filed Oct. 16, 1970, Ser. No. 81,461
Int. Cl. E21b 33/03
U.S. Cl. 166—297 4 Claims

A tubing hanger assembly and method of using same, wherein a continuous tubing having a smooth external surface

which is to be left in a well after insertion is supported by the hanger assembly so that subsequent operations may be performed in the well through the tubing without leaving the usual wellhead equipment at the well.

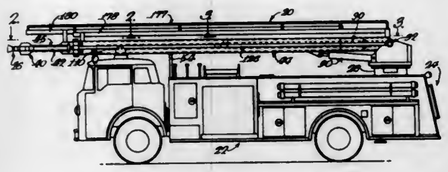


3,675,720
WELL FLOW CONTROL SYSTEM AND METHOD
Phillip S. Sizer, Dallas, Tex., assignor to Otis Engineering Corporation, Dallas, Tex.
Filed July 8, 1970, Ser. No. 53,223
Int. Cl. E21b *43/01, 43/12*
U.S. Cl. 166—314 17 Claims



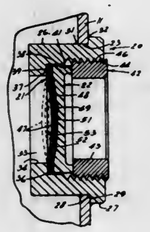
A well flow control system for producing high volumes of fluids from a well formation, the system having a flow conduit or conductor with a safety valve therein responsive to predetermined conditions of flow for shutting off flow through the flow conductor and operable under control from the surface. A means for injecting chemical corrosion inhibitors and other treating fluids into the well fluid is provided which also affords means for loading or killing the well in the event of damage to the surface connections of the well, or other conditions of need. Complete automatic shut-off is provided to prevent the well flowing wild, all controls are subsurface, and are removable by flexible line operated tools through the flow conductor.

3,675,721
FIRE FIGHTING APPARATUS WITH TELESCOPING BOOM
Kenneth H. Davidson, and Carrel V. Morris, both of St. Joseph, Mo., assignors to Snorkel Fire Equipment Company
Filed Oct. 26, 1970, Ser. No. 83,925
Int. Cl. A62c *27/00*
U.S. Cl. 169—24 11 Claims



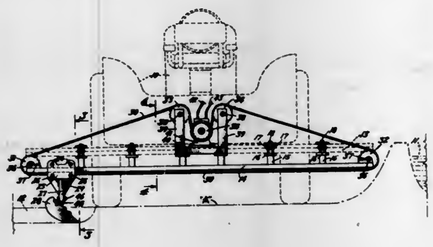
A telescoping boom is disclosed in combination with a pumper truck. The boom sections are hollow tubular members, and floating guide shoes mount the outer boom section for movement relative to the inner boom section. A nozzle is provided at the end of the outer boom section, and telescoping conduit sections are secured in external relationship to be boom for conveying water to the nozzle. Primary control means is provided at the rear of the truck for remotely controlling the boom and nozzle. Hydraulically actuated cable means are connected between the boom sections for extension and retraction of the outer boom section. Secondary control means is provided adjacent the end of the outer boom section for the nozzle, and a telescoping ladder is associated with the boom to provide access to the secondary control means. The telescoping ladder also enables a fireman to carry out normal fire fighting and rescue activities in elevated and difficult to reach positions. A flexible electrical cable and flexible hydraulic conduits are mounted within the boom structure for providing power to the control means at the end of the outer boom section, and the cable and conduits are movable as the outer boom section is extended.

3,675,722
PRESSURE INDICATOR
Mark E. Baines, Sr., Chamblee, Ga., assignor to General Fire Extinguisher Corporation, Northbrook, Ill.
Continuation of Ser. No. 794,866, Jan. 29, 1969, abandoned.
This application April 5, 1971, Ser. No. 131,162
Int. Cl. A62c *11/00*; G01l *19/12*
U.S. Cl. 169—30 15 Claims



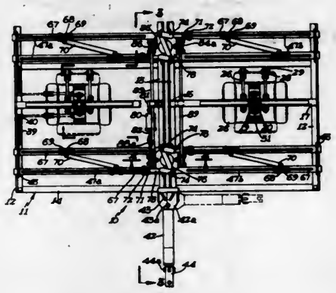
An inexpensive and yet highly reliable device for indicating when the pressure in a receptacle is above or below a predetermined value comprises a housing means, a diaphragm means in the housing means, the diaphragm means having first and second side surfaces and a translucent viewing means having an inner surface, at least a portion of which is adjacent to the second surface of the diaphragm means. The first side surface of the diaphragm is adapted to be in pressure communication with the receptacle so the the diaphragm means may be movable between a first position in which the pressure is below a predetermined value and a second position in which the pressure is above a predetermined value. The inner surface of the viewing is relatively frosted except for at least one portion or area which is relatively clear so that when the diaphragm is in the second position it will be in contact with the inner surface of the viewing means and obscure the differences between the relatively frosted portion and the relatively clear portion. With the diaphragm in the second position the second surface of the diaphragm will be clearly visible through the viewing means and hence indicia on the second surface may be easily read. In one embodiment the word "full" may be used. In the first position with the second surface out of contact with the inner surface of the viewing means the relatively clear area will be readily distinguishable from the relatively frosted area. If the relatively clear area forms the word "empty" this may be clearly read.

3,675,723
FURROW EXTENDING ATTACHMENTS FOR TRACTORS
John A. Yaklich, R. R. #1 Box 108, Avondale, Colo.
Filed Nov. 2, 1970, Ser. No. 85,869
Int. Cl. A01b *35/16*
U.S. Cl. 172—100 2 Claims



An elongated frame bar is removably attached to the conventional implement drag bar or the rear cultivator bar of a tractor so as to successively align with the terminations of a plurality of parallel spaced-apart row irrigation furrows. A carriage, provided with a ditch forming plow, is mounted so as to be longitudinally moved back and forth along said frame bar by a roller chain propelled by a reversible motor so that the ditch forming plow will enter and extend the length of each row irrigation furrow as the frame bar successively aligns therewith.

3,675,724
SELF PROPELLED LAND CLEARING AND PLOWING APPARATUS
Arthur F. Schneider, 4107 Turkey Creek Court, Annandale, Va.
Filed June 11, 1969, Ser. No. 832,048
Int. Cl. A01b *33/00*; A21b *21/02*
U.S. Cl. 172—116 24 Claims

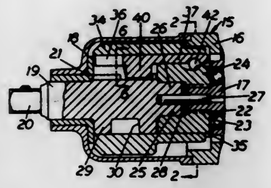


The machine includes a frame carrying a pair of independently driven front rollers rotatable about a common axis, each carrying a set of chopper blades spaced thereabout. The frame also carries a rear roller having a pair of chopper blade sets in side-by-side relation. The blades of each set have common pitch angles with the pitch angles of the blades in the side-by-side sets extending in opposite directions. The front and rear blade sets are longitudinally aligned with the blades thereof having opposite pitch angles, thereby providing a cross chopping action as the machine advances over the ground. The rear roller is carried by a yoke mounted for pivotal movement about a vertical steering axis and a longitudinal axis to permit canting of the rear roller relative to the front roller and frame. A steering motor is provided on the yoke and drives along an arcuate track on the frame to rotate the rear roller about the vertical axis. In another form, the pair of front rollers are replaced by a single roller having arcuate blades, the latter being configured such that the blade tips transcribe the arcs of looped trochoids in the ground with the leading and trailing edges of the arcs of the trochoids intersecting such that a plowing or tilling action is provided.

3,675,725
DISC IMPLEMENT
Henry F. Schultz, Route 1, Welcome, Minn.
Filed May 27, 1970, Ser. No. 40,548
Int. Cl. A01b *63/22, 21/08, 23/04*
U.S. Cl. 172—245 3 Claims

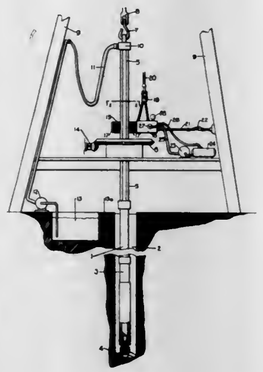
A disc implement includes a frame having retractable transport wheels thereon and having a plurality of tool bars fixedly mounted thereon. These tool bars each include tool bar sections extending laterally from the longitudinal center line of the implement and extending substantially normal to the direction of draft or travel of the implement. Each tool bar section has a plurality of spaced apart concavo-convex discs connected thereto by vertically arranged tool standards, the tool standards being rotatable about their respective longitudinal axes to selectively change the angle of the disc with respect to the direction of draft of the implement. A linkage mechanism is interconnected to the tool standards to selectively shift the same by a hydraulic ram. The discs on one side of the frame are oppositely angled with respect to the discs on the other side of the frame to thereby substantially balance the side draft during operation of the implement.

3,675,726
ROTARY IMPACT MOTOR
Knut Christian Schoeps, Nacka, and Klas Johan Astrom, Danderyd, both of Sweden, assignors to Atlas Copco Aktiebolag, Nacka, Sweden
Filed Jan. 5, 1971, Ser. No. 104,045
Claims priority, application Sweden, Jan. 14, 1970, 421
Int. Cl. B25d 15/00
U.S. Cl. 173—93 10 Claims



In a rotary impact motor, a tool driving anvil has a circumferential groove forming an axial cam rise. The rotary hammer carries an impact dog for conjoint rotation. The impact dog is movable axially in the hammer between impact and release positions relative to the anvil. The impact dog is power biased towards the release position and has a follower lug which engages the anvil groove. During relative rotation between the hammer and the anvil the follower lug is forced by the cam rise to move axially against the power bias to deliver a rotational impact against an impact surface in the anvil groove.

3,675,727
APPARATUS AND METHOD FOR GOVERNING THE OPERATION OF DOWN-HOLE EARTH BORING MOTORS
Wallace Clark, 1830 S. German Church Road, Indianapolis, Ind.
Filed Oct. 23, 1970, Ser. No. 83,455
Int. Cl. E21b 3/08, 7/00
U.S. Cl. 175—26 12 Claims



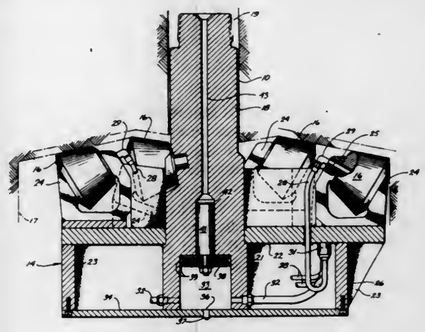
Apparatus and method for governing the operation of down-hole earth boring motors in which braking forces are applied to a rotating drill string in accordance with the reactive torque generated in the drill string by the down-hole motor driving the drill bit, the weight load on the drill bit being varied in accordance with variations in the speed of drill string rotation.

3,675,728
SLIM HOLE DRILLING
Joseph H. Faulk, Dallas; Lloyd R. Kern, Irving, and Graham E. King, Dallas, all of Tex., assignors to Atlantic Richfield Company, New York, N.Y.
Filed Sept. 18, 1970, Ser. No. 73,405
Int. Cl. E21b 17/00
U.S. Cl. 175—57 12 Claims



A method and apparatus for employing slim hole drilling techniques and avoiding key seat problems, particularly when moving a drill string into or out of the wellbore.

3,675,729
BIT LUBRICATION SYSTEM
William J. Neilson, Whittier, Calif., assignor to Smith International Incorporated, Newport Beach, Calif.
Filed May 8, 1970, Ser. No. 35,729
Int. Cl. E21b 9/08; F16c 19/00
U.S. Cl. 175—228 9 Claims

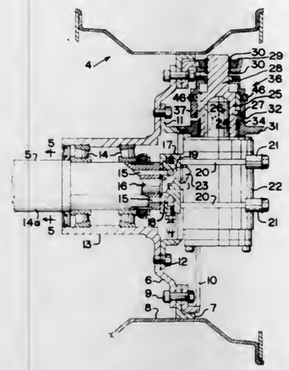


A raise type of earth boring drill for drilling upwardly from an adit or other tunnel is described. The bit is rotated by a drill pipe in a vertical pilot hole, and bores through the earth by means of rolling cutters mounted on the drill bit. Lubrication for the bearings supporting the cutters is provided from a reservoir of lubricant through lubricant manifolds to the individual cutters. A piston in the reservoir is intermittently actuated by pneumatic pressure for giving each of the bearings a small injection of lubricant, thereby obviating any need for complex and troublesome metering systems in the drill bit.

ERRATUM

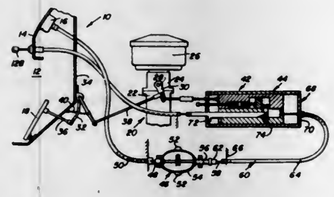
For Class 179—84 VF see:
Patent No. 3,675,513

3,675,730
VEHICLE WHEELED DRIVING MECHANISM
Edward S. Kontranowski, Bay City, Mich., assignor to Aerospace America, Inc., Bay City, Mich.
Filed May 7, 1970, Ser. No. 35,417
Int. Cl. B60k 7/00
U.S. Cl. 180—55 10 Claims



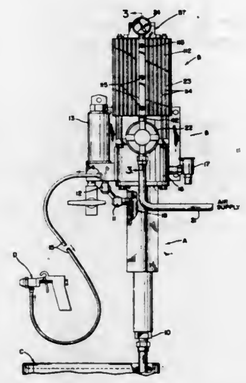
Apparatus for driving each wheel of a multiple wheel vehicle comprises a plurality of ring gears mounted on each wheel and gear driving means associated with each wheel for driving the latter independently of or in conjunction with the remaining wheels. The driving means is reversible and includes motor means having a shaft on which is rotatably mounted one driving pinion for each ring gear, the pinion gears being constantly in mesh with their associated ring gears and being freely rotatable relatively to the motor shaft until one or the other pinion is engaged with the shaft. Coupling means is driven constantly by the motor shaft and is operable to be shifted from a neutral position in which neither pinion is driven to a driving position in which one or the other of the pinions is driven.

3,675,731
VEHICLE SPEED CONTROLLED THROTTLE GOVERNOR
Walter Stopera, 125 Diamond Street, Box 116, Rayland, Ohio
Filed Dec. 1, 1969, Ser. No. 881,120
Int. Cl. B60k 27/04
U.S. Cl. 180—109 9 Claims



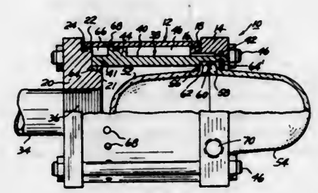
A motor vehicle throttle control operative to limit shifting of the throttle control between open and closed positions to a predetermined range considerably less than the full range of movement thereof between fully open and fully closed positions. The throttle control is operative to vary the effective limits of the predetermined range toward the fully open and fully closed positions of the throttle control in response to increases and decreases in vehicle speed.

3,675,732
MUFFLER FOR PNEUMATIC MOTOR
Samuel R. Rosen, Lorain; Alvin A. Rood, Westlake, and Donald R. Scharf, Amherst, all of Ohio, assignors to Nordson Corporation, Amherst, Ohio
Division of Ser. No. 809,235, March 21, 1969. This application May 17, 1971, Ser. No. 144,124
Int. Cl. F01n 1/08, 1/22
U.S. Cl. 181—36 A 4 Claims



A hydraulic pump and double acting air motor therefor including means for controlling the inlet and exhaust of air to and from the opposite sides of the piston in the air cylinder. A pilot valve operated by the air piston controls one operating valve for the cylinder and a pilot relay valve. The pilot relay valve controls another operating valve which is in reverse phase with respect to the first operating valve. A muffler which inhibits ice formation is operatively associated with the operating valves for muffling the noise of the air being exhausted from the air cylinder through the operating valves with minimal accumulation of ice.

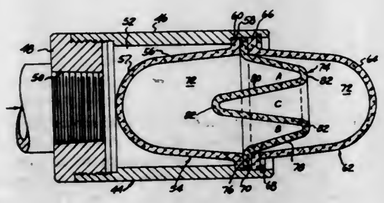
3,675,733
PRESSURE SAFETY RELEASE INDUSTRIAL AIR EXHAUST SILENCER
Leland F. Blatt, 790 Shoreham Road, Grosse Pointe Mich.
Filed March 17, 1971, Ser. No. 125,167
Int. Cl. F01n 1/10, 1/20, 3/00
U.S. Cl. 181—37 7 Claims



An air exhaust silencer comprises a barrel which has a piston head, the barrel is contained for reciprocation within a cylinder and is normally retained in the cylinder in an inwardly retracted position so as to permit air exhaust through the silencer structure supported within the barrel and which embodies a pair of gas permeable frequency distorters adapted to muffle the noise of the exhaust air to below a predetermined

maximum noise level; the barrel containing cylinder of the silencer is provided with a plurality of relief ports which are in open communication with a normally closed off relief chamber in front of the piston head; regulated fluid pressure retaining means are employed to normally retain the barrel in the retracted position; upon build-up of back pressure in the silencer assembly, due to clogging of the gas permeable members of the silencer, the increased air pressure through the silencer becomes sufficient to move the barrel of the silencer out of the cylinder overcoming the magnitude of the fluid pressure retaining means to establish communication between the relief chamber and the inlet port of the silencer to thereby permit air pressure to bypass said clogged gas permeable members of the silencer for direct passage to the atmosphere.

3,675,734
SILENCER WITH FREQUENCY SEPARATING AND MODULATING BAFFLE
Leland Francis Blatt, and Frank H. Wiesenhofer, both of 24121 Mound Road, Warren, Mich.
Filed Sept. 10, 1971, Ser. No. 179,284
Int. Cl. F01n *1/10, 7/16, 7/18*
U.S. Cl. 181—56 **6 Claims**



An air exhaust silencer comprises a housing having an inlet and an outlet with opposed porous dome shaped noise reducing members and a porous frequency separating and modulating baffle disposed within and between said noise reducing members, contoured and of such undulating shape and form extending into at least one of said dome shaped members so as to have a total surface area in excess of the cross sectional area of opening between said dome shaped members, for reducing and modifying high pressure sound frequencies and reducing back pressure.

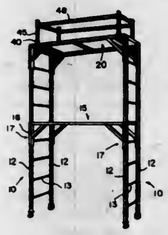
3,675,735
LADDER MOUNTING MEANS FOR CHALK LINE
Loren C. Bailey, Coos Bay, Oreg., assignor to James C. Thompson, Coos Bay, Oreg., a part interest
Filed Dec. 29, 1970, Ser. No. 102,335
Int. Cl. E06c *5/32;* **B44d** *3/38*
U.S. Cl. 182—129 **5 Claims**

The disclosed invention has to do with the handling of a wall marking chalk line such as is commonly used by sign painters and similarly employed workmen and pertains, more particularly, to novel means which is detachably and adjustably bracketed on a stile of one ladder of a pair of spaced companion ladders and which features headed means adjacent the wall surface to which one end of a chalk line is attached. The invention enables one man, working alone, to ascend the ladder adjacent the free end of the chalk line and to snap a guide line on the building wall. A pair of cooperating brackets provide the novel adapter means. This means is detachably mounted on one stile of the ladder. One of the brackets serves to support the median portion of a shiftable rod. The forward end of one embodiment of the rod is provided with a spring-loaded head to which one end of the chalk line is tied and thus anchored. In a second embodiment the headed end of the rod is stationary and bears against the wall surface to function as



the ladder stand-off, that is, to clear the ladder from projecting neon signs and the like on the wall.

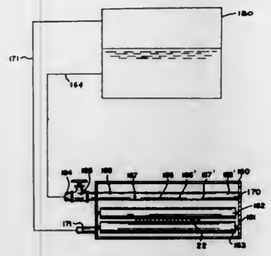
3,675,736
GUARD RAIL ASSEMBLY FOR A PLATFORM
William Clark Roggie, Indianapolis, Ind., assignor to Baker-Roos, Inc., Indianapolis, Ind.
Filed May 3, 1971, Ser. No. 139,616
Int. Cl. E04g *1/26*
U.S. Cl. 182—113 **4 Claims**



A guard rail assembly for a platform in which said platform is supported on a pair of struts interconnecting a pair of leg frames. A plurality of plates are removably mounted on said struts and each is provided with an upwardly open socket. A plurality of posts are received in said sockets and project upwardly therefrom. Said posts are interconnected by a plurality of guard rails.

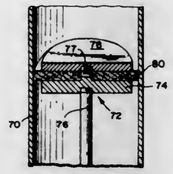
3,675,737
LUBRICATOR FOR ROLL FEED
Stephen M. Chmela, 1514 Mark Drive, Mount Prospect, Ill.
Division of Ser. No. 722,056, April 17, 1968, Pat. No. 3,517,872. This application June 22, 1970, Ser. No. 47,967
Int. Cl. F16n *7/24*
U.S. Cl. 184—17 **2 Claims**

A unitary roll feed for feeding web material to a machine having a simplified manually operable means to permit feed length adjustment while the machine is in operation. A pulsating brake, automatic and manual roll lifter, and oiler are provided in the same compact housing. Since all of these features are in a single unit, it may be universally applied to any type of



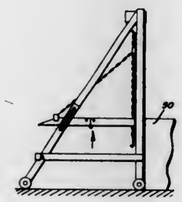
press, punch or analogous machine without loss of any one of the features.

3,675,738
ENGINE SEALING
Vannevar Bush, 304 Marsh Street, Belmont, Mass.
Filed March 2, 1970, Ser. No. 15,462
Int. Cl. F01b *31/10*
U.S. Cl. 184—18 **8 Claims**



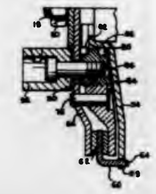
Hot gas engines operating at constant maximum temperatures are sealed with solid lubricant unsplit piston rings. Bellows seal rods within pressurized crankbases.

3,675,739
LIFT HAVING SELF-FOLDING PLATFORM
Atwood E. Erlander, 12221 S. Indiana Avenue, Palos Heights, Ill.
Filed July 10, 1970, Ser. No. 53,872
Int. Cl. B66b *9/00*
U.S. Cl. 187—1 **6 Claims**



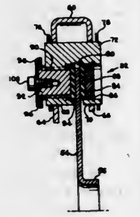
A lift which contains a self-folding platform is disclosed. The rear of a truck may be equipped with the lift to provide a loading and unloading device as well as a tailgate for the truck.

3,675,740
BICYCLE DISC BRAKE
Karl Frei, Horseheads, and Edwin Elliott Hood, Elmira, both of N.Y., assignors to The Bendix Corporation
Filed March 29, 1971, Ser. No. 129,091
Int. Cl. B62l *5/06*
U.S. Cl. 188—26 **10 Claims**



A disc brake for bicycles operating with a rotor mounted externally and driven by the bicycle wheel hub. Means are provided to enable the rotor to shift normally to the plane of rotation to permit alignment during braking. The brake actuating pressure plate member is a full annular plate to provide for balanced braking and is capable of supporting up to 360° of working friction surface. The annular pressure plate is mechanically advanced into and out of brake engagement by a high gain helical screw thread connection.

3,675,741
BICYCLE DISC BRAKE
Karl Frei, Horseheads, and Edwin Elliott Hood, Elmira, both of N.Y., assignors to The Bendix Corporation
Filed March 29, 1971, Ser. No. 129,090
Int. Cl. B62l *5/06*
U.S. Cl. 188—26 **7 Claims**

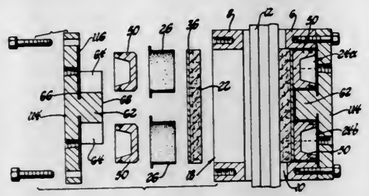


A disc brake for bicycles having a rotor mounted externally on a bicycle wheel hub and a brake housing mounted in a bracket affixed to the wheel axle wherein the brake housing has limited slidable movement in the support bracket to permit alignment with the rotor but is restrained from rotating about its own axis by a complementary opening and housing shape. The brake includes a mechanically manipulated threaded actuator to apply brake motion with a high mechanical advantage.

3,675,742
DISC BRAKE CALIPER ASSEMBLY
Tom H. Thompson, 29210 Point-O-Woods Place, Southfield, Mich.
Filed April 16, 1970, Ser. No. 29,116
Int. Cl. F16d *55/228*
U.S. Cl. 188—72.5 **13 Claims**

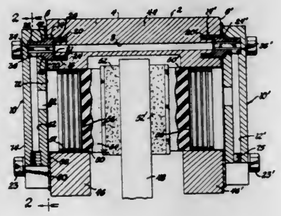
A disc brake caliper assembly including a main body portion having a peripheral base portion and a pair of leg portions extending from the base portion which are spaced from each

other to define a slot for receiving a rotatable brake disc. A bore or opening extends through at least one leg portion and a cap member is detachably mounted on the portions, the cap members each having a closure portion which is spaced from the slot and overlies one end of the bore. The cap member



cooperates with the bore and the leg portion to define at least one chamber for receiving hydraulic brake actuators operable to extend a brake pad from the other end of the bore into the slot for braking engagement with a brake disc received in the slot.

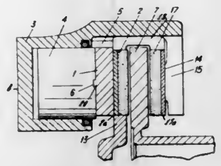
3,675,743
HYDRAULIC DISC BRAKE CONSTRUCTION
Tom H. Thompson, 29210 Point-O-Woods Place, Southfield, Mich.
Filed July 30, 1970, Ser. No. 59,538
Int. Cl. F16d *55/228*
U.S. Cl. 188—72.5 **21 Claims**



Hydraulic Disc Brake construction including a caliper body formed with a passage for hydraulic fluid. A cap member is mounted on a side surface of the caliper body and a passage for hydraulic fluid is formed in the cap member. A fluid connector projects between the caliper body and cap member to provide fluid communication between the caliper body passage and the passage in the cap member. The fluid connector has an endless side wall that projects into the main body with a loose fit and has an elastomeric sealing member bonded to its rim, the sealing member being compressed against the main body to provide a sealed fluid connection between the cap member and main body. The fluid connector may be mounted on the end cap prior to assembly of the end cap to the caliper body to serve as a locating member.

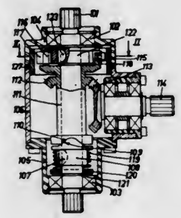
3,675,744
SPOT-TYPE DISC BRAKE
Hans Albert Beller, Budingerstr, Germany, assignor to ITT Industries, Inc., New York, N.Y.
Filed Jan. 21, 1971, Ser. No. 108,656
Claims priority, application Germany, Feb. 27, 1970, P 20 09 260.8
Int. Cl. F16d *55/00*
U.S. Cl. 188—73.6 **6 Claims**

A spot-type disc brake utilizing a floating caliper wherein two brake shoes are applied to opposite faces of the brake disc and an intermediate piece is located between the backing plate of one of the brake shoes and an actuating piston which is maintained in one arm of the floating caliper. The caliper arm is formed with an aperture and the intermediate piece is



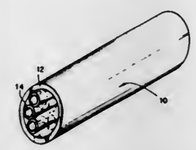
formed with a projection which cooperates with a depression formed in the brake piston thereby allowing easy removal of the intermediate piece from the disc brake. This in turn allows the easy replacement of the brake shoes which are readily exposed.

3,675,745
DOUBLE ACTING FREE WHEEL
Marcel Pierre Alexis Bouhot, 35 Avenue de General Serrail, Paris, France
Filed March 9, 1971, Ser. No. 122,306
Int. Cl. B60t *7/12*
U.S. Cl. 188—134 **1 Claim**



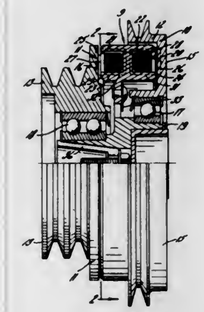
A torque limiting device for stopping a rotating operating shaft when a resisting torque exerted thereon exceeds a predetermined value. A housing having a stationary bowl mounted therein is provided; the operating shaft is mounted for rotation in the housing and extends through a tubular element which has a pinion wheel thereon operatively connected to an actuator device. An annular member is provided at one end of the tubular element and a plurality of rollers are arranged in the annular member and maintained in contact with a cam mounted for rotation to the operating shaft and out of contact with the bowl by a plurality of springs. At the other end of the tubular element is provided sloping surfaces which are shaped to mate with oppositely sloping surfaces provided on a driver mounted for rotation with the operating shaft. A spring is provided to normally maintain the sloping surfaces in mating engagement with each other and is calibrated so that if the resisting torque acting on the operating shaft exceeds a predetermined value, the sloping surfaces move out of mating engagement thereby displacing the cam relative to the annular member to wedge the rollers into engagement with bowl and bring the shaft to a stop.

3,675,746
IMPACT ENERGY ABSORBER
Alvin R. Irvine, Knoxville, Tenn., assignor to The United States of America as represented by the United States Atomic Energy Commission
Filed Oct. 23, 1970, Ser. No. 83,583
Int. Cl. F16f *7/12*
U.S. Cl. 188—1 C **2 Claims**



This invention relates to a deformable impact energy absorber consisting of a plurality of unattached tubes confined within a larger tubulation. During an impact loading the resistance to deformation increases with deformation.

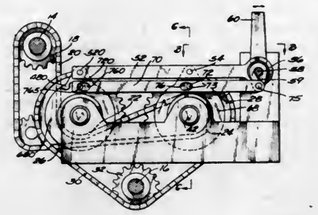
3,675,747
TWO SPEED MAGNETIC CLUTCH DRIVE
John A. Obermark, Beloit, Wis., assignor to Warner Electric Brake & Clutch Company, South Beloit, Wis.
Filed Nov. 9, 1970, Ser. No. 87,840
Int. Cl. F16d *27/06, 27/12, 21/02*
U.S. Cl. 192—48.2 **4 Claims**



In the two speed magnetic clutch drive illustrated, two magnets having oppositely facing pole ends are rigid with each other and axially shiftable selectively into gripping engagement with one or the other of axially fixed disk armatures driven at different speeds. The magnet unit is supported from a driven shaft through angularly spaced and tangentially extending leaf springs which provide a frictionless mounting for the magnet unit and, as an incident to engagement of either clutch, are stressed to provide the force for separating the magnet unit from the armature disk when the clutch magnet is deenergized.

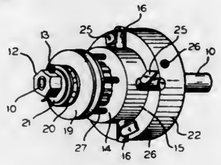
3,675,748
SINGLE LEVER SELECTIVELY ACTUATED FORWARD AND REVERSE CLUTCHES
Quinten A. Hansen, 4338 Hy 38, Franksville, Wis.
Filed Oct. 12, 1970, Ser. No. 79,742
Int. Cl. F16d *21/04, 13/42*; **G05g** *9/00*
U.S. Cl. 192—51 **6 Claims**

Clutches controlling motion in opposite directions have actuators movable oppositely, said actuators being moved by operating linkage from a control lever which includes lost motion designed to actuate one of the actuators only in one direction of lever oscillation and the other actuator in the opposite direction of lever oscillation. In a special arrangement,



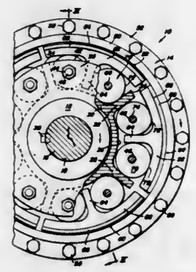
the driven part is locked against movement in either direction by manipulation of the normally stationary linkage to cause both disk packs to be engaged simultaneously.

3,675,749
QUICK DISCONNECT CLUTCH
Vernon Olson, 1961 Bartlett Avenue, Milwaukee, Wis.
Filed Jan. 12, 1971, Ser. No. 105,857
Int. Cl. F16d *43/20*
U.S. Cl. 192—56 R **7 Claims**



A clutch has two spring biased plates, normally urged together by the spring. Detents on one plate are captured by lugs or latches on the other plate. When a jerk occurs the capture is lost, and the detents move out of their capture position.

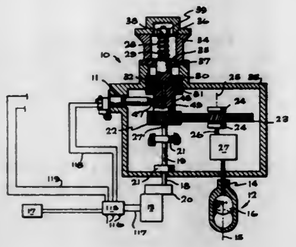
3,675,750
FLEXIBLE CENTRIFUGAL CLUTCH COUPLING
John Wright, Baltimore, Md., assignor to Koppers Company, Inc.
Filed Dec. 8, 1970, Ser. No. 96,019
Int. Cl. F16d *23/10*
U.S. Cl. 192—105 BA **14 Claims**



The centrifugal clutch coupling has an inner hub member with radially extending elongated vanes, and an outer drum

member with an inner cylindrical surface. Engaging shoes are positioned between the inner hub member and outer drum member and have arcuate external surfaces with a friction material secured thereto. The engaging shoes have inwardly extending elongated vanes positioned between the radially outwardly extending vanes of the inner hub member. Elongated elastomeric members are positioned between the inwardly extending vanes of the engaging shoes and the outwardly extending vanes of the inner hub member. The elastomeric members are maintained in position between the elongated vanes by end walls secured in one embodiment to the inner hub member and in another embodiment to the engaging shoes. Torque is transmitted from the inner hub member to the outer drum member through frictional engagement of the friction material on the arcuate external surface of the engaging shoes to the inner cylindrical surface of the outer drum member. The torque is further transmitted through the elastomeric members. In another embodiment, an elastomeric member having an elliptical configuration in section is secured to an engaging shoe and positioned between the radially extending vanes of the inner hub member. Torque is transmitted through the elliptically shaped elastomeric member without the engaging shoe having inwardly extending elongated vane members. Still another embodiment includes elastomeric members preloaded to exert a predetermined amount of force between the inner hub member and the engaging shoes.

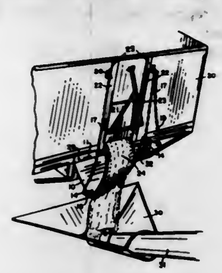
3,675,751
TORQUE OR MOTION RESPONSIVE APPARATUS
William D. Fertner, Cypress, Calif., assignor to The Cavins Co., Long Beach, Calif.
Filed Oct. 20, 1970, Ser. No. 82,356
Int. Cl. F16d 71/00; F16k 31/04; H01h 3/16
U.S. Cl. 192—150 11 Claims



A device adapted to respond to the application of excessive torque or excessive movement of a part, and including a shaft which upon excessive rotary movement in opposite directions will displace a cam which actuates electrical switches for controlling a motor or the like. The shaft carries two cam drivers which are adjustable rotatively relative to the shaft to vary the extent of shaft movement required for actuation of the cam.

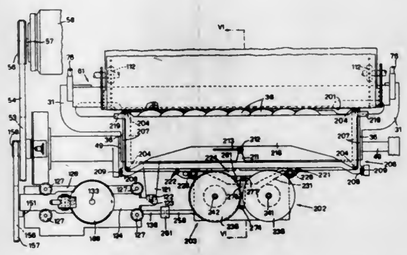
3,675,752
DIRECTIONAL GRAIN CHUTES
Norman R. Quigley, and Marvin E. Hansen, both of Rouleau, Saskatchewan, Canada
Filed Oct. 20, 1970, Ser. No. 82,331
Int. Cl. B65g 11/10; B60p 1/00
U.S. Cl. 193—5 2 Claims

A rectangular-shaped apron of flexible material having one side fastened across the rear of a grain truck and directly under the end gate thereof, while the free corners of the apron are adjustable suspended from brackets on the truck wall, and such that the apron can be flexed to form a chute and direct



grain pouring from under the opened end gate in the direction desired.

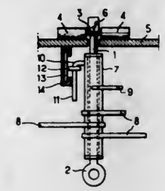
3,675,753
HIGH-SPEED PRINTER
Vincenzo Perucca, Ivrea, Italy, assignor to Ing. C. Olivetti SC., S.p.A., Ivrea, (Turin), Italy
Filed April 23, 1970, Ser. No. 31,331
Claims priority, application Italy, April 23, 1969, 51547 A/69
Int. Cl. B41j 23/04
U.S. Cl. 197—18 13 Claims



A high-speed printer comprising at least one type-bearing element on which there is arranged at least one series of characters, means adapted to move the type-bearing element continuously in a substantially horizontal plane so as to cause each character to travel along a closed path, a hammer adapted to effect the printing of the characters of the element on the fly and means for shifting the type-bearing element and the hammer with respect to a paper support for a distance corresponding to a character space while the first said means moves the series of characters past the hammer, which prints a character on the passage of each of the series of characters when there are more than one series.

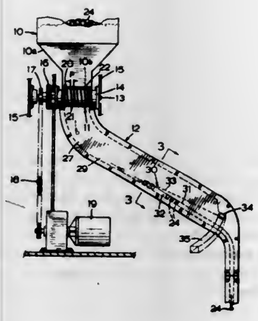
3,675,754
CONVEYORS INTENDED TO CARRY DIRECTLY OBJECTS OR OBJECTS MOUNTED ON SUPPORTS
Jean Etienne Villemaud, Les Sagnes, 87, Saint-Priest Taurion, France
Filed Oct. 30, 1970, Ser. No. 84,990
Claims priority, application France, Oct. 31, 1969, 6937605; Nov. 3, 1969, 6938122; June 5, 1970, 7020836
Int. Cl. B65g 47/00
U.S. Cl. 198—20 9 Claims

This conveyor intended for the transport of objects possibly mounted on supports comprises a succession of standard rectilinear transport elements, each controlled by a reduction drive motor and each including at least two pulleys; a transmission element such as a chain or a belt, the said transmission element being provided with gripping members designed to catch hold of the objects to be transported or their supports, the said transmission element being passed round the two said



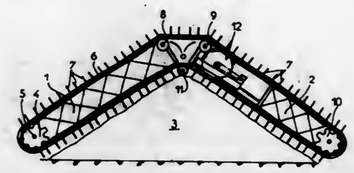
pulleys; guide rails for the transmission element; at least one supporting surface intended to bear the weight of the object and its support; and means of transfer able to unfasten the objects or their supports from a standard rectilinear transport element and to engage them with another standard rectilinear element of the conveyor.

3,675,755
ORIENTING AND FEEDING SMALL DISCS
Charles Douglas Hopwood-Jones, Verdun, Quebec, Canada, assignor to Northern Electric Company Limited, Montreal, Quebec, Canada
Filed May 4, 1970, Ser. No. 34,351
Int. Cl. B65g 47/24
U.S. Cl. 198—33 R 7 Claims



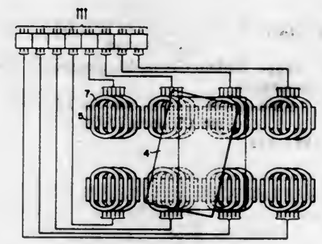
A method and apparatus for orienting and feeding small discs of uniform thickness and diameter, in which a quantity of the discs is fed onto a pair of parallel, helically ridged rollers spaced apart to form a horizontal slot having a width greater than the thickness of one of the discs but substantially less than twice its thickness. The helical ridges on both rollers are convoluted in the same direction. The rollers are rotated in opposite directions with their surfaces moving upwardly adjacent the slot. Passage means are located beneath the slot to receive the discs passing between the rollers and to maintain their orientation.

3,675,756
GANTRY SCRAPER CONVEYOR
Louis Nass, Kingersheim, France, assignor to Societe Anonyme dite AMECO S.A., Kingersheim, France
Filed Jan. 6, 1971, Ser. No. 104,396
Int. Cl. B65g 15/30, 65/28
U.S. Cl. 198—36 9 Claims



A gantry scraper conveyor for storing or picking up material in a heap comprising in a substantially inverted V-shaped frame structure a primary arm and a secondary arm supporting a driven double endless chain resting on two opposite slopes of the heap of the material to be handled with a continuous scraper chain running firstly upwards along the primary arm and then downwardly along the secondary arm. The primary arm has a driving drum with sprockets at the lower end and a guide pulley at the top. Another guide pulley at the adjacent upper end of the secondary arm, so as to provide a short horizontal section therebetween, and a return drum with sprockets at the lower end of the secondary arm, and tractive effort compensating means incorporated in said secondary arm for cancelling the effort due to the upward movement of the chain along the secondary arm while maintaining a proper chain tension.

3,675,757
ELECTROMAGNETIC EDDY CURRENT INDUCTION TYPE CONVEYING METHOD
Yukio Yabuta, Odawara-shi, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Dec. 24, 1969, Ser. No. 887,836
Claims priority, application Japan, Dec. 28, 1968, 44/981
Int. Cl. B65g 47/00
U.S. Cl. 198—41 2 Claims

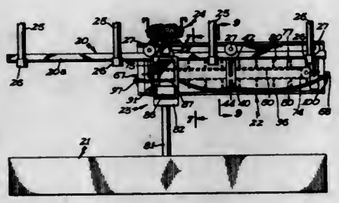


An electromagnetic induction conveying apparatus having a plurality of spaced apart stationary coils for providing a shifting magnetic field and a controller to vary the input to the coils, thereby controls both the direction of travel and the position of an electrically conductive object conveyed by the stationary coils due to eddy currents set up within the object by the shifting magnetic field.

3,675,758
LIVESTOCK FEEDING APPARATUS

Floyd E. Buschbom, Long Lake; Glen D. Hanson, Maple Plain, and Roger L. Johnson, Wayzata, all of Minn., assignors to Van Dale Corporation, Long Lake, Minn.

Filed Feb. 3, 1970, Ser. No. 8,199
Int. Cl. A01k 5/02; B65g 21/12
U.S. Cl. 198—110 23 Claims

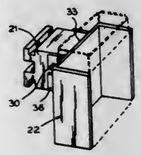


Livestock feeding apparatus including a carriage movable back and forth along a fixed track, a movable conveyor mounted on the carriage, fixed means for driving the carriage on said track, and a connection between the conveyor and the track whereby movement of the carriage on the track causes movement of the conveyor with respect to the carriage. The carriage is made up of a plurality of parts which can be easily and quickly assembled into sections, any number of which can be connected together to provide a carriage of the desired length. A tray or bottom surface in the carriage is constructed so that it can be snapped into place to facilitate easy assembly. Adjacent sections of the carriage are connected together by connector plates at least some of which have mounted thereon an arm which serves as an axle for the rollers by which the carriage is mounted on the track and also have a support member for a drive chain which extends from one end of the carriage to the other and is engaged by a movable drive sprocket. Also disclosed is a unique hanger bracket for connecting the track to supporting posts, either suspended from above or supported from below the tracks, the hanger bracket being such that the track can very quickly and securely be attached to the supporting posts and so that it can readily be adjusted if need be. Also disclosed is an alternative embodiment where the carriage is utilized as a fixed conveyor for feed or the like and wherein the conveyor on the carriage is driven directly by a motor but substantially the same components are used to assemble this embodiment as are used in the traveling carriage arrangement described above.

3,675,759
INTERCHANGEABLE CARTON HOLDER FOR CHAIN CONVEYOR

Robert G. Keppe, Buffalo Grove, Ill., assignor to Exact Weight Scale Corporation

Filed March 5, 1971, Ser. No. 121,494
Int. Cl. B65g 15/00
U.S. Cl. 198—131 4 Claims

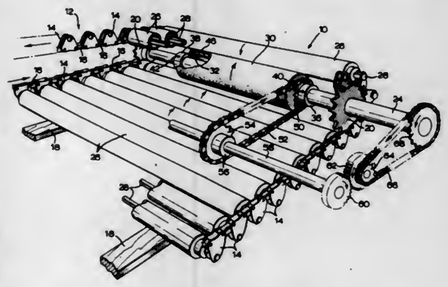


Carton filling mechanism in which a chain carries cartons past a filling station. Carton blank holders of different sizes for different sizes of cartons are snap-fitted over support blocks on the chain, enabling rapid changeover from one carton size to another.

3,675,760
ROLLER SLAT CONVEYOR

Benjamin S. Burrage, Scarborough, Ontario, and George S. Blair, Willowdale, Ontario, both of Canada, assignors to Gerrard Company Ltd., Hamilton, Ontario, Canada

Filed Nov. 25, 1969, Ser. No. 879,812
Int. Cl. B65g 17/12
U.S. Cl. 198—183 2 Claims

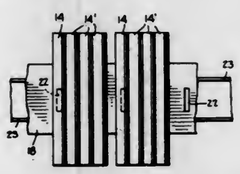


The speed of articles carried on a conveyor formed of free-turning rollers may be modified by applying to the rollers a driven brake.

3,675,761
AUTOMATIC CIGARETTE FEED MACHINE HAVING A VACUUM BELT CONVEYOR

Floyd V. Hall, Durham, N.C., assignor to Liggett & Myers Incorporated, New York, N.Y.

Filed Aug. 5, 1970, Ser. No. 61,347
Int. Cl. B65g 15/00
U.S. Cl. 198—184 13 Claims



The first conveyor which moves the single file of cigarettes upwardly uses an endless belt made of a flexible material with apertures spaced along the path thereof and an evacuation chamber over which the belt slides. The belt serves to cover over the evacuation chamber while the suction force created within the chamber draws air through the apertures in the belt to hold a cigarette thereon. Each cigarette which is positively held on the belt under suction serves to hold a number of cigarettes in front on the conveyor belt.

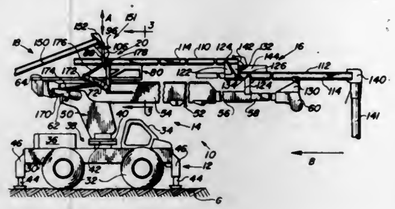
3,675,762
APPARATUS FOR PLACING CONCRETE MIX OR THE LIKE

Charles J. Arndt, Marion, Ohio, assignor to Harsco Corporation, Camp Hill, Pa.

Continuation of Ser. No. 858,298, Sept. 16, 1969, abandoned.
This application Jan. 11, 1971, Ser. No. 105,735
Int. Cl. B65g 37/00, 41/00
U.S. Cl. 198—233 2 Claims

An improved system for placing concrete mix or the like features a supporting structure mounted on a mobile base and

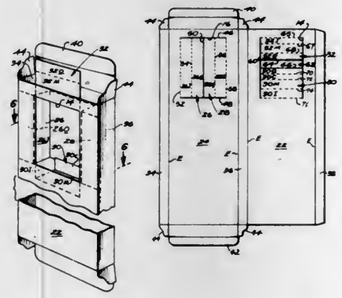
adapted for pivotable movement about horizontal and vertical axes. At least one distributing conveyor is mounted on the supporting structure, and the discharge end of a feeder conveyor is arranged to empty into the topmost one of the distributing conveyors. By means of a plurality of interconnected movable links, the discharge end of the feeding conveyor is maintained in substantial vertical alignment with the vertical axis of movement of the supporting structure as the supporting structure pivots about its horizontal axis.



3,675,763
BOX FOR HOLDING TAPE CARTRIDGES

Herbert N. Sandel, 200 N. Bristol Avenue, Los Angeles, Calif.

Filed Sept. 22, 1969, Ser. No. 859,787
Int. Cl. B65d 5/50
U.S. Cl. 206—45.14 6 Claims



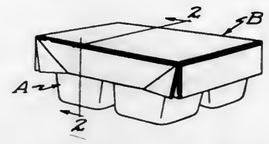
Cartons for holding and displaying large and small tape cartridges in a manner that permits unrestricted browsing while resisting theft. The cartons being too wide for insertion into a man's vest pocket and too long for concealment under a man's arm. Bottom retainers being positioned within the cartons, supporting the cartridges at the upper ends of the cartons in alignment with display apertures. Side retainers being formed within the cartons allowing a carton to be used which is wider than the smaller cartridges. The side retainers allowing cartons of the same width to be used both for the larger cartridges and the smaller cartridges, so that they fit well into the same size display stand.

3,675,764
COVERED TRAY PACKAGE

Daniel P. Dutcher, North Saint Paul, Minn., assignor to Hoerner Waldorf Corporation, Ramsey, Minn.

Filed Jan. 13, 1971, Ser. No. 106,119
Int. Cl. B65d 25/00, 5/26
U.S. Cl. 206—45.34 2 Claims

A tray of plastic or other relatively rigid material having a peripheral generally rectangular outwardly projecting flange is provided with an inverted tray shaped cover. The cover includes a top panel and depending side and end walls. Triangular corner areas of the side walls are adhered to corner flaps on the end walls. The walls are infolded so that there is a tendency for the portions of the side walls between the end walls

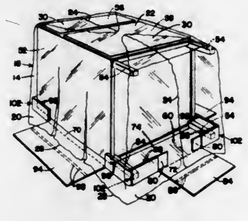


to swing inwardly between the diagonal fold lines defining the triangular corner areas. This causes the upper edges of the corner flaps to engage between the rigid tray flange. The cover may be removed by pulling the side walls outwardly to swing the corner flaps out of flange engaging position.

3,675,765
PALLETIZED LOAD

Norbert J. Meisek, Chicago, Ill., assignor to Signode Corporation, Chicago, Ill.

Filed Nov. 12, 1970, Ser. No. 88,613
Int. Cl. B65d 85/00
U.S. Cl. 206—46 FN 2 Claims



A composite package consisting of an articulated fiberboard pallet or platform, a semi-fragile article positioned thereon, an inner heat-shrinkable plastic film shrunk tightly about and partially enclosing the article and platform and holding the latter partially folded about the article, an articulated outer box-like fiberboard cover telescopically received over the platform, article and film and interlocked with the platform, and a loop of strapping material encircling the fiberboard cover and maintaining the pallet and cover in their interlocking relationship. A method of assembling such a package.

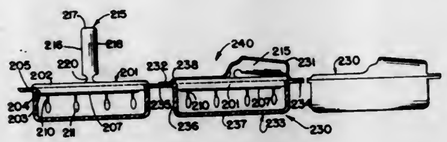
3,675,766
MULTIPLE PUNCTURE INJECTOR DEVICE

Sol Roy Rosenthal, 230 East Delaware Place, Chicago, Ill.

Filed Feb. 4, 1970, Ser. No. 8,625
Int. Cl. A61b 19/02; B65d 81/20
U.S. Cl. 206—63.4 20 Claims

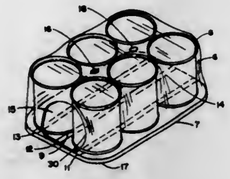
A multiple puncture injector device for use in transcutaneous injection, the injector having a handle hingedly connected to the top surface of a base plate and movable between a use position in which the handle extends outwardly of the base plate and a storage position in which the handle is substantially parallel to the base plate to facilitate storage thereof; the base plates may be straight or arcuate; the handles may be locked in the use and storage positions. The injectors can be

packaged in vacuum-packed hermetically sealed containers, which containers are connected one to another in end-to-end



relationship to facilitate the detachment of a selected one of the packages.

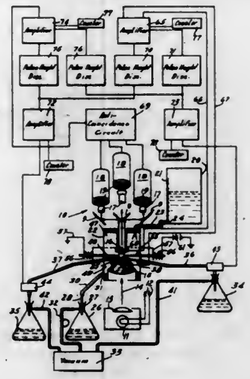
3,675,767
SLEEVE WRAPPED PACKAGE WITH A BASE
Monroe F. Taylor, Greenville, S.C., assignor to W. R. Grace & Co., Duncan, S.C.
Filed May 15, 1970, Ser. No. 37,596
Int. Cl. B65d *65/16, 85/62*
U.S. Cl. 206—65 S 11 Claims



The shifting of articles contained in sleeve wrapped packages is prevented by adhesively securing the articles to a base member wherein the base member is substantially rigid, planar material with discrete deposits of adhesive for securing the containers thereto; and wherein the sleeve wrap is a tightly engaged tube enclosing the containers and the base member. In one embodiment the packaged articles are cylindrical containers disposed in parallel side by side rows with abutting chime portions. Additional embodiments disclosed the forming of finger opening carrying means in the sleeve wrap and in the base member, and further show a hole hanger means in the base member.

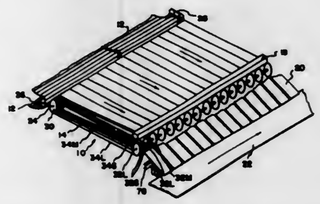
3,675,768
METHOD AND APPARATUS FOR CLASSIFYING AND SEGREGATING PARTICLES WITH ELECTRICAL AND OPTICAL MEANS
Gildardo Legorreta-Sanchez, 2159 Mexico Avenue, Guadalajara, Tal., Mexico
Continuation of Ser. No. 435,377, Feb. 25, 1965, abandoned.
This application March 17, 1969, Ser. No. 809,476
Int. Cl. B03b *1/00*
U.S. Cl. 209—4 50 Claims

Apparatus for classifying, counting and segregating microscopic particles such as cells. The particles may be contained in a gas or liquid and may be classified by measuring two characteristics thereof such as the size of the nucleus and the size or volume of the cell. This permits to count and separate red blood corpuscules from leucocytes in the same solution. Normal and atypical cells may be physically separated. The size of the nucleus may be measured by transmitted light and



the size of the cell by variations of an electromagnetic field or by scattered light.

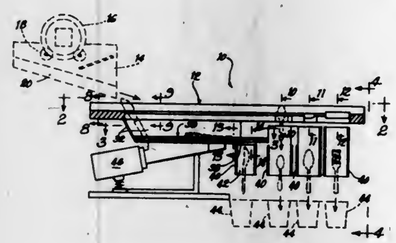
3,675,769
METHOD AND APPARATUS FOR SEPARATING POTATOES FROM STONES AND SOIL CLODS
Albert G. Stary, Fort Collins, Colo., assignor to Colorado State University Research Foundation, Fort Collins, Colo.
Filed Feb. 3, 1971, Ser. No. 112,322
Int. Cl. B07c
U.S. Cl. 209—73 10 Claims



This invention relates to a novel method for separating potatoes from stones and soil clods which comprises channeling a mixture thereof beneath a source of both visible and invisible light as well as infrared radiation covering that portion of the spectrum between approximately 0.2μ and 3.0μ, measuring the reflectance of each element of the mixture within the narrower band of approximately 0.6μ to 1.3μ as well as the band below the latter from about 1.4 to 2.0μ, formulating a ratio based thereon, comparing the ratios thus adduced for each element of the mixture and sorting the elements of the mixture into two groups having similar reflectance ratios. The invention also encompasses the novel apparatus for carrying out the aforesaid separation which comprises a first conveyor locatable at the discharge end of a conventional potato harvester adapted to receive a mixture of potatoes, stones and soil clods therefrom and channel same into a series of side-by-side parallel lines of individual elements; an emitter of both visible light and infrared radiation located above each line of elements in position to shine thereon one-at-a-time; differential detection means responsive to the light reflected from each element adapted to classify the latter into two categories based upon the ratio of their reflectivities within the selected radiant energy bands; and, sorting means connected to the de-

tection means operative to separate each element of the mixture into one of two categories in accordance with the previously determined classification thereof.

3,675,770
SILVERWARE SORTING MEANS
Ralph Ettinger, Jr., Highland Park, and Frederick P. Strohl, Jr., Park Ridge, both of Ill., assignors to Avent Industries, Inc., Wheeling, Ill.
Filed July 31, 1970, Ser. No. 60,020
Int. Cl. B07b *13/04*
U.S. Cl. 209—97 12 Claims



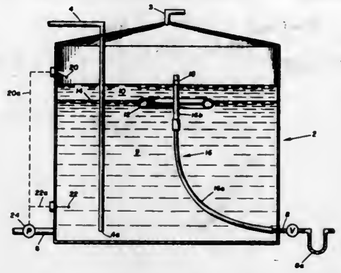
A silverware sorting means for separating knives, forks and spoons which are delivered in random fashion to the sorting means. A sorting bed is provided with vibrating means for moving silverware toward various discharge openings in the bed. Knives are passed through first openings at the leading end of the bed and then into collecting means located beneath the bed. Discharge openings at an intermediate location provide for the passage of spoons through the bed and into additional collecting means. These discharge openings comprise slots dimensioned so that spoons of one size will pass through first into separate collecting means and larger spoons at a later time for discharge into further collecting means. The spoons are held suspended by their bowls and the attitude of the spoons is controlled to determine the discharge point. Separate discharge openings are then provided for the forks, the prior openings being designed so that the forks will ride over these openings.

ERRATUM

For Class 209—166 see:
Patent No. 3,675,773

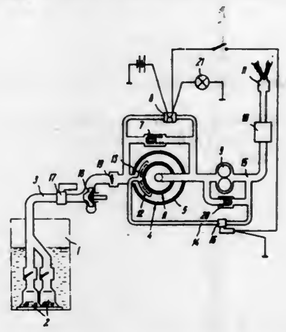
3,675,771
PROCESS AND SYSTEM FOR CONTROL OF FLUIDS IN WATER DISPOSAL SURGE TANKS
Horace L. McKee, Corpus Christi, Tex., assignor to Mobil Oil Corporation
Filed May 23, 1969, Ser. No. 827,224
Int. Cl. B01d *21/00*
U.S. Cl. 210—83 3 Claims

This specification discloses a water-disposal process and system which includes a surge tank in which oil is automatically withdrawn from an oil phase on top of the water at a rate to maintain a constant oil blanket on the water. The oil is withdrawn through a conduit which is secured to a buoy which floats at the oil-water interface. The buoy thus supports the oil inlet of the conduit a fixed distance above the oil-water interface to maintain the thickness of the oil phase constant as the water level varies within the tank. The tank further comprises means for alternately filling and emptying the tank of water between predetermined upper and lower levels. The sides of



the tank between these levels are thus contacted with the oil phase to provide corrosion protection.

3,675,772
FUEL-FEED SYSTEM FOR AN AIRCRAFT ENGINE
Alexandr Ivanovich Zhukovsky, ulitsa Stepana Supruna, 12 kv. 11; Anatoly Lukich Dobrenkoiov, Starve shasse, 12a, kv. 28, and Vasily Ivanovich Orlovsky, ploschad vostania, 1, kv. 364, all of Moscow, U.S.S.R.
Continuation of Ser. No. 782,333, Dec. 9, 1968, abandoned.
This application Dec. 2, 1970, Ser. No. 94,620
Int. Cl. B01d *29/38*
U.S. Cl. 210—90 4 Claims



A fuel-feed system for an aircraft engine is provided with a filter, and inlet and outlet piping coupled with the filter. A differential pressure transmitter is coupled with the filter for sensing a pressure build-up when ice deposits on the filter in flight. Return piping is provided for passing fluid into a nozzle spaced proximate the filter. A shut-off valve is coupled with the transmitter and is connected in the return piping to pass fluid to the nozzle when signaled by the transmitter.

3,675,773
FLOTATION SEPARATION OF GLASERITE FROM SODIUM CHLORIDE AND OTHER SALTS
Elie M. Chantch, Claremont; William R. White, Alta Loma, and Rolando V. Marcelo, La Verne, all of Calif., assignors to Occidental Petroleum Corporation, Los Angeles, Calif.
Filed Aug. 6, 1969, Ser. No. 848,092
Int. Cl. B03d *1/02*
U.S. Cl. 209—166 4 Claims

Glaserite is selectively separated from glaserite-sodium chloride-potassium chloride salt complexes by froth flotation using as the reagent fatty acids or their salts, hydrocarbon sulfates or hydrocarbon sulfonates.

3,675,774
MARINE RECIRCULATING AND HOLDING TANK

George C. Roberts, and Donald A. Dotson, both of Los Angeles, Calif., assignors to Monogram Industries, Inc., Los Angeles, Calif.

Filed Sept. 22, 1970, Ser. No. 74,393
Int. Cl. C02c 1/18
U.S. Cl. 210—167 11 Claims

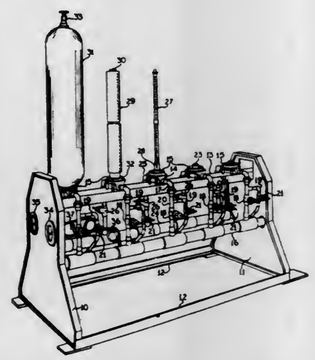


A holding tank is provided to convert a conventional marine toilet into a recirculating toilet system. The tank is provided with a horizontal partition dividing the tank into a lower, clear liquid portion and an upper waste material holding portion. One longitudinal wall of the tank is angled, and a perforated screen is aligned parallel and adjacent this angled wall, connecting to the horizontal partition. A conventional, pump operated marine toilet is then connected to the tank so that flushing liquid is drawn from the bottom of the tank and toilet discharge is applied to the upper portion of the tank. The tank is cleaned by pumping fresh liquid into the lower portion of the tank and pumping the contents of the tank from an intake position immediately above the horizontal partition. When the tank is evacuated by the clean-out pump, a premeasured charge of clear liquid remains in the lower portion.

3,675,775
WATER CONDITIONER

Louis Obidniak, 3115 de Ramesay Street, Duvernay, Quebec, Canada

Filed Dec. 5, 1969, Ser. No. 882,685
Int. Cl. B01d 35/12, 29/38
U.S. Cl. 210—138 5 Claims

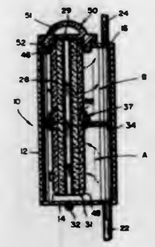


The filtration plant consists of a series of filter units, each comprising a filter bowl containing a tubular filter element. The filter bowl is connected to a water inlet header while the interior of the filter element is connected to a clean water outlet header by way of valve connections. The filter bowl is also valve connected to a drain to permit backwashing. A perforated tube mounted in the center of the filter element which serves to collect clean water during filtering and to provide an even distribution of backwash water on the filter element during backwashing.

3,675,776
FILTER DEVICE

Philip Campo, 202-14 33rd Avenue, Queens County, N.Y.

Filed Dec. 16, 1970, Ser. No. 98,815
Int. Cl. B01d 27/00
U.S. Cl. 210—232 10 Claims

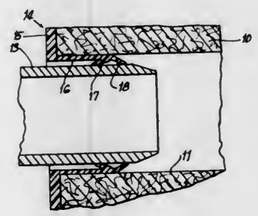


A fluid purification filter device which includes a filter casing for accommodating a disposable filter element. The filter casing is provided with a fluid impervious barrier which divides the interior thereof into at least two compartments. The filter element is symmetrically shaped, and is insertable from either end, into the filter casing and interlockingly engaged with the barrier, such that distinct portions of the filter element extend into each of the compartments and the resultant channelized flow is caused to pass through the several distinct portions of the filter element. A modified embodiment has an independent replacement filter cartridge insertable into the filter element.

3,675,777
FLUID TREATING CARTRIDGE WITH INTEGRAL SEAL

Don E. Heskett, Villa Park; Frank Kryder Hoover, Evanston, both of Ill., and Robert Burkhalter, Jr., Fort Atkinson, Wis., assignors to Morten-Norwich Products, Inc., Chicago, Ill.

Filed Nov. 24, 1969, Ser. No. 879,259
Int. Cl. B01d 27/00
U.S. Cl. 210—232 8 Claims

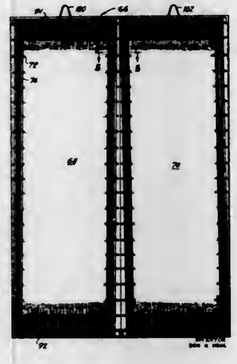


This disclosure relates to a fluid treating cartridge adapted to be employed with fluid treating apparatus, in which a fluid-tight seal is required between the fluid treating element and a tube which projects coaxially into a central bore within the element. The seal is molded integrally with an end cap of the cartridge and tightly encircles the tube with a force which is proportional to the pressure differential across the seal.

3,675,778
SLUDGE TANK WITH SELF-CLEANING SCREEN AND SCREEN FOR USE THEREIN

Don H. Hoag, Erieville, N.Y., assignor to Clarkson Industries, Inc., New York, N.Y.

Filed Sept. 16, 1970, Ser. No. 72,746
Int. Cl. B01d 39/20
U.S. Cl. 210—237 5 Claims

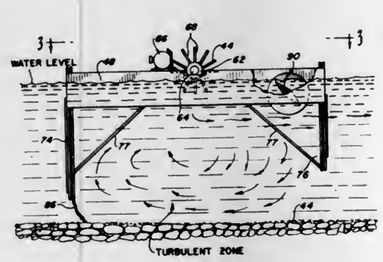


A conveyorized sludge tank is provided with a screen mounted at the bottom of the tank for swinging motion toward and away from the flights of the conveyor and adapted to lean against a course of the conveyor to cause the conveyor flights to continuously wipe the filtering surface of the screen. The screen is preferably formed in sections, each of which has spaced filtering strips and the filtering strips of adjacent sections diverge to form a herringbone pattern that minimizes and equalizes wear on the conveyor flights.

3,675,779
APPARATUS USED IN PURIFYING WASTE WATER

James F. Grutsch, Hammond, and Russell C. Mallatt, Crown Point, both of Ind., assignors to Standard Oil Company, Chicago, Ill.

Division of Ser. No. 824,858, May 15, 1969, Pat. No. 3,589,997. This application Jan. 27, 1971, Ser. No. 110,007
Int. Cl. C02c 1/10
U.S. Cl. 210—242 8 Claims

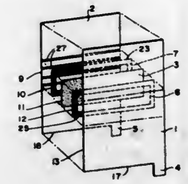


In this system, waste-water, particularly refinery waste-water, is treated in a series of lagoons in which thrive microorganisms that feed on contaminants in the waste-water. The system is characterized by mobile aerator apparatus moving across the lagoons' surfaces. These apparatus introduce air into the lagoons and churn surface water, and they have means which direct at least some of the churning surface water towards the lagoons' bottoms. The underwater turbulence scours the lagoons' bottoms and provides a way of controlling sludge deposits.

3,675,780
FILTER DEVICE

Robert A. Marshall, 15 Jackson Street, Lynn, Mass., and Howard J. Barach, 7 Maple Circle, Marblehead, Mass.

Filed Sept. 25, 1970, Ser. No. 75,345
Int. Cl. B01d 31/00, 29/04
U.S. Cl. 210—446 3 Claims



A compact device for filtering microorganisms such as bacteria from water or other liquid containing the same has a generally flat, envelope-type structure wherein the envelope is divided into a liquid-receiving upper chamber and a lower filtrate-receiving chamber by a flexible microporous membrane.

3,675,781
FILE DRAWER DIVIDER

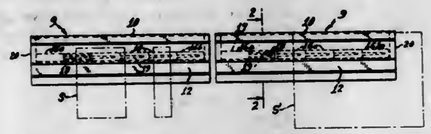
Coleman R. Chamberlin, P.O. Box 84, New Windsor, N.Y.

Filed Dec. 14, 1970, Ser. No. 97,600
Int. Cl. B65d 83/08; A47f 5/11
U.S. Cl. 211—11 2 Claims

A file drawer divider or sectionalizer made of bent wire that is bent to provide a horizontally extending support portion and a vertically extending frame portion extending upwardly from one side of the horizontally extending support portion. The

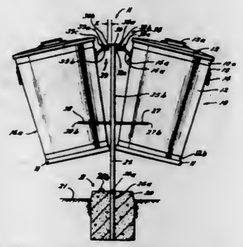
wire is bent and made of one piece by continuous bending starting from one edge of the horizontal portion and running horizontally with bent and vertically upwardly downwardly and over to the opposite end of the horizontal portion to provide an intermediate backing or support portion with the runs of wire crossing one another to provide the intermediate portion. In order to support the depending intermediate portion against horizontal displacement and fixed to the forward run thereof is a triangular shaped wire that extends horizontally and is connected between the intermediate portion and the forward run of the horizontal portion. The wire runs are joined by welding. The wire frame dividers can be assembled one in front of the other and joined by an elongated rigid plate or strip adapted to be extended through the intermediate portions to align opposing notches on the edges of the strip with the parallel depending runs of the wires of the intermediate portion.

3,675,782
HANGER FOR SHEET MATERIAL
James M. Dudley, 2220 Southside Blvd., Jacksonville, Fla.
Filed July 15, 1970, Ser. No. 54,992
Int. Cl. A47f 7/00
U.S. Cl. 211—50 26 Claims



A series of longitudinally aligned rollers or balls lie in an elongated hanger housing between a pair of caging walls and overlie a bottom opening in the housing formed by the spacing of such walls. The rollers or balls are interconnected by portions of a connecting means such as a plurality of pins passing respectively into bores of adjacent rollers for example, or a flexible string or wire passing through bores in such balls or rollers. The balls and rollers while thus interconnected may move limited distances independently of one another. A selective magnetic means independently or simultaneously moves such balls and rollers to release sheet material held thereby. The hanger may be rotated to cause release of sheet material held by the gripping balls or rollers.

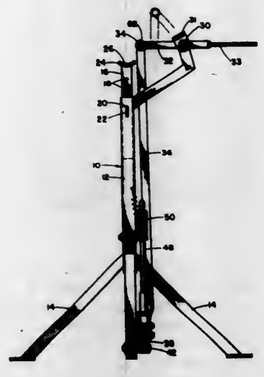
3,675,783
HOLDER FOR REFUSE CANS
Murray C. Reese, 7423 Stanwick, Harris County, Tex.
Filed May 28, 1970, Ser. No. 41,241
Int. Cl. A47g 29/00; A45f 3/44
U.S. Cl. 211—71 6 Claims



A new and improved refuse can holding apparatus permits easy removal and mounting of associated refuse cans, maintaining the cans in a stable relation with respect thereto while such cans are mounted.

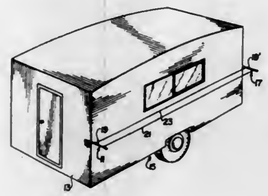
A new and improved apparatus for securing the device with respect to its associated mounting base is provided. The base may be supported by either a foundation, which is embedded in the ground, or a base which is mounted with respect to the floor or ground.

3,675,784
ONE STEP LOCK AND RELEASE CYCLE STAND
Ansel N. John, 2770 Joel Court, Dayton, Ohio
Filed June 26, 1970, Ser. No. 50,130
Int. Cl. A47f 7/00
U.S. Cl. 211—22 5 Claims



A simplified one step lock and release cycle support stand which includes an adjustable support, an extending support and a moveably operated pressure arm. The bottom bracket and the down tube of a cycle are placed on the adjustable and extending support respectively. The cycle is locked in place by operating the pressure arm to apply pressure in the cycle frame thus retaining the cycle on the stand.

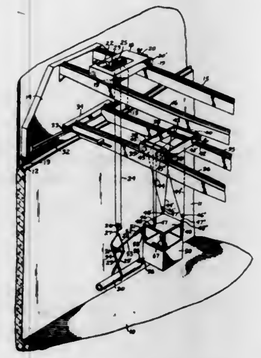
3,675,785
POSITIONABLE CLOTHESLINE SUPPORT
Calvin C. Martin, P.O. Box 3516, Visalia, Calif.
Filed Jan. 30, 1970, Ser. No. 7,037
Int. Cl. A47f 5/08; D06f 53/00
U.S. Cl. 211—119.1 3 Claims



The present invention relates to a portable clothesline arrangement for use with a camper or the like. It has spaced apart extensions, secured to spaced apart surfaces of the camper, to comprise horizontal reaches between which the clothesline is connected. Each of the extensions may be moved, against biasing retaining force, to its non-protruding

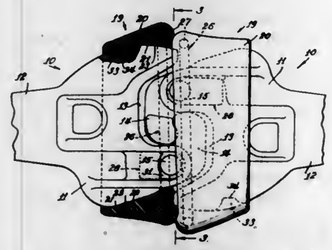
or storage position, which is preferably 180° from its useful or operative position. Locking or locating means cooperate with the biasing means to maintain the support extensions in either the selected storage or operative position.

3,675,786
OVERHEAD CAB CRANE CONTROL STRUCTURE
Ray Wilson, Route 01, Box 102, West Alexandria, Ohio
Division of Ser. No. 813,562, April 4, 1969, abandoned. This application Dec. 21, 1970, Ser. No. 100,021
Int. Cl. B66c 19/00
U.S. Cl. 212—127 5 Claims



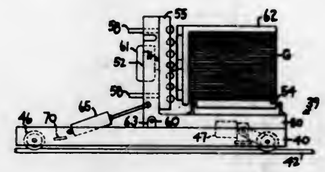
First and second carriages movable along respective rails have block and tackle supporting cables connected to drum mechanism and suspended therefrom to carry load and maintain operator cab level position. A platform is inside the operator cab and a bevel ring gear driven to be rotatable up to 180° in each of opposite directions carries the platform upon which operator control means are mounted. Fluid actuators and cab mounted fluid valves operatively associated therewith are effective for load holding and release with respect to cab control for operator safety. The cab itself is not allowed to turn because of the cable suspension and power lines to and from the cab.

3,675,787
ELASTOMERIC INTERLOCK TO PREVENT VERTICAL DISENGAGEMENT OF RAILWAY CAR COUPLES
William B. Krauskopf, 723 East Willow Avenue, Wheaton, Ill.
Filed Nov. 23, 1970, Ser. No. 91,704
Int. Cl. B61g 3/04, 7/14
U.S. Cl. 213—153 10 Claims



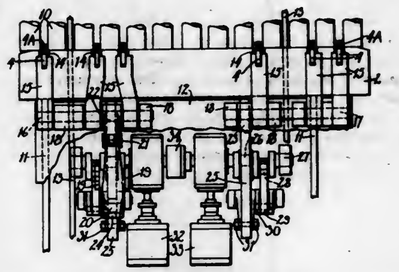
To prevent vertical disengagement of the knuckles of railway car couplers, for example Type "E" couplers, a generally ring shaped elastomeric body is provided for encircling the head of a car coupler and the knuckle of a mating car coupler. Embedded in the body is a reinforcing safety sling in the form of an endless wire cable in a position to overlie this knuckle. Mounting clips also embedded in the body, protrude therefrom and are adapted to be secured to the pivot pin of the coupler.

3,675,788
GLASS TURNOVER AND PACKING DEVICE
William P. Cathers, Allison Park, Pa., assignor to PPG Industries Inc., Pittsburgh, Pa.
Filed Sept. 28, 1970, Ser. No. 76,085
Int. Cl. B65g 7/00
U.S. Cl. 214—1 Q 16 Claims



An L-shaped member is used for placing horizontal stacks of glass in a substantially vertical position in an L-shaped frame such as a pallet or an L-skid. The glass is transferred from a packing machine by a roller conveyor to the L-shaped member. The L-shaped frame is placed upside down around the glass and the member is rotated between about 91° and 100° so that the glass is in a substantially vertical position resting on edge in the L-shaped frame.

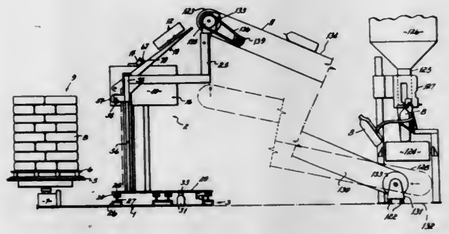
3,675,789
INGOT MANIPULATOR FOR A ROLLING MILL
Clifford Sturdy, Chesterfield, England, assignor to Davy and United Engineering Company Limited, Yorkshire, England
Filed Nov. 23, 1970, Ser. No. 92,015
Claims priority, application Great Britain, Nov. 21, 1969, 56,998/69
Int. Cl. B65g 7/00
U.S. Cl. 214—1 QG 6 Claims



An ingot manipulator for use with a rolling mill has a pair of elongate manipulator heads arranged on opposite sides of a roller table on the entry side of the mill, the heads being displaceable transverse to their length towards and away from each other and one of the heads has on the side thereof facing the other head a plurality of tilting fingers, the fingers are arranged in at least two groups positioned side-by-side on the head and drive means are provided for operating fingers to tilt ingots arranged in tandem on the roller table. Means are also provided by which the fingers of one group are operable inde-

pendently of the fingers of the other group or groups so that if all the fingers are initially operated together to tilt two or more ingots and one ingot fails to tilt then the group of fingers associated with that ingot can be operated independently of the other fingers to bring about tilting of that ingot.

3,675,790
BAG STACKING MACHINE
Arthur C. Avril, Cincinnati, Ohio, assignor to A & T Development Corporation, Cincinnati, Ohio
Filed Nov. 25, 1970, Ser. No. 92,616
Int. Cl. B65g *57/28*
U.S. Cl. 214—6 P **18 Claims**

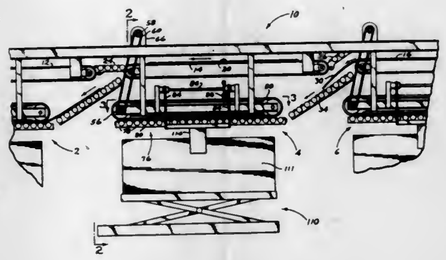


A stacking machine which deposits upon a pallet individual bags of premixed dry concrete, cement, mortar mixtures and other products as the filled bags issue from a processing machine. The stacking machine, in general, comprises a stationary base, a lift and carriage assembly shiftable vertically and also laterally along the base, with a flipper arm including gripping jaws swinging relative to the carriage. The bags are fed at random to a bag conveyor having a lower receiving end tracked upon the floor and an upper discharge end swiveled to the carriage and disposed above the flipper arm so that the bags may issue from the conveyor to be discharged by the flipper arm.

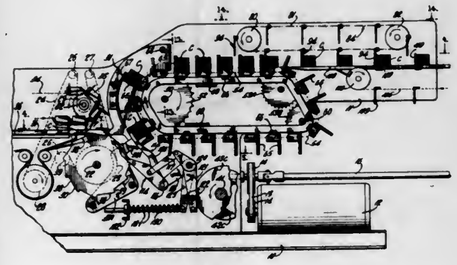
A turntable, carrying a suitable pallet, receives the filled bags from the flipper arm so that a layer of bags having a predetermined pattern may be deposited upon the pallet by the coordinated lateral motions of the carriage, swinging movements of the flipper arm, and rotary indexing movements of the turntable. As each layer of the stack is deposited, the carriage and its arm is shifted upwardly approximately the thickness of one layer of bags, such that successive layers are placed upon one another in order to build up a stack of bags in interlocked relationship. Suitable control apparatus including limit switches program the coordinated movements of the several components until a stack is built up after which the interlocked stack is removed for transport or storage.

3,675,791
SHEET STACKING APPARATUS
Phillips G. Russell, Alsea; Leon E. Guggenbickler, Albany, and John H. Crawford, Corvallis, all of Oreg., assignors to Brand S Corporation, Corvallis, Oreg.
Filed Nov. 16, 1970, Ser. No. 89,745
Int. Cl. B65g *57/00*
U.S. Cl. 214—6 DK **6 Claims**

Apparatus for stacking sheets with end edges of the sheets substantially aligned and in a vertical plane. The apparatus includes a pair of elongated, laterally spaced, powerdriven conveyor belts engaging the top faces of the sheets, and skate roller support means supporting the bottom faces of the sheets. The conveyor belts are independently driven, and each may be stopped independently of the other in producing alignment of a sheet. The skate roller support means are moved out from under a sheet to free a sheet for dropping onto a stack.



3,675,792
CRACKER STACKING AND SEGREGATING APPARATUS
Arthur J. Griner, Wyckoff, and George Ryder, West Orange, both of N.J., assignors to National Biscuit Company
Filed Dec. 11, 1970, Ser. No. 97,151
Int. Cl. B65g *57/30*
U.S. Cl. 214—6 BA **13 Claims**

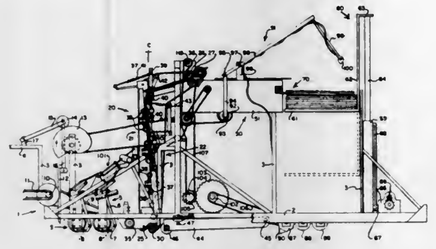


An apparatus to which plural rows of crackers are delivered for counting and stacking operations. The crackers are fed on carriers interposed to form a single line of stacks. A combination of propelling means accelerates and meters the stacks gradually towards a packaging machine thus compensating for the time lost in counting and stack forming operations.

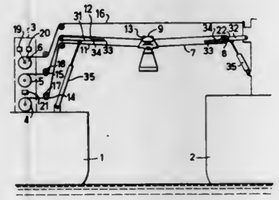
3,675,793
SOD GATHERING APPARATUS
Clifford C. Wetzel, Ithaca, Mich.
Filed Nov. 24, 1969, Ser. No. 879,266
Int. Cl. B65g *57/32*
U.S. Cl. 214—6 B **9 Claims**

Apparatus and methods for gathering sod cut in strips and lying in a field wherein each strip successively is lifted from one end, transported vertically to a substantially horizontal

transfer station, delivered to a platform, and deposited one atop another in a stack. The platform is lowered in timed relation to the depositing of each successive strip so as to maintain the upper end of the stack at a substantially constant level.



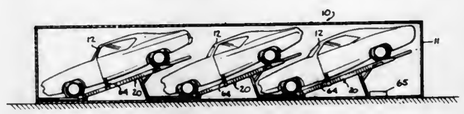
3,675,794
WINCH ARRANGEMENTS
David John Ingram, Barnhurst, and Frederick James Maillardet, Meopham, both of England, assignors to The General Electric and English Electric Companies Limited, London, England
Filed April 29, 1971, Ser. No. 138,767
Int. Cl. B65g *67/58*
U.S. Cl. 214—13 **12 Claims**



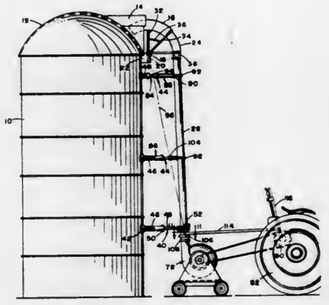
A transfer arrangement for transferring articles between two relatively movable stations, such as ships at sea, in which a support cable carried by a winch on one of the stations and extending to a connecting member on the other station provides a support for the articles being transferred, wherein vertical oscillations of the load, resulting from relative movement of the stations, are damped by controlling the operation of the winch in response to control signals derived from variations in the distances between the stations and modified by further signals derived from variations in the tension in the support cable.

3,675,795
SHIPPING CONTAINER WITH RACKS FOR SUPPORTING VEHICLES THEREIN
Herbert Diuhy, Scotch Plains, N.J., assignor to American Export Isbrandtsen Lines, Inc., Hoboken, N.J.
Filed April 27, 1970, Ser. No. 32,158
Int. Cl. E04h *6/06*
U.S. Cl. 214—16.1 CC **7 Claims**

A vehicle support rack, preferably for use in conjunction with a fully closable shipping container, which acts to support a vehicle in a confined space during shipment. The rack includes a pair of connected tracks, each of which has a support leg on one end thereof to enable the rack and vehicle to be maintained in an inclined position. Each leg is locked in position by a resiliently biased catch in engagement therewith, the catch being operable by a release cord disposed at one end of the rack. Once the vehicle is positioned on the rack, the rearward portion thereof is raised and locked into place by the support legs. Rollers are provided, both on the bottom and sides of the rack, to facilitate placement of the rack within the container, with such placement allowing a greater number of vehicles to be placed within the container.



3,675,796
FILL PIPE FOR SILO
James D. Atkinson, R.D. 3, Wooster, Ohio; James W. Lepley, R.D. 1, Smithville, Ohio; Claire E. Nussbaum, R.D. 1, Orrville, Ohio, and John E. Stolzfus, R.D. 1, Apple Creek, Ohio
Filed March 8, 1971, Ser. No. 122,044
Int. Cl. B65g *65/32*
U.S. Cl. 214—17 C **10 Claims**

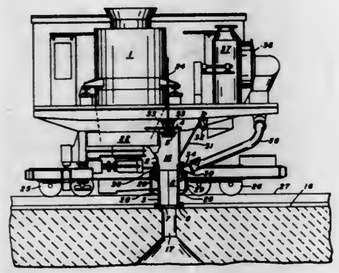


A fill pipe assembly adapted to be connected to a silo and extend from the top thereof to the lower portion for connection to a blower or the like by which the silo is filled with silage, etc. The upper end of the fill pipe has a laterally extending discharge structure and the invention primarily comprises the provision of suitable pivots and brackets which are axially aligned and intermediately spaced between the upper and lower ends of the conduit, whereby the conduit may be oscillated to move the lateral discharge extension in a to and fro pattern to move evenly distribute the discharged material in the silo than under circumstances where no pivoting of the fill pipe is possible.

3,675,797
CHARGING CAR FOR COKE OVENS
Erich E. W. Pries, Bochum, Germany, assignor to Dr. C. Otto & Comp. G.m.b.H., Bochum, Germany
Filed Aug. 5, 1970, Ser. No. 61,166
Claims priority, application Germany, Feb. 26, 1970, P 20 09 017.9
Int. Cl. F23k *3/00*
U.S. Cl. 214—35 R **7 Claims**

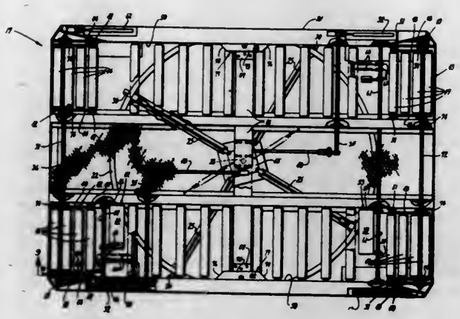
A charging car for coke ovens of the type in which coke is conveyed through feed pipes into holes extending through the tops of the ovens, characterized in that covers can be removed from the holes, coal charged into the ovens and the covers

replaced without permitting the escape of dust and smoke into the atmosphere. This is accomplished in accordance with the invention by means of gripping devices which can be lowered within the feed pipes themselves to grip the charge hole covers and elevate them within the feed pipes to a point where they



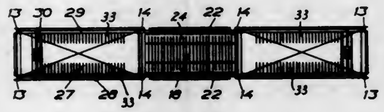
will not interfere with the discharge of coal from the car into the ovens. After the coal is charged into the oven, the feed-hole cover, still gripped by the gripping device, is lowered within the feed pipe to the point where it again seals the charge hole but before the feed pipe is removed.

3,675,798
CONTAINER TRANSPORTER APPARATUS
Victor H. Carder, Carmel, and Kenneth L. Cook, Salinas, both of Calif., assignors to Cochran Western Corporation, Salinas, Calif.
Filed July 29, 1970, Ser. No. 59,143
Int. Cl. B60p 1/52
U.S. Cl. 214—84 14 Claims



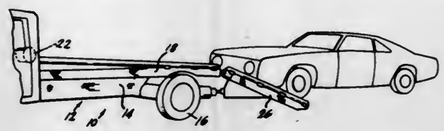
Apparatus for loading, transporting and unloading containers of the pre-loaded pod type. A transporter trailer is provided including a mobile main frame, conveyor means to move a container to and from a transport position, container hold-down means engaging grooves on the container sides and adapted to accomodate container misalignment during loading, container stops spaced apart along the length of the conveyor, and transfer ramps at the conveyor ends. For loading from a selected end a container is pushed onto a normally lowered transfer ramp and moved over the associated container stop which is depressed until the container is locked in transport position. Operating means are provided to lower a selected container stop and raise its associated transfer ramp to an upwardly inclined position for unloading the container.

3,675,799
PARKING APPARATUS WITH POWERED PALLETS IN EACH PARKING STALL
Frank Streeton Steed, Deceased, late of Bath, England; by Robert Mark Rutherford, executer, Somerset, England; by Mary Phyllis Steed, executrix, Somerset, England, and Henry Lawson-Tancred, Boroughbridge, England, assignors to Anthony Sigston Thompson, Harrogate, England
Continuation of Ser. No. 738,735, June 17, 1968, abandoned.
This application Sept. 21, 1970, Ser. No. 74,173
Claims priority, application Great Britain, July 12, 1967, 32,154/67
Int. Cl. E04h 6/06
U.S. Cl. 214—16.1 CB 6 Claims



A multi-story mechanical storage system for vehicles (or other means) providing receiving spaces at each level in register with a vertical lift shaft, a lifting structure in said shaft for carrying a vehicle to a selected level, movable pallets for supporting vehicles in storage, said lifting structure and pallets being of skeleton formation including laterally extending tines which enable the said structure to pass down past a pallet moved into the shaft so that a vehicle on the structure will remain behind on the pallet, the loaded pallet then being moved back into its receiving space.

3,675,800
VEHICLE CARRIER
Romer G. Weyant, 81 Edgewater Drive, Elkhart, Ind., and Kenneth B. Kaar, 1821 N. Street, Lincoln, Nebr.
Filed Nov. 4, 1970, Ser. No. 86,805
Int. Cl. B60p 1/44
U.S. Cl. 214—85.1 1 Claim



A truck for hauling a disabled motor vehicle or the like. The truck has a flat bed and a ramp on which the vehicle can be supported, and the ramp may be lowered for loading and unloading purposes. Hydraulic cylinders are provided for raising and lowering the ramp, and a winch is mounted on the truck for pulling the disabled vehicle up the ramp to a loaded position.

3,675,801
APPARATUS FOR CONVEYING, HANDLING, LOADING, AND UNLOADING OF PALLETIZED MATERIALS
Carl B. Larsen, 430 South Russell, Monterey Park, Calif., and William T. Glimbel, 740 Chaucer Road, San Marino, Calif.
Filed April 22, 1970, Ser. No. 30,628
Int. Cl. B65g 39/00
U.S. Cl. 214—310 11 Claims

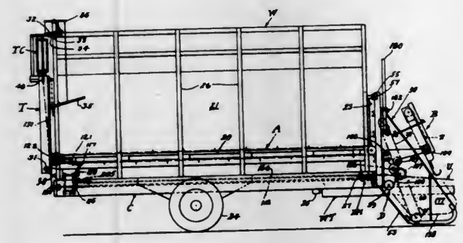
A flexible method and apparatus facilitating the stacking, storing, loading, unloading, selection, and separation of elongated bar and other similar materials, in which an elongated roller conveyor is sectionalized to provide a main material

loading and unloading section in association with a supply feeder section at one end and an exit discharge section at its other end, a pallet pan being provided for the elongated material which can either be conveyed to the main section by means of a crane, fork-life truck or other means, or delivered directly from the feed section of the conveyor. The apparatus also permits an empty unloaded pallet pan to be placed at the main section, and the material independently moved from a supply point into the pan by hoist means or from the conveyor feed station. Powered rollers are operable to selectively shift



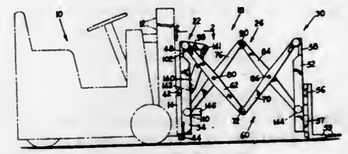
the loaded pallet pan in opposite directions at the main section, and controllable means provided for vertically adjusting the level of the loaded pallet pan to a normal position in which it may be bodily shifted endwise together with the material therein, or to a lowered position in which the pan will be retained against movement and driving rollers projecting through the pan bottom operated for moving the material endwise independently of the pan. Electrical controls are provided for obtaining the variously required operations and coordinating the loading and unloading movements of the pallet pan and material. Adjustable selectable stop means are provided for terminating the movement of material entering the pallet pan from the feed section of the conveyor.

3,675,802
BALE WAGON
Albert M. Bast, New Holland, and Keith B. Anderson, Terre Hill, both of Pa., assignors to Sperry Rand Corporation, New Holland, Pa.
Filed April 2, 1970, Ser. No. 25,226
Int. Cl. B60p 1/36
U.S. Cl. 214—520 15 Claims



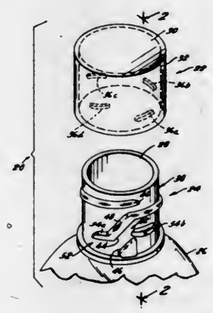
A bale wagon having bale pick up and bale thrower mechanism for picking up bales from the ground and for throwing them into the wagon mounted for up and down movement under influence of the wagon tongue and having a tail gate at its rear end for discharging loaded bales from the wagon for subsequent conveying into a barn or other point of storage.

3,675,803
LOAD-HANDLING APPARATUS WITH REACH MECHANISM
Gaylord G. Baughman, Troutdale, Oreg., assignor to Cascade Corporation, Portland, Oreg.
Filed April 6, 1970, Ser. No. 25,802
Int. Cl. B66f 9/14
U.S. Cl. 214—730 2 Claims



A lift truck with an elevatable carriage mounting, through extensible reach mechanism, load-holding structure, such as lifting forks. The reach mechanism includes a horizontal torque shaft which extends across the support frame, and a pair of laterally spaced extensible folding arm assemblies which join to opposite ends of the torque shaft and extend forwardly to the load-holding structure. The load-holding structure is moved between extended and retracted positions with respect to the carriage by operation of a double-acting ram operatively connected to the reach mechanism. A line which supplies pressure fluid to the ram to actuate it in a contraction stroke to produce contraction of the reach mechanism includes a pilot-operated check valve operable to maintain a pressurized condition in such line upon stopping of the contraction stroke in the ram. Near completion of the contraction stroke, stop means on the support frame engages the load-holding structure. The stop means and the check valve act firmly to hold the load-holding structure in its retracted position.

3,675,804
SAFETY CLOSURE ASSEMBLY
Lewis A. Micallef, New York, N.Y., assignor to Leeds and Micallef, New York, N.Y.
Filed Dec. 4, 1970, Ser. No. 95,300
Int. Cl. A61j 1/00; B65d 55/02
U.S. Cl. 215—9 14 Claims



A safety closure assembly of a container includes a cap having internal interrupted threads and a container neck having external specially arranged guide surfaces. These surfaces define essentially three zones on the neck. At the neck top is a mating thread zone for receiving the interrupted threads. A second thread zone is spaced from the top and cooperates in

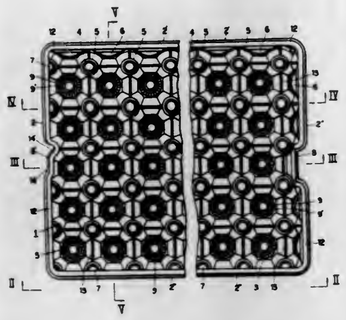
assuring a liquid-tight seal across the neck opening by the cap. Intermediate these threaded zones is a zone which is only traversed by the cap-thread elements upon the application of deliberate and informed movement or manipulation of the cap other than the ordinary unscrewing action. This manipulation may assume the form of either an application of increased force to urge one of the thread elements passed a zone of interference or the axial shifting of the cap through an access zone for the thread elements after a stop is encountered forbidding further turning of the cap relative to the neck; or the manipulation may require a combination of these cap movements.

3,675,805
SNAP OPEN BOTTLE CAP
Victor Shane, P.O. Box 19, Summerland, Calif.
Filed Jan. 21, 1970, Ser. No. 4,591
Int. Cl. B65d *41/20*
U.S. Cl. 215—42 2 Claims



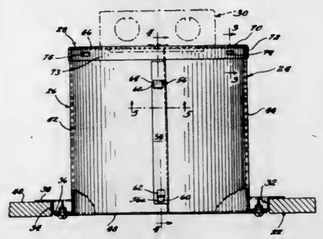
A bottle cap having fault lines seals a bottle provided with wedge shaped ramps which cause the fault lines to yield when pressure is applied to the top of the cap.

3,675,806
PLASTIC TRAY FOR EGGS
Hikoji Noguchi, No. 1251-10, Oaza-Narahashi, Yamato-Machi, Kitatana-gun, Tokyo, Japan
Filed Sept. 8, 1970, Ser. No. 70,043
Int. Cl. B65d *81/00*
U.S. Cl. 217—26.5 4 Claims



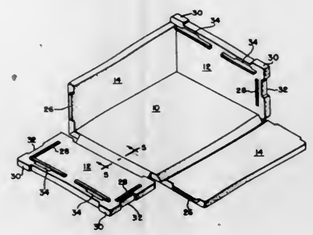
Plastic tray for eggs which can readily and stably be stacked or packed in layers within a carton by means of novel convex and concave projections provided thereto which cooperate with the corresponding convex and concave projections provided to another plastic tray of the same kind when a number of trays of the same kind are disposed one over the other by turning them alternately at an angle of 180°, and which can rightly be disposed in the manner mentioned above by means of handling portions provided to opposite two flanges of the tray and having configurations different from each other.

3,675,807
RECESSED LIGHTING FIXTURE HOUSING
Alvin R. Lund, Carpentersville, and Jack Kaufman, Chicago, both of Ill., assignors to Markstone Manufacturing Company
Filed May 11, 1970, Ser. No. 36,061
Int. Cl. H02g *3/08*
U.S. Cl. 220—3.94 6 Claims



A housing construction for a recessed lighting fixture having a sidewall to completely surround a lamp chamber. The sidewall has top and bottom edges defining the height of the lamp chamber, and has first and second side edges connecting the top and bottom edges. A plurality of openings are spaced along the first side edge and a plurality of corresponding lock tabs are spaced along the second side edge, with the tabs and openings aligned to interengage for rigidly interlocking the adjacent side edges of the sidewall together. A top plate closes the upper end of the chamber and has a depending flange embracing the upper marginal portion of the interengaged sidewall. Inwardly struck shear formed bosses on the flange project into holes in the upper marginal portion of the sidewall to interlock the flange and top plate to the sidewall forming the lamp chamber. The structure may be assembled without tools.

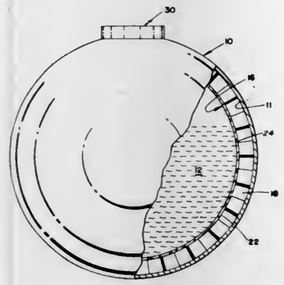
3,675,808
KNOCKDOWN FOAMED PLASTIC SHIPPING CONTAINER
Delbert L. Brink, 7417 Fourth Avenue, S., Seattle, Wash.
Filed June 26, 1970, Ser. No. 50,230
Int. Cl. B65d *7/30*
U.S. Cl. 220—7 7 Claims



A unitary knockdown foamed polystyrene shipping container blank molded in a single operation for fruits, comestibles and other articles has a flat rectangular bottom wall with the four sidewalls hinged thereto by integral thin flexible hinge portions. Two of the sidewalls have slots therein adjacent their side edges and two of the other sidewalls have ears projecting from their respective side edges for insertion into the slots to lock the adjoining sidewalls together. Two of the side walls have lugs on each of their upper corners which project beyond the plane of the side walls and the top edges of the sidewalls. The lugs are adapted to interlock with recesses formed in the bottom corners of the side walls having the lugs thereon of an

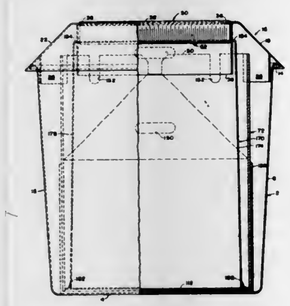
adjacent shipping container. A recess in two of the side walls allows air to circulate freely around the containers when stacked in side-by-side relation.

3,675,809
CAPILLARY INSULATION
Jay L. McGrew, and John P. Gille, both of Littleton, Colo., assignors to Martin Marietta Corporation, New York, N.Y.
Filed June 9, 1970, Ser. No. 44,678
Int. Cl. B65d *25/18*
U.S. Cl. 220—9 LG 22 Claims



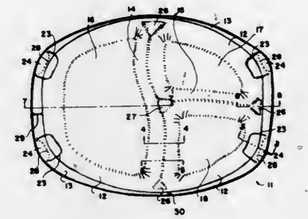
The internal capillary insulation comprises cellular material secured to the internal wall of a vessel which is to contain liquid having a boiling temperature lower than the ambient temperature of the vessel. The cellular material disclosed provides a plurality of discrete cells. Each cell provides for establishing a column of gas therein between the tank wall and the liquid body. A capillary cover substantially closes the liquid side of the cells and has at least one capillary opening per cell designed to form a stable capillary gas-liquid interface or membrane at the capillary opening. The gas columns having a stable gas-liquid interface insulate the liquid from the vessel and in addition, support the liquid in the vessel thereby permitting fabrication of the insulation from materials which have low strength and weight and low thermal conductivity.

3,675,810
RECEPTACLE FOR WASTE MATERIAL
Thorvald S. Ross, Jr., Manchester, and Dante V. Consalvo, Everett, both of Mass., assignors to said Thorvald S. Ross, Jr., by said Dante V. Consalvo
Continuation-in-part of Ser. No. 813,477, April 4, 1969, abandoned. This application March 19, 1970, Ser. No. 20,974
Int. Cl. B65d *25/00*
U.S. Cl. 220—17 7 Claims



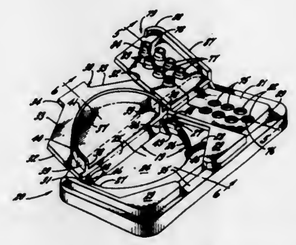
The invention is a combined holder-container system and

3,675,811
VENDING CONTAINER WITH COVER THEREFOR
Kenneth W. Artz, Mohnton, Pa., assignor to W. R. Grace & Co., Duncan, S.C.
Filed Dec. 18, 1969, Ser. No. 886,279
Int. Cl. B65d *1/36, 43/10, 21/02*
U.S. Cl. 220—20 2 Claims



Disclosed is a covered vending container which is divided into compartments by divider wall ridge members. The divider wall ridge members describe generally double-curved paths across the bottom of the container, and rise to a height above the bottom of the container less than the height of the side walls extending peripherally therearound. Container strength is enhanced by the curved paths of the divider walls and by the manner of intersection between the divider walls and the container side walls. The container cover is a clear dome provided with denestable stacking means and corner detent means for engaging the underside of the flange portion of the vending container. In preferred embodiments, the tray portion of the vending container is molded foam sheet and the dome portion of the vending container is clear plastic material.

3,675,812
PLASTIC COVER WITH HINGED CLOSURE AND MOLDING DIES THEREFOR
John A. Foster, Rockford, Ill., assignor to J. L. Clark Manufacturing Co., Rockford, Ill.
Filed May 13, 1970, Ser. No. 36,917
Int. Cl. B65d *43/16, 83/06*
U.S. Cl. 220—31 S 10 Claims



The disclosed plastic cover is similar to and an improvement on that shown in U.S. Pat. No. 3,095,995 by virtue of the projection of the peripheral edge of the hinged closure flap laterally and outwardly beyond the full length of an arcuate

sealing rib and the opposed wall of the dispensing opening with the outer face of the rib making an acute included angle with the under surface of the flap and the inner rib surface disposed substantially parallel to the path of separation of the die surfaces in which the flap and rib are molded. The molding of such a cover construction is made possible by a unique die assembly which permits the hinged flap and rib to be disposed at a substantial obtuse included angle relative to the dispensing opening during the molding of the cover.

3,675,813
COVER FOR WASTE CONTAINER
Johnson T. Morgan, 3635 Blue Lake Drive, Birmingham, Ala.
Filed July 16, 1970, Ser. No. 55,389
Int. Cl. A65d *51/04*; B65d *25/28*
U.S. Cl. 220—36 **6 Claims**

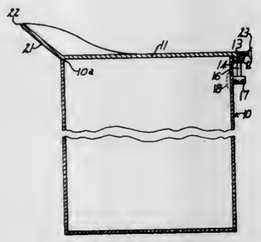
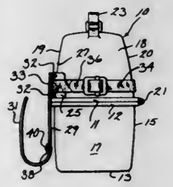


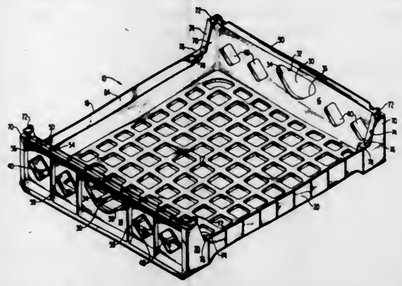
Plate-like cover hingedly connected at one side to waste container with other side of cover carrying outwardly and upwardly projecting arcuate member positioned for lateral force applied thereto to exert lifting force to said opposite side of cover. To reduce required lifting force, counterweight carried by said one side of cover.

3,675,814
AUXILIARY CARRIER FOR PORTABLE BOXES
Edwin H. Graf, W 187, S6876 Jewel Crest Drive, Muskego, Wis.
Filed Oct. 22, 1970, Ser. No. 83,138
Int. Cl. A45r *13/40*; B65d *25/00*
U.S. Cl. 220—85 R **5 Claims**



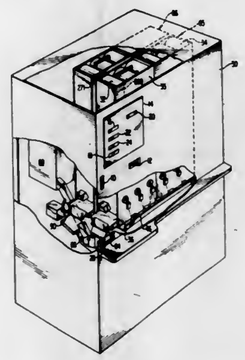
A pair of corner brackets are removably strapped to spaced corners at the front of the cover of a lunch box of the type having an outwardly projecting surrounding rib where the cover and main body meet, each bracket having the upper end of a U-shaped clip attached thereto whereby an elongated item may be releasably held by the clips in a position close to the body of the lunch box and extending longitudinally thereof below the cover.

3,675,815
BAKERY TRAY
Houston Rehrig, 100 Los Altos Drive, Pasadena, Calif.
Filed Dec. 16, 1970, Ser. No. 98,285
Int. Cl. B65d *21/04*
U.S. Cl. 220—97 D **8 Claims**



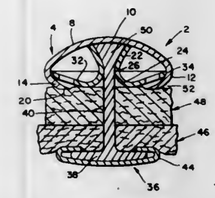
A stacking, cross nesting bakery tray molded from a single homogeneous mass of thermoplastic material and including a rectangular, open grid bottom panel, opposed upwardly extending end walls having vertically registering stacking means along their top and bottom edges, and opposed upwardly extending side walls having a vertical height no greater than half the height of the end walls to permit cross nesting of two vertical stacks of the trays. The end walls and side walls each include means facilitating filling of the tray with packages of bakery products.

3,675,816
CURRENCY DISPENSING APPARATUS
Edgar R. Bourke, II, Wayland, and Robert C. Snow, Concord, both of Mass., assignors to Digital Security Systems, Inc., Natick, Mass.
Filed June 18, 1970, Ser. No. 47,585
Int. Cl. G07f *11/00*
U.S. Cl. 221—13 **25 Claims**



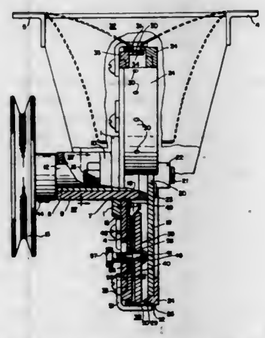
Apparatus for dispensing variable amounts of currency. Verification data on a check and an identification card are read and compared to ascertain authenticity of a currency request. If the request is authentic, the currency is transferred from storage to a receptacle using data representing the amount of the check to select the numbers of each currency denomination to be dispensed. The number of bills actually transferred and the number requested are compared while the currency is temporarily stored in the receptacle located behind a locked door. If the two numbers coincide, the door is unlocked for access by the recipient and the check is transferred to another internal storage location as the operator retrieves his identification card. Otherwise, the door remains locked; the currency is transferred to still another storage location; and both the check and card are returned to the operator.

3,675,817
FASTENING DEVICE
Donald Lake, Watertown; Badger Perrin, Roxbury, and Frederick J. Nolan, Waterbury, all of Conn., assignors to TRW Inc., Cleveland, Ohio
Filed Feb. 18, 1971, Ser. No. 116,372
Int. Cl. A44b *1/42*
U.S. Cl. 24—95 **5 Claims**



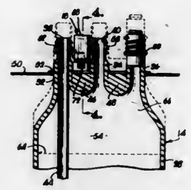
A fastening device known as a tack attached burr. A low profile shell has a tack receiving and retaining vise seated therein. The vise includes a hollow shank having an upper end bearing against the undersurface of the crest of the shell and an opposite outwardly flared end which merges into a peripheral flange. The flange is turned back toward the upper end of the shank and the crest of the shell. The shell is crimped over the vise and has an inwardly turned rim at its end opposite the crest. The rim underlies a substantial area of the flange on the vise and extends downwardly away from the shell crest and terminates in a free circular edge defining a tack receiving opening in axial communication with the shank of the vise.

3,675,818
SEED PLANTER WITH REPLACEABLE ROTARY TRAP CHAMBER
Era E. Urban, Rural Routh No. 1, Bluffton, Ohio
Filed Sept. 14, 1970, Ser. No. 71,690
Int. Cl. B65h *3/28*
U.S. Cl. 221—224 **9 Claims**



The present invention relates to a seed planter for planting a row of seeds. The device includes a rotating annular ring member provided with a plurality of seed receiving apertures in the periphery thereof. A second annular ring member is located concentrically within the first-mentioned annular ring member and forms a floor for each seed cell for retaining seeds therein. The rotating ring member moves relative to a seed hopper wherein seeds are introduced into the seed cells. Continued rotation of the seed cell member brings the seeds into adjacency with the ground at which point they are ejected from the seed cells. The rotating speed of the seed cell member is adjustable relative to the linear speed of the seed planter thus providing an infinitely variable seed spacing in the ground. The seed cell size is determined by the size of the seed receiving aperture of the annular rotating ring member. This member is readily disconnectable from the seed planter to vary the aperture size. Thus, if it is desired to utilize the seed planter for larger seeds having the same thickness, it is merely necessary to quickly disconnect the annular seed cell ring and replace this with a similar ring having larger apertures. If it is desired to change the depth of the seed cells to accomodate seeds having different thickness, in one embodiment of the invention the second, inner, annular ring member is also disconnected from the seed planter. The inner ring member is replaced with one which is thinner in cross section and the seed cell ring member is replaced with a ring which is thicker in cross section, the apertures of which are thus deeper. In an alternative embodiment, a deeper seed cell is provided without removing the inner ring member by providing the outer ring member with a peripheral slot wider than the widest seed cell desired. A semicircular member is positionable into the peripheral slot and thus the thickness of the seed cell is determined by the depth of the slot. In this embodiment, it is only necessary to replace the outer ring member to vary the seed cell aperture width or depth or both.

3,675,819
FLOATING INGREDIENT TANK SOLD-OUT SYSTEM FOR BEVERAGE DISPENSING MACHINES
Theodore L. Hansen, Kansas City, Mo., assignor to The Vendo Company, Kansas City, Mo.
Filed Aug. 18, 1970, Ser. No. 64,693
Int. Cl. B67d *5/22*
U.S. Cl. 222—51 **13 Claims**



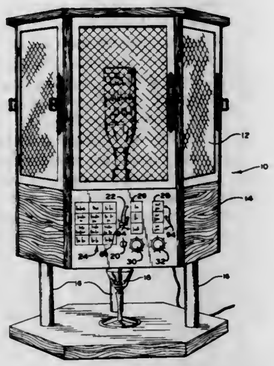
Apparatus for at least temporarily storing liquid material employs a container for such material that is "floated" in another body of liquid and shifts its position under the opposing influences of buoyancy and gravity in response to predetermined changes in the amount of material within the container, and sensing means for detecting such shifting of the position of the container to indicate the presence or absence in the container of a predetermined amount of the material.

The apparatus further provides means for controlling the temperature of the body of liquid in which the container is immersed to in turn control the temperature of material within the container through heat exchange. Although the apparatus is adapted for a variety of applications, a preferred embodiment disclosed for illustrative purposes is especially suited for use in beverage vending or dispensing machines to handle beverage syrups or other liquid beverage forming ingredients and to indicate a "sold-out" condition thereof.

3,675,820
LIQUID DISPENSING APPARATUS

George M. Newberry, R.D. 1, and Nicholas F. Wowk, Carriage House East, both of Kirkwood, N.Y.

Filed Feb. 1, 1971, Ser. No. 111,254
Int. Cl. B67d 5/10
U.S. Cl. 222—76 15 Claims

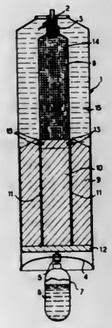


Apparatus for dispensing any of a plurality of liquids either singly or in predetermined combinations either "automatically" according to standard recipes or "manually" by selectively varying the quantities of each liquid dispensed. The disclosed embodiment is particularly directed to an alcoholic beverage dispenser and mixer which is simple and economical in construction, using sturdy and reliable electro-mechanical components, yet versatile in operation by providing two relays between each solenoid valve controlling flow of the respective liquids and a cam operated microswitch controlling the time for which a voltage is provided to the solenoid.

3,675,821
APPARATUS FOR DISPENSING TWO FLUIDS SIMULTANEOUSLY

Bruno Morane, Paris; Charles Paoletti, Aulnay Sous Bois, and Gilles Terrasse, Deuil La Barre, all of France, assignors to L'Oreal, Paris, France

Filed Feb. 18, 1970, Ser. No. 12,174
Claims priority, application France, Feb. 21, 1969, 6904480
Int. Cl. B67d 5/52
U.S. Cl. 222—80 21 Claims

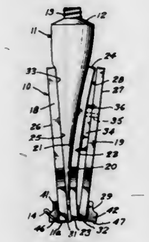


Container for storing separately two fluids which are to be dispensed simultaneously, which comprises an outer jacket carrying a dispensing valve having two inlets, an inner tube connected to one of said inlets, piston means for simultaneously reducing the volume of both the tube, and the annular space between the tube and jacket, and means for introducing pressure fluid to actuate the piston. The inner tube may be longitudinally collapsible, the piston may be adapted to slit the tube longitudinally as it advances, or the piston may be divided into parts which slide axially upward both inside the tube and outside it.

3,675,822
TUBE SQUEEZER

Gino Casali, and Joseph P. Casali, both of 807 Thomas Street, Chicago Heights, Ill.

Filed Sept. 3, 1970, Ser. No. 69,315
Int. Cl. B65d 35/28
U.S. Cl. 222—103 8 Claims



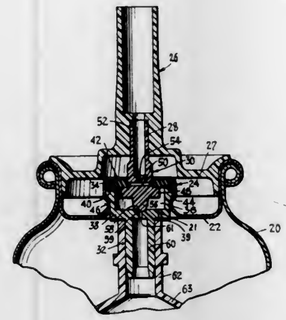
A device for squeezing collapsible tubes such as toothpaste tubes characterized by three members interconnected together along one end thereof to form a V-shaped compartment diverging from the one end for receiving a toothpaste tube. The outer two members are substantially planar and the inner member is longitudinally curved and arranged with the convex curve surface adapted to engage the tube so that the application of pressure to the tube is moved progressively from the one end towards the head of the tube. In the preferred embodiment, the means for holding the three members together includes foot means for enabling the storage of the tube and the dispenser in the upright position, and the pressure member acting on the curved member has a movable block for transferring the squeezing force to the curved member so that the point of transfer can be shifted to increase or decrease the leverage applied to the flexible member.

3,675,823
TILT ACTION MIXING DISPENSER VALVE

Wolf Steiman, Fairfield, Conn., assignor to Valve Corporation of America, Greenwich, Conn.

Filed June 9, 1970, Ser. No. 44,760
Int. Cl. B05b 7/32
U.S. Cl. 222—145 5 Claims

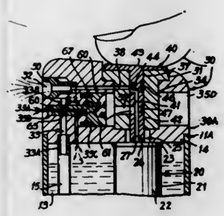
A tilting type dispensing valve comprising a cup-shaped valve housing which is covered by a resilient upper annular discharge-valve seat. A hollow valve stem extends through the valve seat and carries an annular valve shoulder inside the housing. The shoulder is engageable with the seat to close off the discharge. Within the housing there is a supporting boss constituting a second valving means on the valve stem, said boss being located below the valve shoulder and being engageable with a recessed lower annular valve seat in an opposite wall of the valve housing to both normally maintain the valve shoulder and upper seat engaged whereby the upper valve is closed, and to simultaneously close the recessed lower valve seat. The stem can be tilted, however, because the shoulder can compress a localized area of the upper valve seat. This separates another portion of the shoulder from the seat whereby liquid can flow from the housing, out through the hollow valve stem. The tilting of the stem also uncovers the lower valve seat. A container connected to the lower valve seat can empty into the valve housing, as well as a large container enclosing the housing, which discharges into the housing through a hole provided in a wall of the housing. Mixing of the liquids occurs in the valve housing.



3,675,824
AEROSOL CAN WITH PROPELLANT ACTUATED SLIDE PISTON

Matthew Edward Hein, Elgin, Ill., assignor to American Can Company, Greenwich, Conn.

Filed Aug. 7, 1970, Ser. No. 62,099
Int. Cl. B67d 5/54
U.S. Cl. 222—145 17 Claims

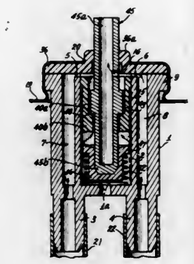


An isolation-type aerosol dispenser for a fluid product, which includes a slidable piston, movable in a chamber between a dispensing and a non-dispensing position. The piston and chamber are adapted for regulating communication between a product container and a venturi-type, discharge nozzle of the dispenser, according to the movement of the piston. The product container communicates with the discharge nozzle only when the piston is in the dispensing position in the chamber. During dispensing, flow of aerosol propellant to the discharge nozzle is conducted to the chamber and causes the piston to be moved to the dispensing position. The piston and chamber are also adapted to vent the product container only when the piston is in the dispensing position.

3,675,825
SELF CLEANING VALVE

Bruno P. Morane, Paris, France, assignor to L'Oreal, Paris, France

Filed July 20, 1970, Ser. No. 56,377
Claims priority, application France, Aug. 12, 1969, 6927754
Int. Cl. B65d 83/14
U.S. Cl. 222—148 7 Claims



A self-cleaning valve for dispensing fluids sold under pressure comprises a sliding member positioned to open and close passages between the interiors of containers for fluid to be dispensed and the central channel in a dispensing spout. The sliding member is spring biassed toward the closed position and driven to its open position by depression of the spout. As the spout is being depressed, but before it strikes the sliding member to open the passageways to the fluid containers, it reaches an intermediate position in which it opens a passage between pressurizing fluid and the central channel, so that only pressurizing fluid is exhausted, thereby cleaning the channel.

3,675,826
PITCHER WITH A FLEXIBLE INNER CONTAINER FORMING THE SPOUT

Robert E. Lorren, 489 S. Perue Street, Cicero, Ind.

Filed Feb. 26, 1970, Ser. No. 14,271
Int. Cl. B67d 5/06
U.S. Cl. 222—183 7 Claims

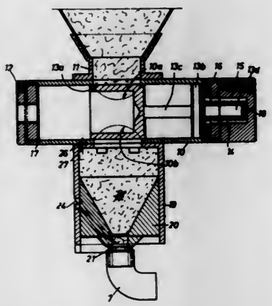


A "spoutless" pitcher, that is, a pitcher having no projecting spout and yet which provides in effect a projecting pouring spout by the co-operation of a flexible liquid container and a notch formed in a rigid outer shell. A rearward slant of the outer shell, and vertical rib members on its interior, retard ice from moving into the spout zone so formed. These and other features provide a pitcher means particularly desirable for an extremely sanitary drinking supply for individual use, as for hospital patients.

3,675,827
PORTABLE METERING CHARGERS FOR LOW VISCOSITY MATERIALS

Roger Gaston Bailly, Aubenas, France, assignor to Societe Anonyme, Societe Miniere Et Metallurgique De Penarroya, Paris, France

Filed Oct. 30, 1970, Ser. No. 85,608
Claims priority, application France, Nov. 20, 1969, 6940010
Int. Cl. B65d 5/54
U.S. Cl. 222—194 6 Claims



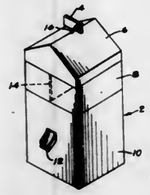
The invention comprises a portable metering apparatus for supply of low viscosity materials in measured quantities and intended mainly for handling charges of explosive material such as ammonium nitrate and fuel oil, said apparatus comprising a hopper for the material to be metered, a horizontal cylinder located beneath the hopper and having a piston member mounted therein, which piston member includes a first and second section spaced axially apart to provide a transfer passage and a metering device into which material flows by gravity from the hopper through the transfer passage into a measuring chamber incorporated in the metering device until the piston is actuated to cut off the flow and permit discharge of a measured amount of material from said chamber. A metering plunger is adjustably mounted within the measuring chamber by which its capacity can be pre-set to measure a give quantity. The cylinder has inlet and outlet orifices for connection respectively to the hopper and the metering chamber. The piston member is urged, e.g. by spring means, to a normal or open position in which the hopper remains in communication with the metering chamber through the transfer passage to permit of transfer of material by gravity from the hopper to said chamber, pneumatically operated means being provided for effecting displacement of the piston member to an operative or release position to cut off the flow of material from the hopper and permit release of the measured quantity in the metering chamber.

3,675,828
DISPENSING MACHINE

Herman Buhles, Jr., 880 N.E. 42nd Street, Fort Lauderdale, Fla.

Filed June 1, 1970, Ser. No. 42,403
Int. Cl. G01f 11/10
U.S. Cl. 222—362 2 Claims

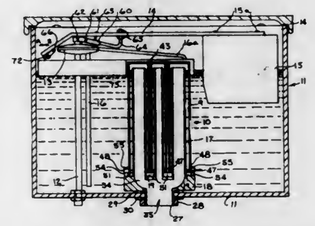
A dispensing machine including a rotatable, manually operated handle, a shaft connected to the handle, a movable upper plate connected to the shaft, topless-bottomless measuring containers connected below and adjacent openings in the upper plate, bins with hoppers above the measuring containers, a fixed bottom plate positioned immediately below the measuring containers, a chute below and adjacent to a cut away portion in the bottom plate, and a stop mechanism connected to the shaft to prevent the measuring containers from being placed beneath more than a single hopper.



3,675,829
APPARATUS FOR EMPTYING AND REFILLING LIQUID IN A RESERVOIR

Albert H. Halff, 3636 Lemmon, Dallas, Tex., and Allen F. Reid, 258 Mill Spring Road, Manhasset, N.Y.

Filed March 19, 1970, Ser. No. 21,095
Int. Cl. B67d 3/00
U.S. Cl. 222—204 11 Claims



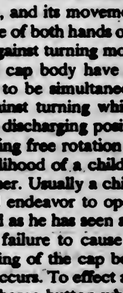
The apparatus has a tank for holding liquid and, a siphon discharge and a valve controlling the inflow of liquid by a float lever responsive to the level of the liquid. The siphon discharge has downflow discharge passages capped by a vertical casing with siphon upflow passages. The float lever is forced downwardly into the liquid by actuating the exterior level to start the siphon discharge and on refilling of the tank closes the inlet valve. Blocks of material are mounted at the upper level of the liquid to minimize the surface area of the liquid at the upper level.

3,675,830
BEVERAGE PUMP DISPENSER

Clyde H. Clement, Phoenix, Ariz., assignor to Leland B. Larson, Phoenix, Ariz., a part interest

Filed Aug. 10, 1970, Ser. No. 62,576
Int. Cl. B67d 5/40
U.S. Cl. 222—385 2 Claims

The invention discloses a beverage pump which has a pouring spout which nests within a sanitary sealing lid when the pump is not in use. The pump fits into a standard beverage container of the bottle type and can be attached to other containers. The pump is held in place by a cap which closely fits the lip and a portion of the neck of the container and which has means for tightening the cap around the neck of the beverage container to provide a tight seal. A deformable



gasket which permits beverage to flow in one direction only provides means for lifting the beverage to the discharge spout.

3,675,831
TAMPERPROOF AEROSOL DISPENSER

Steven W. Beres, Bridgeport, Conn., assignor to VCA Corporation, Greenwich, Conn.

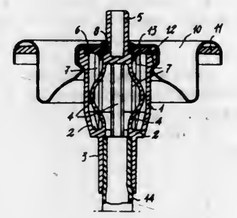
Filed Sept. 30, 1970, Ser. No. 76,873
Int. Cl. B65d 83/00
U.S. Cl. 222—402.11 8 Claims

A tamperproof aerosol dispenser comprising a container for liquids, said container having a dispensing device such as a pump or valve which includes a movable part. When the movable part is actuated it effects a discharge of the liquid contents of the container. An actuator cap is mounted on the container in such a manner that it can be freely turned while still being held captive. The cap movably mounts a turnable actuator button, which is positioned in operative relation with respect to the movable part or valve of the container. The actuator button can be moved between discharge and non-discharge positions, and its movement to the discharge position requires the use of both hands of the user, one hand holding the cap body against turning movement on the container. The container and cap body have adjoining surfaces which enable these parts to be simultaneously grasped by the one hand and held against turning while the actuator button is being shifted to its discharging position. By virtue of the cap body normally having free rotation on the container there is minimized the likelihood of a child being able to actuate or operate the dispenser. Usually a child will hold the container with one hand and endeavor to operate the actuator button with the other hand as he has seen an adult do. However, this will only result in failure to cause actuation of the button, since the free turning of the cap body defeats his efforts, so that no discharge occurs. To effect a discharge, it is necessary to actuate the discharge button while the cap body is simultaneously held against turning with respect to the container (and the button). A locking device is provided in the illustrated embodiment, which becomes unlocked when this proper action is taken, after which the button may be shifted or depressed in the necessary manner to effect the discharge. After use, the user employs a reverse operation to return the actuator button to its non-discharging position which, in the illustrated embodiment of the invention, constitutes a locked position wherein depressing movement of the button is prevented.

3,675,832
AEROSOL VALVE

Tomasco Ruscitti, Milan, Italy, assignor to Coster Tecnologie Speciali S.p.A., Milan, Italy

Filed Aug. 3, 1970, Ser. No. 60,312
Claims priority, application Italy, Oct. 21, 1969, 23668 A/69
Int. Cl. B65d 83/14
U.S. Cl. 222—402.24 6 Claims



Aerosol valve comprising a socket-shaped body securable to the top of an aerosol container, a stem and elongated flexible arms fast with and integral to the socket-shaped body and the stem. The bottom of the socket-shaped body has a hole, from the lower portion of which a hollow extension projects, on which a drawing tube can be threaded and inserted into the container.

3,675,833
CARRYING RACK FOR MOTORCYCLE OR SIMILAR VEHICLE

Robert D. Barr, 5945 Cloverly Avenue, Temple City, Calif.

Filed Oct. 7, 1970, Ser. No. 78,970
Int. Cl. B60r 9/10
U.S. Cl. 224—29 R 1 Claim

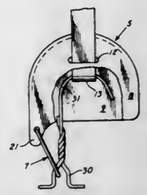


A tie-down for a motorcycle, trailbike, mini-bike or other two wheel motorized bycycle to secure a position which permits the motorcycle or other vehicle to be safely transported and protected from damage during the transporting from one point to another. This tie-down carrying rack may be mounted on the front or rear of any passenger vehicle, truck, camper, trailer, trailer bed, travel trailer, boat trailer or trailer especially constructed for motorcycles or other two wheel vehicular transporting.

3,675,834
CARRYING DEVICE

James G. Peters, 1 Penrose Lane, Colorado Springs, Colo.

Filed Dec. 28, 1970, Ser. No. 101,808
Int. Cl. A45c 13/26
U.S. Cl. 224—45 T 8 Claims

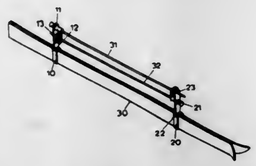


A strap-type carrying device includes a sheath member with a strap extending through the sheath member to form a buckled loop for gripping an object to be carried. The sheath is arranged to cover coat hanger hooks, and a securing ring is secured to the sheath for securing the unit to the coat hangers.

3,675,835
SKI AND POLE GRIPS

Edward S. Wilson, 1001 Sunfield Street, Sun Prairie, Wis.

Filed Dec. 3, 1970, Ser. No. 94,859
Int. Cl. A45c 11/00
U.S. Cl. 224—45 S 4 Claims

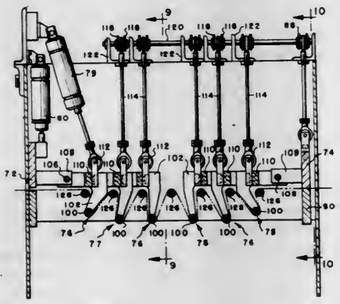


A pair of ski and ski pole carrying grips made of elongate resilient straps. Each strap has two apertures at its upper end, one for receiving the handle of a ski pole and the other for receiving the tip of a second ski pole. Each strap has another aperture in its lower end for receiving the upper end of the strap when the strap is placed around a pair of skis.

3,675,836
PULL TAB MACHINE

William O. Young, Jr., and Walter J. Quattlebaum, both of Spartanburg, S.C., assignors to Deering Milliken Research Corporation, Spartanburg, S.C.

Filed Jan. 7, 1971, Ser. No. 104,726
Int. Cl. B65h 17/42
U.S. Cl. 226—113 4 Claims

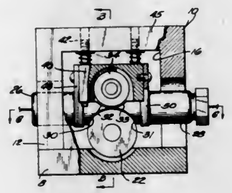


An accumulator for a web treating machine which accumulates paper for the next cycle of the machine while the machine is performing an operation on the paper accumulated in the previous cycle.

3,675,837
WIRE FEEDER

David S. Gerould, Appleton, Wis., assignor to Weld-Motion, Inc., Appleton, Wis.

Filed Sept. 3, 1970, Ser. No. 69,407
Int. Cl. B65h 17/22
U.S. Cl. 226—187 7 Claims

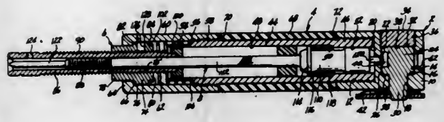


In a wire feed system as used, for example, to feed weld wire, there is a positively driven roll in a fixed location and a complementary pressure roll which, together with the means providing the wire feed track, floats to and from the feed roll rectilinearly on the common diameter of the two rolls to accommodate variations in wire dimension, the pressure roll and wire guides being subject to spring bias pre-set at the proper value for a given wire diameter.

3,675,838
MUZZLE BUSHING ASSEMBLY FOR POWER-ACTUATED FASTENING TOOLS

Andrew G. Bakoledis, Clinton, Conn., assignor to Olin Corporation

Filed March 8, 1971, Ser. No. 121,635
Int. Cl. B25c 1/14
U.S. Cl. 227—8 7 Claims



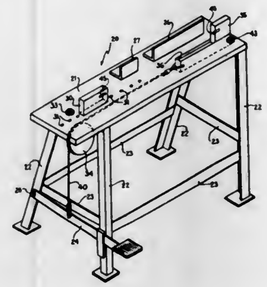
An adjustable muzzle bushing assembly for a powder-actuated tool having means to prevent the muzzle bushing thereof from accidentally moving out of adjustment. The assembly includes a collet with a threaded bore which receives an externally threaded muzzle bushing. A longitudinal portion of the external surface of the muzzle bushing is reduced and the collet has a portion of its external surface reduced to form a flat surface intersecting its bore. A spring has a portion coiled about the collet and a straight portion in engagement with the flat surface and the muzzle bushing to act as a detent when the spring is in engagement with the flat surface of the muzzle bushing.

3,675,839
NAIL INSERTING DEVICE

Merritt H. Thomas, North Rose, N.Y.

Filed March 18, 1971, Ser. No. 125,519
Int. Cl. B27f 7/02
U.S. Cl. 227—140 2 Claims

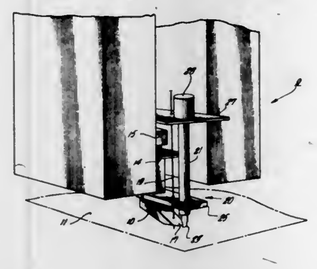
A machine for inserting a headless nail at either end of an elongated wooden member has a table top on which one or more upstanding member guides are adjustably secured, the guides having a flat surface, against which the member may be manually secured, extending longitudinally. A first block is adjustably secured on the table top and a second block is slideable in a longitudinally extending slot in the table top in a direction toward the first block by means of a foot pedal and spring biased in the other direction. Each block has a horizontally extending hole therein for reception of one end of a nail whereby the nails are forced into the ends of the member when the foot pedal is depressed.



3,675,840
WIRE CUTTING APPARATUS FOR REFLOW WIRING MACHINES

Le Roy Dean Towell, Dallas, Tex., assignor to Computer Industries, Inc., Los Angeles, Calif.

Filed Dec. 15, 1969, Ser. No. 885,077
Int. Cl. B23k 1/00
U.S. Cl. 228—4 6 Claims

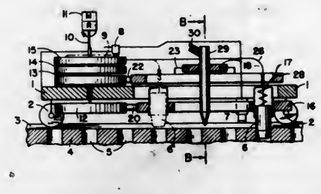


A wire cutting method and apparatus are disclosed for use with a reflow wiring machine for interconnecting selected areas on printed circuit boards. The wire cutting apparatus functions to sever the insulated wire utilized by the reflow wiring machine after a solder joint has been completed. The wire cutting apparatus includes a shaft having a knife edge at its lower extremity positioned adjacent a reflow foot or capillary through which the insulated wire is passed. A knife actuator is connected to the shaft to lower the knife edge into contact with the wire between the solder joint and the reflow foot to sever the wire against the board surface. This results in the formation of a small wire tail located beyond the solder joint and a small wire tail extending below the reflow foot for the initiation of the next solder joint.

3,675,841
APPARATUS FOR AUTOMATIC EXECUTION OF MACHINING OPERATIONS, SUCH AS WELDING

Friedrich Gutlhuber, Huberweid-Strasse 57, 8375 Ruhmannsfelden, and Lothar Kasper, Kircher-Strasse 48, 836 Deggendorf/Danube, both of Germany

Division of Ser. No. 856,883, Sept. 29, 1969. This application Sept. 30, 1969, Ser. No. 862,405
Int. Cl. B23k 1/00
U.S. Cl. 228—25 12 Claims

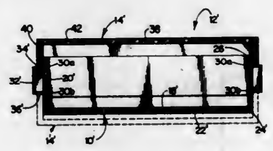


A method for automatic execution of repetitive machining operations, such as welding, utilizes a tool mounted for movement, relative to a workpiece, along two mutually perpendicular coordinates. The individual partial movements of the tool along each of the respective coordinates are coordinated in a manner such that the total movement of the tool along the workpiece comprises plural individual closed path movements, such as curvilinear movements, periodically repeated at different points along the workpiece. The apparatus comprises a wheeled carriage movable along rails which may be mounted on the workpiece, and the carriage has a support base mounting a first table for longitudinal displacement therealong, and a second table is mounted on the first table for displacement transversely thereof. The second tablemounts the tool. A plurality of rotatable cam discs are rotated by a control shaft and cam followers engaging these discs regulate the movements of the first and second tables. Positioning pins, engageable in apertures in the workpiece, are provided, and are also controlled by the cam discs. The positioning pins further may be engaged with a template mounted alongside the workpiece. The tool, in addition to its movement effected by the transversely movable table, may also be mounted in an eccentric so that the tool may execute a small radius circular movement in following the closed path, thereby widening a weld zone, for example.

3,675,842
DECORATIVE COVERING FOR A CONTAINER COMPONENT

George G. Bergh, Plainville, and Robert G. Bergh, North Attleboro, both of Mass., assignors to Bergh Bros. Co., Inc., Attleboro Falls, Mass.

Filed May 4, 1970, Ser. No. 34,247
Int. Cl. B65d 15/22
U.S. Cl. 229—6 R 1 Claim



A decorative covering for a container component of the type having a bottom member and a multi-sided wall member. The covering includes a blank of sheet material overlying the exterior surfaces of both the bottom member and the wall member. The sheet material overlying the wall member is pro-

vided with grooves which receive at least one of two inwardly disposed parallel flanges on a trim member surrounding the wall member. The other flange on the trim member may overlap the upper edge of the wall member. Alternatively, the other flange may be seated in a second parallel groove in the sheet material covering the wall member.

3,675,843
COLLAPSIBLE TOTE BAG
Sidney I. Polansky, Great Neck, N.Y., assignor to Packaging Associates, Inc., Elizabeth, N.J.
Filed Jan. 18, 1971, Ser. No. 107,151
Int. Cl. B65d 33/00
U.S. Cl. 229—54 R 14 Claims



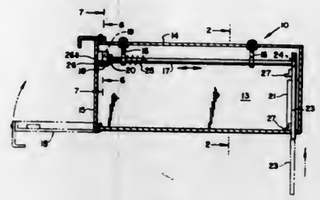
A collapsible tote bag is provided having a generally rectangular base and side walls extending in a generally vertical direction from the base to define an enclosed area. The side walls are formed of a flexible plastic material and a pair of opposed side walls are respectively provided with first and second handle members along the top edges thereof to facilitate carrying the bag in a first configuration wherein the side walls are fully vertically extended. A third handle is mounted on one of these opposed side walls at a position located approximately halfway between the base and the tops of the first and second handles. The side walls are foldable to a second configuration wherein the first and second handles are positioned adjacent the other side wall of said opposed pair near the base, thereby positioning the third handle at the top of the folded configuration. Fastening means is mounted on the other side wall adjacent the base for securing the first and second handles to the side wall to permit carrying of the bag with the third handle in the folded configuration of the bag.

3,675,844
ENVELOPE WITH SEALING MEANS
Stanley Edward Sorrell, Glossop, England, assignor to Sterling Coated Materials Limited, Cheshire, England
Filed March 9, 1970, Ser. No. 17,539
Int. Cl. B65d 27/16, 27/30
U.S. Cl. 229—80 4 Claims



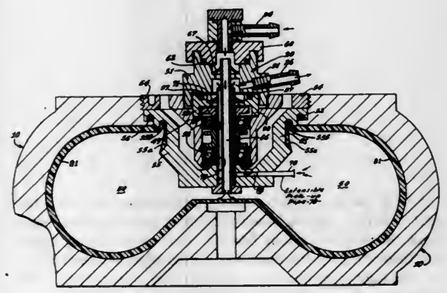
A sealing strip which is particularly useful for securing two layers of paper together, for example sealing the flap of an envelope, which consists of a paper carrier of low internal strength coated on both sides with a pressure-sensitive adhesive. One or both adhesive surfaces may be protected with a removable strip of paper or plastics material.

3,675,845
RURAL MAIL BOXES
Ernest O. Scheerer, 777 Venga Avenue, Toms River, N.J.
Filed Nov. 9, 1970, Ser. No. 88,010
Int. Cl. B65d 91/00
U.S. Cl. 232—35 2 Claims



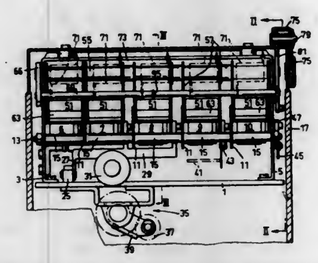
The box has a vertically slideable flag normally housed at the back thereof and maintained therein by registration of the rear end of an elongated rod in a hole in the flag. The rod has a block-like magnet on the front end thereof adjacent the closed box door. The latter has on the inside thereof a magnetizeable block complementary to and, when the door is closed, in alignment with the magnet. When the door is opened the magnetic attraction between the two blocks causes the rod to be pulled forward out of the hole in the flag to let the flag drop to exposed position. After the flag is pushed back up to its original position a spring restores the rod to registration in the hole in the flag.

3,675,846
CONTINUOUS FLOW CENTRIFUGE HEAD CONSTRUCTION
Kenneth Gus Drucker, Astoria, Oreg., assignor to Bir Consultants, Inc., South Gate, Calif.
Filed June 15, 1970, Ser. No. 46,255
Int. Cl. B04b 9/12
U.S. Cl. 233—26 3 Claims



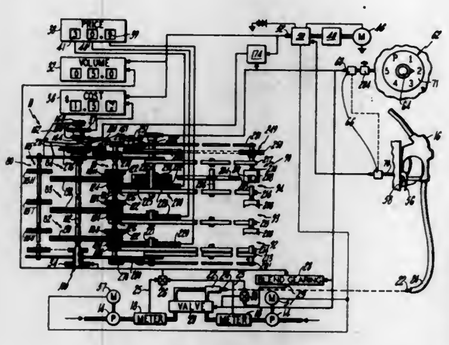
An improved centrifuge head is provided which is constructed to permit continuous flow of a liquid through the head, whereby sediment and other constituents of the liquid may be removed by the centrifugal forces within the head as the liquid passes therethrough.

3,675,847
TAXIMETER HAVING A STAMPING MECHANISM
Borgstrom Gote Ingvar, Svangsta, Sweden, assignor to Abu Aktiebolag, Svangsta, Sweden
Filed June 24, 1970, Ser. No. 49,309
Claims priority, application Sweden, June 24, 1969, 8943/69
Int. Cl. G07b 13/00
U.S. Cl. 235—30 1 Claim



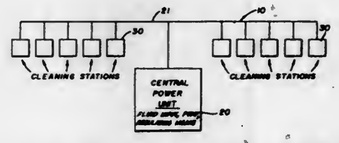
A taximeter has register mechanisms for registering data regarding each driver's work shift, for example the total amount of money earned during his work shift. The register mechanisms have printing type digit wheels and the taximeter has a stamping mechanism operated by an external manual lever, enabling the driver to print on a paper the setting of the register mechanisms at the beginning and the end of his work shift.

3,675,848
VARIATOR
Raymond H. Devaney, Winsted, Conn., assignor to Veeder Industries, Inc., Hartford, Conn.
Filed Aug. 17, 1970, Ser. No. 64,277
Int. Cl. B67d 5/22
U.S. Cl. 235—61 M 24 Claims



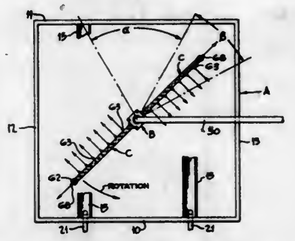
Multiple product gasoline dispensing apparatus having a variator presettable for programming a three-place unit volume price for each of the gasoline products. Three coaxial drive ratchet assemblies each comprising a bank of angularly settable ratchet wheels are provided for programming the units, tens, and hundreds places of the unit volume price. A stepping unit pivotally mounted to be oscillated about the axis of the coaxial ratchet wheels comprises a drive pawl for each of the ratchet wheels and three coaxial selector cams for the three ratchet assemblies for selectively activating the pawls for driving corresponding ratchet wheels as the stepping unit is oscillated. The selector cams are connected to be angularly set by a product selector knob and the indexing unit is connected to be oscillated to set the variator in accordance with the angular settings of the selected ratchet wheels when the gasoline cost and volume registers are reset just prior to the commencement of a fuel delivery.

3,675,849
IN-PLANT CLEANING SYSTEM
Joseph S. Boylan, Ashland, Ohio, assignor to McNeil Corporation, Akron, Ohio
Filed April 6, 1970, Ser. No. 25,989
Int. Cl. B05b 9/00
U.S. Cl. 239—124 6 Claims



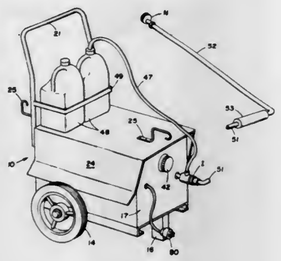
An in-plant cleaning system having a centrally located power unit and a plurality of outlet cleaning stations. The power unit consists basically of a motor, a pump and a conventional unloader. The system is provided with at least one combination of a conventional surge suppressor, a check valve and means to vent reverse pressure slowly back into the system to prevent water hammer. In the preferred embodiment one such combination is provided at each outlet cleaning station along with the cleaning gun.

3,675,850
REACTIVELY DRIVEN ROTARY LIQUID DISTRIBUTOR
Herman G. Ebert, 522 Broadview Road, Upper Darby, Pa.
Filed June 22, 1970, Ser. No. 47,987
Int. Cl. B05b 3/06
U.S. Cl. 239—254 5 Claims



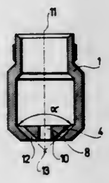
A reactively driven rotary liquid distributor or sweep, of particular use for cleaning generally rectangular filter beds, delivers a patterned spray. Two sets of nozzles, each fed by a separate conduit, are mounted on radially extending sweep arms. One set provides the reactive force and distributes liquid in a generally circular pattern. The other set, mounted on the ends of the arms, selectively covers the corner areas. Liquid flow to the conduits is through the central suspension on which the arms are rotatably mounted. The suspension includes an integral multi-port rotary valve and, as the suspension rotates, the conduits supplying the corner-directed nozzles move in and out of alignment with arcuately extending peripherally spaced ports. Thus, liquid is supplied to these nozzles only when the ends of the sweep arms are proximate the corners of the filter bed. The other nozzles operate throughout 360° of sweep rotation. Liquid is therefore distributed in a rectangular or square pattern which conforms to the shape of the filter bed.

3,675,851
HIGH PRESSURE WASHER WITH DETERGENT ON-OFF NOZZLE
Michael J. Merfeld, Cedar Rapids, and Merlyn R. Truesdell, Sioux City, both of Iowa, assignors to Century Engineering Corporation, Cedar Rapids, Iowa
Filed Feb. 18, 1971, Ser. No. 116,486
Int. Cl. B05b 7/30
U.S. Cl. 239—318 6 Claims



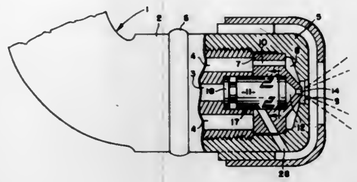
A portable high pressure washer is equipped with a length of hose and a turret nozzle having several manually selectable discharge orifices. One of the latter, the detergent orifice, is of greater size, while the remainder, the washing orifices, are of lesser size, than the throat diameter of a detergent injector located at the washer remote from the nozzle. Injection of detergent can thereby be controlled by the nozzle without the need of other means to activate or deactivate the injector, and at the same time the pressure of the detergent issuing from the nozzle is reduced.

3,675,852
OUTER NOZZLE FOR THE CUTTING HEAD OF A FLAME CUTTER
Jeno Hajduk, and Mihaly Katai, both of Budapest, Hungary, assignors to Nitex Nehezipari Kulkereskedelmi Vallalat, Budapest, Hungary
Filed Sept. 28, 1970, Ser. No. 76,007
Int. Cl. F23d 11/16
U.S. Cl. 239—422 1 Claim



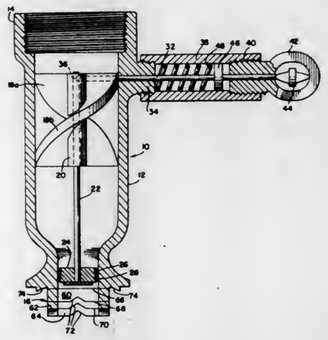
A cutting head for a flame cutter feeds oxygen through a central nozzle and a mixture of oxygen and natural gas through a ring of peripheral nozzles that converge at a point on the axis of the oxygen stream at an angle of 25° to 45°. The peripheral nozzles are fed from an annular mixing chamber at least five times the volume of the inner nozzle, and the total cross-sectional area of the peripheral nozzles is from two to eight times the cross-sectional area of the discharge orifice of the inner nozzle.

3,675,853
FUEL NOZZLE WITH MODULATING PRIMARY NOZZLE
Dominic J. Lapera, Chardon, Ohio, assignor to Parker-Hannifin Corporation, Cleveland, Ohio
Filed Feb. 25, 1971, Ser. No. 118,630
Int. Cl. B05b 1/34
U.S. Cl. 239—464 13 Claims



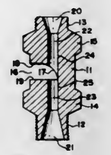
A dual orifice fuel nozzle characterized in the provision of a pressure responsive flow modulating member in the primary fuel supply passage upstream of the spin passages and spin chamber of the primary discharge orifice, said member being operative in response to increasing primary fuel pressure to decrease the flow through the primary discharge orifice and to increase the angle of the fuel spray pattern therefrom once engine ignition and/or some low power condition is reached.

3,675,854
SNAP-OFF TAB NOZZLE
William L. Livingston, Sharon, Mass., assignor to Factory Mutual Research Corporation, Norwood, Mass.
Filed Dec. 30, 1970, Ser. No. 102,651
Int. Cl. B05b 1/34
U.S. Cl. 239—490 4 Claims



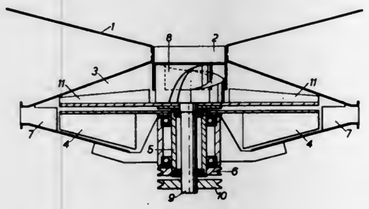
A snap-off tab nozzle consisting of a hollow body member having an inlet adapted for connection to a source of fluid, and an outlet for discharging the fluid. The outlet is formed by at least one separable tab to enable its axial length to be varied to regulate the discharge angle of the fluid.

3,675,855
SPRAY DISCHARGE NOZZLE
Charles C. Harwood, Elgin, and William E. Holtz, Jr., Chicago, both of Ill., assignors to The Quaker Oats Company, Chicago, Ill.
Continuation-in-part of Ser. No. 1,355, Jan. 8, 1970, abandoned. This application April 12, 1971, Ser. No. 133,313
Int. Cl. B05b 1/26
U.S. Cl. 239—597 6 Claims



A side discharge liquid spray nozzle is shown having an air passage and a liquid passage entering from opposing sides thereof and meeting and impinging one on the other in the bottom of a groove, the groove being an external plain groove extending across the body of the nozzle portion.

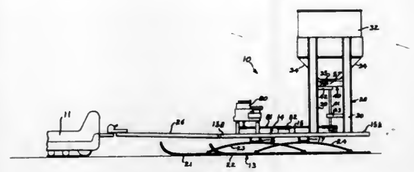
3,675,856
MACHINE FOR DISTRIBUTING SEED, FERTILIZER AND OTHER GRAIN OR POWDER MASSES
Finn Kverneland, Brumunddal, Norway, assignor to Globus Maskinfabrikk A/S, Brumunddal, Norway
Filed Aug. 10, 1970, Ser. No. 62,444
Claims priority, application Norway, Sept. 1, 1969, 3487/69
Int. Cl. A01c 15/04
U.S. Cl. 239—654 4 Claims



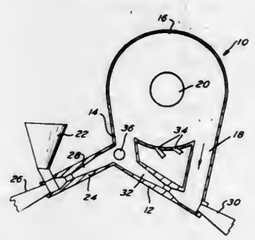
An impeller for controlling the flow of grain or pulverulent materials between a container containing such materials and a centrifugal fan for distributing said materials over a wide area, the impeller feeding a predetermined quantity per revolution to the fan.

3,675,857
SNOW VEHICLE FOR DISTRIBUTING DUST ON SNOW SURFACES
Hubert Bourton, Star Route, Waterville, Wash.
Filed Dec. 23, 1970, Ser. No. 100,878
Int. Cl. A01c 17/00
U.S. Cl. 239—668 5 Claims

A snow vehicle is described for distributing dust in a thin layer on a snow surface behind the vehicle as the vehicle is propelled over the snow surface to cause the snow to melt sooner than normal. The snow vehicle has an elevated hopper with a rotating rotor positioned below the hopper to receive the dust. The rotor is partially enclosed with a housing to develop a directional flow of air through the housing as the rotor is rotating to flow the dust from the rotor horizontally rearward from the vehicle to deposit the dust in a thin layer on the snow surface.



3,675,858
ANGULAR IMPACT FLUID ENERGY MILL
Nicholas N. Stephanoff, Haverford, Pa., assignor to Hewlett-Packard Company, Palo Alto, Calif.
Filed June 18, 1970, Ser. No. 47,357
Int. Cl. B02c 19/06
U.S. Cl. 241—5 7 Claims

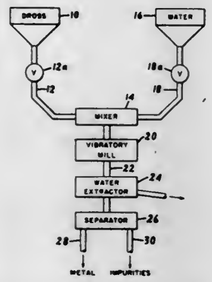


A fluid energy mill having an inlet chamber, a classification chamber, and an upstack and downstack connecting opposite ends of the inlet chamber to the classification chamber. The inlet chamber, which is positioned angularly to the upstack and downstack, has a Venturi portion between the upstack and downstack. A feed inlet is also positioned angularly to the upstack as well as to the inlet chamber. This feed inlet also has a Venturi portion. A feed hopper is provided above the feed inlet and is in connection therewith. A pressure fluid nozzle is provided below the hopper to project the fluid and particles from the hopper through the Venturi in the feed inlet. A similar but opposed nozzle is provided below the downstack to project fluid through the Venturi in the inlet chamber toward the upstack. The fluid and particles propelled by each nozzle meet and impact below the upstack and the resultant fluid and particles pass upwardly through the upstack and centrifugally move through the mill where the lighter particles are centrifugally separated from the heavier particles and exhausted from the mill.

3,675,859
METHOD AND APPARATUS FOR SEPARATING PARTICULATE MATERIALS
Chauncey L. Mitchell, III, Fair Haven, N.J., assignor to Electronic Assistance Corporation, Red Bank, N.J.
Filed July 6, 1970, Ser. No. 52,506
Int. Cl. B02c 14/14
U.S. Cl. 241—20 12 Claims

A mixture of relatively malleable and relatively friable materials in particulate form within a given initial size range is

separated into a fraction composed essentially of the malleable materials and a fraction composed essentially of the friable materials by first subjecting the mixture, in a vibratory mill, to forces effective to break up the particles of the friable fraction

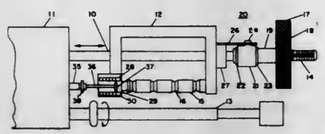


into sizes constituting a range substantially below the initial size range without substantially breaking up the particles of the malleable material and then separating the mixture according to size.

3,675,860
WIRE GUIDE ASSEMBLY FOR MULTIPLE COIL WINDING MACHINE

Thomas J. Clifford, Massapequa, and Robert C. Nelson, Bethpage, both of N.Y., assignors to Hazeltine Corporation, Greenlawn, N.Y.

Filed April 14, 1970, Ser. No. 28,329
Int. Cl. H01f 11/04
U.S. Cl. 242—7.11 7 Claims



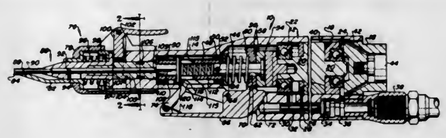
Disclosed is an improved wire guide assembly for multiple coil winding machines which have a laterally driven guide shaft. To permit precise lateral adjustment of the position of a wire guide support, an annular member is engaged on a threaded portion of the guide shaft and coupled to to the wire guide support means so that lateral movement of the annular member along the threaded portion of the shaft is translated into corresponding lateral movement of the wire guide support relative to the shaft and to a stationary multiple coil from. When used in conjunction with an improved index assembly, which is also disclosed, coil margin length and winding length can readily and accurately be determined and adjusted for different size coils.

3,675,861
CONDUCTOR WRAPPING TOOL

William J. Baker, Reed City, and Richard J. Hurst, Hersey, both of Mich., assignors to Gardner-Denver Company, Quincy, Ill.

Filed Jan. 14, 1970, Ser. No. 2,714
Int. Cl. H01f 11/04
U.S. Cl. 242—7.17 3 Claims

A motor driven tool for making wrapped connections of electrical conductor wire about a terminal which includes a wrapping attachment for use with relatively small diameter conductor wire. The wrapping attachment includes a rotatable bit and sleeve assembly in which the sleeve is fixed to the bit for rotation but is axially extendable and retractable with respect to the bit face for receiving and positioning a length of conductor to be wrapped. The attachment includes a digitally

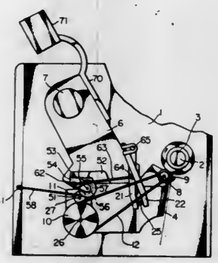


operated lever which is operable to axially extend the sleeve whereby a conductor wire may be placed transversely in a pair of longitudinal slots opening to the end of the sleeve. The attachment includes a stationary conductor support member positioned adjacent the end face of the bit.

3,675,862
DEVICE FOR CONTROLLING YARN WINDING PRESSURE ON A PACKAGE

Shin Tsukuma, No. 7-13, Sakuragaoka, Itami-shi Hyogo-ken, and Akio Higuchi, No. 24,10,1-chome, Akutagawa cho, Takatsuki-shi, Osaka-fu, both of Japan

Continuation-in-part of Ser. No. 608,150, Jan. 9, 1967, Pat. No. 3,510,078. This application Sept. 5, 1969, Ser. No. 855,597
Int. Cl. B65h 54/02, 54/28
U.S. Cl. 242—18 R 6 Claims

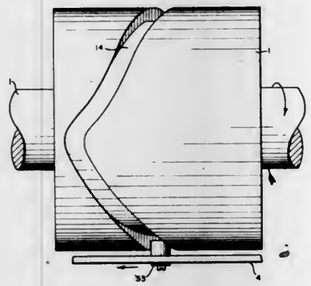


The invention relates to improvements in mechanism for controlling the winding pressure on a package in precision winders of the type having a roller bail extending along the whole length of the package being wound. Increases in the diameter of the winding package causes the roller bail to contact the package which results in rotation of the roller bail. The rotation of the roller bail is transmitted through a speed reduction device to a roller bail receding or retracting means which effects movement of the roller bail away from the peripheral surface of the package. The means for effecting the retracting movement of the roller bail is materially simplified for easier resetting of the device at the time of package doffing and for reducing contacting pressure between the package and the roller bail to an extremely low point. A linear flexible connector is fixed at one end to the frame of the machine and at its other end to a winding drum rotatably mounted on a pivotal arm that supports the roller bail. Slight rotation of the roller bail due to contact with the periphery of the package is transmitted through the speed reduction device to rotate the winding drum to wind up thereon the linear connector. The shortening of the linear flexible connector by the winding operation causes the arm supporting the roller bail to swing about its pivot very slightly to thus move or retract the roller bail away from the package.

3,675,863
YARN WINDING APPARATUS BARREL CAM AND METHOD OF MAKING THE CAM GROOVE

Richard L. Akers, Wilmington, Del., and Donald W. Oplinger, Lynnfield, Mass., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 11, 1970, Ser. No. 10,493
Int. Cl. B65h 54/30
U.S. Cl. 242—43 5 Claims



A yarn winding apparatus for winding generally cylindrical cross-wound packages in which the yarn wave in the extremity of each reversal has the smallest possible radius it will retain on the package. The apparatus includes a rotatably driven barrel cam having a generally continuous helical groove in its surface, a traverse guide riding in the groove through which yarn passes at an angle in an uncontrolled length to a point of tangency on a driven cylinder spaced from the guide. The groove has a profile comprising successive helical, reversal curve and helical portions. The reversal curve portion is characterized by being derived from the sum of the first derivative of the yarn reversal plus the product of the uncontrolled yarn length and the second derivative of the yarn reversal curve. The yarn package comprises layers of helical coils wound on a bobbin. The coils are laid down at the mid-portion of their reversals throughout the package in a curve having a minimum radius R according to the expression:

$$R = ru$$

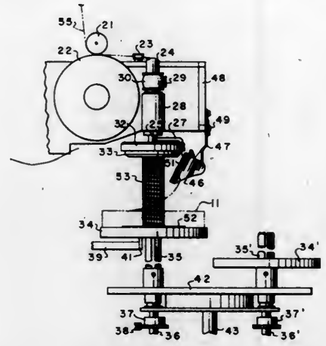
where r is the radius of the bobbin and u is the coefficient of friction of the yarn.

3,675,864
NOVEL YARN PACKAGE AND APPARATUS FOR PRODUCING SAME

Paul W. Eschenbach, Spartanburg, S.C., assignor to Deering Milliken Research Corporation, Spartanburg, S.C.

Filed Nov. 23, 1970, Ser. No. 92,078
Int. Cl. B65h 51/00, 57/00
U.S. Cl. 242—47 3 Claims

A yarn package with a high degree of uniformity in the yarn density throughout the package comprising an ascending series of generally heart shaped yarn loops disposed around a central core with a portion of each loop adjacent the core being disposed in a generally reflex angle configuration and the apex of the angle adjacent the core and another portion of

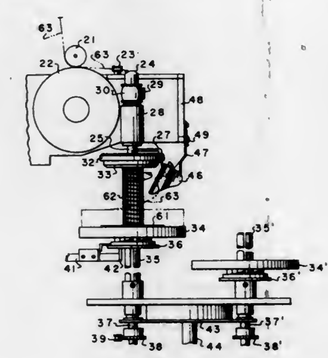


each loop being adjacent the periphery of the package. Also, a novel method and apparatus for producing such a package.

3,675,865
APPARATUS FOR INCREASING THE DENSITY OF YARN PACKAGES

Paul W. Eschenbach, Spartanburg, S.C., assignor to Deering Milliken Research Corporation, Spartanburg, S.C.

Filed Nov. 23, 1970, Ser. No. 92,079
Int. Cl. B65h 54/00, 75/02
U.S. Cl. 242—47 6 Claims



Apparatus for winding a yarn package with increased density including a yarn supply, rotatable yarn distributing means, rotatable yarn collecting means including a supporting base and a central core, and means associated with the turntable to raise and lower the turntable periodically in each revolution thereof.

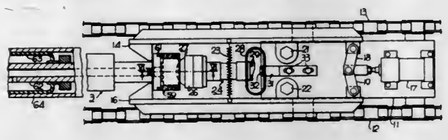
3,675,866
APPARATUS FOR HANDLING PNEUMATIC WEB ROLL WINDING SHAFTS

Donald L. Lemke, Marathon, and Ronald D. Ostrander, Wausau, both of Wis., assignors to Murray Machinery, Inc., Wausau, Wis.

Filed Dec. 28, 1970, Ser. No. 101,746
Int. Cl. B65h 75/02
U.S. Cl. 242—55 10 Claims

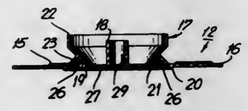
Apparatus for inflating and deflating pneumatic winding shafts and for pulling them from and inserting them into web

roll cores comprises a face-type air coupling mechanism and a jaw-type shaft gripping mechanism which maintains complementary components of the air coupling mechanism in sealing



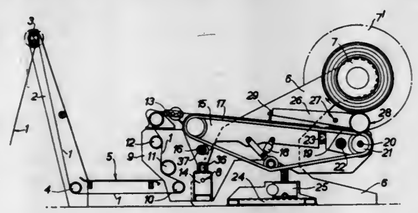
contact with each other. A pneumatic circuit with associated control valves provides for substantial automation of the air coupling and uncoupling operations, as well as for substantial automation of the shaft gripping and releasing operations.

3,675,867
MAGNETIC TAPE SPOOL AND CARTRIDGE
Nathan L. Solomon, P. O. Box 550, Englewood, N.J.
Filed June 12, 1970, Ser. No. 45,812
Int. Cl. B65h *17/48*
U.S. Cl. 242—55.19 A 6 Claims



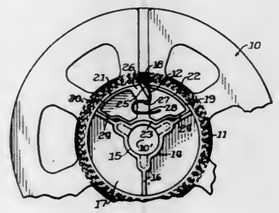
The tape spool in an endless magnetic tape cassette is an integrally one piece molded unit of a polymeric resin and includes a thin circular base, a thin walled coaxial hub including a cylindrical upper section, a lower first conical section extending inwardly from the upper section bottom to the base and a bottom coaxial section extending outwardly from the first conical section medial periphery to the base to delineate a peripheral groove in the hub. A sleeve projects coaxially from the base within the hub and has vertical slots in its lower part connected to radial slots in the base. Radial ridges are formed on the base top face and a circular coaxial ridge in its bottom face proximate the bottom of the first coaxial wall.

3,675,868
MACHINE FOR BEAMING KNITTED FABRICS OF COMMON AND ANTI-LADDER TYPE OR THE LIKE ON TO DYEING BEAMS OR CARDBOARD ROLLERS
Giuseppe Piattelli, Montecatini-Terme, Italy, assignor to Officine Meccaniche Santa Lucia S.A.S.
Filed April 22, 1969, Ser. No. 818,342
Claims priority, application Italy, April 29, 1968, 33011A/68
Int. Cl. B65h *17/08*
U.S. Cl. 242—67.1 3 Claims



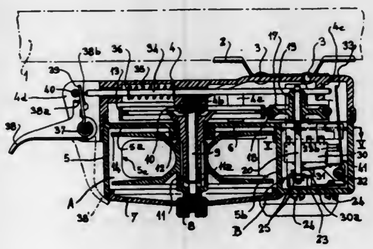
Apparatus for winding knitted fabrics onto a beam or roll comprises an endless conveyor feeding to a cylinder which is in peripheral contact with the growing roll of fabric on the beam and also tangential to the endless conveyor. As the diameter of the roll of fabric on the beam increases, the cylinder is pushed away from the beam and this actuates a control to move the conveyor away from the beam so that the conveyor and the cylinder and the periphery of the roll of fabric maintain their same general relation to each other.

3,675,869
FILM RETAINING INSERT FOR REELS
Peter H. Grant, Lincolnwood, Ill., assignor to Bell & Howell Company, Chicago, Ill.
Filed April 16, 1970, Ser. No. 29,204
Int. Cl. B65h *75/28*
U.S. Cl. 242—74 4 Claims



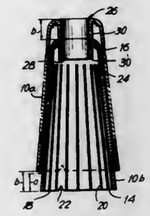
A film retaining insert for reels comprises a unitary molded insert that is provided with either a slot or a slot and pin arrangement capable of anchoring the end of a strip of film to facilitate winding film from or onto the hub of the reel to which the insert is secured. The insert is shaped to fit within the space between the axis and the hub of the reel, and has an entry slot adapted to register with a threading slot extending transversely through the hub of the reel. The end of a strip film to be wound on the reel is threaded through the threading slot and into the entry slot of the insert, and then anchored thereto. The insert holds the film end firmly against accidental displacement from the reel, and thereby facilitates winding the film from or onto the hub of the reel.

3,675,870
ELECTRICALLY OPERATED FISHING REEL
Jean-Louis Ride, 4 Rue Turenne, Geispolsheim-Gare, and Roland Bellaton, 8 Place Sainte-Luc, Sainte-Foy-Les-Lyon, both of France
Filed July 9, 1970, Ser. No. 53,415
Claims priority, application France, July 11, 1969, 6923628
Int. Cl. A01k *89/00*
U.S. Cl. 242—84.1 A 10 Claims



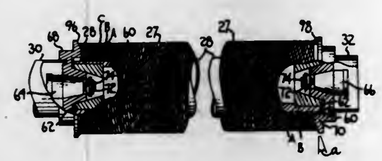
An automatic fishing reel for fly fishing having a constant rewinding torque and constant angular speed. The reel is provided with a small electrical machine which functions as a dynamo brake to control the unwinding of line from the reel drum and as a motor to rewind it. Preferably the electric machine is of the inducer type having a permanent magnet and controlled by a switch to connect it to a battery to cause it to function as a motor, or short circuited directly or through a resistance to function as a dynamo brake.

3,675,871
YARN CONES
Herbert Frank Heydes, 154 Boulevard, Pelham, N.Y.
Filed Dec. 9, 1969, Ser. No. 883,442
Int. Cl. B65h *75/10*
U.S. Cl. 242—118.3 7 Claims



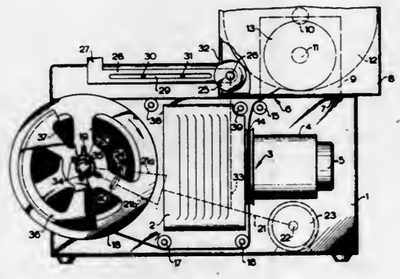
Yarn cones of hollow tapered configuration for supporting yarn at an exterior surface of the cones. The yarn cone has opposed ends one of which is smaller than the other and at the smaller end the yarn cone carries an annular member which projects axially from the smaller end of the cone. In this way when identical cones of this construction are nested the annular member of one cone will engage the smaller end of the body of an adjoining cone to limit the extent of nesting of the cones and thus prevent them from becoming wedged to each other.

3,675,872
GLASS FIBER FORMING AND SUPPLY PACKAGE
Warren W. Drummond, Allison Park, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.
Division of Ser. No. 696,791, Jan. 10, 1968, Pat. No. 3,535,097. This application April 1, 1970, Ser. No. 24,625
Int. Cl. B65h *55/02*
U.S. Cl. 242—174 2 Claims



Forming packages of glass fiber strand containing a substantially uniform thickness of wound strands are provided by oscillating the strand and winding the oscillated strand in a plurality of superimposed layers on a rotating cylindrical surface bounded by axially spaced surfaces that extend outward from the strand-collecting surface in gradually diverging relationship. The ends of the package are formed by winding the strand against the diverging surfaces each time a layer of strand is completed. After winding, the gradually diverging surfaces are removed to provide a forming package having substantially cylindrical inner and outer surfaces and end surfaces which extend outward in gradually diverging relationship from the inner surface of the package. The forming package, when dried, is self-supporting. A plurality of these forming packages are horizontally disposed in rows supported one above the other with the lower rows supporting the upper rows to provide a supply of a plurality of individual strands which are withdrawn from the interiors of the packages and further processed.

3,675,873
CINEMATOGRAPHIC APPARATUS
Marco Alfano, Turin, Italy, assignor to Silma, Turin, Italy
Filed Sept. 15, 1970, Ser. No. 72,285
Claims priority, application Germany, Sept. 18, 1969, P 19 47 149.9
Int. Cl. G03b *23/04*; B65h *17/14*; G03b *1/02*
U.S. Cl. 242—192 9 Claims

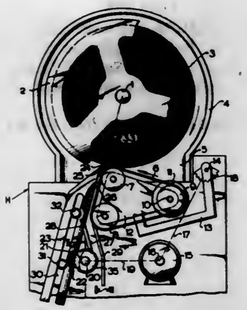


A motion picture projector wherein the core of the takeup reel can be connected with the leader of motion picture film which is stored on a supply reel confined in a magazine which is removably mounted on the housing of the projector or with the leader of film which is stored on an unconfined supply reel. The magazines which can be used with the projector are of the type having a fixedly mounted stub for the core of the supply reel therein, and each such magazine has a window which permits entry of a friction wheel serving to rewind the film onto the supply reel when the motor which normally drives the takeup real is operated in reverse. The unconfined supply reels are to be mounted on a spindle which can be driven by the motor when the latter is operated in reverse. Such spindle can be mounted coaxially with a spindle for the takeup reel or adjacent to the space for reception of magazines so that a properly inserted magazine can disengage a clutch in the transmission which drives the spindle for unconfined supply reels.

3,675,874
FILM THREADING MECHANISM FOR CINEMATOGRAPHIC APPARATUS
Wolfgang Riedel, Winnenden, Germany, assignor to Robert Bosch Photokino GmbH, Stuttgart, Unterturkheim, Germany
Filed Aug. 7, 1970, Ser. No. 62,036
Claims priority, application Germany, Aug. 14, 1969, P 19 41 319.5
Int. Cl. B65h *17/24*
U.S. Cl. 242—192 9 Claims

Automatic film threading mechanism for use in motion picture projectors wherein a motor-driven belt can rotate the supply reel in a direction to pay out the convoluted film. The leader of the outermost convolution is intercepted by the tip of a slide reciprocable radially of the supply reel by a transmission including a friction clutch which insures that the tip en-

gages the outermost convolution with a given force irrespective of the diameter of such convolution. The slide directs the



leader into a film channel wherein the leader advances into the range of a claw pull-down

---

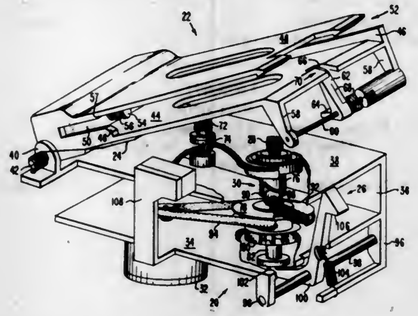
3,675,875
CORRUGATED LINER FOR RECORDING TAPE CASSETTES
Paul Gordon Schmidt, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed Oct. 12, 1970, Ser. No. 80,019
Int. Cl. G11b *23/08*
U.S. Cl. 242—199 **2 Claims**



A recording tape cassette sheet liner of corrugated thermoplastic film, preferably polyethylene terephthalate film, wherein the corrugation ratio is between 1.5 and 15, preferably between 2 and 6, and wherein there are from 5 to 50 corrugations per inch. The cassette has such a liner on at least one side of the tape spools.

3,675,876
AUTOMATICALLY DISENGAGING, TAPE HANDLER
Harold M. Frederick, Birmingham, Mich., assignor to Burroughs Corporation, Detroit, Mich.
Filed April 19, 1971, Ser. No. 135,249
Int. Cl. G03b *1/04*; G11b *15/32, 23/04*
U.S. Cl. 242—198 **18 Claims**

A tape handler is provided having a drive coupling mechanism, a part thereof being axially translatable in response to an end-of-tape condition. The handler includes a pivotally mounted carrier forming a pocket to receive and retain a tape cassette, the carrier being releasably secured to the body of the handler, the translatable part having the function of initiating both the release of the cassette and of the car-



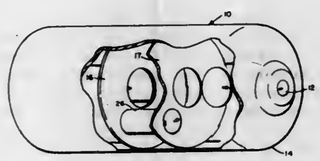
rier, the latter resulting in a separation of the carrier from the handler body sufficient to uncouple tape drive.

3,675,877
MICROFILM TRANSPORT SYSTEM AND TRAILING LEADER
Chester S. Rempala, Chicago, Ill., assignor to Bell & Howell Company, Chicago, Ill.
Filed March 11, 1970, Ser. No. 18,430
Int. Cl. G11b *15/29, 15/24*
U.S. Cl. 242—209 **5 Claims**



A microfilm trailing leader and transport system for terminating the driving relationship between the film and said system to thereby eliminate excessive strain on the connection between the trailing leader and the spool hub. The invention is also directed to a novel drive capstan which eliminates the frictional engagement between the capstan and the film information bearing area to thereby increase the useful film life.

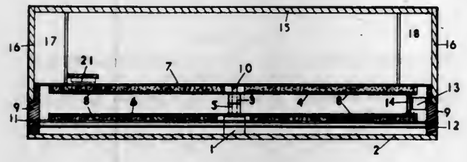
3,675,878
LIFE-SUPPORTING PRESSURIZABLE VEHICLES
Harald J. Von Beckh, P. O. Box 1220, Warminster, Pa.
Filed Sept. 21, 1970, Ser. No. 74,056
Int. Cl. B64c
U.S. Cl. 244—1 SS **13 Claims**



Spacecraft and aircraft life compartments suitable for protecting the occupants from accidental and sudden decompression during space or high altitude flight. The craft is divided into discrete compartment connected by hatchways which selectively close upon decompression in any one compartment

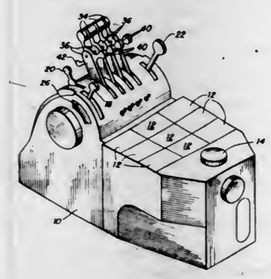
in order to maintain pressure integrity in the other compartments. An air lock and lock valves between compartments enable emergency intravehicular escape and rescue from a decompressed compartment and ensure continued flight control pending corrective action.

3,675,879
METHOD AND MEANS FOR CREATING ARTIFICIAL GRAVITY IN SPACECRAFT
Harry B. Fuchs, 242 Prospect St., Farmingdale, N.Y.
Filed Sept. 2, 1969, Ser. No. 854,558
Int. Cl. B64g *1/00*
U.S. Cl. 244—1 SC **6 Claims**



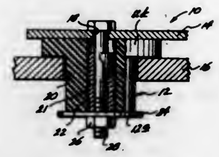
Prolonged weightlessness in space congests the body organs of astronauts and is detrimental to the health thereof; while the discipline of physiotherapy teaches that electrostatic treatments decongest the body organs of human beings. An electrostatic generator at the underside of a floor in a space vehicle produces electrostatic energy which radiates from the topside thereof to attract astronauts in their footwear and clothing, and their implements, to the topside of the floor in simulation of natural gravity. The electrostatically-induced artificial gravity tends to minimize and offset the natural gravity differential effects on bodies in or on a space vehicle. An oppositely-turning rotor counters the torque reaction produced by a rotor forming part of the electrostatic generator. The oppositely-turning rotor also generates electric energy for useful purposes.

3,675,880
MODULAR AIRCRAFT PEDESTAL
John H. Koch, Acton, Mass., assignor to Atkins & Merrill, Inc., Marlboro, Mass.
Filed Dec. 11, 1970, Ser. No. 97,073
Int. Cl. B64c *13/04*
U.S. Cl. 244—83 R **7 Claims**



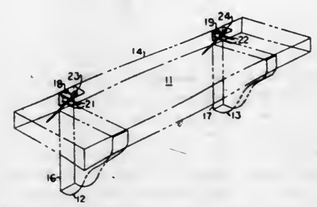
A standardized aircraft flight and engine control assembly in modular form adapted to be incorporated in an aircraft pilots' control pedestal in place of or in addition to the actual aircraft parts. The assembly is made up of one or more control modules including levers for controlling devices such as flaps, spoilers, brakes, elevator trim, and the like, mounted in spaced relation on a chassis designed to fit within a control pedestal. The chassis includes means for holding and supporting an engine control module comprising a support and a plurality of similar engine control lever assemblies mounted on the support in side-by-side relation. The support is designed to hold a variable number of control lever assemblies, one for each engine, so that the dimensions of the overall assembly can be standardized, yet the component modules varied in number and function as required for different aircraft.

3,675,881
BUSHING FOR VIBRATION-ISOLATING MOUNTING
William F. Caldwell, Portland, Oreg., assignor to Huntington Rubber Mills, Portland, Oreg.
Filed Nov. 4, 1970, Ser. No. 86,761
Int. Cl. B62d *23/00, 27/04*
U.S. Cl. 248—9 **2 Claims**



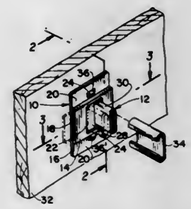
A bushing-sleeve combination for a vibration-isolating mounting. The bushing is resilient, and the sleeve rigid. The bushing includes an elongated cylindrical body portion having along its entire length a uniform outside diameter. One end of the body portion joins with a radially outwardly projecting flange portion. An elongated axially central bore, which has a substantially uniform diameter along its length, extends through the body and flange portions, and is adapted to have the sleeve slidably mounted therein.

3,675,882
WALL SHELF MOUNTING
Douglas D. Dibble, P.O. Box 1175, La Mesa, Calif.
Filed Sept. 8, 1970, Ser. No. 70,019
Int. Cl. A47g *29/02*
U.S. Cl. 248—235 **1 Claim**



A wall shelf mounting having first and second shelf supporting brackets attached to a bottom surface thereof and flush with the back surface of the shelf for abutting a wall; first and second shelf-hanging brackets having one surface resting on the top surface of the shelf and a second surface at right angles thereto resting against the back surface of the shelf, the first part having a nail hole therein and the second part having a plurality of nail holes therein for nailing the hanging brackets to the shelf; the top holes being for receiving a nail at an oblique angle toward the wall and beneath the second surface of the brackets for hanging the entire structure on the wall.

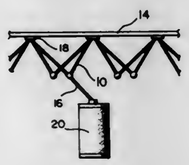
3,675,883
ADJUSTABLE BRACKET ASSEMBLY FOR USE AS A REAR DRAWER SLIDE BRACKET AND THE LIKE
Frank Holmes, Buena Park; Henry Arias, Jr., Rowland Heights, and George Read, Glendora, all of Calif., assignors to Ajax Hardware Manufacturing Corporation, City of Industry, Calif.
Filed Sept. 17, 1970, Ser. No. 73,108
Int. Cl. A47b *88/00*
U.S. Cl. 248—251 7 Claims



A rear door slide supporting bracket of a bracket member is received through a mounting member opening bringing the bracket member into longitudinal slidable nesting within a mounting member longitudinal groove, the mounting member longitudinal groove and enlarged opening permitting relative longitudinal slidable adjustment of the bracket.

Both the mounting and bracket members may be formed of plastic integrally joined by a flexible strap in both dissassembled and assembled positions.

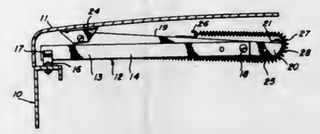
3,675,884
SUSPENSION SYSTEM
John M. Storyk, 254 W. 4th St., New York, N.Y.
Filed Sept. 30, 1970, Ser. No. 76,763
Int. Cl. F16m *13/00*
U.S. Cl. 248—317 2 Claims



Disclosed herein is a suspension system, preferably for connection to a ceiling, wherein a plurality of groups of elongated elements are fixed to the ceiling. Each group comprises three of such elongated elements disposed angularly with respect to both horizontal and vertical planes, wherein the three elements are joined together at an apex and extend upwardly from the apex so that their upper ends are disposed in a common horizontal plane. Thus, each group of elements forms a tetrahedron having three open sides defined by planes passing through the elements of the group, and having a fourth side defined by a plane passing through their upper ends.

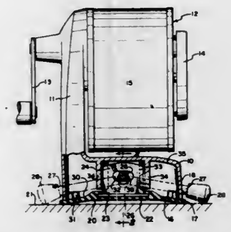
3,675,885
SPRING-LOADED FOLDING ARM
Adrian L. Shute, 2541 E. Washington St., Phoenix, Ariz.
Filed Aug. 20, 1970, Ser. No. 65,643
Int. Cl. F16m *13/00*
U.S. Cl. 248—351 2 Claims

A spring-loaded folding arm comprising two pivotally connected leg portions, with a spring having one end connected to each leg and arranged to urge the arm into the extended position. In a particular application, shown and described, the



arms are employed between a stationary structure and a movable structure to provide a substantially counterbalanced extensible mechanism.

3,675,886
MANUALLY RELEASABLE VACUUM HOLDING BASE CONSTRUCTION
Thomas R. Kampmeier, Freeport, Ill., assignor to Berol Corporation, Danbury, Conn.
Filed Nov. 5, 1970, Ser. No. 87,150
Int. Cl. F16b *47/00*
U.S. Cl. 248—363 3 Claims

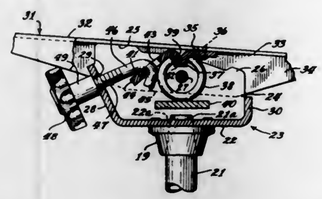


The generally rectangular open bottom base rests on a generally rectangular resilient pad, and a yoke connected with the pad extends upwardly from the central portion thereof for vertical movement in the turning of a crank operating through a slot in the yoke. This crank is at the mid-portion of a cross-shaft disposed parallel to the pad and supported for rotation in registering bearing holes provided in opposed walls of the base, a manually operable lever bent nearly at a right angle to one end of the shaft outside the base serving to turn the shaft and crank to cup the central portion of the pad for suction cup action. Small projections molded integral with the pad at the four corners of the base have locating abutment with these corners inside the base and besides being thereby concealed for good appearance are free to move radially inwardly in the cupping of the pad so there is no interference with this operation. Also, a C-shaped spring clip is applicable to a cutout portion of the shaft next to the inside of the base at the lever end of the shaft to define shoulders on the shaft for abutment with the adjacent wall of the base to complete the assembling of the shaft in the base, the pad being flexible away from the base sufficiently to permit this final step in the assembling.

3,675,887
CHAIR CONTROL ASSEMBLY
James R. Meinhardt, Evanston, Ill., assignor to The Seng Company
Filed Jan. 14, 1971, Ser. No. 106,440
Int. Cl. F16m *11/20*
U.S. Cl. 248—378 11 Claims

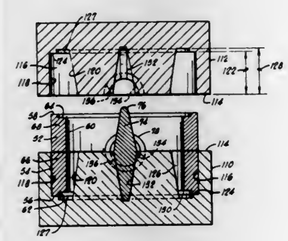
A control for a spring biased tilting chair such as an office swivel chair or a platform rocker has a slotted spring ring means which is either a set of aligned slotted spring rings or a

single long slotted spring ring or sleeve. A tension adjusting member on the base or head piece has a finger which projects into the slot, and there is a tension member on the tilting member which also has a finger projecting into the slot. The tension adjusting member is operatively connected to an ad-



justing hand wheel to vary prestress in the ring means, which resiliently resists tilting movement of the tilting member. The structure is equally applicable to an executive chair a secretarial posture chair, an executive posture chair or a platform rocker.

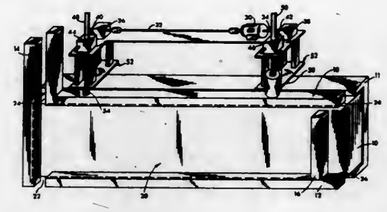
3,675,886
APPARATUS FOR MOLDING A SEAT IN A VALVE BODY
Domer Scaramucci, 3245 S. Hattie, Oklahoma City, Okla.
Filed Feb. 24, 1970, Ser. No. 13,622
Int. Cl. B22c *9/24*; B29d *23/00*
U.S. Cl. 249—57 10 Claims



A method and apparatus for molding an elastomeric seat and stem seal in a valve body, wherein a pair of mold sections, each mold section having a cavity formed therein, are secured about a valve body having the valve member rotatably supported therein by at least one stem journaled in a mating aperture in the valve body. The cavities in the mold sections are shaped to cooperate with the valve body to define a space therebetween wherein the uncured elastomeric material is to be forced, the space being shaped to surround a portion of the stem and to define the limits of the elastomeric seat and stem seal.

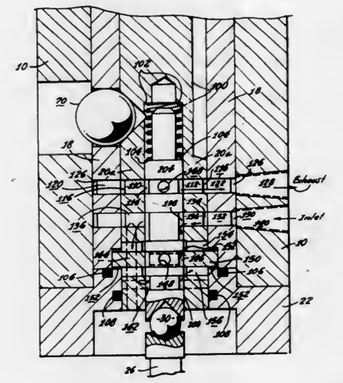
3,675,889
TOP BLOCK LIFTING WITH BACK BLOCK LOADING CONTROL
Richard O. Peck, Elk Grove Village, Ill., assignor to AMSTED Industries Incorporated, Chicago, Ill.
Filed Aug. 24, 1970, Ser. No. 66,499
Int. Cl. B29c *1/16*
U.S. Cl. 249—82 2 Claims

The mold includes a pair of side blocks between which are engaged top, bottom and end inner blocks to define a casting cavity. The top block is moved into engagement with an end block by screw jacks driven by a motor with a spring provided between one of the screws and the top block to accommodate thermal expansion. Load sensing means are provided to shut



down the motor after a particular load between the top and an end block has been achieved.

3,675,890
BOOSTER SERVO CONTROLLED VALVE CONTROL MECHANISM
Roy Rosebrook, Sr., Downey, Calif., assignor to Ancilux Systems Corporation, El Segundo, Calif.
Filed Feb. 16, 1970, Ser. No. 11,526
Int. Cl. B23q *35/16*
U.S. Cl. 251—3 5 Claims

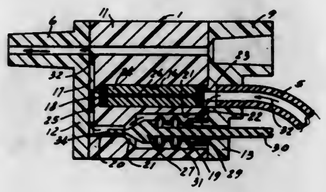


A valve control mechanism is provided which is particularly well suited to be used in conjunction with an hydraulically operated machine tool, such as a milling machine, lathe, or similar machine. A tracer mechanism actuates the valve which in turn hydraulically controls the movement of the machine tool. The disclosure is particularly concerned with such a valve control mechanism which incorporates a booster servo system for facilitating the operation of the mechanism and thus lightening the contact pressure of the stylus of the trace. mechanism on the guiding template.

3,675,891
CONTINUOUS CATHETER FLUSHING APPARATUS
Gordon S. Reynolds; Karl A. Paanier, Jr., and James L. Sorenson, all of Salt Lake City, Utah, assignors to Le Vey's, Inc., Salt Lake City, Utah
Filed Sept. 18, 1970, Ser. No. 73,314
Int. Cl. F16k *51/00*; A61m *5/00*
U.S. Cl. 251—117 10 Claims

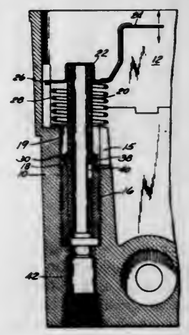
An apparatus effecting continuous flushing of intravascular catheters in systems for monitoring conditions in the thoracic

cavity during surgery in the intensive care ward, cardio vascular diagnostic laboratories, etc. The apparatus embodies a small block having therein passages for a flushing solution in one of which is a flow resistor to limit the flushing to a small



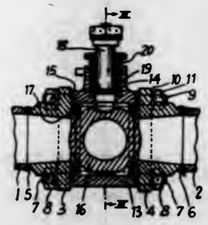
amount, a fail-safe valve in another passage connected by a bypass to the first passage for fast flushing with a much larger amount of solution, and means for connecting the catheter to a monitoring apparatus.

3,675,892
METERING VALVE
William A. Biermann, Brookfield, Wis., assignor to Controls Company of America, Melrose Park, Ill.
Filed Nov. 30, 1970, Ser. No. 93,670
Int. Cl. F16k 47/04
U.S. Cl. 251—121 2 Claims



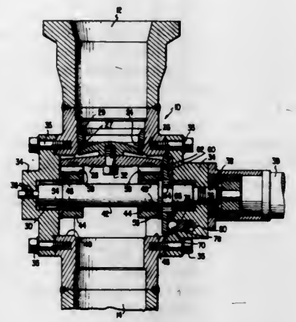
The tubular metering stem is closely guided in the sleeve pressed into the bushing. The upper end of the guide sleeve serves as the valve seat. The stem is provided with a groove which receives the washer as it is coined in a fixture to flow the washer metal into the groove. The spacing between the washer and the corner of the groove below the washer is inadequate to receive the O-ring in a normal manner. Therefore, the corner bites into the O-ring forcing the O-ring against the washer and the bottom of the groove to insure against leakage between the ring and the stem or the washer. The spacing between the O-ring and the valve seat controls the low flow rate as the stem rises. Above low flow the rate is determined by the stem rise and the characteristics of the metering slot. Full shutoff is insured when the O-ring seats on the valve seat.

3,675,893
COCK WITH SPHERICAL CASING
Raymond Andre Avellinos, Montreuil-sous-Bois, France, assignor to Crane S.A., Paris, France
Filed Sept. 30, 1968, Ser. No. 763,648
Claims priority, application France, April 4, 1968, 68146935
Int. Cl. F16k 43/00
U.S. Cl. 251—152 3 Claims



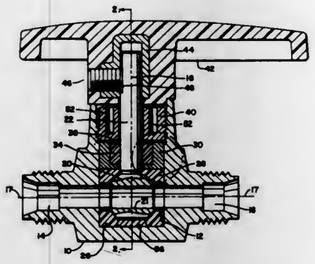
A detachable cock casing of substantially spherical configuration is clamped between registering flanges of pipe sections which are provided with sealing means by a plurality of tie-bolts of which some are adapted to slide in elongated holes formed in said flanges to permit the sliding movement of said tie-bolts away from each other, in their slackened condition, and thus permit the passage, by a movement of translation of the detachable casing in a direction at right angles to the axis of the relevant pipe sections.

3,675,894
EYELID HYBRID BUTTERFLY TYPE POPPET VALVE
Morley V. Friedell, Wheatridge, Colo., assignor to Martin Marietta Corporation, New York, N.Y.
Filed Dec. 3, 1969, Ser. No. 881,779
Int. Cl. F16k 25/00
U.S. Cl. 251—163 3 Claims



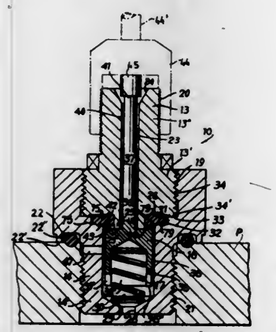
A cylindrical valve body carries a semi-spherical pocket outside of the axial flow path which receives an eyelid, hybrid butterfly type poppet valve of similar configuration and which may be selectively rotated to a position coaxially with an annular valve seat and then axially advanced to valve closed position.

3,675,895
TRUNION MOUNTING FOR ENCAPSULATED BALL VALVE
Stephen Matousek, Moraga, Calif., assignor to Whitey Research Tool Co.
Filed May 28, 1970, Ser. No. 41,381
Int. Cl. F16k 27/06
U.S. Cl. 251—315 4 Claims



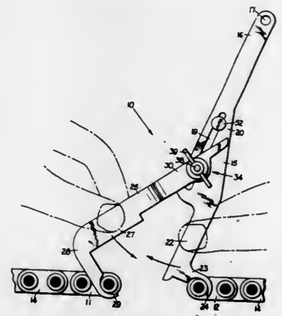
The specification and drawings show a ball valve including a housing defining an internal valve chamber and inlet and outlet flow passages extending through the housing and into the chamber. A ball member having a through flow aperture is positioned centrally in the chamber and an actuating stem extends radially from the ball to a position outside the housing. In the embodiment shown, the chamber is cylindrical and the ball and stem are axially aligned with the axis of the chamber. A resilient packing of synthetic resinous material, such as polytetrafluoroethylene or the like, is disposed in the chamber to surround the ball and sealingly engaging both the ball and the inner walls of the chamber. The packing fills substantially all voids between the ball and the chamber except for ports formed through the packing between the inlet and outlet passages and the ball. Positioned beneath the ball and axially aligned with the stem is a rigid trunion member which extends through the packing between the ball and the end wall of the chamber. The trunion is either integral with the ball and spaced a slight distance from the end wall or, alternately, it is carried by the end wall and spaced a slight distance from the ball.

3,675,896
VALVE INCLUDING RESILIENT SEAT WASHER WITH ABUTTING RIGID ANNULAR WASHER
Jacques H. Mercier, 49 rue de Naples, Paris, France
Filed May 21, 1970, Ser. No. 39,441
Claims priority, application France, May 28, 1969, 6917305
Int. Cl. F16k 1/34
U.S. Cl. 251—321 5 Claims



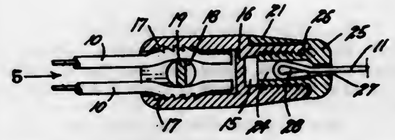
This invention relates to a valve for fluid under pressure which may be a gas or liquid, the valve comprising a fluid passageway having a resilient annular seat encompassing the passageway with the valve member cooperating with said seat to control said passageway, said valve member being urged to closed position against said seat both by the fluid pressure and by associated resilient means and providing a highly effective seal at all pressures, both high and extremely low, the valve member including a stem, the end of which is designed to be pushed to open the valve.

3,675,897
TOOL FOR DRAWING THE ENDS OF OPPOSED MEMBERS TOGETHER
James A. Smith, Eugene, Oreg., assignor to Fibreboard Corporation, San Francisco, Calif.
Filed Aug. 24, 1970, Ser. No. 66,237
Int. Cl. B66f 3/00
U.S. Cl. 254—78 6 Claims



A hand-operated tool for drawing together and clamping the ends of opposed members, such as lengths of chain, in predetermined spaced relationship. The tool comprises a main arm and a secondary arm pivotally secured to the main arm. A hook is formed at one end of each of the arms for engaging the members to be drawn together and a handle is formed at the other end of the main arm. The pivot point between the arms is adjustable to enable different spacings of the opposed members when clamped. Means are provided for locking the arms in a closed position with the opposed members clamped in spaced relationship.

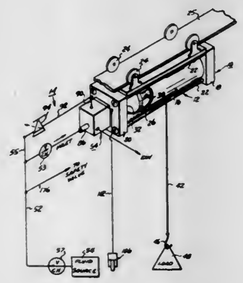
3,675,898
DEVICES FOR DRAWING WIRES THROUGH CONDUITS
Arthur P. Fattor, 5380 S. Holly St., Littleton, Colo., and William Hortenstus, 8278 Cherokee St., Denver, Colo.
Filed Jan. 29, 1970, Ser. No. 6,722
Int. Cl. F16g 11/00
U.S. Cl. 254—134.3 FT 10 Claims



A substantially cylindrical plug-like clamp having a rectangular socket in one extremity, to receive the wires, and a circular socket in the other extremity, to receive a flexible tension element or fishing tape. A lever-actuated, flat shaft transversally crosses the rectangular socket which, when rotated, clamps insulated wires in the latter socket and a screw-actu-

ated nipple in the circular socket acting to secure the extremity of a fishing tape in the latter socket.

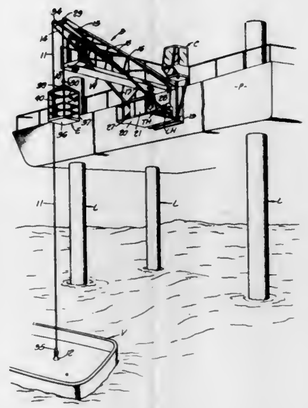
3,675,899
HOIST AND BALANCING APPARATUS
Lorne J. McKendrick, 5131 Surfwood Drive, Milford, Mich.
Filed May 27, 1970, Ser. No. 40,863
Int. Cl. B66d 1/00
U.S. Cl. 254—168 11 Claims



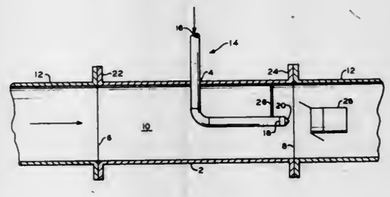
A pneumatic hoist having a supported cylinder and a piston in the cylinder, and means for introducing compressed air into the chamber to act on the piston to develop a force for lifting or supporting a load. A pneumatic control system is disclosed for controlling the pressure of compressed air admitted into the chamber and is adapted to selectively introduce air having one of three adjustable predetermined pressures chosen to balance either the weight of the load-attachment means, the combined weight of the load-attachment means and the load, or the weight of a load greater than the combination in order to lower, suspend, or raise the load. A safety valve in the system is arranged to trap the air in the cylinder behind the piston in the event of loss of source pressure so that a suspended load cannot accidentally drop. The control system is actuated by a hand control device which has a built-in safety latch mechanism for tamper-proof operation of the hoist apparatus.

3,675,900
MOTION COMPENSATING HOIST
Charles D. Barron, Huntington Beach; Earl A. Peterson, Long Beach; Gary K. Stark, Buena Park, and Carl A. Wilms, La Habra, all of Calif., assignors to Byron Jackson, Inc., Long Beach, Calif.
Filed March 16, 1970, Ser. No. 19,582
Int. Cl. B65g 67/58
U.S. Cl. 254—172 17 Claims

A motion compensating hoist for moving a load between relatively vertically movable points, in which a cable from a tensioning hoist is interconnected between the two points, and the cable from a load hoist is connected to the load, and the tensioning hoist and the load hoist are cooperable to establish movement of the load corresponding to the relative movement between the two points and to cause further movement of the load between the two points.



3,675,901
METHOD AND APPARATUS FOR MIXING MATERIALS
Pat F. Rion, Borger, Tex., assignor to Phillips Petroleum Company
Filed Dec. 9, 1970, Ser. No. 96,493
Int. Cl. B01f 5/04
U.S. Cl. 259—4 7 Claims

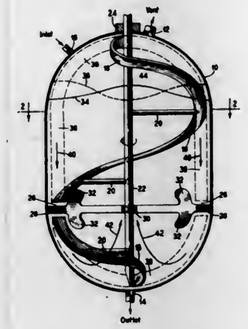


An apparatus for delivering a plurality of materials has a first conduit with a chamber coaxially connected to a line. A second conduit extends from adjacent the first conduit through a sidewall of the first conduit to a coaxial location within the first conduit for injecting and directing at least one other material into and along the axis of the first conduit.

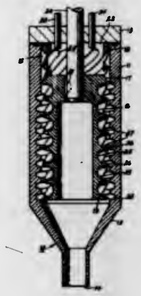
3,675,902
MIXING OF FLUID MATERIALS
Walter R. Marshall, Bloomfield, N.J., assignor to Union Carbide Corporation, New York, N.Y.
Filed July 27, 1970, Ser. No. 58,340
Int. Cl. B01f 7/16
U.S. Cl. 259—7 9 Claims

Method and apparatus are disclosed for the mixing of fluid materials comprising providing a mixing zone having an inlet and an outlet; introducing said material through said inlet into said mixing zone; agitating said material in said mixing zone

with a rotating, interrupted spiral ribbon agitator; disrupting the material flow in a region of interruption of said agitator to effect more intimate mixing; and withdrawing intimately mixed material through said outlet.



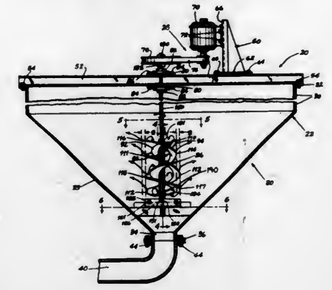
3,675,903
MIXING DEVICE
Robert C. Harper, Loveland, Ohio, assignor to Cincinnati Milacron Inc., Cincinnati, Ohio
Filed Dec. 15, 1970, Ser. No. 98,277
Int. Cl. B01f 7/24
U.S. Cl. 259—8 12 Claims



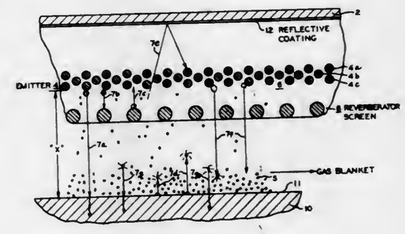
A mixing device for intermixing liquids to a homogenous state. The device comprises a cylindrical housing and a generally cylindrical impeller rotatably positioned within the housing and includes a mixing section between the housing and impeller and means for recycling a portion of the mixture to the mixing section. They recycling of a portion of the flow provides improved homogenity of the final mixture.

3,675,904
AGITATOR APPARATUS
James S. Bremmer, Box 1, Monroe, Mo., and Bernard F. Koste, deceased, late of 723 Selma Ave., Webster Groves, Mo. (by Elsie E. Koste, executrix)
Continuation-in-part of Ser. No. 812,565, March 25, 1969, abandoned. This application Oct. 28, 1970, Ser. No. 84,855
Int. Cl. B01f 7/24
U.S. Cl. 259—108 20 Claims

The agitator apparatus of this invention is designed primarily for use in mixing suspension liquids, such as suspension fertilizers and feeds, and comprises an agitator having a shaft with a first helicoid layer surrounding the shaft, and a second helicoid layer. Means are provided for rotatably mounting the agitator vertically disposed in the material to be mixed, the material being contained in a tank having a diameter substantially greater than the diameter of the agitator, and for rotating the shaft in a direction such that the first helicoid layer produces a movement of the material in the downward direction, and the second helicoid layer produces a movement of the material in the upward direction.

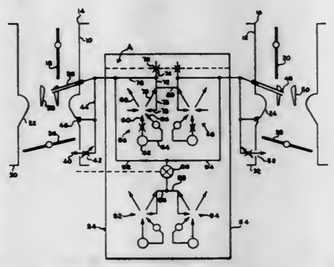


3,675,905
METHOD AND APPARATUS FOR INFRARED HEATING
Eugene W. Placek, Parma, Ohio, assignor to Van Dorn Company, Cleveland, Ohio
Filed Sept. 17, 1970, Ser. No. 73,165
Int. Cl. F27b 17/00
U.S. Cl. 263—2 40 Claims



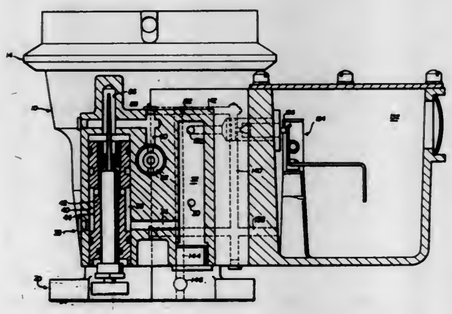
The present invention pertains to a novel and improved method of rapidly heating metals and other materials by means of gas-fired infrared generators, and to apparatus therefor. Infrared generators are positioned in close proximity to a workpiece, preferably so that the infrared radiation source is not more than about five inches nor less than about ¾ inch distant from the surface of the workpiece to be heated. Combustion gas from the generator is directed in turbulent flow onto the workpiece surface facing the generator so as to supplement infrared radiant heating (1) by convection/conduction heat transfer to the workpiece and (2) by secondary radiation from the combustion gas. By use of the method and apparatus of the invention, heating of workpieces is obtained with efficiency and speed far in excess of that possible with prior heating methods.

3,675,906
FLUIDIC FUEL SYSTEM
Walton B. Baldwin, and Donald A. Burger, both of Elmira, N.Y., assignors to The Bendix Corporation
Filed Sept. 25, 1970, Ser. No. 75,634
Int. Cl. F02m 69/04
U.S. Cl. 261—23 A 10 Claims



Fluidic amplifiers responsive to vacuum air signals developed in an engine intake manifold to control fuel delivery to the engine. Fluidic elements are immersed in a fuel containing reservoir with air vacuum control signals applied at a downstream location through an output leg of the fluidic elements and an atmospheric air bleed is provided in the output leg in a horizontal plane above the fluidic elements and reservoir.

3,675,907
CARBURETOR
Harold E. Phelps, Plymouth, Mich., assignor to Harold Phelps, Inc., Plymouth, Mich.
Continuation-in-part of Ser. No. 636,356, May 5, 1967, abandoned. This application May 16, 1968, Ser. No. 729,611
Int. Cl. F02m 1/04, 3/00, 7/22
U.S. Cl. 261—39 1 Claim

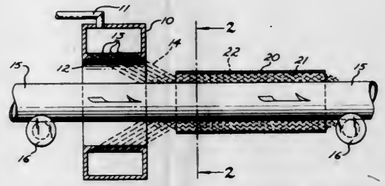


A carburetor for internal combustion engines. Precise regulation of combustion fuel is achieved by means of a high precision metering valve coupled to and operable with the conventional butterfly valve in a manner such that the amount of raw fuel is accurately regulated in accordance with the demand. The metering valve further incorporates a cold start enrichment mechanism and a second metering valve is provided to compensate for abnormal load demands and to prevent overcharging of the engine. The carburetor includes a housing having a throat and a throttle controlled butterfly valve in the throat at the outlet thereof. A fuel nozzle introduces fuel into the throat. An inlet on the housing for receiving fuel from a fuel supply and a first metering valve in the housing for controlling the flow of fuel from the fuel inlet to the nozzle. The first valve comprising a valve seat member having a bore therethrough defining a fuel passage. A valve member mounted for axial reciprocation within the passage. The valve member has a shoulder thereon engageable with the seat at the inlet end of the fuel passage to block the fuel passage. An elongate tapered pin projects axially from the shoulder through the passage. The area of the fuel passage available to the flow of fuel when the shoulder is disengaged from the seat is variable in accordance with the axial position of the pin relative to the fuel passage. The valve member is coupled to the butterfly valve for positioning the pin axially within the fuel passage in accordance with the position with the butterfly valve. A linkage independent of the butterfly valve establishes the axial position of the pin relative to the fuel passage. A vertically elongate inlet chamber formed in the housing. First outlet passage in the housing for conducting fuel from the lower portion of the inlet chamber to the first metering valve. A float chamber defined in the housing. Second outlet passage in the housing for conducting fuel from the upper portion of the inlet chamber to the float chamber. A third passage in the housing for conducting fuel from the lower portion of the float chamber to the throat at a location at the outlet side of the butterfly valve.

ERRATUM

For Class 263—2 see:
Patent No. 3,675,905

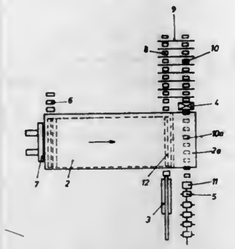
3,675,908
QUENCHING DEVICE
Clifford L. Amend, Youngstown, Ohio, assignor to Ajax Magnethermic Corporation, Warren, Ohio
Filed Jan. 4, 1971, Ser. No. 103,578
Int. Cl. C21d 1/62
U.S. Cl. 266—6 S 3 Claims

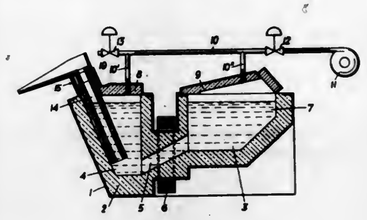


There is disclosed herein an annular quench ring surrounding a coaxial, axially relatively moving pipe for spraying a cone-shaped pattern of quenching fluid inwardly thereagainst. A sleeve, also coaxial with the pipe, is disposed adjacent to the exit end of the quench ring in the direction of the apex of the cone-shaped spray, the sleeve being spaced radially outwardly of the pipe whereby a substantial portion of the fluid richochets between the load and the inner surface of the sleeve throughout the length of the sleeve to increase the quenching effect.

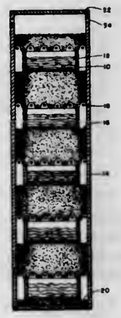
3,675,909
BILLET FEED SYSTEM FOR ROLLING MILLS
Klaus Neumann, Am Klosterhang, Germany, assignor to Moeller & Neumann GmbH, Ingbert/Saar, Germany
Filed June 2, 1970, Ser. No. 42,784
Claims priority, application Germany, June 4, 1969, P 19 28 510.0
Int. Cl. C21d 7/14
U.S. Cl. 266—13 4 Claims

Before the billets to be rolled down in a roll train reach the first roll stand they travel through a de-scaling device behind which the billets leaving the furnace run out freely. The billets are moved out of the furnace oppositely to the rolling direction and are conveyed crosswise on a rollway disposed in front of the de-scaling device and whose extension toward the first roll stand is located within the furnace chamber.





3,675,910
APPARATUS FOR PRODUCING METAL POWDERS
Alan Arias, Cleveland, Ohio, assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration
Division of Ser. No. 853,855, Aug. 28, 1969, Pat. No. 3,623,861. This application June 25, 1971, Ser. No. 156,778
Int. Cl. F27b 11/08
U.S. Cl. 266—24 6 Claims

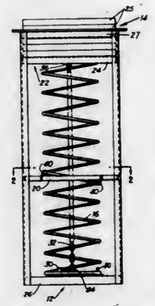


Producing metal powders of controlled particle size by reducing oxides with the vapor of a reactive metal in a vacuum.

3,675,911
ARRANGEMENT FOR DISCHARGING PREDETERMINED AMOUNTS OF MOLTEN METAL FROM A VESSEL
Walter Kapun, Wurzbachgasse, Austria, assignor to Wiener Schwachstromwerke Gesellschaft m.b.H., Wien, Austria
Filed Nov. 7, 1969, Ser. No. 874,817
Claims priority, application Austria, Nov. 11, 1968, A 10928/68
Int. Cl. C21b 7/14
U.S. Cl. 266—38 1 Claim

For discharging predetermined quantities of molten metal a gas tight vessel having a discharge conduit is arranged to hold the molten metal. The vessel is connected to a source of a pressurized gaseous medium so that the gaseous medium assists in the discharge of the molten metal. Sensing means are used to generate an output signal, which is representative of the velocity of flow of the molten metal from the vessel, and the signal is passed to an integrating mechanism attains a predetermined value corresponding to the predetermined quantity of molten metal to be discharged, the discharge flow from the vessel is discontinued.

3,675,912
ANTI-SPRING BUCKLING DEVICE
Joseph A. Des Jardins, Norwich, Conn., assignor to AMF Incorporated
Filed July 27, 1970, Ser. No. 58,410
Int. Cl. F16f 1/10
U.S. Cl. 267—166 1 Claim

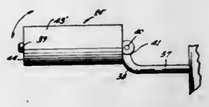


A combination which includes a housing having an inner wall, a helically coiled spring located within the housing and laterally spaced from the inner wall, apparatus connecting the spring to the housing so that the length of the spring changes in response to a change in loading on the spring, and apparatus which is movably connected to and extends tangentially of the spring for contacting the inner wall of the housing at radially spaced positions on the inner wall to maintain the lateral spacing between the spring and housing. Preferably, the apparatus which contacts the inner wall is a rectangularly-shaped member having four wall contacting portions.

3,675,913
PIVOTABLE MANDREL
Rubin Warsager, 483 Forest St., Kearny, N.J.
Filed March 27, 1970, Ser. No. 23,190
Int. Cl. B23q 1/04, 3/14; B25j 1/02
U.S. Cl. 269—51 3 Claims

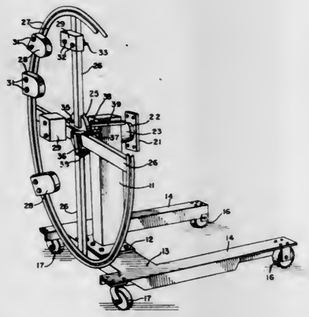
A hinged mandrel which pivots to allow a narrow-necked bottle to be placed thereon. The mandrel pivots to form a

straight-line portion where it is normally curved and the narrow-necked bottle is placed thereon. When the bottle is over



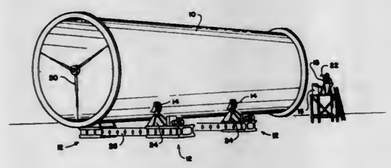
the mandrel, the bottle is returned to a horizontal position and the mandrel is conveniently positioned therein.

3,675,914
ENGINE STAND
Carl E. Douglass, c/o Douglass Products, Huntingdon, Pa.
Filed Oct. 29, 1969, Ser. No. 872,084
Int. Cl. B23q 1/04
U.S. Cl. 269—55 **4 Claims**



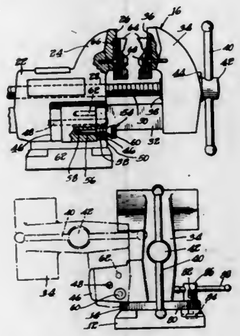
A stand upon which an engine may be mounted and rotated utilizing a wheel and spoke arrangement for turning by hand with movable weights on spokes and rim for counterbalancing the weight of the engine, and a locking pin through the hub assembly to hold the engine in the desired position.

3,675,915
HYDRAULIC POSITIONING SADDLE
Cebron T. Vigus, Chattanooga, Tenn., assignor to Combustion Engineering, Inc., Windsor, Conn.
Filed Dec. 19, 1969, Ser. No. 886,661
Int. Cl. B25j 5/00
U.S. Cl. 269—58 **10 Claims**



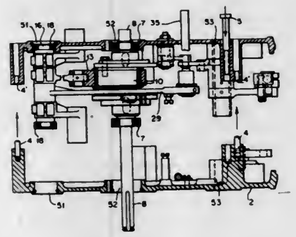
A work supporting and positioning apparatus is provided that includes four positioning saddle-jacks rectangularly disposed in a manner to horizontally mount a large diameter, heavy pressure vessel. The saddle-jacks are operated by linear fluid motors for adjusting their respective positions. Remotely actuated electric controls operate the fluid motors to enable a workman to single-handedly operate the saddle-jacks either singly or in combination to adjust the position of the pressure vessel with respect to a pre-determined point.

3,675,916
VISE ASSEMBLY
Raymond H. Kartasuk, Lincolnwood, and Walter Smierciak, Elgin, both of Ill., assignors to Wilton Corporation, Schiller Park, Ill.
Filed Sept. 21, 1970, Ser. No. 73,860
Int. Cl. B23q 1/06; B25b 1/02, 1/10
U.S. Cl. 269—69 **4 Claims**



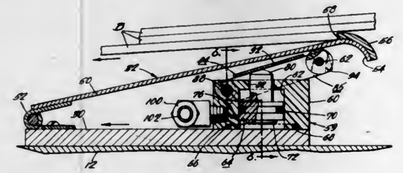
A vise is disclosed herein and generally comprises an object retaining assembly including confronting fixed and movable jaw members for clamping and holding a workpiece. The object retaining assembly is mounted to a sub-base for pivotal movement between a first vertical position and a second horizontal position. In addition, the sub-base is mounted to a fixed base for pivotal movement about an axis perpendicular to the aforementioned axis whereby partially to rotate the entire object retaining assembly.

3,675,917
SUCTION HEAD IN SHEET-FEED SYSTEMS
Arno Wirz, Schwetzingen, Germany, assignor to Heidelberger Druckmaschinen Aktiengesellschaft, Heidelberg, Germany
Filed July 24, 1970, Ser. No. 58,037
Claims priority, application Germany, July 26, 1969, P 19 38 041.7
Int. Cl. B65h 3/08
U.S. Cl. 271—26 **3 Claims**



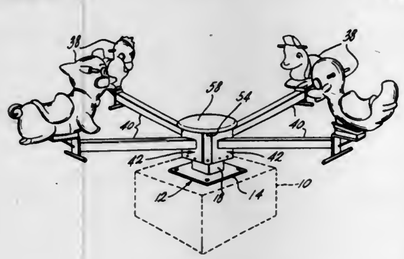
Sheet-feed system for sheet processing machines having a suction head for forming an overlapped sheet-feed which has separating suckers for raising sheets from a pile thereof that is automatically adjustable to a given level, the separating suckers cooperating with feeder suckers proper for transporting the sheets in a direction to further conveying means of the sheet feed system, includes a housing for the suction head formed of two housing halves having respective dividing surfaces, and a plurality of aligning pins, the housing halves being joinable and threadedly connectable to one another at the dividing surfaces thereof by the aligning pins, the housing halves serving to receive substantially all mountings for driven parts of the suction head and, in joined and threadedly connected condition thereof, being machinable to form all opposing bores therein in accurate alignment.

3,675,918
AIR CUSHIONED KICKER FEED BAR
Edward V. Henc, 302 Netherington Drive, Broomall, Pa., and Edmund F. X. Devlin, Manoa, Pa., assignors to said Henc, by said Devlin
Filed Feb. 16, 1970, Ser. No. 11,596
Int. Cl. B65h 5/16
U.S. Cl. 271—44 **11 Claims**



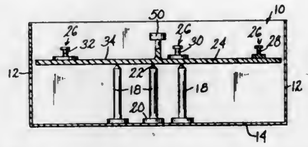
A feed bar assembly for apparatus for performing operations on sheet material including a feed station wherein a plurality of sheets are supported in a stack and means for reciprocating the feed bar to advance single sheets to a pair of feed rolls comprising an elongated bar and a plurality of feed fingers mounted along the length of said bar, each of said fingers including a pivotally mounted plate member and a feed clip mounted on said plate member having a pickup portion adapted to engage an edge of one sheet at the bottom of the stack to advance the same to the feed rolls and actuator means adapted to pivot said feed fingers upwardly to insure positive engagement of each of said feed fingers with the edge of one sheet.

3,675,919
RUBBER SPRING SUPPORTED PLAYGROUND APPARATUS
Ronald L. Ewers, Hilladale, Mich., assignor to Game Time, Inc., Litchfield, Mich.
Filed Sept. 21, 1970, Ser. No. 74,050
Int. Cl. A63g 17/00
U.S. Cl. 272—54 **5 Claims**



Playground apparatus including at least one occupant-supporting seat wherein the seat is connected to a stationary support member through a resilient elastomer member such that vertical and horizontal movement of the seat is permitted due to the resilient characteristic of the elastomer. In the disclosed form of the invention a plurality of seats are mounted upon elongated arms radially disposed to a support member, and the arms are rigidly connected to an annular collar circumscribing the support member wherein a plurality of elastomer elements are interposed between the support member and collar.

3,675,920
BALANCING GAME
John R. Gorman, 398 W. River Road, Orange, Conn.
Filed Nov. 5, 1969, Ser. No. 874,356
Int. Cl. A63f 3/00
U.S. Cl. 273—1 R **13 Claims**



A game played by two or more persons, wherein the object of the game is to place weights on a flat balanced board without tipping over the board. The flat board is preferably balanced on three support members which are positioned within a prescribed area in a container. The container has a bottom and four sides, so that the players are not able to view the positions of the support members.

3,675,921
BASKETBALL TRAINING DEVICE
Walter A. Meyers, Sr., Baltimore, Md., assignor to Sports Equipment, Inc., Towson, Md.
Filed June 22, 1970, Ser. No. 48,146
Int. Cl. A63b 69/00
U.S. Cl. 273—1.5 A **11 Claims**

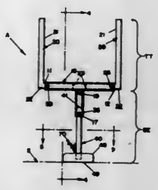


A representation of a basketball player is mounted for up and down movement to simulate jumping. A drive motor causes the representation to jump up and come down once, and a cycle of operation can be initiated at will by a person operating a remote control device or by a player shooting from a given position for a field goal. The representation is vertically adjustable to simulate players of different height and has pivoted arms that swing upwardly as the figure jumps upwardly. Either or both arms can be disconnected from the drive motor. Selectively operable controls permit continuous jumping movement.

3,675,922
PORTABLE GOALPOST

Donald B. Nisland, 127 N. Main St., Carroll, Iowa

Filed Sept. 8, 1970, Ser. No. 70,349
Int. Cl. A63b 67/00
U.S. Cl. 273—55 R 9 Claims



A readily disassemblable football goalpost assembly that is readily portable from one location to another in either the assembled or the disassembled forms thereof, the disassemblable structural features also providing for interim storage and for selective adjustments of the height above the ground and the distance between the upright legs of the goalpost target member appropriate to the operator's skill. The goalpost structure might also conveniently carry a kicking-tee that is extendable for a measurable distance forwardly from the target member.

3,675,923
GOLF PUTTER WITH THREE PRONG SHAFT ATTACHMENT

William J. Allen, and Michael D. Barber, both of Brunswick, Ga., assignors to Seaview Enterprises, Inc., Brunswick, Ga.

Filed April 29, 1970, Ser. No. 32,887
Int. Cl. A63b 53/02
U.S. Cl. 273—80.2 7 Claims



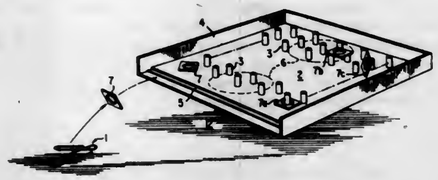
A golf putter having an elongated head with an upright striking face and with a sole plate extending rearwardly from the striking face forming a body portion which is substantially L-shaped in cross section. A handle supports the head by a plurality of prongs, one of which is located centrally of the length of the head, and additional prongs are located adjacent opposite end portions thereof. The shank of the handle extends in an oblique direction from the point of connection of the center prong with the head.

3,675,924
PROJECTION GAME APPARATUS INCLUDING PAPER CLIP PROJECTOR AND CLOSELY SPACED TARGET POSTS

Richard D. Smith, 913 N. Liberty St., Arlington, Va.

Filed April 29, 1970, Ser. No. 32,907
Int. Cl. A63b 71/04
U.S. Cl. 273—101 6 Claims

Game apparatus for projecting lightweight planar objects toward a plurality of spaced posts for individually ringing posts, leaning against one or several posts, or being suspended

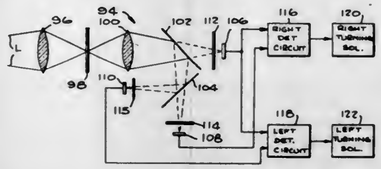


against gravity upon the plateau-like tops of two or more posts.

3,675,925
COLOR RESPONSIVE TOY

John W. Ryan, Los Angeles; John G. Tomkinson, Palos Verdes Peninsula, and Paul R. Wisman, Hawthorne, all of Calif., assignors to Mattel, Inc., Hawthorne, Calif.

Filed Feb. 8, 1971, Ser. No. 113,478
Int. Cl. A63f 9/02
U.S. Cl. 273—101.2 7 Claims

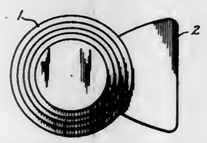


A toy which senses the color of a target area to select an appropriate output, one of such toys being a rifle which can be aimed at a target device to register whether a hit has been made. The rifle includes a lens which focuses light from the precise direction in which the rifle is aimed onto two identical photocells. A red filter is placed in front of a first of the cells while a neutral density filter is placed in front of a second cell, so that when the rifle is aimed at a red target the red-filtered cell generates a larger output than the other. A detecting circuit determines when the output from the red-filtered cell is greater than that from the other to ring a bell in the gun that indicates a hit. The detecting circuit is activated only at the instant when a child first depresses a trigger on the gun.

3,675,926
SHEET TARGET WITH ATTACHABLE STABILIZING WINGS

Kenneth W. Misevich, Fairfield, Conn., assignor to Remington Arms Company, Inc., Bridgeport, Conn.

Filed Oct. 16, 1970, Ser. No. 81,258
Int. Cl. F41j 9/16
U.S. Cl. 273—105.4 11 Claims



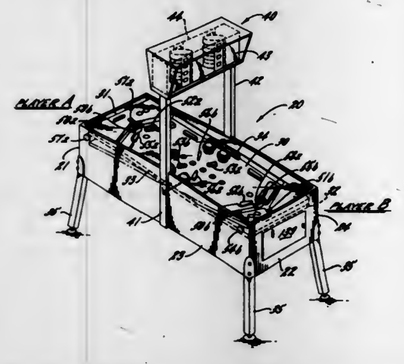
The new form of aerial target which is disclosed consists of a frangible body portion, which may conveniently be a standard

trap and skeet target, to which there has been attached a tail like appendage which controls the flight of the target when it is thrown without spin. The new target is capable of generally following a predictable trajectory with unexpected dives, climbs and even skips which more nearly simulate bird flight than the relatively straight trajectory of the usual clay target.

3,675,927
TWO-PLAYER PINBALL MACHINE

Alvin J. Gottlieb; Wayne E. Neyens, both of Elmhurst; Robert T. Smith, Berwyn, and Roman F. Gerbarb, Westchester, all of Ill., assignors to D. Gottlieb & Company, Chicago, Ill.

Filed June 10, 1970, Ser. No. 45,134
Int. Cl. A63d 3/02
U.S. Cl. 273—119 A 22 Claims



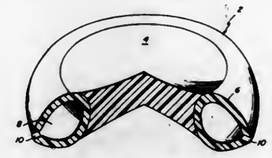
A two-player pinball machine intended for simultaneous play by a player at each end and in which the play field has means for tilting first in one direction and then in the other to place the players alternately in offensive and defensive roles, triggered by passage of the ball into the offensive player's out-hole. Scoring targets are provided on the play field with the prime goal being the goal at the opposite out-hole. Sets of flippers, controlled from the respectively opposite ends of the machine, are provided for the offensive player to drive the ball to the scoring targets and for concurrent use by the defensive player to thwart the offensive player, particularly by driving the ball through the out-hole of the latter, to achieve tilting of the play field so as to take over the offensive role. A single ball, which need not leave the surface of the play table, suffices for both players. A control arrangement is provided for the targets in which a portion of the targets are activated in a commutated sequence and in which the status of commutation is preserved, and the sequence is reversed, incident to reversal of the tilt of the table. A tilting mechanism is used which is disengageable for easy access to the underside of the table for servicing purposes. The accumulated score of each player is indicated by a single set of drums viewable through oppositely facing panels extending bridgingly over the center of the machine.

3,675,928
IMPACT SAFETY HOCKEY PUCK

Salvatore A. Gentile, 3 Eaton Avenue, Beverly, Mass.

Filed Sept. 9, 1970, Ser. No. 70,667
Int. Cl. A63b 71/00
U.S. Cl. 273—128 R 13 Claims

A hockey puck is disclosed for use on any indoor or outdoor hard surface. A collapsible and resilient sidewall structure defining a cavity and air relief means provides the hockey stick contacting portion as well as, impact shock absorbing means to protect other players or spectators. Such structure is joined by top and bottom walls means to provide durable wearing surface for all hard surfaces including ice, as well as, driveways, streets, sidewalks, playgrounds and the like. In addition to the official regulation dimension numerous other sizes, as well as, composite embodiments may be provided with desired sliding, visibility and roll-preventing capabilities,



in addition to the impact safety features. A range of plastic materials provide the cavity-defining wall of a selected specific gravity and elasticity characteristic which is lower and softer than the central body portion. Further embodiments employ a hard rubber material body member having a cavity adjacent the contact sidewall means as well as the air relief means.

3,675,929
GOLF TEE

Michael J. Guarino, Sr., Mountainside, N.J., assignor to Thomas La Marca, Jr., a part interest

Filed March 22, 1971, Ser. No. 126,579
Int. Cl. A63b 69/36
U.S. Cl. 273—183 A 14 Claims



A golf tee is provided with a streamer to facilitate locating the tee and to point out the desired line of flight of the ball. The tee engaging end of the streamer may be integrally secured to the tee or detachably secured thereto. In either case, a slot is provided in the streamer adjacent the tee engaging end thereof. The streamer is adapted to be folded under the tee in a manner such that the tee stem passes through the slot with the forward end of the slot adjacent or engaging the front surface of the tee stem.

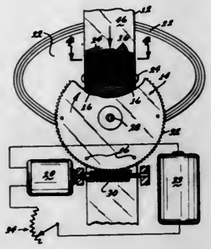
3,675,930
STRIP RECORD FOR A PHONOGRAPH

William F. Summerfield, Huntington Beach, Calif., assignor to Mattel, Inc., Hawthorne, Calif.

Filed Sept. 2, 1970, Ser. No. 68,876
Int. Cl. G11b 3/00
U.S. Cl. 274—11 R 6 Claims

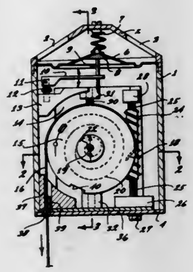
A toy phonograph with an elongated strip record having numerous slightly curved grooves extending across its width, and a head having several styluses arranged in a circle, the head rotating so that the styluses engage successive grooves to play

them and to slowly advance the record along its length. An acoustical speaker cone contacts a side of the strip record op-



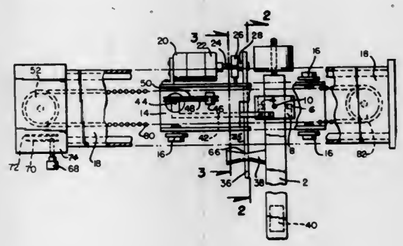
posite the styluses, so that vibrations of the tape directly drive the speaker cone.

3,675,931
SOUND REPRODUCING APPARATUS
Edmund Schlosser, Berlin, Germany, assignor to Mattel Inc., Hawthorne, Calif.
Filed May 17, 1968, Ser. No. 730,034
Int. Cl. G11b 25/06
U.S. Cl. 274—11 R **4 Claims**



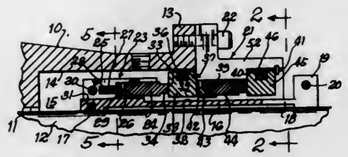
A sound reproducing apparatus, particularly for use in toys, utilizing in the specific embodiment shown a tape adapted for use as a sound track carrier. The tape is, in the housing of the sound reproducing apparatus, stored on a reel around which it is normally wound. The reel is coupled to a rotational velocity regulator and, in addition to its rotary movement in winding and unwinding the tape, the reel is also relatively movable in a translational sense with respect to the regulator so as to move the reel and the tape thereon towards or away from a sound pickup device. In operation the tape is first pulled from the reel, which pulling energizes a spring restraint attached to the reel. When the already pulled tape is released the tape is retracted onto the reel. During such retraction the reel moves against the sound pickup device and the tape is thereby "played," i.e., its sound reproduced, during the retraction of the tape. The operation of the regulator both controls the rotational velocity of the reel and also produces forces which move the reel against the sound pickup device. When the retraction cycle is completed the reel returns to its normal position in which the tape is disengaged from the sound pickup device.

3,675,932
ELECTRICAL LOWERING AND LIFTING MECHANISM FOR PHONOGRAPH TONE ARMS
Jacob Rabinow, Bethesda, Md., assignor to Max L. Libman, Reston, Va., a part interest
Filed March 16, 1970, Ser. No. 19,639
Int. Cl. G11b 3/10
U.S. Cl. 274—23 A **7 Claims**



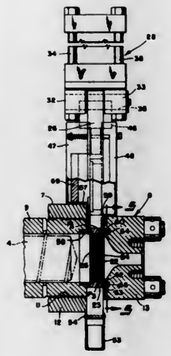
A unidirectional electric motor is used to lift and lower a phonograph arm by means of an eccentric or a cam mounted on a suitable gear train. The eccentric can stop in one of two positions corresponding to the upper and lower positions of the arm. This stopping is controlled by a switch controlled by the same shaft on which the eccentric is mounted. The switch that opens the circuit of the motor can be over-ridden either by the automatic trip switch of the arm or by a manual push-button. Thus, the initiation of the arm lift cycle can be achieved either automatically or manually while the lowering cycle can be initiated manually.

3,675,933
SEAL WITH INSTALLED SPACE PARTS
William D. Nappe, Broomall, Pa., assignor to Crane Packing Company, Morton Grove, Ill.
Filed Sept. 3, 1970, Ser. No. 69,352
Int. Cl. F16k 15/16
U.S. Cl. 277—9 **4 Claims**



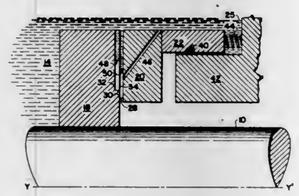
To avoid the necessity of disassembling a drive for a pump to replace worn or defective parts of an end face shaft seal, provision is made for assembling around the shaft replacement parts for the seal at the time the original installation of the shaft seal is made. The subsequently worn or defective parts of the seal are destroyed and removed and the stored replacement parts are moved axially into place in he seal. The gland plate is split and removable to allow the replacement parts to pass through the gland plate to the seal. Worn parts which cannot be destroyed are moved to an annular storage space in housing provided for this purpose.

3,675,934
SCREEN CHANGER MOUNTING
Eugene E. Heston, 548 Parkside Drive, Akron, Ohio
Filed June 1, 1970, Ser. No. 41,800
Int. Cl. B29f 3/01; B76d 1/00; F16j 9/00
U.S. Cl. 277—12 **2 Claims**



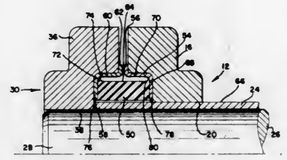
A sealing arrangement between a screen changer strainer and a clamping body in which an annular rib on a sealing plate abutting the strainer fits in an annular groove in the clamping body and a hydraulically displaceable material is confined in the space between the end face of the rib and the bottom of the groove. As the clamping body is pressed against the strainer and undergoes distortion creating areas of high and low pressure around the rim, the material in the groove is displaceable circumferentially of the groove to distribute the forces evenly around the face of the rib abutting the strainer and thereby provide a tight seal and an even distribution of forces on the strainer.

3,675,935
SPIRAL GROOVE SEAL
Lawrence P. Ludwig, Fairview Park, and Thomas N. Strom, North Olmsted, both of Ohio, assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration
Continuation-in-part of Ser. No. 723,465, April 23, 1968, abandoned. This application July 13, 1970, Ser. No. 54,540
Int. Cl. F16j 15/34
U.S. Cl. 277—27 **6 Claims**



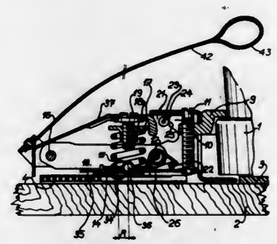
Mating flat surfaces inhibit leakage of a fluid around a stationary shaft. A spiral groove pattern produces a pumping action toward the fluid when the shaft rotates which prevents leakage while a generated hydraulic lifting forces separates the mating surfaces to minimize wear.

3,675,936
TRACK PIN SEAL
Seymour A. Hatch, Maywood, Ill., assignor to Chicago Rawhide Manufacturing Company, Chicago, Ill.
Division of Ser. No. 713,077, March 14, 1968, Pat. No. 3,574,419. This application Feb. 19, 1970, Ser. No. 12,803
Int. Cl. F16j 15/16
U.S. Cl. 277—94 **9 Claims**



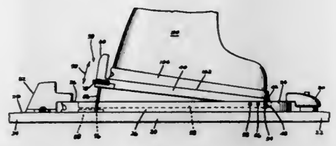
A protective seal unit for retaining grease in, and excluding abrasive particles from a track pin connecting two or more links, which, when connected together, form an endless crawler track for a track laying vehicle. The seal includes first and second collar members, each having radially and axially extending flanges and an elastromeric torsional deflection sealing element extending between the two radially extending flanges, connecting the two collars, and being spaced apart from the axially extending portions of the collars. Each collar is held in fixed relation relative to the link member with which it is associated, and the links are oscillated in relation to each other when the track moves over a drive sprocket or an idler.

3,675,937
SAFETY BINDINGS FOR SKIS
Nicolar Laszlo, Cluses, France, assignor to Ets. Carpano & Pons, Cluses, France
Filed July 21, 1970, Ser. No. 56,960
Claims priority, application France, July 25, 1969, 6925544; Nov. 25, 1969, 6940539
Int. Cl. A63c 9/00
U.S. Cl. 280—11.35 T **10 Claims**



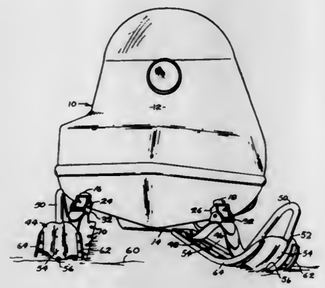
A heel clip for releasably attaching a heel of a ski boot to a ski includes a framework pivotally mounted on the ski. A first member is pivotally connected to the framework for movement between first and second positions. In the first position, a second member pivotally connected to the first member engages a stop member and a clamp connected to the second member firmly engages the heel of a ski boot. When the heel exerts a sudden force sufficient to overcome a spring biasing the first member in the first position, the first member moves to the second position whereupon a groove in the second member receives therein the stop member thereby permitting the second member to pivot relative to the first member. This pivotal movement causes the clamp to release the heel of the ski boot.

3,675,938
SKI WITH INCLINED BOOT PLATFORM
Jon D. Sigl, P.O. Box 22, Fort Wayne, Ind.
Filed July 22, 1970, Ser. No. 57,109
Int. Cl. A63c 9/00
U.S. Cl. 280—11.35 C 9 Claims



A snow ski having an upwardly and rearwardly inclined boot mounting platform. The platform is preferably mounted on the ski for selective adjustment of its angle of inclination thereby providing varying degrees of forward lean for the skier, and also for selective longitudinal adjustment of its position along the length of the ski.

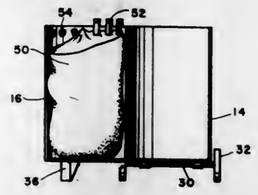
3,675,939
SNOWMOBILE SKI AND BLADE CONSTRUCTION
Albam M. Vik, New Brighton, Minn., assignor to Dempco, Inc., Minneapolis, Minn.
Filed March 2, 1970, Ser. No. 15,603
Int. Cl. B62m 27/02
U.S. Cl. 280—28 3 Claims



A blade for a snowmobile ski which consists of a narrow vertically disposed blade body adapted to be mounted on the longitudinal edge of a snowmobile ski in a position to depend downwardly. The forward portion of the blade curves upwardly to conform to the front of the ski. The blade is preferably provided with an integral horizontal web that is bolted or welded to the edge of the ski and lies in a abutting face to face relationship with the ski.

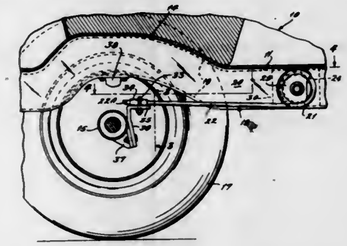
3,675,940
MOBILE TRASH CART
James R. Crookston, 3566 Oak Road, Stow, Ohio
Filed April 30, 1970, Ser. No. 33,257
Int. Cl. B62b 1/16
U.S. Cl. 280—47.26 2 Claims

A mobile trash cart is provided including a two-part container having each part extending the height of the container, hinge means secure the parts together for pivotal movement therebetween, lock means on opposite edges of the container



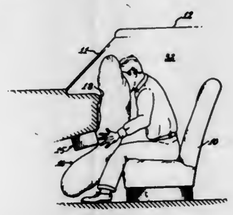
to secure such parts together, and a cart means engages one of the container parts for ready transportation of the container.

3,675,941
VEHICLE STABILITY CONTROL DEVICE
William A. Scheublein, Jr., Ballwin, and Louis P. Fister, St. Louis, both of Mo., assignors to Moog Industries, Inc., St. Louis, Mo.
Filed June 29, 1970, Ser. No. 50,518
Int. Cl. B60g 11/14
U.S. Cl. 280—124 R 7 Claims



A resilient control device for stabilizing the road and load response of a vehicle as well as being useful as the main suspension means for certain vehicles. The device has the characteristics of resisting movement in opposite directions from an initial relationship of the sprung and unsprung components of a vehicle, as well as imposing a desired rate of load carrying capacity.

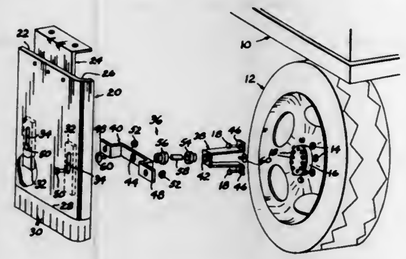
3,675,942
COLLISION SURVIVAL SYSTEM
John F. Huber, Litchfield Park, Ariz., assignor to Unidynamics/Phoenix, Inc.
Filed Aug. 31, 1970, Ser. No. 68,353
Int. Cl. B60r 21/06
U.S. Cl. 280—150 AB 2 Claims



A restraining device is described incorporating an inflatable bag positioned in a vehicle to restrain persons in a vehicle and

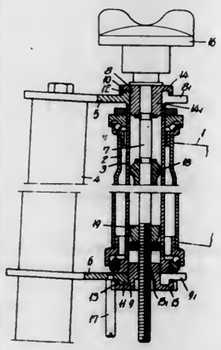
prevent them from colliding with objects when the vehicle is subjected to collision accelerations. The bag incorporates passageways therein which are connected to a gas source; the gas source, when actuated, inflates the passageways, thus extending the bag and drawing air into the bag from the atmosphere within the vehicle. A unidirectional valve permits the air to enter the bag, but prevents its escape in the event the pressure within the bag exceeds that of the atmosphere within the vehicle, such as by the impact of a person with the bag.

3,675,943
SPLASH GUARD FOR TRUCKS
Peter N. Moore, and Leo F. Pierce, both of 117 S.W. 23, Oklahoma City, Okla.
Filed Sept. 18, 1970, Ser. No. 73,525
Int. Cl. B62d 25/16
U.S. Cl. 280—154.5 R 2 Claims



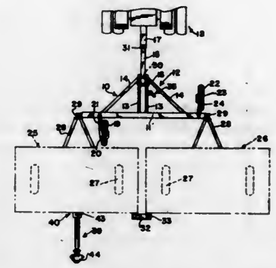
A bracket secured to the lateral side of a truck bed or frame vertically supports a mud flap laterally of the truck wheel position. Bracket means extending between the wheel hub and the mud flap maintains it in parallel spaced relation with respect to the plane of the lateral side of the truck wheel.

3,675,944
APPARATUS FOR ATTACHING A FRONT-WHEEL FORK TO A HEAD PIPE IN A TWO-WHEELED VEHICLE OR THE LIKE
Yozaburo Kobayashi, Tokyo, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 16, 1969, Ser. No. 885,531
Claims priority, application Japan, Dec. 16, 1968, 43/109803
Int. Cl. B62k 15/00
U.S. Cl. 280—278 9 Claims



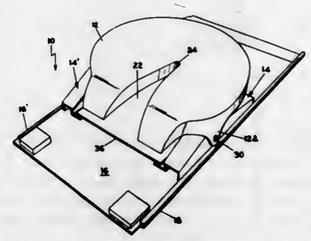
A front-wheel fork of a two-wheel vehicle carries upper and lower bridge members adapted for detachably engaging opposite ends of a core end projecting from a head pipe. The bridge members have central openings with lateral grooves in which the ends of the rod can be introduced and removed, and selectively locked by means of positioning members on the rod which engage in the central openings and interlock with the bridge members.

3,675,945
DUPLEX IMPLEMENT HITCH
Raymond G. Fischer, Hinsdale, Ill., assignor to International Harvester Company, Chicago, Ill.
Filed Oct. 16, 1970, Ser. No. 81,237
Int. Cl. B60d 1/00
U.S. Cl. 280—411 C 2 Claims



A pair of side by side tractor propelled implement units are connected to a duplex hitch for operation over a broad area and are shiftable to tandem positions with the duplex hitch disposed therebetween for transporting the implement by propelling force of the tractor connected to one of the implement units.

3,675,946
IMPACT FIFTH WHEEL
Miklos B. Korodi, New York, N.Y., and Clarence R. Runyan, Holland, Mich., assignors to Holland Hitch Company, Holland, Mich.
Filed March 2, 1971, Ser. No. 120,089
Int. Cl. B62d 53/00
U.S. Cl. 280—440 5 Claims

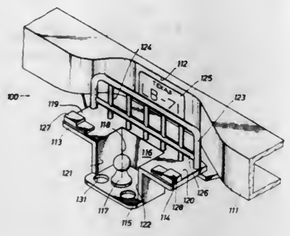


A fifth wheel assembly for trucks wherein the fifth wheel is pivotally supported on a pair of laterally spaced mounts, each having an enclosure with an open bottom and sloping front and rear surfaces, a laminated insert of bonded alternate viscoelastic layers and metal layers in each enclosure, having a stepped construction, with connection means at the bottom of each insert, and connection means at the top of each insert attached to the enclosure.

3,675,947
COUPLER-ALIGNING TRAILER HITCH

Leon Blagg, Flying X Ranch, P.O. Drawer H, Bertram, Tex.

Filed Feb. 16, 1971, Ser. No. 115,374
Int. Cl. B60d 1/06
U.S. Cl. 280—500 14 Claims

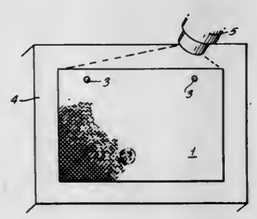


In the representative embodiments of the new and improved trailer hitches disclosed herein, a base is secured to the rear of a towing vehicle for carrying an upright coupler ball aligned along a generally-vertical axis. Members are arranged above the base for providing upwardly-facing coupler-supporting surfaces extending outwardly from each side of the coupler ball as well as a rearwardly-facing upright coupler-positioning surface spaced ahead of the vertical axis and inwardly-facing opposed guide surfaces respectively spaced on opposite sides of the vertical axis for cooperatively guiding a trailer coupler downwardly onto the coupler ball after the coupler has been slid across either of the supporting surfaces.

3,675,948
PRINTING METHOD AND ARTICLE FOR HIDING HALFTONE IMAGES

Ralph C. Wicker, Fairport, N.Y., assignor to American Bank Note Company, New York, N.Y.

Filed Sept. 10, 1969, Ser. No. 856,663
Int. Cl. B41m 3/14; B42d 15/00
U.S. Cl. 283—6 13 Claims



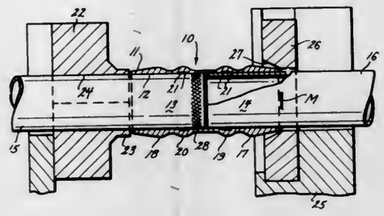
A method of halftone printing is disclosed which permits an image to be disguised or hidden in a printed field from detection by ordinary photography or the eye of a viewer and an apparatus is presented which can be used to bring out or detect the hidden image. The printed field comprises three halftone components: an overall halftone at a given angle; a second halftone at a different angle and containing a negative of the image; and the image itself in halftone at a third angle and coincident with the negative portion of the second halftone. When each of the halftones is made up of dot figures of similar size, period and tone, the field will give a uniform appearance to the eye, obscuring the image and resisting photographic analysis except by impractical magnification.

An apparatus in the form of a screen made up of a periodic pattern of similar frequency to that of the halftone screen of the printed field and arranged at the proper angle to the printed field, will reveal the hidden image at a different brightness than the background. By moving the properly arranged screen in an appropriate manner relative to the printed field, the hidden image will appear as a blinking image. If the method and apparatus are used in printing and checking security documents, additional printing techniques are disclosed for preventing counterfeiting of the documents such as black overprinting, slight variations in the print angle from the conventional angles and the use of unique and complicated dot figures and images.

3,675,949
COUPLING FITTING FOR CONNECTING TWO PIPES

James A. Dawson, Hazelwood, Mo., assignor to McDonnell Douglas Corporation, St. Louis, Mo.

Division of Ser. No. 739,528, June 24, 1968, Pat. No. 3,572,779. This application May 18, 1970, Ser. No. 38,355. The portion of the term of this patent subsequent to March 30, 1988, has been disclaimed.
Int. Cl. F16l 19/02
U.S. Cl. 285—354 6 Claims

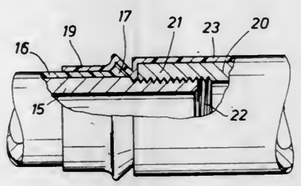


A coupling for fluid conduits in which each end portion of two tubes to be connected is provided with a swaged-on adapter carrying the necessary means to connect or disconnect the tubes without disturbing the swaged-on adapter.

3,675,950
ARTICLES OF MANUFACTURE INCLUDING CYLINDRICAL MEMBERS HAVING SPECIALLY-TERMINATED PROTECTIVE COATINGS

Calvin D. Beene, Houston, Tex., assignor to Schlumberger Technology Corporation, New York, N.Y.

Division of Ser. No. 691,522, Dec. 18, 1967, Pat. No. 3,535,136. This application Nov. 21, 1969, Ser. No. 878,722
Int. Cl. F16l 11/12
U.S. Cl. 285—45 4 Claims

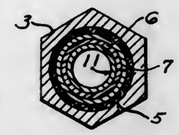


The particular embodiment described herein as illustrative of the present invention relates to articles of manufacture having particular portions that are selectively coated. More particularly, the present invention as disclosed herein is directed to articles of manufacture having selected cylindrical surfaces which are masked and, after being heated, are fusion coated by application thereto of pulverulent particles of a fusible thermoplastic or thermosetting coating material. After the article has been coated and the coating has at least firmed, the mask is removed in such a manner as to leave a well-defined marginal termination of the coating, with this termination being raised in relation to the surface of the adjacent portions of the coating to provide sealing engagement within a pliable complementary sleeve extending from other associated coated articles

3,675,951
COUPLER FOR REINFORCED HOSE

Louis F. Morin, Springfield, Mass., assignor to Everflex Products, Inc., Ludlow Hampden, Mass.

Filed Jan. 4, 1971, Ser. No. 103,720
Int. Cl. F16l 39/02, 33/22
U.S. Cl. 285—39 2 Claims

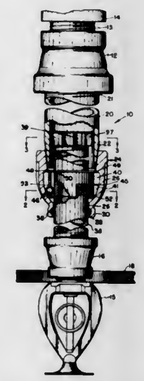


This invention is concerned with a device for coupling the end of a hose assembly of the type having an inner liner with an outer shield. The coupler is substantially cylindrical. It has threads at one end adapted to engage to a source such as a tank, etc. There is a hex shaped body portion to facilitate turning. An outer coupler fits over the shield of the hose and locks same to the surfaces on the main body portion. There is on the main body portion a cylindrical member or nipple portion of reduced diameter that fits within the inner liner of the hose. A ring circumscribes the inner liner and locks same about the outer surface of the cylindrical member. The outer coupler is threaded onto the main body portion near the hex surface creating friction pressure sealing engagement of the inner liner between the ring and nipple portion and a clamping engagement of the outer shield of the hose assembly between the ring and coupler.

3,675,952
ADJUSTABLE DROP NIPPLE FOR PENDENT SPRINKLER

James W. Mears, Warwick, R.I., assignor to Grinnell Corporation, Providence, R.I.

Filed July 24, 1970, Ser. No. 57,915
Int. Cl. F16l 15/02
U.S. Cl. 285—302 21 Claims

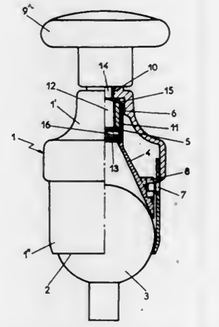


An adjustable drop nipple is disclosed for connecting a pendent sprinkler to a sprinkler system. The nipple includes outer and inner telescoped pipes with a gripping means therebetween which permits an adjustment of the telescoped relation of the pipes for a desired position of the pendent sprinkler below a drop ceiling. The gripping means includes rollers which are positioned in an annular cavity having a downwardly reducing cross-sectional area and which have spiral threads on their outer cylindrical surfaces. When the nipple is installed in its pendent position, the rollers restrain downward movement of the inner pipe, that is a lengthening of the nipple, by a jamming action of the rollers in the reduced cross-sectional area portion of the annular cavity; but the spiral threads on the rollers permit spiral downward movement of the inner pipe for a lengthening of the nipple. The rollers ride upwardly in the cavity to release their grip and thereby permit a shortening of the nipple toward a more telescoped position responsive to an upward force on the inner pipe.

3,675,953
BALL JOINT

Albert Glatz, Teuchelwiesstrasse 13, Frauenfeld, Switzerland

Filed Oct. 5, 1970, Ser. No. 78,034
Claims priority, application Switzerland, Oct. 6, 1969, 15027/69
Int. Cl. F16c 11/06
U.S. Cl. 287—12 10 Claims



A ball member is turnably accommodated in a socket and a pressure-exerting element is threaded into the socket and can be turned in a sense advancing its leading end towards the surface of the ball member. A deformable insert member is located between the ball member and the leading end of the pressure-exerting member and the surface area of contact between it and the leading end of the pressure-exerting member is smaller than the surface area of contact between it and the ball member whereby forces exerted upon the pressure-transmitting member by the pressure-exerting member are amplified when they are transmitted to the ball member.

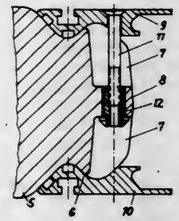
3,675,954
STRUCTURAL ASSEMBLY

Gustav Konig, 7026 Bonlanden, Bonlanden Stuttgart, Germany

Filed Jan. 22, 1971, Ser. No. 108,780
Claims priority, application Germany, Jan. 23, 1970, P 20 03 011.9
Int. Cl. F16b 5/06
U.S. Cl. 287—20.92 W 14 Claims

A platelike element comprises at least one undulated edge portion, which is undulated on opposite sides. At least one pair of undulated connecting members are provided, which are complementary to and mate with said undulated edge portion on opposite sides thereof. Threaded fastening means are

connected to said undulated connecting members and to said platelike element adjacent to said undulated edge portion to

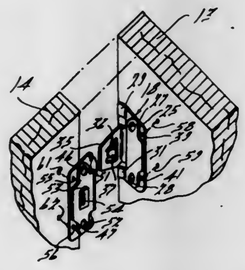


hold said undulated connecting members mated with said undulated edge portion.

3,675,955
CABINET BRACKET

Frank R. Hajduk, Lincoln Park, Mich., assignor to Regis Manufacturing Company

Filed March 23, 1970, Ser. No. 21,731
Int. Cl. G09f 7/00
U.S. Cl. 287—20.927 5 Claims

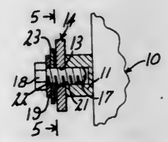


A cabinet assembly of the knockdown type embodying male and female brackets mounted contiguous to peripheral edges of members for affixing the members together in a snap together manner. A method and structure for locating the brackets relative to the respective members in preselected locations is employed. Additionally, the brackets embody improved resilient fingers for holding the brackets and members in an interlocked condition.

3,675,956
CONNECTOR BETWEEN TRANSMISSION ACTUATING SHAFT AND ARM THEREFOR

Dalton A. Thomas, Route One, Box 97, Alpine, Ala.

Filed April 19, 1971, Ser. No. 135,101
Int. Cl. F16d 1/06
U.S. Cl. 287—53 R 3 Claims

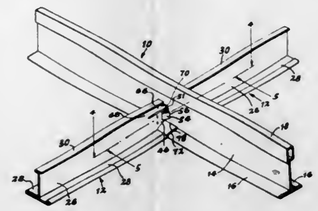


A connector for transmission actuating shaft and an arm having an elongated opening receiving projecting end of shaft with one side of opening tapered inwardly. A washer carrying an inwardly tapered wedge is interposed between the arm and a retainer member with the wedge between and engaging the inwardly tapered side of opening and the projecting end of shaft.

3,675,957
LOCKING CONNECTION FOR SUPPORTING GRID SYSTEMS

Robert Paul Licklider; Earl Abbott, both of Hamburg, and John F. Reeves, Tonawanda, all of N.Y., assignors to Flangeklamp Corporation, Buffalo, N.Y.

Continuation-in-part of Ser. No. 806,977, March 13, 1969, Pat. No. 3,584,904. This application March 10, 1970, Ser. No. 18,071
Int. Cl. E16b 21/08; E04b 1/38
U.S. Cl. 287—189.36 A 9 Claims

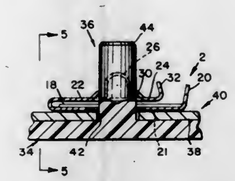


A first support member having a web with a slot therein and a second support member having a web upstanding from a pair of laterally extending support flanges and a locking connector formed integral with the web and extending axially therefrom for insertion in the slot. The connector has a locking tab engageable behind one side of the first support member web. The second support member has an offset end portion forming a continuation of the support flanges and adapted to overlie the first support member support flanges. The offset portion is provided with a transverse edge engageable with the other side of the first support member web to provide a rigid connection between the first and second support members. The offset portion has a thickness less than one-half the thickness of the support flanges with which it is integrally formed.

3,675,958
SHEET METAL PANEL FASTENER

William B. Duffy, Berkeley Heights, N.J., assignor to TRW Inc., Cleveland, Ohio

Filed June 17, 1970, Ser. No. 46,940
Int. Cl. F16b 17/00, 37/02
U.S. Cl. 287—189.36 D 8 Claims



A unitary, spring metal fastener has inner and outer arms connected by a resilient, reversely bent bight. Both of the arms have through openings formed therein. The arms are normally disposed in divergent untensioned relationship to each other. The outer arm includes two sections connected by resilient webs having an inverted U-shaped configuration. The opening in the outer arm is at least partially defined by a pair of stud

gripping tongues struck upwardly from the adjacent ends of the arm sections substantially between the connecting webs. The fastener is particularly adapted for clamping an apertured member to a support having a stud projecting from the surface thereof confronting the member and through the aperture in the member by compressing the arms toward a substantially parallel relationship with each other to bring the openings therein into registering alignment and forcing the arms downwardly over the stud so that the aforementioned tongues grippingly engage the stud and, upon removal of the compressing force, exert an axial pull on the stud thereby tensioning the apertured member against the support. The fastener also includes means which are easily operable to release the tongues from gripping engagement with the stud for removal of the fastener.

3,675,959
DOOR HOLDER

John A. Hansen, Lake Forest, and Robert E. Doerfield, Lindenhurst, both of Ill., assignors to A. L. Hansen Mfg. Co., Gurnee, Ill.

Continuation-in-part of Ser. No. 6,808, Jan. 29, 1970, abandoned. This application June 17, 1970, Ser. No. 46,986
Int. Cl. E05c 19/02
U.S. Cl. 292—70 6 Claims

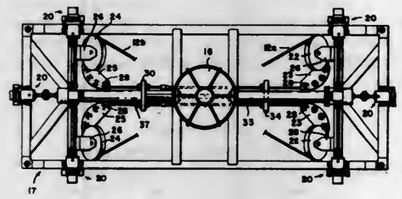


A door holder including a receptacle unit adapted to be mounted on a wall and having a plastic body member with an outwardly opening central axial cavity, and a plunger unit adapted to be mounted on a door and having an elongated shank with an outer end releasably interengageable in the cavity of the body member.

3,675,960
SELF LEVELING SPREADER FRAME

Edward J. Mangold, Burlington, Wash., assignor to Skagit Corporation, Sedro-Woolley, Wash.

Filed April 1, 1970, Ser. No. 24,701
Int. Cl. B66c 1/10
U.S. Cl. 294—81 SF 5 Claims

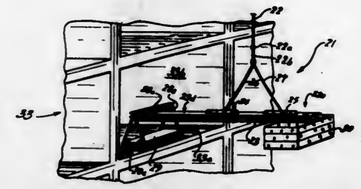


A sling assembly of four cables which are mounted in rectangular array about four pivot sheaves supports a spreader frame for use in fastening to containers or other loads to be hoisted. A set of two of the cables at one longitudinal end of the spreader frame are secured to a piston rod of a first hydraulic cylinder. The set of two remaining cables at the other longitudinal end of the spreader frame are secured to the piston rod of a second hydraulic cylinder. A hydraulic control circuit connects the cylinders with a source of pressurized fluid and interconnects the rod side and rear side of each respective cylinder. The spreader frame is leveled by opening a valve to release fluid from the rear side of the cylinder which has its piston rod secured to the cables supporting the high side of the spreader frame so that the weight of the container will retract the piston rod allowing the container to be leveled.

3,675,961
HORIZONTAL LOAD POSITIONER

Charles B. Wheeler, Box 140, Route 5, Lee's Summit, Mo.

Continuation-in-part of Ser. No. 856,733, Sept. 10, 1969, abandoned. This application June 24, 1970, Ser. No. 49,290
Int. Cl. B66c 1/10
U.S. Cl. 294—67 R 5 Claims

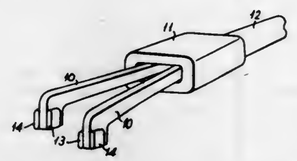


A beam connectable intermediate the ends thereof to a hoist line by spreader cables. One end of the beam adapted for carrying a load and the opposite end of the beam having a plurality of removable counterweights connected thereto for balancing the load to maintain the beam in a horizontal position. In the first form of the invention, the counterweights are fixed with respect to the beam. In the second form of the invention, the counterweights are mounted on a tilt responsive carriage which automatically moves to vary the distance between the counterweights and the fulcrum of the beam to maintain the beam in a horizontal position regardless of the weight of the load.

3,675,962
GRIPPING

David Cumming Simpson, Edinburgh, Scotland, assignor to National Research Development Corporation, London, England

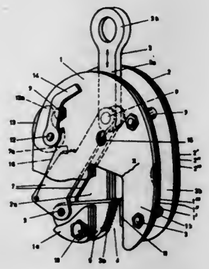
Filed June 4, 1970, Ser. No. 43,539
Claims priority, application Great Britain, June 13, 1969, 30,169/69
Int. Cl. A61f 1/06
U.S. Cl. 294—99 R 3 Claims



Use of an object-engaging device in the form of a deformable non-stretch container enclosing a sealed volume of fluent granular material is proposed for at least one of a plurality of force applying members in a gripping apparatus. The con-

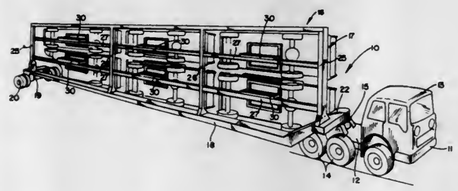
tainer is preferably of a double-walled construction with two flexible walls of which one is elastic, and the inner part is preferably sub-divided. Incorporation of a pressure transducer to indicate applied force conveniently involves the use of electrically conductive granular material to act as a variable resistor.

3,675,963
HOISTING GRAB
Adrianus G. Stijger, Haarlem, Netherlands, assignor to Interlas N.V., Soesterberg, Amersfoortsestraat, Netherlands
Filed Feb. 17, 1971, Ser. No. 116,100
Int. Cl. B66c 1/48
U.S. Cl. 294—104 **1 Claim**



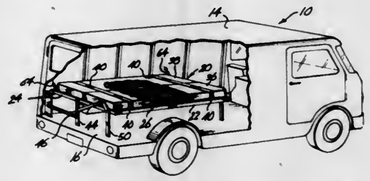
A hoisting grab of which the grab housing, provided with a hoisting eye, comprises at least two spaced webs between which one gripping cam is pivotally mounted, the webs having aligned recesses situated in the path of said gripping cam, adapted to receive an edge portion of an article to be hoisted, wherein the webs are each composed of two or more separate layers of sheet metal.

3,675,964
HIGHWAY TRAILER VEHICLE WITH OFFSET TRUSS STRUCTURE
William L. Pringle, Grosse Pointe Shores, Mich., assignor to Pullman Incorporated, Chicago, Ill.
Filed Aug. 21, 1970, Ser. No. 65,833
Int. Cl. B60p 3/06
U.S. Cl. 296—1 A **3 Claims**



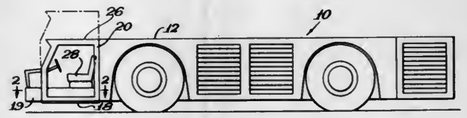
A trailer for connection to a highway tractor comprises a truss structure including relatively narrow, vertical and longitudinally extending beams which are supported on opposite ends of such truss structure on transversely extending stabilizing members. The rear stabilizing member is supported on a suitable wheel and axle assembly and the forward portion of the truss structure is supported on a stabilizing member which includes a downwardly projecting kingpin connected to the fifth wheel of a highway tractor in conventional fashion. The truss structure is the primary structural member extending between the stabilizing members and is offset laterally with respect to the kingpin and longitudinal axis of the tractor to provide an offset space extending the full length of the truss structure within which vehicles or other cargo are suspended by attachment to the beams of the truss structure.

3,675,965
FOLDING BED ASSEMBLY FOR A VEHICLE
Roy Burdett, 3818 E. Fourth Street, Long Beach, Calif.
Filed July 13, 1970, Ser. No. 54,327
Int. Cl. B60p 3/36
U.S. Cl. 296—23 **3 Claims**



A bed assembly for a vehicle having an upright sidewall. The assembly includes a pair of rectangular frames hinged together along a pair of adjacent side edges. One frame is hinged to the sidewall of the vehicle for swinging between an open horizontal position, and a stored position adjacent the wall. The other frame is swingable between a stored position folded back against the bottom side of the one frame and an open horizontal position. Legs pivotally connected to the frames support them above the floor of the vehicle. Linking arms connected to the legs swing them to positions normal to the frames on swinging of the frames to their horizontal positions.

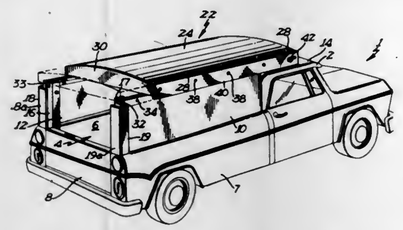
3,675,966
ELEVATING COMPARTMENT
Robert G. Luft, Wildwood, Ill., assignor to International Harvester Company, Chicago, Ill.
Filed July 7, 1970, Ser. No. 52,877
Int. Cl. B62d 33/06
U.S. Cl. 296—28 C **7 Claims**



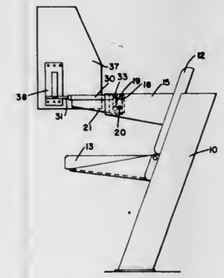
An elevating compartment having a piston rod connected at each end with the vehicle frame. A single acting cylinder reciprocably mounted upon the piston rod and secured to the compartment so that raising and lowering of the cylinder relative to the rod will affect raising and lowering of the compartment. A guide means is provided on the vehicle frame and engageable by guide rollers on the compartment to maintain the compartment in its intended position relative to the vehicle frame.

3,675,967
TRUCK WITH SLIDING ROOF
William J. Ahrens, Route 3, Sauk Center, Minn.
Filed July 27, 1970, Ser. No. 58,432
Int. Cl. B60j 7/02
U.S. Cl. 296—137 B **2 Claims**

A truck having a cargo carrying compartment behind a cab is provided with a covering roof slidably supported over the cargo compartment on side panels of such a height as to permit the roof to be shifted forwardly over the cab to expose substantially the entire interior of the cargo compartment. Interlocking, J-shaped guide rails on the roof and cargo compartment side panels prevent vertical or lateral movement of the roof with respect to the side panels.



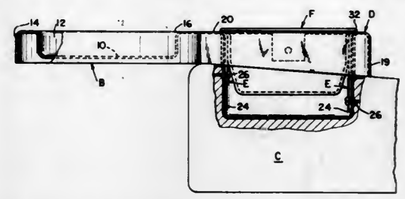
3,675,968
TABLET ARM ASSEMBLY FOR SEATS
James B. Douglas, 5840 McLyan Avenue, Montreal 29,, Canada
Filed July 10, 1970, Ser. No. 53,897
Claims priority, application Canada, July 11, 1969, 056,775
Int. Cl. A47b 41/00
U.S. Cl. 297—162 **10 Claims**



A foldable tablet assembly for the arm rest of a seat of the type including a member pivotally mounted for movement about a first horizontal axis extending transversely of the arm rest, and a tablet member pivotal on said pivotal member about a second axis perpendicular to the said first axis. The present invention provides interengaging means which firstly ensure that the pivotal member is held in a raised position when the tablet is displaced from a vertical plane for movement to a horizontal working position, and secondly the interengaging means maintain the tablet in a vertical plane when the pivotal member is being swung down to the stowed position. The interengaging means include a part, such as a lug, attached to the tablet member, and a fixed surface extending transversely of the arm rest engageable with said part to prevent movement of the pivotal member as the tablet is swung down to the working position.

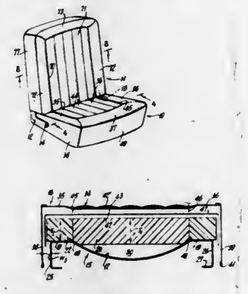
3,675,969
CHAIR-ARM CUP RECEPTACLE
Charles H. Gage, 1913 Spruce Avenue, Chico, Calif.
Filed Jan. 6, 1971, Ser. No. 104,387
Int. Cl. A47c 7/62
U.S. Cl. 297—194 **17 Claims**

A cup receptacle for attachment to the end of the arm of a chair is provided. A cup tray is cantilevered beyond the end of the chair-arm from a mounting on the end of the chair-arm.



The mounting is in turn secured to the chair by bendable tabs from the mounting arm.

3,675,970
SEAT CONSTRUCTION
Sigmund Bereday, 11 Suchville, Bayamon, P.R.
Filed Feb. 10, 1970, Ser. No. 10,257
Int. Cl. A47c 7/20; B60n 1/00
U.S. Cl. 297—452 **20 Claims**

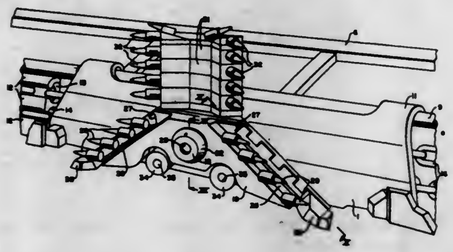


The invention contemplates a seat comprising rigid structure and yieldable padding beneath a desired upholstery covering. The frame is of stamped sheet material or of plastic laminate and defines an elongated concavity between spaced elongated shoulders. The padding may be molded foamed material, but important economies are realized by using slabbed stock of uniform thickness; different seat and back-support objectives are achieved by selection of slab thickness and/or slab density for each of several slab parts forming the padding of any particular seat element. The upholstery compressionally loads foamed material against the concavity in such manner that a body load on the seat is sustained primarily by the foamed material in its progressive reaction to the centering support afforded by convergent locales of the concavity.

3,675,971
COAL PLOW
Pal Frenyo; Karl-Heinz Hafer; Reimund Karkutt, all of Bochum, and Walter Pelka, Gelsenkirchen, all of Germany, assignors to Gebr. Eickhoff Maschinenfabrik und Eisengiesserei GmbH, Bochum, Germany
Filed Dec. 31, 1970, Ser. No. 103,142
Claims priority, application Germany, Jan. 9, 1970, P 20 00 748.1
Int. Cl. E21c 35/12
U.S. Cl. 299—34 **10 Claims**

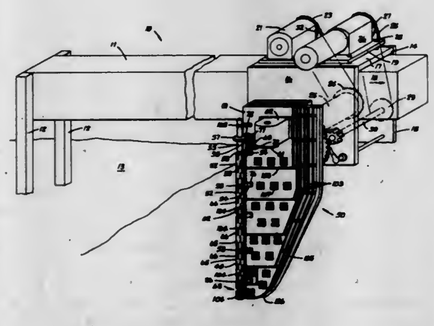
A coal plow includes a guide beam that is movable lengthwise along a coal face and that has a mining side and a conveyor side. Projecting horizontally from the mining side of the beam is an axle, on which a supporting member is mounted for rocking movement parallel to the beam. The degree of rocking is limited by means carried by the beam. At

opposite ends of the supporting member there are blade carriers hinged thereto on axes diverging downwardly. Mounted on the lower end of each carrier is a bottom plow blade, while



secured to the same carrier is a plurality of plow blades disposed in an inclined row that extends upwardly from the bottom blade. The blades are in positions to swing with their carrier away from the guide beam.

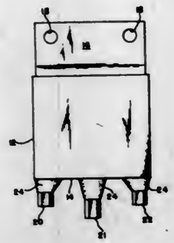
3,675,972
STONE SLOTTING MACHINE
Joseph T. Slomito, R.R. 11, Box 60, Bloomington, Ind.
Filed Jan. 8, 1971, Ser. No. 104,900
Int. Cl. E21c *31/04, 41/12*
U.S. Cl. 299—41 **6 Claims**



A machine for cutting slots into stone. An arbor frame having cutting cylinders rotatably mounted along its edge is pivotally mounted to a carriage movably mounted on a rail. A motor is mounted on the frame and is operable to rotate the cutting cylinders. A second motor and converter mechanism is mounted on the carriage and is operable to reciprocate the arbor with respect to the carriage. Water pipes and suction pipes are mounted to the frame to wash the cutting cylinders and remove the slush formed thereby. Rollers are also mounted to the frame for abutting the sides of the stone slot. One of the cutting cylinders is spring loaded being mountable to the bottom of the arbor.

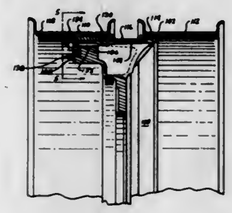
3,675,973
CONCRETE BREAKER
Archie Mottinger, 1901 Marine Drive, Bremerton, Wash.
Filed Aug. 10, 1970, Ser. No. 62,373
Int. Cl. E21c *35/18*
U.S. Cl. 299—88 **5 Claims**

A body having a working end is secured at its opposite end to a coupling for engagement to a mobile hammer or the like. The working end is provided with three spaced, hexagonal breaking bars. Two of the bars are positioned at opposite edges of the working end, whereas the third bar is centrally positioned between them. The central bar extends outwardly



from the other two bars a substantial distance so that it contacts the concrete or the like before the other two bars.

3,675,974
DUAL WHEEL ASSEMBLY AND CLAMP THEREFOR
Nolan B. Durham, Miamisburg, Ohio, assignor to Crowe Manufacturing Company, Dayton, Ohio, a part interest
Filed Jan. 22, 1970, Ser. No. 4,925
Int. Cl. B60b *23/10*
U.S. Cl. 301—13 SM **3 Claims**

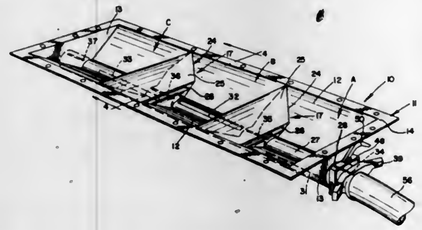


A wheel assembly suitable for supporting dual tires comprises a wheel having an inboard shoulder against which a rim assembly for the tires can be clamped. The wheel has outboard peripherally spaced spokes each having a rim clamp fastened thereto. The wheel is modified from conventional wheels by reason of extensions formed on the outboard ends of said spokes. The rim clamp is conventional in that it has a leg portion beveled for wedging against an outboard rim shoulder, but is modified from conventional rim clamps by reason of having a second leg sized to seat upon the aforementioned spoke extensions.

3,675,975
PNEUMATIC DISCHARGE ARRANGEMENT FOR HOPPERS
William D. Mundinger, Highland, and Ronald W. Marsh, Michigan City, both of Ind., assignors to Pullman Incorporated, Chicago, Ill.
Filed Sept. 30, 1970, Ser. No. 76,931
Int. Cl. B65g *53/40*
U.S. Cl. 302—52 **9 Claims**

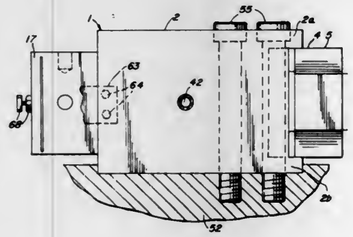
An arrangement for discharging materials from a hopper by pneumatic means includes a housing adapted to be attached to the lower end of a hopper. The housing is divided into a plurality of compartments separated by divider wall constructions. A control tube is rotatably positioned within a tubular trough communicating with the compartments. The control tube comprises a material receiving slot rotatable to an open position whereby sequential discharge may be obtained from each of the compartments. The discharge slots are circumferentially spaced about the peripheral surface of the control

tube which may be rotated to a position closing all of the compartments. The control tube is rotatable within bearings provided in each of the divider walls, the said bearings including longitudinally extending recesses which are provided with resilient bearing elements engaging the peripheral portions of the control tube disposed in the area of the divider wall.



Cleanout slots of relatively narrow width are provided on the tube in longitudinally spaced relation with respect to each other and the discharge slots. Certain of the cleanout slots are also provided at opposite ends of the control tube for cleaning out a space provided between the tubular trough and the peripheral surface of the control tube.

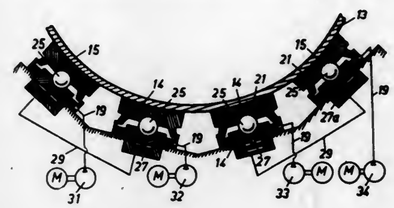
3,675,976
GIBS
Louis F. Carrieri, La Grange Park, and Edwin A. Spanke, Oak Forest, both of Ill., assignors to U. S. Industries, Inc., New York, N.Y.
Filed Jan. 21, 1971, Ser. No. 108,358
Int. Cl. F16c *17/00*
U.S. Cl. 308—3 **11 Claims**



A gib which is internally pressurized by working fluid to a predetermined pressure, and which will yield if the thrust on the gib is sufficient to exceed the internal force afforded by the working fluid.

3,675,977
BEARING FOR SUPPORTING HEAVY ROTATING MACHINERY
Torsten Henry Arsenius, and Carl Goran Albin Hallstedt, both of Goteborg, Sweden, assignors to SKF Industrial Trading and Development Company N.W., Amsterdam, Netherlands
Filed Oct. 2, 1970, Ser. No. 77,436
Int. Cl. F16c *17/16*
U.S. Cl. 308—9 **7 Claims**

A hydrostatic bearing for heavy rotating machinery contains a number of bearing blocks, each consisting of a fixed base plate and a top plate which is movable in relation thereto. The bearing blocks cooperate with a race ring in the machinery, and are hydraulically interconnected in one or more groups. One block within each group will serve as reference unit with respect to the clearance between the blocks and race ring, and an automatic adjustment of the clearance will occur



if the race ring due to changes in load and/or temperature will temporarily change its shape and/or its position.

3,675,978
ROLLER BEARINGS
Ralph E. McKelvey, Louisville, Ohio, assignor to The Timken Company, Canton, Ohio
Filed Nov. 12, 1970, Ser. No. 88,951
Int. Cl. F16c *33/66*
U.S. Cl. 308—214 **12 Claims**

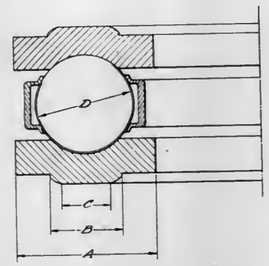


A tapered roller bearing has a cone provided with a thrust rib at the large diameter end of the cone raceway. The rib has an abutment face against which the large diameter ends of the rollers in the bearing run so that some of the thrust loads applied to the rollers are transferred to the thrust rib through the abutment face. Either the abutment face or the opposite end faces on the rollers are formed at least in part from a composite material containing a dry lubricant. Should the bearing lose its normal supply of lubricant, the composite material will give up its lubricant and prevent the bearing from failing.

3,675,979
ROLLING BEARINGS COMPRISING ANNULAR WASHERS OR CYLINDRICAL SLEEVES PROVIDED WITH A NUMBER OF BALL GROOVES
Stig Lennart Hallerback, Vastra Frolunda, Sweden, assignor to SKF Industrial Trading and Development Company N.V., Amsterdam, Netherlands
Filed Dec. 3, 1970, Ser. No. 94,804
Claims priority, application Sweden, Dec. 12, 1969, 17,166/69
Int. Cl. F16c *17/00*
U.S. Cl. 308—230 **1 Claim**

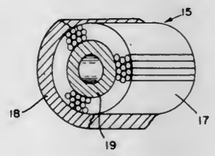
Rolling bearings comprising annular washers or cylindrical sleeves provided with a number of ball grooves,

which washers or sleeves are made of a sheet metal material and with a mainly constant thickness in a section through the center of the axis, characterized thereby that



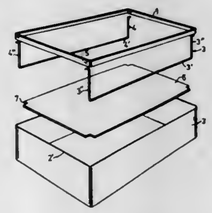
the washer or sleeve has two characteristic zones on the surface opposite the ball groove, both zones being considerably narrower than the total width of the section.

3,675,980
BEARING
Bernard G. E. Stiff, Lynnfield, and Thomas M. Finelli, North Andover, Mass., assignors to Avco Corporation, Cincinnati, Ohio
Filed Aug. 20, 1970, Ser. No. 65,646
Int. Cl. F16c *33/16, 33/26*
U.S. Cl. 308—238 **11 Claims**



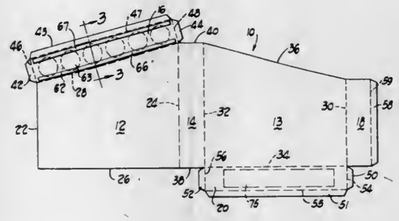
This invention relates to a bearing consisting of a plurality of carbonaceous filaments oriented side by side to form a mass. The carbonaceous filaments are end loaded, that is to say, the terminal cross section surfaces of the filaments form the bearing surface.

3,675,981
COLLAPSIBLE STORAGE UNIT
Filip Birger Emanuel Mallander, Klintvagen 44, Tyreso, Sweden
Filed Jan. 22, 1970, Ser. No. 4,994
Claims priority, application Sweden, June 28, 1969, 1,078/69
Int. Cl. A47b *43/00*; E04h *1/12, 1/14*
U.S. Cl. 312—257 **5 Claims**



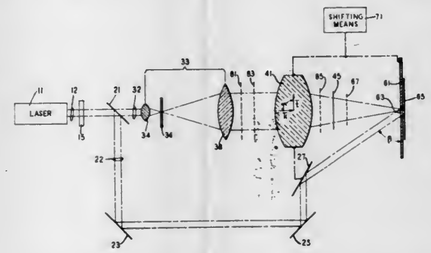
The invention concerns a collapsible storage unit, comprising a rigid frame surrounding the access opening of said unit and a bag of flexible, but substantially non-stretchable material, the edge of which is attached to said frame. At least two U-formed stretching members are so mounted in said frame that they are swingable from a position in plane with said frame into a position mainly perpendicular thereto. In the last mentioned position the stretching members keep said bag in a taut condition in order to form the bottom and side walls of said unit. A rigid board is furthermore insertable between said stretching members to maintain same in the last mentioned position.

3,675,982
SHELF CONTAINER FOR FILM STRIP
Seldon D. Strother, 3251 Meadowbrook Blvd., Cleveland Heights, Ohio 44118
Filed Nov. 12, 1970, Ser. No. 88,529
Int. Cl. A47b *97/00*
U.S. Cl. 312—278 **15 Claims**



A container that holds film strips and related material for shelf storage and display. The container is box-like in construction, book-sized, and supports one or more film strip canisters in apertures along a narrower portion adapted to stand upright and face outwardly from a supporting shelf. A large opening is additionally provided for receiving material related to the film strip or strips, such as pamphlets, tape cassettes, or the like.

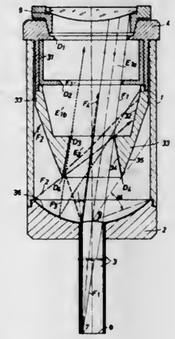
3,675,983
LARGE CAPACITY DIGITAL MEMORY
John Thomas La Macchia, Berkeley Heights, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill and Berkeley Heights, N.J.
Filed Feb. 16, 1971, Ser. No. 115,233
Int. Cl. G02b *27/00*
U.S. Cl. 350—3.5 **6 Claims**



A method and apparatus are disclosed for forming a page-organized optical memory that can be read by a single array of photodetectors. Each page of the memory is a hologram. To form each hologram, a beam of light is directed through a converging lens and a page of digital data to a portion of a recording medium located at the focal point of the lens. There the converging beam of

light interferes with a reference beam. An aperture in a mask over the recording medium defines the portion of the recording medium where the hologram is recorded. For each subsequent hologram that is recorded, the converging lens and the mask are first moved an equal amount in the same direction parallel to the surface of the recording medium; and the above-described hologram forming procedure is repeated. As a result of this recording process, the real image from each hologram stored in the memory can be reconstructed at the same location and therefore read by one array of photodetectors. To distribute the light amplitude on the recording medium more evenly than it is in the Fourier transform plane, either the light beam incident on the converging lens is made slightly diverging or converging or a fly's eye lens is inserted into its path.

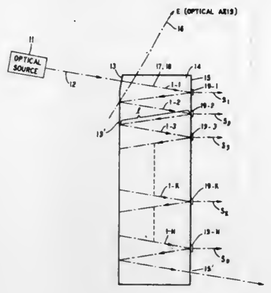
3,675,984
CONTACT ENDOSCOPE WITH STRAY LIGHT TRAP
Jacques Claude Vulmiere and Huguette Nelly Vulmiere, Paris, France, assignors to Etablissement Public: Agence Nationale de Valorisation de la Recherche (Anvar) Tour Aurore
Filed May 17, 1971, Ser. No. 144,049
Claims priority, application France, May 27, 1970, 7019264
Int. Cl. G02b *5/14*
U.S. Cl. 350—96 R **6 Claims**



The invention refers to improvements to contact endoscopes. The invention purpose is to provide a contact endoscope featuring a cylindrical hollow light collecting member made of transparent material and having smooth internal and frosted external surfaces, a sight (4) fastened at one of the cylindrical collector (1) extremities and a light guide (3) located co-axially to the other extremity of said collector and having a viewing distal face, this endoscope being characterized in that an optical unit (31 to 36) acting as a stray light trap, is located inside the cylindrical collector (1). The invention applies to direct inspection through endoscopes.

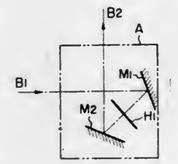
3,675,985
OPTICAL AUTOCORRELATOR FOR AUTOCORRELATING PICOSECOND OPTICAL PULSES
Detlef Christoph Gloge, Red Bank, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill and Berkeley Heights, N.J.
Filed Aug. 3, 1970, Ser. No. 60,476
Int. Cl. G02b *27/28*; G02f *1/26*
U.S. Cl. 350—157 **10 Claims**

An optical autocorrelator which can be employed to investigate optical pulses having durations of the order of 10^{-12} seconds is disclosed. The autocorrelator comprises a single birefringent, nonlinear medium. Optical pulses are applied to the medium such that each pulse is resolved into two orthogonally polarized component pulses traveling with different group velocities. By causing multiple reflections of the pulses between a first and second surface of the medium, the pulses are made to trace out a zigzag path within the medium. In each traversal from the first surface to the second surface, the pulses generate second



harmonic power whose time average is substantially proportional to a point on the intensity autocorrelation function of the pulses. Second harmonic detectors, located at the reflection points on the second surface, detect the second harmonic power generated, and various points on the autocorrelation function are thereby obtained. The latter function contains essentially all the information about the pulses, e.g., their width and their repetition rate.

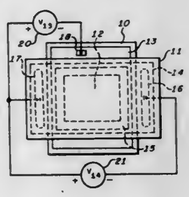
3,675,986
REFLECTING OPTICAL SYSTEM CAPABLE OF COMPENSATING FOR THE VARIATION IN POLARIZATION MODE
Tadaaki Yamamoto and Toshiyuki Kasai, Kawasaki, Japan, assignors to Nippon Kogaku K.K., represented by Yutaka Sugi, Tokyo, Japan
Filed Dec. 23, 1970, Ser. No. 101,072
Claims priority, application Japan, Dec. 29, 1969, 45/105,203; Feb. 6, 1970, 45/10,025
Int. Cl. G02b *27/78*
U.S. Cl. 350—157 **2 Claims**



A reflecting optical system which comprises two reflecting surfaces such as mirrors or the like equal in optical characteristics disposed to have the same plane of incidence. A first half-wavelength plate is disposed in the path of light between the two reflecting surfaces perpendicularly to the path of light and in such a manner that the axis of the first plate forms an angle of 45° with respect to the plane of incidence of the first reflecting surface. And if desired, a second half-wavelength plate is disposed in the path of emergent light from the second reflecting surface perpendicularly to the optic axis of the path of emergent light and in such a manner that the axis of the second plate forms an angle of 45° with respect to the

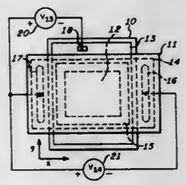
plane of incidence of the second reflecting surface, whereby the light emergent from the optical system is always ensured to present to same mode of polarization as that of the incident light.

3,675,987
LIQUID CRYSTAL COMPOSITIONS AND DEVICES
Mary J. Rafuse, Harvard, Mass., assignor to Sperry Rand Corporation, Great Neck, N.Y.
Filed Mar. 29, 1971, Ser. No. 128,666
Int. Cl. G02f 1/16
U.S. Cl. 350—160 **18 Claims**



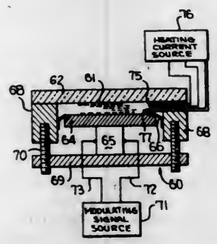
Room temperature nematic liquid crystal compositions suitable for use as scatterers of light in optical devices are presented that include as a basic new component p-methoxyformyloxybenzylidene p-n-butylaniline. Such compositions may also include p-ethoxybenzylidene p-n-butylaniline or p-butoxybenzylidene p-n-butylaniline, along with certain additives including p-toluylidene p-n-butylaniline. The compositions are employed in the form of thin layers within thin cells having transparent electrodes with means for applying electric fields across the layer. The display is formed by electrically controlling light-scattering properties of the liquid crystal layer.

3,675,988
LIQUID CRYSTAL ELECTRO-OPTICAL MEASUREMENT AND DISPLAY DEVICES
Richard A. Soref, Chestnut Hill, Mass., assignor to Sperry Rand Corporation, Great Neck, N.Y.
Filed Nov. 25, 1969, Ser. No. 879,645
Int. Cl. G01r 5/22; G02f 1/26, 1/28
U.S. Cl. 350—160 **22 Claims**



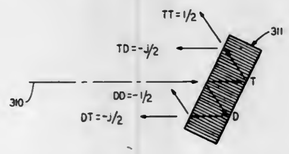
A flat screen electrically controlled, display device is provided that includes a layer of liquid crystalline material of the nematic type. The liquid crystals is one whose optical scattering or translucence is a sensitive function of the electric field in it. The nematic material is placed in a flat-sided cell between a transparent planar front electrode and a back electrode that is transparent or specularly reflecting. A spatial voltage gradient is generated across the transparent front electrode, while the whole of the back electrode may be held at a particular potential. Continuous relative changes of the respective potentials provide continuous or analog movement of the borders between clear and translucent areas formed within the nematic medium.

3,675,989
LIQUID CRYSTAL OPTICAL CELL WITH SELECTED ENERGY SCATTERING
Roy Pietsch, Austin, Tex., and Bernard L. Lewis, Satellite Beach, Fla., assignors to Radiation Incorporated, Melbourne, Fla.
Filed Nov. 26, 1969, Ser. No. 880,129
Int. Cl. G02f 1/36
U.S. Cl. 350—160 R **5 Claims**



An optical cell includes a pair of spaced-apart walls, at least one of which is transparent to radiant energy in a wavelength band to be accommodated by the cell and is positioned for incidence of the radiant energy thereon. A liquid crystal medium is interposed between and in contact with the opposing surfaces of the cell walls. The crystalline planes of the liquid crystal medium are normally disposed to permit passage of coherent radiant energy through the medium to impinge on the other wall. When such passage is to be restricted, the crystalline planes are subjected to shearing to randomly scatter and thereby render incoherent the radiant energy incident on the liquid crystal medium.

3,675,990
REFLECTIVE-TYPE NARROW BAND FILTER
Herwig Werner Kogelnik, Fair Haven, and Charles Vernon Shank, Highlands, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill and Berkeley Heights, N.J.
Filed June 16, 1970, Ser. No. 46,729
Int. Cl. H01s 3/10
U.S. Cl. 350—311 **2 Claims**

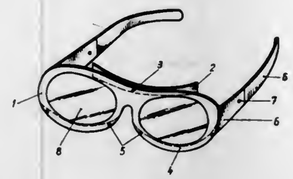


A thick transmission hologram is backed by reflective means to provide a narrow band filter or wavelength selector. Particularly advantageous are holograms with a diffraction efficiency of approximately 50 percent.

3,675,991
SPECTACLES HAVING BANDS THAT REDUCE FACIAL WRINKLES
Gemma Adriana Brena, Via Can. Ghiringhelli, 6500 Bellinzona, Switzerland
Filed Feb. 20, 1970, Ser. No. 12,993
Claims priority, application Switzerland, Aug. 8, 1969, 12,257/69
Int. Cl. G02c 11/00
U.S. Cl. 351—41 **4 Claims**

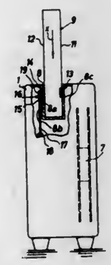
The device comprises in combination a spectacle frame and means for effecting pressure over at least a portion

of the zone of the face which surrounds the eyes. The frame may be elastic and lined by a soft material. The



pressuring portions may be removable. The lower edge of the glasses may be shaped to form a portion to support the rings under the eyes.

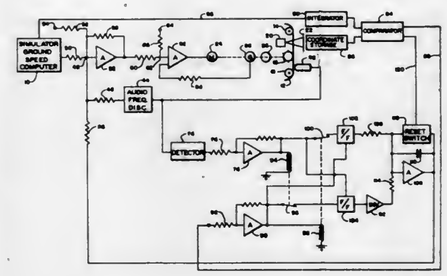
3,675,992
PROJECTOR FOR USE WITH CASSETTES FOR MOTION PICTURE FILM
Alfred Winkler, Munich, and Herbert Wilsch and Friedrich Winkler, Unterhaching, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany
Filed Nov. 25, 1970, Ser. No. 92,783
Claims priority, application Germany, Dec. 5, 1969, P 19 61 006.3
Int. Cl. G03b 23/00
U.S. Cl. 352—72 **30 Claims**



The top wall of the housing in a motion picture projector is formed with an inwardly extending chamber for reception of small, medium-sized or large cassettes for convoluted motion picture film. The cassettes are provided with external locating means which facilitate stacking of cassettes during storage or in transport. A plate-like detent member is mounted in the housing adjacent to one side of the chamber and is biased against a cassette in the chamber. The detent member has retaining means which can engage with the locating means of the inserted cassette.

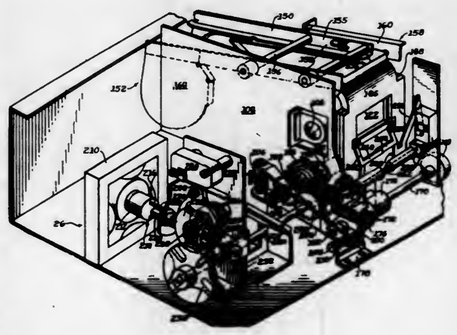
3,675,993
VISUAL SYSTEM
William C. Ebeling, deceased, by Dorothy Stott Ebeling, executrix, 61 Buckboard Road, Wilton, Conn. 06897
Continuation-in-part of applications Ser. No. 757,656, Sept. 5, 1968, and Ser. No. 779,499, Nov. 27, 1968. This application Jan. 18, 1971, Ser. No. 106,952
Int. Cl. G03b 21/50; G09b 9/08
U.S. Cl. 352—92 **13 Claims**

A simplified visual system which is inexpensive and provides visual training aids for a general-purpose aviation trainer by using a motion picture projector to project upon a suitable display screen in clear view of the trainee motion pictures of aircraft landings and take-offs. The sound track of the motion picture containing information pertaining to the speed of the camera aircraft when the pic-



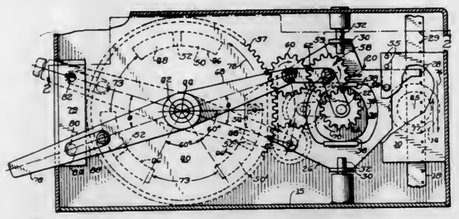
ture was made is read and used to control the projection speed of the film. In addition, the apparatus for initiating the projection of the film at the proper time, for halting the motion picture at the proper time and for rewinding the film is provided.

3,675,994
FILMSTRIP PROJECTOR WITH SYNCHRONIZED SOUND
Frank C. Badalich, Chicago, and Roy H. Watterlohn, Morton Grove, Ill., assignors to Bell & Howell Company, Chicago, Ill.
Filed Dec. 14, 1970, Ser. No. 97,859
Int. Cl. G03b 21/46
U.S. Cl. 352—163 **5 Claims**



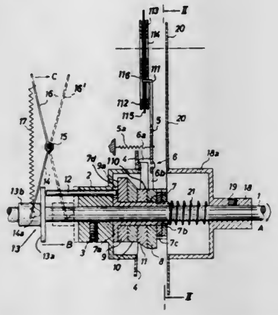
A filmstrip projector provided with synchronized audio accompaniment. The filmstrip is framed with respect to a projection aperture by a manually operable framing means. Once framed, the filmstrip is advanced frame-by-frame by a motor driven film advance mechanism. The audio accompaniment is carried on a dual track audio tape one track of which carries the audio accompaniment. The remaining track carries control signals which serve to actuate the film advance mechanism to maintain synchronization between the audio track and the filmstrip. The framing device includes a clutch for disengaging the film drive mechanism from the drive motor.

3,675,995
REVERSING MECHANISM FOR MOTION PICTURE PROJECTORS
Jaroslav Cherniavsky, Skokie, Ill., assignor to Bell & Howell Company, Chicago, Ill.
Continuation of abandoned application Ser. No. 765,265, Oct. 4, 1968. This application May 21, 1971, Ser. No. 141,346
Int. Cl. G03b *1/18*
U.S. Cl. 352—173 **15 Claims**



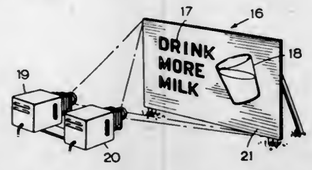
A reversing mechanism for an intermittent pull-down motion picture projector changes the phase relationship between the up-and-down and in-and-out cams of the projector by 180° to reverse the direction of movement of the film without stopping the prime mover of the projector. The mechanism achieves the required phase change by shifting the point of contact of the driving gear, that connects the cams in timed operating relationship with the prime mover, along an arc concentric with the axis of the in-and-out cam and through an angle equal to 180° divided by the ratio of the frequency of rotation of the up-and-down cam to the frequency of the in-and-out cam.

3,675,996
FILM TRANSPORTING MECHANISM FOR CINEMATOGRAPHIC APPARATUS
Herbert Wilsch, Unterhaching, and Hermann Muller, Munich, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany
Filed Apr. 2, 1970, Ser. No. 25,102
Claims priority, application Germany, Apr. 5, 1969, P 19 17 697.7
Int. Cl. G03b *1/22, 21/44*
U.S. Cl. 352—194 **10 Claims**



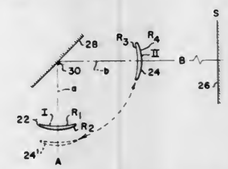
A film transporting mechanism for use in a motion picture projector comprises a shaft which rotates the shutter and first and second axially movable advancing cams which respectively impart to the pull-down movements necessary to effect forward and rearward transport of motion picture film. The cams are movable axially of the shaft by a shifter device so that one thereof imparts to the pull-down movement by way of a suitable follower. The face of the second cam differs from the face of the first cam to the extent necessary to compensate for the clearance with which the claw of the pull-down extends into the perforations of motion picture film. This insures that the frames of such film register accurately with the gate and with the optical system not only during forward but also during rearward transport of the film.

3,675,997
METHOD OF ILLUMINATING PRESELECTED AREAS OF A DISPLAY
Roman Andruchiw, 137 Spring Garden Ave., Willowdale, Ontario, Canada
Continuation-in-part of application Ser. No. 717,663, Apr. 1, 1968. This application Apr. 6, 1970, Ser. No. 25,694
Int. Cl. G03b *21/00*
U.S. Cl. 353—28 **2 Claims**



Preselected areas of a billboard are illuminated by means of a transparency produced by photographing the billboard from a fixed station, producing from the negative a transparency which is opaque except for clear areas which correspond to the preselected areas on the billboard. The transparency is inserted into a projector and positioned at the fixed station. The lens used to focus the image onto the billboard is the same as the camera lens used to obtain the photograph and the aperture settings of the camera and projector are the same. The billboard may be animated by interposing light interfering means such as an interrupter or analyzer in the light path between the light source from the projector and the billboard. The apparatus for animating the billboard includes a bulb, a projection lens, a condensing lens system to direct light from the bulb through the projection lens, a guide for a transparency between the condensing lens and the projection lens and a disc mounted for rotation in the light path. Photographic film may be inserted into the guide and the film exposed through the projection lens. A shutter arrangement is provided to control the exposure time. A peep hole is provided for viewing the interior of the apparatus from the outside in order to properly focus the image from the billboard on the film.

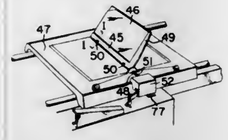
3,675,998
DUAL MAGNIFICATION PROJECTION LENS
Henry T. Wilton, Buffalo, N.Y., assignor to American Optical Corporation, Southbridge, Mass.
Filed Oct. 29, 1970, Ser. No. 85,104
Int. Cl. G02b *15/00, 27/18*
U.S. Cl. 353—101 **4 Claims**



A two-element projection lens in which one element is swingably mounted on an axis perpendicular to the optical path. When the two lens elements are positioned adjacent each other, they comprise a lens having a given

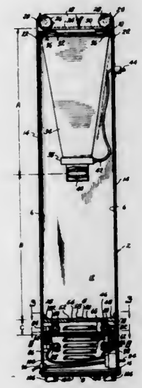
focal length to effect a certain magnification. When the two lens elements are separated by swinging one to an alternate position in the optical path, the combined lens has a different focal length to effect a different magnification.

3,675,999
PHOTOCOPYING APPARATUS PROVIDED WITH ORIGINAL INVERTING DEVICE
Shigehiro Komori, Kawasaki-shi, and Hiroyuki Hattori, Tokyo, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed May 6, 1970, Ser. No. 34,927
Claims priority, application Japan, May 10, 1969, 44/35,949
Int. Cl. G03b *27/62*
U.S. Cl. 355—8 **8 Claims**



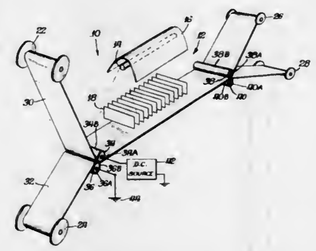
A photocopying machine with a reciprocating original carrier and a slit exposure system of this invention provides a device for inverting an original so as to copy both sides of the original on one copy paper in a single copying operation.

3,676,000
DATA ENCODING AND DECODING APPARATUS AND METHOD
George L. Mayer, Jr., New Orleans, La., and David L. Dobbins, McLean, Va., assignors to Coded Signatures, Inc., New Orleans, La.
Filed Dec. 31, 1970, Ser. No. 103,204
Int. Cl. G03b *27/68*
U.S. Cl. 355—52 **22 Claims**



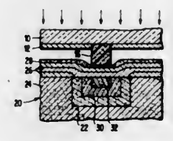
Apparatus and method or system for encoding and recording coded data, and retrieving the same by decoding and display thereof for direct viewing or for viewing on a screen. The method comprises utilizing a multiple array lens, otherwise known as a "fly's eye" lens, for "scrambling" the data to be encoded and also for "unscrambling" or decoding the data. The encoding means includes photographic means for making a negative film, or a direct positive photo, of the image appearing at the back face of the encoding lens. In the case of a photographic negative, a positive print is made therefrom. The positive print, whether made directly or indirectly, is applied to a paste-up sheet, which is photographed and the negative thereof is used with a masking sheet to expose an offset printing plate. Alternatively, a positive printing plate can be made directly from the paste-up sheet and used for ink-printing the encoded data. The system includes decoding apparatus for converting the encoded data back to its original form for viewing and, if desired, display and comparison with other matter, which may appear on the same document containing the encoded data.

3,676,001
PROCESS FOR MAKING DUPLICATES OF MICROFILM
Carl Botkin, Glenview, Ill., assignor to Addressograph-Multigraph Corporation, Mount Prospect, Ill.
Filed May 22, 1970, Ser. No. 39,803
Int. Cl. G03b *27/02*
U.S. Cl. 355—132 **6 Claims**



Duplicates of reels of microfilms are made by bringing the original film into surface contact with the light sensitive film which is to become the duplicate and then exposing the two films to actinic radiation. The film strips are passed through an electrical field imparting oppositely poled electrostatic charges to the film strips so that they are electrostatically attracted to one another being held in registration during the contact exposure while moving at speeds ranging from 8 feet to 50 feet per minute. The electrostatic charge is generated by corona emission electrodes or contact electrodes.

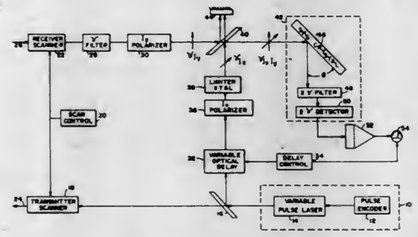
3,676,002
OPTICAL MASK WITH INTEGRAL SPACERS AND METHOD OF MAKING
Wayne M. Moreau, Wappingers Falls, and Hans R. Rottmann, Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed June 30, 1969, Ser. No. 837,802
Int. Cl. G03b *27/28*
U.S. Cl. 355—133 **9 Claims**



This is an optical mask primarily for use in the manufacture of solid state semiconductor devices. The mask

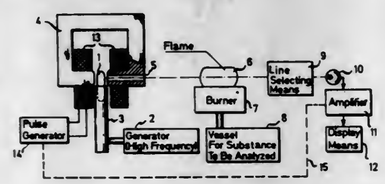
has integral spacer portions which intimately contact the surface of the device during the stage in the processing when the photoresist is exposed. These integral spacers not only protect the mask during contact with the device but also provide improved devices because of superior optical characteristics.

3,676,003
LASER RADAR SYSTEM
Charles S. Naiman, Brookline, and Stuart D. Pompian, Waban, Mass., assignors to Sanders Associates, Inc., Nashua, N.H.
Filed June 4, 1970, Ser. No. 43,458
Int. Cl. G01c 3/08
U.S. Cl. 356—5 **13 Claims**



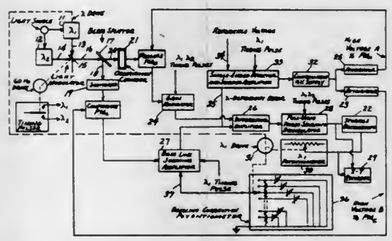
An improved laser radar system comprises a variable pulse laser transmitter a portion of the output of which is delayed, polarized in a first direction and limited to a maximum intensity value. The remainder of the transmitter output is directed to a remote target whereby it is reflected back to the receiver. The received reflected energy is filtered and polarized in a second direction normal to the said first direction. The received and delayed energy is combined and directed to a second harmonic generating crystal at a predetermined orientation. Only energy having both orthogonal polarization components operates to produce second harmonic energy which is filtered and detected by a second harmonic detector. The detector output signal is compared with the delayed signal to establish the distance to the target.

3,676,004
DEVICE FOR THE SPECTROCHEMICAL DETERMINATION OF THE CONCENTRATION OF AN ELEMENT IN A SAMPLE
Hans Prugger and Reimund Torge, Heidenheim, Germany, assignors to Carl Zeiss-Stiftung, doing business as Carl Zeiss, Heidenheim, Germany
Filed Dec. 17, 1970, Ser. No. 99,075
Claims priority, application Germany, Dec. 23, 1969, P 19 64 469.0
Int. Cl. G01j 3/30, 3/42
U.S. Cl. 356—87 **13 Claims**



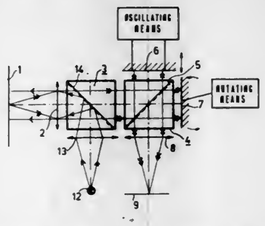
The invention represents an improvement in devices for the spectrochemical determination of the concentration of a particular element in a sample. A single radiation source is caused, by a frequency-shifting technique, to emit a time-alternating succession of two radiations, one of which is at a specific frequency that is characteristic of the particular element, and the other of which represents a slight spectral shift from the first radiation. The radiations are passed through the sample in time-alternation, and a synchronously commutated detector differentially evaluates the relation between two transmissions, attributable to the respective radiations. When the amplifier characteristic is logarithmic, the differential evaluation provides the quotient of the two detected transmissions.

3,676,005
RAPID-SCANNING DUAL WAVELENGTH SPECTROPHOTOMETER
Britton Chance, % Johnson Research Foundation, Medical School, University of Pennsylvania, Philadelphia, Pa. 19104
Filed Mar. 17, 1971, Ser. No. 125,252
Int. Cl. G01j 3/42
U.S. Cl. 356—97 **11 Claims**



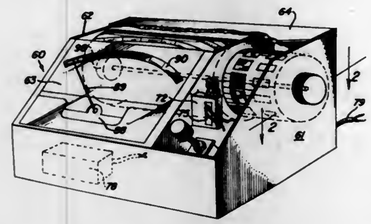
A dual wavelength spectrophotometer for recording reactions in turbid suspensions of biological materials, wherein one of the inspection wavelengths is held constant and the other inspection wavelength is cyclically varied over a range of the order of 40 nm. and at a rate of the order of 20 nm./sec. A noise-compensating photomultiplier is included to compensate for light source noise. A tapped potentiometer is employed for base line correction, and a comparator and error detector is employed to adjust the photomultiplier high voltages for correcting wavelength-dependent sensitivity errors.

3,676,006
METHOD OF MEASURING THE ROUGHNESS OF A SURFACE
Christiaan Hendrik Frans Velzel, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Sept. 22, 1969, Ser. No. 859,989
Claims priority, application Netherlands, Sept. 24, 1968, 6813608
Int. Cl. G01b 9/02
U.S. Cl. 356—109 **2 Claims**



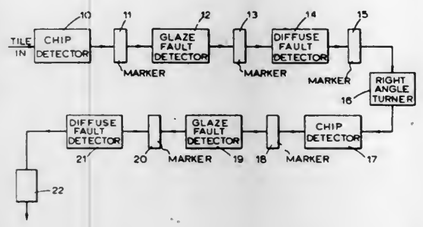
The invention relates to a method of measuring the roughness of a surface. The invention also relates to an apparatus for carrying out the method.

3,676,007
DIRECT READING FILTER PHOTOMETER
Raymond W. Kiess, Miami, Fla., assignor to Kiess Instruments, Inc., Miami, Fla.
Continuation-in-part of application Ser. No. 692,525, Dec. 21, 1967. This application Feb. 9, 1971, Ser. No. 113,881
Int. Cl. G01j 1/42, 3/48
U.S. Cl. 356—184 **13 Claims**



A direct reading filter photometer for chemical analysis is provided with a plurality of meter scales and a plurality of color filters with interlocking means for automatically selecting the scale and filter appropriate to the specific analysis to be performed.

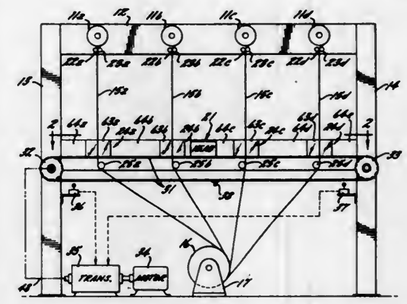
3,676,008
METHOD AND ELECTRO-OPTICAL SYSTEM FOR INSPECTING BODIES SUCH AS TILES
Robert N. West, Orpington, Richard A. Brook, Bromley, Richard G. Shaw, Meopham, near Gravesend, Daniel R. Lobb, Farnborough, and Anthony J. Allnutt, Chislehurst, England, assignors to British Scientific Instrument Research Association, South Hill, Chislehurst, Kent, England
Filed Jan. 16, 1970, Ser. No. 3,540
Claims priority, application Great Britain, Jan. 17, 1969, 2,971/69
Int. Cl. G01n 21/32
U.S. Cl. 356—196 **13 Claims**



A method of, and system for, automatically inspecting regular bodies, such as ceramic glazed tiles, for visual defects in its boundary and upper surface.

Each body is moved through stations having electro-optical devices for determining various classes of defects in the body. The devices which are used to inspect the upper surface of the body scan the surface and convert light diffusely or specularly reflected therefrom into a waveform composed of a series of pedestals which are analysed for defect-indicative information. The device used to inspect the boundary of the body acts to determine whether there are any irregularities, such as indentations or projections, in the boundary. Various techniques are provided to improve the validity of the defect detecting operation.

3,676,009
PHOTOELECTRIC DISCONTINUITY AND THE LIKE DETECTOR FOR MULTIELEMENT ARRAYS
Roger C. Brendemuehl, Beloit, Wis., assignor to Warner Electric Brake & Clutch Company, South Beloit, Ill.
Filed Dec. 22, 1970, Ser. No. 100,708
Int. Cl. G01n 21/18
U.S. Cl. 356—199 **23 Claims**



A radiant energy scanner, specifically a photoelectric scanner, for inspecting multielement arrays to detect missing or broken element conditions comprises a radiant energy transmit-receive head spaced from one side of the array and first and second sets of surfaces with different degrees of reflectance spaced from the opposite side of the array. The head is reciprocated to sweep a radiant energy, i.e., light beam, across the elements, and the first and second sets of surfaces are positioned relative to the elements so that the beam is transmitted and received at any given instant along substantially the same optical axis. Further, the first set of surfaces have a relatively high reflectance and align with element inspection areas to complete a first set of alternate beam transmission paths which have a relatively low attenuation level that is momentarily increased to a slightly higher level each time the beam traverses an element. The second set of surfaces have a relatively low reflectance and align with the spaces adjacent the inspection areas to complete a second set of alternate beam transmission paths which have a relatively high attenuation level. A logic circuit is included to provide an output indication of a missing element condition when the intensity of the received beam changes in immediately successive steps from a relatively low level, to a relatively high level, and back to the relatively low level, without an intervening change to an intermediate level.

3,676,010
APPLICATORY-LIQUID FEEDING AND APPLYING APPARATUS
Paul W. Kirch, 2325 Kellogg Court, Altadena, Calif. 91001
Continuation-in-part of application Ser. No. 759,710, Sept. 13, 1968, which is a continuation-in-part of application Ser. No. 565,302, July 14, 1966. This application Mar. 6, 1970, Ser. No. 17,267
Int. Cl. A46b 11/02
U.S. Cl. 401—188 **11 Claims**

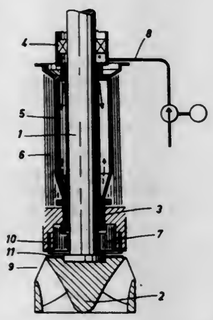
The specification discloses a pressurized applicatory-liquid feeding and applying apparatus including a pressurizable storage reservoir adapted to contain an open-topped can of paint therein in a manner whereby most of the interior of the reservoir is effectively sealed from the paint adapted to be contained within the open-topped paint can so as to prevent the paint from getting on major portions of the interior of the reservoir, which would subsequently require excessive cleaning effort. The apparatus includes a length of flexible feed tubing extending from

the pressurized open-topped paint can within the reservoir to an applicatory brush means for connection to a coupling means (in a preferred form either of two different coupling means) carried by the brush means and extending thereinto at a location laterally adjacent and offset from the forward end of the handle and its junction to the rear end of a brush body portion in a position such as to provide minimum interference with a hand holding the handle and brush. In a preferred form of the invention, there are two parallel coupling means at each side of the forward end of the handle, making it possible to connect the flexible



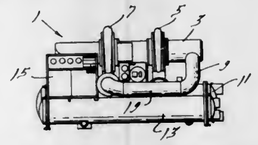
feed tubing at either side of the handle for use by a right-handed person or a left-handed person. The coupling means is effectively a part of and in communication with a centrally angularly forwardly directed interior flow passage means which, at a central position within the brush body portion, is provided with a normally finger or thumb operable valve at a symmetrically centrally positioned location suitable for operation by a control finger of either a painter's right hand or left hand, thus facilitating the easy pressurized feeding and application of paint or other liquid to a surface by either a right-handed or a left-handed painter.

3,676,011
LIQUID-SEALED CENTRIFUGAL PUMP
Kurt Reif, Graz, Austria, assignor to Maschinenfabrik Andritz Actiengesellschaft, Graz-Andritz, Austria
Filed Mar. 27, 1970, Ser. No. 23,334
Claims priority, application Austria, Mar. 31, 1969, A 3,132/69
Int. Cl. F01d *11/00*
U.S. Cl. 415—111 **7 Claims**



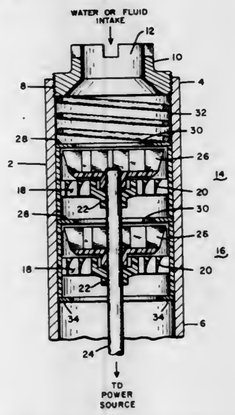
An impeller is secured to a rotatable shaft to rotate therewith. A shaft seal is arranged to seal said shaft on one side of said impeller. A guide bearing cooperates with said shaft and is disposed between said shaft seal and said impeller and arranged to permit of a leakage of a predetermined amount of liquid from said one side of said impeller into said receiving chamber when said impeller coasts to a stop from a rotation at a predetermined, normal speed in such a sense that liquid is delivered by said impeller on said one side thereof. A standstill seal is disposed between said guide bearing and said impeller and arranged to be open during a rotation of the impeller in said sense and to be closed when said impeller is stopped. Means are provided which define a receiving chamber that is disposed between and communicates with said shaft seal and said guide bearing and adapted to hold said predetermined amount of liquid. Means are provided to supply a sealing liquid to said receiving chamber.

3,676,012
NOISE REDUCTION APPARATUS
Thomas H. Brockie, West Carrollton, Ohio, assignor to Chrysler Corporation, Highland Park, Mich.
Filed Dec. 2, 1970, Ser. No. 94,272
Int. Cl. F01n *1/00;* **F04d** *29/66*
U.S. Cl. 415—119 **9 Claims**



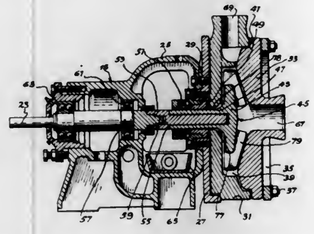
An elongated, rectangular baffle located in the cross-over pipe of the multi-stage compressor of water chiller apparatus.

3,676,013
AXIAL FLOW PUMP
Robert V. Albertson, 2100 Shady Wood Road, Minneapolis, Minn.
Filed Sept. 23, 1970, Ser. No. 74,564
Int. Cl. F04d *1/00, 29/02, 29/00*
U.S. Cl. 415—128 **6 Claims**



A multi-stage axial flow pump designed to pump fluids which may contain solid particles, without jamming or damage to the working parts thereof. The pump comprises a plurality of stages each including a stator element and a rotor element contained within the stator element. The stages, in turn, are located within a cylindrical housing. A compression type spring is located within the housing and normally urges the stator members against one another and against one end of the housing so that they remain stationary during normal operation. However, in the event a foreign particle becomes lodged between the rotor and the stator, the stator is permitted to move or shift in axial position such that the foreign particle may pass therethrough.

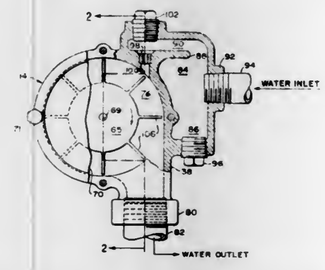
3,676,014
PUMP
Robert H. Bevan, Romulus, and Vincent D. Buffone, Seneca Falls, N.Y., assignors to Goulds Pumps, Incorporated, Seneca Falls, N.Y.
Filed Aug. 28, 1970, Ser. No. 67,866
Int. Cl. F01d *1/02, 9/00;* **F23k** *31/02;* **F04b** *17/00, 35/04*
U.S. Cl. 415—200 **3 Claims**



A pump impeller, especially useful in the pumping of corrosive and abrasive liquids, includes a unitary blade-shaft member of a material such as a corrosion resistant vitreous or ceramic material, which is impracticable for threading or other such shaping operations or has insufficient strength to withstand normal forces on threads or other such elements thereof. To provide for affixation to means for rotating the impeller in a pump, a threadable shaft extension is employed, inserted into and cemented in place in a hollow portion of the blade-shaft member and threaded or otherwise formed or machined at its other end for connection with suitable driving means. By making the blade-shaft member so that corrosion-resistant shaft portion is long enough to extend past a seal, contact of the pumped liquid with the impeller is limited to the corrosion-resistant part thereof.

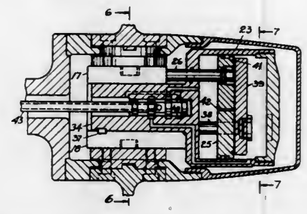
Also disclosed are pumps and motor-pump combinations including the mentioned impellers, as well as methods for the manufacture of the impellers.

3,676,015
WATER MOTOR
Willis K. Hodgman, Jr., Taunton, Mass., assignor to Hodgman Manufacturing Company, Inc., Taunton, Mass.
Filed Oct. 28, 1970, Ser. No. 84,750
Int. Cl. F01d *15/06, 9/00*
U.S. Cl. 415—202 **3 Claims**



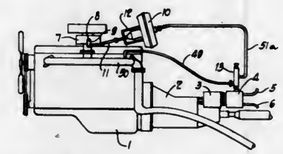
An easily maintained, efficient, low turbulence water motor in which water is projected from a nozzle to the blades of an impeller and expelled through an outlet in straight alignment with the nozzle. The water enters the nozzle through an inlet chamber integral with the body of the motor and providing a sump for retention of dirt or other particulate matter in the water.

3,676,016
CONTROLLABLE PITCH PROPELLERS
Arne Feroy, 1921 S. 291st St., Federal Way, Wash. 98002
Filed Sept. 21, 1970, Ser. No. 73,915
Int. Cl. B63h *3/08*
U.S. Cl. 416—157 **9 Claims**



In a controllable pitch propeller, a double crank blade-turning mechanism having a pivotable piston assembly with self-aligning connections to one set of crankpins, to provide equal loading on all the crankpins.

3,676,017
SPEED CONTROL
Joseph C. Castleberry, Birmingham, Ala., assignor to Altec, Inc., Birmingham, Ala.
Filed Apr. 27, 1970, Ser. No. 31,906
Int. Cl. F04b *49/00*
U.S. Cl. 417—34 **3 Claims**

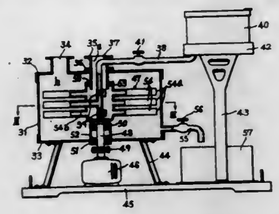


The disclosure herein is of a speed control for use particularly with hydraulically operated mechansms which demand increased pressure when a load is imposed thereon, such mechanisms being primarily engine driven by hydraulic pumps in a hydraulic system in which it is desirable to regulate the speed by in turn regulating the throttle by which the engine speed is actually controlled. The actual control of the mechanism is effected by a valve which receives the pressure from the hydraulic system, and upon increased demand therefor in turn operates a valve member to direct vacuum developed in the engine by which the entire mechanism is driven, to a vacuum actuator which is in turn connected to the throttle and thereby upon increased vacuum produced, in turn increases the speed of the engine whereby the pressure in the hydraulic pump driven thereby is likewise increased, the hydraulic and vacuum systems being entirely separate to obviate any possibility of hydraulic balance which would prevent return of the engine to normal speed when the pressure is removed from the hydraulic system.

3,676,018
PUMPING APPARATUS
Saburo Shimoi, Kyoto, Japan, assignor to Shimadzu Seisakusho, Ltd., Kyoto, Japan
Original application Nov. 25, 1968, Ser. No. 778,539, now Patent No. 3,584,978. Divided and this application June 12, 1970, Ser. No. 57,864
Int. Cl. F04f *11/00*
U.S. Cl. 417—72 **5 Claims**

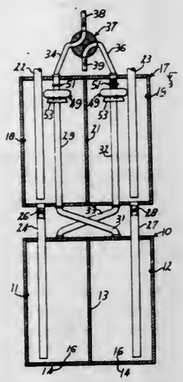
A pumping apparatus includes a radially extending rotary fluid passage member within a pumping casing. The rotary fluid passage member is communicated with

low pressure side within the casing through its inlet end and with high pressure side within the casing through its outlet end. Liquid is intermittently supplied into the fluid passage member through the inlet end to form liquid partitions within the fluid passage member. The liquid



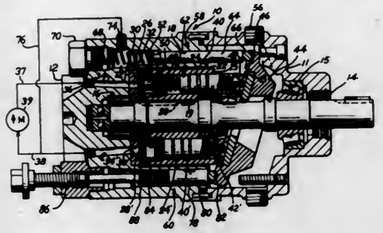
partitions are driven radially outwardly through the fluid passage member under the centrifugal force produced by the rotation of the fluid passage member so as to positively transfer the fluid in the low pressure side through the passage member into the high pressure side, thus effecting pumping action.

3,676,019
FLUID PUMP
Douglas R. Self, 100 Joy Road, Birmingham, Ala. 35235
Filed Feb. 24, 1971, Ser. No. 118,405
Int. Cl. F04f *1/06*
U.S. Cl. 417—121 **10 Claims**



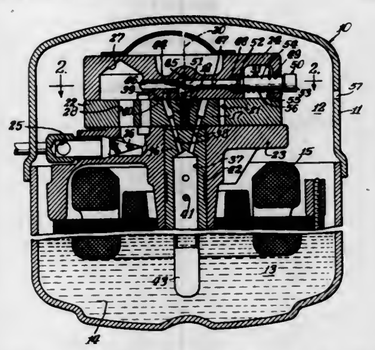
Fluid pump having upper and lower pairs of laterally disposed chambers with liquid receiving openings in lower chambers. Liquid discharge conduits extend above upper chambers and communicate with lower portion of upper chambers. Lower portion of one chamber of upper chambers communicates with lower portion of one chamber of lower chambers while lower portion of other chamber of upper chambers communicates with lower portion of other chamber of lower chambers with check valves preventing flow of liquid from upper chamber to lower chamber. A first conduit communicates with upper portion of said one chamber of upper chambers and upper portion of said other chamber of lower chambers while a second conduit communicates with upper portion of said other chamber of upper chambers and upper portion of said one chamber of lower chambers. Gas introduced alternately into first conduit as exhausted through second conduit and alternately into second conduit as exhausted through first conduit.

3,676,020
COMPENSATED HYDRAULIC DEVICE
Howard P. Andreasen and Jay H. Ankeny, West Des Moines, Harold W. Foddy, Woodward, and David W. Reynolds, West Des Moines, Iowa, assignors to Delavan Manufacturing Co.
Filed Feb. 24, 1970, Ser. No. 13,722
Int. Cl. F04b *1/26*
U.S. Cl. 417—222 **16 Claims**



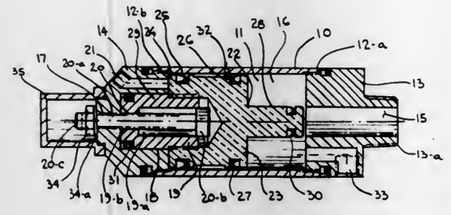
An axial piston hydraulic device having an angularly tiltable cam plate includes a pair of tilt control piston assemblies, one of which includes a plurality of resilient, preferably bimetal, discs. When the pressure or temperature of the fluid changes, the discs deform in response thereto to effect a controlled change in the tilt of the cam plate to adjust the flow rate of the device compensating for flow rate changes resulting from the change in pressure or temperature. In addition, the plane of the pivot axes of the pistons of the device may be offset from the pivot axis of the cam plate to further modify the flow rate resulting from the action of the discs.

3,676,021
RADIAL UNLOADER VALVE FOR THRU-SLOT ROTARY COMPRESSOR
Milton Young Warner, Evansville, Ind., assignor to Whirlpool Corporation
Filed Oct. 9, 1970, Ser. No. 79,399
Int. Cl. F04b *49/02, 49/08*
U.S. Cl. 417—299 **17 Claims**



A rotary compressor such as for use in refrigeration apparatus having a vane-type rotor. Means are provided for alleviating liquid fluid ingestion in the compressor during start-up including valved passage means for returning high pressure liquid fluid from the compression chamber to the suction inlet during start-up. The passage means includes means for passing liquid fluid from a muffler chamber into the head space during start-up. The valve means is responsive to the pressure conditions within the compressor to substantially throttle such liquid fluid transfer during normal operating conditions of the compressor.

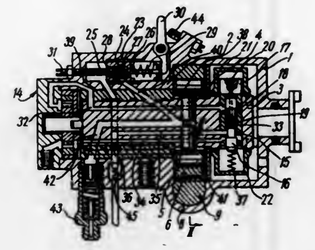
3,676,022
PNEUMATIC/HYDRAULIC PRESSURE ACTUATED POSITIVE DISPLACEMENT PUMP
Richard S. Paulinkouis, 6660 Greenbriar Drive, Cleveland, Ohio 44130
Filed Nov. 25, 1970, Ser. No. 92,727
Int. Cl. F04b *17/00, 35/00*
U.S. Cl. 417—392 **2 Claims**



A pneumatic or hydraulic pressure actuated positive displacement pump of reciprocating type with piston assembly shiftable from one open pump position enabling pump priming through the void provided in the pump chamber when the working fluid pressure is relieved, into the second position for pumping out the contents trapped in said pump chamber upon the application of the working fluid to the opposite end of said piston assembly, and subsequent return of the piston to the original position when said working fluid is relieved, by the suction force that is generated during the forward piston movement when it is energized by pressure of the working fluid; piston assembly comprising one large working piston with U-cup seals at extremities and oriented so as to expand under pressure for better sealing, and two smaller pistons at each end of large piston face, one for acting as a suction cup to return piston assembly to the original position when working fluid pressure is relieved from the piston energization port, including appropriate seals, another piston at the opposite end for plugging-off fluid pumped from the supply source in order to facilitate improved pumping with minimum slippage.

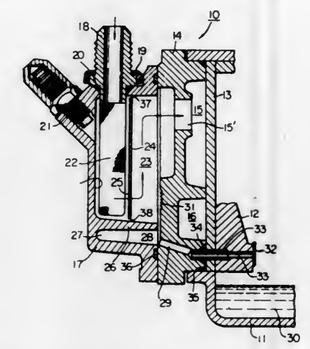
3,676,023
FUEL PUMP FOR INTERNAL COMBUSTION ENGINES
Petr Ivanovich Andrusenko, Ulitsa Selskokhozyaistvennaya 3, kv. 44; Kint Evgenievich Dolganov, ulitsa Patorzhinskogo 14, kv. 5; Alexandr Ivanovich Kovalev, ulitsa Zhitomirskaya 8, kv. 25; Pavel Iosipovich Berezovsky, ulitsa Rybalskaya 20, kv. 9; Vladimir Ilich Dmitrenko, Nikolai Pavlovich Shukshin, and Jury Feodosievich Gutarevich, all of ulitsa Ivana Kudri 32, Obschezhitie KADI, Kiev, U.S.S.R.; Vladimir Grigorievich Kislov, ulitsa Tekstilei 40, kv. 11; Andrei Vasilievich Chevtaev, polschad III Internatsionala 31; Eduard Ivanovich Koshman, ulitsa Molodezhnaya 4, kv. 26; Vladimir Vasilievich Filippov, shosse Entuziastov 2, kv. 21; Mikhail Sergeevich Dolganov, 2 Textilny pereulok 1, kv. 15; and Dmitry Ivanovich Prosnjakov, Nizhegorodskaya ploschad 3, all of Moskovskaya oblast, Noginsk, U.S.S.R.; and Alexandr Brokopievich Bakharev, deceased, by Anna Mikhailovna Menshikova and Jury Alexandrovich Bakharev, both of ulitsa Ljublinskaya 39/2, kv. 31; and Galina Alexandrovna Ashikhmina, ulitsa Novo-Alexeevskaya 4, korpus 2, kv. 59, Moscow, U.S.S.R., administrators
Filed Jan. 6, 1970, Ser. No. 937
Int. Cl. F04b *3/00, 19/02;* **G05d** *13/10*
U.S. Cl. 417—253 **2 Claims**

A fuel pump for internal combustion engines, comprises a housing accommodating a low pressure pump and a high pressure pump, the latter being connected to an automatic fuel injection advance device installed within the housing. A fuel feeder is installed in the housing for feeding fuel batchwise to the high pressure pump and a slide valve of a centrifugally sensitive element is also



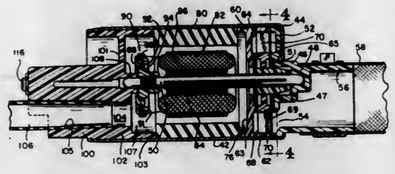
mounted in the housing and hydraulically connects the low pressure pump to the feeder and to the automatic fuel injection advance device.

3,676,024
APPARATUS FOR SEPARATING LUBRICANT FROM A REFRIGERANT LUBRICANT MIXTURE IN A RECIPROCATING TYPE AUTOMOTIVE AIR CONDITIONER COMPRESSOR
Seiji Akaike, Atsugi, and Akira Morinaga, Aiko Atsugi, Japan, assignors to Nissan Motor Company, Limited, Yokohama, and Atsagi Motor Parts Company, Limited, Atsugi, Japan
Continuation of application Ser. No. 838,104, July 1, 1969. This application Mar. 2, 1971, Ser. No. 120,362
Int. Cl. F04b *39/02*
U.S. Cl. 417—372 **7 Claims**



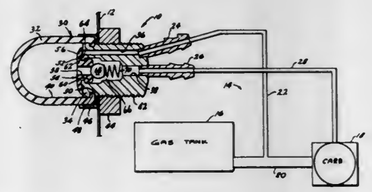
Disclosed herein is an apparatus for separating lubricant from a refrigerant-lubricant mixture circulating in a reciprocating type automotive air conditioner. The apparatus includes a strainer mounted within a first chamber for separating the lubricant from the mixture, a pair of spaced passages for the lubricant and refrigerant, respectively, and for interconnecting the first chamber with a second separating chamber, a partition for keeping the separated oil isolated from the mixture, a passage provided between the second separating chamber and a recess provided by the partition, and a lubricant passage for passing the lubricant from the recess to the oil reservoir of the compressor.

3,676,025
ELECTRICAL IN-TANK FUEL PUMP
John E. Shultz, Davison, Mich., and Wilfred W. Herderhorst, Fort Wayne, Ind., assignors to Tokheim Corporation, Fort Wayne, Ind.
Filed Apr. 23, 1970, Ser. No. 31,191
Int. Cl. F01d *5/10;* **F04b** *17/00, 35/04*
U.S. Cl. 417—423 **17 Claims**



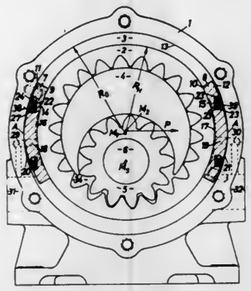
An electrical motor and pump unit for mounting in an automotive or other combustion-engine fuel tank to pump liquid fuel to the engine. A circular regenerative fuel pump has its rotor on the armature shaft of a permanent-magnet motor mounted in a common cylindrical housing. Rotor blade spacing follows an orderly mathematical progression. The ferrite motor field magnet is a relatively thin-walled cylinder having large air-gap clearance from the armature and lying against the cylindrical housing which forms a return flux path. Full pump delivery flow passes through the large air gap, and hydraulic gain from improved flow through such air gap offsets any electrical loss. The use of a peripheral thin-wall magnet provides open interior space which permits a large commutator and brush contact area.

3,676,026
PRIMER PUMP
Willis E. Tupper and John R. Hanson, Dexter, Mich., assignors to Dexter Automatic Products, Co., Inc., Dexter, Mich.
Filed Jan. 7, 1971, Ser. No. 104,654
Int. Cl. F04b *21/02, 39/10;* **F16k** *15/00*
U.S. Cl. 417—560 **5 Claims**



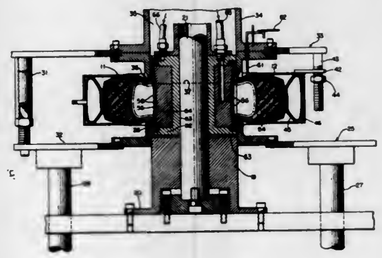
Fuel primer apparatus for use in connection with internal combustion engines for vehicles such as snowmobiles and the like. The apparatus is characterized by its relatively light weight and compact construction, and it is especially suitable for mounting on a snowmobile cowling formed of a thin sheet of plastic material. It comprises a unitary structure of a primer bulb and a check valve assembly which is constructed and arranged so that a pressure drop at its discharge end induced by operating conditions will be insufficient to induce undesired flow of fuel through the apparatus to flood the engine.

3,676,027
CRESCENT MACHINE
Hans Molly, 48 Dr. Eugen-Essig-Str., 7502 Malsch, Germany
Filed Mar. 11, 1971, Ser. No. 116,728
Claims priority, application Germany, Mar. 14, 1970, P 20 12 149.7; Jan. 7, 1971, P 21 00 435.3
Int. Cl. F01c *1/10;* **F03c** *3/00;* **F04c** *1/06*
U.S. Cl. 418—71 **7 Claims**



A hydraulic pump or motor has a spur gear which engages an internal ring gear and a crescent between one side of the two gears. The machine casing has a cavity substantially larger than the ring gear. Two rocker shoes are between the casing wall and the ring gear on opposite sides of the ring gear. These shoes support the ring gear while permitting it to move along a line connecting the centers of the two gears.

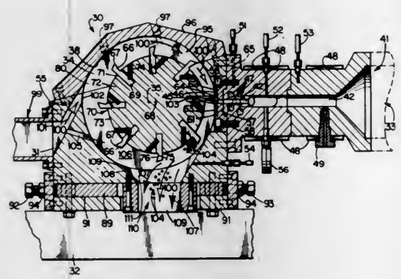
3,676,028
APPARATUS FOR BUILDING A FOAM INFLATED TIRE
Christopher E. Christie, Akron, and Eugene Earl Martin, Hudson, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Feb. 16, 1971, Ser. No. 115,264
Int. Cl. B29d *3/00, 27/00;* **B29h** *5/02*
U.S. Cl. 425—38 **30 Claims**



An apparatus for at least partially filling a molded and vulcanized tire with foamable, elastomeric material. The apparatus has a pair of parallel, upper and lower bead seats on which a vulcanized tire is mounted. An inflatable ring is moved into position for annularly engaging and constricting the tire to maintain the beads of the tire in firm seated relation against the bead seats. An externally,

accessible chamber is movable into communicating relation with the annular cavity of the tire mounted on the bead seats. Unfoamed, elastomeric material is then placed in the chamber and a ram is used to force the material from the chamber into the tire cavity. The ram carries a bladder which is centered in the space between the bead seats and inflated to compress the material within the tire cavity against the inner crown of the tire. The various components are then moved out of interfering relation with removal of the filled tire from the machine. The filled tire is then mounted on a wheel rim and heated to foam and cure the elastomeric material in the tire cavity.

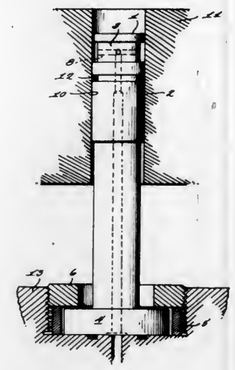
3,676,029
PELLETIZING APPARATUS
Peter Hopkin, 13 Colonial Circle, Hampton, N.H. 03842
Filed Apr. 9, 1970, Ser. No. 26,969
Int. Cl. B29b *1/02*
U.S. Cl. 425—67 **8 Claims**



An underwater pelletizer has a generally cylindrical, elongated chamber with a generally cylindrical, drum, having longitudinal cutter blades, eccentrically rotatable therein to form a pump. A narrow, linear, longitudinal row of extrusion orifices in the side wall of the chamber, discharges a row of viscous strands from which successive rows of viscous pellets are simultaneously cut off by each blade and driven tangentially into a longitudinal effluent port to clear the orifices of stray pellets. The chamber also includes a longitudinally extending influent port for liquid under pressure which sweeps around the chamber periphery to also clean the orifices while solidifying the viscous plastic.

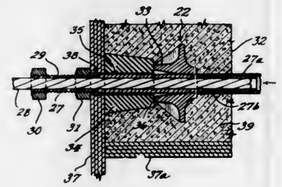
3,676,030
APPARATUS FOR LUBRICATION OF COMPRESSION TOOLS FOR POWDER METALLURGICAL PURPOSES
Horst Roepenack, Bruchkobel, Dieter Nowak, Kohl, and Fritz Ploger, Kleinostheim, Germany, assignors to NUKEM Nuklear-Chemie und -Metallurgie, GmbH., Wolfgang, near Hanau am Main, Germany
Filed Oct. 22, 1969, Ser. No. 868,484
Claims priority, application Germany, Apr. 22, 1969, P 19 20 308.8
Int. Cl. B30b *11/00, 15/02*
U.S. Cl. 425—78 **10 Claims**

There is provided an apparatus for the lubrication of compression tools for power metallurgical purposes comprising a lower die adapted to supply lubricant film, a guide for the lower part having a slightly larger diameter to insure production of a uniform lubricant film and a foot on the opposite end of the die positioned within a slightly larger distance ring which is held in position by a fixing nut, the space between the die foot and fixing nut



compensating for production errors in the axis parallelism of the die bore.

3,676,031
POST-TENSIONING SYSTEM
Frederick M. Stinton, Woodbridge, Ontario, and William M. Slater, Toronto, Ontario, Canada, assignors to Conenco International Limited
Filed May 28, 1970, Ser. No. 41,369
Int. Cl. B28b *7/16*
U.S. Cl. 425—111 **9 Claims**

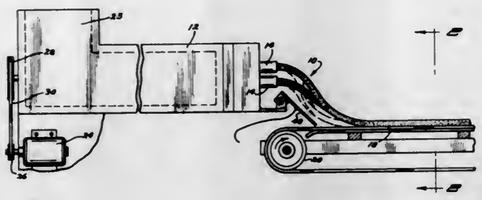


A post-tensioning assembly for concrete slabs and beams in which an anchorage block for a tendon has reinforcing gussets facing outwardly from the concrete so as to impose compressing stresses therein in response to tension forces on the tendon. A protective tube is removably screw-threaded into an anchorage sheath and covers the cable and is fitted over an end of the tube which projects from the anchorage to eliminate fouling of the conical opening of the anchorage with concrete and bonding of the concrete to the cable. The anchorage is simple and easily formed so that a single anchorage accommodates plural tendons.

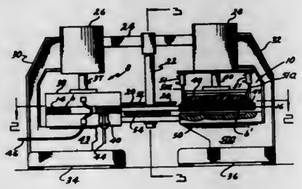
3,676,032
EXTRUSION CONTROL APPARATUS
Byron W. Meyer, Minneapolis, and William F. Wright, St. Paul, Minn., assignors to The Pillsbury Company, Minnneapolis, Minn.
Filed Mar. 9, 1970, Ser. No. 17,389
Int. Cl. A21c *3/04*
U.S. Cl. 425—140 **4 Claims**

The diameter of a cylinder of extruded plastic food material is maintained within close tolerances by extruding the cylinder through a nozzle and allowing it to pass

from the nozzle a short distance in an unsupported condition to a take-away conveyor which carries the product to a cutter. The extruder from which the material is expelled comprises one plate of a capacitor. The other plate is located in a position spaced from the extruded material. The take-away conveyor is run at a speed from about 2 to 20% faster than the average speed of the material being extruded to impart a controlled degree of stretch in the extruded material. The speed differential is increased when the stretched material droops below a predetermined position and decreased when the extruded food material adjacent the nozzle rises above a predetermined position as sensed by the changes in capacitance between the plates as a result of the change in position of the extruded food material.



3,676,033
APPARATUS FOR MAKING THERMOPLASTIC CELLULAR PRODUCTS
Robert B. Buonaiuto, 12 Bayview Road, Ipswich, Mass. 01938
Original application Apr. 30, 1968, Ser. No. 725,430 Divided and this application Apr. 16, 1971, Ser. No. 134,708
Int. Cl. B29c 3/04; B29d 27/00; B29g 7/02
U.S. Cl. 425—174 **7 Claims**



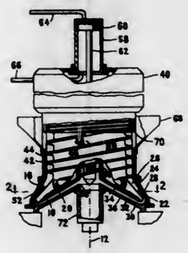
An apparatus for making thermoplastic cellular plastic products and which has preform and final forming stations. The apparatus features the use of a pair of frames which are interchanged at the said preform and final form stations by a transfer mechanism. Each frame is charged with thermoplastic beads while held between platens at the preform station for the introduction of heat to form a cellular preform blank and is then moved to the final form station where the blank is given a final shape between another pair of platens.

3,676,034
EXTRUDER MIXING SCREW
Roland Norbert Wendricks, St. Charles, Ill., assignor to American Can Company, New York, N.Y.
Filed May 1, 1970, Ser. No. 33,599
Int. Cl. B29f 3/00
U.S. Cl. 425—208 **5 Claims**

A single stage extruder screw wherein, in addition to having a continuous helical flight for advancing thermoplastic material, such as food grade PVC, there is provided radial mixing pins arranged in nine circumferential rows which are axially spaced along the screw for mixing the advancing thermoplastic material. Seven of the nine rows are incomplete circumferential rows of radial pins, the rows being interrupted by the helical flight and aligned to diagonally bisect a portion of a helical channel defined by the adjacent turns of the helical flight on either side of the location at which each row is interrupted by the helical flight. Further, one complete flight turn is cut back on the extruding end of the screw thereby leaving a flightless root portion at this end of the screw. Finally, the remaining two of the nine rows are circumferentially arranged about this end of the screw at the flightless root portion and are complete rows of radial mixing pins.

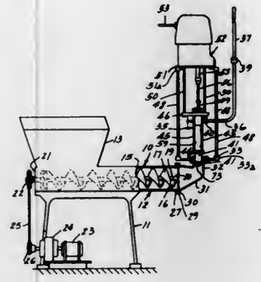


3,676,035
APPARATUS FOR PROCESSING PLASTIC MATERIALS
Hans A. Eckhardt, 55 Crescent Bend, Allendale, N.J. 07401
Filed Sept. 18, 1968, Ser. No. 760,515
Int. Cl. B29f 1/00
U.S. Cl. 425—203 **19 Claims**



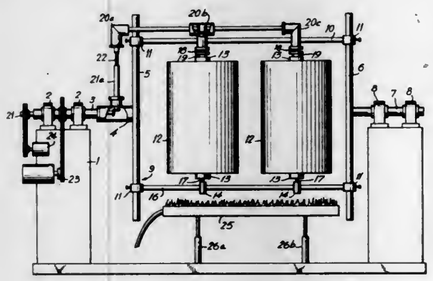
An apparatus for extruding, injection molding, blow molding and transfer molding plastic materials comprise a feed screw pressing plastic material over a rotor with a diameter which first increases in order to mill and shear the material over a spreading circumference, and then decreases in order to work and stretch the plastic material centripetally. The feed screw is closely surrounded by a barrel, and the rotor by a first and a second housing ending in a discharge opening, through which a flighted screw extends in a closely surrounding cylinder. The flighted screw is firmly attached to the end of the rotor for extrusion operation. For injection molding, the flighted screw is mounted for axial and rotational movement through a bore in the rotor. For piston injection molding, a piston extends through the bore of the rotor. The generatrices of the rotor and housing surfaces form acute angles between opposite proximate sections of these surfaces, corresponding to the requirements of different plastic materials. Rotor and housing surfaces are provided with protrusions to achieve specific processing tasks. An opening in the housing near the maximum rotor surface serves to devolatilize gases and vapors. Rotor and housing are axially movable to each other, to vary and control the processing spaces therebetween.

3,676,036
APPARATUS FOR EXTRUDING CANDY FILLINGS HAVING A HIGH PERCENTAGE OF SOLIDS
Anthony J. Rossi, 40 Kasbey St., Clifton, N.J. 07043
Original application Apr. 25, 1968, Ser. No. 724,120, now Patent No. 3,556,021, dated Jan. 19, 1971. Divided and this application May 4, 1970, Ser. No. 46,588
Int. Cl. A21c 11/16
U.S. Cl. 425—209 **5 Claims**



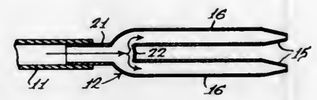
Apparatus for extruding high solid content candy fillings to size in which the candy filling is deposited into the hopper of a worm type extruder and is reduced and pressurized by this extruder and is then picked up by a high pressure high viscosity piston pump in communication with a reducer, and ejected by the piston pump under high pressure to the final size of the filling. A Teflon lined high pressure hose is connected with the discharge end of the pump. A heavy duty pipe is connected with the discharge end of the hose, and may be formed at its discharge end to shape the filling to a desired size.

3,676,037
APPARATUS FOR MOLDING HOLLOW PLASTIC ARTICLES
Stewart Pivar, 1 Lynn Drive, Muttontown, N.Y.
Continuation of abandoned application Ser. No. 724,803, Apr. 29, 1968. This application Jan. 4, 1971, Ser. No. 103,893
Int. Cl. B29c 5/04
U.S. Cl. 425—435 **6 Claims**



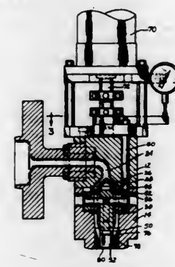
Apparatus for molding hollow plastic articles in which a mold is simultaneously rotated about two mutually perpendicular axes, a source of heat being located at a position generally radially displaced relative to a circle described by the mold. The mold is supported in a frame which is of adjustable size, there being provided a telescopic drive for rotating the mold and which is extensible to accommodate adjustment in the frame.

3,676,038
APPARATUS FOR PRODUCING YARN
John F. Orzechowski, Orange, and Thomas W. Haley, Shelton, Conn., assignors to Raybestos-Manhattan, Inc., Bridgeport, Conn.
Filed June 26, 1970, Ser. No. 50,237
Int. Cl. B29f 3/04
U.S. Cl. 425—464 **4 Claims**



An extrusion nozzle for asbestos dispersions comprises a single conduit feeding into a plurality of secondary conduits having outlet orifices. A concave or U-bent deflector is provided at the juncture of adjacent secondary conduits and faces the flow path of the dispersion in order to minimize formation of clots and undesirable fiber accumulation between secondary conduits.

3,676,039
VARIABLE ORIFICE EXTRUSION HEAD
Calvin Hulstein, Wapping, Conn., assignor to Monsanto Company, St. Louis, Mo.
Filed Aug. 5, 1970, Ser. No. 61,381
Int. Cl. B29d 23/04
U.S. Cl. 425—466 **6 Claims**



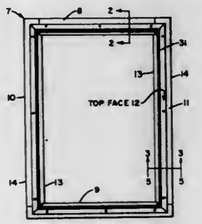
A variable orifice extrusion head for extruding thermoplastic tubular products of varying wall thicknesses. The head has a spider member within the outer body which includes a conically shaped nose portion positioned in the flow passage for dispersing the thermoplastic outwardly. A relatively short mandrel slidably mounted within the spider member below the nose portion has a tip which cooperates with the outlet in the body to define the extrusion orifice. Means operable in a direction parallel to the mandrel are provided for axially moving the mandrel to provide variable orifice capability.

3,676,040
APPARATUS FOR PRODUCING TRIMMED PRINTING FACE PLATES
Paul W. KcKinney, Louisville, Ky., assignor to The Fawcett Printing Corporation, Louisville, Ky.
Filed Sept. 14, 1970, Ser. No. 71,846
Int. Cl. B29c 17/00
U.S. Cl. 425—470 **3 Claims**

In preparing a copper face plate of precise length and width for use in producing an electrotype printing plate, a copper shell of greater length and width is electrolytically deposited upon a molded plastic impression of the pattern face of the original or starting form (i.e. the typeform, containing a positive pattern of the subject matter to be printed, and the adjacent front face of the original

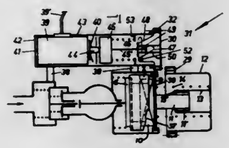
mold frame, which encircles the type-form). In the preferred embodiment of the invention, the front face of my mold frame is provided with an endless groove which also encircles the type-form and which is more or less centered on a "boundary" path accurately reproducing said precise length and width boundaries of the copper face plate.

This endless groove is cross-sectionally contoured to form a pair of narrow valleys separated by a sharp ridge, which is precisely located along said boundary path to reproduce said boundaries accurately. Accordingly, when a negative plastic impression is taken over the pattern face of the starting form, the endless groove causes a corresponding projection to be formed on the impression while the sharp ridge in that groove causes a steep valley



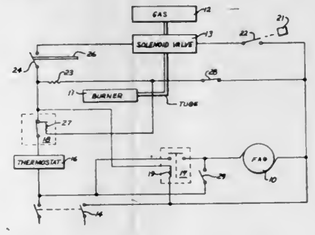
to be formed in that projection. Now, when the plastic impression is conductively coated and electroplated, the thickness of the copper "shell" will inherently be reduced along that deep valley and that thickness reduction will center sharply on the bottom of that valley. As a result, during the stripping operation, when the plastic sheet and shell are separated from each other, the excess margin and the copper face plate portions of the shell can be contemporaneously separated from each other by tearing the shell along the center of the line of reduced thickness. As a consequence, said copper face plate will have the precise length and width desired. This eliminates the normally requisite operations of separately trimming each margin of the copper shell.

3,676,041
GAS BURNER CONTROL APPARATUS FOR OPERATING A PIEZOELECTRIC IGNITION SYSTEM IN CONJUNCTION WITH THE GAS VALVES
Gunter Mobus, Wermelskirchen, Germany, assignor to Joh. Vaillant KG, Remscheid, Germany
Filed Sept. 16, 1970, Ser. No. 72,638
Claims priority, application Austria, Sept. 26, 1969, A 9,151/69
Int. Cl. F23q *9/08*
U.S. Cl. 431—47 **11 Claims**



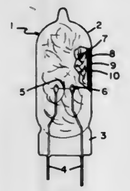
A valve housing includes a pilot valve and a main valve movable along a common axis to open and close the valves. An operating mechanism for the valves includes a cam support and a cam post contacting a cam on one side of the support. A handle is operatively connected to the support so that it can be rotated to a position at which the pilot valve is open. The burning of the pilot valve causes a latch to hold the support in the rotated position. Reverse rotation of the post, cams the rotationally latched support so as to open the main valve. A handle is connected to rotate the post and also a ring gear. Axial displacement of the handle axially moves the gear to a position at which it engages a gear on a piezoelectric lighter, whereupon rotation of the two gears actuates the lighter.

3,676,042
HEATER IGNITION SYSTEM
Keith Osborne, Fort Lee, N.J., assignor to Southern California Gas Co., Los Angeles, Calif.
Filed June 25, 1970, Ser. No. 49,872
Int. Cl. F23n *1/02*
U.S. Cl. 431—66 **5 Claims**



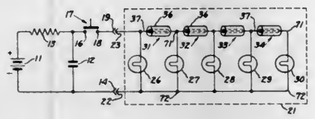
A simple ignition system for a space heater or the like is provided wherein gas or similar fuel flow is controlled by a solenoid valve. A heat sensitive switch and an air flow sensitive switch are serially connected to the solenoid valve for preventing gas flow in the absence of ignition or air flow, respectively. An electric glow igniter adjacent the heat sensitive switch initiates combustion and is disconnected after ignition for prolonged life. If desired, a time delay for disabling the heater in the absence of ignition can be employed if, for example, the heater is a nonsealed system.

3,676,043
PHOTOFLASH LAMP HAVING LAMINATED GLASS ENVELOPE
John Wallace Anderson, Danvers, and Frederick Ardel Loughridge, Manchester, Mass., assignors to Sylvania Electric Products Inc.
Filed Oct. 26, 1970, Ser. No. 84,057
Int. Cl. F21k *5/02*
U.S. Cl. 431—93 **3 Claims**



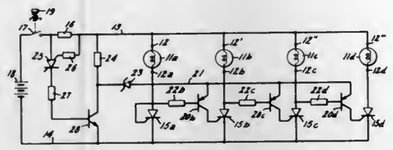
A laminated glass envelope of a photoflash lamp comprises three separate layers of glass fused to one another to provide an integral envelope. The center layer of glass has a higher coefficient of thermal expansion than the inner and outer layers with the result that the center layer is in tension and the other layers are under compressive stress. The envelope as a result is stronger than conventional single layer glass envelopes and more resistant to internal pressure when the lamp is flashed.

3,676,044
CIRCUIT UTILIZING MAGNETIZED CORES FOR SEQUENTIALLY FLASHING PHOTOFLASH LAMPS
Sang-Chul Kim, Cleveland Heights, Ohio, assignor to General Electric Company
Filed Feb. 16, 1971, Ser. No. 115,469
Int. Cl. F21k *5/02*
U.S. Cl. 431—95 **12 Claims**



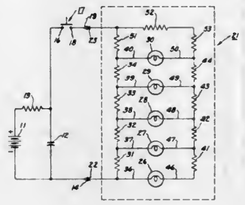
A plurality of photoflash lamps are connected electrically to a source of firing pulses through a succession of magnetized cores. The cores are magnetized in a polarity so as to resist passage of the firing pulse. Each firing pulse has sufficient energy to overcome the magnetization effect of one core, whereby a different individual lamp is flashed upon the occurrence of each firing pulse.

3,676,045
SEQUENCING STATIC ELECTRONIC FLASHING CIRCUITS FOR PHOTOFLASH LAMP ARRAY
Donald L. Watrous, Liverpool, N.Y., and Paul T. Coté, Cleveland Heights, Ohio, assignors to General Electric Company
Continuation of abandoned application Ser. No. 820,186, Apr. 29, 1969. This application Jan. 25, 1971, Ser. No. 109,576
Int. Cl. F21k *5/02*
U.S. Cl. 431—95 **33 Claims**



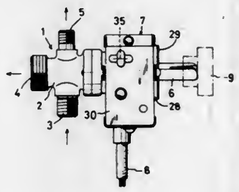
A sequencing static electronic flashing circuit used with a disposable array of *n* flash lamps (or flashbulbs) operates within several microseconds to flash one lamp in sequence each time the circuit is energized in time relation to the opening of a camera shutter, can be fabricated completely as a monolithic or hybrid integrated circuit, and by-passes open-circuited lamps. Each flash lamp except optionally the first is in series with a solid state switching device such as a gate controlled thyristor or a transistor. A D-C logic sequencing control circuit, implemented with constant voltage drop means and logic transistors, requires as conditions for turning on a switching device that the previous device be conducting and that the voltage across the preceding lamp terminals exceed a threshold voltage, whereby all previous control circuit paths are conducing. Current or light sensing operates a lockout to de-energize the sequencing control circuit to prevent multiple flashes, and in another embodiment the sequencing is initiated by an external pulse and the circuit is energized only during the duration of the pulse. The start of sequencing after energizing the circuit and de-energization thereof independent of the shutter actuated switch can be controlled either by modifications within the sequencing flashing circuit or by external timer circuits that operate a static switch.

3,676,046
RESISTOR CIRCUIT ASSEMBLY FOR SEQUENTIALLY FLASHING PHOTOFLASH LAMPS
Edward L. Laskowski, Parma, Ohio, assignor to General Electric Company
Filed Aug. 3, 1970, Ser. No. 60,298
Int. Cl. F21k *5/02;* **H05b** *37/00*
U.S. Cl. 431—95 **12 Claims**



A resistor circuit, and assembly, for causing sequential flashing of a plurality of photoflash lamps from pulses of electrical energy. A first series of resistors are successively connected between first leads of the flash lamps, and a second series of resistors are successively connected between second leads of the flash lamps. The source of firing pulses is connected to a lead of a first lamp at one end of the circuit, and to the leads of the last lamp at the other end of the circuit via a resistance network. The assembly consists of an elongated U-shaped strip of resistance material, with the lamps positioned therealong and the leads of each lamp connected to adjacent points on the respective legs of the U-shaped strip. A second similar assembly of a U-shaped resistance strip and lamps connected thereto, is interposed with the first such assembly to provide a double array of flash lamps in a single unit.

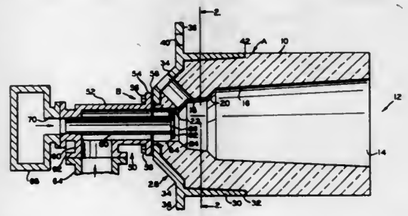
3,676,047
GAS CONTROL VALVE MEANS HAVING A PIEZOELECTRIC FIRING UNIT
Shinichi Soma, Okazaki-shi, Japan, assignor to Kabushiki Kaisha Rinnai Seisakusho, Nagoya-shi, Japan
Filed Mar. 31, 1971, Ser. No. 129,842
Claims priority, application Japan, Aug. 10, 1970, 45/69,206
Int. Cl. F23q *3/00*
U.S. Cl. 431—255 **11 Claims**



A gas control valve apparatus comprises a valve unit operated by a rotatable shaft to first open a pilot gas passage after which rotation is automatically stopped and at this time, a cocked hammer is released to strike a piezoelectric firing unit and effect a spark discharge to ignite the pilot burner. The stop of the rotation of the shaft is released automatically by removal of the actuating torque on the shaft whereby the shaft can be further rotated to bring the valve unit to a position in which a gas passage for the main burner is fully opened.

3,676,048
EXCESS AIR BURNER
John Sellors, Jr., and Howard E. Sinclar, Cleveland, Ohio, assignors to Pyronics Inc., Cleveland, Ohio
Filed Mar. 13, 1970, Ser. No. 19,305
Int. Cl. F23d 15/02
U.S. Cl. 431—353 1 Claim

A gas burner particularly adapted for operation with exceptionally large quantities of excess air. The preferred embodiment of the burner comprises a generally cylindrical, ceramic burner block having a central bore which increases in diameter non-uniformly from the inlet to the outlet. The gas inlet comprises a tube member positioned axially of the bore and terminating closely adjacent the inlet end. A circular flange extends outwardly about the end of the tube into close proximity with the bore to define a narrow annular gap or space. Air is supplied annularly of the tube and flows through the narrow gap with substantial velocity. This causes a vacuum across the face of the flange and gas supply tube to produce good mixing and efficient combustion. By properly relating the size of the flange, the annular opening and the bore, the



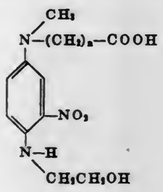
burner gives excellent combustion characteristics throughout substantial variations in gas-air ratios.

CHEMICAL

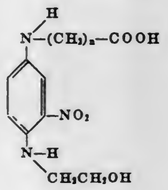
3,676,049
DYEING HAIR WITH DERIVATIVES OF NITRO-PARAPHENYLENEDIAMINE
Gregoire Kalopissis, Paris, and Andree Bugaut, Boulogne-sur-Seine, France, assignors to L'Oreal, Paris, France
No Drawing. Continuation-in-part of application Ser. No. 544,079, Apr. 21, 1966. This application July 20, 1970, Ser. No. 56,756
Claims priority, application France, Apr. 23, 1965, 14,482
Int. Cl. A61k 7/12
U.S. Cl. 8—10 6 Claims

A hair dye composition comprising a solution having a pH of 3 to 10 containing an effective amount of a hair dye selected from the group having the formula:

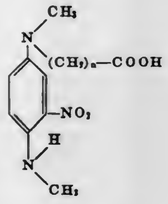
(I)



(II)



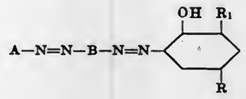
(III)



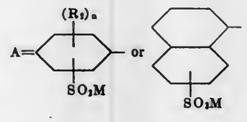
in which n is 1 to 4 and the method of dyeing hair with this composition.

3,676,050
AQUEOUS DYEING OF ACID-DYEABLE POLYAMIDE FIBERS USING YELLOW-TO-ORANGE DISAZO DYES
Daniel S. James, Hockessin, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
No Drawing. Filed Jan. 21, 1969, Ser. No. 792,783
Int. Cl. C09b 31/04
U.S. Cl. 8—41 B 11 Claims

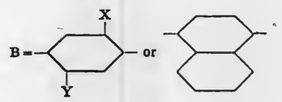
In an aqueous process for dyeing textile materials comprised of polyamides, particularly deep-dyeable polyamides and polyamide styling yarns and fibers, at a pH of 3–7 and at a temperature up to the boil, in the presence of dyes and dyeing assistants, the improvement of using yellow-to-orange disazo dyes of the structure



wherein



the SO_3M group in the latter structure being substituted in either aromatic ring of the naphthalene nucleus;
R_2=methyl, methoxy, $NHCOCH_3$, Cl or Br;
n=0, 1 or 2;
M=H, alkali metal or ammonium cation;



X and Y=H, C_{1-2} alkyl or C_{1-2} alkoxy;
R=C_{1-5} alkyl, —$NHCOC_{1-4}$ alkyl, or, when X (or both X and Y) is a substituent other than H, Cl or Br; and
R_1=H or C_{1-5} alkyl.

3,676,051
PROCESS FOR DYEING AND PRINTING TEXTILE MATERIALS MADE FROM SYNTHETIC ORGANIC FIBRES
Purushottam Janardan Kangle, Goregaon-Bombay, India, and Visvanathan Ramanathan, Basel, and Rudolf Argy, Arlesheim, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland
No Drawing. Filed June 15, 1970, Ser. No. 46,452
Claims priority, application Switzerland, June 16, 1969, 9,158/69
Int. Cl. D06p 5/00
U.S. Cl. 8—65 6 Claims

A process for dyeing and printing textile materials comprising one or more synthetic, hydrophobic linear polymers that are free from nitrile groups, wherein the material is padded with a disperse dyestuff which contains amino groups but which does not contain acidic groups or quaternary ammonium groups, dried, printed with a printing paste containing a compound having an acid reaction at least when subjected to heat, the material is subjected to fixation by the application of dry heat and subsequently the salt of the dyestuff containing amino groups is washed out of the printed areas.

3,676,052
POLYPROPYLENE GLYCOLS AND SUBSTITUTED POLYPROPYLENE GLYCOLS ARE USED IN CONJUNCTION WITH CROSSLINKING AGENTS TO PRODUCE DURABLE PRESS FABRICS WITH IMPROVED SOIL RELEASE PERFORMANCE
Robert J. Harper, Jr., Metairie, Joseph S. Bruno, Chalmette, and Gloria A. Gautreaux, Metairie, La., assignors to the United States of America as represented by the Secretary of Agriculture
No Drawing. Filed Nov. 3, 1969, Ser. No. 873,703
Int. Cl. D06m 15/10, 15/54, 15/58
U.S. Cl. 8—115.6 4 Claims

This invention relates to fabrics treated with one bath systems containing crosslinking agents and polypropylene alcohols, glycols and polyols. These treatments once applied to fabrics produce fabrics with wash-wear and durable press performance and which have improved soil release characteristics. This provides garments for the consumer with better washability characteristics. These treatments are most effective on all-cotton fabrics but they may also be applied to polyester-cotton blends. The system utilized to achieve soil-release is a one bath system readily applicable to either precured or postcured fabrics. These treatments have been evaluated using soiling tests followed by laundering and measuring reflectance values.

3,676,053
METHOD OF MODIFYING FIBROUS MATERIALS
Yasuhiko Miyake, Nobara, and Eifu Takayanagi, Shigeo Narita, Masaaki Shin, Toshio Hayashi, and Koichi Sakurai, Kanakawa-Prefecture, Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan
No Drawing. Filed Sept. 4, 1969, Ser. No. 855,411
Claims priority, application Japan, Sept. 26, 1968, 43/69,106; Jan. 14, 1969, 44/2,333; Jan. 31, 1969, 44/6,665; Mar. 14, 1969, 44/18,850; Mar. 26, 1969, 44/22,309
Int. Cl. D06m 13/14, 13/18, 13/40
U.S. Cl. 8—116 10 Claims

The present invention is a method of modifying cellulosic fibrous materials characterized by impregnating a cellulosic fibrous material with a modifier containing tetraoxane and/or pentaoxane and heat-treating it at an elevated temperature preferably above at least about 100° C. in the presence of an acid substance. Also covered are novel modifier compositions containing tetraoxane and/or pentaoxane and an acid catalyst.

3,676,054
PROCESS FOR FLAMEPROOFING CELLULOSIC TEXTILE FABRICS AND PRODUCT OBTAINED THEREBY
Richard H. Symm, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.
No Drawing. Filed Mar. 9, 1970, Ser. No. 17,975
Int. Cl. C09k 3/28; D06m 13/44, 13/48
U.S. Cl. 8—116.2 6 Claims

The present invention relates to a composition of matter, suitable for flameproofing textile fabrics, consisting of an aziridinyl phosphine oxide or sulfide and a halogen substituted alcohol or phenol which, when heated, will copolymerize and react with the hydroxyl or nitrogen hydrogen of the natural or synthetic fiber of a textile material. The invention also relates to the method for applying the composition to the textile material to impart said flameproofing characteristics to the so-treated textile material.

3,676,055
PRESERVING CELLULOSIC MATERIALS THROUGH TREATMENT WITH ALKYLENE OXIDES
Richard Daniel Smith, 1369 E. Hyde Park Blvd., Chicago, Ill. 60615
No Drawing. Continuation-in-part of application Ser. No. 661,190, Aug. 15, 1968. This application Aug. 31, 1970, Ser. No. 68,472
Int. Cl. D06m 11/12, 13/10
U.S. Cl. 8—120 12 Claims

An improvement in nonaqueous processes for deacidification and preservation of cellulosic materials is disclosed, comprising reacting the deacidified cellulosic material with alkylene oxide such as ethylene oxide. Particularly effective is contacting cellulosic material, such as books, which are deacidified by a nonaqueous deacidification process, with ethylene oxide for 15 minutes or less at ambient temperature and atmospheric pressure, and equivalent reaction conditions at other pressures and temperatures.

3,676,056
HIGH ENERGY RADIATION STABILIZATION OF CELLULOSE OBTAINED BY ESTERIFYING WITH THENOYL CHLORIDE
Jett C. Arthur, Jr., Metairie, La., and Sujan Singh, Varanasi Uttar Pradesh, India, assignors to the United States of America as represented by the Secretary of Agriculture
No Drawing. Filed Apr. 30, 1971, Ser. No. 139,138
Int. Cl. D06m 13/20
U.S. Cl. 8—120 9 Claims

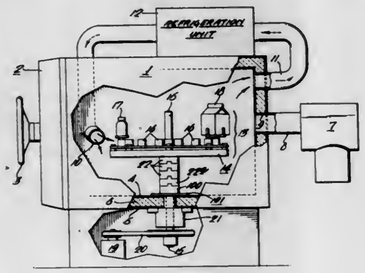
This invention relates to a method for stabilizing organic materials that contain the glycosidic bond to the effects of high energy radiation. Stabilization is achieved by the introduction of thenoate groups as substituents into the said organic material. The method of this invention has as its objective the modification of the chemical structure of organic materials which contain the glycosidic bond to allow preferential transfer of high energy from one part of the organic material to the thenoate substituent group within which group radiation energy is dissipated without damage to the glycosidic bond of the organic material.

3,676,057
TEXTILE PROCESS
Thomas Desmond Brown, Keighley, England, assignor to I.W.S. Nominee Company Limited, London, England
No Drawing. Filed Feb. 5, 1969, Ser. No. 796,916
Claims priority, application Great Britain, Feb. 9, 1968, 6,621/68
Int. Cl. D06m 3/10, 13/00
U.S. Cl. 8—128 10 Claims

Dimension and shape stabilized wool garments are produced by applying resins or resin-forming materials in an

organic solvent to wool fabric or garments which have previously been set by steam or with the help of chemical setting agents in a desired configuration, which may be flat or pleated. The effect of the combined setting and resin treatment is to give a permanent set which is greater than that possible by either a setting or a resin treatment alone, and the process affords a way of achieving a finish on a wool garment which is machine washable. The setting treatment can be applied either to a wool fabric, which may be of pure wool or of wool blended with other fibres, or to a partially or wholly make-up garment. The resin treatment can be conveniently carried out in dry cleaning machinery.

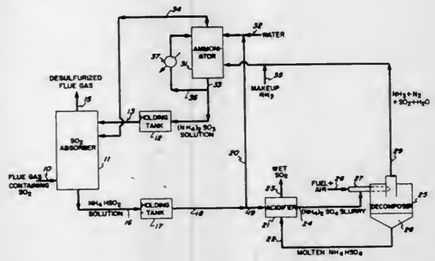
3,676,058
MICROWAVE TREATING APPARATUS AND METHOD
Oscar S. Gray, Fort Lauderdale, Fla., assignor to Gray Industries, Inc., Fort Lauderdale, Fla.
Continuation-in-part of application Ser. No. 817,181, Apr. 17, 1969. This application May 25, 1970, Ser. No. 40,327
Int. Cl. A61l 3/00; A23l 3/08; B65b 55/02
U.S. Cl. 21—54 R **17 Claims**



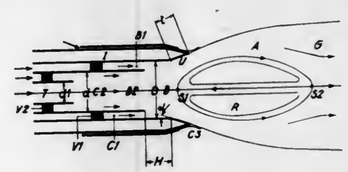
An apparatus for treating articles with microwave energy involving a chamber; means for admitting microwave energy into the chamber; means for supporting articles to be treated by said microwave energy comprising a main rotatable turntable and, mounted on said main turntable, at least one minor rotatable turntable small relative to said main turntable and adapted to rotate individually as the main turntable rotates so that said minor turntable rotates while at the same time passing in an arc, defined by the rotation of the said main turntable, toward, past and away from said site where said microwave energy is admitted to said chamber. There is also provided a method for treating an article with microwave energy wherein the article, while being subjected to microwave energy, is rotated in a plurality of modes of different magnitude.

3,676,059
SULFATE CONTROL IN AMMONIA FLUE GAS DESULFURIZATION
Albert B. Welty, Jr., 225 Watchung Fork, Westfield, N.J. 07090
Filed June 1, 1970, Ser. No. 41,940
Int. Cl. C01b 17/60; C01c 1/24
U.S. Cl. 23—2 **5 Claims**

Buildup of sulfate ions in a flue gas desulfurization system employing an aqueous ammoniacal absorbent is prevented by reducing a portion of the sulfate to sulfur dioxide. Sulfur dioxide is removed from flue gas by absorption in an aqueous solution of ammonium sulfite or ammonia. Some oxidation of tetravalent sulfur to the hexavalent state takes place. At least a portion of the absorber effluent solution is regenerated by acidification with ammonium bisulfate to liberate sulfur dioxide and to form an aqueous ammonium sulfate-ammonium bisulfate slurry. This slurry is introduced into a decomposition zone where a major portion of the salt content is decomposed into ammonium bisulfate and ammonia, and a minor portion into a gas mixture comprising ammonia, nitrogen, sulfur dioxide and steam. The ammonium bisulfate thus produced furnishes the bisulfate used for liberation of sulfur dioxide. The gas mixture formed in decomposition is used to ammoniate a second portion of the absorber effluent solution, and thereby produce fresh absorbent solution.



3,676,060
APPARATUS FOR THE COMBUSTION OF TITANIUM TETRACHLORIDE WITH OXYGEN FOR THE PRODUCTION OF TITANIUM DIOXIDE PIGMENT
Gianfranco Bedetti, Milan, Italy, assignor to Montecatini Edison S.p.A., Milan, Italy
Original application Aug. 11, 1967, Ser. No. 660,035, now Patent No. 3,552,920, dated Jan. 5, 1971. Divided and this application Feb. 2, 1970, Ser. No. 12,490
Claims priority, application Italy, Aug. 16, 1966, 19,039/66
Int. Cl. B05b 7/10; C01g 23/04; B01j 1/00
U.S. Cl. 23—277 R **1 Claim**



Apparatus for the combustion of titanium tetrachloride with oxygen to titanium dioxide into a reaction chamber, the apparatus comprises a tubular cylindrical vortex chamber with an outlet end equipped with a flare towards the reaction chamber; a feeding device for the vortex chamber consisting of three ducts coaxial one with each other and with the vortex chamber, the inner one of said ducts feeding one of two auxiliary reactants has no swirl devices, the middle one, feeding a second auxiliary reactant is equipped with a swirl device. The coaxial flare ending in the reaction chamber diverges in its last part from the tubular body of an angle comprised between 10° and 45°. The ratio of the length of the conical flare versus the diameter of the tubular body is between 0.15 and 1. The ratio between the length of the vortex chamber and the diameter of said chamber is between 0 and 3. The ratio of the length of the portion of the duct where the mixing of the auxiliary reacting substances occurs, and the diameter of the duct is between 2 and 10.

3,676,061
MANUFACTURING METHOD FOR HIGH PURITY SYNTHETIC CRYOLITE FROM CRUDE WET PROCESS PHOSPHORIC ACID
Koji Taga and Masahiko Noguchi, Kasaoka, Japan, assignors to Konoshima Chemical Co., Ltd., Osaka, Japan
No Drawing. Filed Sept. 21, 1970, Ser. No. 74,149
Claims priority, application Japan, Oct. 1, 1969, 44/78,712
Int. Cl. C01b 9/08
U.S. Cl. 23—88 **8 Claims**

High purity synthetic cryolite is prepared from wet process phosphoric acid solution through treatment of the solution with an alkali salt so as to form crystalline alkali fluosilicate, heating the alkali fluosilicate thus obtained with concentrated sulfuric acid and at least one alkali salt selected from the group consisting of alkali chloride and alkali nitrate and absorbing the gas thereby evolved so as to provide a solution of hydrofluosilicic acid and either hydrochloric or nitric acid, and reacting this solution of hydrofluosilicic acid with sodium aluminate solution.

3,676,062
MANUFACTURING METHOD FOR PURE SYNTHETIC CRYOLITE
Koji Taga and Masahiko Noguchi, Kasaoka, Japan, assignors to Konoshima Chemical Co., Ltd., Osaka, Japan
No Drawing. Filed Oct. 7, 1970, Ser. No. 78,991
Claims priority, application Japan, Oct. 11, 1969, 44/81,264
Int. Cl. C01f 7/54
U.S. Cl. 23—88 **2 Claims**

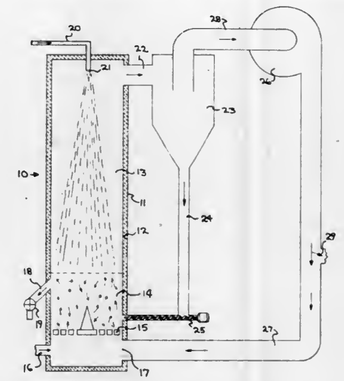
Synthetic cryolite for use in the refining of aluminum is prepared having less than 1% SiO_2 content. The synthesis is carried out with 5–20% of one or more mineral acids at pH 3.5–4.5.

3,676,063
PROCESS FOR PREPARING SYNTHETIC CRYSTALLINE ZEOLITIC SODIUM ALUMINOSILICATE
Arpad Elo, Jr., Chicago, and Frank R. Broersma, Oak Forest, Ill., assignors to Nalco Chemical Company, Chicago, Ill.
No Drawing. Filed Mar. 11, 1971, Ser. No. 123,389
Int. Cl. C01b 33/28
U.S. Cl. 23—113 **4 Claims**

Crystalline zeolitic sodium aluminosilicates are prepared by reacting sources of silica, alumina, and sodium oxide in an aqueous medium in the presence of gluconate in an amount sufficient to suppress side reactions and enhance the formation of synthetic faujasite.

3,676,064
METHODS FOR THE TREATMENT OF SPENT SULFITE PULPING LIQUORS AND THE RECOVERY OF CHEMICAL PULPING VALUES THEREFROM
Philip E. Shick, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio
Filed Apr. 16, 1970, Ser. No. 29,063
Int. Cl. C01d 5/14, 7/00
U.S. Cl. 23—129 **1 Claim**

Improved processes for the treatment of spent pulping liquors and the recovery of sulfite values therefrom wherein the disclosure sets forth a first method consisting essentially of the combined process of pyrolyzing and treating in a fluidized bed a spent neutral semi-sulfite liquor in a single apparatus; then, transferring the gaseous product to a separator for removing entrained particles for return to the fluidized bed where the particles are converted to sodium carbonate followed by a removal of the sodium carbonate from the bed for scrubbing gases to absorb sulfur dioxide to produce sodium sulfite, and wherein the process further consists of recirculating the hot gases produced in the combined pyrolyzing fluidized bed treatment after the entrained particles have been separated in the cyclone separator by conveying some of the gases to the fluidized bed and also burning some of the gases in a furnace to produce sulfur dioxide, which is then absorbed in a solution of sodium carbonate from the fluidized bed to produce sodium sulfite. The second process described in the invention relates to pyrolyzing a spent liquor in a pyrolyzing chamber followed by separating the entrained particles in a cyclone separator and conveying said separated particles to a multistage fluidized bed to produce a solid product consisting primarily of sodium carbonate and gaseous products, which gaseous products are conveyed from the fluidized bed to the pyrolyzing chamber for treatment of the incoming spent pulping liquor. The gases produced in the pyrolyzing chamber are conveyed from the cyclone to a recirculating system with some of the said gases being transported back into the pyrolyzing chamber mixed with the gases from combustion of the solid particles entering the fluidized bed from the cyclone, and the remaining gases transported to a recovery boiler for conversion of the sulfur compounds to sulfur dioxide, which is then scrubbed with a solution of sodium carbonate from the fluidized bed reactor, for regeneration of sodium sulfite for preparation of a pulping liquor. In both of these processes, the recirculation of the pyrolytic gases into the pyrolysis chamber aids in maintaining an improved, more effective and economical pyrolysis system.

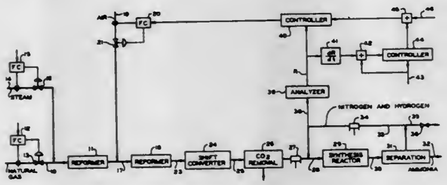


3,676,065
METHOD OF MANUFACTURING HIGHLY CONCENTRATED NITRIC ACID
Gerhard Oberste-Berghaus, Berlin, Germany, assignor to Pintsche Bamag Aktiengesellschaft, Berlin, Germany
Continuation of abandoned applications Ser. No. 834,602, June 9, 1969, and Ser. No. 662,985, Aug. 24, 1967. This application Nov. 16, 1970, Ser. No. 91,608
Claims priority, application Germany, Aug. 30, 1966, P 40,298
Int. Cl. C01b 21/44
U.S. Cl. 23—160 **4 Claims**

The invention relates to a method of manufacturing highly concentrated nitric acid, wherein dilute nitric acid

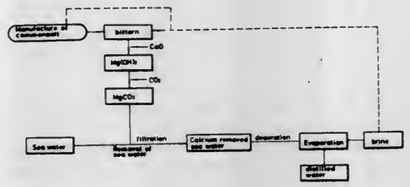
is concentrated beyond the azeotropic point by chemical absorption of nitrogen dioxide, the product so obtained being subjected to a rectification process.

3,676,066
PROCESS CONTROL
Edward N. Pennington, Bartlesville, Okla., assignor to Phillips Petroleum Company
Filed Sept. 17, 1970, Ser. No. 73,070
Int. Cl. C01c *1/04*
U.S. Cl. 23—198 8 Claims



A chemical process in which unreacted feed constituents are recycled, such as ammonia synthesis, is controlled by establishing a first signal representative of the ratio of two constituents fed to a reactor. A second signal is established which is representative of the derivative of the first signal. In response to a combination of the first and second signals, the ratio of feed constituents to the process is controlled.

3,676,067
PRODUCTION OF FRESH WATER, BRINE AND MAGNESIUM HYDROXIDE
Hisanobu Tabata and Norimasa Tabata, both of 968 Kou, Ohgoshi-machi, Sakaide-shi, and Rokuro Nakajima, 1831 Ohyabu-cho, Sakaide-shi, all of Kanagawa-ken, Japan
Filed June 15, 1970, Ser. No. 46,286
Claims priority, application Japan, June 19, 1969, 44/48,416, 44/48,417
Int. Cl. C01b *5/00*; C01d *3/00*; C01f *5/14*
U.S. Cl. 23—204 R 10 Claims



Disclosed is a method for making fresh water and brine from sea water by reacting bittern, obtained, for example, from the extraction of common salt, with calcium oxide to form an aqueous suspension of magnesium hydroxide which is treated with carbon dioxide to form magnesium carbonate. The magnesium carbonate is added to the sea water to precipitate calcium out of the water as calcium carbonate which is filtered off and the remaining solution is concentrated to produce fresh water and brine. Also disclosed is a method for preparing magnesium hydroxide wherein an aqueous magnesium chloride solution is mixed with quicklime in a closed, rotary reaction zone at a temperature of about 50° to 70° C. at a pH of about 8.0 to 8.5.

3,676,068
METHOD FOR SYNTHESIZING DIAMOND
Alexandr Alexandrovich Shulzhenko and Anatoly Fedorovich Getman, Kiev, U.S.S.R., assignors to Ordena Trudovogo Krasnogo Znameni Ukrainsky Nauchno-Issledovatelsky Konstruktorsky, Teknnologichesky Institut Sintetlcheskikh Sverkhtverdykh materialov I Instrumenta Gosplana Ukrainskoi SSR, Kiev, U.S.S.R.
No Drawing. Filed May 11, 1971, Ser. No. 142,800
Claims priority, application U.S.S.R., May 18, 1970, 1,436,483
Int. Cl. C01b *31/06*
U.S. Cl. 23—209.1 3 Claims

Diamond is synthesized by subjecting carbon-containing material in contact with a compound of mercury or lead, such as mercury oxide or lead oxide, to a temperature of at least 2000° C. and a pressure corresponding to a selected temperature within the diamond stability region.

3,676,069
METHOD FOR MANUFACTURING DIAMONDS IN A HYDROGEN FREE ENVIRONMENT
George C. Kennedy, Los Angeles, Calif., assignor to Teledyne, Inc., Los Angeles, Calif.
Filed Aug. 13, 1970, Ser. No. 63,355
Int. Cl. C01b *31/06*
U.S. Cl. 23—209.1 6 Claims

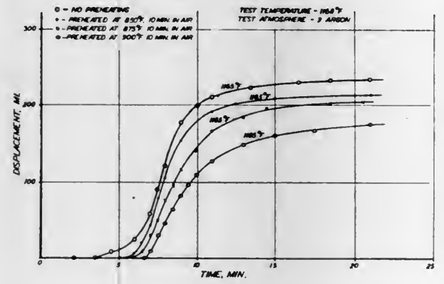


A method of manufacturing diamond from graphite in a hydrogen free environment is disclosed in which a reaction vessel is first formed from an anhydrogenous material. A charge of graphite and a carbon solvent is placed in the reaction vessel and the reaction vessel is placed in the reaction chamber. A plunger is placed in the reaction chamber to generate high pressures therein, and the relatively moving surfaces between the reaction chamber and the plunger are lubricated with an anhydrogenous lubricant. The temperature and pressure in the reaction chamber are then raised until the conditions in the reaction chamber are above the diamond-graphite equilibrium line of the carbon phase diagram and these pressure and temperature conditions are maintained for a predetermined time period until at least a portion of the graphite in the charge is converted to diamond.

3,676,070
MANUFACTURE OF CARBON BLACK
John W. Vanderveen, Paul J. Cheng, K. Louis Mills, Jr., Charles R. Venable, Jr., and Paul H. Johnson, Bartlesville, Okla., assignors to Phillips Petroleum Company
No Drawing. Filed Jan. 29, 1971, Ser. No. 111,082
Int. Cl. C09c *1/48*
U.S. Cl. 23—209.4 9 Claims

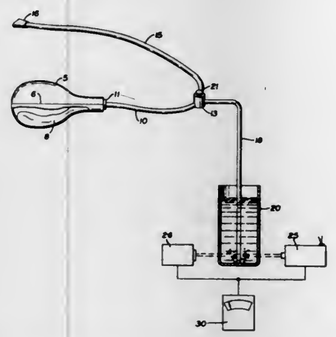
In a process for producing carbon black in which a hydrocarbon feed is pyrolytically decomposed in a carbon black reactor an oxide of aluminum or zirconium is introduced into the carbon black reactor in an amount sufficient to prevent the decomposition of the refractory lining as caused by the presence of barium, calcium, and iron but insufficient to effect the structure of the carbon black product.

3,676,071
PROCESS FOR CONTROLLED PRODUCTION OF HYDROGEN GAS BY THE CATALYZED AND CONTROLLED DECOMPOSITION OF ZIRCONIUM HYDRIDE AND TITANIUM HYDRIDE
Sidney E. Speed, Stonington, Conn., assignor to Olin Corporation, New Haven, Conn.
Continuation-in-part of application Ser. No. 866,776, Oct. 15, 1969. This application Apr. 22, 1970, Ser. No. 30,886
Int. Cl. C01b *1/02*; C01g *25/02*
U.S. Cl. 23—212 R 13 Claims



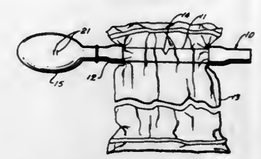
A process for producing a controlled amount of hydrogen gas by for catalyzing and controlling the solid state decomposition of a material which releases a gas at elevated temperatures comprising mixing and compacting a discrete particulate material containing a major proportion of aluminum with zirconium hydride or titanium hydride. heating the resultant compact at a temperature of 850° to 900° F. for at least five minutes and then heating said compact at a temperature greater than the decomposition temperature of said decomposable material.

3,676,072
BREATH TEST FOR MARIJUANA SMOKERS AND APPARATUS THEREFOR
Alan F. Krivis, Akron, Ohio, assignor to Portage Research & Development Corporation, Kent, Ohio
Filed Sept. 10, 1969, Ser. No. 856,541
Int. Cl. G01n *21/24, 33/16, 31/22*
U.S. Cl. 23—232 R 7 Claims



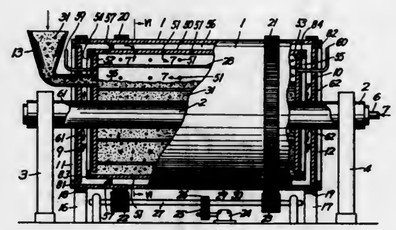
A test for determining whether one has recently smoked marijuana. The test involves treating the breath of the person with a compound known to react with decomposition products of marijuana to produce a color reaction. Apparatus is included.

3,676,073
ALVEOLAR BREATH VOLUMETRIC ANALYSIS FOR ALCOHOL
Manley J. Luckey, 7252 Osbun Road, San Bernardino, Calif. 92404
Filed May 6, 1970, Ser. No. 35,139
Int. Cl. G01n *33/16*
U.S. Cl. 23—232 R 7 Claims



A breath sampling kit and method for sampling breath are described for sampling the quantity of alcohol in a fixed quantity of breath without elaborate apparatus. According to this arrangement, a test subject inflates an inelastic bag of predetermined volume connected in bypassing relation to an elastic container such as a balloon. The volume of the bag is such as to accommodate the nonalveolar breath of the test subject. After the bag is filled, the balloon is inflated with the alveolar breath. The balloon is then deflated through a sample tube in which a solid material is contained and inflates a second inelastic bag, the volume of which bears a fixed relation to 1 milliliter of blood so that upon subsequent analysis the quantity of alcohol in the blood is determined directly. The solid material in the tube adsorbs alcohol in the breath and keeps it trapped for later extraction and analysis. The alcohol is extracted from the solid by water or other solvent for alcohol passed through the solid, and the solid material is selected for reversibly adsorbing the alcohol and being substantially insoluble in the extracting solvent so as not to interfere with subsequent analysis, silica gel being particularly preferred.

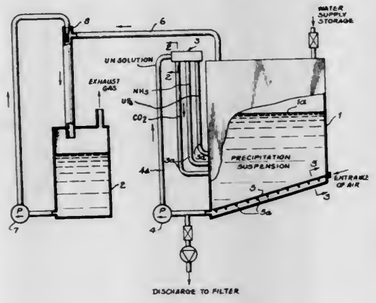
3,676,074
APPARATUS FOR TREATING ORGANIC WASTE
Daigoro Shibayama, Takasaki, and Teruo Mashimo, Annaka, Japan, assignors to Yamato Setubi Koji Kabushiki Kaisha, Maebashi-shi, Japan
Filed May 19, 1970, Ser. No. 38,740
Claims priority, application Japan, June 30, 1969, 44/51,663
Int. Cl. B01j *2/12*; C05f *3/06*
U.S. Cl. 23—259.1 5 Claims



An apparatus for disposal of organic waste such as the excrement of birds and animals and sea food wastes comprising a fixed air pipe having a specific diameter and a cylinder rotatable around the axis of the fixed air pipe, said air pipe having a plurality of air blow-off elements to feed air into the cylinder, or said cylinder being combined with a coaxial inner cylinder rotatable also around

the axis of said air pipe, said inner cylinder having a plurality of air jet holes to supply air into the inner cylinder, whereby such organic wastes as excrements and sea food wastes fed into the rotating cylindrical structure are fermented and decomposed by the action of aerobic bacteria and subjected to drying and solidification before being taken out of the cylindrical tank.

3,676,075
APPARATUS FOR SEPARATING URANIUM FROM AN AQUEOUS SOLUTION
Fritz Ploger, Kleinostheim, and Horst Vletzke, Grossauheim, Germany, assignors to Nukem Nuklear-Chemie und Metallurgie Gesellschaft m.b.H., Wolfgang, near Hanau am Main, Germany
Filed July 7, 1969, Ser. No. 839,435
Claims priority, application Germany, May 14, 1969, P 19 24 594.4
Int. Cl. B01j *1/00*; C01g *43/00*
U.S. Cl. 23—285 **5 Claims**



A uranium solution is cycled from a vessel through mixing nozzles mounted in precipitating tubes and back into the vessel, and the gases produced in the vessel are passed into a washing tank.

3,676,076
DISPOSABLE CONTAINER
Dennis R. Grady, Yonkers, N.Y., assignor to Gradko Glass Laboratories, Inc., Yonkers, N.Y.
Filed Sept. 24, 1970, Ser. No. 74,959
Int. Cl. B01l *3/00*; B65d *1/04*; G01n *1/14*
U.S. Cl. 23—292 **6 Claims**

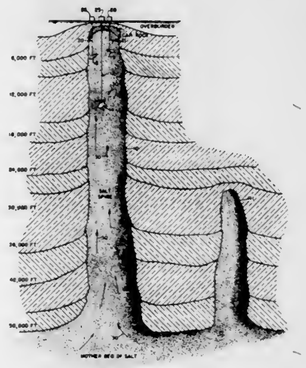


A disposable container, particularly for use in laboratory and medical uses, includes a plastic resin container having flexible walls. A neck portion of the container has an opening which is closed by a thin membrane, the membrane being adapted to be pierced by a bushing lodged, with a friction fit, in the neck. The bushing has a pointed edge directed toward the membrane and an outwardly extending flange portion, which controls the movement of the bushing.

3,676,077
PURIFICATION OF MAGNESIUM CHLORIDE SOLUTIONS
Norman Bell and Hung-Kei H. Lam, Walnut Creek, Calif., assignors to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.
No Drawing. Filed Aug. 28, 1969, Ser. No. 853,971
Int. Cl. C01f *5/30*
U.S. Cl. 23—296 **4 Claims**

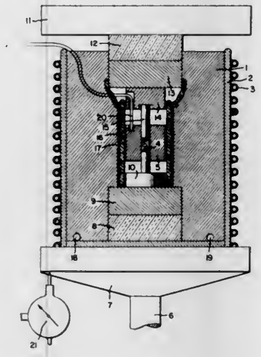
A bittern which is substantially free of sodium and potassium values is readily obtained by adjusting the $MgCl_2$ concentration of the bittern to approximately 30% by weight, cooling the adjusted bittern to about —10° C. to 20° C., preferably 0° C., maintaining the bittern at such temperature until crystallization is substantially complete, and then recovering purified magnesium chloride bittern.

3,676,078
SALT SOLUTION MINING AND GEOTHERMAL HEAT UTILIZATION SYSTEM
Charles H. Jacoby, Dalton, Pa., assignor to International Salt Company, Clarks Summit, Pa.
Filed Mar. 19, 1970, Ser. No. 21,051
Int. Cl. B01d *1/00, 11/02*; C01d *3/08*
U.S. Cl. 23—299 **4 Claims**



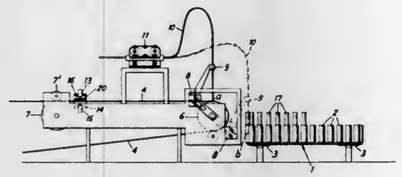
A method of solution mining and recrystallization recovery of solid sodium chloride salt from underground occurrences thereof, which utilizes the heat conductivity characteristics of an underground salt spine, spire, dome, or the like; whereby the latent heat of the earth's core may be efficiently employed in the recrystallization process. The highly (heat) conductive characteristic of a salt spire or the like such as has been formed by geologic plastic flow and vertical intrusion of a portion of a deep-seated "mother" bed of salt through the relatively heat-insulative overlying rock strata, is employed to draw heat from a high temperature geologic structure which is so deep-seated as to be economically inaccessible to modern drilling equipment. This heat energy is drawn into a "heat well" which is developed at an underground level which is readily within reach of modern earth bore drilling techniques; the heat energy flowing into the "heat well" being thereupon transmitted and utilized in the salt recrystallization process facility at or near the earth's surface.

3,676,079
PRESSURE CALCINTERING
Peter E. D. Morgan, Ithaca, N.Y., assignor to Research Corporation, New York, N.Y.
Filed Mar. 28, 1966, Ser. No. 538,036
Int. Cl. C01f *1/00, 15/00*; C22c *1/04*
U.S. Cl. 23—345 **10 Claims**



Finely-grained ceramic magnesium, aluminum or thorium oxide having an actual density approaching the theoretical density is prepared by heating the corresponding substantially pure hydroxide maintained at a pressure above 1500 p.s.i. to a temperature above its decomposition temperature while permitting water vapor to escape as it is formed.

3,676,080
DEVICE FOR AUTOMATICALLY ANALYZING LIQUIDS
Roland Richterich, Bern, Switzerland, assignor to Hoffmann-La Roche Inc., New York, N.Y.
Filed Dec. 5, 1968, Ser. No. 781,317
Claims priority, application Switzerland, Dec. 15, 1967, 17,638/67
Int. Cl. G01n *1/10, 1/18*
U.S. Cl. 23—253 R **1 Claim**

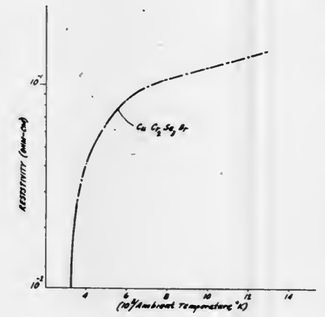


Each group of reaction vessels embodied in a transparent band is automatically filled with the liquid to be analyzed and each vessel of the group is automatically filled with a different one of several reagents. Each vessel is then led past an individual light source and photocell, which latter detects the reaction and sends a signal to a chart recorder or other suitable device.

3,676,081
REMOVAL OF TITANIUM FROM MONAZITE ORES
Joseph Peter Mazza, 2497 Forest Ave., Niagara Falls, N.Y. 14301
No Drawing. Filed Dec. 31, 1968, Ser. No. 788,312
Int. Cl. C22b *61/04, 53/00*
U.S. Cl. 23—327 **11 Claims**

Titanium occurring as an impurity in monazite ores is removed by treatment of a thorium chloride solution derived from said ores which contains said titanium with tannic acid to precipitate the titanium, thereby removing 90% or more of the latter.

3,676,082
MAGNETIC COMPOSITIONS
Murray Robbins, Trenton, N.J., assignor to RCA Corporation
Filed May 19, 1967, Ser. No. 639,798
Int. Cl. C01b *19/00*; H01f *1/00, 1/06*
U.S. Cl. 23—367 **9 Claims**



A new magnetic material comprises the molar formula $MM'_2Z_{3+y}X_{1-y}$ where: Z consists essentially of at least one of the chalcogenides, S^{2-}, Se^{2-}, Te^{2-}; X consists essentially of at least one of the halides, Cl^-, Br^-, I^-; M consists essentially of copper ions; M' consists essentially of chromium ions; and y is a number from zero to less than 1. Values of y exist above which the material behaves as a conductor and at or below which the material behaves as a semiconductor. The compositions are generally in the spinel crystal class and are useful in magnetic and semiconductor devices. A method of preparing the above material comprises first mixing the starting materials copper halide, chromium, chalcogen and copper in the molar ratios to give the desired product. Then pressed pellets of the mixture are formed and placed in evacuated quartz tubes. The pellets are then fired for at least 10 hours at 700–800° C.

3,676,083
MOLYBDENUM BASE ALLOYS
Richard F. Cheney and Donald S. Parsons, Towanda, Pa., assignors to Sylvania Electric Products Inc.
No Drawing. Filed Jan. 21, 1969, Ser. No. 792,754
Int. Cl. B22f *3/00*
U.S. Cl. 29—182 **5 Claims**

A molybdenum base alloy is disclosed that has a recrystallization temperature above that of molybdenum and upon being heated above its recrystallization temperature forms an interlocking grain structure. The alloy comprises, in parts per million by weight of the alloy, from about 30 to about 180 parts per million of aluminum, from about 600 to about 2500 parts per million of silicon and from about 50 to about 150 parts per million

of an alakli metal. A process for preparing the alloy is disclosed that involves forming a uniform mixture of finely divided molybdenum dioxide and a sufficient amount of a recrystallization modifier, reducing the molybdenum dioxide in the mixture to molybdenum, compacting the mixture into shaped articles and thereafter heating the articles in a reducing atmosphere under controlled rate of heating by self-resistance heating.

3,676,084
REFRACTORY METAL BASE ALLOY COMPOSITES

Max Quatinetz, Bay Village, John W. Weeton, Rocky River, and Thomas P. Herbell, Parma, Ohio, assignors to the United States of America as represented by the Administrator of the National Aeronautics and Space Administration

Original application Mar. 25, 1966, Ser. No. 539,255, now Patent No. 3,472,709, dated Oct. 14, 1969. Divided and this application Jan. 24, 1969, Ser. No. 793,657
Int. Cl. C22c *31/04*
U.S. Cl. 29—182.5 **2 Claims**

High temperature composites of a dispersion strengthened tungsten wherein a portion of the refractory compounds are reprecipitated for uniform distribution and a finer particles size.

3,676,085
COBALT BASE COATING FOR THE SUPERALLOYS

Dennis J. Evans, South Windsor, and Richard C. Elam, Manchester, Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

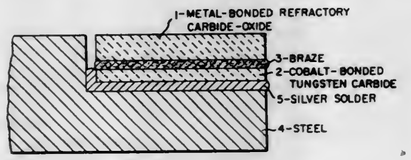
Continuation-in-part of application Ser. No. 795,616, Jan. 31, 1969. This application Feb. 18, 1971, Ser. No. 116,322
Int. Cl. C22c *19/00*; B32b *15/06*
U.S. Cl. 29—194 **3 Claims**

The oxidation-erosion and sulfidation resistance of the nickel- and cobalt-base superalloys is markedly improved through the use of a coating consisting of cobalt, chromium, aluminum and an active metal such as yttrium, particularly at the composition, by weight, of 15–40 percent chromium, 10–25 percent aluminum, .01–5 percent yttrium, balance cobalt.

3,676,086
METAL/CARBIDE-OXIDE COMPOSITE

Dong M. Chay and Ralph K. Iler, Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Original application Nov. 25, 1968, Ser. No. 784,999, now Patent No. 3,567,408, dated Mar. 2, 1971. Divided and this application Dec. 8, 1970, Ser. No. 96,292
Int. Cl. B32b *15/00*
U.S. Cl. 29—195 **12 Claims**

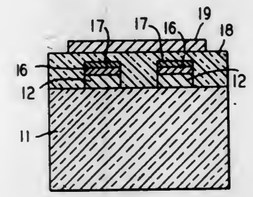


Disclosed are composite structures comprising (1) a dense, metal-bonded refractory carbide-oxide element metallurgically bonded with a copper-alloy to (2) a dense, cobalt-bonded tungsten carbide element having a substantially uniform coefficient of thermal expansion of from 0.5 to 1.5 times that of said carbide-oxide element. The composites are particularly useful as cutting edges for milling and turning cast iron and hardened steels.

3,676,087
TECHNIQUE FOR THE FABRICATION OF A PHOTOLITHOGRAPHICALLY DEFINABLE, GLASS COVERED GOLD CONDUCTOR PATTERN

Gerald Burt Fefferman, Parsippany, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Mar. 15, 1971, Ser. No. 123,973
Int. Cl. B23p *3/20*; C23b *5/50*; B44d *1/14*
U.S. Cl. 29—195 G **5 Claims**



A technique is described for enhancing the wettability characteristics of a photolithographically definable gold conductor pattern with respect to glass wherein a thin film of rhodium is interposed between the gold and the applied glass film. The resultant structure includes a smooth, defect-free glass insulating film and is uniquely suited for multilayer electronic circuitry including a glass dielectric.

3,676,088
COMPOSITE ARTICLE

Michael J. Pryor, Woodbridge, Stanley Shapiro, New Haven, Derek E. Tyler, Cheshire, and John Shabarack, Guilford, Conn., assignors to Olin Corporation

No Drawing. Filed Mar. 3, 1971, Ser. No. 120,742
Int. Cl. B21b *3/00*; B32b *15/20*
U.S. Cl. 29—199 **10 Claims**

The disclosure teaches a composite cuprous article particularly useful as a brazing sheet. The composite has a core of a copper base alloy having a solidus temperature in excess of 1900° F. clad with a dissimilar copper base alloy containing from 22 to 40% manganese.

3,676,089
MOTOR FUEL COMPOSITION

Herbert C. Morris, Wappingers Falls, and Peter Dorn, Lagrangeville, N.Y., assignors to Texaco Inc., New York, N.Y.

No Drawing. Filed Nov. 6, 1969, Ser. No. 874,700
Int. Cl. C10l *1/18, 1/22*
U.S. Cl. 44—62 **6 Claims**

Motor fuel composition comprising a mixture of hydrocarbons in the gasoline boiling range containing (a) from 0.0004 to 0.1 weight percent based on said composition of an N-polyamine substituted alkenyl succinamic acid or corresponding succinimide in combination with (b) from 0.003 to 0.20 volume percent of (1) a polymer of a C_2 to C_6 unsaturated hydrocarbon, (2) a copolymer of a C_2 to C_6 unsaturated hydrocarbon, or (3) the corresponding hydrogenated polymer or copolymer, said polymer or copolymer having a molecular weight in the range from about 500 to 3500 and a method for operating an internal combustion gasoline engine.

3,676,090
COMPOSITION OF MATTER AND METHOD OF TREATING INTERNAL COMBUSTION ENGINE FUEL GASES

Abraham M. Herbsman, Harbor City, Calif., by Clarke Merle Kates, administrator of Abraham Herbsman, deceased

No Drawing. Division of application Ser. No. 864,241, July 31, 1969, now Patent No. 3,642,901, which is a division of application Ser. No. 759,780, Sept. 13, 1968, now Patent No. 3,488,169, which in turn is a continuation-in-part of application Ser. No. 283,550, May 27, 1963. This application June 15, 1970, Ser. No. 57,419
Int. Cl. C10l *1/26*
U.S. Cl. 44—72 **4 Claims**

A composition of matter, which is soluble in gasoline and in liquid aliphatic hydrocarbons, and which consists of the product, produced by reacting boron trifluoride ethyl ether complex with an amine reagent, selected from the group consisting of tertiary nonyl amine, a mixture of tertiary-alkyl primary amines, ranging from

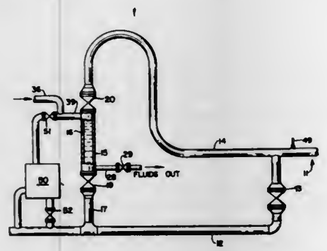
$$t\text{-}C_{12}H_{25}NH_2 \text{ to } t\text{-}C_{18}H_{31}NH_2$$

a mixture of tertiary-alkyl primary amines, ranging from $t\text{-}C_{18}H_{37}NH_2$ to $t\text{-}C_{24}H_{49}NH_2$, and primary alkyl aryl amines in which the alkyl radical is large enough to impart solubility to the reaction product in gasoline and liquid aliphatic hydrocarbons.

3,676,091
METHOD FOR FORMING AND CIRCULATING PLUGS IN A PIPELINE

John P. Fraser, Houston, and David E. Hartman, Seabrook, Tex., assignors to Shell Oil Company, New York, N.Y.

Filed Sept. 8, 1970, Ser. No. 70,099
Int. Cl. F17d *1/04*
U.S. Cl. 48—190 **1 Claim**



A method for forming and circulating a plug within a pipeline having a gas stream flowing therein by reacting water with gas to form a gas hydrate plug which is subsequently circulated through the pipeline.

3,676,092
OVERSIZED ABRASIVE COATED PRODUCTS

Halsey W. Buell, Niagara Falls, N.Y., assignor to The Carborundum Company, Niagara Falls, N.Y.

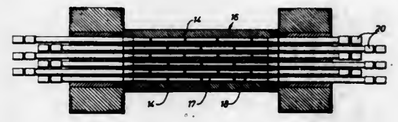
No Drawing. Filed Dec. 21, 1970, Ser. No. 100,393
Int. Cl. B24b *1/00*
U.S. Cl. 51—295 **4 Claims**

An abrasive coated product, e.g., an abrasive belt or abrasive disc, having on the abrasive face thereof an oversize of at least about 0.5 lb./ream of a highly chlorinated paraffin or mixture thereof having an average chain length of at least 20 carbon atoms said product being characterized by an increased rate of stock removal and a greater total stock removal during prolonged grinding compared to a product lacking said oversize.

3,676,093
FURNACE FOR THE PRODUCTION OF GLASS FIBERS

Nils Gustav Schrewelius, Hallstahammar, Sweden, assignor to Aktiebolaget Kanthal, Hallstahammar, Sweden

Filed Sept. 2, 1970, Ser. No. 68,986
Claims priority, application Sweden, Sept. 3, 1969, 12,189/69
Int. Cl. C03b *37/02*
U.S. Cl. 65—1 **8 Claims**

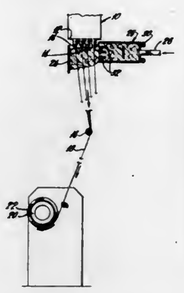


In a furnace for use in the production of glass fibers at least a portion of the bottom wall of a compartment for molten glass is formed by one or more rods consisting essentially of molybdenum disilicide and having transverse through bores forming outlets for the molten glass. The rods may be heated by passing current through them.

3,676,094
METHOD OF COATING GLASS FIBERS

Robert G. Russell, Granville, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Jan. 8, 1970, Ser. No. 1,501
Int. Cl. C03c *25/02*
U.S. Cl. 65—3 **14 Claims**

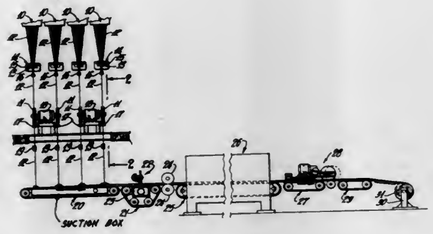


The method of coating glass fibers by contacting the fibers with a foam of the coating material. In one method, the foam is supported adjacent the hot bushing from which the molten streams of glass are pulled to form the filaments, so that the foam contacts the fibers before the fibers pick up any appreciable amount of water or organic materials from the atmosphere. The foam may be of organic base, so that the surface has oleophobic portions extending outward and oleophilic portions extending into the organic material. The oleophobic portions are preferably a coupling agent for the glass, and the oleophilic portions preferably have a benzene ring adjacent the terminal ends. This process can also be used to coat woven fabrics by heat cleaning the fabric and then contacting it with the foam. The foam of coating material may be positioned in the path of fibers issuing from a centrifuge to cushion and coat the fibers. The foam of coating material may also be projected into a gas stream carrying randomly oriented fibers to produce a glass fiber mat, or can be spread upon the surface of the mat, and the foam broken to wet out the fibers and produce a bonded mat.

3,676,095
PROCESS FOR PRODUCING AIR BLOWN GLASS FIBER STRAND MAT

Joseph P. Stalego, Newark, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Continuation of application Ser. No. 693,351, Dec. 26, 1967. This application June 25, 1970, Ser. No. 56,054
Int. Cl. C03c *25/02*
U.S. Cl. 65—3 8 Claims

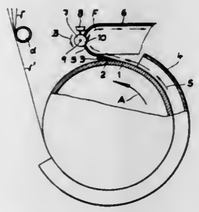


A process of making a mat of glass fibers wherein a strand of glass fibers frictionally engages the surface of a revolving cylinder from which the strand is tangentially discharged onto a moving conveyer. The strand is caused to be randomly looped upon the conveyer by alternate blasts of air which laterally impinge upon the strand to throw the strand in a looped fashion from side to side across the conveyer. High uniform mat strengths are obtained by wetting the individual filaments of glass with a water solution of organosilane and a nonionic lubricant, the principal constituent of the molecules of which is a polyoxyethylene polyhydric alcohol condensate grouping.

3,676,096
PROCESS AND APPARATUS FOR MAKING GLASS FIBER STRUCTURES INCLUDING COATING BEFORE AND AFTER ATTENUATION

Wolfgang Schuller, Wertheim am Main, and Harald Hohlfeld, Wertheim (Nord), Germany, assignors to Werner Hugo Wilhelm Schuller, Munich, Grunwald, Germany

Filed July 16, 1969, Ser. No. 842,271
Claims priority, application Germany, July 18, 1968, P 17 71 833.1
Int. Cl. C03c *25/02*
U.S. Cl. 65—3 16 Claims



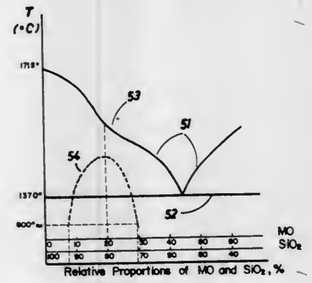
In making glass fiber structures, the strands of glass are first coated with a liquid, for instance a lubricant, prior to their delivery to the drawing drum, and the glass fibers formed on the drawing drum are then coated in a separate application, while separated from each other, with a liquid coating medium after their removal from the drawing drum and prior to their consolidation into a glass fiber structure.

An apparatus for carrying out the second coating application includes an air channel leading away from the drawing drum and liquid transfer means protruding into the air channel so as to be contacted by the glass fibers carried through said air channel in a stream of air.

3,676,097
PHYSICALLY STRENGTHENING BODIES MADE OF AT LEAST PARTLY VITREOUS MATERIAL

Emile Plumat, Gilly, and Robert van Laethem, Loverval, Belgium, assignors to Glaverbel S.A., Watermael-Boitsfort, Belgium

Filed Apr. 26, 1968, Ser. No. 724,490
Claims priority, application Luxembourg, Apr. 27, 1967, 53,548
Int. Cl. C03b *29/00*; C03c *17/00*
U.S. Cl. 65—33 7 Claims

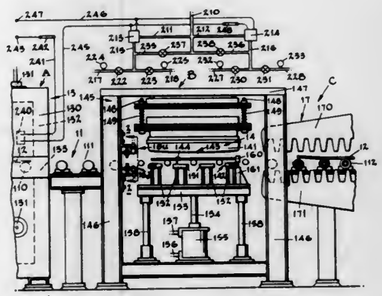


A process for physically strengthening a body made of vitreous or partly vitreous material by providing the body with surface layers or coatings of a material whose composition is such that at least one coating ingredient can undergo a solid-to-solid phase transformation which gives the coating a hardness at least equal to that of the body, and causing such phase transformation to take place.

3,676,098
METHOD OF BENDING GLASS SHEETS

Harold R. Hall, Toledo, Ohio, assignor to Libbey-Owens-Ford Company, Toledo, Ohio

Filed July 16, 1970, Ser. No. 55,394
Int. Cl. C03b *23/02*
U.S. Cl. 65—106 4 Claims

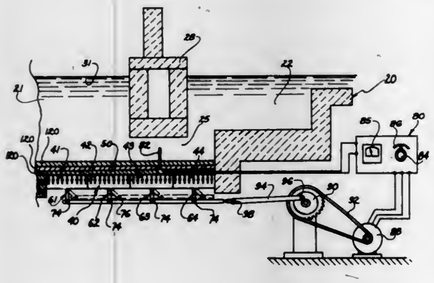


A method of bending glass sheets in which a sheet, that has been heated to a temperature at which the glass softens, has a surface thereof cooled prior to bending the heated and softened sheet against a shaping mold; together with apparatus for use in performing this method.

3,676,099
GLASS MELTING FURNACE AND CONTROL MEANS FOR THE FLOW OF MOLTEN SILICATES THEREIN

Palmer Fultz, 4280 Hayden Run Road, Columbus, Ohio 43221

Filed Feb. 17, 1970, Ser. No. 12,107
Int. Cl. C03b *5/22*
U.S. Cl. 65—162 21 Claims



A throat-type glass melting furnace provided with variable radiation control means for controlling the flow of molten silicates therein. The control means is characterized by a variable radiation retarding means underlying a radiation area of the furnace bottom along the path of flow of molten silicates through the furnace throat so as to controllably and efficiently dissipate heat from the molten silicates at a specific location and in a controlled manner.

3,676,100
PROCESS FOR PRODUCING A STABILIZED SUSPENSION NPK, NP OR PK FERTILIZER

Wilfred Gerhardt, Knapsack, near Cologne, and Heinz Harnisch, Lovenich, near Cologne, Germany, assignors to Knapsack Aktiengesellschaft, Knapsack, near Cologne, Germany

No Drawing. Filed Feb. 19, 1970, Ser. No. 12,860
Claims priority, application Germany, Feb. 21, 1969, P 19 08 721.9
Int. Cl. C05b *21/00*
U.S. Cl. 71—37 3 Claims

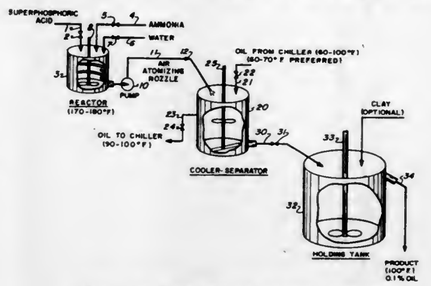
Production of stabilized NPK-, NP- or PK-suspension fertilizers having an overall nutrient concentration of at least 20 grams, preferably more than 30 grams, per 100 grams suspension fertilizer. The stabilizer in the fertilizers is a neutralization sludge obtained in the neutralization of crude phosphoric acid produced by wet-processing treatment of phosphate ores with the use of an alkali liquor and/or ammonia.

3,676,101
SELF-SUSPENDING AMMONIUM POLYPHOSPHATE SUSPENSION FERTILIZER

Fred D. Nix, Phil Campbell, Ala., assignor to Tennessee Valley Authority, Muscle Shoals, Ala.

Continuation of application Ser. No. 110,537, Jan. 28, 1971, which is a continuation-in-part of abandoned application Ser. No. 836,386, June 25, 1969. This application Aug. 2, 1971, Ser. No. 168,280
Int. Cl. C05b *7/00*
U.S. Cl. 71—34 4 Claims

A process for improving the storage characteristics of ammonium polyphosphate clayless base suspensions while increasing the grade up to 14–47–0 involves causing fine crystals of ammonium polyphosphate to be formed in the fresh suspension by close control of the P_2O_5 (80–81 percent) content of the superphosphoric acid fed thereto and quick-cooling the product by direct contacting in a chilled fluid immiscible therewith.



PRODUCTION OF AMMONIUM POLYPHOSPHATE SUSPENSIONS COOLING BY DIRECT CONTACT WITH OIL

3,676,102
METHOD OF TREATING PLANTS

Arthur R. Clark and Margaret M. Clark, both of P.O. Box 283, Spring Lake, N.J. 07762

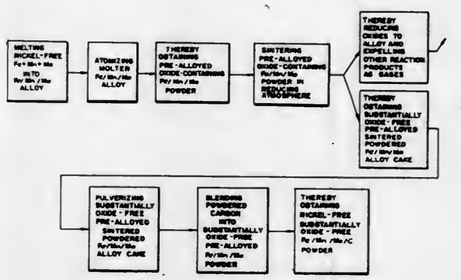
No Drawing. Application Oct. 30, 1968, Ser. No. 771,975, now Patent No. 3,592,910, which is a continuation-in-part of application Ser. No. 676,019, Oct. 18, 1967. Divided and this application Oct. 19, 1970, Ser. No. 82,122
Int. Cl. A01n *5/00*, *3/02*
U.S. Cl. 71—127 5 Claims

Liquid polyterpenes having a molecular weight of from 272 to 544 are applied to growing plants, particularly nursery stock and food crops, to provide the plants with a protective coating. The polyterpene coating inhibits the transpiration of water from the plants, and enhances plant growth.

3,676,103
PRE-ALLOYED NICKEL-FREE SILICON-FREE MINIMAL-OXIDE LOW-ALLOY IRON POWDER AND METHOD OF MAKING THE SAME

Gordon J. Le Brasse, Ann Arbor, and Boniface Stolarski, Grosse Pointe Woods, Mich., assignors to Federal-Mogul Corporation, Southfield, Mich.

Filed Feb. 17, 1971, Ser. No. 115,994
Int. Cl. B22d *23/08*; B22f *9/00*
U.S. Cl. 75—.5 BA 9 Claims



A pre-alloyed nickel-free silicon-free low-alloy iron powder with minimal oxide content yet possessing good hardenability and good mechanical and metallurgical

properties for the production of sintered powdered metal articles is prepared by alloying iron with approximately one-half of one percent molybdenum and approximately one-half of one percent of manganese. Any desired carbon content is obtained either by combining carbon with the molten alloy prior to atomization or by adding graphite thereafter to the pre-alloyed powder by blending prior to compacting. The detrimental oxides normally created during the production of these compactible metal powders by the high temperature atomization of the molten metal from which they are formed are reduced to negligible amounts having harmless effects by passing the pre-alloyed powder through a sintering furnace containing a reducing atmosphere, such as a hydrozen or dissociated ammonia gas atmosphere. The sintered powdered alloy cake thus produced is then pulverized to form the alloy powder of the present invention. Comparative tests described, and their results set forth herein, show that the present invention alloy powder, although omitting the nickel content previously thought necessary, nevertheless retains the functions of, and compares favorably in performance with the prior nickel-content iron alloy powders.

3,676,104

PRE-TREATMENT OF METAL-BEARING MINERAL PRODUCTS

Per G. Kihlstedt, Stockholm, Sweden, assignor to AB Cold-Bound Pellets, Djursholm, Sweden

Filed Mar. 21, 1969, Ser. No. 809,289
Claims priority, application Sweden, Mar. 25, 1968, 3,918/68; Apr. 11, 1968, 4,947/68
Int. Cl. C21b *1/24*
U.S. Cl. 75—3 **7 Claims**

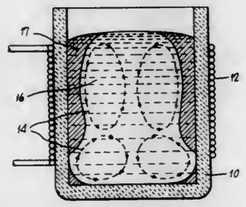
Pellets of metal-bearing mineral concentrates are produced by mixing together concentrates differing in ranges of grain sizes, together with a binder, grinding the mixture to a pre-determined extent, forming the ground mixture into pellets and autoclaving the pellets. Normally, the concentrates are moist, in which event the pellets are partially dried before being subjected to autoclaving.

3,676,105

RECOVERY OF METAL FROM DROSS

Melvin Elliott McLeod, Arvida, Quebec, Canada, John Edward Deutschman, Mandeville, Jamaica, West Indies, and Herbert Warren Percival, Beaconsfield, Quebec, and Hans Spoel, St. Cesaire, Quebec, Canada, assignors to Alcan Research and Development Limited, Montreal, Quebec, Canada

Filed Jan. 8, 1971, Ser. No. 105,025
Int. Cl. C22b *7/00, 21/00*
U.S. Cl. 75—68 R **16 Claims**



Procedure for treating dross from a molten aluminum surface to recover free metal contained in the dross by heating the dross in an induction furnace in the presence of a salt flux. Preferably, the dross is initially rapidly quenched upon removal from the molten surface, to maintain a high free metal content in the dross. With a heel of molten aluminum established in the induction furnace, a substantial proportion of the flux is added, and the dross is then fed to the melt in successive increments which may be interspersed with further additions of flux. Heat and fluid circulation caused by induced currents in the melt and by the electromagnetic field effect separation and coalescence of free metal from the dross.

3,676,106

ION EXCHANGE PROCESS FOR THE RECOVERY OF METALS WITH CATION EXCHANGE AGENTS

Wayne C. Hazen, Denver, Colo., assignor to Hazen Research, Inc., Golden, Colo.

No Drawing. Filed Sept. 10, 1970, Ser. No. 71,278
Int. Cl. C22f *15/08, 59/00*
U.S. Cl. 75—101 R **12 Claims**

A method for recovering metal values from aqueous solution with a hydrogen ion exchange agent in which the acidity of the aqueous solution is controlled without neutralizing the acid formed therein, the method comprising alternately contacting the aqueous solution with (1) the hydrogen ion exchange agent to replace hydrogen ions on the agent by metal ions and (2) a solvent extractant for hydrogen ions to recover hydrogen ions from the aqueous solution until substantially all of the metal values are recovered from the aqueous solution.

3,676,107

REFINING IRON-BEARING WASTES

Paul G. Barnard, Aaron G. Starliper, and James B. Stephenson, Rolla, Mo., assignors to the United States of America as represented by the Secretary of the Interior

Filed Jan. 4, 1971, Ser. No. 103,559
Int. Cl. C22b *3/00*
U.S. Cl. 75—109 **4 Claims**

Iron-bearing wastes, such as steelmaking dusts, are treated with sulfuric acid to form sulfates of the iron, copper, lead, manganese and zinc in the dust. The sulfated material is roasted at a temperature of about 550 to 700° C. to convert the iron sulfate to iron oxide and is then leached with water to remove the soluble copper, zinc and manganese sulfates.

The lead is removed from the iron-bearing residue by roasting in a reducing atmosphere whereby the lead sulfate is decomposed, the decomposition products volatilized and the lead collected in the form of lead oxide. The iron-rich residue is then reduced to a metallized product suitable for recycle to a steelmaking plant.

3,676,108

LOW CARBON HIGH YIELD STRENGTH ALLOY STEEL

William F. McGarrity, Dearborn, Mich., assignor to National Steel Corporation

No Drawing. Filed June 1, 1970, Ser. No. 42,511
Int. Cl. C22c *39/54*
U.S. Cl. 75—123 B **7 Claims**

A low carbon, low alloy steel composition which after being heat treated is characterized by high yield strength and ductility suitable for cold forming operations consisting essentially by weight of:

Carbon: about 0.05–0.25%
Manganese: about 0.50–1.30%
Silicon: about 0.40–0.90%
Zirconium: about 0.03–0.15%
Boron: about 0.0005–0.0025%

with the balance iron and residual impurities. The heat treated steel compositions can be cold formed to produce for example truck frame rails.

3,676,109

RUST AND HEAT RESISTING FERROUS BASE ALLOYS CONTAINING CHROMIUM AND ALUMINUM

Hugh S. Cooper, Shaker Heights, Ohio, assignor to Cooper Metallurgical Corporation, Cleveland, Ohio

No Drawing. Filed Apr. 2, 1970, Ser. No. 25,278
Int. Cl. C22c *37/10, 39/14*
U.S. Cl. 75—124 **5 Claims**

Rust and heat resisting ferrous base alloys comprising by weight between about 3% and 10% aluminum, between about 4% and 8% chromium, about 0.5% copper, less than 0.05% carbon, and the balance substantially iron. The aluminum and chromium together total at least 9%, with either the chromium or the aluminum being at least 6% and the difference between the chromium and aluminum being less than 6%, of the weight of the alloy. The alloys according to this invention may be rendered heat treatable by precipitation hardening by adding between about 0.5% and 2.0% by weight of titanium to the alloy to produce rust and corrosion resistant alloys of high tensile strength with good ductility.

3,676,110

CHROMIUM BASE ALLOYS HAVING EXCELLENT CORROSION RESISTANCE AND WORKABILITY

Satoru Mito, Yokohama, Kazumi Shimotori, Kawasaki, Mituo Kawai, Yokohama, and Kanzi Kawaguchi, Tokyo, Japan, assignors to Tokyo Shibaura Electric Co. Ltd., Kawasaki-shi, Japan

Filed Dec. 8, 1970, Ser. No. 96,220
Claims priority, application Japan, Dec. 9, 1969, 44/98,281
Int. Cl. C22c *19/00, 27/00*
U.S. Cl. 75—134 **3 Claims**

Cr-Ni alloys having excellent workability and corrosion resistance, which comprises 40–70% chromium, 2–7% manganese, and nickel as the remainder. Said alloys may contain 0.5% max. carbon or 0.2% max. nitrogen.

3,676,111

METHOD OF GRAIN REFINING ALUMINUM BASE ALLOYS

Peter F. Wieser, Bay Villlage, Ohio, and James E. Dore, Milford, Conn., assignors to Olin Corporation

No Drawing. Filed Mar. 1, 1971, Ser. No. 119,946
Int. Cl. C22c *21/00*
U.S. Cl. 75—142 **10 Claims**

The instant disclosure teaches a method of grain refining aluminum base alloys. The method of the present invention comprises adding boron and titanium to the melt in specifically defined quantities.

3,676,112

ANTICARIOGENIC DENTAL AMALGAM

Joseph C. Muhler, Indianapolis, Ind., assignor to Indiana University Foundation, Bloomington, Ind.

No Drawing. Filed May 19, 1970, Ser. No. 38,889
Int. Cl. C22c *5/00*; A61k *5/02*
U.S. Cl. 75—173 R **7 Claims**

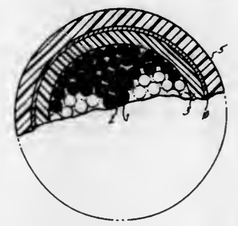
This invention relates to an anticariogenic dental amalgam and method of reducing dental caries at the margin of a dental restoration. Moreover, this invention relates to a specific dental amalgam additive, stannous hexafluorozirconate, $SnZrF_6$, that provides anticariogenic effectiveness without appreciably affecting the physical properties set forth by the American Dental Association for dental amalgam alloys.

3,676,113

ALUMINUM-ZINC-BORON ALLOYS

Michael J. Pryor and William H. Anthony, Hamden, Conn., assignors to Olin Mathieson Chemical Corporation

Original application Oct. 25, 1967, Ser. No. 677,955, now Patent No. 3,579,313, dated May 18, 1971. Divided and this application Oct. 29, 1967, Ser. No. 870,972
Int. Cl. C22c *21/00*
U.S. Cl. 75—146 **8 Claims**



This invention relates to a novel high strength Al-Zn-B alloy metallurgically bonded to steel and heat treating processes therefore, for use in both aerial and underground cable sheathing.

3,676,114

IMPROVEMENT IN THE PROCESS RELATING TO ALLOYS CONTAINING PLATINUM GROUP METALS

Gordon Leslie Selman, High Wycombe, England, assignor to Johnson, Matthey & Co., Limited

No Drawing. Continuation-in-part of application Ser. No. 740,017, June 26, 1968. This application Aug. 28, 1970, Ser. No. 67,986
Claims priority, application Great Britain, June 28, 1967, 29,958/67; Jan. 23, 1968, 3,520/68
Int. Cl. C22c *5/00*
U.S. Cl. 75—172 **7 Claims**

Method of dispersion strengthening rhodium-platinum alloys in which the dispersed phase consists essentially of at least one transition element in an amount up to 20 atomic percent selected from the titanium, vanadium, zirconium, niobium, hafnium and tantalum.

3,676,115

ZINC ALLOYS

George Anthony Hare, Highworth, and Alan Ernest William Smith, Swindon, England, assignors to National Research Development Corporation, London, England

No Drawing. Filed Apr. 22, 1969, Ser. No. 818,389
Claims priority, application Great Britain, May 3, 1968, 21,118/68; Dec. 20, 1968, 60,579/68
Int. Cl. C22c *17/00*
U.S. Cl. 75—178 AM **7 Claims**

The new alloys comprise by weight zinc within the range 70–82 percent (the remainder being substantially aluminium) and magnesium within the range greater than 0.05 to 0.25 percent which may contain up to 2 percent of one or more of the elements copper, nickel and silver.

The magnesium in the above alloys may be replaced by lithium.

An example of these alloys contains zinc and aluminium within the above prescribed limits and magnesium and copper within the range 0.125 ± 0.025 and 1.25 ± 0.25 percent respectively.

The alloys have improved mechanical properties and corrosion resistance and the microstructures produced

are stable at user temperatures. Additionally, the alloys retain the super plastic behaviour of the zinc-aluminium eutectoid.

ERRATUM

For Class 90—11 A see:
Patent No. 3,676,120

3,676,116

IMAGE REVERSAL IN MANIFOLD IMAGING USING AN ELECTRICALLY CONDUCTIVE RECEIVER SHEET

Ivar T. Krohn, Geoffrey A. Page, and Gedeminas J. Reinis, Rochester, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Continuation-in-part of abandoned application Ser. No. 812,734, Apr. 2, 1969, and application Ser. No. 81,357, Oct. 16, 1970. This application Dec. 18, 1970, Ser. No. 99,721

Int. Cl. G03g *13/22*

U.S. Cl. 96—1.3 **23 Claims**

An imaging process wherein a cohesively weak electrically photosensitive imaging layer sandwiched between a donor sheet and an electrically conductive receiver sheet is subjected to an electric potential and imagewise electromagnetic radiation to which the layer is sensitive such that upon sandwich separation under an electric field the imaging layer fractures in imagewise configuration providing a positive image on one of the sheets and a negative image on another sheet. Prior to sandwich separation, the electric potential is modified causing a reversal of image sense on each of the sheets.

3,676,117

METHOD OF ELECTROPHOTOGRAPHY

Koichi Kinoshita, Narashino-shi, Japan, assignor to Katsuragawa Denki Kabushiki Kaisha, Tokyo-to, Japan

Filed Oct. 9, 1968, Ser. No. 766,237

Claims priority, application Japan, Oct. 20, 1967, 42/67,181

The portion of the term of the patent subsequent to Apr. 11, 1989, has been disclaimed

Int. Cl. G03g *13/22*

U.S. Cl. 96—1 R **5 Claims**

In a method of electrography comprising the steps of applying a first field of one polarity across a photosensitive element including a photoconductive layer and a highly insulated layer integrally bonded to one side of the photoconductive layer and applying a second field of opposite polarity concurrently with or before projection of a light image whereby to form an electrostatic latent image corresponding to the light image on the surface of the highly insulative layer, uniform light is projected on the photosensitive element on the side opposite to that of the highly insulative layer concurrently with or prior or subsequent to the application of the first field.

3,676,118

REFLEX XEROGRAPHIC IMAGING SYSTEM

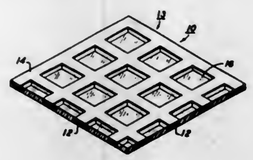
George R. Mott, Rochester, and Edward M. Van Wagner, Webster, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Continuation-in-part of application Ser. No. 619,618, Mar. 1, 1967. This application Aug. 26, 1970, Ser. No. 67,115

Int. Cl. G03g *5/00, 13/00*

U.S. Cl. 96—1.5 **12 Claims**

A xerographic imaging system employing a new xerographic plate adapted for reflex exposure, the plate comprising an opaque electrically conductive grid of grid portions and interstices, the grid portions overcoated with an imaging photoconductor and the interstices at least partially filled with a material substantially transparent to



that wavelength radiation to which the imaging photoconductor is photosensitive, said material preferably comprising a photoconductive or electrically "leaky" dielectric filler material to form a plate preferably having a smooth face at the imaging photoconductor face of the plate.

3,676,119

SPECTRAL SENSITIZATION OF PHOTOCONDUCTIVE COMPOSITIONS

Henri Depoorter, Mortsel, and Theofiel Hubert Ghys, Kontich, Belgium, assignors to Agfa-Gevaert, Mortsel, Belgium

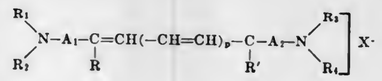
No Drawing. Filed Dec. 30, 1969, Ser. No. 889,338

Claims priority, application Great Britain, Jan. 20, 1969, 3,157/69

Int. Cl. G03g *7/00, 5/08*

U.S. Cl. 96—1.7 **10 Claims**

An electrophotographic recording material comprising an inorganic photoconductive substance, especially zinc oxide, is described wherein the said substance is spectrally sensitized by means of a dye corresponding to the formula:



wherein:

each of A_1 and A_2 stands for an arylene group,
each of R_1, R_2, R_3 and R_4 represents an alkyl group, a cylcloalkyl group, an aralkyl group or an aryl group or R_1+R_2 and/or R_3+R_4 together represent the atoms necessary to close a heterocycle,
each of R and R′ represents hydrogen, alkyl, cycloalkyl, aralkyl or aryl,
p is 0, 1 or 2, and
X^- is an anion.

The dyes have a favorable sensitizing action and confer only a very low and neutral coloring to the photoconductive layer.

3,676,120

SIDE OPERATED DRAWBOLT FOR TOOL-CARRYING SPINDLE

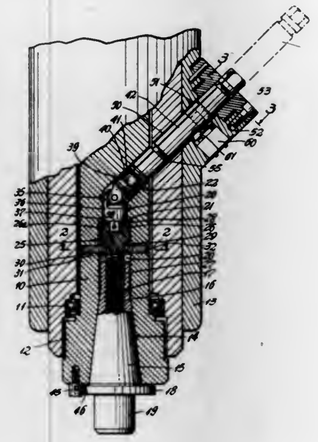
Leonard Nelson and Thomas Wilson, Trumbull, Conn., assignors to Custom Tool & Machine Co., Inc., Bridgeport, Conn.

Filed Feb. 26, 1971, Ser. No. 119,177

Int. Cl. B23c *5/26*

U.S. Cl. 90—11 A **6 Claims**

A simplified drawbar means for eliminating the use of the long drawbar unit extending through the spindle and providing a side actuated device for turning a tool mounting bolt in the spindle by means of a universal joint. The device which is extremely simple and can be easily assembled is contained in the end of the spindle near the work so that it is readily available for actuation. It is



particularly useful in machine tools having a vertically disposed spindle since it provides a short drawbar with a side actuator therefor which is conveniently located adjacent the tool-carrying end of the spindle for drawing the tool carrier into position.

3,676,121

MULTI-COLOR REPRODUCTIONS

Rexford W. Jones and William B. Thompson, Columbus, Ohio, assignors to A. E. Staley Manufacturing Company, Decatur, Ill.

No Drawing. Continuation-in-part of applications Ser. No. 796,897, Feb. 5, 1969, and Ser. No. 833,771, June 16, 1969. This application Aug. 12, 1969, Ser. No. 849,492

Int. Cl. G03c *7/16, 1/68*

U.S. Cl. 96—13 **37 Claims**

The method of forming a multicolor reproduction which comprises: coating a substrate bearing a first color fused in image-wise configuration to said substrate with a solid, light-sensitive organic layer having a thickness of at least 0.1 micron while maintaining said first color in its image-wise configuration, said light-sensitive organic layer being capable of developing a R_d of 0.2 to 2.2; exposing said light-sensitive organic layer to actinic radiation in image-receiving manner to establish a potential R_d of 0.2 to 2.2; applying to said layer of organic material, free flowing powder particles of a second color having a diameter, along at least one axis of at least about 0.3 micron but less than 25 times the thickness of said organic layer; while the layer is at a temperature below the melting points of the powder and of the organic layer, physically embedding said powder particles as a monolayer in a stratum at the surface of said light-sensitive layer to yield an image having portions varying in density in proportion to the exposure of each portion; and removing non-embedded particles from said organic layer to develop a multicolor reproduction.

3,676,122

PROCESS FOR THE PRODUCTION OF NEGATIVE OR POSITIVE CONTINUOUS-TONE OR SCREENED IMAGES THEREOF

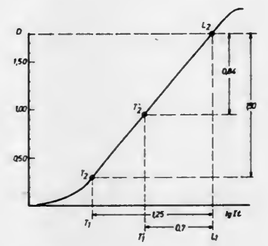
Ehrhard Hellmig, Leverkusen, Germany, assignor to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed July 2, 1969, Ser. No. 838,475

Claims priority, application Germany, July 8, 1968, P 17 72 812.0

Int. Cl. G03b *27/76;* **G03c** *7/00*

U.S. Cl. 96—23 **5 Claims**



A process for the production of negative continuous-tone images from colored originals with different density ranges, wherein the exposure time is determined only by the densities of high-light areas in the original.

3,676,123

NOVEL PHOTOGRAPHIC PRODUCTS AND PROCESSES

Robert K. Stephens, Burlington, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

No Drawing. Filed July 13, 1970, Ser. No. 54,615

Int. Cl. G03c *5/54*

U.S. Cl. 96—29 **11 Claims**

Motion picture film composed of a plurality of layers includes at least a first outer layer having a friction reducing agent, e.g., particles of polytetrafluoroethylene, incorporated therein to minimize frictional resistance as the film contacts various mechanisms involved in processing, transporting, storing and projecting film strips, thus minimizing a lack of uniformity in film transport rates and obviating damage to the film as a result of frictional resistance.

3,676,124

PHOTOGRAPHIC NEGATIVE MATERIAL FOR COLOR DIFFUSION TRANSFER PROCESS

Kinji Ohkubo, Katsumi Hayashi, and Kazuya Sano, Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Ashigara-Kamigun, Kanagawa, Japan

No Drawing. Filed Oct. 13, 1969, Ser. No. 866,022

Claims priority, application Japan, Oct. 12, 1968, 43/74,386

Int. Cl. G03c *1/40, 5/54*

U.S. Cl. 96—290 **12 Claims**

Photographic diffusion transfer element with a silver halide emulsion containing a color developing agent and coupler dissolved in a high temperature boiling organic solvent which is immiscible with water, but miscible upon contact with an alkaline medium.

A color diffusion transfer process using the above element as a negative involves exposing the element and then,

by alkaline processing, freeing the solvent to thereby permit transfer to a positive element and yield a positive element. Conventional diffusion transfer steps are also practical.

3,676,125
METHOD OF PRODUCING PLANOGRAPHIC PRINTING PLATES
Louis Maria de Haes, Edegem, Belgium, assignor to Agfa-Gevaert, Mortsel, Belgium
No Drawing. Filed Apr. 24, 1970, Ser. No. 31,787
Claims priority, application Great Britain, Apr. 25, 1969, 21,279/69
Int. Cl. G03f 7/02
U.S. Cl. 96—33 11 Claims

A photographic printing plate is prepared from a sheet material carrying an exterior hydrophilic colloid layer having substantially concentrated at its free surface a pattern of finely divided silver particles, by contacting the same with an aqueous alkaline liquid fixer composition containing an oxidizing agent for said silver particles, e.g. cyanoferrate(III)-ions, an organic thioxo compound or tautomer thereof for converting the pattern of silver particles into a hydrophobic ink-receptive pattern, a higher fatty acid, e.g., oleic acid, for improving the ink-receptivity of said pattern, and a water-soluble nitrite, such as alkali metal nitrite or an ammonium nitrite, for stabilizing the dispersion of the higher fatty acid in the fixed liquid.

3,676,126
PLANAR TECHNIQUE FOR PRODUCING SEMICONDUCTOR MICROCOMPONENTS
Peter Albus, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin, Germany
Continuation of abandoned application Ser. No. 596,305, Nov. 22, 1966. This application Jan. 19, 1970, Ser. No. 4,446
Int. Cl. G03c 5/00
U.S. Cl. 96—36.2 7 Claims

The planar technique is improved by dissolving the part of oxide layer which forms on the semiconductor surface during diffusion of the emitter zone. The oxide layer may be phosphorus oxide glass. HF buffered with NH_4F is illustratory of dissolvent.

3,676,127
COLOR TELEVISION TUBE FABRICATION
Thomas F. Protzman, Worthington, Ohio, and William H. Magidson, Decatur, Ill., assignors to A. E. Staley Manufacturing Company, Decatur, Ill.
No Drawing. Filed Jan. 23, 1970, Ser. No. 5,363
Int. Cl. G03c 5/00, 5/04
U.S. Cl. 96—36.1 1 Claim

In the process of forming color television tube faceplates the improvement which comprises coating a cathode ray tube faceplate with a solid, light-sensitive layer capable of developing a R_{dp} of 0.2 to 2.2; exposing said light-sensitive organic layer in predetermined areas, corresponding to the predetermined cathodoluminescent areas of the faceplate, to actinic radiation in image receiving manner to establish a potential R_{dp} of 0.2 to 2.2; applying to said organic layer, free flowing powder particles comprising at least one light-absorbing pigment, said free flowing powder having a diameter along at least one axis of at least about 0.3 micron but less than 25 times the thickness of said organic layer; while the layer is at a temperature below the melting point of the powder particles and of the organic layer, physically embedding said powder particles as a monolayer in the stratum at the surface of said light-sensitive layer to yield an image having portions varying in density in proportion to the exposure of each portion; and removing non-embedded particles from said organic layer to develop a discrete pattern of powder particles comprising at least one light-absorbing pigment.

3,676,128
COMPLEX FILM FOR OBTAINING SILK SCREEN STENCILS
Henri Leopold and Jacques Pomathios, Poncin, France, assignors to Etablissements Tiflex, Poncin, France
Filed June 8, 1967, Ser. No. 644,683
Claims priority, application France, June 20, 1966, 47,439
Int. Cl. G03c 5/00
U.S. Cl. 96—36.4 5 Claims



A complex film for producing silk screen stencils includes three layers superposed and joined relative to one another. A backing layer, an emulsion layer, and a transparent layer interposed therebetween constitute the three layers. The backing layer is joined to the transparent layer only temporarily and is easily removed or peeled therefrom.

3,676,129
METHOD FOR MAKING A LIGHT INTENSITY CORRECTION FILTER
Frank Rowland Ragland, Jr., Lancaster, Pa., assignor to RCA Corporation
Filed Dec. 1, 1969, Ser. No. 881,233
Int. Cl. G03c 5/00, 11/00
U.S. Cl. 96—38.3 5 Claims

To make a light intensity correction filter for a lighthouse:

(1) prepare a transmission pattern which, when placed in a predetermined position adjacent an element of the lens assembly of the lighthouse, compensates for nonuniformities in brightness due to asymmetrical refraction of light projected through the lens assembly;
(2) prepare a negative image of the transmission pattern;
(3) position is a lighthouse a light source, at least one optical element of the lens assembly, which element carries on one surface thereof a layer of a photosensitive composition containing light attenuation material, and the negative image;
(4) project light from the light source incident upon the coating of photosensitive composition;
(5) and then develop the exposed coating to produce the filter.

3,676,130
BEADED PLATE INTEGRAL PHOTOGRAPHY
Christoph B. Burckhardt, Berkeley Heights, and Edward T. Doherty, Morris Township, Morris County, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill and Berkeley Heights, N.J.
Filed Nov. 26, 1969, Ser. No. 880,280
Int. Cl. G03c 9/00
U.S. Cl. 96—40 2 Claims

Apparatus for recording an integral photograph is disclosed comprised of a layer of minute, transparent spheres that adhere to a photosensitive emulsion.

3,676,131
CHEMICAL DEVELOPMENT OF LIGHT-SENSITIVE LEAD COMPOSITIONS
Jozef Frans Willems, Wilrijk, Frans Clement Heugebaert, Kontich, and Eric Maria Brinckman, Mortsel, Belgium, assignors to Agfa-Gevaert, Mortsel, Belgium
No Drawing. Filed Aug. 24, 1970, Ser. No. 66,589
Int. Cl. G03c 5/24, 1/00
U.S. Cl. 96—48 7 Claims

A process for recording information is described which comprises information-wise exposing to active radiation a photosensitive recording material containing a photosensitive lead compound and developing the latent image

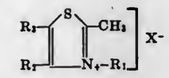
formed by means of a sodium dithionite composition in the presence of a diquaternary cyclic ammonium salt which by the uptake of 1 electron forms stable Weitz-radicals. By the presence of the ammonium salt selective development is possible in a short time, at normal room temperature and normal pH-values.

3,676,132
THERMOGRAPHIC REPRODUCTION MATERIAL AND PROCESS
Siegfried Scheler, 120 Schonaustrasse, Wiesbaden-Schierstein, Germany, and Johannes Munder, 13 Lohmuhlweg, Wiesbaden-Biebrich, Germany
No Drawing. Continuation of abandoned application Ser. No. 690,756, Dec. 15, 1967. This application Dec. 1, 1970, Ser. No. 94,186
Claims priority, application Germany, Dec. 15, 1966, K 60,929
Int. Cl. G03c 1/58, 5/52, 5/34
U.S. Cl. 96—49 11 Claims

A thermographic material capable of fixing against post-imaging heat effects is prepared by coating a transparent natural paper support with a composition comprising a heat- and light-sensitive diazo compound and an organic acid. Thermographic exposure to infrared radiation results in the formation of an opaque decomposition image in the support. Post-imaging exposure to actinic light decomposes the diazo compound without image formation to render the material insensitive to subsequent heating.

3,676,133
DIAZOTYPE RECORDING PROCESS AND MATERIAL USED THEREIN
Albert Lucien Poot, Kontich, Jan Frans van Besauw, Brasschaat, and Henri Depoorter, Mortsel, Belgium, assignors to Agfa-Gevaert, Mortsel, Belgium
No Drawing. Filed Dec. 2, 1970, Ser. No. 94,606
Claims priority, application Great Britain, Dec. 30, 1969, 63,326/69
Int. Cl. G03c 1/58, 5/22, 5/34
U.S. Cl. 96—49 10 Claims

Diazo copying process using as the coupling agent a thiazolium compound corresponding to the following general formula:



wherein:

X^- represents an anion and may be missing when the anion is present in the R_1 group,
R_1 represents an organic group introduced by quaternization, each of R_2 and R_3 represents an alkyl group or an aryl group and only one of R_2 and R_3 is hydrogen; and recording materials useful therein.

A preferred thiazolium compound is 2,3-dimethyl-thiazolium ethyltolusulphonate and a preferred diazonium compound is p-diethylaminobenzene-diazonium tetraborofluoride.

3,676,134
COPYING MATERIAL AND PROCESS FOR THE PREPARATION OF AUXILIARY COPIES FOR MULTICOLOR PRINTING
Fritz Uhlig, Wiesbaden-Biebrich, and Jurgen Braun, Wiesbaden, Germany, assignors to Kalle Aktiengesellschaft, Wiesbaden-Biebrich, Germany
No Drawing. Filed June 10, 1969, Ser. No. 831,993
Claims priority, application Germany, June 12, 1968, P 17 71 592.3
Int. Cl. G03c 1/52; G03f 3/00
U.S. Cl. 96—49 7 Claims

This invention relates to a copying material for use in the preparation of auxiliary copies for multicolor printing comprising a biaxially stretched and thermo-set polyester film as a support and a light-sensitive copying layer thereon, the latter containing at least one compound selected from the group consisting of a p-benzoquinone diazide and a p-benzoquinone imino diazide, at least one acid- and alkali-resistant dyestuff which is soluble in organic solvents, and at least one film-forming, substantially colorless, alkali-soluble resin.

3,676,135
PROCESS FOR FORMING DYE IMAGES
Walter J. Muslimer, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
No Drawing. Filed June 22, 1970, Ser. No. 48,546
Int. Cl. G03c 7/00
U.S. Cl. 96—54 14 Claims

Formazan dye image densities formed by treating a photographic metal image in a hydrophilic colloid binder layer with a tetrazolium salt solution in the presence of a metal complexing ligand are enhanced by the presence in said binder layer of a dispersion of at least one high-boiling substantially colorless, crystalloidal organic oil, the weight ratio of oil to hydrophilic colloid preferably being in the range of from about 10:1 to about 1:30 and the dispersed particles of the oil preferably having diameters in the range up to about 2μ.

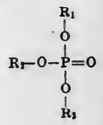
3,676,136
PHOTOGRAPHIC STABILIZER COMPOSITIONS
Rowland G. Mowrey, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
No Drawing. Filed June 22, 1970, Ser. No. 48,547
Int. Cl. G03c 7/00
U.S. Cl. 96—56 21 Claims

Aqueous stabilizer compositions comprising (1) a water-soluble addition complex of an alkali metal bisulfite and an aldehyde that preferably contains from one to six carbon atoms and from one to three carbonyl groups with at least one of the carbonyl groups being part of an aldehyde group in the concentration range of from about 0.5 g./l. to about 100 g./l. and either, (2) a sufficient amount of an alkali metal hydroxide or an acid to adjust the pH of the composition in the range of from 3 to 7, or (3) a buffer comprising (a) an acid, such as, sulfuric, nitric, phosphoric, boric, hydrochloric acids and organic carboxylic acids in the concentration range of from about 0.5 g./l. to about 25 g./l. and (b) a sufficient amount of an alkali metal hydroxide to buffer the composition at a pH in the range of from 3 to 7, are advantageously used as a final rinse in color photographic processes to stabilize the dye images either in the presence or absence of residual color-forming coupler against the staining and/or fading effects of exposure to high temperatures, high humidity and prolonged exposure to light.

3,676,137
COLOR PHOTOGRAPHIC LIGHT-SENSITIVE ELEMENT CONTAINING MAGENTA COUPLER AND ALKYL PHOSPHATE SOLVENT
Eiichi Mizuki, Yasushi Oishi, and Masao Sawahara, Saitama, Japan, assignors to Fuji Photo Film Co., Ltd., Ashigara-Kamigun, Kanagawa, Japan
Filed Aug. 27, 1970, Ser. No. 67,330
Claims priority, application Japan, Aug. 27, 1969, 44/67,797
Int. Cl. G03c 7/00, 1/40
U.S. Cl. 96—56.5 20 Claims

A light-sensitive material comprising at least a layer of a silver halide emulsion containing (1) a non-diffusing 5-pyrazolone coupler having at least a hydrophobic bal-

lasting group containing from 9 to 30 carbon atoms and (2) a coupler solvent having the formula



wherein R_1 and R_2 each is an alkyl group and wherein R_3 represents a member selected from a group consisting of an alkyl group and an aryl group, and wherein the total number of the carbon atoms in R_1, R_2 and R_3 ranges from 14 to 40 carbon atoms, is disclosed.

3,676,138

FORMATION OF DYES SUITED FOR REPRODUCTION PURPOSES

Albert Lucien Poot, Kontich, and Henri Depoorter, Mortsel, Belgium, assignors to Agfa-Gevaert, Mortsel, Belgium

No Drawing. Filed Dec. 2, 1970, Ser. No. 94,574
Claims priority, application Great Britain, Dec. 3, 1969, 59,093/69
Int. Cl. G03c *1/58, 5/22, 5/34*
U.S. Cl. 96—75 **16 Claims**

Diazo recording process giving a neutral black tone using as the coupling agent in an alkaline medium a quaternary salt of 2-methyl-5,6-dimethoxybenzothiazole or a quaternary salt of 2-methylbenzothiazole wherein the carbon atoms of the 5- and 6-position are part of a fused ring closed by a —O—CH_2—O— or a

—O—CH_2—CH_2—O—

group. Preferably the quaternary salt is substituted on the nitrogen atom of the benzthiazolium nucleus with a

—CH_2—Y

group in which Y is an electron-withdrawing group such as in a —CH_2—CO—NH—SO_2—CH_3 group; and recording materials useful therein.

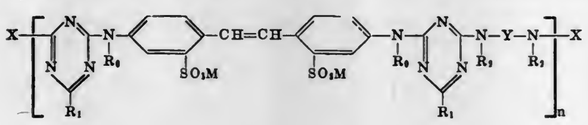
3,676,139

COLOR PHOTOGRAPHIC PRINTING PAPER

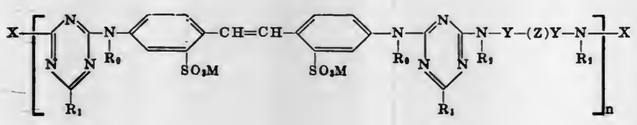
Hiroyuki Amano, Fumihiki Nishio, Nobuo Tsuji, and Kazuo Shirasu, Ashigara-Kamigun, Kanagawa, Japan, assignors to Fuji Shashin Film Kabushiki Kaisha (now Fuji Photo Film Co., Ltd.), Ashigara-Kamigun, Kanagawa, Japan

No Drawing. Filed Jan. 13, 1969, Ser. No. 790,846
Claims priority, application Japan, Jan. 12, 1968, 43/1,669
The portion of the term of the patent subsequent to Oct. 26, 1988, has been disclaimed
Int. Cl. G03c *1/92, 1/84*
U.S. Cl. 96—82 **9 Claims**

A color photographic printing paper containing an ultraviolet absorbent and a fluorescent brightening agent represented by the formulas



(I)



(II)

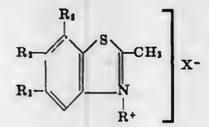
3,676,140

DIAZO RECORDING

Albert Lucien Poot, Kontich, and Henri Depoorter, Mortsel, Belgium, assignors to Agfa-Gevaert, Mortsel, Belgium

No Drawing. Filed Dec. 2, 1970, Ser. No. 94,575
Claims priority, application Great Britain, Dec. 23, 1969, 62,708/69
Int. Cl. G03c *1/58, 5/22, 5/34*
U.S. Cl. 96—91 **9 Claims**

A dry or wet diazo process giving deep colored tones using as the coupling agent a benzothiazolium compound corresponding to the following general formula:



wherein:

X^- stands for an anion, and may be missing when the anion is present in the R group,

R stands for an organic group introduced by quaternization,

R_1 stands for hydrogen, an alkyl group, a phenyl group, an alkoxy group, a halogen atom, an amino group, cyano, an alkoxycarbonyl group, an acyl group, or an alkylsulphonyl group,

R_2 stands for hydrogen, a C_2–C_5 alkyl group, an alkoxy group, cyano, cyanovinyl or a halogen atom,

R_3 stands for hydrogen, halogen, a sulpho group or a sulphamyl group, the benzene ring of the benzothiazolium nucleus carrying at least one substituent other than hydrogen and being free of a methoxy group in the 6-position; and recording materials useful therein.

A preferred benzothiazolium compound is 2,3,5,6-tetramethyl-benzothiazolium methylsulphate and a preferred diazonium compound p-diethylaminobenzene-diazonium tetraborofluoride.

3,676,141

PROCESS FOR THE PREPARATION OF COLOR-PHOTOGRAPHIC SENSITIVE MATERIALS USING NONIONIC AND ANIONIC SURFACE ACTIVE AGENTS

Hikoharu Hara, Yasushi Oishi, and Kameji Nago, Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Ashigara-Kamigun, Kanagawa, Japan

No Drawing. Filed Aug. 22, 1969, Ser. No. 852,465
Claims priority, application Japan, Aug. 22, 1968, 43/60,130
Int. Cl. G03c *1/40*
U.S. Cl. 96—100 **25 Claims**

A process for producing color-photographic sensitive material comprising a support and a silver halide emulsion carried thereon. The emulsion contains a finely dispersed color-forming coupler which has a hydrophobic radical containing 9–28 carbon atoms. The color-photographic material is formed by dispersing the above coupler in an aqueous gelatin solution in the presence of a nonionic surface active agent obtained by the esterification of one to two hydroxyl groups in an anhydrohexitol molecule with a fatty acid containing 10 to 20 carbon atoms and an anionic surface active agent containing both a hydrophobic radical containing 8 to 30 carbon atoms and a water-solubilizing MO_3S- or MO_3SO-group wherein M represents a hydrogen atom, or an alkali metal atom or an ammonium group.

3,676,142

METHOD OF INCORPORATING PHOTOGRAPHIC INGREDIENTS INTO PHOTOGRAPHIC COLLOID COMPOSITIONS

Jan Albert Carpentier, Walem, and Alfons Jozef De Pauw, Edegem, Belgium, assignors to Agfa-Gevaert, Mortsel, Belgium

No Drawing. Filed Sept. 10, 1969, Ser. No. 856,825
Claims priority, application Great Britain, Sept. 10, 1968, 43,029/68
Int. Cl. B01j *13/00;* **G03c** *1/40, 1/72*
U.S. Cl. 96—100 **6 Claims**

A color-coupling or mask-forming compound is inhibited against diffusion from the layer of a color photographic material in which is in incorporated by means of a water-insoluble chemically inert wax dispersed uniformly throughout the layer and having the color-coupling or mask-forming compound in contact therewith, preferably contained in finely divided particles thereof. Any of a variety of natural or synthetic waxes can be employed, preferably having a low refractive index, and the wax and the color-coupling or mask-forming compound can be incorporated into the layer-forming composition in a variety of ways.

3,676,143

TREATMENT OF EXPOSED SILVER HALIDE EMULSION WITH ACIDIC HARDENING BATH FOLLOWING BY ALKALINE ACTIVATING BATH

Wolfgang Himmelmann, Opladen-Luetzenkirchen, Karl-Wilhelm Schranz, Opladen, and Johannes Sobel, Leverkusen, Germany, and George Frans van Veelen, Mortsel, Belgium, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Aug. 5, 1970, Ser. No. 61,403
Claims priority, application Germany, Aug. 21, 1969, P 19 42 562.8
Int. Cl. G03c *1/30*
U.S. Cl. 96—111 **4 Claims**

Exposed photographic layers particularly layers which contain color couplers, are hardened before processing by treating the exposed layer with prehardening baths, have a pH-value in the side range and which contain hardening agents.

3,676,144

EPOXIDE HARDENER IN SILVER HALIDE EMULSION LAYER AND FORMALDEHYDE AND/OR GLYOXAL HARDENER IN ADJACENT PROTECTIVE LAYER

Gunter Schulz, Holzkirchen, Wolfgang Himmelmann, Opladen-Lutzenkirchen, and August Randolph, Leverkusen, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed June 2, 1970, Ser. No. 42,865
Claims priority, application Germany, June 4, 1969, P 19 28 356.8
Int. Cl. G03c *1/30*
U.S. Cl. 96—111 **1 Claim**

The process in the preparation of photographic materials of adding epoxy compounds having hardening properties to a silver halide emulsion containing gelatin, coating a base with the mixture and then coating with a protective gelatin layer containing formaldehyde or glyoxal as a hardener.

3,676,145

PREDETERMINED CHEMICAL REACTIONS IN PHOTOGRAPHIC IMAGEWISE CONFIGURATION

Thomas F. Protzman, Worthington, Ohio, assignor to A. E. Staley Manufacuring Company, Decatur, Ill.

No Drawing. Filed Sept. 21, 1970, Ser. No. 74,119
Int. Cl. G03c *1/68, 5/00*
U.S. Cl. 96—115 **23 Claims**

Process for carrying out a predetermined chemical reaction in imagewise configuration which comprises exposing an element comprising (A) a first solid layer comprising a composition capable of undergoing a predetermined chemical reaction bearing (B) a second layer comprising a composition capable of receiving a powder in image-wise configuration to actinic radiation to form a latent powder-receptive image without initiating said predetermined chemical reaction; developing said latent image with powder particles comprising a complementary reagent which, in minor proportions, exerts a major influence on the course of said predetermined chemical reaction to form a layer of powder particles in image-wise configuration; bringing said complementary reagent into reactive contact with said composition capable of undergoing said predetermined chemical reaction; and carrying out said predetermined chemical reaction in a predetermined configuration conforming to the image-wise configuration of the powder particles of said second layer.

3,676,146

CONTROLLING PREDETERMINED CHEMICAL REACTIONS IN PHOTOGRAPHIC IMAGE-WISE CONFIGURATION

Thomas F. Protzman, Worthington, Ohio, assignor to A. E. Staley Manufacturing Company, Decatur, Ill.

No Drawing. Filed Sept. 21, 1970, Ser. No. 74,121
Int. Cl. G03c *1/68, 5/00*
U.S. Cl. 96—115 **22 Claims**

Process for carrying out a predetermined chemical reaction in image-wise configuration which comprises bringing into contact (1) a first layer comprising a composition capable of undergoing a predetermined chemical reaction with a second layer bearing a layer of powder particles in image-wise configuration, said powder particles comprising a component which, in minor proportion, exerts a major influence on the course of said predetermined chemical reaction and (2) carrying out said predetermined chemical reaction in a predetermined configuration conforming to the image-wise configuration of the powder particles of said second layer.

3,676,147

METHOD OF SPECTRALLY SENSITIZING PHOTOGRAPHIC SILVER HALIDE EMULSIONS

Simone J. Boyer and Roger Caridi, Vincennes, France, assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Nov. 28, 1969, Ser. No. 880,944
Claims priority, application France, Dec. 24, 1968, 180,194
Int. Cl. G03c *1/16, 1/18, 1/20*
U.S. Cl. 96—130 **13 Claims**

Light sensitive silver halide is spectrally sensitized by dispersing a substantially water-insoluble photographic spectral sensitizing dye into a water-soluble organic liquid without dissolving the dye, and incorporating the dispersion into a liquid photographic silver halide emulsion. Novel dispersions of dyes are also provided.

3,676,148
EDIBLE COMESTIBLES AND PROCESS FOR MAKING SAME

Duane G. De Weese, Takoma Park, Md., and Ronald C. Hanck, Parma Heights, Ohio, assignors to SCM Corporation, Cleveland, Ohio

No Drawing. Filed May 13, 1970, Ser. No. 37,065
Int. Cl. A23l *1/00*; A22c *18/00*
U.S. Cl. 99—1 7 Claims

Set forth is an edible comestible adapted for rigid-form syneresis resisting refrigerated storage. The comestible comprises a continuous phase having a gelatin content of ½–4%, the gelatin having a bloom between about 100–300, and from about ½% to 3½% of a crumb carbohydrate thickener. The comestible preferably contains meat to form a meat sauce or it can contain no meat, but can be used for enrobing pieces of meat providing a gravy therefor. On heating to a temperature of 80° F. or higher, the continuous phase collapses to a fluent palatable liquid of sauce-like consistency.

3,676,149
TASTE-MODIFYING COMPOSITION CONTAINING MIRACULIN AND METHOD OF PREPARATION

John Richard Fennell and Robert J. Harvey, Sudbury, Mass., assignors to Meditron, Inc., Wayland, Mass.

No Drawing. Filed Apr. 15, 1970, Ser. No. 28,981
Int. Cl. A23l *1/22*
U.S. Cl. 99—140 R 15 Claims

Stable solid miraculin substantially free of components of ripe miracle fruit that degrade miraculin. The miraculin is useful in conjunction with foods such as in coatings to render sour-tasting foods sweet tasting while maintaining this taste modifying characteristic for long periods under normal atmospheric conditions. The miraculin is obtained by low temperature procesing including comminuting the ripe fruit, dehydration, and separation on a density basis.

3,676,150
LOW CALORIE YEAST LEAVENED BAKED PRODUCTS

Martin Glicksman, Valley Cottage, Elizabeth H. Farkas, Yonkers, and Sadie Carter, Ossining, N.Y., assignors to General Foods Corporation, White Plains, N.Y.

No Drawing. Filed June 1, 1970, Ser. No. 42,549
Int. Cl. A21d *13/04, 13/06*
U.S. Cl. 99—90 R 9 Claims

Low calorie, yeast leavened baked goods, including bread, are prepared from a flour comprised of gums, starch and alpha-cellulose. The sponge structure of the reduced calorie products is similar to that of wheat flour-containing baked goods.

3,676,151
TOASTER PRODUCT AND PROCESS

Rudolph K. Scharschmidt, Battle Creek, Mich., assignor to General Foods Corporation, White Plains, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 873,731, Nov. 25, 1969, which is a continuation of application Ser. No. 798,777, Feb. 12, 1969, which is a continuation-in-part of application Ser. No. 599,984, Dec. 7, 1966, which is a continuation-in-part of application Ser. No. 487,927, Sept. 16, 1965, which in turn is a continuation-in-part of application Ser. No. 303,169, Aug. 19, 1963, all now abandoned. This application Jan. 11, 1971, Ser. No. 105,637
Int. Cl. A21d *13/00*
U.S. Cl. 99—86 6 Claims

A toaster product has been prepared which is made up of a continuous dough crust containing a fruit filling. Apple powder is used in the fruit filling to provide bulk to the filling and to contribute to the stability of the product which is stored without refrigeration at a moisture content of 13 to 25 percent.

3,676,152
UNLEAVENED, FINE GRAIN HIGH VOLUME LAYER CAKE MIX

James B. Edwards and Warren R. Haug, Hamilton County, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

No Drawing. Filed Dec. 29, 1969, Ser. No. 888,863
Int. Cl. A21d *2/00*; A23l *1/10*
U.S. Cl. 99—94 5 Claims

An unleavened fine grained, high volume layer cake mix in which the shortening contains a high percent of alpha-phase crystal-tending emulsifiers and is free from leavening ingredients which release CO_2 gas before or during the baking process.

3,676,153
METHOD FOR PREPARING BEEF FEET PRODUCTS

Richard Sheldon, Denver, Colo., assignor to Litvak Meat Company Inc., Denver, Colo.

Filed Nov. 24, 1969, Ser. No. 879,441
Int. Cl. A22c *18/00*
U.S. Cl. 99—107 2 Claims



The process of the present invention is particulariy adapted for use in the preparation of kosher or non-kosher animals' feet for human consumption involving a sequence of steps in which a plurality of feet, following preliminary preparation and cleaning, are revolved in a tumbler having spaced openings and containing a caustic solution at a preselected elevated temperature whereby to effect the complete removal of the hair and hair follicles covering the upper shank portion of the feet. The tumbler employed is characterized in that the spaced openings have relatively smooth edges which will lend some abrasive action to the hair removal process without damaging the skin.

3,676,154
SHELF STABLE TOMATO SOUP CONCENTRATE

George Glasser, Ossining, Ragnar Edward Sjonvall, East Chester, and Milton Kaplow, White Plains, N.Y., assignors to General Foods Corporation, White Plains, N.Y.

No Drawing. Filed Apr. 3, 1970, Ser. No. 25,590
Int. Cl. A23l *1/40*
U.S. Cl. 99—124 4 Claims

A tomato soup concentrate is prepared with a water soluble solids content sufficient to provide microbiological stability at room temperature conditions without the need for commercial sterilization; also, the level of soluble solids prevents the soup concentrate from solidifying at home freezer temperatures (0° F. to 15° F.) and thereby effects a readily spoonable, semi-frozen consistency which lends itself to single serving dispensing and dilution with hot water to form an excellent quality soup.

3,676,155
DEXTROSE ICINGS

Harold Edwin Horn, Oak Lawn, and Bruce Allan Kimball and Martin Michael Godzicki, Chicago, Ill., assignors to CPC International Inc.

No Drawing. Filed May 22, 1970, Ser. No. 39,903
Int. Cl. A23g *3/00*
U.S. Cl. 99—139 2 Claims

Icings having improved skin forming and texture properties containing dextrose ad dextrose hydrate.

3,676,156
FLAVOR ENHANCING MATERIALS AND METHOD OF PREPARING SAME

Alan P. Bentz, Stamford, Conn., and Richard Scarpellino, Ramsey, N.J., assignors to General Foods Corporation, White Plains, N.Y.

No Drawing. Filed May 20, 1970, Ser. No. 39,853
Int. Cl. A23l *1/26*
U.S. Cl. 99—140 R 11 Claims

Flavor enhancing materials are prepared by reacting ammonia with carbonyl compounds in an aqueous medium. The flavor enhancing materials are stable in the aqueous medium and retain their high potency and quality when combined with an edible fixation agent and are dehydrated.

3,676,157
METHOD OF PREPARING FREEZE-THAW STABLE SPOONABLE SALAD DRESSING

Peter Wintersdorff, San Diego, Calif., assignor to Kelco Company, San Diego, Calif.

No Drawing. Filed July 16, 1970, Ser. No. 55,619
Int. Cl. A23l *1/24*
U.S. Cl. 99—144 4 Claims

A method of making a spoonable salad dressing containing starch, about 30 to about 70 percent of an edible oil, about 30 to about 70 percent of water, about 1 to about 3.5 percent of salt, and a Xanthomonas colloid in about 0.2 to about 0.3 percent by weight, said method comprising admixing the ingredients for the dressing including up to about 0.75 percent by weight of salt, emulsifying the mixture, and thereafter blending the balance of the salt into the emulsion.

3,676,158
METHOD OF FORMING AN ADHERENT COATING ON FOODS

Leonard G. Fischer, College Point, N.Y., and Philip Wong, Bergenfield, N.J., assignors to DCA Food Industries Inc.

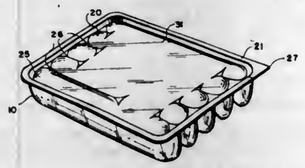
No Drawing. Filed June 7, 1971, Ser. No. 150,799
Int. Cl. A23b *1/10, 7/16*
U.S. Cl. 99—166 11 Claims

A food product having a gel-forming material on its surface is exposed to a gelation agent thereby forming a continuous skin which envelops the food product. An excess of gelation agent is employed so that a residue is left on the skin. The skin-enveloped product is then coated with a fluid batter containing a gel-forming material. The residue gelation agent and the gel-forming material within the batter react to form an additional gel structure.

3,676,159
THERMOFORMED REUSABLE PACKAGE HAVING A RECLOSABLE LID

Derek Fallowfield, Oakville, Ontario, Canada, assignor to W. R. Grace & Co., Duncan, S.C.

Filed Apr. 27, 1970, Ser. No. 32,227
Int. Cl. B65b *25/06*
U.S. Cl. 99—174 6 Claims

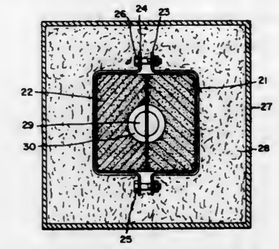


This invention comprises a thermoformed reusable package having a reclosable lid. The package is formed to accept a set of shaped food items. The lid is also shaped to the shape of the food items except for an opaque area of the lid which carries descriptive information.

3,676,160
CARBON MATERIALS AND ARTICLES

Robert Lewis Bickerdike and Garyth Hughes, Farnham, England, assignors to National Research Development Corporation, London, England

Application Apr. 20, 1967, Ser. No. 632,277, now Patent No. 3,534,803, which is a continuation of application Ser. No. 541,975, Apr. 12, 1966. Divided and this application Jan. 27, 1970, Ser. No. 13,232
Int. Cl. B28b *7/34*
U.S. Cl. 106—38.9 4 Claims



A carbon casting mould for metals is provided which nas low conductivity and high thermal shock resistance. The moulds, which comprise fibrous carbon bonded with non-fibrous carbon, can be repeatedly used to cast grey iron.

3,676,161
REFRACTORIES BONDED WITH ALUMINIDES, NICKELIDES, OR TITANIDES

Paul C. Yates, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 3, 1969, Ser. No. 803,817
Int. Cl. C04b *35/70*
U.S. Cl. 106—55 14 Claims

Dense compositions having a grain size smaller than 10 microns and containing from 10 to 80 volume percent of a wear-resistant material selected from the group consisting of (a) aluminum nitride, (b) tantalum nitride, (c) mixtures of (a) and (b), and (d) a refractory oxide of an element selected from the group consisting of magnesium, zirconium, hafnium, titanium, chromium, beryllium, zinc, calcium, thorium, barium, strontium, silicon, the rare earth metals, and mixtures thereof; 15 to 80 volume percent of a metalline selected from the group consisting of titanium carbide, titanium nitride, zirconium carbide, zirconium nitride, tantalum carbide, niobium carbide, niobium nitride, and mixtures thereof; and 5 to 35 volume percent of an intermetallic selected from the group consisting of molybdenum nickelide, tantalum nickelide, zirconium, nickelide, niobium, nickelide, cobalt, aluminide, cobalt titanide, iron aluminide, iron titanide, nickel aluminide, nickel titanide, tungsten aluminide, molybdenum aluminide, niobium aluminide, tantalum aluminide, titanium aluminide, zirconium aluminide, and mixtures thereof are (1) effective for cutting tools for high speed machining and (2) resistant to oxidation.

3,676,162
MAGNESITE REFRACTORY MATERIALS

Ernst Mahler, Wiesbaden-Bierstadt, Germany, assignor to Didier-Werke A.G., Wiesbaden, Germany

No Drawing. Filed June 10, 1970, Ser. No. 45,243
Claims priority, application Great Britain, June 21, 1969, 31,464/69
Int. Cl. C04b *35/04*
U.S. Cl. 106—58 11 Claims

In the particular embodiments of the invention described herein, a basic refractory material for lining steel

converters and the like comprises a granular mixture of sintered magnesia having 80% of the granules between 1 mm. and 10 mm., bonded together with sodium polyphosphate or magnesium sulfate, and impregnated with liquid tar.

3,676,163

REFRACTORY, FIRED MAGNESIA BRICK

Günther Lorenz Mörtl, Villach, Austria, assignor to Oesterreichisch-Amerikanische Magnesit A.G.

No Drawing. Filed Aug. 20, 1970, Ser. No. 65,701

Claims priority, application Austria, Aug. 25, 1969, A 8,117/69

Int. Cl. C04b *35/04*

U.S. Cl. 106—58 11 Claims

Refractory magnesia brick fired at standard temperatures of about 1650° C., containing at least 90% MgO, less than 1% Fe_2O_3, and having a lime-silica ratio (C/S) of 1.65 to 2.50, said brick being formed from over 50% coarse-grained magnesia having a particle size of at least 0.3 mm. and a C/S of at least 1.0, and less than 50% fine-grained magnesia having a particle size of at most 0.3 mm., at least 2% fine-grained magnesia with a C/S of less than 1.0 being present, and a finely ground lime-carrier, and said brick having a bonding phase containing dicalcium silicate formed in situ in the brick by reaction of said fine-grained magnesia with said finely ground lime-carrier.

3,676,164

TREATMENT OF WASTE SULFITE LIQUOR TO AVOID POLLUTION, AND METHOD OF MAKING

Harry Silby, Miami, Fla., assignor to Wire Sales Company, Chicago, Ill.

No Drawing. Filed Apr. 20, 1970, Ser. No. 30,331

Int. Cl. C04b *29/02*

U.S. Cl. 106—77 3 Claims

Hard briquettes suitable for use in the building arts can be formed from the waste products obtained from the treatment of waste sulfite liquor. Using lime as the treating agent, calcium sulfate is obtained as a by-product from the treatment of waste sulfite liquor from paper pulp operations. Iron oxide, mineral fillers and a suitable binder are used to make the briquettes.

3,676,165

SAND-LIME BRICKS AND PROCESS FOR MAKING THEM

Alfred Schneider-Arnoldi, Krefeld, Friedrich-Wilhelm Kampmann, Liblar, Hans-Dieter Thiel, Hurth, near Cologne, Joachim Kandler, Lechenich, and Dietrich Gleisberg, Hurth, near Cologne, Germany, assignors to Knapsack Aktiengesellschaft, Knapsack, near Cologne, Germany

No Drawing. Filed Apr. 20, 1970, Ser. No. 30,333

Claims priority, application Germany, Apr. 23, 1969, P 19 20 488.7

Int. Cl. C04b *7/20*

U.S. Cl. 106—117 4 Claims

Novel sand-lime bricks consisting substantially of sand and between 6 and 15 weight percent of a binder. Between 5 and 95 weight percent of the binder is phosphorus furnace slag and the balance is burnt lime or lime hydrate.

3,676,166

PLASTICIZED SULFUR COMPOSITIONS

Rector P. Louthan, Bartlesville, Okla., assignor to Phillips Petroleum Company

No Drawing. Filed Sept. 28, 1970, Ser. No. 76,210

Int. Cl. C09d *1/00*

U.S. Cl. 106—241 21 Claims

The color stability of plasticized sulfur-containing compositions is improved by the addition of a viscosity control agent selected from the group consisting of 1,2,4-trichlorobenzene; biphenyl; naphthalene; o-dichlorobenzene; p-dichlorobenzene or xylene.

3,676,167

RUTILE TITANIUM DIOXIDE PIGMENT FOR PAPER LAMINATES

Alfred John Werner, Newport, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Aug. 14, 1970, Ser. No. 63,922

Int. Cl. C09c *1/36*

U.S. Cl. 106—300 2 Claims

In a process of treating rutile titanium dioxide pigment by (a) mixing titanium dioxide and a silicate in water forming a slurry; (b) neutralizing the slurry to obtain a pH value of about 5–8, at a temperature of about 50–70° C.; (c) adding a soluble zinc salt to the mixture and adjusting the pH of the mixture to a level of about 6.5–7.5; (d) isolating the treated pigment from the mixture; (e) calcining the isolated pigment; and (f) dry-grinding the calcined pigment, the light stability of the pigment and the ability of the pigment to be retained by paper pulp in the manufacture of paper is improved by rapidly adding sulfuric acid having a concentration of 50–96 percent to the slurry of pigment and silicate, reducing the pH of the slurry to a value of 5 or less and effecting rapid precipitation of silica.

3,676,168

CARBON BLACK MANUFACTURE

Robert E. Dollinger, Toledo, Ohio, assignor to Phillips Petroleum Company

No Drawing. Filed May 14, 1970, Ser. No. 37,338

Int. Cl. C08h *17/08*; C09c *1/58*

U.S. Cl. 106—307 10 Claims

A method of improving the scorch time of rubber into which carbon black is blended by incorporating into the carbon black an antioxidant by mixing the antioxidant and carbon black in contact with water and oxidatively drying the carbon black.

3,676,169

FIRE RETARDING PROCESS COMPRISING CONVERGING SEPARATE SOLUTIONS OF POLYVINYL ALCOHOL AND ALKALI METAL BORATE

Edward R. Degginger, Convent Station, N.J., assignor to Allied Chemical Corporation, New York, N.Y.

No Drawing. Filed July 23, 1970, Ser. No. 59,778

The portion of the term of the patent subsequent to Nov. 3, 1987, has been disclaimed

Int. Cl. A01n *3/00*; C09d *5/18*

U.S. Cl. 117—3 7 Claims

An aqueous solution of polyvinyl alcohol and an aqueous solution of an alkali metal borate, when combined, form a dilatant fluid having excellent properties as a fire retardant and fire suppressant.

3,676,170

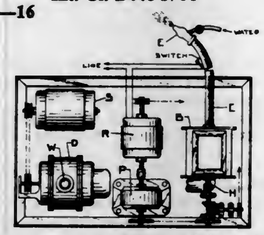
METHOD FOR SPRAYING A HIGH DENSITY INSULATING MAT

Richard Lewis Kempthorne, Miami, Fla., assignor to Sprayon Research Corporation, Fort Lauderdale, Fla.

Continuation-in-part of application Ser. No. 658,012, June 19, 1967. This application Mar. 30, 1970, Ser. No. 23,970

Int. Cl. B44c *1/08*

U.S. Cl. 117—16 3 Claims



The apparatus and method for applying a high density, fibrous insulating mat surface which requires no tamping. A blower and nozzle arrangement to mix and spray the fibrous material in an extremely high velocity impact stream.

3,676,171

POLYVINYL CHLORIDE POWDER COATINGS

Lester L. Spiller and Claude W. Buford, Indianapolis, Ind., assignors to Ransburg Electro-Coating Corp., Indianapolis, Ind.

No Drawing. Filed Nov. 16, 1970, Ser. No. 90,061

Int. Cl. B44d *1/094*; B05b *5/00*

U.S. Cl. 117—17 22 Claims

Polyvinyl chloride homopolymer powder which is substantially free of copolymerizable monomers which will soften the polymer or increase its solubility in organic solvents so that it does not fuse to form a film when heated in the absence of pressure is fused and coalesced into a continuous non-porous film by subjecting a layer of the powder on a substrate to organic solvent vapor having a temperature in excess of 100° C. while condensing the solvent vapors on the substrate until the film is formed.

3,676,172

VAPOR COALESCENCE OF POWDER COATINGS

John W. Van Dyk, Wilmington, Del., and Dao-Tsing Wu, Villanova, Pa., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Continuation-in-part of abandoned application Ser. No. 733,275, May 31, 1968. This application Dec. 14, 1970, Ser. No. 98,131

Int. Cl. B44d *1/48, 1/094*

U.S. Cl. 117—21 17 Claims

The process for forming a continuous polymeric coating on a substrate comprises the following steps:

(1) applying a coating of a thermoplastic polymeric powder on a substrate,

(2) exposing the coating to a partial pressure of a coalescing vapor for the polymeric powder, and

(3) absorbing sufficient vapor into the coating to coalesce the powder particles and heating the coalesced coating to remove solvent.

3,676,173

METHOD FOR FORMING PYROLYZED STRUCTURES

Whitney R. Adams, Wilmington, Del., assignor to Scott Paper Company, Philadelphia, Pa.

Continuation of application Ser. No. 485,893, Sept. 8, 1965. This application Apr. 10, 1969, Ser. No. 858,210

Int. Cl. C23c *9/06*

U.S. Cl. 117—21 9 Claims

Porous, cellular structures which have been at least partially carbonized, which have greater strength at high temperatures, and which are capable of withstanding higher temperatures than could the structures prior to pyrolysis. A method for forming the above structures in which a first basic structure having a desired configuration and comprised of material having a low fusion or deterioration temperature is coated at even lower temperatures with an infusible resin which is capable of being cured to an infusible state at a temperature lower than the fusion or deterioration temperature of the material comprising the first basic structure, and the resulting coated structure, is then subjected to elevated temperatures so that the basic structure is pyrolyzed and carbonized leaving a stronger, high-temperature-resistant structure substantially in the image of the first basic structure.

3,676,174

COATING AND FORMING

Herman Spector, 75 Central Park W., New York, N.Y. 10023

No Drawing. Continuation-in-part of application Ser. No. 698,707, Jan. 18, 1968, now Patent No. 3,558,340. This application Nov. 16, 1970, Ser. No. 90,161

The portion of the term of the patent subsequent to Jan. 26, 1988, has been disclaimed

Int. Cl. B44c *1/06*; B44d *1/094*

U.S. Cl. 117—26 7 Claims

Formed objects are given a hard coat by rubbing a dry powder and plaster of Paris thereon, painting the surface with a mixture of this powder and polyvinyl acetate, and allowing the painted surface to cure. The powder may be wood flour or microporous cellulose. If desired, a metallic coating may be provided by further painting on a coating of a fine metal powder suspended in polyvinyl acetate. The mixture itself of powder, plaster of Paris and polyvinyl acetate may be shaped or moulded into the form of useful or decorative objects.

3,676,175

PAPER COATED WITH PIGMENTED RESIN AND OPTICAL BRIGHTENING AGENT

Anthony Ian Woodward, Amersham, and Angus John Challis Purdie, Maidenhead, England, assignors to Wiggins Teape Research & Development Limited, London, England

No Drawing. Filed June 17, 1970, Ser. No. 46,884

Claims priority, application Great Britain, June 23, 1969, 31,654/69

Int. Cl. G03c *1/86, 1/92*

U.S. Cl. 117—33.5 T 4 Claims

A synthetic resin composition which contains antimony trioxide and an optical brightening agent for the production of photograph support materials. The composition is used in sheet form or coated on to a base of paper or board. The synthetic resin composition surface can be sensitized with a photograph emulsion or coated with silver precipitation nuclei.

3,676,176

METHOD OF MAKING FLUORESCENT LAMPS

Willy P. Schreurs, Danvers, and Lawrence W. Kimball, Bedford, Mass., assignors to Sylvania Electric Products Inc.

No Drawing. Filed Sept. 28, 1970, Ser. No. 76,270

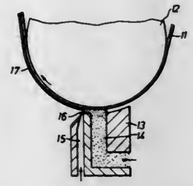
Int. Cl. F21k *2/00*; B44d *1/46, 1/48*

U.S. Cl. 117—33.5 L 7 Claims

The inner wall of a tabular, open-ended glass envelope is coated with a phosphor by flushing a liquid phosphor suspension therethrough. In order to improve the uniformity of thickness of the phosphor, the envelope is positioned vertically and the wet phosphor is zone dried while air is passed through the envelope.

3,676,177
METHOD OF STABILIZING RARE EARTH OXIDE PHOSPHOR IN DICHROMATE SENSITIZED COATING SLURRY
Michael J. Hammond and James W. Haynes, Towanda, Pa., assignors to Sylvania Electric Products Inc.
No Drawing. Filed Apr. 24, 1970, Ser. No. 31,771
Int. Cl. H01j 31/00
U.S. Cl. 117—33.5 CM 12 Claims
The hydrolysis of rare-earth oxide phosphors contained in a slurry of an organic binder sensitized with a dichromate ion can be prevented by treating the phosphor or the slurry with a water soluble PO_4^{-3} containing compound prior to the application of the slurry to a substrate.

3,676,178
PROCESS AND APPARATUS FOR COATING WEB SUPPORTS
Kurt Browatzki, Opladen, Hans Gref, Cologne, Peter Herzhoff, Leverkusen, Fritz Maus, Cologne, and Stephan Platz, Gustav Schaum, Wolfgang Schweicher, and Willi Wasser, Leverkusen, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany
Filed Mar. 17, 1970, Ser. No. 20,227
Claims priority, application Germany, Apr. 25, 1969, P 19 21 644.7
Int. Cl. C23c 13/08
U.S. Cl. 117—34 2 Claims



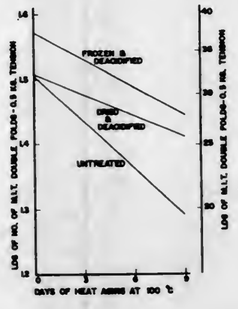
A process for coating web supports with viscous solutions in which the solution is applied to the web support from a coating chamber through a narrow gap between the exit side of the chamber and the support, the gap opening being several times larger than the thickness of the applied solution layer. An adjustable gas pressure in excess of atmospheric pressure is applied against the coating solutions directly adjacent the outer side of the coating chamber while maintaining atmospheric pressure on the entry side of the coating chamber.

3,676,179
COATED ARTICLE AND METHOD FOR MAKING SAME
Jack C. Bokros, San Diego, Calif., assignor to Gulf Oil Corporation, San Diego, Calif.
No Drawing. Filed Oct. 3, 1968, Ser. No. 764,954
Int. Cl. C23c 11/10; B44d 1/12
U.S. Cl. 117—46 CG 15 Claims
A method of coating with pyrolytic carbon to provide a coated article having high strength characteristics. Deposition of pyrolytic carbon is effected on an article from a carbonaceous atmosphere at a preselected temperature under conditions that result in formation of carbon having a preselected coefficient of thermal expansion which is less than that of the article. During cooling of the coated article to ambient temperature, the difference between the coefficients of thermal expansion of the article and the pyrolytic carbon causes the pyrolytic carbon coating to be placed under substantial compressive tangential stress. Deposition is usually carried out at a temperature of about 1500° C. or below to deposit fairly dense isotropic or laminar carbon. The coefficient of thermal expansion of the article being coated is usually between about 6 to 9×10^{-6}/° C., with the preferred material being graphite.

3,676,180
ACID TREATMENT OF ARTIFICIAL LEATHER FOR IMPROVED ADHERENCE WITH A LATEX ADHESIVE
Werner Riess, Erlenbach, and Helmut Schaefer and Bernd Bayer, Elsenfeld, Germany, assignors to Glanzstoff AG, Wuppertal, Germany
No Drawing. Filed Jan. 22, 1969, Ser. No. 793,159
Claims priority, application Germany, Jan. 23, 1968, P 17 19 138.7
Int. Cl. B44d 1/092; D06n 3/00
U.S. Cl. 117—47 A 11 Claims
Process for improving the adhesiveness of a microporous artificial leather while retaining its permeability to water vapor, particularly as a pretreatment step in adhering the artificial leather with an aqueous latex adhesive, by treating said leather as a substrate with an aqueous solution of a weakly acidic electrolyte in an amount sufficient to yield a pH-value on the surface of the artificial leather of from about 2 up to less than 7.

3,676,181
ELECTRICAL DISCHARGE TREATMENT OF TETRAFLUOROETHYLENE/HEXAFLUOROPROPYLENE COPOLYMER IN ACETONE
Alexander Joseph Kowalewski, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
No Drawing. Filed Sept. 16, 1969, Ser. No. 858,497
Int. Cl. B44d 1/092
U.S. Cl. 117—47 A 5 Claims
Treatment of tetrafluoroethylene/hexafluoropropylene copolymer surface by electrical discharge in an atmosphere containing 3 to 40% by volume of acetone to render the surface more adherable to another material.

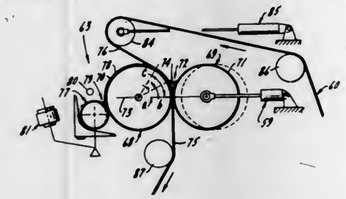
3,676,182
TREATMENT OF CELLULOSIC MATERIALS
Richard Daniel Smith, 1369 E. Hyde Park Blvd., Chicago, Ill. 60615
Continuation-in-part of applications Ser. No. 559,415, June 22, 1966, Ser. No. 695,631, Jan. 4, 1968, and Ser. No. 850,991, Aug. 18, 1969. This application Aug. 31, 1970, Ser. No. 68,499
Int. Cl. B44d 1/092
U.S. Cl. 117—60 47 Claims



A non-aqueous process for deacidifying and preserving cellulosic materials by means of a solution of an alkali or alkaline earth alkoxide, or mixtures thereof, in an organic solvent therefor. Also disclosed are nonaqueous deacidification processes employing other alkali and alkaline earth compounds, and processes which employ a liquefied gas and/or halogenated hydrocarbon solvent. Also disclosed are processes for deacidifying and preserving cellulosic aggregates such as whole books, and cellulosic plastics.

3,676,183
PROCESS FOR PREPARING HIGH GLOSS PHOTOGRAPHIC PAPER
Leonid G. Garth, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
No Drawing. Filed June 30, 1970, Ser. No. 51,358
Int. Cl. B44d 1/44; G03c 1/30
U.S. Cl. 117—64 R 2 Claims
Photographic paper base is coated with a mixture of gelatin, barium sulfate and a gelatin hardener, dried, coated with an alkaline gelatin solution, dried, sprayed with an alkaline formaldehyde solution and dried in contact with a highly polished heated metal drum to obtain a high gloss finish.

3,676,184
METHOD FOR CONTROLLING VARYING LIQUID PENETRATION OF A CONTINUOUS PAPER WEB
Walter E. Spearin and Harold S. Vanderhei, Roaring Spring, Pa., assignors to Combined Paper Mills, Inc., Combined Locks, Wis.
Filed Aug. 22, 1969, Ser. No. 852,426
Int. Cl. B05c 9/04
U.S. Cl. 117—68 4 Claims

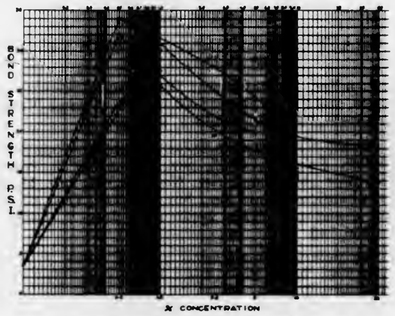


A method for controlling coating liquid penetration into the substrate of a continuous web which includes application of a barrier liquid to the first side of the web prior to the time the coating liquid is applied to the second side of the web.

3,676,185
HEAT-SEALABLE MOISTUREPROOF WRAPPING MATERIAL
Cyril Howard Phillips, James Charles Brunton, and Geoffrey Downing Pearce, Bridgwater, England, assignors to British Cellophane Limited, Bridgwater, England
No Drawing. Filed Mar. 12, 1970, Ser. No. 19,095
Claims priority, application Great Britain, Mar. 13, 1969, 13,278/69
Int. Cl. B44d 1/02; B32b 23/08, 27/08
U.S. Cl. 117—68.5 9 Claims
The invention relates to heat-sealable moistureproof sheet materials. A base sheet is coated on each side with a sub-coating of a vinylidene chloride copolymer having a vinylidene chloride content of from 93 to 96% by weight and having a sum total weight of coating on both sides of the sheet of from 2.0 to 10.0 grams per square metre. The sub-coating is overlain with a top coating comprising a vinylidene chloride copolymer having a vinylidene chloride content of from 80 to 92% by weight and having a sum total weight of top coating on both sides of the sheet of from 1.0 to 5.0 grams per square metre. The sheet materials are useful as wrapping materials.

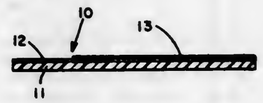
3,676,186
SOIL RETARDANT COATING AND METHOD FOR FORMING THE SAME
Louis L. Pytlewski, Philadelphia, Pa., assignor to Research Corporation, New York, N.Y.
No Drawing. Continuation-in-part of application Ser. No. 591,717, Nov. 3, 1966. This application Sept. 11, 1970, Ser. No. 71,426
Int. Cl. B44d 1/14; B05b 5/00; C03c 23/00
U.S. Cl. 117—69 12 Claims
Positively charged coatings are provided comprised of positively charged particles of a salt of a metal, the metallic element of which exhibits two stable states of oxidation simultaneously while in solution. The coatings may further have an additional layer of negatively charged silica particles over the positively charged coatings. The coatings of this invention are substantive to negatively charged surfaces such as glass and are also hydrophilic. When water strikes the coated surface, there is a preferential wetting out and removal of soils from the surface. The coatings of this composition are especially useful as soil retardant coatings for window glass and other negatively charged surfaces such as textiles, metals, painted surfaces, plastic and the like.

3,676,187
BRICK TREATMENT
Leo Kampf, 39—67 48th St., Sunnyside, N.Y. 11104
Filed May 18, 1970, Ser. No. 38,386
Int. Cl. B44d 1/02
U.S. Cl. 117—70 A 8 Claims



The application to the mortar surface of brick of a water repellant material at a concentration in the range of about 0.5% to less than 5%, with a preferred concentration of 1%.

3,676,188
METHOD FOR PREPARING SENSORS FOR DETECTING REDUCING VAPORS
Herbert P. Silverman, Orange, and Gino A. Giarrusso, Long Beach, Calif., assignors to TRW Inc., Redondo Beach, Calif.
Original application Aug. 23, 1967, Ser. No. 662,688, now Patent No. 3,549,329, dated Dec. 22, 1970. Divided and this application Aug. 24, 1970, Ser. No. 66,571
Int. Cl. B44d 1/06, 1/14
U.S. Cl. 117—71 R 2 Claims



A thin film of one of the noble metals bonded to a non-corrodible backing and having a reducible metallic

salt on at least a portion of the metal film, the salt being adapted to deposit its metal on the metal film when the salt is exposed to reducing vapors.

3,676,189

METHOD OF COATING A POLYOLEFIN OR POLYOLEFIN-COATED PAPER SHEET MATERIAL

Anthony Ian Woodward, Amersham, Angus John Challis Purdie, Maidenhead, and Anthony Paul Way, Chesham, England, assignors to Wiggins Teape Research & Development Limited, London, England

No Drawing. Filed Aug. 7, 1970, Ser. No. 62,160

Claims priority, application Great Britain, Aug. 22, 1969, 42,069/69

Int. Cl. G03c *1/86;* **B44d** *5/04*

U.S. Cl. 117—76 P **4 Claims**

The invention concerns a polyolefin surface treated with a coating of an acidic composition which comprises aqueous silica sol, an acid stable water insoluble film forming material, surface agents to keep the film forming material as a stable suspension in the composition, and an acid. The composition is coated onto the polyolefin as an aqueous composition and dried. The treatment renders the polyolefin surface adherent to, for example, photograph emulsion, printing inks and adhesives.

3,676,190

GRAFT COPOLYMERS AND PROCESS OF MAKING SAME

Yvan Landler, 12 Boulevard Desgranges, Sceaux, Seine, France, and Pierre Henri Lebel, 290A Avenue Napoleon Bonaparte, Reuil-Malmaison, France

No Drawing. Continuation-in-part of applications Ser. No. 490,108, Feb. 23, 1955, Ser. No. 697,773, Nov. 27, 1957, now abandoned, Ser. No. 712,322, Jan. 31, 1958, now abandoned, and Ser. No. 767,767, Oct. 17, 1958, now abandoned. This application Jan. 7, 1964, Ser. No. 336,145

Claims priority, application France, Mar. 3, 1954, 664,578; Nov. 24, 1956, 9,995; Jan. 31, 1957, 730,947; Feb. 2, 1957, 731,050; June 14, 1957, 741,122; Oct. 18, 1957, 749,811; Brazil, Nov. 14, 1957, 60,876

Int. Cl. C08f *15/00, 21/00*

U.S. Cl. 117—76 **36 Claims**

A process for making substantially pure graft polymers comprises the steps of subjecting an organic polymer having a molecular weight of at least 1500 to the action of ozone at a temperature not exceeding 130° C. to form an ozonized polymer and then reacting the ozonized polymer with at least one polymerizable ethylenically unsaturated monomer to form a graft copolymer, the ozonized polymer being the sole added grafting catalyst and the graft copolymer containing at least 5% polymer substrate. The monomer may be in vapor form. The process may, if desired, be applied to shaped objects so as to form a graft copolymer only at the surface of the object. In this event, the polymer is shaped into the form of the desired polymeric object at least prior to reacting the ozonized polymer with the ethylenically unsaturated monomer. There is also disclosed a process for modifying linear polyesters free from aliphatic unsaturation and having linking groups characterized by the presence of at least one hetero atom in the chain, comprising treating such polyesters with ozone and then with a fluid organic compound containing carbon-to-carbon aliphatic ethylenic unsaturation. The resulting products are also disclosed.

3,676,191

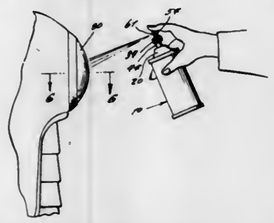
METHOD OF COATING A VEHICLE HEADLIGHT LENS

Leo H. Bond, P.O. Box 409, Norfolk, N.Y. 13667

Filed Dec. 22, 1969, Ser. No. 886,906

Int. Cl. B44d *1/14;* **C03c** *17/32*

U.S. Cl. 117—77 **2 Claims**



A spray applicator of the aerosol container type having two separate receptacles therein and a two-way rotatable valve structure including a finger depressible plunger nozzle. Separate passages connect each receptacle with the rotatable valve structure which when rotated in one selected position and depression of the plunger nozzle that opens a valve in the valve structure will provide for the flow of a pressurized liquid from one receptacle through one passage through the valve structure for discharge as a spray from the plunger nozzle. Rotation of the valve structure to another selected position will effect a like spray discharge from the other receptacle. Contained in one receptacle is a liquid adhesive mixture of rubber cement, a thinner and a drying agent. Contained in the other receptacle is a liquid mixture of a yellow dye, a water soluble resin, a spreading agent and a deforming agent. Coating a headlight lens of a vehicle with three films of spray the intermediate film being a spray of the liquid dye mixture will convert the white light beam of the headlight to a yellow light beam that will penetrate fog.

3,676,192

CROSSLINKED POLYVINYL CHLORIDE OR POLYVINYLIDENE FLUORIDE FILM

Ernest A. Hahn, Pittsburgh, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

No Drawing. Filed Apr. 6, 1970, Ser. No. 26,086

Int. Cl. B44d *1/50;* **C08f** *1/24*

U.S. Cl. 117—93.31 **22 Claims**

Coating compositions comprising polyvinyl chloride or polyvinylidene fluoride are prepared by mixing a solution of the polyvinyl chloride or polyvinylidene fluoride in an active solvent with an acrylic monomer and subjecting the mixture to ionizing irradiation. The cured films are hard, stain-resistant, heat-resistant, and mar-resistant.

3,676,193

PROCESS FOR CASTING INTEGRALLY SUPPORTED TUBULAR MEMBRANES

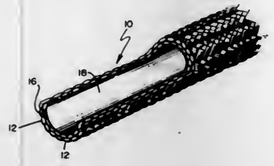
William W. Cooper IV, Sudbury, and Edward M. Shea, Stoneham, Mass., assignors to Abcor, Inc., Cambridge, Mass.

Continuation-in-part of application Ser. No. 658,166, Aug. 3, 1967. This application May 8, 1970, Ser. No. 35,646

Int. Cl. B01d *25/08;* **B44d** *1/02*

U.S. Cl. 117—94 **27 Claims**

An apparatus for and method of forming an integrally supported tubular membrane having an inner microporous layer by casting on an interior supporting surface a liquid polymeric composition. Polymeric compositions are applied to the interior of a tubular structure by means of a casting bob which is generally tear-dropped in shape



and which is hollow to receive the polymer composition and further which is characterized by apertures in the sides from which the polymeric composition is discharged from the bob onto the adjacent surface.

3,676,194

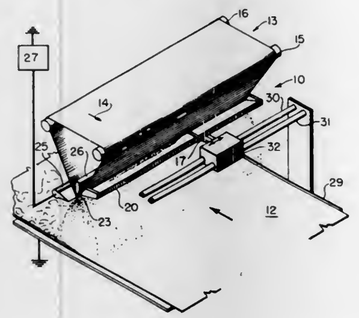
METHOD OF ELECTROSTATIC SPRAYING

Richard O. Probst, Indianapolis, Ind., assignor to Ransburg Electro-Coating Corp., Indianapolis, Ind.

Filed Aug. 5, 1970, Ser. No. 61,308

Int. Cl. B05b *5/02*

U.S. Cl. 117—93.4 R **12 Claims**



An apparatus for and a method of providing charged particles of an organoplastic material including but not limited to a polymeric organoplastic foam. The organoplastic material may be used as backing or a myriad of substrate materials including but not limited to nonconductive substrate materials such as woven and nonwoven fiber webs and conductive metallic substrate materials such as aluminum and steel.

The apparatus for providing the charged particles includes an electrically insulative belt having a surface upon which the organoplastic material is placed and transported to an electrical charging and atomizing zone. Positioned within the charging and atomizing zone is means having an extended or elongated edge at high electrical potential. The extended edge is so positioned as to be substantially transverse of and in close proximity with the surface of the insulative means transporting the organoplastic material. A high intensity electric field extends from the extended edge to, or in some instances, through the substrate if the substrate is porous and fabricated from an insulative rather than a conductive material. The position of the extended edge at high electrical potential relative to the organoplastic material causes the organoplastic material to be formed into charged particles that are projected toward and deposited upon the substrate.

3,676,195

WATER-RESISTANT MATERIALS, AND METHODS OF PRODUCTION AND USE OF SAME

Clifton L. Kehr, Silver Spring, and Walter R. Wszolek, Sykesville, Md., assignors to W. R. Grace & Co., New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 617,801, Feb. 23, 1967, which is a continuation-in-part of application Ser. No. 567,841, July 26, 1966. This application July 29, 1969, Ser. No. 845,908

Int. Cl. B44d *1/50;* **C08f** *1/18*

U.S. Cl. 117—93.31 **32 Claims**

Water-resistant materials having improved electrical and mechanical properties can be produced from an element which includes a liquid photocurable composition absorbed into and onto a porous support layer. The process includes, for example, impregnating a porous support layer with a liquid photocurable composition and exposing the photocurable element to U.V., electron beam or gamma radiation. The support layer containing the photocured composition is water-resistant and has improved properties. The liquid photocurable composition contains at least a polyene, a polythiol, and optionally a photocuring rate accelerator. The products, for example, can be used as water-proofed fabrics, or composite structures.

3,676,196

COATING FOR WATER CONTAINING HYDRAULIC CEMENT ARTICLES

Stephen Mark Quint, Basking Ridge, and John Junior Dalton, East Whitehouse, N.J., assignors to Johns-Manville Corporation, New York, N.Y.

No Drawing. Filed Nov. 17, 1969, Ser. No. 877,436

Int. Cl. B44d *1/20*

U.S. Cl. 117—96 **5 Claims**

An article constructed of hydraulic calcareous cement material, such as pipe, having a coating on its water containing surfaces composed of a resin copolymer of vinyl toluene and alpha methyl styrene to inhibit dissolving and leaching of water soluble minerals from the cementitious material, and a method of applying the resin coating comprising the use of the resin dissolved in perchloroethylene.

3,676,197

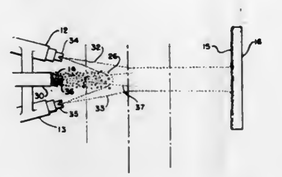
METHOD OF PROJECTING PLURAL COMPONENT MATERIAL UPON A SUITABLE BASE

David Harrison, Fort Lauderdale, and Raul T. Sainz, Miami, Fla., assignors to Ransburg Electro-Coating Corp., Indianapolis, Ind.

Filed Apr. 27, 1970, Ser. No. 32,064

Int. Cl. B44d *1/12, 1/08*

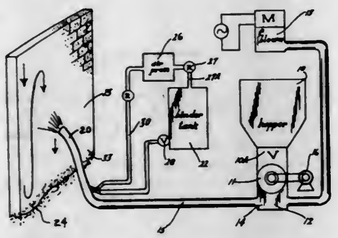
U.S. Cl. 117—105.5 **13 Claims**



An apparatus for and a method of providing a mixed spray of a plural component material and curing agent with granular material entrained in the mixed spray. The apparatus includes curing agent spray means, outboard plural component material spray means flanking the curing agent spray means and granular material dispensing or emitting means The outboard spray means includes a plurality of spaced apart spray nozzle means inclined toward each other so as to provide converging sprays of

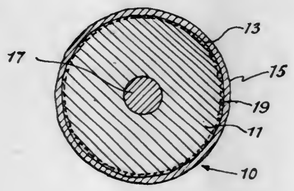
the plural component material. The sprays are adapted to converge and intersect externally of the apparatus prior to deposition upon a surface. The curing agent spray means provides a spray of curing agent which intersects and mixes with the sprays of the plural component material. Granular material entrained in a fluid medium mixes with the sprays of plural component materials so as to provide a mixed spray of plural component material and curing agent with granular material entrained therein.

3,676,198
METHOD FOR WATERPROOFING STRUCTURES
Bryan M. McGroarty, Minneapolis, Minn., assignor of a fractional part interest to Wesley R. Green, Prior Lake, Minn.
Continuation-in-part of application Ser. No. 751,517, Aug. 9, 1968. This application May 11, 1970, Ser. No. 36,296
Int. Cl. B44d *1/12, 1/08*
U.S. Cl. 117—105.5 **28 Claims**



Applying granular non-hydrated bentonite to surfaces to be waterproofed by mixing it with a material causing the granular bentonite to adhere to the surface. Upon being wetted by water, the bentonite will expand to seal the surface for an indefinite period.

3,676,199
FABRIC CONDITIONING ARTICLE AND USE THEREOF
Gordon Trent Hewitt, Upper Montclair, and Annie Sue Giordano, New Brunswick, N.J., assignors to Colgate-Palmolive Company, New York, N.Y.
Filed Oct. 20, 1970, Ser. No. 82,368
Int. Cl. B44d *1/46, 1/48;* **B05c** *11/12*
U.S. Cl. 117—109 **13 Claims**



A method of treating fibrous materials with a conditioning agent includes tumbling such materials, in a damp and/or heated state, into contact with a form-retaining conditioning article containing a conditioning agent on a surface thereof. Such article is a form-retaining base, e.g., a polystyrene foam sphere, having a conditioning coating on the exterior thereof which is removable upon contact with tumbling laundry in the dryer, and is transferable to the laundry by such contact.

By means of the conditioning treatment, various desirable properties can be imparted to laundry or other fabrics being conditioned but generally the most important effect obtained is softening of the materials and/or making them antistatic.

3,676,200
PROCESS FOR THE MANUFACTURE OF PREPREGS
Heinz Rembold, Arlesheim, and Ewald Losert, Birsfelden, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland
No Drawing. Filed July 2, 1970, Ser. No. 52,106
Claims priority, application Switzerland, July 7, 1969, 10,354/69
Int. Cl. C08g *30/14;* **C03c** *25/02*
U.S. Cl. 117—121 **11 Claims**

Process for the manufacture of prepregs from pre-impregnated endless filaments, hanks, rovings, mats, knitted fabrics or woven fabrics based on inorganic fibre materials of high mechanical performance, or highly heat-resistant organic fibres, by impregnating the substrate with a solution containing (a) a curable polyadduct, still containing free glycidyl groups, of triglycidylisocyanurate and a less than equivalent amount of curing agent, which is obtained by reacting triglycidylisocyanurate with cycloaliphatic, aromatic or heterocyclic polyamines which contain at least two primary amino groups, at elevated temperature, with 0.05 to 0.5 amine hydrogen equivalent of the polyamine being employed per 1 epoxide equivalent of the triglycidylisocyanurate, (b) a curing agent in an amount sufficient for complete curing of the polyadduct (a) and (c) an organic solvent, and by subsequently drying the impregnated substrates.

3,676,201
ADHESIVE COATED VINYL CHLORIDE FILM
Richard C. Doss and Faber B. Jones, Bartlesville, Okla., assignors to Phillips Petroleum Company
No Drawing. Filed Jan. 8, 1970, Ser. No. 1,537
Int. Cl. C09j *7/02*
U.S. Cl. 117—122 H **3 Claims**

Film materials of vinyl chloride polymers are contacted with a dry-film forming, heat-activatable solution of adhesive material comprising the reaction product of an essentially linear essentially dihydroxy polyester and a diisocyanate.

3,676,202
PRESSURE-SENSITIVE ADHESIVE TAPE
Ralf Korpman, East Brunswick, N.J., assignor to Johnson & Johnson
Continuation-in-part of application Ser. No. 720,811, Apr. 12, 1968. This application Oct. 7, 1969, Ser. No. 864,512
Int. Cl. C09j *7/02*
U.S. Cl. 117—122 P **7 Claims**



A normally tacky and pressure-sensitive adhesive tape having superior properties, wherein the adhesive is based upon the combination of a particular type of elastomeric and thermoplastic block polymer with a tackifier comprising a major proportion of polymerized piperylene or isoprene and piperylene structures. The block polymer has the structure ABA, wherein A is a thermoplastic polymer block of a vinyl arene and possesses a glass transition temperature above normal room temperature and B is an elastomeric polymer block of isoprene, and the thermoplastic A block composes about 8–35 percent by weight of the block polymer.

3,676,203
SEMIPERMEABLE MEMBRANES
Samuel B. Sachs, Rehovot, Israel, and Robert L. Riley, San Diego, Calif., assignors to the United States of America as represented by the Secretary of the Interior
No Drawing. Filed Aug. 7, 1970, Ser. No. 62,177
Int. Cl. B32b *27/06*
U.S. Cl. 117—123 D **3 Claims**

Semipermeable composite membranes are prepared by coating polyacrylic acid on a porous support. The resulting membranes exhibit superior salt rejecting capability and find particular utility in desalination of water by reverse osmosis.

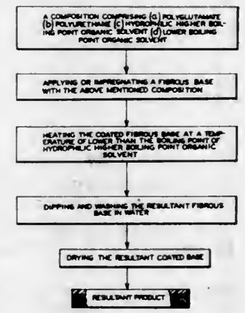
3,676,204
COMPOSITION AND PROCESS FOR GLAZING CERAMIC WARE
Richard Andrew Eppler, Timonium, Md., assignor to SCM Corporation, Cleveland, Ohio
No Drawing. Application May 28, 1969, Ser. No. 828,783, now Patent No. 3,565,644, dated Feb. 23, 1971, which is a continuation-in-part of application Ser. No. 625,000, Mar. 22, 1967. Divided and this application Sept. 25, 1970, Ser. No. 75,710
Int. Cl. C03c *25/00*
U.S. Cl. 117—125 **4 Claims**

This patent application describes a method and composition for blazing ceramic ware with a high gloss, low expansion glaze, preparations useful for making same, process for glazing bodies and substrates with same, and resulting coated ceramic bodies. The composition for glazing is characterized by containing a particulate vitrifiable material, at least a substantial fraction of which is in the particulate vitreous state, said vitrifiable material, after melting into a fluent vitreous state, being self-nucleating or autocrystallizable or crystallizable into a substantially dimensionally stable continuous vitreous film in which are dispersed crystals of low thermal expansion. The glazing composition is particularly suited for glazing low expansion ceramic whiteware. Set forth as useful preparations are special particulate lithium aluminosilicates modified with flux in proportion controlled to restrict the development of a primary low thermal expansion crystalline phase, some of said preparations being modified with zirconia. The percentage of B_2O_3 and K_2O as flux components is critical to the development of high gloss glazes with high ratios of combined B_2O_3 and K_2O resulting in high gloss. The glazing process comprises partially coating a ceramic body with the composition for glazing, firing the coated body at a temperature sufficiently high and for a time sufficiently long for converting the composition into a fluent continuous vitreous surface coating, then adjusting the temperature to a value at which crystal growth in the surface coating occurs at a measurable rate, and finally cooling the resultant glazed ware at a rate consistent with keeping the ware integral. The invention shows particular advantage for making high gloss glazes of adjustable and low thermal expansion for thermal shock and mechanical shock resistant ceramic whiteware, for example, dinnerware, cookware, ceramic tile, acoustical tiles of the mineral type, sanitary ware, artware, and electrical and technical porcelain. The invention is especially adaptable to conventional "two-fire" glazing practice.

3,676,205
TEXTILE TREATMENT WITH AMPHOTERIC STARCH
Lee H. Elizer, Keokuk, Iowa, assignor to The Hubinger Company, Keokuk, Iowa
No Drawing. Continuation-in-part of applications Ser. No. 597,561, Nov. 29, 1966, and Ser. No. 816,100, Apr. 14, 1969, now Patent No. 3,622,563, dated Nov. 23, 1971. This application Feb. 13, 1970, Ser. No. 11,300
Int. Cl. C08j *1/44;* **D06m** *15/16*
U.S. Cl. 117—139.5 C **8 Claims**

Amphoteric starch which contains both cationic and anionic groups linked to the starch molecule is used in the textile industry, especially for sizing mixed fibers in the form of threads or yarns such as, for example, mixtures of polyester fibers and cotton fibers. The amphoteric starch has an isoelectric pH and can be dyed with acid dyes at a pH below the isoelectric pH and with basic dyes at a pH above the isoelectric pH. It can therefore be used to alter the dyeing properties of material to which it is applied.

3,676,206
POROUS COATED FIBROUS MATERIAL
Kazuo Nishitani, Kainan, and Yasuhiro Shiga and Yoshifumi Nishibayashi, Osaka-fu, Japan, assignors to Toyo Cloth Co., Ltd.
Filed June 27, 1969, Ser. No. 837,184
Claims priority, application Japan, July 2, 1968, 43/46,134
Int. Cl. C08c *17/08*
U.S. Cl. 117—140 A **10 Claims**



A natural leather-like product having a high moisture permeability and moisture release, an elastic plasticity, and a peculiar hand is prepared by applying or impregnating a porous coated fibrous material with a solution of blended composition of polyglutamate and polyurethane and treating it by the wet coagulation method.

3,676,207
PERMANENT SIZING OF YARNS AND FIBERS WITH DURABLE POLYMERS AND COPOLYMERS FOR THE PRODUCTION OF FABRICS WITH IMPROVED PROPERTIES FOR PARTICULAR END USES
John T. Lofton and Robert J. Harper, Jr., Metairie, and Eugene J. Blanchard, New Orleans, La., assignors to the United States of America as represented by the Secretary of Agriculture
No Drawing. Continuation-in-part of application Ser. No. 756,323, Aug. 29, 1968. This application July 15, 1970, Ser. No. 55,259
Int. Cl. D06m *1/00*
U.S. Cl. 117—143 A **15 Claims**

This invention relates to a process for sizing cotton yarns and fibers. More particularly, this invention relates

to a method of sizing cotton fibers prior to weaving by coating or impregnating the fibers with polymers and copolymers which adhere well with the fiber. In this method, cotton fibers are sized with permanent polymer additives prior to weaving. The polymer additive employed is one which improves the wrinkle recovery or abrasion resistance when applied to woven fabric. By application of the polymer additive to the yarn, prior to weaving, the polymer additive serves the dual purpose of acting as a weaving size and improving the wrinkle recovery of the finished fabric.

3,676,208

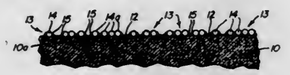
ANTI-SLIP SURFACED ARTICLE

Ivan E. Griffin, Paramount, Calif., assignor to Raymond R. Griffin, Sandy, Utah

Continuation-in-part of abandoned application Ser. No. 415,360, Dec. 2, 1964. This application Feb. 14, 1969, Ser. No. 799,483

Int. Cl. C09k *3/14;* **B32b** *27/38*

U.S. Cl. 117—161 ZB **3 Claims**



An article having an anti-slip surface in the form of a hardened film having individual anti-skid islands raised above the superficial surface of the film. The islands are formed of one or more smooth-surfaced, solid spheres, such as glass beads, of diameter greater than the thickness of the film, the spheres being bottomed on the article and firmly anchored, but not covered by the surrounding portions of the film.

3,676,209

ANTISTATIC FILM PROPERTIES USING METHYL VINYL ETHER/MALEIC ACID INTERPOLYMER

E. Scudder Mackey, Binghamton, and Vincent J. Micell, Conklin, N.Y., assignors to GAF Corporation, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 728,346, May 10, 1968. This application June 12, 1970, Ser. No. 45,941

Int. Cl. G03c *11/00;* **C09h** *3/16*

U.S. Cl. 117—161 UC **4 Claims**

Photographic film resistant to the accumulation of static electrical charges thereon is obtained by adding to the outermost layer on at least on side of the film a neutralized interpolymer of methyl vinyl ether and maleic acid, typically in amounts from one to ten percent by weight based on the solids content of the outermost layer.

3,676,210

PROCESS FOR MAKING ELECTROPHOTOGRAPHIC PLATES

Meredith David Shattuck, San Jose, and William J. Weiche, Los Gatos, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

No Drawing. Filed Nov. 9, 1970, Ser. No. 88,149

Int. Cl. B44d *1/08*

U.S. Cl. 117—201 **7 Claims**

A conductive substrate is simultaneously sprayed with a resin binder suspended in a carrier liquid and with the precursors of a photoconductive compound.

3,676,211

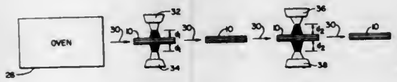
CONTACT SYSTEM FOR ELECTRICALLY CONDUCTIVE CERAMIC-LIKE MATERIAL

John G. Kourtesis, East Providence, R.I., and Leo Marcoux, Rehoboth, Mass., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jan. 2, 1970, Ser. No. 340

Int. Cl. H01l *1/14*

U.S. Cl. 117—212 **13 Claims**



An improved contact system is provided for ceramic or ceramic-like material. Pills of electrically conductive or semiconductive ceramic material such as a barium titanate doped with a rare earth are placed in a holder so that the outer periphery of the pill is masked and flame sprayed with a metal which gives a good physical bond and an ohmic contact having low electrical resistance. Although several metals can be employed for this coating, aluminum is preferred. The pill is preheated to mitigate thermal shock problems. When aluminum is employed, preheating of the pill is also found to significantly enhance the bond strength between the ceramic and the aluminum. The end use of the pill affects the choice of the metallic layer applied to the ceramic. For certain applications, for instance, one layer may suffice, such as when pressure leads are employed. For such applications an ohmic contact having a good physical bond is all that is required; however, in many other applications, it is desired to solder leads to the contact layer. In such cases, the ceramic pill must have a first coating of aluminum to provide the necessary physical bond; however, since aluminum cannot be soldered, another layer of material is required. This second layer of solderable material, such as copper, is applied, preferably by flame spraying onto the unmasked surface of the pills. The pills are removed and the periphery is abrasively cleaned to ensure removal of any conductive material which may have gotten beyond the mask. The pills are then placed between the ends of a generally U-shaped springy lead so that the ends are biased into engagement with the opposite faces of the pill. The pills are passed through a foam flux, then into a solder bath. For many applications, when electrical insulation is not required, the pills are then ready for use upon cutting off of the bight portion of the U-shaped lead. Where electrical insulation is required, the pills are coated with a conventional encapsulating material. In either case, the leads may be deformed to provide stops useful to limit insertion of the switch into its mount and finally, if the bight portion of the lead is still attached, it is cut off.

3,676,212

PRODUCTION OF RESISTIVE COATINGS

Ralph Ephraim Mishler, Menomonee Falls, Wis., assignor to Globe-Union Inc., Milwaukee, Wis.

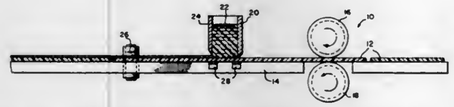
Filed Mar. 10, 1970, Ser. No. 18,243

Int. Cl. B44d *1/18*

U.S. Cl. 117—212 **19 Claims**

A method for producing a plurality of side-by-side micro-thin resistive plastic coatings on a dielectric substrate which comprises continuously advancing a dielectric substrate, e.g., a phenolic strip, at a substantially uniform rate along a prescribed path, supporting a plurality of flowable masses of conductive plastic material onto

confined portions of the advancing substrate and doctoring each mass to form a micro-thin stripe coating of each material on the substrate as it advances away from each mass; the location of each of the plastic masses supported on the confined portions of the substrate being selected so



that the plastic materials doctored onto said substrate form an edge-like continuous uniform electrical junction between each coating, and the viscosity of said plastic materials being sufficient to form continuous substantially uniform edges along each of said coatings.

3,676,213

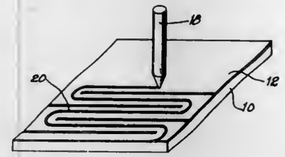
PROCESS FOR THE SELECTIVE FORMATION OF COATINGS BY ELECTROLESS DEPOSITION

John P. Marton, London, Ontario, Canada, assignor to Welwyn Canada Limited, London, Ontario, Canada

Filed Mar. 23, 1970, Ser. No. 21,661

Int. Cl. C23c *3/02*

U.S. Cl. 117—212 **3 Claims**



A process for forming metal and alloy coatings on a dielectric substrate or support by electroless deposition wherein a portion of the substrate surface is activated so that metal will deposit on the surface when the substrate is exposed to an electroless solution containing the metal. The activated portions of the surface define a pattern corresponding to the pattern desired for the metal and alloy coating to be provided on the substrate. Areas of the surface which are adjacent to the activated portion and which are unactivated are unreceptive to the deposit of metal.

3,676,214

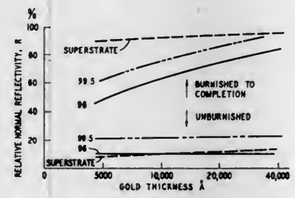
TECHNIQUE FOR ENHANCING THE STABILITY OF TRANSITION METAL-GOLD THIN FILM COMPOSITES

Alan Taylour English, Summit, and Paul Anthony Turner, Murray Hill, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Apr. 6, 1970, Ser. No. 25,923

Int. Cl. B44d *1/14*

U.S. Cl. 117—217 **4 Claims**



A technique is described for obviating thermal degradation of adhesion of transition metal-gold thin film composites by effecting occlusion of pin holes in the gold film. This end is attained by mechanical procedures which take advantage of the malleable nature of the gold.

3,676,215

IMAGING SYSTEM

Robert W. Gundlach, Victor, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

No Drawing. Filed Apr. 26, 1968, Ser. No. 724,596

Int. Cl. G03g *13/06, 13/10*

U.S. Cl. 117—230 **16 Claims**

A simple electrostatographic imaging system including an electrostatographic imaging surface, a donor member having a liquifiable polar developer layer on a surface thereof and developer repellent spacer particles sandwiched between the electrostatographic imaging surface and the liquifiable polar developer layer. Imaging is accomplished in this system by forming an electrostatic latent image on the surface of the electrostatographic imaging surface, liquifying the liquifiable polar developer on the surface of the donor member and allowing the resulting liquified polar developer to migrate to the surface of the electrostatographic imaging surface in image configuration.

3,676,216

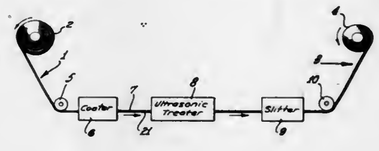
VIBRATION PROCESSING OF MAGNETIC TAPE

Georges D. Abitboul, Los Angeles, Calif., assignor to Audio Magnetics Corporation, Gardena, Calif.

Filed Jan. 21, 1969, Ser. No. 792,464

Int. Cl. H01f *10/00*

U.S. Cl. 117—237 **6 Claims**



Ultrasonic processing of the magnetizable material coating on magnetic tape means renders the coating thickness more nearly uniform and thus improves tape quality and fidelity of reproduction. Improved tape handling techniques for such processing are provided including gas bearing biasing of the tape toward the processing head.

3,676,217

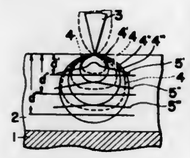
MAGNETIC RECORDING MEDIUM

Goro Akashi, Osamu Suzuki, and Matsuaki Nakamura, Odawara-shi, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Aug. 4, 1969, Ser. No. 847,337

Int. Cl. H01f *10/06*

U.S. Cl. 117—239 **8 Claims**



Magnetic recording medium, resistant to the high-frequency damping effect of pressure, comprising a ferromagnetic recording layer and a powdery CrO_2-based surface layer.

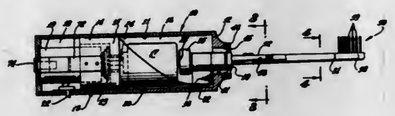
3,676,218
SONIC ENERGY CLEANING METHOD

Harold T. Sawyer, Pacific Palisades, Calif., assignor of a fractional part interest to Vernon D. Beehler, Los Angeles, Calif.

Continuation-in-part of applications Ser. No. 631,736, Apr. 18, 1967, now Patent No. 3,507,695, Ser. No. 658,673, Aug. 7, 1967, now Patent No. 3,535,726, and Ser. No. 832,156 and Ser. No. 832,180, both June 11, 1969. This application Sept. 2, 1969, Ser. No. 854,363

Int. Cl. A61c 17/00

U.S. Cl. 134—1 3 Claims



A resonating toothbrush for cleaning teeth which is electrically operated. A housing is provided which serves as a handle and as a container for a rechargeable electric battery and, in the preferred embodiment, an electric motor. Extending parallel to the motor is an arm anchored to the housing on a partition which separates the battery from the motor and having a free end near the base of the toothbrush shaft. There is an eccentric connection between the motor shaft and the free end of the arm which when actuated, resonates the free end of the arm much the same as the action of free resonant motion of the arms of a tuning fork. A corresponding motion is thereby imparted to the shaft of the toothbrush which ultimately sets the bristle end of the brush and the bristles in resonance at the fundamental frequency or at any of the multiples of fundamental frequency.

3,676,219
CHEMICAL STRIPPERS AND METHOD OF USING

Kenneth H. Schroeder, Wilmington, Del., and George J. Kelly, Jr., Port Murray, N.J., assignors to Allied Chemical Corporation, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 866,036, Oct. 13, 1969. This application Sept. 25, 1970, Ser. No. 75,660

Int. Cl. C23g 1/02

U.S. Cl. 134—3 3 Claims

Strippers for removal of organic films and deposits, such as the polymeric etch resists employed in the manufacture of semiconductors from silicon bodies or silicon dioxide coated silicon bodies, are composed of solutions of chromium trioxide in mixtures of strong nitric and sulfuric acids containing about 2% to about 20% water.

3,676,220
FACILITATED TRANSPORT LIQUID MEMBRANE

William J. Ward III, Schenectady, N.Y., assignor to General Electric Company

Filed Feb. 27, 1969, Ser. No. 803,019

Int. Cl. H01m 27/02; B01d 57/00; C01b 21/36

U.S. Cl. 136—86 9 Claims

A confined liquid membrane having an electrode in contact with each surface thereof is provided with a concentration of a non-volatile transporting specie in solution therein, which transporting specie can be oxidized or reduced from a first to a second valence state. The transporting specie must be reactive with a specific gas in at least one of the multiple valence states. If the transporting specie is reactive with the gas in both valence states, such reactions must have different equilibrium constants. By bringing the specific gas into contact with one surface of such a liquid membrane and applying an electrical potential across the electrodes on each side thereof, the specific gas may be pumped through the membrane against a concentration gradient. Similarly,



while a concentration gradient in the specific gas exists across the structure described, an electrical potential difference develops across the film and the electrodes.

3,676,221
STACKED BATTERY CONSTRUCTION HAVING INSULATING DISKS BETWEEN CELLS JOINED BY WELDS

Walter H. Bach, 6950 Romaine St., Los Angeles, Calif. 90038

Filed Sept. 23, 1968, Ser. No. 761,532

Int. Cl. H01m 21/00

U.S. Cl. 136—111 10 Claims



A battery comprising a plurality of stacked, disk-like sealed cells secured together by cups fitted over one cell of each pair and having bottoms spot-welded to the next cell and sidewalls spot-welded to the interfitting cell. A heat-shrunk sheath encloses the battery and has caps forming the poles. Between each pair of cells is a circular disk of insulating material against which the cup bottoms bulge upon expansion of the contents of the cells, thereby breaking the welds and electrically disconnecting the cells.

3,676,222
CONDUCTIVE CARBON MEMBRANE ELECTRODE

Max C. Deibert, Needham Heights, Mass., assignor to Monsanto Research Corporation, St. Louis, Mo.

Continuation of application Ser. No. 656.611, May 24, 1967, which is a division of application Ser. No. 435,821, Mar. 1, 1965, now Patent No. 3,385,736, dated May 28, 1968. This application Sept. 10, 1970, Ser. No. 70,982

The portion of the term of the patent subsequent to May 28, 1985, has been disclaimed

Int. Cl. H01m 27/04, 13/02

U.S. Cl. 136—121 1 Claim

Novel membrane electrodes of particulate electrode material comprising conductive hydrophobic carbon and polytetrafluoroethylene with the electrode material particles coating the polytetrafluoroethylene particles, and substantially all of the surface of the electrode material being exposed.

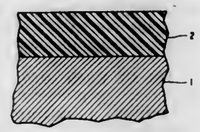
3,676,223
PROCESS FOR THE SURFACE TREATMENT OF TITANIUM AND ITS ALLOYS

Hargovind Nihchaldas Vazirani, Passaic Township, Morris County, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Apr. 17, 1970, Ser. No. 29,511

Int. Cl. C23f 7/14

U.S. Cl. 148—6.15 R 5 Claims



Method for the surface treatment of titanium and its alloys which results in improved joints subsequently formed between the metal and organic materials and comprises treatment in an aqueous solution containing hydrofluoric acid, at least 60 percent by volume of concentrated phosphoric acid, and nitric or chromic acid.

3,676,224
PHOSPHATING SOLUTION WITH SCALE SUPPRESSING CHARACTERISTICS

Charles Thomas Snee, Willoughby, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio

No Drawing. Filed Oct. 16, 1970, Ser. No. 81,518

Int. Cl. C23f 7/08

U.S. Cl. 148—6.15 Z 14 Claims

Modified zinc phosphate solutions for the treatment of metal surfaces, wherein the modifying metal is calcium, magnesium, lithium, beryllium, strontium, cadmium or barium (preferably calcium and/or magnesium), tend to form scale on the surfaces of phosphating apparatus. This scale formation is suppressed by the addition to the phosphating solution of a fluorine-containing complex ion such as fluosilicate or fluoborate.

3,676,225
THERMOMECHANICAL PROCESSING OF INTERMEDIATE SERVICE TEMPERATURE NICKEL-BASE SUPERALLOYS

William A. Owczarski, Cheshire, John M. Oblak, Rocky Hill, and Daniel F. Paulonis, Middletown, Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

No Drawing. Filed June 25, 1970, Ser. No. 49,957

Int. Cl. C22f 1/10

U.S. Cl. 148—12.7 8 Claims

The nickel-base superalloys, such as Inconel 718 and Incoloy 901, are strengthened by thermomechanical processing, usually including solutioning, cold work, precipitation aging and warm working. The processing results in a fine-grained microstructure containing dispersed intermetallic particles and a dense dislocation substructure which may be stabilized by post-deformation precipitation aging.

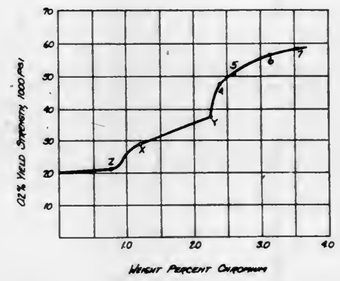
3,676,226
HIGH STRENGTH COPPER-NICKEL ALLOY

Frank Arthur Badia, Ringwood, N.J., and Gary Neil Kirby, Ann Arbor, Mich., assignors to The International Nickel Company, Inc., New York, N.Y.

Continuation-in-part of application Ser. No. 708,973, Feb. 28, 1968, which is a continuation-in-part of application Ser. No. 581,066, Sept. 21, 1966. This application June 13, 1969, Ser. No. 840,106

Int. Cl. C22c 9/06

U.S. Cl. 148—32 12 Claims



Corrosion resistant copper-base alloy containing nickel and chromium has special hardening characteristics which afford high strength properties upon cooling from elevated temperatures over a wide range of cooling rates.

3,676,227
PROCESS FOR PRODUCING SINGLE ORIENTED SILICON STEEL PLATES LOW IN THE IRON LOSS

Fumio Matsumoto, Toshiya Wada, Takaaki Yamamoto, Osamu Tanaka, Kunihide Takashima, and Toshihiko Takata, Kitakyushu, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

No Drawing. Filed Oct. 31, 1969, Ser. No. 873,070

Claims priority, application Japan, Nov. 1, 1968, 43/79,484

Int. Cl. H01f 1/18

U.S. Cl. 148—111 1 Claim

A process for producing a single oriented silicon steel plate or particularly a single oriented silicon steel plate having a high magnetic induction produced by adding a small amount of Al in the molten steel characterized by that in heating steel plate it is painted with an annealing separating agent, to which boron or boron compound is added in a prescribed amount, and then finally annealed, whereby the iron loss can be remarkably reduced.

3,676,228
METHOD OF MAKING A P-N JUNCTION DEVICE

Takeshi Sakurai, Hyogo-ken, and Zenpei Tani, Osaka, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed June 17, 1970, Ser. No. 47,031

Claims priority, application Japan, June 20, 1969, 44/49,181, 44/49,185

Int. Cl. H01l 7/38

U.S. Cl. 148—171 9 Claims

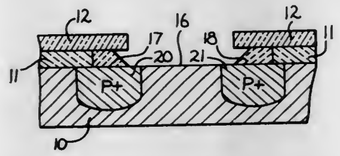
Method of making P-N junction device which uses the liquid phase epitaxial growth technique in which

elements of Group IV are employed as amphoteric impurities for semiconductors of compounds of Groups III–V. The growth cooling rate is changed to grow N-type and P-type layers successively on the substrate.

3,676,229
METHOD FOR MAKING TRANSISTORS INCLUDING BASE SHEET RESISTIVITY DETERMINING STEP
Willem Gerard Einthoven, Belle Mead, Evelyn Speter Jetter, East Brunswick, and Carl Franklin Wheatley, Jr., Somerset, N.J., assignors to RCA Corporation
Filed Jan. 26, 1971, Ser. No. 109,783
Int. Cl. H01l 7/44
U.S. Cl. 148—186 7 Claims

A semiconductor wafer has a uniformly thick collector layer therein with a uniformly thick base layer adjacent the collector layer. A plurality of emitter regions are diffused into the base layer from the surface. During emitter diffusion, an annular region of the same conductivity as the emitter regions is also diffused into the base layer to surround a portion of the base layer at the surface. The sheet resistivity of the base layer between the annular region and the collector layer is determined, and if below a desired minimum, the emitter and annular regions are further diffused.

3,676,230
METHOD FOR FABRICATING SEMICONDUCTOR JUNCTIONS
Edward J. Rice, Los Angeles, Calif., assignor to TRW Inc., Los Angeles, Calif.
Filed Feb. 16, 1971, Ser. No. 115,411
Int. Cl. H01l 7/44
U.S. Cl. 148—187 29 Claims



A method for forming semiconductor junctions. A semiconductor material of a given conductivity is provided, two sequential passivating layers being disposed on the surface thereof, the passivating layers being adapted to be etched by mutually exclusive etching compounds. A portion of the semiconductor surface is exposed, the passivating layer adjacent the surface of the semiconductor material being undercut relative to the upper passivating layer. A doped oxide is disposed upon the semiconductor surface including that portion adjacent the undercut passivating layer. The doped oxide is etched in a manner leaving portions of the doped oxide in intimate contact with the surface of the semiconductor material substantially adjacent the undercut passivating layer. The dopant is then diffused into the semiconductor surface forming appropriate semiconductor junctions therein.

3,676,231
METHOD FOR PRODUCING HIGH PERFORMANCE SEMICONDUCTOR DEVICE
Bartholomew P. Medvecky, Poughkeepsie, Avtar S. Oberai, Wappingers Falls, and Alan Platt, La Grangeville, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Feb. 20, 1970, Ser. No. 12,977
Int. Cl. H01l 7/44
U.S. Cl. 148—188 6 Claims

A method for producing a diffused boron region in a silicon semiconductor having an impurity profile characterized as a step function and having a surface impurity concentration less than the solid solubility of boron in silicon wherein the body is exposed to a gaseous mixture of O_2, and BBr_3, and an inert carrier gas at an elevated temperature which forms a glassy boron rich layer, and subsequently heating the resultant body in an oxidizing environment, or a combination oxidizing and non-oxidizing environments, to increase the depth of the diffused region and simultaneously reduce the surface concentration producing a profile having a step function configuration.

3,676,232
PREPARATION OF UNIFORM AND STORABLE FUEL MIXTURES
James M. Lucas, El Dorado Hills, Calif., assignor to Aerojet-General Corporation, El Monte, Calif.
No Drawing. Original application Jan. 12, 1968, Ser. No. 698,660, now Patent No. 3,607,470, dated Sept. 21, 1971. Divided and this application Feb. 7, 1969, Ser. No. 810,446
Int. Cl. C06b 19/02
U.S. Cl. 149—6 1 Claim

This patent describes a thixotropic, storage and mechanically stable, gelled liquid rocket fuel comprising hydrazine fuel containing therein a suspension of a polysemicarbazide coated aluminum hydride, and the method for the preparation of the same.

3,676,233
CASELESS PROPELLANT CHARGE CONTAINING NITROCELLULOSE IN A SYNTHETIC RESIN
Theodor Netzer, Pocking, and Hans-Jurgen Block, Altmuhldorf, Germany, assignors to Nitrochemie G.m.b.H., Aschau, Germany
No Drawing. Filed Dec. 1, 1969, Ser. No. 881,307
Claims priority, application Germany, Nov. 30, 1968, P 18 11 924.9
Int. Cl. C06b 5/00, 5/04
U.S. Cl. 149—19 4 Claims

A compact propellant charge of any configuration made from propellant powders without a casing or shell.

3,676,234
EXPLOSIVE SLURRY HAVING CONSTANT DETONATION VELOCITY OVER A WIDE TEMPERATURE RANGE
William L. Schwoyer, Yardley, Pa., assignor to Commercial Solvents Corporation, New York, N.Y.
No Drawing. Filed Dec. 9, 1969, Ser. No. 883,632
Int. Cl. C06b 15/00
U.S. Cl. 149—38 19 Claims

An aqueous explosive slurry is provided having a constant detonation velocity over a wide temperature range, and sensitive enough to be detonated in a film or layer from ¼ to ½ inch thick, based on a primary high explosive such as pentolite, nitrostarch or pentaerythritol tetranitrate, an inorganic nitrate oxidizer, an amide forming a eutectic mixture with inorganic nitrates, and a water-soluble thickening agent, if desired, to adjust the viscosity of the slurry.

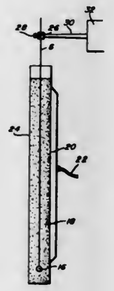
3,676,235
EXPLOSIVE COMPOSITION CONTAINING AMMONIUM NITRATE AND AN ORGANIC SENSITIZER DISSOLVED IN DIMETHYLFORMAMIDE
Edwin H. Nuscher and Jack D. Slater, Savannah, Ga., assignors to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.
No Drawing. Filed Oct. 23, 1968, Ser. No. 770,093
Int. Cl. C06b 9/00
U.S. Cl. 149—39 8 Claims

Ammonium nitrate explosives are conveniently prepared by dissolving a sensitizing compound such as TNT in dimethyl formamide and then mixing it at ambient temperatures with ammonium nitrate and additional fuel components. The resultant mixture is uniform in performance over extended periods of time.

3,676,236
METHOD OF FORMING IN PLACE A GELLED SUSPENSION EXPLOSIVE
Frank J. Klima, Virginia, and James D. Duncan, Chisholm, Minn., assignors to Gulf Oil Corporation, Pittsburgh, Pa.
No Drawing. Filed Mar. 23, 1970, Ser. No. 22,059
Int. Cl. C06b 15/00
U.S. Cl. 149—41 3 Claims

The method of forming in place a stable, gelled suspension explosive composition as disclosed in U.S. Pat. 3,409,486 is improved by regulating the pH of the composition to a value between 4 and 6 and injecting into the exit stream from the pump an aqueous solution of zirconium sulfate, aluminum sulfate and chromic acid to yield a tougher, more water resistant gel.

3,676,237
METHOD OF MAKING NYLON MONOFILAMENT SINKING FISHING LEADER
Virgil N. Peters, R.F.D. 1, Box 4, Stevens Point, Wis. 54423
Filed Nov. 17, 1970, Ser. No. 90,327
Int. Cl. B29c 23/00; A01k 91/00
U.S. Cl. 156—2 5 Claims

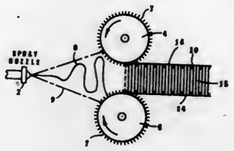


A sinking fishing leader of uniform density and the method of making same from level or tapered extruded nylon monofilament by chemical treatment to produce a sinking leader used for dry fly and wet fly fishing. The leaders are made in various lengths and with various butt and tip diameters and are dyed in various colors.

3,676,238
MANUFACTURE OF FLUID LOGIC COMPONENTS FOR FLUIDIC CIRCUITS
Owen Desmond Arthur Charles Furlong, East Coker, and Neil L. Bottrell, Yeovil, England, assignors to Westland Aircraft Limited, Yeovil, Somerset, England
Filed Dec. 29, 1969, Ser. No. 888,352
Int. Cl. B32b 31/14
U.S. Cl. 156—3 15 Claims

Fluid logic components for fluidic circuits are produced by first producing a master design or templet, casting a mold to provide a pattern of the master design or templet, and casting from the mold a unit having cavities or ducts corresponding to the duct system required in the logic element. The cavities and/or ducts are positively sealed and enclosed by sealing or fusing a cover over the duct system. The unit having the cavities and ducts preferably is formed of an epoxy resin, and the cover can be a preformed cover which is bonded to the base unit using an epoxy resin as a sealing material, or the cover can be formed by casting an epoxy resin and catalyst mixture over the base part, after first filling the cavities and ducts with a paraffin wax. The paraffin wax is thereafter removed by heating and flushing with an organic solvent. The sealing of the cavities and ducts can also be accomplished by applying thereover a thin cover plate of reinforced plastic, bonded thereto with a thin adhesive coat of epoxy resin, after which a final bottom plate is bonded to the casting.

3,676,239
METHOD OF PRODUCING SPRAY SPUN NONWOVEN SHEETS
John W. Soehngen, Berkeley Heights, N.J., assignor to Celanese Corporation, New York, N.Y.
Continuation-in-part of application Ser. No. 580,994, Sept. 21, 1966. This application Dec. 8, 1970, Ser. No. 96,041
Int. Cl. B32b 3/00, 5/14
U.S. Cl. 156—16 F 9 Claims



A three-dimensional nonwoven fibrous assembly having an upper and lower surface indented to give a puckered effect and a method of producing this assembly by spray spinning directly into a zone at least partially occupied by convergent portions of a pair of moving collection surfaces, having a series of spaced projections on their respective surfaces which constitute the primary collection loci.

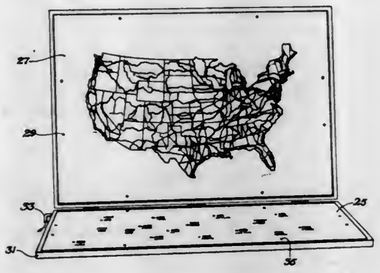
3,676,240
METHOD OF ETCHING MATERIALS CAPABLE OF BEING ETCHED WITH HYDROFLUORIC ACID
Theodore Frank Retajczyk, Jr., North Plainfield, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill and Berkeley Heights, N.J.
No Drawing. Filed Apr. 14, 1970, Ser. No. 28,505
Int. Cl. H01l 7/50
U.S. Cl. 156—17 13 Claims

A method for etching the oxides of silicon and other materials capable of being etched with aqueous hydrofluoric acid is described. The material to be etched is treated with an etching solution comprising (a) an etchant having the general formula $R_xNH_{x+1}F_{y+2}$, wherein x and y may be 0 or 1, and x and y are equal, and wherein R may be a hydrogen radical or an organic radical represented as C_nH_{2n+1} wherein n is an integer from 1 to 10, and (b) a suitable solvent for the etchant.

3,676,241
METHOD OF MANUFACTURING A LAMINATED PLANAR STRUCTURE
George W. Plumly, 3900 Tamworth Road, Fort Worth, Tex. 76116
Filed Dec. 17, 1969, Ser. No. 885,755
Int. Cl. B29j 1/00
U.S. Cl. 156—62 16 Claims

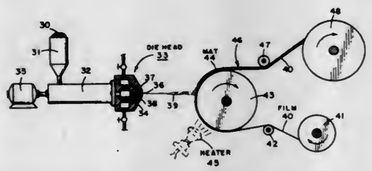
A method of making an integral laminated planar structure such as a map having a total information content

composed of general information and specialized information, characterized by preparing a planar first layer containing the general information; preparing a photographic reproduction overlay containing the specialized informa-



tion; and accurately aligning and bonding the photographic reproduction overlay and the planar first layer. The photographic reproduction overlay is transparent except for the specialized information it contains so as to expose the general information contained on the planar first layer.

3,676,242
METHOD OF MAKING A NONWOVEN POLYMER LAMINATE
James S. Prentice, Baytown, Tex., assignor to Esso Research and Engineering Company
Filed Aug. 13, 1969, Ser. No. 861,536
Int. Cl. B29j *5/08*
U.S. Cl. 156—62.4 **11 Claims**

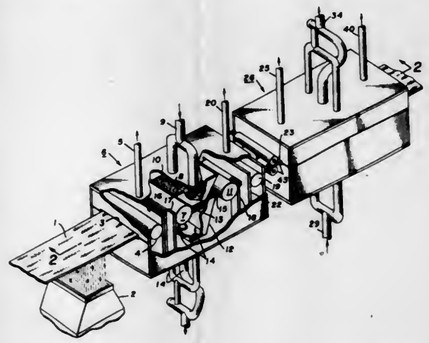


A laminar structure is produced by thermally bonding a nonwoven mat of melt-blown polyolefin fibers to a polyolefin film. The nonwoven mat may be thermally bonded to the film either as the film or the nonwoven mat is produced or by pressing a preformed nonwoven mat of polyolefin fibers onto a hot polyolefin film.

3,676,243
PROCESS FOR THE PRODUCTION OF FLEECES
Franz Sassbofer, Vocklabruck, and Johannes Krissig, Gmunden, Austria, assignors to Chemiefaser Lenzing Aktiengesellschaft, Lenzing, Austria
Filed Nov. 18, 1970, Ser. No. 90,678
Claims priority, application Austria, Nov. 21, 1969, A 10,875
Int. Cl. D04h *3/16*
U.S. Cl. 156—167 **5 Claims**

The invention relates to a process for the production of fleeces, in which threads are deposited on a perforated, moving support which is subjected to suction, and the fleece so produced is compacted mechanically, thermally or by glueing. The improvement resides in that the threads are guided to the support as a series of threads arranged in one plane and parallel to each other, said series being obtained by cutting a polymer foil and simultaneously stretching the threads while they are being made. Thus each individual thread may form a loop so that a highly dense, uniformly tangled arrangement is obtained.

3,676,244
PROCESS FOR FORMING HIGH STRENGTH SPUNBONDED FABRIC BY AUTOGENOUS BONDING OF FILAMENTS
Dong W. Kim, Chester, Va., assignor to Monsanto Company, St. Louis, Mo.
Filed June 29, 1970, Ser. No. 50,497
Int. Cl. D04h *3/10*; C09j *5/02*
U.S. Cl. 156—181 **6 Claims**



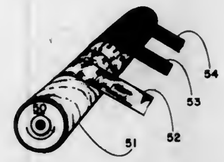
A nonwoven web comprised of polyamide filaments which are bonded together at a substantial number of filament cross-over points by the absorption and subsequent desorption of a hydrogen halide gas is provided with increased web tenacity by elevating the moisture content of the filaments prior to bonding to at least 3% based on the filament weight.

3,676,245
PROCESS FOR THE PRODUCTION OF NONWOVEN WEBS OF CONTINUOUS FILAMENTS
Werner Helmut and Dieter Frank, Elsenfeld, and Werner Drachenberg, Streit, Germany, assignors to Akzona Incorporated, Asheville, N.C.
Filed Dec. 1, 1969, Ser. No. 881,168
Claims priority, application Germany, Dec. 4, 1968, P 18 12 516.1
Int. Cl. D04h *1/72*
U.S. Cl. 156—181 **14 Claims**

A process for producing a nonwoven web or fabric of substantially continuous synthetic polymer filaments in which the initially formed web of randomly deposited filaments carried on an endless band or screen is sprayed with very small droplets of water in limited amounts sufficient to enhance the coherent strength of the web, after which the web is removed from the band or screen and only then treated with a binder to provide an adhesive bonding of the filaments.

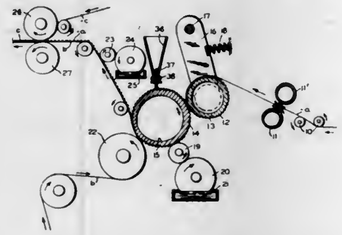
3,676,246
METHOD FOR LONGITUDINAL REINFORCING PLASTIC PIPES
James L. Grosh, Los Altos, Calif., assignor to United Aircraft Corporation, East Hartford, Conn.
Original application May 29, 1967, Ser. No. 641,963. Divided and this application Mar. 9, 1970, Ser. No. 22,729
Int. Cl. B31c *13/00*; B32b *31/12*
U.S. Cl. 156—188 **6 Claims**

A longitudinally extending nonwoven tape comprising longitudinally extending tacking strands supporting a multiplicity of transverse filament bundles. The tape is manufactured by continuously depositing adhesive coated tacking strands onto both sides of continuous moving double band and continuously winding filament bundles over said strands and around said band. The band is passed between rollers and heated to bond the filament to



the tacking strand. The band is then passed against a cutter which severs the wound filaments between the bands and permits the longitudinally extending tape to be removed from the band. The tape is used to provide longitudinal reinforcement of reinforced plastic pipe by winding the tape around the mandrel in the pipe fabrication process.

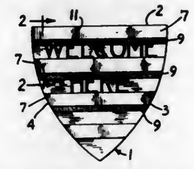
3,676,247
CORRUGATING PAPERBOARD
Andrew W. Morris, North Balwyn, Victoria, and Reginald J. Norman, Kew, Victoria, Australia, assignors to Australian Paper Manufacturers Limited, Melbourne, Victoria, Australia
Filed Jan. 19, 1970, Ser. No. 4,059
Claims priority, application Australia, Feb. 3, 1969, 49,922/69
Int. Cl. B31f *1/22*
U.S. Cl. 156—205 **12 Claims**



A method of corrugating paperboard at cold (ambient) or intermediate temperatures up to 320° F. but at conventional speeds or higher by treating both sides of the medium prior to corrugation with a lubricant such as a mixture of stearates and paraffin wax so that the coefficient of kinetic friction between the medium and corrugator is less than would be obtained by conventional heat and steam pretreatment.

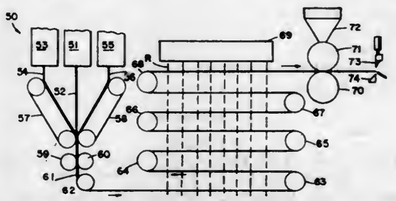
3,676,248
METHOD FOR APPLYING LETTERS TO PLAQUES AND THE LIKE
William M. Swartz, 1430 W. Wrightwood Ave., Highland Park, Ill. 60614
Filed Sept. 11, 1969, Ser. No. 857,063
Int. Cl. C09j *5/04*; B29c *27/10*
U.S. Cl. 156—235 **5 Claims**

Method for applying indicia to a plaque or other surface comprises applying a transfer sheet containing a pressure-sensitive adhesive to the indicia. While the indicia is on the sheet, the back of the indicia is coated with adhesive, and then the transfer sheet is applied over the plaque in predetermined registration therewith to position the indicia properly onto the plaque. After the adhesive on



the indicia has dried, the sheet is stripped from the indicia, leaving the same bonded to the plaque.

3,676,249
IRRADIATION METHOD FOR PRODUCTION OF FIBER-REINFORCED POLYMERIC COMPOSITES
Jerome H. Lemelson, 85 Rector St., Metuchen, N.J. 08840
Continuation-in-part of application Ser. No. 269,832, Mar. 22, 1963, which is a continuation-in-part of application Ser. No. 651,749, Apr. 9, 1957. This application is also a continuation-in-part of application Ser. No. 501,174, Oct. 22, 1965, which is a continuation-in-part of application Ser. No. 393,292, Aug. 31, 1964, now Patent No. 3,594,254. This application Dec. 18, 1967, Ser. No. 696,966
Int. Cl. B32b *31/30, 31/28*
U.S. Cl. 156—244 **12 Claims**



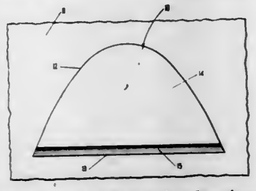
A method is provided for irradiating material on a continuous basis to improve or predeterminately change its physical and chemical characteristics. In one form, polymeric material is continuously formed by extrusion and is continuously combined with or sealed to a second material to form an integral unitary structure therewith after which said unitary structure is driven and guided in a predetermined path through a field of intense radiation which is operative to change the physical characteristics of one or more of the components of the composite material such as by effecting the cross linking of the polymer.

In another form, a material such as a polymer is continuously fed or formed into a sheet or other suitable shape and a plurality of reinforcing elements such as glass filaments are encapsulated within the polymer or otherwise secured thereto on a continuous basis. The resulting composite filament-reinforced member is thereafter treated to effect the cross linking of the polymer to improve its physical characteristics and to improve the bond between the polymer and the reinforcing filaments.

3,676,250
SHOE STIFFENER MEANS AND METHOD
William E. Palm, Jr., Beverly, Mass., assignor to Compo Industries, Inc., Waltham, Mass.
Filed Oct. 17, 1969, Ser. No. 867,334
Int. Cl. B32b *31/06*
U.S. Cl. 156—249 **1 Claim**

An integral, unsupported, preformed thermoplastic film stiffener for a shoe upper is formed by molding a thermoplastic shoe stiffener blank on a release surface with said stiffener blank defining a skived edge and removing the

thermoplastic shoe stiffener blank from the release surface. The shoe stiffener blank can then be positioned between a shoe upper material and a shoe inner layer whereupon the stiffener blank is adhered by heat and pressure to combine the shoe upper material and the shoe inner layer in a sandwich which can be lasted as to form a box toe in a shoe upper. The novel stiffener blanks preferably have substantially uniform thickness at all but a marginal edge portion which is skived.



3,676,251

PUNCHING OPENINGS IN A WEB AND HEAT SEALING TABS THERETO

William A. Young, Jr., and Walter J. Quattlebaum, Spartanburg, S.C., assignors to Deering Milliken Research Corporation, Spartanburg, S.C.

Filed Jan. 7, 1971, Ser. No. 104,725
Int. Cl. B29c *17/08*
U.S. Cl. 156—252 **4 Claims**

A method and apparatus for accurately punch openings in a web of material and heat seal tabs thereover to provide easy access to the contents of a package formed therefrom. As the machine performs these operations it is also accumulating a predetermined amount of paper for the next cycle.

3,676,252

METHOD OF ELECTRICALLY MOUNTING COMPONENTS IN HYBRID CIRCUITS

Trevor Richard Allington, Indianapolis, Ind., assignor to RCA Corporation

No Drawing. Filed Apr. 13, 1970, Ser. No. 28,108
Int. Cl. B32b *33/00*
U.S. Cl. 156—277 **2 Claims**

In mounting components such as ceramic chip capacitors on insulating substrates so as to make good electrical connection with a conducting area of the substrate, a solventless conducting composition is screen printed on the mounting surface and the chip is pressed into the composition. The composition comprises a low viscosity liquid epoxy resin, a hardener for the resin, and a relatively high proportion of silver powder.

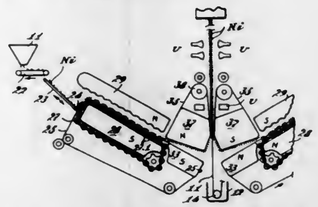
3,676,253

PROCESS OF MAKING FLOCKED PLATE STRUCTURE FOR ELECTRIC BATTERIES

Irvin W. Cox, East Acton, Mass., assignor to Cambridge Thermionic Corporation, Cambridge, Mass.

Original application Nov. 20, 1969, Ser. No. 878,434, now Patent No. 3,563,801. Divided and this application Nov. 2, 1970, Ser. No. 86,231
Int. Cl. B44d *1/092*
U.S. Cl. 156—279 **1 Claim**

A conductive metal strip for alkaline batteries carries an effectively ordered array of extremely, thin, square nickel (or nickel plated iron) flakes stacked approximately normal to and transversely of the strip with their edges approximately parallel, and with one edge of each flake conductively joined to the strip by a sintered nickel fillet. The flakes are slightly separated by the mode of fabrication and by deviations from exactly normal and transverse position on the strip, and from exact flatness. These deviations are so small as compared to the generally normal and transverse positions and the flatness of the flakes, that they provide essentially regular interstices with optimal surface area of active material and accessibility thereof to electrolyte, and minimal volume and conductive length of supporting material.



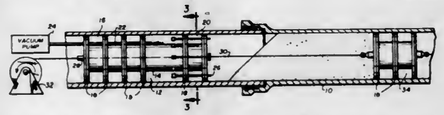
A suitable technique of fabricating a flocked strip by way of magnetic stacking of flakes on belts and finally on the strip, traveling at different speeds, is described.

3,676,254

INTERNALLY SEALING PIPE JOINT

Hanford Z. Hight, Short Hills, and Stephen Lesky, Metuchen, N.J., assignors to Bonded Products, Inc., South Orange, N.J.

Filed Feb. 20, 1970, Ser. No. 13,116
Int. Cl. B29c *17/00*
U.S. Cl. 156—286 **8 Claims**



Epoxy resin sealing material is loaded onto a plunger in pipe behind a vacuum chamber therein, which chamber exhausts annular cavity of bell and spigot joint, and plunger is pulled to force material against vacuum chamber wall and into exhausted cavity.

3,676,255

BONDING METALS TO ELASTOMER SYSTEMS

Andries Voet, Borger, Tex., assignor to J. M. Huber Corporation, Locust, N.J.

No Drawing. Filed Nov. 18, 1970, Ser. No. 90,801
Int. Cl. B32b *15/06;* **B44d** *1/34;* **C08c** *11/18*
U.S. Cl. 156—306 **1 Claim**

Rubber vulcanizates reinforced with ozone treated furnace carbon blacks show improved adhesion to a surface of brass.

3,676,256

BONDING METALS TO ELASTOMER SYSTEMS

Peter Aboytes, Borger, Tex., assignor to J. M. Huber Corporation, Locust, N.J.

No Drawing. Filed Nov. 18, 1970, Ser. No. 90,810
Int. Cl. B32b *15/06;* **B44d** *1/34;* **C08c** *11/18*
U.S. Cl. 156—306 **1 Claim**

Rubber vulcanizates reinforced with air oxidized treated furnace carbon blacks show improved adhesion to a surface of brass.

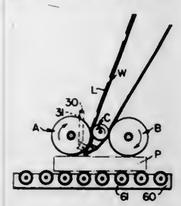
3,676,257

METHOD OF AND APPARATUS FOR APPLYING LABELS TO ARTICLES OR PACKAGES

James E. Ingalls, 325 2nd Ave. S., St. Petersburg, Fla. 33060

Filed July 3, 1969, Ser. No. 838,805
Int. Cl. B65h *25/04, 5/28*
U.S. Cl. 156—351 **5 Claims**

There is disclosed a method of applying labels to packages or articles to be labeled in which a silicone coated paper carrier web having a succession of pressure-sensitive adhesive coated labels peelably adhered thereto is intermittently advanced past a label applying zone where the web undergoes an abrupt change of direction and a label is peeled off the web and applied to an article or package to be labeled with the carrier web being conjointly pushed and pulled through said abrupt change of direction while the web is advancing by a three roll means arrangement in which a middle web contacting roll is frictionally driven by contact with the other two rolls. Additionally, there is disclosed apparatus for carrying out such method which includes means operable, responsive to an approaching article or package to cause the middle roll to make contact with the web and the other two rolls to cause advance of the web to effect a labelling operation and means operable, responsive to approaching movement of a next label to cause said middle roll to move out of contact with the other two rolls to effect stoppage of said carrier web.

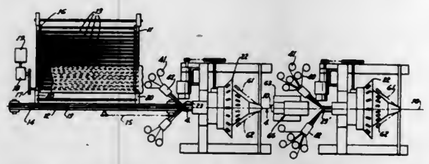


3,676,258

APPARATUS FOR PRODUCING FIBER GLASS ARTICLES

Carl Thomas Jackson, Fairview, Pa., assignor to True Temper Corporation, Cleveland, Ohio

Original application July 25, 1967, Ser. No. 655,919, now Patent No. 3,567,542. Divided and this application Feb. 20, 1970, Ser. No. 12,999
Int. Cl. B65h *81/08*
U.S. Cl. 156—392 **15 Claims**



There is disclosed herein a method and apparatus for continuously producing fiber glass reinforced articles by continuously pulling a plurality of fiber glass strands along a production line, some of said strands being provided with an uncured resin, arranging the strands into a tubular shape, successively inserting mandrels into the tube thus formed, curing the resin, cutting the mandrels apart, and removing the mandrels from the hollow articles formed thereon.

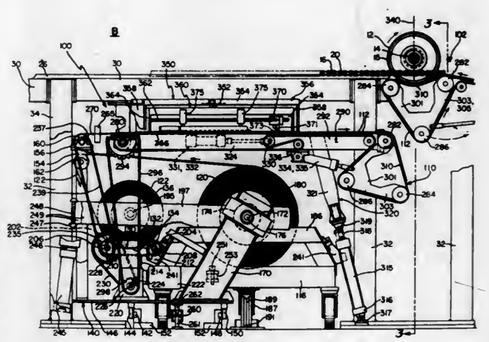
3,676,259

TIRE BUILDING APPARATUS HAVING A PLURALITY OF COMPONENT APPLYING STATIONS AND DRUMS

Paul E. Appleby, Cuyahoga Falls, Denver C. Folden, Akron, and Donald C. Kubinski, Seville, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed July 6, 1970, Ser. No. 52,228
Int. Cl. B29h *17/20*
U.S. Cl. 156—395 **15 Claims**

The tire building apparatus has a plurality of building drums movable by conveyors between stations in certain of which a ply or plies is or are wound on each of successive drums. A single belt trained about rolls carried in an articulated belt conveyor frame is movable to conform a portion of the belt about an arcuate portion of the drum in such station or away from it. A supply roll of ply stock on a wheeled truck is unwound by a surface drive arrangement having belts forming a cradle which rotates a core on which a cloth liner is wound off from the supply roll to feed the ply material onto the single belt. A cut off device on the conveyor frame operates to cut a length of ply equal to the circumference of the drum plus an allowance for a suitably overlapped splice. The so cut length is wrapped by the belt onto the drum. A device for sensing the edge location of the ply is operative to move the truck and the surface drive laterally as a unit to correct deviations from the desired edge location of the moving ply.

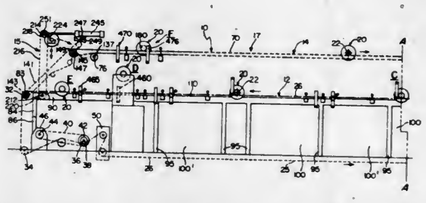


3,676,260

TIRE BUILDING APPARATUS

Paul E. Appleby, Cuyahoga Falls, Robert S. Riggs, Stow, and Edwin S. Woodhall, Cuyahoga Falls, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

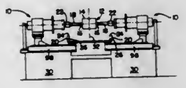
Filed July 6, 1970, Ser. No. 52,214
Int. Cl. B29h *17/14*
U.S. Cl. 156—396 **28 Claims**



Tire building apparatus disclosed features a spaced apart parallel pair of continuously moving conveyors of roller chain on which a plurality of collapsible tire building drums are carried. Each drum has an extended center shaft having a freely rotatable bearer at each end which rests on and is moved by engagement with seats afforded by the side link edge shapes of the roller chain. Mechanism for collapsing and expanding the drum includes a right and lefthand screw housed in the hollow center shaft. At successive work stations disposed along the conveyors each drum is stopped by swing arms movable to arrest the drum and is lifted and chucked on centers which coaxially engage the ends of the shaft. Each work

station accommodates apparatus which performs a single operation, e.g. applying a liner or a cord ply, setting tire beads, enfolding carcass ply or plies about the beads, applying tread or tread and sidewall stitching, and removal of a completed carcass from the drum. Each work station is operable at its own rate and in its own time interval, relatively independently of preceding and succeeding stations. Holding stations disposed between immediately adjacent work stations have swing arms which stop forward movement of a drum on the conveyor until the following work stations can receive it. The apparatus includes a pair of upper conveyors movable continuously and oppositely above the first pair, as well as a drum elevating and a drum lowering device which cooperate with the upper conveyors to transfer a drum with a completed tire carcass thereon back to the starting position on the first conveyor.

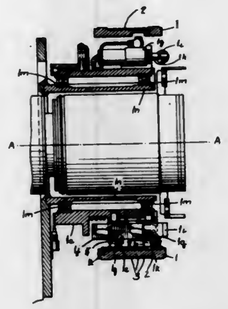
3,676,261
BEAD SETTING AND PLY TURNUP APPARATUS
Paul E. Appleby, Cuyahoga Falls, and Denver C. Folden and Arland A. Peck, Akron, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed July 6, 1970, Ser. No. 52,231
Int. Cl. B29h *17/22*
U.S. Cl. 156—401 **7 Claims**



The apparatus disclosed features mechanisms particularly useful in combination with a tire building machine having a plurality of stations, a conveyor, and a plurality of tire building drums movable by the conveyor between the stations wherein a component or components of a complete tire carcass are applied to each building drum. The disclosed mechanism includes a coaxially opposed pair of spindles which support a single tire building drum therebetween, a pair of carriages having bladder turnup assemblies fixed thereon surrounding the spindles for movement coaxially toward or away from the drum. A cylindrical sleeve integral with the carriage supports a sleeve carrying ply turndown fingers and a bead setter sleeve for placing a bead. Both the finger sleeve and the beadsetter sleeve are moved separately and relatively of the carriage and turnup assembly, the latter being movable axially over the fingers to move free ends thereof radially inwardly to form a bead receiving seat in a ply or plies at the shoulders of the building drum. The bead is held by the beadsetter against the seat while the bladder turnup is repositioned and then inflated to wrap the ply endings about the bead.

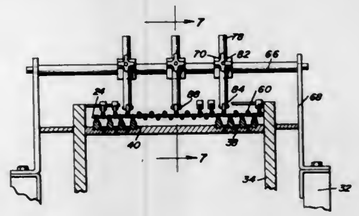
3,676,262
TIRE BUILDING DRUM HAVING A MAGNETIZED SURFACE
Jean Leblond, Compiegne, France, assignor to Uniroyal Englebert France S.A., Paris, France
Original application Apr. 1, 1968, Ser. No. 717,786. Divided and this application Mar. 4, 1970, Ser. No. 19,134
Claims priority, application France, July 6, 1967, 113,452
Int. Cl. B29h *17/16*
U.S. Cl. 156—417 **11 Claims**

A tire building machine, comprising a radially expansible and contractable, breaker-tread assembly building drum having a magnetized outer surface for retaining building alignment of metallic cord breaker plies during building of the assembly, a pair of variably spaced tire carcass support and shaping discs coaxial with but spaced from the building drum and providing for direct inflation of a first stage carcass supported thereon, a radially expansible and contractable and axially movable transfer ring for transferring breaker-tread assemblies from the drum



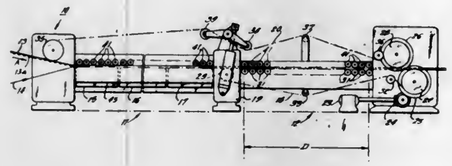
to carcasses on the shaping discs, and movable, conical, shaping rings engageable with the carcass sidewalls and limiting same to a predetermined pattern during inflation of the carcass.

3,676,263
MACHINE FOR MAKING STRESS LAMINATED PANEL
Lucien E. Tisdale, Monroe, La., assignor to Ridge Ply, Inc.
Filed Mar. 26, 1970, Ser. No. 22,850
Int. Cl. B31f *1/24*
U.S. Cl. 156—462 **8 Claims**



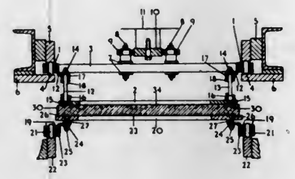
A corrugated laminated panel in which a multiplicity of flat webs of paper are glued together and while the glue is still soft, the laminated web is fluted or corrugated longitudinally in a converging process which convolutes the individual plies of the laminated panel, incrementally stretching the fibers on the outside of the bends and conversely compressing the fibers on the inside of the bends. The fluting machine includes a drag shoe engaging a transversely curved surface to impart drag against the laminated sheet to assure that the sheet will stay smooth and eliminate slack. The fluting machine also includes adjustable pressure points which may be adjusted to assure uniformity of the flutes formed in the web. The fluting machine also includes spring loaded fingers to remove variations in flute development to further assure uniformity of the flutes. A drying tunnel is provided with guide rods providing a downward force to hold the laminated sheet in contact with supporting belts in the drying tunnel, and is heated by an air system including air impingement on the panel at relatively high velocity which dries the adhesive in the panel and at the same time serves to retain the panel or sheet on the supporting belt assembly therefor.

3,676,264
SHORTENED APPARATUS FOR PRODUCING CORRUGATED BOARD
Lawrence J. Saunders, Elmont, N.Y., assignor to S & S Corrugated Paper Machinery Co., Inc., Brooklyn, N.Y.
Continuation-in-part of application Ser. No. 692,529, Dec. 21, 1967. This application Nov. 26, 1969, Ser. No. 880,307
Int. Cl. B31f *1/20*
U.S. Cl. 156—470 **11 Claims**



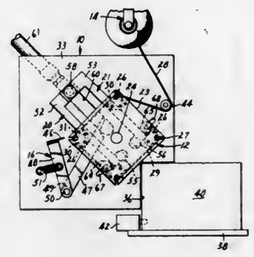
The length of a machine for producing corrugated board is substantially reduced by shortening the heating section where the glue gels and/or the pulling section which receives the corrugated board web after it passes through the heating section. Shortening of the heating and/or pulling sections is achieved by constructing the rollers providing the loading on the upper conveyor belt common to both the heating and pulling sections with diameters within the range of 1½" to 3" and positioning these rollers with spacings between centers that are, on average, 1.1 to 1.3 times roll diameter for steel rollers in the range of 80" to 105" in length.

3,676,265
MANUFACTURE OF LAMINATED ARTICLES
Harry Edwards, Manchester, England, assignor to Imperial Chemical Industries Limited, London, England
Filed June 16, 1970, Ser. No. 46,740
Claims priority, application Great Britain, June 17, 1969, 30,617/69
Int. Cl. A23c *3/00;* **B29b** *5/04*
U.S. Cl. 156—500 **9 Claims**



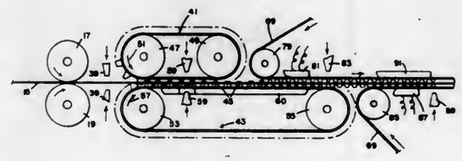
Apparatus for the continuous manufacture of laminated foam articles, comprising a foam dispensing means for applying foam-forming ingredients to sheet material which is to form one of the facings of the laminate and a conveying means for causing that sheet together with another sheet which is to form the other facing to move parallel to each other while the foam core is formed between them, the conveying means consisting of upper and lower parts one or both of which can move up or down with respect to the other part and exerting a predetermined constant pressure on the components of the laminate. The conveying means is characterised in that each of its movable parts comprises an endless series of slats mounted parallel to one another and transversely to their direction of motion and each independently carried on one or more endless chains by means whereby each slat is yieldingly urged outwardly from the chain or chains into contact with a sheet of facing material. The apparatus is of particular value for the production of laminated articles in which at least one of the facing sheets is pre-formed with lateral flanges, ridges or other convex configurations.

3,676,266
ADHESIVE TAPE DISPENSER
Robert A. Jensen, St. Paul, and Orville M. Johnson, Falcon Heights, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Continuation of abandoned application Ser. No. 867,004, Oct. 16, 1969. This application Apr. 21, 1971, Ser. No. 136,242
Int. Cl. B32b *31/10;* **B65b** *51/06;* **B65c** *9/36*
U.S. Cl. 156—521 **10 Claims**



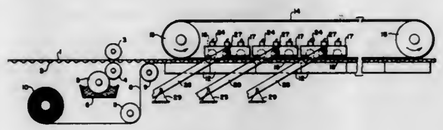
A pressure-sensitive adhesive tape dispenser in which a rotatable member is formed with a plurality of spaced peripheral tape support areas from which pins extend to pierce and support a length of tape with the adhesive side out to provide advancing and positioning of the tacky tape surface for application and in which the tape length may be severed with the severed length supported at its ends by pins on two adjacent support areas for application.

3,676,267
APPARATUS FOR MAKING CELLULAR STRUCTURES
Theodore H. Fairbanks, Liverpool, Pa., assignor to FMC Corporation, Philadelphia, Pa.
Original application Mar. 19, 1968, Ser. No. 714,231, now Patent No. 3,616,025. Divided and this application July 21, 1970, Ser. No. 56,815
Int. Cl. B32b *31/18*
U.S. Cl. 156—523 **3 Claims**



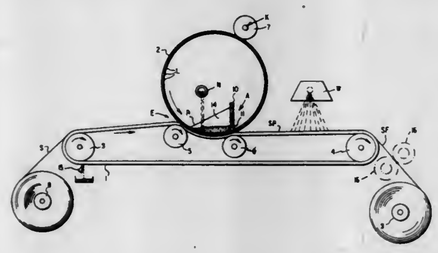
Apparatus for making a cellular structure having a plurality of walls extending along intersecting planes and together providing abutting cells, such walls being connected at their locations of intersection by cruciform sections and formed by flexing portions of a slit web material into planes disposed at angles to the plane of the original web material.

3,676,268
MACHINE FOR MAKING DOUBLE FACED CORRUGATED PAPERBOARD COMPRISING A PLURALITY OF ROWS OF AXIALLY SPACED, STAGGERED PRESSURE ROLLS
Helmut Brandenburg, Wuppertal, and Hansludwig Beck, Bochum, Germany, assignors to Gebr. Eickoff, Maschinenfabrik und Eisengiessari m.b.H., Bochum, Germany
Filed Oct. 26, 1970, Ser. No. 83,869
Claims priority, application Germany, Nov. 14, 1969, P 19 57 270.4
Int. Cl. B31f *1/20*
U.S. Cl. 156—548 8 Claims



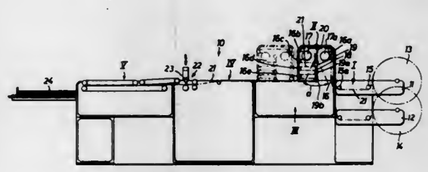
Adhesive is applied to the crests of the corrugations of a corrugated paper sheet, to the opposite side of which a flat paper facing sheet has previously been attached. A second facing sheet then is applied to the adhesive-carrying corrugations to form a double faced corrugated paperboard strip. This strip moves across heating plate means, against which it is pressed by an endless traveling weighting belt that has a slack lower strand engaging the upper surface of the paperboard. Weight is added to the belt by means of pressure rolls that rest on its lower strand with their axes extending transversely thereof. The rolls are held in parallel rows spaced lengthwise of the belt, with several rolls in each row. The rolls in each row are spaced apart axially and are staggered relative to the rolls in the rows beside them so as to press the belt against the paperboard evenly in order to promote uniform bonding of the second facing sheet to the corrugated sheet.

3,676,269
METHOD OF AND APPARATUS FOR COATING FABRICS
Josef Schaetti, 5 Gartenheimstrasse, 8304 Wallisellen, Switzerland
Filed Sept. 4, 1969, Ser. No. 855,236
Int. Cl. B32b *31/08, 31/12*
U.S. Cl. 156—548 10 Claims



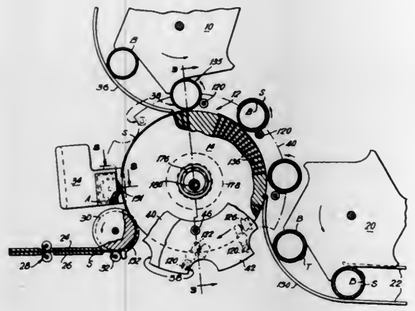
Method and apparatus for applying coatings of thermoplastic or thermosetting resins in a predetermined pattern on one face of a traveling web. The apparatus includes a hollow rotating drum which is perforated in a desired pattern and into which is metered the resin to be applied to the traveling web. The web is held in engagement with the outer periphery of the rotating drum by a traveling belt or any other convenient arrangement which can assure passage of the web in contact with the drum at the same speed as the peripheral speed of the drum. Located interior of the drum is a baffle structure which limits the movement in response to rotation of the drum of the resin and assures that the coating of resin applied to the web through the holes in the drum is of constant thickness. After the web leaves its engagement with the rotating drum, the powdered resin is heated to cause it to sinter and to adhere to the web.

3,676,270
MACHINE FOR PROCESSING OF WEB STOCK, PARTICULARLY OF THERMOPLASTIC SYNTHETIC PLASTIC MATERIAL
Michael Lehmacher, Unterdorfstrasse, and Hans Lehmacher, Im Humnerich, both of 5215 Mondorf uber Troisdorf, Germany
Filed Nov. 3, 1969, Ser. No. 870,542
Claims priority. application Germany, Nov. 8, 1968, P 18 07 689.6; Sept. 12, 1969, P 19 46 269.2
Int. Cl. B32b *31/08;* B65h *17/42*
U.S. Cl. 156—553 29 Claims



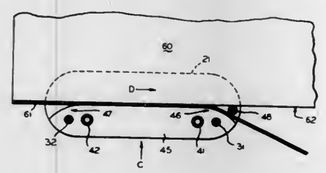
A machine in which a plastic film web, continually unwound from a supply roll passes through a film motion equalizing take-up mechanism from which it is drawn generally horizontally stepwise by advance rolls intermittently actuated to permit seam welding, severing, punching, and other film working operations—as used, for example, in manufacture of bags, sacks or other packaging—to be performed on the web while stationary, at a "tool" station subsequent to the take-up. The take-up mechanism, as a separate assembly including continuous draw rolls and swinging equalizer rolls, is mounted above and shiftably horizontally along the general web path, so that the spacing from the take-up to the tool station may be kept short for better and safer feed as permitted by the tooling used. With spaced pairs of draw rolls commonly driven by a continuous flexible chain or belt drive and establishing a reach of intermittently moved web along which one or more process step tools or stations are locatable, the first draw roll pair is also mounted on the shiftable take-up, and the flexible element is at one end supported by a rotating idler shiftable to change belt tension as required by or for the draw roll shift. By dividing the advance rolls and idler each at mid-length into aligned halves connectable to rotate unitarily and disconnectable for independent rotation and providing separate belt drives on each side, single wide webs or two distinct webs (with likewise divided tooling where appropriate) may be processed through a single two-section shiftable take-up, and with respective separately shiftable take-ups plastic film products of different lengths may be fabricated. Two spaced take-ups are disclosed along one web so that continuous-intermittent-continuous motion sequence of a web is available; also a single take-up, shiftable away from the supply roll, so that tooling may be used carrying out operations on the web while moved continuously such as slitting or cylinder printing in a machine carrying out also intermittent type operations. Also disclosed is modular construction for the take-up and for other operating sections of a film working machine.

3,676,271
APPARATUS FOR APPLYING A STRIP MEMBER TO A CYLINDRICAL CONTAINER BODY
Walter Thomas Hake, Wyckoff, N.J., and Henry Gilbert Stieglitz, Cary, Ill., assignors to American Can Company, New York, N.Y.
Original application Oct. 23, 1967, Ser. No. 677,413, now Patent No. 3,524,006, dated Aug. 11, 1970. Divided and this application Mar. 25, 1970, Ser. No. 25,617
Int. Cl. B32b *31/10;* B65b *61/18*
U.S. Cl. 156—567 6 Claims



In applying to container bodies plastic seam release strips which are adapted to be stripped from the sealed container to provide an easy-opening feature, a rotating container body and a strip member are moved along substantially concentric, parallel paths to a location where the leading end of the strip member is brought into substantial tangential contact with the rotating body, whereupon the strip member is transferred to and wrapped around the rotating container body.

3,676,272
HAND TOOL FOR APPLYING EDGE BANDING TO LAMINATED PLASTIC BOARDS
Kenneth N. White and Harold E. Meyer, both % White-Meyer Wood Products, Inc., 141st and Rte. 45, Orland Park, Ill. 60462
Filed May 8, 1970, Ser. No. 35,714
Int. Cl. B32b *31/10, 31/20*
U.S. Cl. 156—574 8 Claims

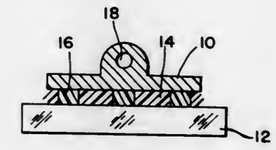


A hand tool comprises two space parallel plates floating relative to each other, on a pair of bias springs. The plates fit over the edges of a laminated plastic board. A guide wall positioned between these plates applies a pressure on a strip of edge banding plastic, forcing it against the edges of the laminated board, having an adhesive previously applied thereto. The length of the parallel plates is adequate to insure an alignment of the edge banding strip and the laminated board before there is a tack between the edge banding strip and the board.

3,676,273
FILMS CONTAINING SUPERIMPOSED CURVED CONFIGURATIONS OF MAGNETICALLY ORIENTATED PIGMENT
Irving Stuart Graves, Media, Pa., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
No Drawing. Filed July 30, 1970, Ser. No. 59,680
Int. Cl. B44c *3/02;* C09d *5/28;* C09j *5/00*
U.S. Cl. 161—3 9 Claims

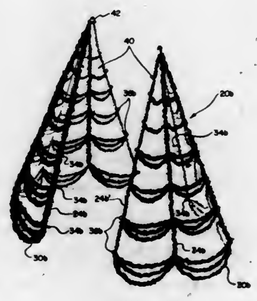
A pigmented film comprising a film of film-forming material and contained in the film, magnetically orientable pigment that is orientated in superimposed curved configurations.

3,676,274
DISTORTION-FREE MIRROR ATTACHED TO A METALLIC HOLDER
Albert J. Matulis, Philadelphia, Pa., assignor to the United States of America as represented by the Secretary of the Army
Original application Oct. 2, 1967, Ser. No. 672,386. Divided and this application May 29, 1970, Ser. No. 38,872
Int. Cl. B44f *1/00;* G02b *5/08*
U.S. Cl. 161—4 1 Claim



A method for securing a mirror to its metal holder by the use of an adhesive containing a plurality of shims imbedded therein so that there are only point contacts between the mirror and said metal holder and the resolution of the mirror is practically unaffected by distortion of the metal holder.

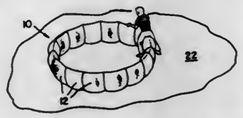
3,676,275
DECORATIVE TREE COVERING FOR ORNAMENTING AN ARTIFICIAL TREE
Seymour D. Sloane, 7938 210th St., Flushing, N.Y. 11364
Filed Oct. 19, 1970, Ser. No. 81,762
Int. Cl. A47g *33/08*
U.S. Cl. 161—14 9 Claims



A decorative tree covering including a tinsel garland attached to backing strips in a pre-designed pattern. The tall covering is adapted to be draped, in tent-like fashion, over a tree, such as a Christmas tree, for ornamentation

purposes. An alternate embodiment utilizes a web network for supporting the garland; the tree is further adorned with bows, etc., attached to the network.

3,676,276
ENDLESS INFLATABLE DEVICE
Sanford Hirshen and Sim Van der Ryn, Berkeley, Calif., assignors to Hirshen/Van der Ryn, Berkeley, Calif.
Filed Dec. 11, 1969, Ser. No. 884,109
Int. Cl. A63g *31/00*
U.S. Cl. 161—17 **6 Claims**



A device comprised of a plurality of inflatable cells arranged in end-to-end relationship to form an endless body with each cell having inflation means to permit the same to be inflated independently of the other cells. The device can be made from an initially flat sheet of a suitable material capable of being heat sealed, such as vinyl or the like.

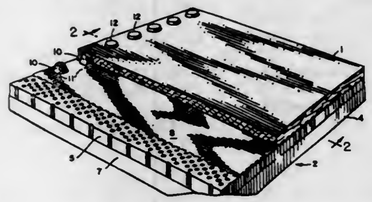
3,676,277
DECORATIVE BOW AND METHOD OF MAKING SAME
Bernard S. Truskolaski, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Dec. 18, 1970, Ser. No. 99,448
Int. Cl. D04d *7/06*
U.S. Cl. 161—9 **8 Claims**



Lace-like ribbon materials made from interconnected pliable filaments sparsely but regularly distributed so that a major portion of the ribbon material is comprised of open spaces is disclosed. In a preferred embodiment, a drawstring is bonded to the material at spaced points along its length. Prefabricated bow forms produced from said materials and decorative bows and a method of producing same are also disclosed.

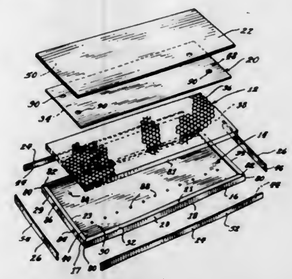
3,676,278
PADDED PANEL FOR AUTOMOBILE DOOR
John S. Stewart, St. Charles, Ill., assignor to Hawley Products Company, St. Charles, Ill.
Original application Dec. 21, 1967, Ser. No. 692,426. Divided and this application Nov. 19, 1969, Ser. No. 878,019
Int. Cl. B32b *3/00, 5/14*
U.S. Cl. 161—43 **3 Claims**

A cushioned article is provided comprising a molded fiber foundation panel having porous and non-porous felted fibrous areas, the porous areas having a sufficiently lower fiber density to permit gases to escape therethrough, a non-porous facing member spaced from said foundation panel, and an expanded cellular cushioning substance in



the space between said panel and said facing member in contact with the inner sides of said facing member and said foundation panel.

3,676,279
SANDWICH TOP CONSTRUCTION FOR OFFICE FURNITURE
Donald V. Beaver, Brookfield, Ill., assignor to All-Steel Equipment Inc.
Filed June 16, 1970, Ser. No. 46,605
Int. Cl. B32b *3/12;* **E04c** *2/00;* **A47b** *13/08*
U.S. Cl. 161—44 **10 Claims**

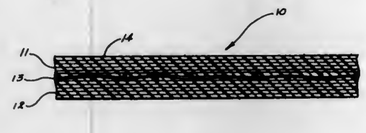


A top structure for office furniture such as desks, tables, and credenzas, which is of a sandwich construction comprising a bottom plate defining upstanding marginal walls about its rim each including an inturned flange with the flanges being in coplanar relation, a cellular filler or core structure bonded to the bottom plate within but extending short of the bottom plate marginal walls, a top plate bonded to the core structure, and sheets of finishing material bonded to the top plate and side surfaces defined by the bottom plate walls in close fitting relation.

3,676,280
TUFTED CARPET BACKSIZED WITH POLYMERIC COMPOSITION
Seymour Sands, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
No Drawing. Continuation of application Ser. No. 714,813, Mar. 21, 1968, which is a continuation-in-part of application Ser. No. 549,461, May 12, 1966, now Patent No. 3,390,035, dated June 25, 1968, which in turn is a continuation-in-part of application Ser. No. 241,548, Dec. 3, 1962. This application Aug. 21, 1970, Ser. No. 66,144
Int. Cl. D05c *17/02*
U.S. Cl. 161—67 **2 Claims**

This invention relates to tufted carpets which are backsized with a polymeric material containing a copolymer of ethylene and vinyl acetate. In the process of making the carpet the polymeric composition is applied to the back side of the carpet as a hot-melt.

3,676,281
SIGN SUPPORT MATERIAL
Robert P. Logan, Tustin, Calif., assignor to Eagle-Picher Industries, Inc., Cincinnati, Ohio
Filed July 29, 1970, Ser. No. 59,104
Int. Cl. B32b *15/14, 29/02*
U.S. Cl. 161—85 **3 Claims**



A sign support material comprising an upper face of phenolic resin impregnated paper, a lower face of phenolic resin impregnated paper, and a wire screen interposed between the two faces. The two faces are bonded one to the other through the wire screen therebetween. The material is a rigid, compact, reinforced laminate particularly adapted for use in exterior or outdoor applications as highway signs, commercial signs, and industrial signs.

3,676,282
PRINTING CLOTH
Edmund Volmer, Hannover, Germany, assignor to Continental Gummi-Werke Aktiengesellschaft, Hannover, Germany
Filed Mar. 20, 1970, Ser. No. 21,238
Claims priority, application Germany, Mar. 20, 1969, P 19 14 142.5
Int. Cl. B32b *5/16;* **B41f** *29/00*
U.S. Cl. 161—87 **2 Claims**



A printing cloth, especially for offset printing, which includes: a base layer of elastomeric material having a maximum thickness of 0.7 mm. and comprising at least one fabric ply of fiber material having a high modulus of elasticity, a volume compressible layer of elastomeric material having a thickness of at least 0.6 mm. and having embedded therein a high percentage of cork particles, and a highly elastic cover layer of at least one solvent resistant polymer and having a thickness of from 0.2 to 0.5 mm., said base layer and volume compressible layer and cover layer being placed upon and vulcanized to each other.

3,676,283
LAMINATE AND PROCESS FOR LAMINATING WITH POLYTHIOL POLYENE REACTION PRODUCT
Clifton L. Kehr, Silver Spring, and Walter R. Wszolek, Sykesville, Md., assignors to W. R. Grace & Co., New York, N.Y.
Continuation-in-part of application Ser. No. 617,801, Feb. 23, 1967. This application Aug. 14, 1969, Ser. No. 850,067
Int. Cl. B32b *21/08;* **C23b** *5/60;* **C08g** *45/06*
U.S. Cl. 161—88 **34 Claims**

This invention is directed to a method and means for laminating superimposed layers or plies of the same or different material, e.g., wood, fabric, glass, brick, elastomer, leather, paper, plastic or metal, by adhering said layers with a curable liquid adhesive composition comprising a polyene and a polythiol which, on exposure to ionizing radiation or other free radical generating agent, cures to a solid adhesive under ambient conditions thereby bonding the layers into a laminated product. The adhesive system is especially useful in bonding plywood and veneered wood.

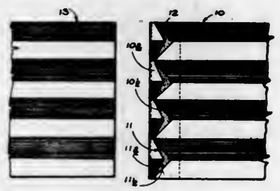
3,676,284
REINFORCED FOAM POLYSTYRENE LAMINATE
Elizabeth Blommers, Monroeville, Pa., assignor to Koppers Company, Inc.
No Drawing. Filed Mar. 2, 1971, Ser. No. 120,322
Int. Cl. B32b *5/18, 17/10*
U.S. Cl. 161—93 **10 Claims**

A reinforced foamed polystyrene laminate comprising a first layer of foamed polystyrene, a second layer of glass cloth, and an adhesive layer formed from (a) a resin mixture of a phenol resorcinol-formaldehyde resin and a polysulfide resin, and (b) a hardener for the resin mixture. The adhesive layer adhesively joins the polystyrene layer to the secondary layer. The resin mixture and hardener can also be used as a coating for foamed polystyrene.

3,676,285
LAMINATES CONTAINING STANNOUS COMPOUND IN BONDING RESIN
Maynard C. Agens, Burnt Hills, and Simon W. Kantor, Schenectady, N.Y., assignors to General Electric Company
Filed Mar. 27, 1969, Ser. No. 811,012
Int. Cl. B32b *5/28, 15/02*
U.S. Cl. 161—93 **8 Claims**

The invention relates to a laminated structure comprising a substrate having on at least one of its two major surfaces at least one absorbent insulating lamina which has been impregnated and integrally bonded to said surface with a synthetic resin having incorporated therein a stannous compound.

3,676,286
CORRUGATED COVERS
Royston L. Moseley, Bewdley, and Peter M. Knowles, Kidderminster, England, assignors to Henry Beakbane (Fortox) Limited, Kidderminster, England
Filed Feb. 2, 1970, Ser. No. 7,517
Claims priority, application Great Britain, Feb. 5, 1969, 6,153/69
Int. Cl. B32b *3/10, 3/28*
U.S. Cl. 161—109 **4 Claims**



A corrugated cover component is formed from a sheet formed with parallel fold lines and a row of cut-outs. The

cut-outs permit the part of the sheet on one side of the row to be corrugated inversely relative to the part on the other side of the row.

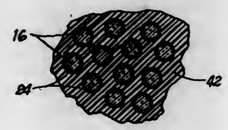
3,676,287
GLASS FIBER-REINFORCED ELASTOMERS

Martin C. Flautt, Granville, Leland G. Moran, Newark, and Frank P. McCombs, Granville, Ohio, assignors to Owens-Corning Fiberglas Corporation

Filed Sept. 8, 1970, Ser. No. 70,252

Int. Cl. B29h *17/28;* **B32b** *25/02*

U.S. Cl. 161—140 **13 Claims**



This invention is addressed to the improvement in the bonding relationship of glass fibers with elastomeric materials in the manufacture of glass fiber-reinforced elastomeric products wherein individual glass fibers are treated with a composition including a polyamide, which is preferably a microcrystalline polyamide, a lubricant, an organo silicon compound coupling agent and a gel agent to form a thin coating on the individual glass fibers, and wherein the individually coated glass fibers may be further processed into glass fiber bundles and impregnated with an elastomer compatible material.

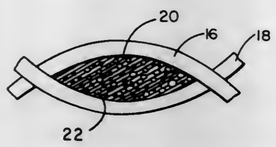
3,676,288
LOW-DENSITY BONDED NONWOVEN FABRICS AND PROCESS THEREFOR

Albert G. Hoyle, Lowell, Mass., assignor to The Kendall Company, Boston, Mass.

Filed May 4, 1970, Ser. No. 34,493

Int. Cl. B32b *5/02, 5/22*

U.S. Cl. 161—158 **7 Claims**



Fibrous webs in which the fibers are free to move relative to each other are bonded with fluid polymeric binder solutions or dispersions containing a proportion of microspheric spheres of expandable plastic filled with an expandable low-boiling liquid or vapor. In drying the fluid from the binder, the microspheres are expanded in volume but not ruptured, leading to the formation of nonwoven fabrics with low density and high fluid absorbency.

3,676,289
TECHNIQUES FOR FORMING SEALS BETWEEN POLYETHYLENE AND FLUOROCARBON POLYMERS

Katsuyuki Hara, Plainfield, and Harold Schonhorn, New Providence, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill and Berkeley Heights, N.J.

No Drawing. Filed Apr. 29, 1970, Ser. No. 33,035

Int. Cl. B32b *27/30, 27/16, 27/32*

U.S. Cl. 161—189 **5 Claims**

A technique for preparing plastic laminates comprising a low surface energy polymer bonded with polyethylene involves modifying the surface of the polymer to effect an increase in the strength of its surface layer and subsequently melting polyethylene upon the resultant modified polymer.

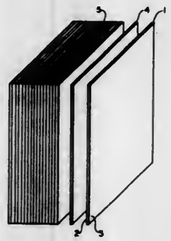
3,676,290
POLYVINYL FLUORIDE SURFACED LAMINATES

Richard R. Hetrick, Bainbridge, N.Y., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 15, 1969, Ser. No. 824,769

Int. Cl. B32b *27/08, 27/42, 27/30*

U.S. Cl. 161—189 **6 Claims**



A weatherproof outdoor laminate is made from a core layer impregnated with a phenolic resin, a print sheet layer impregnated with an aminotriazine-aldehyde resin and an outer polyvinyl fluoride layer having at least one adherable activated side, wherein the activated side of the polyvinyl fluoride outer layer is bonded directly to the print sheet layer without the use of an adhesive layer.

3,676,291
POLYESTERAMIDES

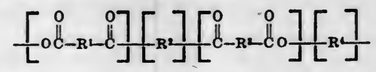
Ray C. Christens, Wichita, and Earnest L. Johnston, Clearwater, Kans., assignors to Vulcan Materials Company, Birmingham, Ala.

No Drawing. Filed Aug. 31, 1970, Ser. No. 68,492

Int. Cl. B32b *17/10, 27/36;* **C08g** *20/30*

U.S. Cl. 161—195 **12 Claims**

A polyesteramide of the formula:



wherein:

R^1 is chlorinated or brominated alkylene, or chlorinated or brominated arylene;

R^2 is aminoalkyleneoxy or oxyalkyleneamino;

R^3 is alpha-beta ethylenically unsaturated alkylidene; and

R^4 is alkylene or alkylidene.

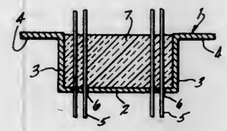
3,676,292
COMPOSITES OF GLASS-CERAMIC-TO-METAL SEALS AND METHOD OF MAKING SAME

Michael J. Pryor, Woodbridge, and James M. Popplewell, Guilford, Conn., assignors to Olin Corporation

Filed Oct. 7, 1970, Ser. No. 78,899

Int. Cl. B32b *17/06;* **H01j** *5/32;* **H05k** *5/06*

U.S. Cl. 161—196 **11 Claims**



Glass or ceramic-to-metal composites or seals wherein the glass or ceramic is bonded to a copper base alloy having a thin film of Al_2O_3 on its surface. The Al_2O_3 film comprises at least 10%, up to 100%, of the oxide film thickness on the metal. The copper base alloy preferably contains 2 to 10% aluminum with C.D.A. Alloy 638 being the most preferred alloy. The invention also includes the process of bonding the glasses or ceramics to the metal. Substantial mismatch between the coefficient of the thermal expansion of the glasses or ceramics and the copper base alloys may be tolerated in accordance with this invention.

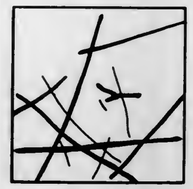
3,676,293
LAMINATED ARTICLE

Bernard A. Gruber, Boxford, Mass., assignor to Monsanto Company, St. Louis, Mo.

Continuation of application Ser. No. 413,498, Nov. 24, 1964, which is a division of application Ser. No. 80,402, Jan. 3, 1961, now Patent No. 3,246,950, which in turn is a continuation-in-part of application Ser. No. 803,176, Mar. 31, 1959. This application Apr. 22, 1970, Ser. No. 28,294

Int. Cl. B32b *9/04*

U.S. Cl. 161—206 **1 Claim**



A shaped laminated object of reinforced fibrous silicon carbide comprises a layer of a skeletal structure of fibrous silicon carbide which crystallizes in the cubic crystalline form as fibers which have a length to diameter ratio of at least 5, the said fibrous silicon carbide layer being intimately bonded with at least one layer of carbon. Such objects are characterized by extreme strength and high temperature stability and may be useful as nose cones for missiles and rockets.

3,676,294
METHOD AND APPARATUS FOR FEEDING FIBERS TO HEADBOX IN PAPER-MAKING USING AN ELECTRICAL FIELD

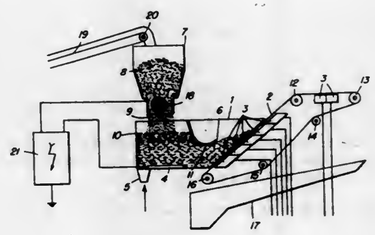
Fritz Opderbeck, Buderich, Dusseldorf, Theodor Ploetz, Hosel, Rudolf Thamm, Viersen, and Popko J. Westerhuis, Baal, Germany, assignors to Feldmuehle Aktiengesellschaft, Dusseldorf-Oberkassel, Germany

Filed June 23, 1970, Ser. No. 49,123

Claims priority, application Germany, June 25, 1969, P 19 32 169.8

Int. Cl. D21f *11/02, 1/02*

U.S. Cl. 162—192 **10 Claims**



A method producing nonwoven sheet material comprising in whole or in part staple fibers between about ¼ to 1½ inches long which includes the steps of feeding the fibers dry at a predetermined rate to the breast box of a wet laid forming machine by means of an electrical field which accelerates them toward the surface of the aqueous medium in the breast box. The electrical field is produced either by the direct application of a voltage to the fibers or by spontaneously charging them with static electricity. The breast box according to the invention includes an electrode which maintains the medium at ground potential. The apparatus also includes a fiber basket with a perforated bottom above the breast box through which the fibers are distributed into the medium. The bottom of the basket comprises an electrode for charging the fibers. The breast box also includes a baffle plate which directs the immersed fibers downwardly into the region of the sheet forming zone where they are uniformly mixed with the medium before being laid down on a forming wire.

3,676,295
NONINTERACTING CONTROL OF MOISTURE AND FIBER CONTENT OF FIBROUS SHEET DURING MANUFACTURE

James S. Rice, Columbus, Ohio, assignor to Industrial Nucleonics Corporation

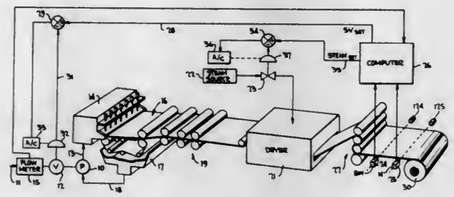
Filed Sept. 12, 1969, Ser. No. 857,324

Int. Cl. D21f *1/06, 5/06*

U.S. Cl. 162—198 **9 Claims**

Moisture and fiber content of a fibrous sheet are controlled during manufacture by measuring the sheet moisture downstream of a dryer in the manufacturing machine, as well as the sheet fiber content. The fiber content and moisture measurements are combined to control the dryer drying rate in such a manner that changes in the rate at which fiber is fed to the machine are compensated for by changes in the dryer drying rate so that changes in the

moisture content of the sheet are greatly minimized. The rate of fiber flow is controlled in response to an error



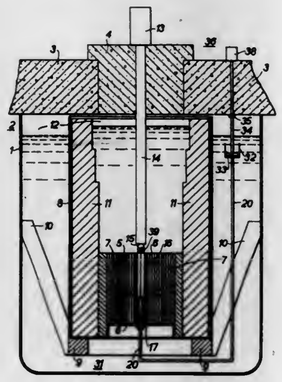
signal for the sheet fiber content and the rate at which fiber is fed into the machine.

3,676,296

NUCLEAR REACTOR WITH SECONDARY SHUT DOWN CONTROL ROD

David Lees Linning and Charles Brian Cowking, Warrington, England, assignors to United Kingdom Atomic Energy Authority, London, England

Filed Nov. 3, 1969, Ser. No. 873,438
Claims priority, application Great Britain, Dec. 20, 1968, 60,866/68
Int. Cl. G21c *7/08*
U.S. Cl. 176—35 **2 Claims**



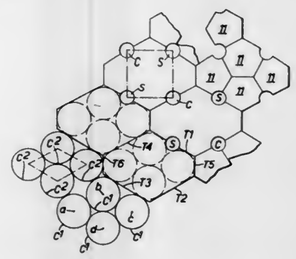
Secondary shut down equipment for a liquid metal cooled fast nuclear reactor. The reactor is of the type comprising a core structure having a central active region, the core structure being supported on a diagrid within a vessel containing the liquid metal coolant. Control rod tubes extend vertically above, through and below the active region of the core structure. Normal control rods operate in the parts of the control rod tubes above the core structure. The secondary shut down equipment comprises a rigid absorber element in the lower end of each control rod tube below the active region of the core structure. The absorber elements are insertable into the active region of the core structure by compression springs which are held in a compressed state within the lower end of the control rod tube by the absorber element. Hold down of the absorber element is by differential pressure existing between liquid metal coolant in the control rod tube above and below a flange on the absorber element which seals with the wall of the control rod tube.

3,676,297

PENTAGONAL CORE BLOCKS FOR GAS COOLED NUCLEAR REACTORS

Compton Alexander Rennie, Wareham, George Edward Lockett, Parkstone, and Samuel Brittan Hosegood, Wareham, England, assignors to United Kingdom Atomic Energy Authority, London, England

Filed Dec. 9, 1968, Ser. No. 782,295
Claims priority, application Great Britain, Dec. 21, 1967, 58,245/67
Int. Cl. G21c *3/04, 5/14*
U.S. Cl. 176—58 **3 Claims**



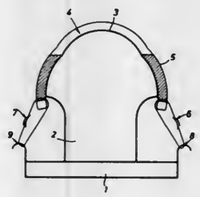
A gas cooled reactor having a core composed of a plurality of similar replaceable fuel bearing blocks of moderator material. The blocks are substantially pentagonal in cross section and assembled side by side with the flanks of one block engaging the flanks of adjacent blocks. The blocks are interlocked due to their shape such that upon removal of a block a neighboring block will not topple into the void so created. The corners of adjacent blocks are grooved to receive longitudinal members which are withdrawable to provide looseness between the flanks of adjacent blocks.

3,676,298

PROCESS FOR THE TREATMENT OF ORGANS TO BE USED AS GRAFTS, NOTABLY ANIMAL OR HUMAN CORNEAS

Madeleine Csanadi Moczar and Elemer Moczar, Gif-sur-Yvette, and Paul Bertrand Payrau, Paris, France, assignors to Etablissement Public: Agence Nationale de Valorisation de la Recherche (ANVAR), Courbevoie, France

Filed June 20, 1970, Ser. No. 42,748
Claims priority, application France, June 3, 1969, 6918127
Int. Cl. A61f *1/16, 9/00*
U.S. Cl. 195—1.7 **9 Claims**



The invention relates to the treatment of corneas removed from human beings or animals and adapted to be subsequently grafted.

According to the process of the invention, products capable of establishing bridge-links between the protein molecules of the corneas are used to treat excised corneas to reduce the capacity of inflation of said corneas when they have been grafted while retaining their transparency. These products are notably dialdehydes.

The invention applies more particularly to transfixion grafts for the surgical treatment of fistula corneas, pterygium and especially chronic edema of the cornea.

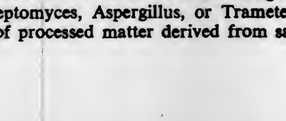
3,676,299

MICROBIAL PRODUCTION OF NOVEL HYDROXYPHENYL KETOBUTYRIC ACIDS

Richard L. Raymond, Wilmington, Del., assignor to Sun Research and Development Co., Philadelphia, Pa.

No Drawing. Original application Nov. 28, 1967, Ser. No. 686,329. Divided and this application Oct. 22, 1970, Ser. No. 83,152
Int. Cl. C12d *1/00*
U.S. Cl. 195—28 R **5 Claims**

Novel hydroxyphenylketobutyric acids having the structural formula:



wherein R_1 and R_2 are hydrogen or lower alkyl groups having from one to three carbon atoms; R_3 is hydrogen, and wherein R_1 and R_2 may be the same or different, are prepared by subjecting naphthalene or alkyl-substituted naphthalenes having the structural formula:

wherein R_1, R_2 and R_3 are as defined above, to the oxidizing activity of the microorganisms *Nocardia coeliaca*, ATCC No. 21,146, *Nocardia nov.* sp., ATCC No. 21,145, or Streptomyces species, ATCC No. 21,147.

3,676,300

METHOD FOR PRODUCING MONOACYL DERIVATIVES OF ANTIBIOTIC T-2636C

Hiroichi Yamamoto, Kobe, Takashi Suzuki, Amakasaki, Eiji Higashide, Takarazuka, Takeshi Fugono, Kawanishi, and Komei Mizuno, Osaka, Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

No Drawing, Filed Mar. 31, 1970, Ser. No. 24,384
Claims priority, application Japan, Mar. 31, 1969, 44/25,096
Int. Cl. C12d *9/00*
U.S. Cl. 195—29 **8 Claims**

14-monoacyl derivatives of Antibiotic T-2636C are produced by reacting T-2636C with an organic acid ester in the presence of a culture of a microorganism of the genus Streptomyces, Aspergillus, or Trametes or in the presence of processed matter derived from said cultures.

3,676,301

PROCESS FOR PREPARING L-HISTIDINE

Junichi Nakajima, Kazumi Araki, and Kenzo Morinaga, Hofu, Japan, assignors to Kyowa Hakko Kogyo Kabushiki Kaisha, Tokyo-to, Japan

No Drawing. Filed Apr. 9, 1970, Ser. No. 27,141
Claims priority, application Japan, Apr. 10, 1969, 44/27,270
Int. Cl. C12d *13/06*
U.S. Cl. 195—29 **5 Claims**

L-histidine is prepared by a fermentation process comprising culturing in a suitable nutrient medium a mixture of a microorganism capable of producing L-histidinol and a yeast capable of converting L-histidinol into L-histidine.

3,676,302

LINCOMYCIN PRODUCTION

Jeronimo Visser, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Filed Aug. 28, 1970, Ser. No. 67,966
Int. Cl. C12d *9/00*
U.S. Cl. 195—80 R **3 Claims**

Microbiological process for preparing the antibiotic lincomycin wherein the concomitant production of lincomycin B (4'-depropyl-4'-ethyllincomycin) is significantly reduced by the addition of an effective amount of propylproline to the fermentation medium. The reduction of lincomycin B in the fermentation beer results in increased lincomycin recovery from the fermentation beer.

3,676,303

METHOD FOR DETERMINING ENDOHYDROLASES CAPABLE OF BREAKING DOWN POLYSACCHARIDES AND REAGENTS FOR CARRYING OUT THE METHOD

Björn G.-A. Ingelman and Miroslav Ceska, Uppsala, Sweden, assignors to Pharmacia AB, Uppsala, Sweden

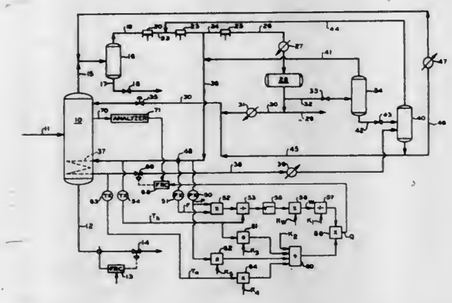
No Drawing. Filed Jan. 14, 1969, Ser. No. 791,177
Claims priority, application Sweden, Jan. 15, 1968, 465/68
Int. Cl. G01n *31/14*
U.S. Cl. 195—103.5 R **42 Claims**

A method for determining endohydrolase which breaks down polysaccharide in an aqueous sample which comprises contacting the sample with a reagent consisting of a water-insoluble but hydrophilic, swellable, enzymatically hydrolyzable three-dimensional network of molecules of either a polysaccharide or an enzymatically hydrolyzable derivative of a polysaccharide. The molecules are crosslinked with bonds of a covalent nature. Also the three-dimensional network presents indicatable substituents bound by means of bonds of a covalent character. The contacting causes a reaction to take place between the enzyme and the reagent whereby water-soluble fragments of the reagent containing indicatable substituents are released. The undissolved reagent is separated from the liquid with the water-soluble fragments of the reagent dissolved therein, after the enzyme has acted upon the reagent for a determined period of time. The indicatable substituents are then determined in at least one of the two phases consisting of the liquid phase and the undissolved reagent material phase as a measure of the enzyme activity. Also, the reagent for determining endohydrolase is provided.

3,676,304
CONTROL OF FRACTIONATION COLUMN REBOILER

James W. Hobbs, Bartlesville, Okla., and George W. Long, Sweeny, Tex., assignors to Phillips Petroleum Company

Filed July 8, 1970, Ser. No. 53,107
Int. Cl. B01d 3/42
U.S. Cl. 202—160 3 Claims

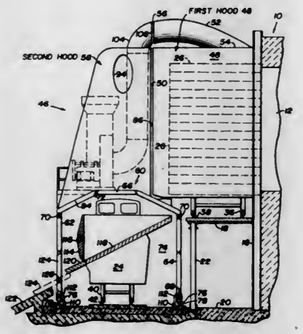


The flow of heat exchange fluid through the reboiler of a fractionation column is controlled in response to a computation of the heat actually supplied by the fluid. The set point of the flow controller is established from a measurement of the separation made by the column or the liquid level in the lower region of the column.

3,676,305
DUST COLLECTOR FOR A BY-PRODUCT COKE OVEN

Walter Cremer, Essen, Germany, assignor to Heinrich Koppers Gesellschaft mit beschrankter Haftung, Essen, Germany

Filed Nov. 26, 1969, Ser. No. 879,986
Claims priority, application Germany, Dec. 5, 1968, P 18 12 897.7
Int. Cl. C10b 33/00
U.S. Cl. 202—263 8 Claims



A first hood member extends around the coke guide and is movable longitudinally with the coke guide along the side of the coke oven battery. The first hood encloses the coke guide and is in sealing relation with an aligned coking chamber and has an open front portion for the coke being pushed. A dust withdrawal conduit extends forwardly from the upper section of the first hood. A second hood has a frame member supported on a ground level track and is movable longitudinally along the side of the coke oven battery independently of the coke guide. The second hood has an enclosed portal portion in which the quench car and the locomotive are positioned. The second hood has an upwardly extending portion with an open rear end that mates with the open front end of the first hood so that a continuous enclosure is formed when the upper portion of the second hood is aligned with the opening in the first hood and the dust created while the coke is being pushed is evolved within either the first or second hood. A first dust removal device is positioned on the roof of the portal and has a conduit with an open end operable to be pushed in overlying relation with the open end of the conduit extending forwardly from the first hood. A second dust removal device is positioned on the roof of the frame member and is connected by means of a conduit to the upper portion of the second hood.

3,676,306
SEPARATION OF PURIFIED VINYLIDENE CHLORIDE

James I. Jordan, Jr., 1512 Kenilworth Parkway, Baton Rouge, La.

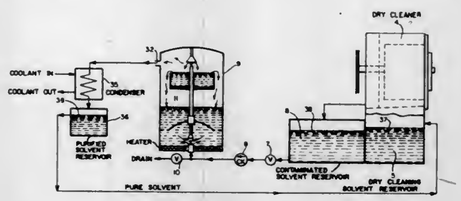
Filed July 8, 1970, Ser. No. 53,329
Int. Cl. B01d 3/34; C07c 17/40
U.S. Cl. 203—8 3 Claims

The normal tendency of vinylidene chloride to polymerize on heating is repressed by the addition of hydrogen chloride to the system. Thus, for instance, vinylidene chloride can be separated from methylchloroform or other higher boiling compounds without undue polymerization by fractionally distilling the mixture at atmospheric or superatmospheric pressure and injecting hydrogen chloride into the distillation system.

3,676,307
PERCOLATOR DISTILLATION SYSTEM

Charles A. Black, Rockfield, Ky., assignor to Detrex Chemical Industries, Inc., Detroit, Mich.

Filed May 8, 1969, Ser. No. 823,038
Int. Cl. B01b 1/02; D06f 29/00; B01d 19/02, 35/18
U.S. Cl. 203—20 7 Claims



A system is disclosed wherein a liquid solvent, susceptible of foaming, is heated within a confined volume and thereby raised to a high pressure, causing same to rise through a vertical stand pipe and be ejected into an unconfined volume of lower pressure, whereupon the solvent is partially vaporized. The unvaporized solvent is caused to impact against a deflector, such impacting in combination with the lower pressure acting to maintain the solvent in a foamless state. It is then channeled through an accumulator prior to re-distillation.

3,676,308
ELECTROLYTIC CODEPOSITION OF POLYVINYLIDENE AND COPOLYMER PARTICLES WITH COPPER

Henry Brown, Huntington Woods, Mich., assignor to Udylite Corporation, Warren, Mich.

Filed June 19, 1969, Ser. No. 834,892
Int. Cl. C23b 5/48, 5/20
U.S. Cl. 204—16 12 Claims

Fine particles of organic resins derived from vinylidene chloride such as Saran F-220 resin, a copolymer of vinylidene chloride and acrylonitrile, densely codeposit with copper when dispersed in aqueous acidic copper electroplating baths. These fine particles of polyvinylidene resins codeposit on vertical cathodes to an amazingly high volume percent compared to any other bath-insoluble particles, inorganic or organic. The surfaces of such two-phase copper coatings with their densely imbedded resin particles have anti-seizing properties. Furthermore, when subsequent thin plate is deposited over these copper surfaces with their densely imbedded particles, a finely porous over-lay plate is obtained. Also the resin particles may be dissolved out with solvents to yield porous copper surfaces or porous films.

3,676,309
ALUMINUM WELDING WIRE ELECTRODE WITH AN ALUMINA COATING CONTAINING PHOSPHATE

Allan A. Dolomont, Branford, Conn., assignor to Olin Mathieson Chemical Corporation

Division of Ser. No. 712,586, March 13, 1968, Pat. No. 3,519,779, Continuation-in-part of Ser. No. 650,547, June 30, 1967, Pat. No. 3,378,669, which is a continuation-in-part of Ser. No. 339,853, Jan. 24, 1964, abandoned, Continuation-in-part of Ser. Nos. 374,290, June 11, 1964, abandoned, and Ser. No. 339,880, Jan. 24, 1964, Pat. No. 3,378,668. This application Feb. 4, 1970, Ser. No. 12,505
Int. Cl. C23b 5/58, 9/02, 3/06
U.S. Cl. 204—27 2 Claims

An aluminum welding wire having a coating thereon and capable of producing porosity free welds after exposure to an atmosphere of 95 percent relative humidity at 100° F. for 30 full days wherein the coating is from 10 to 90 angstrom units thick and consists essentially of alumina and at least 0.001 percent by weight of phosphate.

3,676,310
PROCESS FOR ELECTROCHEMICAL MACHINING EMPLOYING A DIE OF A SPECIAL ALLOY

Frederick T. Wishnie, Seaford, N.Y., assignor to Eutectic Welding Alloys Corporation, Flushing, N.Y.

Division of Ser. No. 664,227, Aug. 2, 1967, abandoned. This application July 9, 1970, Ser. No. 53,644
Int. Cl. B23p 1/00; B01r 3/06; C22c 9/06
U.S. Cl. 204—143 M 4 Claims

Electro-chemical machining die of an alloy comprising the following constituents in the following range of percentages by weight: nickel 5 to 27 percent, castability promoting elements 1.2 to 8 percent, hardness promotion elements .5 to 9.5 percent, with the balance being copper.

3,676,311
BURN-RESISTANT COMPOSITIONS CONTAINING A POLYTHIOL AND A PHOSPHONITRILIC POLYMER

Victor S. Frank, Silver Spring; Eldon E. Stahly, Ellicott City, and Rip G. Rice, Ashton, all of Md., assignors to W. R. Grace & Co., New York, N.Y.

Filed April 17, 1969, Ser. No. 817,186
Int. Cl. B01j 1/00; C08g 23/00, 33/00
U.S. Cl. 204—159.14 18 Claims

Burn-resistant polymers are prepared by photocuring a mixture of polythiol and a phosphonitrilic polymer containing at least two reactive unsaturated carbon-to-carbon (ene) groups. The photocuring is achieved by exposing the mixture to ultraviolet light. The phosphonitrilic polymer containing at least two reactive ene groups is prepared by reacting a cyclic or linear phosphonitrilic chloride polymer, e.g., $(PNCl_2)_4$, with moieties containing reactive ene groups, e.g., allyl.

3,676,312
AMINOPLAST RESINS PARTICULARLY ADAPTED FOR ELECTROCOATING AND PROCESS FOR PRODUCING THE SAME

Kazys Sekmakas, Chicago, Ill., assignor to DeSoto, Inc., Des Plaines, Ill.

Filed March 13, 1970, Ser. No. 19,457
Int. Cl. B01k 5/02; C23b 13/00
U.S. Cl. 204—181 15 Claims

Aminoplast resins particularly adapted for use in electrocoating are provided by heat reacting a polyamine, such as benzoguanamine, with formaldehyde in the presence of a mixture of etherifying alcohol and a small proportion of an hydroxy carboxylic acid such as dimethylol propionic acid. The reaction is conducted in a single stage in the absence of extraneous acidic or basic catalysts.

3,676,313
REMOVING UNDESIRED POTENTIAL FROM THE BLOCKING ELECTRODE IN A PHOTOELECTROPHORETIC IMAGING SYSTEM

Roger N. Ciccarelli, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

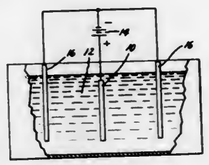
Continuation of Ser. No. 626,917, March 28, 1967, abandoned. This application Aug. 3, 1970, Ser. No. 60,675
Int. Cl. G03g 13/00
U.S. Cl. 204—181 8 Claims

Build-up of undesired potential on the blocking electrode in a photoelectrophoretic imaging system during successive imaging operations is prevented by one of several methods. Typically, potential of a sign opposite to that built up may be applied, or the blocking electrode surface may be discharged between imaging cycles.

3,676,314
METHOD OF ELECTRODEPOSITING VITREOUS COATINGS ATOP A MULTIAPERTURED SUBSTRATE

Roland T. Girard, Scotia, N.Y., assignor to General Electric Company

Filed Dec. 15, 1969, Ser. No. 885,205
Int. Cl. B01k 5/02; C23b 13/00
U.S. Cl. 204—181 6 Claims

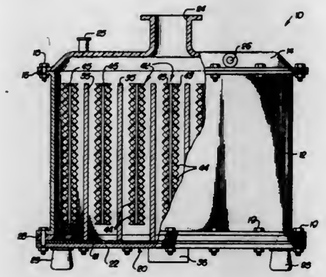


Pinhole-free vitreous enamel coatings are electrophoretically deposited without frothing atop a multi-apertured substrate from an aqueous slurry of vitreous enamel and inert refractory particles by the inclusion of ammonium alginate or gelatine in the slurry in quantities less than 0.3 percent by weight of the water vehicle. Desirably a low ash producing organic film-forming binder, such as an acrylic emulsion, also is included in the bath in quantities less than 0.3 percent by weight water vehicle to enhance the toughness of the deposited film while the presence of minor quantities of an ionic wetting agent serves to enhance the plating characteristics of the bath.

3,676,315
PRODUCTION OF SODIUM CHLORATE

Duane N. Goens, Fullerton, and Thomas W. Clapper, Whittier, both of Calif., assignors to Kerr McGee Chemicals Corp.

Division of Ser. No. 708,819, Feb. 28, 1968, Pat. No. 3,598,715. This application Sept. 28, 1970, Ser. No. 76,306
Int. Cl. C01b *11/26*; B01k *3/04*
U.S. Cl. 204—95 4 Claims

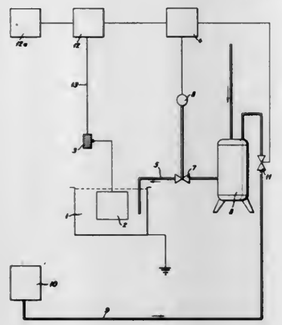


An electrolytic cell comprising a tank having a closed top and an open bottom. An anode closure plate extends over the bottom of the tank to form the bottom wall of the cell. A plurality of vertically positioned anodes are secured to the closure plate and are spaced to receive a cathode member between adjacent pairs of anodes. The electrodes are mounted in the cell in a manner such that they are completely submerged in electrolyte in the cell.

3,676,316
METHOD FOR COATING METAL WORKPIECES WITH WATER SOLUBLE OR COLLOIDAL COLORING MATTER EMULSIFIED IN WATER

Jozsef Domokos; Gyorgy Benedek; Bela Kiss; Laszlo Winkler, and Zoltan Beller, all of Budapest, Hungary, assignors to Hajtomu-es Felvonogyar, Budapest, Hungary

Filed Jan. 16, 1968, Ser. No. 698,273
Claims priority, application Hungary, Jan. 20, 1967, DO-310
Int. Cl. B01k *5/02*; C23b *13/00*
U.S. Cl. 204—181 1 Claim

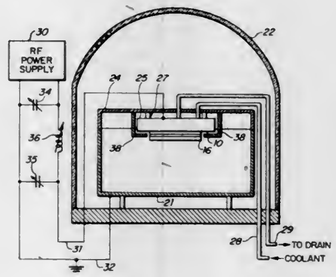


A method is provided for coating metal workpieces with coloring material in a continuous process, by being interconnected to form an anode and are advanced sequentially through a solution of coloring matter in a continuous procedure. The coloring material is contained in a vessel forming a cathode and a coulomb meter integrator-regulating means senses, a time and a current quantum impulse; a valve being provided for controlling the flow of coloring material from a supply to the vessel cathode and being actuated by the aforesaid regulator means.

3,676,317
SPUTTER ETCHING PROCESS

Patrick A. Harkins, Jr., El Cajon, Calif., assignor to Stromberg Datagraphix, Inc., San Diego, Calif.

Filed Oct. 23, 1970, Ser. No. 83,295
Int. Cl. C23c *15/00*
U.S. Cl. 204—192 5 Claims

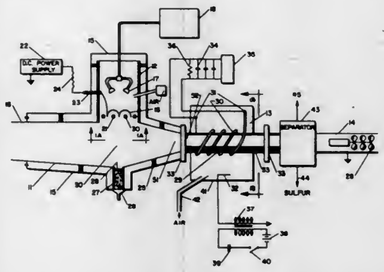


A process of etching high resolution openings in surfaces by sputter etching is disclosed. A mask is first prepared having apertures of shapes corresponding to areas to be etched on a surface. A low sputtering yield material is coated onto the mask. The mask is then placed in a suitable chamber between a source of accelerated and bombard the mask and the body surface beyond mask apertures, atoms are dislodged from the bombarded surfaces and diffuse away. Preferably, this etching action is more rapid on the body than on the mask coating. The low yield coating is reformed as necessary. The mask may be made of any solid material, including those which would be rapidly destroyed if used in a sputter etching system without the low sputtering yield coating.

3,676,318
APPARATUS FOR REMOVING SULFUR DIOXIDE FROM STACK GASES

James L. Lauer, c/o Sun Oil Company, P.O. Box 426, Marcus Hook, Pa.

Division of Ser. No. 765,151, Oct. 4, 1968, Pat. No. 3,565,777. This application Sept. 25, 1970, Ser. No. 75,741
Int. Cl. B01j *1/10*
U.S. Cl. 204—193 5 Claims



A method and apparatus for removing sulfur dioxide from stack gases wherein the stack gas is first subjected to electrically charged water droplets and subsequently to ultraviolet light.

3,676,319
ELECTRODE, HALF CELL AND ELECTRODE COMPONENT FOR THE MEASUREMENT OF ELECTROMOTIVE FORCE

Jurgen Manfred Kirsten, Horsholm, Denmark, assignor to Radiometer A/S, Copenhagen, Denmark

Filed March 28, 1969, Ser. No. 811,328
Int. Cl. B01k *3/00*
U.S. Cl. 204—195 F 25 Claims

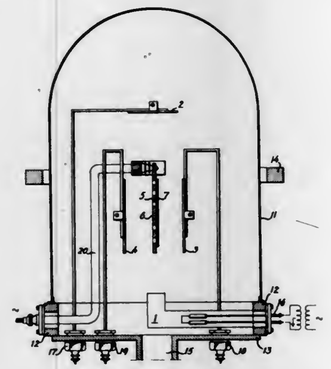


An electrode, half cell and electrode component for the measurement of electromotive force, wherein during application a conductor surface of a solid metal contacts ions of a sparingly soluble salt of the same metal and ions of a readily soluble salt, the anion of which is identical with the anion of the sparingly soluble salt. By providing sufficient amounts of a solid phase of both kinds of salts, such that the solid phase of both salts is still present in the electrode component or half cell at the maximum operating temperature, the solution contacting the conductor surface is saturated with respect to both types of salts at any operating temperature, whereby temperature hysteresis is avoided.

3,676,320
METHOD FOR DEPOSITING THIN FILMS ON THIN ELONGATED ELECTRICALLY INSULATING SUBSTRATES

Orla Christensen, Copenhagen, Denmark, assignor to Disa Elektronik A/S (Dansk Industri Syndikat A/S), Herlev, Denmark

Filed March 13, 1970, Ser. No. 19,352
Claims priority, application Denmark, March 17, 1969, 1443
Int. Cl. C23c *15/00*
U.S. Cl. 204—192 1 Claim

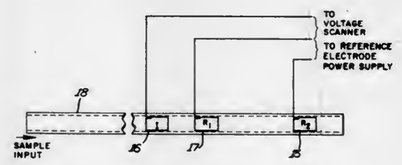


A method for depositing thin films on thin elongated, electrically insulating substrates by bias-sputtering material from two targets on to the substrates in an electrical plasma, the substrates being suspended over apertures in an electrically biased metallic substrate holder, around which is formed a dark space filling said apertures and surrounding the substrates. A thin film deposited by said method has good film adhesion, good all-over uniformity and electrical properties close to the bulk valus of the film material so as to be applicable as sensing element in sensors.

3,676,321
ELECTROCHEMICAL OXYGEN DEMAND SYSTEM

John P. Cummings, Minneapolis, and Richard E. Berg, Chanhassen, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed July 27, 1970, Ser. No. 58,254
Int. Cl. G01n *27/46*
U.S. Cl. 204—195 R 15 Claims



A method and system for the determination of organic and inorganic waste products present in aqueous samples, the arrangement including cell means for receiving a flow of an aqueous sample therethrough with means for delivering a predetermined quantity of a water soluble electrolyte into said sample prior to passing through said cell. Heating means are provided for maintaining the sample at a predetermined temperature level as it passes through said cell. The cell includes a plurality of space electrodes including a reference electrode, an indicating electrode, and a common electrode in circuit with said reference and indicating electrodes. A first circuit is coupled to the reference and common electrodes and a unipolar electrical signal is impressed thereacross, the magnitude being sufficient for aqueous electrolysis, A second circuit means is coupled to said indicating and common electrodes and delivers a scanning signal of a programmed potential magnitude with periodic increases and decreases in respect to time, the peak magnitude of said scanning signal being less than that required for aqueous electrolysis. Readout means are arranged in series with said indicating and common electrodes for determining the current flow through said second circuit means in response to the scanning signal. The system is also useful for the determination of carbon monoxide in gaseous atmospheres.

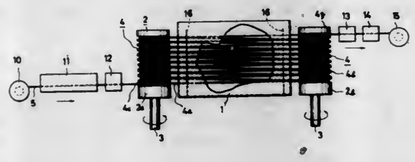
3,676,322
APPARATUS AND METHOD FOR CONTINUOUS PRODUCTION OF ELECTROLYTICALLY TREATED WIRES

Yoshihiro Kamata, and Takashi Hirose, Nikko-shi, both of Japan, assignors to The Furukawa Electric Company Limited, Tokyo, Japan

Filed Jan. 6, 1970, Ser. No. 891
Int. Cl. C23b *3/06*, *5/58*, *5/68*
U.S. Cl. 204—206 5 Claims

Apparatus and method for continuously producing electrolytically treated wires which comprise immersing a wire repeatedly in an electrolyte contained in an electrolytical treatment tank positioned between guide rolls which passing the wire continuously back and forth between the guide rolls by

guiding the wire stepwise on the guide rolls, using the wire as an electrode and providing another electrode within the elec-



trolytic treatment tank to effect electrolytic plating and/or polishing at a high production efficiency.

3,676,323

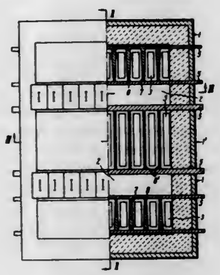
FUSED SALT ELECTROLYZER FOR MAGNESIUM PRODUCTION

Khaim Lipovich Strelets, ulitsa Furmanova, 19, kv. 2; Alexandr Sergeevich Chesnokov, ulitsa Schastlivaya, 9, kv. 28, both of Leningrad; Vladimir Nikolaevich Devyatkin, prospekt Lenina, 43, kv. 9, Berezniki Permskoi Oblasti; Alexandr Nikolaevich Tatakin, ulitsa Gornyakov, 13, kv. 3, Solikamsk Permskoi Oblasti; Evsei Dmitrievich Krasikov, Slavyansky bulvar, 3, kv. 51, Moscow; Ljudmila Sergeevna Leonova, ulitsa Lomonosova, 105, kv. 151; Galina Arkadievna Medvetskaya, ulitsa Lva Tolstogo, 68, kv. 53, both of Berezniki Permskoi Oblasti, and Tatyana Georgievna Nechaeva, ulitsa Mira, 42, kv. 73, Solikamsk Permskoi Oblasti, all of U.S.S.R.

Filed Dec. 10, 1970, Ser. No. 96,835

Int. Cl. C22d *3/02, 3/08*

U.S. Cl. 204—244 **4 Claims**



An electrolyzer for the manufacture of magnesium, which has at least one electrolysis compartment with a cathode in the form of a frame whose members make up a closed loop around an anode in the electrolysis compartment.

3,676,324

COMPOSITE CARBON ELECTRODE STRUCTURE HAVING IMPROVED ELECTRICAL CONDUCTIVITY

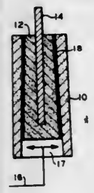
King L. Mills, Bartlesville, Okla., assignor to Phillips Petroleum Company

Filed Nov. 7, 1969, Ser. No. 874,808

Int. Cl. B01r *3/04*; C23b *5/74*; B01r *3/08*

U.S. Cl. 204—284 **14 Claims**

A carbon electrode structure having improved electrical conductivity is provided. Said carbon electrode structure comprises a first section of carbon, a second section of carbon secured to said first section of carbon, and a layer of finely di-



vided conductive carbon disposed between said first and second sections of carbon.

3,676,325

ANODE ASSEMBLY FOR ELECTROLYTIC CELLS

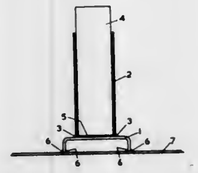
Frank Smith, and John Hubert Entwisle, both of Runcorn, England, assignors to Imperial Chemical Industries Limited, London, England

Filed June 8, 1970, Ser. No. 44,044

Claims priority, application Great Britain, June 27, 1969, 32,544/69

Int. Cl. B01k *3/04*; C23g *5/68*; B01r *3/04*

U.S. Cl. 204—288 **14 Claims**



An anode assembly for electrolytic cells comprising: a downwardly-facing, open-ended, horizontally-elongated titanium channel member having a web portion and two depending flange portions integral with the web portion; a titanium tube secured at one end to said web portion in a fluid-tight manner so that said web portion closes said end, said web portion having at least one gas escape opening therethrough located intermediate said tube and each end of said channel an aluminum current lead-in rod at least partially within the tube coaxially therewith having one end friction-welded to said web portion; and a foraminate titanium structure lying in a plane parallel to said web portion and electrically connected to the lower edges of the flange portions, said foraminate structure carrying on at least a part of its surface a coating comprising an operative electrode material.

3,676,326

CATION EXCHANGE MEMBRANES

Xavier Marze, Lyon, France, assignor to Rhone-Poulenc S.A., Paris, France

Filed July 17, 1969, Ser. No. 842,718

Claims priority, application France, July 18, 1968, 68159720

Int. Cl. B01k *3/10*

U.S. Cl. 204—296 **5 Claims**

The invention provides cation exchange membranes made from sulphated ethylene-vinyl alcohol copolymers and a process for the preparation thereof.

3,676,327

INHIBITION OF CORROSION BY HYDROTREATER EFFLUENT

Zisis Andrew Foroulis, East Orange, N.J., assignor to Esso Research and Engineering Company

Filed Feb. 19, 1970, Ser. No. 12,840

Int. Cl. C23f *11/04*; C10g *9/10*

U.S. Cl. 208—47 **6 Claims**

Corrosion of metals by aqueous hydrochloric acid condensates in petroleum processing equipment is markedly inhibited by the addition of a lower aliphatic amine to the system. The operative amines are primary aliphatic amines having four to 10 carbon atoms. Octylamine is a preferred inhibitor.

3,676,328

REFORMING WITH FIVE PLATINUM RHENIUM CATALYST BEDS

Milton H. Dalson, c/o Engelhard Minerals & Chemicals Corp. 497 Delancy St., Newark, N.J.; James P. Gallagher, c/o Atlantic Richfield Co. 400 E. Sibley Blvd., Harvey, Ill., and William C. Pfefferle, c/o Engelhard Minerals & Chemicals Corp. 497 Delancy St., Newark, N.J.

Filed June 12, 1970, Ser. No. 45,937

Claims priority, application Canada, June 20, 1969, 054,905

Int. Cl. C10g *35/08*

U.S. Cl. 208—65 **3 Claims**

Naphtha containing from 40 to 60 percent naphthenes, 5 to 25 percent aromatics, 25 to 55 percent paraffins is reformed in a system including five serially arranged reactors having catalyst containing platinum and rhenium supported on a porous, solid base such as alumina. A defined manner of operation regarding reactor inlet temperatures and space velocities is disclosed.

3,676,329

REFORMING WITH FOUR OR FIVE PLATINUM RHENIUM CATALYST BEDS

Milton H. Dalson, and William C. Pfefferle, both of c/o Engelhard Minerals & Chemicals Corp., 497 Delancy St., Newark, N.J.

Filed June 12, 1970, Ser. No. 45,896

Claims priority, application Canada, June 20, 1969, 054,900

Int. Cl. C10g *35/08*

U.S. Cl. 208—65 **3 Claims**

Naphtha containing 15 to 30 percent naphthenes and 5 to 20 percent aromatics is reformed in a system including four or five serially-arranged reactors in which the catalyst contains platinum and rhenium supported on a porous, solid base such as alumina. Reactor inlet temperatures and space velocities are defined.

3,676,330

ZEOLITE-CONTAINING CATALYST, SYNTHESIS AND USE THEREOF

Charles J. Plank, Woodbury, and Edward J. Rosinski, Deptford, both of N.J., assignors to Mobil Oil Corporation

Filed Dec. 15, 1969, Ser. No. 885,288

Int. Cl. C10g *13/02*; B01j *11/40*

U.S. Cl. 208—111 **44 Claims**

A method of preparing a composition comprising a crystalline zeolite and a porous matrix material which comprises coating at least a portion of the surface of at least one of the components selected from the group consisting of said zeolite and said porous matrix material with a solid or liquid coating material which is substantially retained during any subsequent processing steps prior to its positive intentional removal, which occurs after the compositing step, intimately compositing said zeolite with said matrix material and removing said coating material; the composition prepared therefrom and hydrocarbon conversion employing the composition as a catalyst.

3,676,331

UPGRADING OF CRUDE OILS

Armin C. Pitchford, Bartlesville, Okla., assignor to Phillips Petroleum Company

Filed June 19, 1970, Ser. No. 47,598

Int. Cl. C10g *13/02*

U.S. Cl. 208—112 **9 Claims**

A method and catalyst for the upgrading of hydrocarbons which employs a multiple component catalyst system to generate hydrogen in situ and to thereby produce, within the hydrocarbons, materials of low molecular weight, and of reduced carbon residue and sulfur content.

3,676,332

HYDROGENATION WITH A MOLYBDENUM ARSENIC CATALYST

Marvin M. Johnson, and Donald C. Tabler, both of Bartlesville, Okla., assignors to Phillips Petroleum Company

Filed April 2, 1970, Ser. No. 25,239

Int. Cl. C10g *23/02*

U.S. Cl. 208—143 **7 Claims**

A method and catalyst for reacting hydrogen with aromatic hydrocarbons, with sulfur-containing acyclic and heterocyclic compounds, and with nitrogen-containing acyclic and heterocyclic organic compounds, the catalyst being comprised essentially of supported molybdenum and arsenic in their reduced forms.

3,676,333

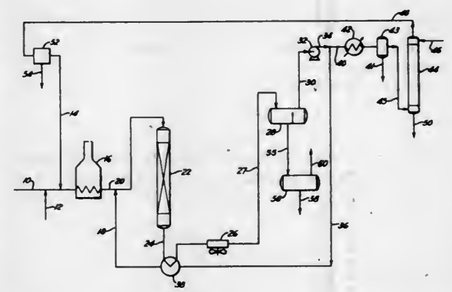
HYDRODESULFURIZATION UTILIZING MULTIPLE HYDROGEN RECYCLE STREAMS

Edgar Carlson, Allison Park, Pa., and William R. Lehrian, Tokyo, Japan, assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed March 26, 1970, Ser. No. 25,115

Int. Cl. C10g *23/00*

U.S. Cl. 208—209 **7 Claims**



A portion of the effluent gas from a hydro-desulfurization process is treated for removal of hydrogen sulfide and admixed with the hydrocarbon fraction before entry into the feed heater. Untreated effluent gas containing hydrogen and hydrogen sulfide is then admixed with the preheated hydrocarbon-hydrogen gas mixture prior to entry into the reactor. Treating only that portion of the effluent gas which passes through the heater minimizes coking and corrosion problems in the heater but it also reduces the effort previously required for treating all the recycle gas.

3,676,334
WASTEWATER TREATMENT SEQUENCE

Mathew M. Zuckerman, Yonkers, and Alan H. Molof, New City, both of N.Y., assignors to Envirotech Corporation, Palo Alto, Calif.

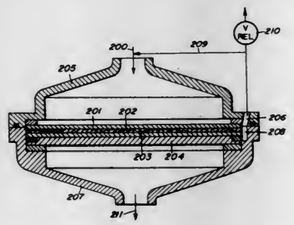
Continuation-in-part of Ser. No. 768,378, Oct. 17, 1968. This application May 14, 1969, Ser. No. 824,709
Int. Cl. C02c *5/02*
U.S. Cl. 210—9 **20 Claims**

An improved process for treating wastewater is based on a pre-treatment to convert high molecular weight soluble organic material in raw wastewater into organic material of low molecular weight. Following this conversion, the wastewater is treated with a process sequence tailored to effluent quality requirements. One such sequence may include, for example, the steps of physical or biological adsorption, solids removal, membrane filtration, and disinfection.

3,676,335
PROCESS FOR EFFECTING CHANGES IN SOLUTION CONCENTRATIONS

Robert E. Lacey, Homewood, Ala., and Milton S. Mintz, McLean, Va., assignors to Southern Research Institute and The United States of America as represented by the Secretary of Interior, part interest to each

Division of Ser. No. 645,571, June 8, 1967, Pat. No. 3,577,331. This application Dec. 9, 1970, Ser. No. 96,406
Int. Cl. B01d *13/00*
U.S. Cl. 210—23 **6 Claims**



Efficiency of reverse osmosis separation processes is enhanced by reducing the thickness of the boundary layer formed at the membrane-solution interface. This is accomplished by placing a second membrane, which is substantially permeable to the solution, in a close-spaced relationship to the reverse osmosis membrane. A portion of the solution is withdrawn from the space between the two membranes.

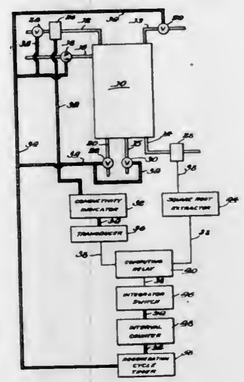
3,676,336
METHOD AND APPARATUS FOR WATER SOFTENING

Dennis M. O'Brien, Morristown, and Cole R. Miller, Medford Lakes, both of N.J., assignors to Ecodyne Corporation, Chicago, Ill.

Filed Jan. 11, 1971, Ser. No. 105,188
Int. Cl. B01d *15/04*
U.S. Cl. 210—25 **14 Claims**

The invention provides an improved method and apparatus for controlling the provision of regenerated resin to an ion-exchange column. In carrying out the method, the conductivity of the raw water flowing to the column and the flow of water delivered to the column are measured. The conductivity is then multiplied by the flow, and the product of the conductivity and flow is totalized. The column is provided with regenerated resin when the total of this product reaches a predetermined amount.

The apparatus comprises an improvement in a conventional ion-exchange system having a service column containing ion-exchange resin and raw water delivery means for delivering raw water to the service column. Generally, the invention comprises an improved control system having conductivity means for measuring the conductivity of the water in the raw water delivery means and flow measuring means for measuring the flow of water through the service column. Multiplier means are provided for multiplying the conductivity by the

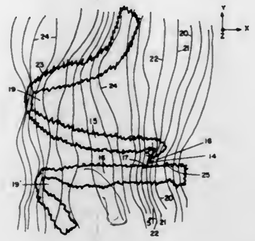


flow, and totalizer means totalize the product of these functions. Means are provided for automatically providing the service column with regenerated resin responsive to a signal from the totalizer means indicating that the total of the product has reached a pre-determined amount.

3,676,337
PROCESS FOR MAGNETIC SEPARATION

Henry H. Kolm, Wayland, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation-in-part of Ser. No. 761,048, Sept. 20, 1968, Pat. No. 3,567,026. This application July 9, 1970, Ser. No. 53,497
Int. Cl. C02b *1/00*
U.S. Cl. 210—42 **6 Claims**

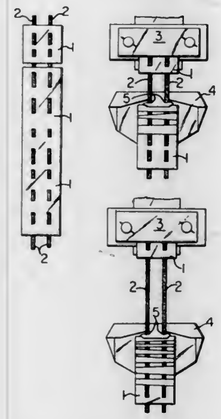


Process for separating colloidal and sub-colloidal ceramic magnetic components and paramagnetic components from a slurry (or other carrier) by passing the slurry through a column containing a magnetic material, as a magnetic grade stainless steel wool. The steel wool is subjected to a d-c magnetic field sufficient in magnitude to effect magnetization to saturation and above and provides a large number of regions of very high magnetic field and magnetic field gradient along the paths of travel of the slurry to attract and retain the magnetic components. It has been found that in order to provide removal of such components on an industrial scale at the high throughput rates required, a background field in the wool of at least about 12,000 gauss is required to overcome the forces of turbulence or the like in the slurry.

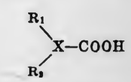
3,676,338
DETERGENT COMPOSITIONS CONTAINING A TEXTILE SOFTENER

Walter Fries, Erkrath-Unterbach; Markus Berg, Dusseldorf-Holthausen; Manfred Dohr, Dusseldorf-Holthausen, and Alfred Kirstahler, Dusseldorf, all of Germany, assignors to Henkel & Cie GmbH, Dusseldorf, Germany

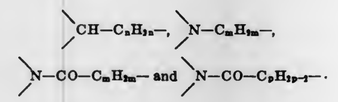
Continuation-in-part of Ser. No. 745,952, July 18, 1968, abandoned. This application Jan. 14, 1970, Ser. No. 2,722
Claims priority, application Germany, Jan. 16, 1969, P 19 01 936.4; July 19, 1967, H 63320; April 5, 1968, P 17 67 142.0
Int. Cl. C11d *1/04, 1/83;* **D06m** *13/20*
U.S. Cl. 252—8.75 **18 Claims**



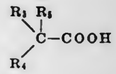
This invention relates to a combination of surface-active compounds utilizable in neutral to alkaline textile washing baths which comprises (a) from 20 to 90 percent by weight of customary surface-active compounds utilizable in neutral to alkaline textile washing baths selected from the group consisting of anionic surface-active compounds, amphoteric surface-active compounds, non-ionic surface-active compounds and mixtures thereof and (b) from 80 to 10% by weight of a textile softener selected from the group consisting of (1) compounds of the formula



wherein R_1 and R_2 are alkyl having from six to 18 carbon atoms and X is a trivalent link selected from the group consisting of



where *n* represents an integer from 0 to 2, *m* represents an integer from 1 to 2 and *p* represents an integer from 2 to 3, compounds of the formula



wherein R_3 and R_4 are members selected from the group consisting of alkyl having from one to 23 carbon atoms and cycloalkylalkyl having from seven to 23 carbon atoms and R_5 is a member selected from the group consisting of hydrogen, alkyl having from one to 23 carbon atoms and cycloalkylalkyl having from seven to 23 carbon atoms, with the proviso that the total number of carbon atoms in R_1, R_2 and R_5 is from six to 24 carbon atoms and (2) water soluble salts thereof. Textile washing agents and textile auxiliary washing agents containing the above combinations of surface-active compounds, with or without a content of enzymes are also part of the invention.

3,676,339
SUBSTITUTED BIS-TRIAZINYLAMINO STILBENE COMPOUNDS AND COMPOSITIONS THEREOF

Christopher Johannes Tscharner, Warwick, R.I., assignor to Geigy Chemical Corporation, Greenburgh, N.Y.

Division of Ser. No. 561,330, June 29, 1966, Pat. No. 3,546,218. This application April 16, 1970, Ser. No. 33,118
Int. Cl. D06m *13/46;* **C11d** *3/42*
U.S. Cl. 252—8.75 **5 Claims**

Described herein are certain bis-triazinylamino stilbene type optical brighteners and their use in treating textiles and paper. The brighteners are particularly useful in conjunction with fabric softeners and in laundry detergents.

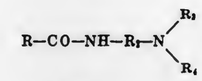
3,676,340
COMBINATIONS OF DETERGENTS WITH CONTROLLED FOAMING PROPERTIES AND WASHING AGENTS CONTAINING THEM

Markus Berg, Dusseldorf-Holthausen; Walter Fries, Erkrath, Unterbach, Rhineland, and Alfred Kirstahler, Dusseldorf, all of Germany, assignors to Henkel & Cie GmbH, Dusseldorf, Germany

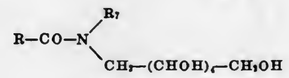
Filed July 18, 1968, Ser. No. 752,097
Claims priority, application Germany, July 19, 1967, H 63320; April 27, 1968, P 17 67 334.6
Int. Cl. C11d *1/84, 3/28, 9/24*
U.S. Cl. 252—8.75 **14 Claims**

This invention relates to a combination of anionic and/or non-ionic surface-active compounds together with a foam stabilizer and a foam inhibitor active at temperatures above 60° C, said combination having controlled foaming properties, containing therein as foam stabilizer active at temperatures up to 60° C, a compound of the formula selected from the group consisting of

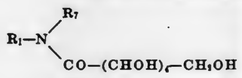
I



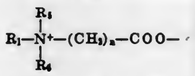
II



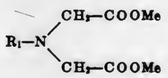
III



IV

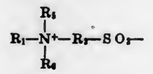


V



and

VI



wherein R—CO represents the acyl of a fatty acid with 10 to 18 carbon atoms, R_1 represents an aliphatic hydrocarbon radical with 10 to 18 carbon atoms, R_2 represents an alkylene group with two to five carbon atoms, R_3 and R_4 represent members selected from the group consisting of hydroxyethyl, hydroxypropyl and dihydroxypropyl, R_5 and R_6 represent members selected from the group consisting of methyl, ethyl, hydroxyethyl, hydroxypropyl and dihydroxypropyl, R_7 represents members selected from the group consisting of hydrogen, methyl, ethyl, hydroxyethyl, hydroxypropyl and dihydroxypropyl, *n* is an integer from 1 to 2 and Me represents a member selected from the group consisting of hydrogen and alkali metal. The invention also relates to washing agents having controlled foaming properties containing the above combination of surface-active compounds.

3,676,341

TEXTILE SOFTENING COMPOSITIONS

John Fred Gerecht, Somerville, and Harold Eugene Wixon, New Brunswick, both of N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

Continuation-in-part of Ser. No. 733,316, May 31, 1968, abandoned. This application March 15, 1971, Ser. No. 124,515

Int. Cl. C11d *3/04, 1/38*

U.S. Cl. 252—8.8 **6 Claims**

A method and composition for simultaneously cleansing and softening textiles without yellowing by utilizing a detergent composition containing effective amounts of an alkylated polyethyleneimine polymer, the ratio of detergent to polymer ranging from 20:1 to 1:5 and preferably 10:1 to 1:2.

3,676,342

LUBRICANT FOR TEXTILE MACHINERY

Albert Gathman, Belmar, and George W. Gleim, Springfield, both of N.J., assignors to Esso Research and Engineering Company

Filed Dec. 1, 1969, Ser. No. 881,331

Int. Cl. C10m *1/24, 1/10*

U.S. Cl. 252—18 **3 Claims**

A lubricating composition that is uniquely designed for the lubrication of textile machinery such as a circular knitting machine comprises a lubricating oil containing zinc oxide as an antiwear agent. The zinc oxide is incorporated in the lubricating oil composition by first preparing an additive concentrate wherein up to 10 weight percent of zinc oxide has been dispersed in a lubricating oil using as a dispersing agent zinc naphthenate, magnesium naphthenate or mixtures thereof. The lubricating composition also preferably contains an oiliness agent, an antioxidant and an extreme pressure agent. The zinc naphthenate or magnesium naphthenate not only serves to suspend the zinc oxide but also imparts scourability to the composition, thereby aiding in the removal of the lubricant from the textile processed by the textile machinery.

3,676,343

AMORPHOUS BORON-SILICON-NITRIDE MATERIALS

John W. Dietz, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed March 10, 1969, Ser. No. 805,837

Int. Cl. C10m *5/02*

U.S. Cl. 252—25 **7 Claims**

Amorphous boron-silicon-nitride ternary nitrides are prepared by reacting boron trichloride [BCl_3], silicon tetrachloride [$SiCl_4$], and ammonia. The products are resistant to oxidation; have a surface area greater than 100 m^2/gm; and are useful at high temperatures as insulation, catalyst supports, and dry lubricants.

3,676,344

ETHER AMIDES IN AQUEOUS LUBRICANTS

Vincent P. Kuceski, Chicago Heights, Ill., assignor to The C. P. Hall Company of Illinois/Chicago, Illinois

Continuation-in-part of Ser. No. 791,259, Jan. 15, 1969, abandoned. This application Sept. 2, 1970, Ser. No. 69,071

Int. Cl. C10m *1/36*

U.S. Cl. 252—49.3 **5 Claims**

Metals, when rolled or otherwise compressed, are lubricated by an aqueous solution of an organic, polar, surface-acting composition having a negative heat of solution which is an ether amide which is soluble in the water at a lower temperature but insoluble in the water at the temperature to which the aqueous solution is heated during compression of the metal. This aqueous lubricant eliminates the fire hazard involved in the use of the present non-aqueous lubricants.

3,676,345

AQUEOUS LUBRICANT

Vincent P. Kuceski, Chicago Heights, Ill., assignor to The C. P. Hall Company of Illinois, Chicago, Ill.

Division of Ser. No. 791,259, Jan. 15, 1969, abandoned. This application Aug. 17, 1970, Ser. No. 64,454

Int. Cl. C10m *1/46*

U.S. Cl. 252—49.3 **5 Claims**

Metals, when rolled or otherwise compressed, are lubricated by an aqueous solution of an organic, polar, surface-acting composition having a negative heat of solution which is a phosphate or phosphite of an alcohol ether which is soluble in the water at a lower temperature but insoluble in the water at the temperature to which the aqueous solution is heated during compression of the metal. This aqueous lubricant eliminates the fire hazard involved in the use of the present non-aqueous lubricants.

3,676,346

LUBRICATING OIL COMPOSITIONS CONTAINING IMPROVED SLUDGE INHIBITING ADDITIVES

Shih-En Hu, Westfield, N.J., assignor to Esso Research and Engineering Company

Filed Feb. 19, 1970, Ser. No. 12,869

Int. Cl. C10m *1/38*

U.S. Cl. 252—47.5 **7 Claims**

Mineral lubricating oil compositions are prepared containing sludge dispersing amounts of conventional ashless dispersants and, optionally, their sulfurized derivatives, and also containing sludge inhibiting or oxidation inhibiting amounts of sulfurized oil-soluble pour point depressant type organic compounds. The ashless dispersants used are the polyalkylene polyamine condensation products of alkenyl succinic acids or anhydrides or of alkenyl substituted lower fatty acids wherein the alkenyl radical is of C_{40} to C_{250} length used either alone or along with their sulfurized derivatives. The pour point depressants are those heretofore conventionally used but in their sulfurized form, such as sulfurized wave alkylated naphthalene, sulfurized polymeric long chain alkyl esters of acrylic or methacrylic acids.

3,676,347

LUBRICANT AND HYDROCARBON FUEL COMPOSITIONS

Gerassimos Frangatos, Westmont, N.J., assignor to Mobil Oil Corporation

Filed June 19, 1970, Ser. No. 47,900

Int. Cl. C10m *1/28, 1/32*

U.S. Cl. 252—51.5 R **15 Claims**

The stability and cleanliness of lubricating oils under severe thermal and oxidative conditions are improved and the electrical conductivity of hydrocarbon fuels is increased by adding thereto a copolymer of cetyl vinyl ether and N-vinyl-pyrrolidone.

3,676,348

LUBRICANT COMPOSITIONS

Alvin J. Unick, Baton Rouge, La., and Kenneth W. Gault, Newnan, Ga., assignors to Ethyl Corporation, New York, N.Y.

Filed May 27, 1969, Ser. No. 828,384

Int. Cl. C10m *1/30, 1/22*

U.S. Cl. 252—54 **10 Claims**

Disclosed are improved lubricants particularly useful for forming metallic articles into desired sizes and shapes based upon operations enhanceable by lubricants. Typical specific working operations are cutting, sawing, grinding, shaping, planing, stamping, drawing, sanding, filing, milling, shearing, machining, and drilling. Preferred lubricant compositions are alkanol mixtures of predominantly normal alcohol and branched primary alcohol structures having predominantly from about 20 to about 34 carbon atoms per molecule, with or most preferably, without other alcohols containing secondary hydroxyl groups or unsaturation ranging from about 14 to about 50 carbon atoms per molecule. The preferred lubricant compositions are characterized by useful residual or film properties for protection of surfaces, particularly those freshly exposed through working when using the lubricants. Such properties are enhanced by the combination of polar and nonpolar aspects of the preferred molecules.

3,676,349

LUBRICATING COMPOSITIONS CONTAINING HALOGEN AND ALKOXY, ACYLOXY, OR HYDROXY GROUPS

Edgar D. Brown, Jr., Schenectady, N.Y., assignor to General Electric Company

Division of Ser. No. 666,965, Sept. 11, 1967, abandoned. This application Sept. 25, 1970, Ser. No. 75,666

Int. Cl. C10m *1/30*

U.S. Cl. 252—54.6 **7 Claims**

Compositions substituted with iodine, with either bromine or chlorine, and with either alkoxy, acyloxy, or hydroxy groups are prepared by adding a mixture of iodine and either bromine or chlorine or IBr or ICl to alpha-olefins in the presence of alcohols, carboxylic acids, or water. Lubricating compositions useful for lubricating high temperature alloys are prepared by adding such compounds to oils of lubricating viscosity.

3,676,350

GLOW DISCHARGE POLYMERIZATION COATING OF TONERS FOR ELECTROPHOTOGRAPHY

John F. Wright, and James R. Olson, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 3, 1970, Ser. No. 8,424

Int. Cl. G03g *9/00*

U.S. Cl. 252—62.1 **8 Claims**

The triboelectric properties and minimum caking temperature of particulate toner material can be altered by glow discharge treatment in the presence of an inert gas, air or a gaseous polymerizable material.

3,676,351

CERAMIC DIELECTRIC COMPRISING CALCIUM TITANOSILICATE

Hiromitsu Taki; Shigeru Hayakawa, both of Osaka, and Kaneomi Nagase, Kyoto, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Osaka, Japan

Continuation-in-part of Ser. No. 682,506, Nov. 13, 1967, abandoned. This application Aug. 6, 1970, Ser. No. 61,745

Claims priority, application Japan, March 27, 1967, 42/19747

Int. Cl. H01b *3/02*

U.S. Cl. 252—63.5 **3 Claims**

Dielectric ceramics having a high dielectric constant, an extremely low dissipation factor, and a controlled temperature coefficient of dielectric constant between +800 and −1,000ppm/° C consists, according to this invention, of three phases composed essentially of,

	Mol percent
calciumtitanosilicate	10 ~ 99.5
strontium titanate	0.5 ~ 30
titanium dioxide	remainder.

3,676,352

PROCESS FOR THE MANUFACTURE OF ENZYME AND PERBORATE-CONTAINING DETERGENT COMPOSITIONS

Dieter Grimm, Hermulheim near Cologne; Joachim Kandler, Lechenich; Karl Merkenich, Efferen near Cologne, and Wolf-Dieter Pirig, Euskirchen, all of Germany, assignors to Knapsack Aktiengesellschaft, Knapsack near Cologne, Germany

Filed Jan. 26, 1970, Ser. No. 5,945

Claims priority, application Germany, Feb. 11, 1969, P 19 06 705.1; Jan. 2, 1970, P 20 08 069.5

Int. Cl. C11d *7/56*

U.S. Cl. 252—99 **8 Claims**

Production of enzyme and perborate-containing detergent compositions by spraying liquid or pasty detergent components onto solid, powdery detergent components with the resultant formation of a readily flowable granulate. Solid detergent components comprising a powder mixture consisting substantially of one or more alkali metal salts as a builder substance and sodium perborate are fluidized by means of air and the fluidized powder mixture is granulated by spraying liquid detergent components comprising water or an aqueous solution or suspension of one or more binders and optionally a surface-active substance, onto it. The enzyme may be present in the powder mixture or in the water or aqueous solution or suspension to be sprayed thereonto.

3,676,353

NONFLOURIDE LAUNDRY SOUR CONTAINING FUMARIC ACID

John D. Cilko, Detroit, Mich., assignor to Basf Wyandotte Corporation, Wyandotte, Mich.

Filed Feb. 16, 1971, Ser. No. 115,885

Int. Cl. C11d *7/08, 7/26;* **D06l** *1/16*

U.S. Cl. 252—136 **5 Claims**

The laundering of fabrics is improved by the use of fumaric acid as a laundry sour. Very satisfactory results are obtained by the use of a laundry sour containing a predominant amount of fumaric acid and a minor amount of a glassy sodium metaphosphate.

3,676,354

CORROSION INHIBITOR FOR HYDROCHLORIC ACID PICKLING OF STEEL

Thomas M. Kaneko, Trenton; Irving R. Schmolka, and John W. Compton, both of Grosse Ile, all of Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Division of Ser. No. 697,631, Jan. 15, 1968, Pat. No. 3,607,781. This application Oct. 2, 1970, Ser. No. 77,710

Int. Cl. C23f *11/04, 11/12*

U.S. Cl. 252—147 **8 Claims**

A corrosion inhibitor composition for addition to aqueous solutions normally corrosive to metal surfaces is prepared by

dissolving a surface active agent and an amine in a mixture of mineral acids.

3,676,355
STABILIZATION OF 1,1,1,TRICHLOROETHANE WITH OXAZOLE

Jacques Vuillemenot, Uriage-les-Bains, France, assignor to Ugine Kuhlmann, Paris, France

Filed Dec. 19, 1968, Ser. No. 785,372
Claims priority, application France, Dec. 22, 1967, 67133564
Int. Cl. C07d *17/40*; C11d *7/50*; C23g *5/02*
U.S. Cl. 252—153 5 Claims

1,1,1, trichlorethane, an industrial solvent, is stabilized to prevent its reaction with metals by the addition thereto of from about 0.2 percent to 10 percent of a stabilizing agent comprising oxazole either alone or in combination with one or more other stabilizers having a boiling point in the range from 40° C. to 200° C. and having a molecular structure which comprises at least one of the molecular groups consisting of ethylenic bond, acetylenic bond, acetal, ketone, alcohol, nitrile, amine, ester function, ether or tioether bond-bridge, nitrated group and 1,2-epoxy group.

3,676,356
COMPOSITION FOR THE REMOVAL OF HYDROGEN SULFIDE FROM GASEOUS STREAMS

Melvin L. Roberts, Woodridge, Ill.; Carl E. Johnson, Brookhaven, Miss., and Richard C. Miller, Chicago, Ill., assignors to Nalco Chemical Company, Chicago, Ill.

Continuation-in-part of Ser. No. 9,430, Feb. 6, 1970, Pat. No. 3,622,273. This application March 22, 1971, Ser. No. 127,015
Int. Cl. C01b *17/04*; B01d *53/34*
U.S. Cl. 252—192 9 Claims

A method for removing hydrogen sulfide from gaseous streams by contacting the gaseous stream with an absorbing solution of from 0.005 to 20 percent of a ferric ion complex, from 25.0 to 99.945 percent water, from 0.05 to 10.0 percent of a buffering agent, and from 0 to 74.945 percent of a water-soluble, organic solvent selected from the group consisting of dimethyl formamide and dimethyl sulfoxide.

3,676,357
COMPOSITIONS USEFUL FOR ELIMINATING WATER SURFACE POLLUTION CAUSED BY ORGANIC SUBSTANCES

Brunello Ciuti, San Donato Milanese, and Sergio Del Ross, La Spezia, both of Italy, assignors to Snam Progetti S.p.A., Milan, Italy

Filed March 6, 1970, Ser. No. 17,334
Claims priority, application Italy, March 6, 1969, 13723 A/69
Int. Cl. B01d *15/00*; C09k *3/00*
U.S. Cl. 252—259.5 2 Claims

Composition useful in eliminating surface water pollution caused by crude petroleum oil or its fractions consisting of:

1. a carrier having a specific gravity sufficiently low that it floats (e.g. sawdust, silicates, diatomite, vegetable oil residues, vegetable flour, animal flour, silica gel, charcoal, polyurethane resin and polyvinyl chloride);
2. a surface active agent, viz., sodium stearate, sodium alkyl-sulfonate, potassium stearate, sodium dodecyl-benzene-sulfonate, potassium palmitate, nonylphenol ethylene oxide (1:7) or triethanolamine oleate; and
3. a wetting agent, viz., isoamyl alcohol, glycerol, ethylene glycol, butylic alcohol or amyl alcohol.

3,676,358
ATOMIZING, SPRAY-DRYING AND FLAME PROCESS FOR MANUFACTURING PHOSPHORS

Ernest A. Dale, Hamilton, and Martha J. B. Thomas, Winchester, both of Mass., assignors to Sylvania Electric Products Inc.

Filed Jan. 2, 1970, Ser. No. 422
Int. Cl. C09k *1/36*
U.S. Cl. 252—301.4 P 10 Claims

Phosphor raw ingredients are homogeneously dispersed or dissolved in a liquid which is then spray dried to form particles having a predetermined particle size range, each particle containing substantially identical proportions of the raw materials. The particles are then passed through a flame in order to react the particles to form phosphor matrices.

3,676,359
CHEMICAL SEA SURFACE MARKER

William D. Garrett, Washington, D.C., and William R. Barger, Jr., Landover, Md., assignors to The United States of America as represented by the Secretary of the Navy

Filed Oct. 14, 1970, Ser. No. 80,763
Int. Cl. C09k *1/02*, *3/00*
U.S. Cl. 252—301.3 R 2 Claims

Surface-active monomolecular films are used in conjunction with fluorescent dyes to provide sea surface markers having greater visibility at all angles for longer periods of time than prior art dye markers.

3,676,360
LIQUID SCINTILLATORS

Adil E. Shamoo, 32-32 32nd St., Astoria, N.Y.

Continuation-in-part of Ser. No. 874,979, Nov. 7, 1969, abandoned. This application June 30, 1971, Ser. No. 158,554
Int. Cl. G01t *1/20*; C09k *1/02*
U.S. Cl. 252—301.2 R 12 Claims

The counting efficiency of liquid scintillators containing toluene as the solvent for a primary solute or activator and for a secondary solute or spectrum shifter is improved, particularly in the presence of water, for example, when the isotope to be detected is an aqueous solution, by adding to the liquid scintillator a hygroscopic substance which is soluble in toluene in an amount sufficient to absorb and/or emulsify the water that is present. Such hygroscopic additive is preferably cellulosic and may be selected from the group consisting of cellulose, carboxymethyl cellulose, cellulose phosphate, diethylaminoethyl cellulose, benzyl diethylaminoethyl cellulose and epichlorohydrin triethanolamine cellulose. The additive for improving the counting efficiency may advantageously include, apart from the cellulose and/or cellulose derivative, a small amount of sodium or calcium carbonate or bicarbonate. The improvement in counting efficiency resulting from the mentioned addition is particularly large when the scintillators liquid includes alcohol as well as toluene.

3,676,361
TERNARY ALKALINE-EARTH PYROSILICATE LUMINESCENT MATERIALS ACTIVATED WITH DIVALENT EUROPIUM

Ranajit Kumar Datta, East Cleveland, Ohio, assignor to General Electric Company

Filed April 15, 1969, Ser. No. 816,273
Int. Cl. C09k *1/54*
U.S. Cl. 252—301.4 F 4 Claims

Several ternary pyrosilicate compositions of the system $MO\text{-}MgO\text{-}SiO_2$ (M = Sr, Ba, Ca) of the general formula M_2MgSi_2B7 were activated with divalent europium while maintaining the charge balance. Under cathode-ray, and long- and short-wavelength ultraviolet excitation, they show green and/or blue emission depending on the matrix involved. In the phosphors not containing barium, equivalent amounts of magnesium and silicon can be replaced by aluminum and the charge balance maintained. Some embodiments, especially those with high barium content, show good temperature-dependence characteristics, and this phosphor system is useful in fluorescent and high pressure mercury vapor lamps.

3,676,362
METHOD FOR MAKING METAL OXIDE SOLS IN POLAR ORGANIC SOLVENTS

Paul C. Yates, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

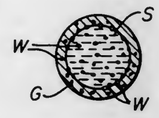
Filed Nov. 30, 1970, Ser. No. 93,846
Int. Cl. B01j *13/00*
U.S. Cl. 252—309 7 Claims

Sols of Sb_2O_2, SnO_2, TiO_2 and ZrO_2 in organic polar liquids are prepared by reacting a soluble salt of the metal with water and ammonia in a solution of the liquid. The reaction produces the metal oxide in colloidal dispersion and an insoluble ammonium salt, which precipitates and is filtered off. Sols in liquids which are solvents for organic polymers are used to incorporate metal oxides into the polymers to provide flame resistance and other desirable properties.

3,676,363
PRODUCTION OF WEIGHTED MICROCAPSULAR MATERIALS

Benjamin Mosier, 5139 S. Braeswood, Houston, Tex.

Continuation of Ser. No. 451,285, April 27, 1965, abandoned, which is a continuation-in-part of Ser. No. 316,763, Oct. 16, 1963, abandoned. This application Sept. 4, 1969, Ser. No. 855,100
Int. Cl. B44d *1/02*; B01j *13/02*; C23f *11/14*
U.S. Cl. 252—316 16 Claims



A process for production of weighted liquid center microcapsules by coacervation of a macro-colloid from an emulsion having minute droplets of a substantially water-immiscible organic solvent containing a chemical treating agent as the dispersed phase of an aqueous solution of macro-colloid as the continuous phase wherein a powdered metal compound is mixed into the aqueous phase prior to encapsulation resulting in weighted microcapsules having a specific gravity of 1.3 to 2.6. The powdered metal compound functions as an auxiliary wetting agent as well as a weighting agent.

3,676,364
REGENERATION OF NICKEL-ALUMINUM CATALYSTS BY POLYCARBOXYLIC ACID WASHING

John Stuart Coates, Houston, Tex., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Sept. 23, 1970, Ser. No. 74,547
Int. Cl. B01j *11/30*, *11/02*
U.S. Cl. 252—413 10 Claims

The method of regenerating a granular, foraminous nickel-aluminum catalyst which has been activated by removing about 2–50 percent of the aluminum from a nickel-aluminum alloy originally containing about 25–60 percent by weight of nickel and about 40–75 percent by weight of aluminum and which has lost activity through use as a fixed-bed catalyst in the preparation of butane-1,4-diol by the continuous hydrogenation of an aqueous mixture containing about 30–80 percent by weight of water and diol selected from the group consisting of 2-butyne-1,4-diol and 2-butene-1,4-diol at a temperature of about 60–150°C., a hydrogen pressure of about 100–400 atmospheres and a superficial gas velocity of at least about 0.5 foot per minute which comprises washing the catalyst with a wash medium consisting essentially of about 90–99 percent by weight of water and about 1–10 percent by weight of a polycarboxylic acid selected from the group consisting of citric and succinic acids. Such catalysts can be reactivated by first washing with the above polycarboxylic acid solution and then treating with a dilute aqueous alkali metal hydroxide solution, thereby removing additional aluminum from the alloy. Catalysts which have become fouled through use of an aqueous feed mixture containing dissolved calcium ions can be regenerated by washing the catalyst with the above polycarboxylic acid solution until the wash liquid no longer becomes saturated with calcium ions.

3,676,365
METHOD FOR MANUFACTURING ACTIVATED CARBON AND APPARATUS THEREFOR

Yoshihiro Shirai, Osaka; Hirohiko Ichikawa, Kyoto; Akira Yoshida, Nishinomiya; Naotake Uchida, Osaka; Masaru Tsuji, Takarazuka, and Zenji Matsumoto, Osaka, all of Japan, assignors to Takeda Chemical Industries, Ltd., Higashi-ku, Osaka, Japan

Continuation-in-part of Ser. No. 599,175, Dec. 5, 1966, abandoned. This application March 2, 1970, Ser. No. 15,743
Claims priority, application Japan, Dec. 6, 1965, 40/75158; Dec. 7, 1965, 40/75424
Int. Cl. C01b *31/08*
U.S. Cl. 252—422 6 Claims

In preparing activated carbon by carbonizing and then activating cellulosic material impregnated with activating agent, the process of the invention is characterized by continuously supplying said activating agent-impregnated material into a carbonizing zone containing previously carbonized cellulosic material at such a constant flow rate as to allow the impregnated material to reside in the carbonizing zone at least for 15 minutes and carbonizing the impregnated material in said carbonizing zone with the carbonized cellulosic material which is heated at 150° to 350° C. by counter currently supplied hot gases and which forms an agitated fluidized bed by being fluidized with the hot gas stream and being stirred by a mechanical means.

3,676,366
PROCESS FOR THE PRODUCTION OF HIGHLY POROUS BEAD-FORM SILICA CATALYST SUPPORTS

Ernst Podschus, Leverkusen; Ludwig Dorn, Koeln-Stammheim, and Gerhard Heinze, Schildgen, all of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Aug. 19, 1969, Ser. No. 851,477
Claims priority, application Germany, Sept. 24, 1968, P 17 92 601.1
Int. Cl. B01j *11/44*
U.S. Cl. 252—448 10 Claims

Catalyst supports in bead form having a porosity of more than 60 percent formed by suspending finely divided silicate and/or silica fillers, carbonates, metal oxides and hydroxides compatible with a silica sol, in a silica sol so that the total weight of the solids is at least 50 percent by weight based on the silica content of the silica sol, dispersing the resulting mixture into drops of the required size, gelling the drops in a water-immiscible medium, separating the resulting granulate from the medium, subjecting the granulate to a heat treatment at 100° to 800° C, and subsequent acid treatment to remove a major portion of the cations, and washing the acid treated granulates.

3,676,367
ADSORBENT FOR BEVERAGES
Karl J. Raible, Grafelfing, Germany, assignor to Aktiengesellschaft Fur Brauerei-Industrie, Basel, Switzerland
Filed Nov. 13, 1969, Ser. No. 876,609
Claims priority, application Switzerland, Nov. 22, 1968, 17,453/68
Int. Cl. B01j *11/36, 11/40*
U.S. Cl. 252—451 31 Claims

The adsorbent based on montmorin minerals is preferably intended for the treatment of fermentable or fermented liquids, particularly of beer or wine and their precursors, and contains added, highly dispersed free silica, which has been produced in situ as non-gelatinous silica and which is localized between the layers of the clay mineral.

3,676,368
RARE EARTH-HYDROGEN EXCHANGED ZEOLITES
Julius Scherzer, Baltimore, and Edwin W. Albers, Annapolis, both of Md., assignors to W. R. Grace & Co., New York, N.Y.
Filed Aug. 26, 1970, Ser. No. 67,284
Int. Cl. B01j *11/40*; C01b *33/28*
U.S. Cl. 252—455 Z 12 Claims

Alkali metal faujasite having a silica to alumina ratio in excess of about 3 is rate earth exchanged in an acid media at a pH of about 3.0 to 3.5, calcined, and washed to reduce the alkali metal oxide content thereof to a low level. The exchanged faujasite contains 6 to 14 percent by weight rare earth oxide and a concentration of hydrogen ions which imparts the desired catalytic activity. The present rare earth-hydrogen faujasite finds utility as a hydrocarbon conversion catalyst, and particularly as an ingredient in catalytic cracking catalyst compositions.

3,676,369
MANGANESE SILICATE-CONTAINING MINERALS IN THE FORM OF NODULES AND THEIR USE IN HYDROCARBON CONVERSION
Joseph N. Miale, Trenton, N.J., assignor to Mobil Oil Corporation
Continuation-in-part of Ser. No. 597,243, Nov. 28, 1966, Pat. No. 3,509,041. This application April 24, 1970, Ser. No. 31,766. The portion of the term of this patent subsequent to April 28, 1987, has been disclaimed.
Int. Cl. B01j *11/40, 11/06*
U.S. Cl. 252—454 4 Claims

A catalyst comprising a base-exchanged, calcined manganese silicate-containing mineral in the form of a manganese nodule, said mineral having hydrogen ions bonded thereto in an amount of at least 0.01 gram per 100 grams of said mineral; a method of preparing the same from naturally occurring manganese nodules and organic compound conversion with catalytically-active forms of said nodules.

3,676,370
NEODYMIUM OXIDE-BARIUM OXIDE CATALYST COMPOSITION
Ruth E. Stephens, Detroit, Mich., assignor to Ethyl Corporation, New York, N.Y.
Continuation-in-part of Ser. No. 692,687, Dec. 22, 1967, abandoned. This application Aug. 31, 1970, Ser. No. 68,574
Int. Cl. B01j *11/00, 11/06, 11/40*
U.S. Cl. 252—455 R 5 Claims

The oxides of nitrogen content of a gas stream can be reduced by contacting the gas stream with a catalyst consisting essentially of neodymium oxide and barium oxide on a suitable support at elevated temperatures. The catalysts are especially useful in reducing the nitric oxide content of the exhaust gas of internal combustion engines.

3,676,371
HIGH OUTPUT ELECTRODE WITH STABILIZED ELECTRIC ARC
Dieter Zollner, Erlangen; Konrad Koziol, Rothenbach/Pegnitz; Bernhard Reichelt, Nuraberg-Laufamholz, and Wolfgang Lippert, Schwabach, all of Germany, assignors to C. Conradty, Nuraberg, Germany
Filed Jan. 30, 1970, Ser. No. 7,235
Claims priority, application Germany, Jan. 30, 1969, P 19 04 408.7
Int. Cl. H01b *1/06*
U.S. Cl. 252—507 1 Claim

A high output electrode of carbon or graphite and method of making same, according to which the electrode has incorporated therein a titanium-boron combination with or without carbides, said titanium-boron combination preferably containing at least one of the compounds TiB and TiB_2.

3,676,372
HYDROGENATED OLEFIN SULFONATE-FATTY ACID AMIDE DETERGENT COMPOSITIONS
Samuel H. Sharman, Berkeley, Calif., assignor to Chevron Research Company, San Francisco, Calif.
Filed Oct. 24, 1968, Ser. No. 770,415
Int. Cl. C11d *3/066, 1/12*
U.S. Cl. 252—525 7 Claims

High performance detergent compositions comprise a mixture of hydrogenated olefin sulfonates and a selected amide or substituted amide.

3,676,373
DETERGENT COMPOSITIONS
Stanley C. Paviak, Shaler Township, Allegheny County, Pa., assignor to Gulf Research & Development Company, Pittsburgh, Pa.
Filed July 20, 1970, Ser. No. 56,734
Int. Cl. C11d *3/065, 1/12*
U.S. Cl. 252—531 7 Claims

Detergent compositions are disclosed which incorporate as a builder a water-soluble salt of a copolymer consisting of ethyl benzene and succinic acid groups in a 1:1 ratio and having a molecular weight of at least 3,000 and, optionally, a poly-phosphate.

3,676,374
ENZYME-CONTAINING LIQUID DETERGENT COMPOSITIONS
Wahib Nassif Zaki, and Daniel Guy Jean Biard, both of Bruxelles, Belgium, assignors to The Procter & Gamble Company, Cincinnati, Ohio
Filed Nov. 20, 1970, Ser. No. 91,596
Claims priority, application Luxembourg, Nov. 25, 1969, 59 883
Int. Cl. C11d *1/37, 1/83*
U.S. Cl. 252—551 6 Claims

Liquid detergent compositions comprising a mixture of from about 2 percent to about 35 percent of an alkane sulfonate, alpha-olefin sulfonate, or mixtures thereof having from about 10 to about 26 carbon atoms in the hydrocarbon chain; from about 2 percent to about 30 percent of an ethoxylated alcohol or alkyl phenol or sulfate thereof; and from about 0.001 percent to about 5.0 percent of enzyme. The detergent compositions have desirable enzyme activity upon storage and exhibit desirable levels of soil-removal performance.

3,676,375
ADAMANTYL EPOXIDE POLYMERS
Alfred E. Borchert, Cherry Hill, N.J., and Eugene C. Capaldi, Broomall, Pa., assignors to Atlantic Richfield Company, Philadelphia, Pa.
Division of Ser. No. 686,842, Nov. 30, 1967, Pat. No. 3,536,732. This application June 12, 1970, Ser. No. 57,856
Int. Cl. C08g *23/02*
U.S. Cl. 260—2 A 3 Claims

Novel compositions of matter comprising polymers of adamantyl epoxides and adamantyl epoxides useful as intermediates in the preparation of said polymers. The polymers are useful in making wax additives, gaskets and rubber-like compositions.

A process for the preparation of adamantyl epoxides comprising contacting an alkenyl adamantane with an oxidizing agent selected from the group consisting of organic peracids and their derivatives, inorganic peracids, halogenhydrins and their derivatives, hydrogen peroxide, and organic hydroperoxides.

3,676,376
LOW FLAME SPREAD POLYURETHANE FOAM CONTAINING BROMINE-CONTAINING POLYESTER RESIN
Glenn R. Svoboda, and Ronald W. Reineck, both of Grafton, Wis., assignors to Freeman Chemical Corporation, Port Washington, Wis.
Continuation-in-part of Ser. No. 747,829, July 26, 1968, abandoned. This application Jan. 4, 1971, Ser. No. 103,913
Int. Cl. C08g *22/44*
U.S. Cl. 260—2.5 AV 10 Claims

A low-flame spread rating polyurethane foam includes as one of its polyol ingredients saturated polyester composition of low acid value having 20 to 30 percent bromine by weight and an —OH value of 350–550 formed from

a. tetrabromophthalic anhydride or acid;
b. an aliphatic dicarboxylic acid;
c. a polyol;
d. an aliphatic diol.

The polyester preferably has a viscosity less than 500,000 centipoises at 25° C. In such low-flame spread forms, the polyester is combined with prepolymers of a polyether polyol and a polyisocyanate, preferably polymethylene polypehnylene polyisocyanate.

3,676,377
PROCESS FOR PREPARING A THERMOSETTING ACRYLIC ENAMEL MODIFIED WITH CELLULOSE ACETATE BUTYRATE
Terry P. Anderson, Swartz Creek, and Fred W. Parker, Flint, both of Mich., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed Dec. 3, 1970, Ser. No. 94,987
Int. Cl. C08g *37/32*
U.S. Cl. 260—15 8 Claims

The improved process for preparing a thermosetting acrylic enamel modified with cellulose acetate butyrate comprises the following steps:

1. forming pigment chips by mixing pigment particles, cellulose acetate butyrate, and an organic plasticizer on a roll mill having one hot roll and one cold roll;
2. forming a mill base by dissolving the pigment chips prepared in Step (1) in an organic solvent;
3. blending the mill base with an acrylic polymer having free hydroxyl groups and carboxyl groups and with a melamine/formaldehyde resin which has been at least partially reacted with an aliphatic monohydric alcohol having one to four carbon atoms.

3,676,378
CONTINUOUS PRODUCTION OF EXPANDABLE THERMOPLASTICS
Eduard Heil, Limburgerhof; Hans-Georg Trieschmann, Hambach; Herbert Willersinn, Ludwigshafen; Herbert Bolte, Frankenthal, and Klaus Bronstert, Carlsberg, all of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rhein, Land Rheinland-Pfalz, Germany
Claims priority, application Germany Mar. 29, 1969, P 19 16 220.0
Filed March 25, 1970, Ser. No. 22,517
Int. Cl. C08f *47/10, 33/02*
U.S. Cl. 260—2.5 E 4 Claims

Continuous production of styrene polymers which contain an expanding agent and which are in the form of granules by extrusion of a mixture of a melt of the polymer with the expanding agent and rapid cooling of the extruded mixture, wherein excess expanding agent is first mixed with the melt and then the excess of expanding agent is evaporated. In this way both the production of a homogeneous mixture and the cooling of the mixture prior to extrusion to temperatures just above the softening point of the mixture are facilitated.

3,676,379
POLYURETHANES
Donald Bob Parrish, and Ronnie Mac Pruitt, both of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.
Filed March 27, 1970, Ser. No. 23,508
Int. Cl. C08g *22/14, 22/44*
U.S. Cl. 260—2.5 AQ 13 Claims

Novel polyurethanes are prepared in the novel process which comprises reacting a polyisocyanate, such as toluene diisocyanate, with an oxaminated polyol. The oxaminated polyols described herein are polyols which have been reacted with a mixture of an N-substituted aziridine and a monoepoxide; such as polyoxypropylene glycol which has been reacted with a mixture of N-ethyl aziridine and ethylene oxide.

3,676,380
LOW FRIABILITY POLYISOCYANURATE FOAMS
Alexander McLaughlin, Meriden, and James S. Rose, Guilford, both of Conn., assignors to The Upjohn Company, Kalamazoo, Mich.
Filed May 19, 1969, Ser. No. 825,941
Int. Cl. C08g *22/48*
U.S. Cl. 260—2.5 AW 12 Claims

High temperature resistant, flame resistant polyisocyanurate polymers with superior characteristics of friability are disclosed. These polymers are obtained by first preparing an isocyanate-terminated prepolymer consisting of 1 percent to 10 percent by weight of an aliphatic diol and 99 to 90 percent by weight of a polymethylene polyphenyl isocyanate (consisting of 35 to 85 percent by weight of methylenebis(phenyl isocyanate). The prepolymer is polymerized in the presence of a tertiary amine and a monomeric homocyclic polyepoxide and/or a polyol. The novel foams, useful in thermal insulation and like applications where resistance to high temperatures and low flame spread requirements must be met, are particularly useful in applications where vibration is a factor, having a friability factor approximately one half that of prior isocyanurate linked cellular foams.

3,676,381
SEALANT FOR PNEUMATIC TIRES
Joseph J. Silverstein, Woodmere, N.Y., assignor to Engine Power Corp., College Point, N.Y.
Filed Feb. 18, 1969, Ser. No. 800,254
Int. Cl. C08l *41/06, 37/00*
U.S. Cl. 260—17.4 R 2 Claims

A self-sealing lining is provided in pneumatic tires which includes an aqueous blend of a blocking agent, a binding agent, an adhesive agent and a diluent.

3,676,382
ADHESIVE FOR REGENERATED CELLULOSE
Albin F. Turbak, and Henry J. Rose, both of Danville, Ill., assignors to Tee-Pak, Inc., Chicago, Ill.
Continuation-in-part of Ser. Nos. 779,230, Nov. 26, 1968, abandoned, and Ser. No. 731,519, May 23, 1968, Pat. No. 3,630,826, and Ser. No. 718,343, April 3, 1968. This application May 19, 1970, Ser. No. 38,911
Int. Cl. C08g 22/04
U.S. Cl. 260—18 TN 5 Claims
A novel adhesive for sealing or joining sheets or films of regenerated cellulose or fiber-reinforced regenerated cellulose comprises a fluid, organic solvent solution having a solute comprising a film-forming polymeric polyisocyanate, and a curing agent for the polyisocyanate including a plasticizer ingredient, such as a polyol or a reaction product of a polyol with ethylene oxide or the like, and a surfactant ingredient, such as a fatty acid partial ester of sorbitan. The coating composition may be used to seam sheets of regenerated cellulose or paper-reinforced regenerated cellulose into tubular form or in forming cemented end closures on tubes of regenerated cellulose or paper-reinforced regenerated cellulose. The adhesive composition is preferably applied in a very thin film, allowed to penetrate into the regenerated cellulose substrate, and cured by heating at an elevated temperature, e.g. 300°–320°f., for about 20–30 sec., more or less.

3,676,383
NON-AQUEOUS ELECTROPHORETIC COMPOSITIONS COMPRISING LIQUID NITROALKANES AS A SOLVENT
Luciano C. Scala, and Wilford O. Bartlett, both of Murrysville, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Continuation-in-part of Ser. No. 661,687, Aug. 18, 1967, abandoned. This application Dec. 19, 1969, Ser. No. 886,778
Int. Cl. C09d 3/64, 5/24; C23b 13/00
U.S. Cl. 260—22 R 5 Claims
A process for the electrophoretic coating or repair of flaws in insulation of electrical components which employs non-aqueous solutions comprising liquid nitroalkanes as a solvent, consisting essentially of a resin dissolved in the solvent together with surface active agents, and desirably containing small amounts of a finely divided inorganic filler, to provide improved coverage on sharp edges of members being coated. The electrophoretically applied coating is then heat treated.

3,676,384
COPOLYMERS OF HYDROXYALKYL METHACRYLATES AND AN ACRYLATE OF METHACRYLATE ESTER REACTED WITH A PARTIALLY EPOXIDIZED DRYING OIL
Alfred E. Rheineck; Paul L. Nielsen, both of Fargo, N. Dak., and Teng H. Khoe, Peoria, Ill., assignors to North Dakota State University Memorial Foundation, Fargo, N. Dak.
Filed May 6, 1970, Ser. No. 35,299
Int. Cl. C08f 27/00
U.S. Cl. 260—23 EP 13 Claims
Coating compositions based upon acrylic resin copolymers having pendent reactive groups and a partially epoxidized drying oil. A partially epoxidized oil, as derived from linseed oil or safflower oil, is reacted in about equal oxirane-hydroxyl molar amounts with a copolymer of a hydroxyl-lower alkyl methacrylate with an acrylic monomer or mixture of monomers, such as methyl methacrylate and ethyl acrylate and homologous esters. Two alternate procedures, method A and method B are described. The resulting compositions form air drying coating films which are hard, glossy, flexible, non-yellowing, and chemically resistant. Baked films may also be obtained and these are very hard, glossy, flexible and chemically resistant.

3,676,385
COATING COMPOSITIONS OF ACRYLIC-EPOXY ESTER GRAFT COPOLYMERS UTILIZING AZIRIDINYL ALKYL ACRYLATE OR METHACRYLATE IN THE COPOLYMER
Aloysius N. Walus, Flint, Mich., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed Dec. 22, 1970, Ser. No. 100,806
Int. Cl. C08f 45/34; C08g 51/34
U.S. Cl. 260—32.8 R 14 Claims
The novel coating composition consists essentially of a graft copolymer dissolved in an organic solvent wherein the backbone of the graft copolymer is of polymerized constituents of an alkyl acrylate, an alkyl methacrylate in which the alkyl groups have one to three carbon atoms or styrene and also can contain acrylic constituents having adhesion promoting groups; the copolymer has graft into the backbone through a coupling unit of an aziridinyl acrylate or an aziridinyl methacrylate a side chain of an epoxy ester. The composition forms a high quality coating and is useful as a primer or as sealer composition in the manufacture of automobiles and trucks.

3,676,386
GASKET-FORMING SOLVENT-BASED COMPOSITIONS CONTAINING STYRENE-BUTADIENE BLOCK COPOLYMERS
Mannie Brenner, Cambridge; Fred L. Chase, Arlington, and Arthur J. Leydon, Waltham, all of Mass., assignors to W. R. Grace & Co., Cambridge, Mass.
Filed Jan. 5, 1970, Ser. No. 801
Int. Cl. C08d 9/12
U.S. Cl. 260—27 7 Claims
Gasket-forming compositions based on styrene-butadiene block copolymers blended with a minor portion of random styrene-butadiene copolymer and polyisobutylene are prepared by conventional rubber compounding techniques in the presence of low molecular weight polyethyethylene. Fillers and solvents are used to complete the formula.

3,676,387
STABLE ELASTOMERIC POLYMER-OIL COMBINATIONS
James A. Lindlof, White Bear Lake, Minn., assignor to Minnesota Mining and Manfacturing Company, St. Paul, Minn.
Continuation-in-part of Ser. No. 574,943, Aug. 25, 1966, abandoned. This application Dec. 21, 1970, Ser. No. 100,520
Int. Cl. C08d 13/22; C08k 1/28; C08f 47/00
U.S. Cl. 260—28.5 B 10 Claims
A highly elastic synthetic polymer-oil combination meltable at high temperatures for casting from a liquid state, comprising 5 to 30 percent by weight of an unvulcanized elastomeric block copolymer composed of terminal glassy or resinous polymer blocks and a central elastomeric polymer block, and 70 to 95 percent by weight of a stable paraffin oil of low volatility and which has a flash point in excess of the melting temperature of the gel.

3,676,388
METHOD OF PREPARING ANTIFOULANT COATING COMPOSITIONS AND RESULTING PRODUCT
William R. Davie, Hopewell Township, Beaver County, Pa., assignor to Porter Paint Co.
Continuation-in-part of Ser. No. 574,943, Aug. 25, 1966, abandoned. This application Oct. 14, 1968, Ser. No. 767,483
Int. Cl. C08g 51/52; C08f 45/28
U.S. Cl. 260—28 14 Claims
An antifoulant coating composition and preparation method in which the final composition is composed of two Components "A" and "B" mixed immediately before the composition is applied, and usually an inert filler introduced at least in part via Component "A". The active ingredient of Component "A" is a base formed of coal-tar pitch or equivalent and epoxy resin. The active ingredients of Component "B" are a curing agent for the epoxy resin and a solid organotin toxicant. Component "B" may be either a slurry of needle-like crystals of toxicant, or the toxicant may be dissolved in a suitable solvent. In the latter case the toxicant precipitates as needle-like crystals when Components "A" and "B" are mixed. The invention produces a composition of a viscosity which makes it easy to apply.

3,676,389
FLAME PROOFING COMPOSITIONS
Robert C. Putnam, Mountain Lakes, N.J., and Jeffrey W. Young, Norristown, Pa., assignors to Polaris Chemical Corp., Manville, N.J.
Filed June 12, 1970, Ser. No. 45,887
Int. Cl. C08g 51/82
U.S. Cl. 260—29.4 UA 12 Claims
Aqueous flame-proofing compositions are disclosed which contain a foaming agent; a mixture of urea or thiourea and a polyhalo (Br, Cl) propanol ester of phosphoric, phosphoramidic or phosphorodiamidic acid, phosphoramide, its base-addition salts or mixtures thereof; a water-soluble amine-aldehyde resin, and an acid-generating catalyst.

3,676,390
COMPOSITIONS OF POLYMERS OF BICYCLA (2.2.1) HEPTENE-2 AND DERIVATIVES
Jean Vergne; Leon Solaux; Jean-Claude Robinet, and Philippe Lacroix, all of Verneuil-en-Halatte, France, assignors to Charbonnages De France, Paris, France
Continuation-in-part of Ser. No. 739,881, June 25, 1968, abandoned. This application Jan. 20, 1971, Ser. No. 107,953
Claims priority, application France, June 27, 1967, 112114; May 16, 1968, 152120
Int. Cl. C08f 45/40, 45/28
U.S. Cl. 260—31.8 HR 20 Claims
The invention relates to a vulcanized elastomer composition consisting essentially of a vulcanized mixture of (1) a macromolecular polymer compound selected from the group consisting of substantially amorphous polymers of bicyclo [2.2.1] heptene-2 and its substituted derivatives (2) at least one compound having a low volatility and a freezing point less than −30° C, this mixture of said polymer and said low volatility compound prior to vulcanization having a glass transition temperature lower than about −10° C, said vulcanized composition having a combination of good mechanical and physical properties.

3,676,391
COATING COMPOSITIONS FOR POLYOLEFIN SUBSTRATES
Frank De Ross, Zion, Ill., assignor to The Dexter Corporation, Windsor Locks, Conn.
Filed April 3, 1970, Ser. No. 25,546
Int. Cl. C08f 45/28, 45/30
U.S. Cl. 260—33.6 UA 7 Claims
Coating composition for priming untreated polyolefin substrates is provided comprising a resin of chlorinated polyolefin and ethylene/vinyl acetate copolymer in a stable solvent system. Also composition for protective and decorative coatings for direct application to untreated polyolefin substrate, comprising a resin of chlorinated polyolefin and acrylic copolymers.

3,676,392
RESIN COMPOSITIONS
Janis Robins, St. Paul, Minn., assignor to Ashland Oil Inc., Houston, Tex.
Continuation-in-part of Ser. No. 72,113, Sept. 14, 1970, and a continuation-in-part of Ser. No. 723,873, April 24, 1968, abandoned, and a continuation-in-part of Ser. No. 569,106, Aug. 1, 1966, Pat. No. 3,429,848, and a continuation-in-part of Ser. No. 536,180, March 14, 1966, Pat. No. 3,485,797. This application Jan. 26, 1971, Ser. No. 109,944
Int. Cl. C08g 5/06
U.S. Cl. 260—38 17 Claims
Novel resin compositions comprising mixture of organic solvent soluble phenolic resin containing benzylic ether linkage and/or methylol end group with polyisocyanate and catalytic concentrations of a base. The resin compositions are capable of curing at room temperature and are useful as coating and binder compositions.

3,676,393
POLYESTERS STABILIZED BY PHOSPHORUS COMPOUNDS
Aleksander Plirma, Stow, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Continuation of Ser. No. 650,219, June 30, 1967, abandoned, which is a continuation-in-part of Ser. No. 348,786, March 2, 1964, abandoned. This application Oct. 14, 1968, Ser. No. 768,966
Int. Cl. C08q 51/58
U.S. Cl. 260—45.7 P 3 Claims
The invention concerns stabilization of polyester resins by incorporating in the resins certain types of phosphorous compounds. The application particularly relates to the process of stabilizing and to the stabilized compositions.

3,676,394
ANTIOZONANT RUBBER COMPOSITIONS
Robert W. Murray, Warren, N.J., and Paul R. Story, Athens, Ga., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.
Continuation of Ser. No. 717,048, March 27, 1968, abandoned, which is a continuation of Ser. No. 650,209, June 30, 1967, abandoned, which is a continuation-in-part of Ser. No. 490,736, Sept. 27, 1965, abandoned. This application Nov. 10, 1969, Ser. No. 871,652
Int. Cl. C08c 27/68; C08f 45/60
U.S. Cl. 260—45.9 R 5 Claims
Vulcanized rubbery polymers may be effectively protected against ozone cracking by incorporation therein of certain non-primary aliphatic diamines, triamines and tetramines.

3,676,395
STABILIZERS FOR POLYSULPHIDES
Jean-Philippe Pied, Bully-Les-Mines, France, assignor to Societe Ethylene Plastique, Paris, France
Filed March 11, 1970, Ser. No. 18,707
Claims priority, application France, March 12, 1969, 6907016
Int. Cl. C08g 51/58, 51/60
U.S. Cl. 260—45.9 R 16 Claims
A method of stabilizing polylalkane sulphides) when heated, characterized in that the following substance is added to the polymer: from 0.5 to 10 percent by weight, with respect to the polymer, of a Mannich base or of a condensation product of a Mannich base and an aldehyde and, if required, a product chosen from among the acrylamides, the diisocyanates and the epoxides.

3,676,396

STABILIZATION OF BUTADIENE-STYRENE RUBBERS

Lynn B. Wakefield, Akron, Ohio, assignor to Firestone Tire & Rubber Company, Akron, Ohio

Filed July 15, 1970, Ser. No. 55,257
Int. Cl. C08f 45/60
U.S. Cl. 260—45.9 R 3 Claims

Polyalkylenepolyamines are used as stabilizers for solution-polymerized butadiene-styrene rubbers.

3,676,397

OXAZOLIDINONE-CONTAINING EPOXY RESINS AND PROCESS FOR THEIR PREPARATION

James A. Clarke, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed Oct. 12, 1970, Ser. No. 80,254
Int. Cl. C08g 30/04
U.S. Cl. 260—47 EP 18 Claims

Novel oxazolidinone-modified epoxy resins are prepared by reacting a polyglycidyl ether of a polyhydric compound such as the diglycidyl ether of bisphenol A with cyanuric acid or thiocyanuric acid at a temperature in the range of 130° to 180° C. The oxazolidinone-modified epoxy resins prepared in this manner have a different structure and exhibit greater Izod impact strengths as compared to the oxazolidinone-modified epoxy resins prepared from polyisocyanates and polyglycidyl ethers.

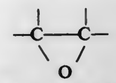
3,676,398

POLYMERIZABLE CROSSLINKABLE ESTERS OF POLYEPOXY COMPOUNDS

Gaetano F. D'Alelio, South Bend, Ind., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Nov. 25, 1968, Ser. No. 778,825
Int. Cl. C08g 30/10
U.S. Cl. 260—47 EP 21 Claims

Crosslinkable derivatives containing acrylic ester linkages are prepared by the reaction of a polyepoxide (compounds having a plurality of



groups) with an acrylic anhydride of a monocarboxylic acid, CH_2 C(Y)COOOCR'. The derivatives are crosslinked readily by ultraviolet light and ionizing radiations as well as by chemical initiators, and can be used for the preparation of homopolymers and copolymers. They find utility as casting, potting, laminating and molding compounds, as coatings and impregnants, electrical insulators and the like.

3,676,399

POLYBENZOXAZOLE AMIDES, ESTERS AND THIOESTERS, POLYBENZTHIAZOLE AMIDES, ESTERS AND, THIOESTERS AND PREPARATION THEREOF

Alan Sidney Lindsey, and Sydney Edwin Hunt, both of Teddington, England, assignors to National Research Development Corporation, London, England

Continuation-in-part of Ser. No. 800,251, Feb. 18, 1969, abandoned. This application Nov. 17, 1971, Ser. No. 199,800
Claims priority, application Great Britain, Feb. 22, 1968, 8,684/68
Int. Cl. C08g 33/02
U.S. Cl. 260—47 CP 31 Claims

The invention comprises an aromatic polyamide polymer having oxy-or thio- groups in ortho or peri relationship to the amide structural units which can be cyclised to form benzoxazole or benzthiazole structural units by heating, and —CONH—, CO.O— or —CO.S— structural units which are not able to cyclise at the temperature at which the benzoxazole or benzthiazole units are formed. Such a polymer is prepared by reacting [A] 9 polybasic carboxylic aromatic acid or a functional derivative thereof, with [B] a bis o-amino thiophenol or a functional derivative thereof, with [B] a bis o-amino phenol or a bis o-amino thiophenol or a functional derivative thereof and [c] a third component of formula:

X — Ar — Z Z

where X and Z are the same or different and represent a hydroxyl, amino or thiol group, and Ar represents an aromatic group such that X and Z are not in ortho or peri relationship.

3,676,400

THERMOPLASTIC BLENDS OF HIGH-AMINE-END POLY-AMIDES AND ACID-CONTAINING OLEFIN POLYMERS

Melvin I. Kohan, Wilmington, Del.; Wayne H. Martin, Vienna, W. Va., and Chester K. Rosenbaum, Westover Hills, Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 719,685, April 8, 1968, abandoned, which is a continuation-in-part of Ser. No. 517,935, Jan. 3, 1965, abandoned. This application Nov. 13, 1970, Ser. No. 89,457
Int. Cl. C08g 41/04
U.S. Cl. 260—857 L 7 Claims

The strength properties of blends of 50 to 90 percent by weight polyamide having a molecular weight of at least 10,000 with 10 to 50 percent by weight of an olefin copolymer containing from 0.1 to 10 mole percent of groups derived from an α,β-unsaturated carboxylic acid, are improved by having at least 60 percent of the polyamide end groups being amine end groups.

3,676,401

ENVIRONMENTALLY DISINTEGRATABLE PLASTIC COMPOSITIONS COMPRISING COPOLYMERS OF ETHYLENE AND CARBON MONOXIDE AND A DEGRADATION ACCELERATOR

James William Henry, Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 849,265, Aug. 4, 1969, abandoned, Continuation of Ser. No. 411,354, Nov. 16, 1964, abandoned. This application Oct. 30, 1970, Ser. No. 85,784
Int. Cl. C08f 3/40, 13/04
U.S. Cl. 260—63 CQ 14 Claims

Compositions comprising (1) a copolymer of ethylene and 0.1 percent to 18 percent by weight of carbon monoxide, said percentage range being the proportion of carbon monoxide in the copolymer, and (2) an ultraviolet light degradable amount of an organometallic compound or salt of a common metal, e.g., ferricine, cobalt acetyl acetonate, etc., whereby film, articles of manufacture and especially packaging means, upon exposure to ultraviolet rays emitted by the sun are capable of accelerated deterioration thereby causing such materials including packaging means to decompose forming dust or flakes which may become embedded in the soil or carried away by rain water under those circumstances where they are thrown away out of doors so as to be exposed to natural environmental conditions.

3,676,402

LOW-TEMPERATURE CURABLE BLOCKED ISOCYANATE COMPOSITIONS CONTAINING A STANNOXANE CATALYST

Yutaka Matsui, Ashiya; Noritoshi Mise, Ikeda; Jugo Goto, Osaka, and Makoto Yokoo, Toyonaka, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 880,462, Dec. 3, 1969, abandoned, Continuation of Ser. No. 403,902, Oct. 14, 1964, abandoned. This application Oct. 29, 1970, Ser. No. 85,254
Claims priority, application Japan, Oct. 29, 1963, 38/58108
Int. Cl. C08g 22/42, 22/18
U.S. Cl. 260—75 NC 25 Claims

Octaalkyl-stannoxanes are provided herein which permit regeneration of an isocyanate group in a blocked isocyanate compound at a lower temperature than previously possible. The resulting compounds with the regenerated isocyanante groups are useful, e.g., in the preparation of urethane resin in the conventional manner.

3,676,403

PROCESS FOR THE PRODUCTION OF INSULATING COATINGS ON ELECTRIC CONDUCTORS

Arnold Dobbelstein; Hans-Dieter Hille, both of Wuppertal-E., and Anneliese Geb. Kozlolek Momm, Nierenhof, all of Germany, assignors to Dr. Krut Herberts & Co. vorm Otto Louis Herberts, Christbusch, Wuppertal-Barmen, Germany

Filed Sept. 3, 1969, Ser. No. 855,032
Claims priority, application Germany, July 23, 1969, P 19 37 312.7
Int. Cl. C08g 41/00
U.S. Cl. 260—75 N 8 Claims

A process and solution for the production of insulated coatings on electric conductors, such coating solution containing a catalytic amount of a reaction product of dicyano diamide with hydrazine, the reaction product being prepared at temperatures between room temperature and about 280° C.

3,676,404

METHYL METHACRYLATE COPOLYMERS

Eric Nield, Watton-at-Stone, England, assignor to Imperial Chemical Industries Limited, London, England

Continuation-in-part of Ser. No. 360,073, April 15, 1964, Continuation-in-part of Ser. No. 781,673, April 16, 1968. This application June 9, 1970, Ser. No. 44,879. The portion of the term of this patent subsequent to Nov. 25, 1986, has been disclaimed.
Int. Cl. C08f 19/10
U.S. Cl. 260—78 UA 7 Claims

Copolymers prepared from methyl methacrylate, electron deficient monomers, for example N-aryl maleimides and other ethylenically, unsaturated monomers copolymerisable therewith.

3,676,405

THERMOSET RESINS WITH HYDROXY ACRYLATE, METHYL METHACRYLATE AND BLOCKED ISOCYANATE

Santokh S. Labana, Dearborn Heights, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed June 5, 1970, Ser. No. 43,894The portion of the term of this patent subsequent to May 2, 1989, has been disclaimed.
Int. Cl. C08q 22/06
U.S. Cl. 260—77.5 CR 20 Claims

Novel thermosetting resin powders which can be molded to form products characterized in tensile measurement, by high elongation-to-break, high tensile strength and modulus and a high glass transition temperature are prepared from a mixture of (a) a prepolymer formed by reacting (1) hydroxy ester of acrylic or methacrylic acid and a $C_2 - C_3$ diol with (2) methyl methacrylate and (b) a blocked di- or triisocyanate wherein the isocyanate groups are directly attached to an aromatic ring and deblock at temperatures in the range of about 120° to 160° C.

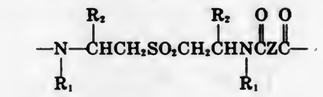
3,676,406

POLYAMIDE OBTAINED BY REACTION OF A β,β-BIS(ALKYLAMINO) DIETHYL SULFONE AND A DICARBOXYLIC ACID CHLORIDE

Albert C. Perrino, Cranston, and Michael G. Israel, East Providence, both of R.I., assignors to I.C. I/Organics/Inc., Stamford, Conn.

Division of Ser. No. 720,384, April 10, 1968, Pat. No. 3,576,879. This application June 1, 1970, Ser. No. 54,057
Int. Cl. C08g 20/20
U.S. Cl. 260—78 R 2 Claims

Polyamides obtained by reacting a dibasic acid chloride and a β,β'-bis(alkylamino) diethyl sulfone. The polyamides are characterized by the repeating unit or methyl.



wherein Z is phenylene or alkylene of from two to eight carbon atoms, R_1 is unsubstituted alkyl, hydroxyalkyl, alkoxyalkyl or alkyl substituted aminoalkyl, the total number of carbon atoms in R_1 ranging between 1 and 18; and R_2 is hydrogen or-methyl. These polymers are film-forming and possess adhesive or rubber-like properties.

3,676,407

TETRAPOLYMERS AND PROCESS FOR PRODUCTION THEREOF

Henry L. Hsieh, and Ollie G. Buck, both of Bartlesville, Okla., assignors to Phillips Petroleum Company

Filed Sept. 23, 1970, Ser. No. 74,844
Int. Cl. C08g 22/00
U.S. Cl. 260—77.5 R 9 Claims

Tetrapolymers, which can be used as adhesives and as terminating agents for lithium initiated polymerizations, are prepared by polymerizing a mixture of an oxirane, a cyclic ether, an organic acid anhydride, and a monoisocyanate in the presence of an organometal compound.

3,676,408

METHYL VINYL ETHER COPOLYMERS

Herman S. Schultz, Easton; William Katzenstein, Broomal, and Earl P. Williams, Pen Argl, all of Pa., assignors to GAF Corporation, New York, N.Y.

Division of Ser. No. 691,935, Dec. 20, 1967, Pat. No. 3,541,015, which is a continuation-in-part of Ser. No. 515,201, Dec. 20, 1965, abandoned. This application Oct. 23, 1969, Ser. No. 870,362
Int. Cl. C08f 15/10, 1/72
U.S. Cl. 260—80.3 E 6 Claims

Methyl vinyl ether is copolymerized with a comonomeric compound of the formula:

$CH_2 - CHOR$

wherein R is phenyl or alkyl of from three to 30 carbon atoms, to give a copolymer containing from 20 to 85 weight percent of said comonomeric compound and having an inherent viscosity (0.1 percent solution in toluene) at 25° C. in the range of 0.6 to 2.0. The resulting copolymer is soluble in hydrocarbon lubricating oils and exhibits a unique combination of properties, such as viscosity index improver, thickener, good shear stability, good 0° F. properties, and as ashless dispersant for gums, resins and other oxidation products, present or formed, in the lubricating oil during the operation of combustion engines of various types.

3,676,409

CO-AND TERPOLYMERS OF ALPHA OLEFINS WITH CYCLO PROPANE DERIVATIVES

Edward William Duck; Brian John Ridgewell, both of Southampton, and John Michael Locke, Lyndhurst, all of England, assignors to The International Synthetic Rubber Company Limited, Southampton, England

Filed Dec. 13, 1968, Ser. No. 783,726
Claims priority, application Great Britain, Dec. 21, 1967, 58,132/67; Oct. 16, 1968, 49,100/68
Int. Cl. C08f 15/40
U.S. Cl. 260—80.78 7 Claims

Novel co- and ter-polymers of l-olefins are obtained by

polymerizing at least one l-olefin with a novel adduct containing at least two ethylenically unsaturated linkages of

a. a carbene of formula: CXY where X and Y are each hydrogen, halogen or an organic radical and either

b. a polyene of the general formula

$$H_2C=CH-R$$

where R is a monovalent hydrocarbon group containing at least two ethylenically unsaturated linkages and having at least five carbon atoms not more than two unsaturated linkages of the polyene being conjugated.

or

c. a polyene of the general formula

where R' is a divalent hydrocarbon group containing at least two ethylenically unsaturated linkages and having at least five carbon atoms, not more than two unsaturated linkages of the polyene being conjugated.

3,676,410

ETHYLHEXYL ACRYLATE-ACRYLONITRILE-DIVINYLBENZENE TERPOLYMERS

Richard G. Bauer, and George P. Pattitsas, both of Kent, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Aug. 24, 1970, Ser. No. 66,650

Int. Cl. C08f *15/40*

U.S. Cl. 260—80.81 **3 Claims**

A chlorine-free acrylic ester/vinyl nitrile unvulcanizable copolymer and a cross-linked acrylic ester/vinyl nitrile chlorine-free copolymer exhibit a combination of clarity, good temperature flexibility and high temperature strength. The copolymer has good sprayability when diluted with 70 to 90 weight percent of certain non-aqueous solvents. The cross-linked clear interpolymer is a thermoplastic which can be fabricated into a variety of useful products.

3,676,411

TERNARY CATALYST SYSTEMS FOR THE POLYMERIZATION OF CONJUGATED DIOLEFINS

Morford C. Throckmorton, and William M. Saltman, both of Akron, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Dec. 17, 1970, Ser. No. 99,257

Int. Cl. C08d *1/14, 3/06, 3/04*

U.S. Cl. 260—82.1 **10 Claims**

There is disclosed a process for the polymerization of conjugated diolefins and mixtures thereof which comprises contacting at least one conjugated diolefin with a catalyst system comprising (A) at least one compound selected from the group consisting of metal salts of carboxylic acids, metal salts of inorganic acids and organic complex compounds of metals wherein the metal is selected from a group consisting of uranium and thorium, (B) at least one trialkylaluminum or dialkylaluminum hydride, and (C) at least one halide ion containing compound selected from a group consisting of hydrogen halides, organometallic halides wherein the metal is selected from Groups II, III-A and IV-A of the Periodic Table and halides of metals of Groups III, IV, V, VI-B and VIII of the Periodic Table.

3,676,412

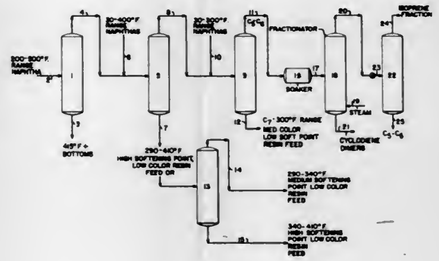
METHOD FOR PREPARING RESIN FEED

John C. Winkler, and Corley P. Senyard, both of Baton Rouge, La., assignors to Esso Research and Engineering Company, Linden, N.J.

Continuation of Ser. No. 800,803, Jan. 28, 1969, abandoned, which is a continuation-in-part of Ser. No. 462,886, June 10, 1965, abandoned. This application Aug. 12, 1970, Ser. No. 63,311

Int. Cl. C08f *1/72*

U.S. Cl. 260—82 **4 Claims**



A steam-cracked stream boiling in the 200°–500° F. range is fractionated into two fractions, one boiling above and the other below 410° F. The heavier fraction is discarded and the lighter fraction is again fractionated to separate it into a fraction boiling 290°–410° F. and a fraction boiling below 290° F. Low boiling naphthas boiling 30°–300° or 400° F. are preferably added to the lighter fractions from each fractionation step. A C_5–C_6 fraction is obtained by fractionating the overhead from the second fractionator and is heat soaked to remove the cyclodiene monomers prior to Friedel-Crafts polymerization.

3,676,413

PROCESS FOR THE POLYMERIZATION AND COPOLYMERIZATION OF VINYL MONOMERS AND THE RESIN COMPOSITIONS OBTAINED THEREBY

Michel Boel, Rosignano-Solvay, Italy, and Roger Dechenne, Strombeek, Belgium, assignors to Solvay & Cie., Brussels, Belgium

Filed June 22, 1970, Ser. No. 48,184

Claims priority, application France, June 24, 1969, 6921207; Dec. 22, 1969, 6944530

Int. Cl. C08f *1/04, 3/30*

U.S. Cl. 260—87.5 **6 Claims**

Vinyl monomers are polymerized and copolymerized in mass or in the gaseous phase in the presence of a water-soluble polymerization catalyst which is mixed with an inert support material and water in a small amount, such that the resin product varies in consistency from a powder to a moist cake. High yields of polymer is a desirable form are obtained by this process. Further, the support material is completely embedded in the resultant polymer, so that if the catalyst support is a reinforcing agent, in compounds which are reinforced may be obtained by this process.

3,676,414

PROCESS FOR POLYMERIZING α-OLEFINS

Bernd Diedrich; Karl Diether Keil, and Kurt Rust, all of Frankfurt/Main, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt/Main, Germany

Filed June 25, 1969, Ser. No. 836,571

Claims priority, application Germany, June 27, 1968, P 17 70 718.5; June 27, 1968, P 17 70 727.6

Int. Cl. C08f *1/56, 3/06*

U.S. Cl. 260—88.2 **8 Claims**

The invention provides a process for homopolymerizing or copolymerizing ethylene in the presence of mixed catalysts comprising as component A the reaction products of specific tetravalent titanium compounds with chlorine-containing magnesium compounds containing at least 1.5 moles of OH groups per gram-atom of magnesium and as component B an organo-aluminum compound. Under a pressure below 20 atmospheres the yields are so high per unit of catalyst that the residues thereof need not be removed from the polymer. It is possible to produce polymers having a very narrow distribution of molecular weight and very good color and corrosion values.

3,676,415

PROCESS FOR POLYMERIZING α-OLEFINS

Bernd Diedrich; Karl Diether Keil, and Kurt Rust, all of Frankfurt/Main, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft Vormals Meister Lucius & Bruning, Frankfurt/Main, Germany

Filed June 25, 1969, Ser. No. 836,574

Claims priority, application Germany, June 27, 1968, P 17 70 719.6; June 27, 1968, P 17 70 730.1; June 27, 1968, P 17 70 725.4; June 27, 1968, P 17 70 716.3

Int. Cl. C08f *1/56, 3/06*

U.S. Cl. 260—88.2 **8 Claims**

The invention provides a process for homopolymerizing or copolymerizing ethylene in the presence of mixed catalysts comprising as component A the reaction products of specific tetravalent titanium compounds with halogen-free magnesium compounds containing 0.1 to 2 moles of OH groups per gram-atom of magnesium and as component B an organo-aluminum compound. Under a pressure below 20 atmospheres the yields are so high per unit of catalyst that the residues thereof need not be removed from the polymer. It is possible to produce polymers having a very narrow distribution of molecular weight and very good color and corrosion values.

3,676,416

ISOPRENE POLYMERIZATION PROCESS AND CATALYST SYSTEM THEREFOR

Tsutomu Makimoto, Kurashiki, Japan, assignor to Kurary Co., Ltd., Kurashiki, Japan

Continuation-in-part of Ser. No. 70,504, Sept. 8, 1970, abandoned. This application Nov. 18, 1970, Ser. No. 90,799

Claims priority, application Japan, Sept. 27, 1969, 44/77269

Int. Cl. C08d *1/14, 3/10*

U.S. Cl. 260—94.3 **17 Claims**

Polyisoprene exhibiting a high molecular weight, a high cis-1,4 content and containing essentially no gel is obtained by polymerizing isoprene in the presence of a catalyst system prepared from a trialkyl aluminum, a titanium tetrahalide and an aromatic polyether.

3,676,417

POLYMERIZATION USING A SUPPORTED CHROMIA ACTIVATED WITH A TIN ON GALLIUM COMPOUND

Bertalan Horvath, Berlin, Germany, assignor to Phillips Petroleum Company

Division of Ser. No. 727,706, May 8, 1968, Pat. No. 3,622,522. This application Feb. 25, 1971, Ser. No. 118,947

Int. Cl. C08f *1/66, 3/06*

U.S. Cl. 260—94.9 D **5 Claims**

A catalyst is formed by combining a support material with (1) a chromium-containing compound such as chromium trioxide and (2) at least one of a gallium-containing compound such as gallium isopropoxide, and a tin-containing compound such as tin isopropoxide, and then activating the catalyst by heating at a temperature of at least 1,700° F. Polymers such as polyethylene formed using the catalyst of this invention have a narrow molecular weight distribution.

3,676,418

CATALYTIC PRODUCTION OF OLEFIN POLYMERS

Kijuro Tashiro, and Masuzo Yokoyama, both of Inashiki-gun, Ibaraki-ken, Japan, assignors to Mitsubishi Petrochemical Co., Ltd., Tokyo-to, Japan

Filed July 16, 1969, Ser. No. 842,386

Claims priority, application Japan, July 20, 1968, 43/50907

Int. Cl. C08f *1/56, 3/10*

U.S. Cl. 260—88.2 **6 Claims**

A Ziegler-type polymerization catalyst comprising a first catalyst component containing a transition metal compound and a second catalyst component containing an organometallic compound, which first catalyst component contains a silicon compound. Preparation of the first catalyst component and production of olefin polymers are also disclosed.

3,676,419

PROCESS FOR PRODUCING FINE POLYETHYLENE POWDER

Masaaki Takehisa; Shiro Senrui, and Hayato Nakajima, all of Gunma-ken, Japan, assignors to Japan Atomic Energy Research Institute, Tokyo, Japan

Filed Feb. 28, 1969, Ser. No. 803,990

Claims priority, application Japan, March 4, 1968, 43/13630

Int. Cl. C08f *47/02*

U.S. Cl. 260—94.9 F **3 Claims**

It has been found that a fine powder of polyethylene, the average particle size of which is not more than 100 microns in diameter, is obtained by polymerizing ethylene at a temperature lower than the melting point of the produced polyethylene, by means of irradiation of an ionizing radiation or free radical initiator, dispersing the thus produced powder polyethylene in a water-miscible liquid dispersing medium which wets the polyethylene but does not substantially dissolve it, and the surface tension of which is not more than 32.5 dyne/cm, to dissociate the agglomerated polyethylene powder particles washing the dissociated polyethylene powder particles with water, and drying the particles.

3,676,420

ROOM TEMPERATURE VULCANIZABLE SILICONE RUBBER COMPOSITION

Michael Fulton; John Darrell Jones, and Christopher A. Pearce, all c/o Midland Silicones Limited, Reading, England

Filed April 15, 1970, Ser. No. 28,937

Claims priority, application Wales, April 25, 1969, 21329/69

Int. Cl. C08f *21/01*

U.S. Cl. 260—185 **5 Claims**

A two package room-temperature vulcanizable silicone rubber stock comprising (1) an α,ω-dihydroxydior-

ganopolysiloxane polymer and (2) a mixture of (a) a cross-linking agent selected from trialkoxysilanes, tetra-alkoxysilanes and alkylpolysilicates, (b) a condensation catalyst and (c) an alkoxy endblocked diorganopolysiloxane.

3,676,421
ORTHO-CHLORINATION OF AZOBENZENE
Darryl R. Fahey, Bartlesville, Okla., assignor to Phillips Petroleum Company
Filed Nov. 26, 1969, Ser. No. 880,376
Int. Cl. C07c *107/06*
U.S. Cl. 260—205 10 Claims

A method of chlorinating azobenzene in the ortho positions by employing a palladium chloride catalyst in the presence of water and an organic compound in which azobenzene is soluble.

3,676,422
5'ADAMANTOYL-2'-DEOXY-5-METHYLAMINOURIDINE
Tsung-Ying Shen, Westfield, and Kay H. Boswell, Clark, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.
Filed Sept. 17, 1970, Ser. No. 73,206
Int. Cl. C07d *51/52*
U.S. Cl. 260—211.5 R 1 Claim

A novel nucleoside, 5'-adamantoyl-2'-deoxy-5-methylaminouridine is prepared by adamantoylation of 5-methylamino-2'-deoxyuridine (MADU), using β,β,β-trichloroethoxycarbonyl as a protective group on the 5-methylamino substituent. The compound is useful as an antiviral agent, specifically against herpes Keratitis in tissue culture.

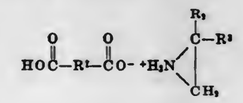
3,676,423
AMPHOTERIC CELLULOSE AND PROCESS FOR THE PREPARATION THEREOF
Lee H. Elizer, Keokuk, Iowa, assignor to The Hubinger Company, Keokuk, Iowa
Filed Sept. 29, 1969, Ser. No. 862,051
Int. Cl. C08b *11/00*
U.S. Cl. 260—212 17 Claims

Amphoteric cellulose which contains both cationic and anionic groups linked to the cellulose molecule, and which has an isoelectric point, is prepared. The products can be made to have an affinity for anionic or cationic substances, e.g., acid or basic dyes or resins, by lowering or raising their pH.

3,676,424
AZIRIDINE SALTS OF DIBASIC ACIDS
Ray C. Christens, Wichita, and Earnest L. Johnston, Clearwater, both of Kans., assignors to Vulcan Materials Company, Birmingham, Ala.
Filed Aug. 31, 1970, Ser. No. 68,493
Int. Cl. C07d *45/00*
U.S. Cl. 260—239 E 11 Claims

0000

An aziridine salt of the formula:



wherein.

R^1 is alkylene, arylene, or aralkylene, wherein one or all of the hydrogen atoms thereof can be substituted with F, Cl, Br, lower alkyl and/or lower alkoxy; and

R^2 and R^3 are hydrogen, alkyl, or aryl.

Process for producing polyesteramides by reacting the above salt with a polycarboxylic acid and a polyhydric alcohol are described.

3,676,425
PROCESS FOR THE SEPARATION OF HMX FROM MIXTURES COMPRISING RDX AND HMX
Ralph E. Dawson, and Donald M. Mahaffey, both of Kingsport, Tenn., assignors to The United States of America as represented by the Secretary of the Army
Filed Oct. 6, 1970, Ser. No. 78,607
Int. Cl. C07d *55/16, 55/60*
U.S. Cl. 260—239 HM 12 Claims

A process for the separation of HMX (cyclotetramethylenetetranitramine) from mixtures of RDX (cyclotrimethylenetrinitramine) and HMX whereby said mixtures are dissolved in hot, water-saturated cyclopentanone and the RDX and HMX are thereafter selectively precipitated.

3,676,426
2-(1-HYDROXYALKYLIDENE)-3-OXO STEROIDS
Raymond O. Clinton, New York, N.Y., assignor to Sterling Drug Inc., New York, N.Y.
Continuation-in-part of Ser. No. 793,292, Feb. 16, 1959, which is a continuation-in-part of Ser. No. 723,148, March 24, 1958, abandoned. This application Nov. 22, 1968, Ser. No. 778,345
Int. Cl. C07c *173/00, 173/10*
U.S. Cl. 260—239.55 R 18 Claims

Steroido[3.2-c]pyrazoles, having endocrinological, including anabolic, activities, are prepared by interacting 2-(1-hydroxyalkylidene)-3-oxo steroids with hydrazine or a substituted hydrazine. The intermediate 2-(1-hydroxyalkylidene)-3-oxo steroids are in turn prepared by interacting a 3-oxo steroid with a lower-alkyl lower-alkanoate in the presence of a strong base.

3,676,427
PROCESS FOR THE MANUFACTURE OF THE DISODIUM SALT OF ALPHA-CARBOXYBENZYLPENICILLIN
Daniel P. O'Shea, Groton, and Susumu Nakanishi, East Lyme, both of Conn., assignors to Pfizer Inc., New York, N.Y.
Filed Jan. 26, 1971, Ser. No. 109,934
Int. Cl. C07d *99/16, 99/18*
U.S. Cl. 260—239.1 5 Claims

An improved process for the manufacture of the crystalline disodium salt of α-carboxybenzylpenicillin from solutions of disodium α-carboxybenzylpenicillin.

3,676,428
DIBENZODIAZOCYCLOTETRADECADIENE COMPOUNDS
Irving M. Goldman, Niantic, and Jerry K. Larson, New London, both of Conn., assignors to Pfizer Inc., New York, N.Y.
Filed June 2, 1969, Ser. No. 829,714
Int. Cl. C07d *53/00*
U.S. Cl. 260—239 DD 4 Claims

3,4,10,11-Dibenzo-1,8-diazacyclotetradeca-3,1-dienes and pharmaceutically acceptable acid addition salts useful as hypoglycemic agents, obtained by cyclization of the N-formyl derivatives of phenylpropylamine or substituted phenylpropylamines to form dihydrobenzazepin, which is dimerized to the corresponding dibenzodiazacyclotetradecatetraene, which is then reduced to the corresponding diazacyclotetradecadiene.

3,676,429
IMINO COMPOUNDS OF PENICILLINS AND SILYL ESTERS THEREOF
Helmut Wilhelm Otto Weisenburger, Rijswijk, Netherlands, assignor to Koninklijke Nederlandsche Gist-en Spiritusfabriek NV, Delft, Netherlands
Continuation-in-part of Ser. No. 681,002, Nov. 6, 1967, Pat. No. 3,499,909, which is a continuation-in-part of Ser. No. 622,907, March 14, 1967, abandoned. This application July 16, 1969, Ser. No. 842,344
Claims priority, application Netherlands, May 18, 1966, 6606872
Int. Cl. C07d *99/16*
U.S. Cl. 260—239.1 10 Claims

Novel imino chlorides or bromides of silyl esters of penicillin compounds which are useful intermediates for the preparation of 6-amino-penicillanic acid and its derivatives.

3,676,430
PRODUCTION OF CAPROLACTAM
Clifford William Capp, Ewell; Brian Walton Harris, Horley, and Edwin George Edward Hawkins, Lower Kingswood, all of England, assignors to BP Chemicals (U.K.) Limited, Moor Lane, London, England
Filed May 8, 1968, Ser. No. 727,728
Claims priority, application Great Britain, June 2, 1967, 25,685/67
Int. Cl. C07d *41/06*
U.S. Cl. 260—239.3 A 9 Claims

Caprolactam is made by reacting 1,1'-peroxydicyclohexylamine with alkali metal methoxide dissolved in methanol at a concentration of at least 4 gram moles/liter.

3,676,431
PRODUCTION OF CAPROLACTAM
Clifford William Capp, Ewell, Surrey, and Keith Warwick Denbigh, Epsom, Surrey, both of England, assignors to BP Chemicals (U.K.) Limited, London, England
Filed May 21, 1968, Ser. No. 730,941
Claims priority, application Great Britain, June 2, 1967, 25,686/67
Int. Cl. C07d *41/06*
U.S. Cl. 260—239.3 A 7 Claims

In the production of caprolactam by reaction of 1,1'-peroxydicyclohexylamine with alkali metal alkoxides, the reaction is carried out in a reaction medium which is a mixture of methanol and dimethylsulphoxide.

3,676,432
11,12-DIHYDRODIBENZ[B,F]AZOCIN-6(5H)-ONES
Grover Cleveland Helsley, Richmond, Va., assignor to A. H. Robins Company, Incorporated, Richmond, Va.
Filed Aug. 31, 1970, Ser. No. 68,548
Int. Cl. C07d *41/08*
U.S. Cl. 260—239.3 T 4 Claims

5-(1-Hydrocarbon-3-pyrrolidinyl)-11,12-(dihydro- and dehydro)dibenz[b,fe[azocin-6(5H)-ones exhibiting antidepressant activity are disclosed.

3,676,433
IMPROVED PROCESS FOR THE 5α,6α-EPOXIDATION OF Δ_5-DOUBLE BONDS
Jekishan R. Parikh, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.
Filed Sept. 15, 1970, Ser. No. 72,490
Int. Cl. C07c *169/20, 169/22*
U.S. Cl. 260—239.55 R 11 Claims

An improved process for the stereoselective 5α,6α-epoxidation of isolated 5,6-double bonds in steroid molecules. The process of this invention comprises reacting a steroid containing an isolated 5,6-double bond with peroxytrifluoroacetic acid or peroxytrichloroacetic acid in an organic solvent of low polarity which promotes intramolecular hydrogen bonding in the peracid molecule, and in the presence of a basic buffering agent, to obtain the corresponding 5α,6α-epoxide.

An important characteristic of many pharmacologically active steroids is the presence of a methyl or halogen substituent at the 6α-position. The process of this invention provides an improved method for obtaining important 5α,6α-expoxide intermediates leading to these useful compounds.

3,676,434
CEPHALOSPORIN SALTS
Eddie H. Massey, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.
Filed July 29, 1970, Ser. No. 59,352
Int. Cl. C07d *99/24*
U.S. Cl. 260—243 C 4 Claims

New and improved salts of cephalexin with anthraquinone-1,5-disulfonic acid, anthraquinone-2-sulfonic acid and 1-naphthol-5-sulfonic acid having solubilities in water less than 10 milligrams per milliliter.

3,676,435
1-(HYDROXY-1-PHENYL-4-AMINOBUTENYL)ADAMANTANE DERIVATIVES
Carl Kaiser, Haddon Heights, N.J., and Charles L. Zirkle, Berwyn, Pa., assignors to Smith Kline & French Laboratories, Philadelphia, Pa.
Division of Ser. No. 715,507, March 25, 1968, Pat. No. 3,553,225. This application Aug. 12, 1970, Ser. No. 63,266
Int. Cl. C07d *29/16, 29/12*
U.S. Cl. 260—240 TC 3 Claims

1-(1-Hydroxy-1-phenyl-4-aminobutyl)-and 1-(1-phenyl-4-aminobutenyl)-adamantane derivatives in which the phenyl ring may be chloro, trifluoromethyl, methyl, methoxy or methylthio substituted and the amino group may be dilower-alkylamino, N-piperidinyl, N-pyrrolidinyl, N'-lower alkyl-N-piperazinyl or N-morpholinyl are useful as tranquilizers. The compounds are generally prepared by reaction of an appropriate 1-adamantyl phenyl ketone with an aminopropyl magnesium halide to give the hydroxybutanes followed by acid dehydration to furnish the butene derivatives.

3,676,436
NOVEL AMINOPHENYL ALKOXY COUMARINS
Durvasula V. Rao, Hamden; Adnan A. R. Sayigh, North Haven, and Henri Ulrich, Northfield, all of Conn., assignors to The Upjohn Company, Kalamazoo, Mich.
Filed March 16, 1970, Ser. No. 20,063
Int. Cl. C07d *7/26*
U.S. Cl. 260—343.2 R 2 Claims

Alkoxy - substituted 3-(aminophenyl)-coumarins are prepared by hydrogenation of the corresponding nitrophenyl-coumarin derivative in the presence of Raney nickel or a noble metal catalyst. The novel amino compounds are useful, by virtue of fluorescence in ultraviolet light, as optical brighteners, as ultraviolet light filters, in the preparation of polyureas and photoresist polymers. Also, the novel amino compounds can be phosgenated to yield the corresponding isocyanates.

3,676,437
RECOVERY OF PURE CEPHALEXIN
Phillip Thomas Siddons, Plaxer, England, assignor to Glaxo Laboratories Limited, Greenford, Middlesex, England
Filed Aug. 10, 1970, Ser. No. 62,706
Claims priority, application Great Britain, Sept. 26, 1969, 47,571/69
Int. Cl. C07d *99/24*
U.S. Cl. 260—243 C 1 Claim

A process for the purification of crude cephalexin comprises contacting a crude acidic aqueous solution of cephalex-

in with methanol, adjusting the pH of the solution to about 4 to initiate crystallization of the cephalexin and separating off the mother liquor after crystallization has taken place.

3,676,438

DESACETYLARANOTIN

Norbert Neuss, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Oct. 15, 1969, Ser. No. 866,497
Int. Cl. C07d 93/20
U.S. Cl. 260—243 R 1 Claim

Desacetylaranotin having anti-viral activity.

3,676,439

5,6-DIHYDRO-8,8-DIMETHYL-3-NITRO-8H IMIDAZO(2-1-C) (1,4)OXAZINE

Max Hoffer, Nutley, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Filed April 13, 1971, Ser. No. 133,737
Int. Cl. C07d 87/20
U.S. Cl. 260—244 R 1 Claim

5,6-Dihydro-8,8-dimethyl-3-nitro-8H-imidazo(2-1-c)(1,4)oxazine and its pharmaceutically acceptable salts are described. The compounds are antiprotozoal agents.

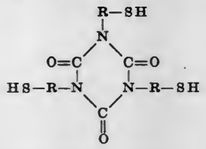
3,676,440

ISOCYANURATE-CONTAINING POLYTHIOLS

Lenore J. Los, Greenbelt, Md., assignor to W. R. Grace & Co., New York, N.Y.

Filed Feb. 26, 1970, Ser. No. 14,676
Int. Cl. C07d 55/38
U.S. Cl. 260—248 NS 9 Claims

This invention describes compounds of high polarity which are useful as curing agents in curable liquid polymer systems containing polyenes and a free-radical initiator. Each of these polar compounds comprises the isocyanurate group as a central nucleus and bears substituents attached thereto at least two of which must contain a thiol group. In this class of compounds, the preferred members are isocyanurate-containing trithiols having the generalized structure as follows:



wherein R is an organic divalent moiety.

3,676,441

2-AMINO-4-TERTIARY BUTYLAMINO-1,3,5-TRIAZINES

Erwin Nikles, Liestal, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland

Filed April 16, 1970, Ser. No. 29,252
Claims priority, application Switzerland, April 24, 1969, 6356/69
Int. Cl. C07d 55/20
U.S. Cl. 260—249.8 4 Claims

2-Amino-4-tertiary butylamino-1,3,5-triazines possessing in the 6-position a chlorine atom, a methoxy or a methyl-mercapto group are very effective weed killers and plant influencing agents.

3,676,442

SYNTHESIS OF PYRAZINES

Albert Bonzom, Rosendael, and Bernard Tramier, Marseille, both of France, assignors to Societe Nationale des Petroles D'Aquitaine, Tour Aquitaine, Courbevoie, France

Filed Nov. 21, 1969, Ser. No. 878,941
Claims priority, application France, Nov. 22, 1968, 68174829
Int. Cl. C07d 51/76
U.S. Cl. 260—250 R 12 Claims

Hydrocarbon substituted pyrazines are prepared by the reaction of an ammonium compound having NH_4 or NH_2 groups with an acetylene compound having an oxygen atom linked to the acetylenic unit, the reaction being conducted in an acid medium, preferably containing formic acid or a formate.

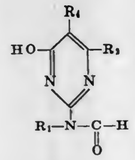
3,676,443

CERTAIN 2-FORMAMIDO-4-HYDROXYPYRIMIDINES

Brian Kenneth Snell, Ruscombe, and Nigel Douglas Bishop, Winnersh, both of England, assignors to Imperial Chemical Industries Limited, London, England

Filed May 18, 1970, Ser. No. 38,543
Claims priority, application Great Britain, May 28, 1969, 26,920/69
Int. Cl. C07d 51/38
U.S. Cl. 260—256.4 C 3 Claims

Pyrimidine derivatives of formula:



wherein R_1 represents an atom of hydrogen or an alkyl radical and R_3 and R_4 represent atoms of hydrogen or halogen or alkyl radicals; and salts, ethers and esters thereof; and compositions containing them, are pesticidal.

3,676,444

HALOALKANOYLTETRAHYDROISOQUINOLINECARBO-XYLIC ACID ESTERS

Sydney Archer, and John W. Schulenberg, both of Bethlehem, N.Y., assignors to Sterling Drug Inc., New York, N.Y.

Division of Ser. No. 826,681, May 21, 1969, Pat. No. 3,557,120, which is a continuation-in-part of Ser. No. 569,021, Aug. 1, 1966, abandoned. This application April 8, 1970, Ser. No. 26,766
Int. Cl. C07d 35/32
U.S. Cl. 260—287 R 2 Claims

Ethyl 2-(α-halo lower-alkanoyl)-1,2,3,4-tetrahydro-6,7-dimethoxy-1-isoquinolinecarboxylates are intermediates for the preparation of 1,3,4,6,7,11b-hexahydro-9,10-dimethoxy-2H-pyrazino[2,1-a]isoquinolines, which possess sedative, tranquilizing and related pharmacodynamic effects.

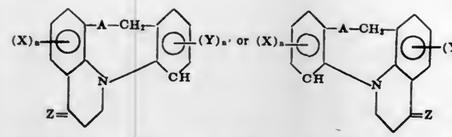
3,676,445

1,2-DIHYDROQUINOBENZOXA(OR THIA)ZEPINE DERIVATIVES

Harry Louis Yale, and Ramesh Petigara, both of New Brunswick, N.J., assignors to E. R. Squibb & Sons, Inc., New York, N.Y.

Filed Oct. 27, 1970, Ser. No. 84,533
Int. Cl. C07d 87/54
U.S. Cl. 260—288 R 14 Claims

1,2-Dihydroquinobenzoxa(or thia)zepine derivatives are provided having the structures



wherein Z is O, or N—OH, A is O, S, SO or SO_2 and X, Y, n and n' are as defined hereinafter. These compounds are useful as antifungal agents and antibacterial agents.

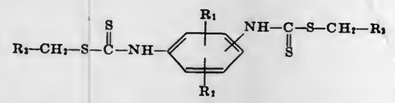
3,676,446

PHENYLENE-BIS-DITHIOCARBAMIC ACID ESTERS

Manfred Schorr, Frankfurt/Main; Walter Durckheimer, Hattersheim/Main; Lothar Behrendt, Konigstein/Taunus, and Dieter Duwel, Hofheim/Taunus, all of Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt/am Main-Hoechst, Germany

Filed Sept. 8, 1970, Ser. No. 70,485
Claims priority, application Germany, Sept. 20, 1969, P 19 47 746.4
Int. Cl. C07d 31/50
U.S. Cl. 260—294.8 E 7 Claims

Anthelmintically active phenylene-bis-dithiocarbamic acid esters of the formula



in which R_1 and R_2 are equal or different and represent hydrogen, halogen, alkyl or alkoxy having from one to six carbon atoms and R_3 is pyridyl, quinolyl or isoquinolyl which may be substituted by one or more alkyl radicals having from one to six carbon atoms. A process for their preparation.

3,676,447

3,4,5-TRIMETHOXYBENZAMIDES OF PHENYL-AND PYRIDYLAKYLAMINES

Wilfred A. Skinner, Portola Valley; John G. Johansson, Palo Alto, and Howard L. Johnson, Sunnyvale, all of Calif., assignors to Stanford Research Institute, Melo Park, Calif.

Filed June 24, 1970, Ser. No. 49,518
Int. Cl. C07d 31/44
U.S. Cl. 260—295 AM 22 Claims

3,4,5-Trimethoxybenzamides of pyridylalkylamines such as pyridylmethylamine and of phenylalkylamines such as phenylmethylamine, phenethylamine and β-hydroxyphenethylamine, as well as derivatives thereof wherein the aromatic nucleus in the amine is substituted by one or more hydroxy, carboxy, halo, aryl, alkyl, nitro, alkoxy, aryloxy or thioalkoxy groups. The compounds are relatively non-toxic and are useful for pharmacological purposes. They exert a specific effect on the central nervous system and a somewhat lesser effect on muscle function. They are useful as relatively mild tranquilizers in the control of anxiety states, excessive aggressiveness and hyperactivity.

3,676,448

2,2'-BIS(3-PYRIDINOLS)

Joseph G. Wirth, Schenectady, N.Y., assignor to General Electric Company

Filed Jan. 7, 1970, Ser. No. 1,318
Int. Cl. C07d 31/40
U.S. Cl. 260—296 D 5 Claims

The novel compounds, 2,2'-bis(3-pyridinols), will fluoresce in the visible spectrum when exposed to ultraviolet light. The particular color emitted is dependent upon the other substituents on the pyridine ring. Generally, the parent compound and its substituted derivatives fluoresce green, unless the substituents have aromatic or aliphatic unsaturation which is conjugated with the unsaturation of the pyridine ring. This shifts the fluorescence to longer wavelengths, so that it is possible to produce compounds which fluoresce in the yellow and red portions of the visible spectrum. The compounds are readily soluble in common organic solvents and are thermally stable. They can be incorporated in various polymers to impart their fluorescent properties to the polymers. They can be incorporated in lacquers to produce films or applied as coatings on the envelope of ultraviolet lamps to produce various colored lights when energized.

3,676,449

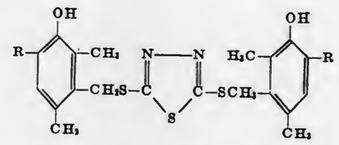
1,3,4-THIADIAZOLE-BRIDGED THIOMETHYLENEPHENOL ANTIOXIDANTS

John Song, Bound Brook, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Filed Jan. 22, 1970, Ser. No. 5,090
Int. Cl. C07d 91/62
U.S. Cl. 260—302 SD 2 Claims

0000

1, 3, 4 - thiadiazole-bridged bis-thiomethylene-phenol compounds of the formula



in which R is a tertiary alkyl of 4–12 carbon atoms are provided. They are excellent antioxidants for oxygen-sensitive organic materials, particularly polyolefins of 2–6 carbon atoms such as polypropylene plastics. They are prepared by condensing one mole of 2,5-dimercapto-1,3,4-thiodiazole with two moles of a 3-hydroxy-2.6-dimethyl-4-tertiary alkyl benzyl halide in the presence of an acid acceptor.

3,676,450

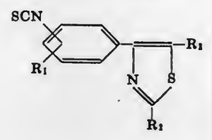
-4-(ISOTHI OCYANOPHENYL)-THIAZOLES

Rene Bosshard, Birsfelden; Kurt Gubler, Riehen; Ernest Aufderhaar, Kaiseraugst, and Paul Brenneisen, Basel, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Oct. 19, 1970, Ser. No. 82,188
Claims priority, application Switzerland, Oct. 30, 1969, 16249/69
Int. Cl. C07d 91/32
U.S. Cl. 260—302 s 9 Claims

0000

This invention concerns new 4-(isothiocyanophenyl)-thiazoles corresponding to the Formula I



(I)

wherein

R_1 represents hydrogen, the nitro group, halogen, a lower alkyl or alkoxy radical, or the isothiocyano group in a position other than the ortho-position to the isothiocyano group already present,

R_2 represents hydrogen, halogen, a lower alkyl, alkoxy or alkylthio radical, a dialkylamino radical, and

R_3 represents hydrogen or a lower alkyl radical,

and processes for the production of these compounds. These new compounds have antihelmintic properties. Compositions

containing these new 4-(isothiocyanophenyl)-thiazoles and/or their non-toxic salts as active components as well as a method for combatting helminths in warm-blooded animals organisms by administering these new compounds in therapeutically active doses are given. Of special interests are the 4-(isothiocyanophenyl)-thiazoles of Formula I wherein R_1 is hydrogen or halogen.

3,676,451

THIAZOLYLSALICYLIC ACIDS

Lewis H. Sarett, Skillman, and William V. Ruyle, Scotch Plains, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 673,273, Oct. 6, 1967, Pat. No. 3,558,641. This application June 9, 1970, Ser. No. 44,866
Int. Cl. C07d *91/32*
U.S. Cl. 260—302 R 5 Claims

New salicylic acid compounds, particularly 5-(heterocyclic)-salicylic acid derivatives and process for their preparation are claimed. The new 5-(heterocyclic)salicylic acid compounds described have anti-inflammatory, anti-pyretic and analgesic activity.

3,676,452

ACENAPHTHYLOXAZOLE DERIVATIVES

Seymour D. Levine, North Brunswick, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Feb. 2, 1970, Ser. No. 8,016
Int. Cl. C07d *85/00*
U.S. Cl. 260—307 D 7 Claims

In addition, intermediates and a process for preparing the acenaphthyloxazoles are provided, which process comprises reacting an acenaphthenequinone with ethylene glycol in the presence of p-toluenesulfonic acid to form an acenaphthenequinone monoethylene ketal, reducing the ketal to the corresponding 1-hydroxy-2-acenaphthenone monoethylene ketal, hydrolyzing the ketal and reacting the resulting 1-hydroxy-2-acenaphthenone with succinic acid or acid anhydride to form the corresponding succinate and reacting the succinate with ammonium acetate and acetic acid to form the compounds of the invention.

3,676,453

OXAZOLE AND OXAZOL-5-ONE DERIVATIVES

Seemon H. Pines, Murray Hill, and Meyer Sletzinger, North Plainfield, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Nov. 7, 1968, Ser. No. 774,213
Int. Cl. C07d *85/42*
U.S. Cl. 260—307 R 5 Claims

5-(dibenzyloxybenzoyloxy)-4-lower alkyl-2-substituted-oxazoles and 4-(dibenzyloxybenzoyl)-4-lower alkyl-2-substituted-oxazol-5-ones which are useful as intermediates.

3,676,454

ACYLOXYMETHYL DERIVATIVES OF DIPHENYLHYDANTOIN

Julius A. Vida, Boston, Mass., assignor to The Kendall Company, Boston, Mass.

Division of Ser. No. 749,973, Aug. 5, 1968, Pat. No. 3,595,862. This application Aug. 31, 1970, Ser. No. 68,471
Int. Cl. C07d *49/32*
U.S. Cl. 260—309.5 5 Claims

N,N'-Bis(acyloxymethyl) phenobarbital, N,N'-Bis(acyloxymethyl)barbital, 3-acyloxymethyl diphenylhydantoin, and N,N'-diacyloxy diphenylhydantoin compounds are described as well as therapeutic compositions containing them and their use as anticonvulsant agents.

3,676,455

HYDANTOIN DIISOCYANATES

Theobald Haug, Frenkendorf, and Hans Batzer, Arlesheim, both of Switzerland, assignors to Ciba-Geigy Corporation

Filed April 8, 1970, Ser. No. 26,778
Claims priority, application Switzerland, April 15, 1969, 5664/69
Int. Cl. C07d *49/32*
U.S. Cl. 260—309.5 6 Claims

New bis-(1'-γ-isocyanatopropylhydantoinyl-3')-alkanes, for example 1,6-bis-[1'-(-γ-isocyanatopropyl)-5',5'-dimethylhydantoinyl-3']-n-hexane and 1,1'-methylene-bis-(3-γ-isocyanatopropylhydantoins), for example 1,1'-methylene-bis-(3-γ-isocyanatopropyl-5,5-dimethylhydantoin), and their use for the manufacture of polyurethanes by reaction of the new diisocyanates with polyhydroxyl compounds. The new diisocyanates are completely odorless and an irritation of the mucous membranes by these new diisocyanates has hitherto not been observed. The new diisocyanates are therefore preferentially used in the lacquer field.

3,676,456

DERIVATIVES OF 3-ARYL-5-ALKYLHYDANTOINS

Norbert Gruenfeld, Bronx, N.Y., assignor to Ciba-Geigy Corporation

Continuation-in-part of Ser. No. 717,035, March 28, 1968, abandoned. This application Feb. 27, 1970, Ser. No. 15,208
Int. Cl. C07d *49/32*
U.S. Cl. 260—309.5 6 Claims

3-Phenyl-5-alkylhydantoins and certain derivatives thereof are anti-inflammatory, analgesic and antipyretic agents and are prepared through cyclization of a phenylhydantoic acid or ester. A typical embodiment is 3-(p-fluorophenyl)-5-methylhydantoin.

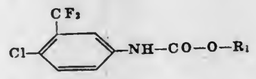
3,676,457

N-[3-TRIFLUOROMETHYL-4-CHLOROPHENYL]-CARBAMATES

Adolf Hubele, Riehen, and Otto Rohr, Therwil, both of Switzerland, assignors to Ciba-Geigy Corporation

Filed Feb. 4, 1969, Ser. No. 796,571
Claims priority, application Switzerland, Feb. 6, 1968, 1765/68
Int. Cl. C07c *101/00*
U.S. Cl. 260—471 6 Claims

The invention relates to compounds of the general formula



wherein R_1 represents an aralkyl or aralkenyl residue or a phenyl radical having four or five substituents or a five- to six-membered heterocycle which may be bound over an alkyl residue. The compounds are used for combating various types of pests, preferably bacteria and fungi.

3,676,458

(INDOLYMETHYL) MALONATE COMPOUND

Edmund Carl Kornfeld, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 719,666, April 8, 1968, Pat. No. 3,535,336, Division of Ser. No. 57,873, June 11, 1970. This application June 11, 1970, Ser. No. 57,872
Int. Cl. C07d *27/60*
U.S. Cl. 260—326.14 T 1 Claim

6-(Trifluoromethyl)tryptophane, useful as a non-nutritive sweetening agent and also useful in the synthesis of a corresponding pyrrolnitrin derivative; and intermediates useful in the synthesis of 6-(trifluoromethyl)tryptophane.

3,676,459

3-ARYLIMINO-1,2-DITHIOLS

Jorg Bader, Arlesheim, and Karl Gatzi, Basle, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed May 28, 1969, Ser. No. 828,766
Claims priority, application Switzerland, June 10, 1968, 8595/68
Int. Cl. C07d *71/00*
U.S. Cl. 260—327 C 3 Claims

3-Arylimino-4-chloro-5-thio-1,2-dithiols are disclosed as antifungal agents, which are particularly useful for the protection of plants against phytopathogenic fungi. Antifungal compositions containing them as active ingredients are also described.

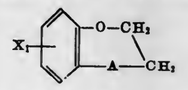
3,676,460

BENZOXAZEPINE DERIVATIVES

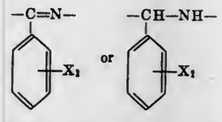
Toshiyuki Hirobashi, Ashiya; Takahiro Izumi, Takarazuka, and Hisao Yamamoto, Nishinomiya, all of Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan

Filed March 24, 1970, Ser. No. 22,388
Claims priority, application Japan, March 28, 1969, 44/24232; March 31, 1969, 44/24974; May 6, 1969, 44/34964
Int. Cl. C07d *87/54*
U.S. Cl. 260—333 5 Claims

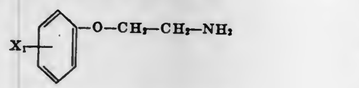
Novel 2,3-dihydro-1,4-benzoxazepine or 2,3,4,5-tetrahydro-1,4-benzoxazepine derivatives, which have strong central nervous system activity, of the formula:



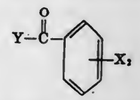
X_1 is hydrogen, halogen, $C^1 - C^3$ alkyl or $C^1 - C^3$ alkoxy and A is a group of the formula:



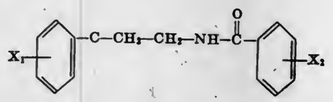
wherein X_2 is hydrogen, halogen, $C^1 - C^3$ alkyl or $C^1 - C^3$ alkoxy. These compounds are produced by contacting a phenoxyethlamine derivative of the formula:



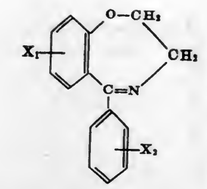
with a benzoylhalide derivative of the formula:



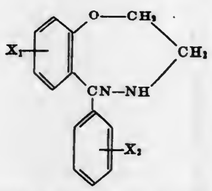
to yield an N-benzoyl phenoxyethlamine derivative of the formula:



and contacting the obtained N-benzoyl phenoxyethylamine derivative with a suitable dehydrating agent to yield a 2,3-dihydro-1,4-benzoxazepine derivative of the formula:



and further, if necessary, reducing the resultant 2,3-dihydro-1,4-benzoxazepine derivative to yield a 2,3,4,5-tetrahydro-1,4-benzoxazepine derivative of the formula:



in the above formulas X_1 and X_2 being as defined above, and Y being halogen.

3,676,461

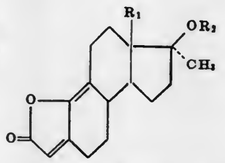
1-OXA-A-NOR-STEROIDS

Georges Muller, Nogent sur Marne, and Roland Bardoneschi, le Vert Galant, both of France, assignors to Roussel UcLaf, Paris, France

Filed July 7, 1969, Ser. No. 839,706
Claims priority, application France, July 24, 1968, 160425
Int. Cl. C07d *5/34*
U.S. Cl. 260—343.3 8 Claims

0000

1-Oxa-13β-R_1-17α-methyl-A-nor-$\Delta^{3(5),9}$-gonadienes of the formula



I

wherein R_1 is alkyl of one to three carbon atoms and R_2 is acyl of an aliphatic carboxylic acid of two to four carbon atoms having antiandrogenic activity and their preparation and intermediates formed therein.

3,676,462

7,8,9,10-TETRAHYDRO (AND 7,8,9,10,11,12-HEXAHYDRO) 6H-DIBENZO [B,D] PYRANS

Harry G. Pars, Lexington, and Felix E. Granchelli, Arlington, both of Mass., assignors to Arthur D. Little, Inc., Cambridge, Mass.

Continuation-in-part of Ser. No. 642,187, May 29, 1967, abandoned. This application Jan. 8, 1970, Ser. No. 1,550
Int. Cl. C07d *7/20*
U.S. Cl. 260—345.3 3 Claims

A series of novel 7,8,9,10-tetrahydro-6H-dibenzo [*b, d*] pyrans and 7,8,9,10,11,12-hexahydro-6H-dibenzo [*b,d*] pyrans having C.N.S. activity.

3,676,463
OXOBENZOFURAN CARBOXAMIDES
Saul P. Kadin, New London, Conn., assignor to Pfizer Inc., New York, N.Y.
Filed Oct. 15, 1970, Ser. No. 81,162
Int. Cl. C07d 5/34
U.S. Cl. 260—343.3 15 Claims

A series of novel 2-oxo-2,3-dihydrobenzofuran-3-carboxamides have been prepared, including their pharmaceutically acceptable salts. These compounds are useful in therapy as non-steroidal anti-inflammatory agents. Alternate methods of preparation are provided and the principal synthetic route is described in detail.

3,676,464
2-SUBSTITUTED BENZYLIDENE-4-PHENYL-3-HYDROXY-5-OXO -2,5- DIHYDROFURAN DERIVATIVES
Frederick Roger Foden, and Derrick Michael O'Mant, both of Macclesfield, England, assignors to Imperial Chemical Industries, Limited, London, England
Filed Oct. 19, 1970, Ser. No. 82,214
Claims priority, application Great Britain, Oct. 29, 1969, 52,969/69
Int. Cl. C07d 5/10
U.S. Cl. 260—343.6 4 Claims

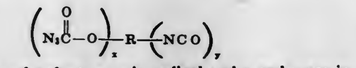
2-Substituted benzylidene-e-phenyl-3-hydroxy-5-oxo-2,5-dihydrofuran derivatives, for example 2-(m-trifluoromethyl-α-methoxycarbonylbenzylidene)-4-phenyl-3-hydroxy-5-oxo-2,5- dihydrofuran, a process for their preparation, and pharmaceutical compositions. Compounds have anti-inflammatory, analgesic and antipyretic activity.

3,676,465
4-HYDROXY-1-METHYLOL 6-OXA(3.2.1.1^{3,6}) TRICYLONONANE
Arsene Isard, St. Genis Laval, and Francis Weiss, Pierre Benite, both of France, assignors to Ugine Kuhlmann, Paris, France
Division of Ser. No. 695,572, Jan. 4, 1968. This application May 25, 1970, Ser. No. 48,681
Claims priority, application France, Jan. 6, 1967, 6790194
Int. Cl. C07d 5/32
U.S. Cl. 260—346.2 M 1 Claim

4-hydroxyl-1-methylol-6-oxa (3.2.1)-bicyclo-octane, 4-hydroxy-1-methylol-6-oxa (3.2.1.1^{3,6})-tricyclo-nonane, and 4-hydroxy-1-methylol-6,8-dioxa (3.2.1)-bicyclo-octane are prepared by reacting in the presence of a catalyst such as tungstic acid, a peracid with a cyclic diol such as 1,1-dimethylol-3-cyclohexene, 2,2-dimethylol-5-norbornene, 2,2-dimethylol-3,4-dihydro (2H) pyran. The peracid may be prepared in situ by reacting hydrogen peroxide with a carboxylic acid.

3,676,466
AZIDOFORMATE-ISOCYANATE COMPOUNDS
Harold M. Spurlin, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.
Filed Sept. 22, 1969, Ser. No. 860,034
Int. Cl. C07c 117/00; C07d 109/00
U.S. Cl. 260—349 5 Claims

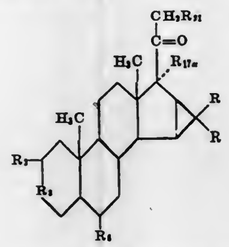
Disclosed are azidoformate-isocyanate compounds of the formula



where R is a polyvalent organic radical and x and y are integers from 1 to 100. The use of said azidoformate-isocyanate compounds to modify polymers, cross-link polymers, and adhere polymers to substrates selected from siliceous materials, metals and other polymer substrates is disclosed. Also disclosed are rubber tires reinforced with polyester tire cord which has been modified with an azidoformate-isocyanate compound.

3,676,467
15, 16 SUBSTITUTED STEROIDS AND DERIVATIVES
Andor Furst, Basel; Peter Muller, Arlesheim; Marcel Muller, Frenkendorf, and Dieter Kagi, Basel, all of Switzerland, assignors to Hoffman-La Roche Inc., Nutley, N.J.
Filed April 17, 1969, Ser. No. 817,178
Claims priority, application Switzerland, April 22, 1968, 5935/68
Int. Cl. C07c 169/32, 169/34
U.S. Cl. 260—397.3 34 Claims

Compounds of the formula



are described. The aforesaid compounds are useful as hormonal agents.

3,676,468
PREPARATION OF FACTICE-LIKE PRODUCTS
Gerhard Stolpa, Hilden, Germany, assignor to Henkel & Cie, GmbH, Dusseldorf, Germany
Continuation of Ser. No. 612,789, Jan. 31, 1967, abandoned. This application April 23, 1970, Ser. No. 29,732
Claims priority, application Germany, March 26, 1966, H 58924
Int. Cl. A23j 7/00; C07f 9/02
U.S. Cl. 260—403 4 Claims

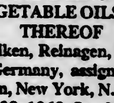
Process for the preparation of factice-like products from oxidized polymers of esters of unsaturated fatty acids and/or resinic acids with polyols reacted with a phosphorus halide and products produced therein having fire-resistant properties.

3,676,469
PROCESS FOR THE PREPARATION OF HALOGENATED ESTERS
Wilbert H. Urry, Chicago, Ill., and Hsien Ying Niu, Southgate, Mich., assignors to Wyandotte Chemicals Corporation, Wyandotte, Mich.
Continuation-in-part of Ser. No. 551,555, May 20, 1966, abandoned. This application Dec. 12, 1968, Ser. No. 783,437
Int. Cl. C07c 67/00; C09f 5/00
U.S. Cl. 260—408 5 Claims

Halogenated esters are prepared by the free-radical initiated reaction of aldehydes with certain halogenated ketones. The esters have selective pesticidal activity and possess surface active properties.

3,676,470
1,6-OCTADIENE DERIVATIVES AND THE PREPARATION THEREOF
Kuniyuki Takahashi; Go Hata, and Akihisa Miyake, all of Kamakura-shi, Japan, assignors to Toray Industries, Inc., Tokyo, Japan
Filed May 27, 1968, Ser. No. 732,108
Claims priority, application Japan, May 26, 1967, 42/33114; Aug. 23, 1967, 42/53691; Dec. 19, 1967, 42/81022; Jan. 20, 1968, 43/2989; March 4, 1968, 43/13609
Int. Cl. C11c 3/00
U.S. Cl. 260—410 8 Claims

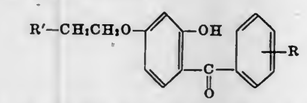
A compound represented by the general formula



wherein X and Y each represent an electron attracting group and Z represents a hydrogen atom, a mono-valent hydrocarbon radical, a di-valent hydrocarbon radical bonded to X or Y, or an alkadienyl radical represented by the formula —CH$_2$—CH = CH—CH$_2$CH$_2$CH = CH$_2$ or alkyl-substituted derivatives thereof, and a process for preparing said compounds by adding a 1,3-diene to an active methylene compound or hydrocarbon-substituted methylene compound having the electron attracting groups X and Y as represented by the general formula X — CH(Z) — Y.
wherein X, Y and Z have the same meaning as above, using a palladium compound or a platinum compound as catalyst.

3,676,471
4-(BETAHYDROXYETHOXY-2-HYDROXY-BENZOPHENONES) AND ESTERS THEREOF
Heinz Eggensperger, Gadernheim uber Bensheim; Volker Franzen, Heidelberg, and Wilfried Kloss, Kolmbach uber Bensheim, all of Germany, assignors to Deutsche Advance Produktion GmbH, Lautern/Odenwald, Germany
Filed Oct. 28, 1968, Ser. No. 771,272
Claims priority, application Germany, Dec. 21, 1967, P 16 43 307.1
Int. Cl. C07c 69/28, 49/82; C08f 45/58
U.S. Cl. 260—410.5 8 Claims

Compounds of the formula



wherein R is hydrogen, alkyl or aryl and R′ is hydrocarbyl acyloxy, said compounds being useful for light-stabilization of polymeric compositions.

3,676,472
CERTAIN LINOLEIC AND LINOLENIC ACID ESTER FRACTIONS OF VEGETABLE OILS AND DERIVATIVES THEREOF
Frederick William Zilliken, Reinagen, Rhine, and Heinz Egge, Marburg, both of Germany, assignors to American Home Products Corporation, New York, N.Y.
Filed July 28, 1969, Ser. No. 845,511
Int. Cl. C07c 3/00; A61k 27/00
U.S. Cl. 260—410.9 R 4 Claims

This invention is concerned with prophylactically effective substances which are useful in protecting mammals against staphylococcal infection. These substances comprise the linoleic and linolenic acid ester fractions of vegetable oils and derivatives thereof. Further, it is concerned with a process for the preparation of some of these prophylactically effective substances.

3,676,473
PROCESS FOR PREPARING ORGANIC ACIDS
Alan F. Ellis, Murrysville, Pa., assignor to Gulf Research & Development Company, Pittsburgh, Pa.
Filed Oct. 7, 1969, Ser. No. 864,550
Int. Cl. C07c 51/32
U.S. Cl. 260—413 9 Claims

A process for converting an alpha olefin to an organic carboxylic acid having one less carbon than the olefin which involves subjecting the alpha olefin to metathesis conditions to obtain an internal olefin having two less than twice the carbon number of the alpha olefin charge and thereafter subjecting the internal olefin so obtained to ozonolysis and oxidation to obtain the desired organic carboxylic acid.

3,676,474
MULTINUCLEAR π-COMPLEXES HAVING AT LEAST TWO METAL-COBALT BONDS
James H. Tsai, Sarnia, Ontario, and Glenn H. Anderson, Corunna, Ontario, both of Canada, assignors to The Dow Chemical Company, Midland, Mich.
Filed Nov. 24, 1969, Ser. No. 879,608
Int. Cl. C07f 7/00, 7/24, 15/06
U.S. Cl. 260—429 R 22 Claims

Multinuclear cobalt carbonyl π-Complexes having metal-cobalt bonds and which are useful as catalysts for the dimerization of norbornadiene are represented by the general formula:

$$Z_{4-m}MCo_m(CO)_{4m-2n}Y_n$$

wherein M is a Group 4a metal, Z is a halo, nitrato, alkyl, aryl or similar ligand, Y is a π-bonded diolefin ligand, m is 2, 3, or 4, and n is 1, 2, 3, or 4, but not greater than m.

3,676,475
HYDRIDES OF NICKEL COORDINATION COMPOUNDS
William C. Drinkard, Jr., Wilmington, and Richard V. Lindsey, Hockessin, both of Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.
Continuation-in-part of Ser. No. 847,442, Aug. 4, 1960, Pat. No. 3,538,142, which is a continuation-in-part of Ser. No. 682,623, Nov. 13, 1967, abandoned. This application July 6, 1970, Ser. No. 52,701
Int. Cl. C07f 15/04
U.S. Cl. 260—439 R 16 Claims

Hydrides of nickel coordination compounds of the general formula HNi(MYZ)$_n$$^+X^-$ where M is P, As or Sb, Z is R or OR, where R is a hydrocarbyl radical of up to 18 carbon atoms or a hydrocarbyl radical of up to 18 carbon atoms substituted with any of —Cl, —O— or —CN, where Y is two Z's or either —R′— or —O—R′—O—, where —R′— is a divalent hydrocarbylene radical of from two to 12 carbon atoms, n is 3 or 4, and X$^-$ is an anion of a protonic acid, particularly HSO_4^-, Cl^-, Br^-, Cn^-, CF_3COO^-, $AlCl_4^-$, or $ZnCl_2CN^-$ or BF_4^- and the process of preparing these hydrides from the corresponding nickel complex and acid as well as the process of isomerizing 3-pentenenitrile to 4-pentenenitrile using the hydrides.

3,676,476
METHOD FOR PREPARING TRIVALENT AND PENTAVALENT ANTIMONY ESTERS OF POLYHYDROXY COMPOUNDS
Michael J. Randolph, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed Nov. 30, 1970, Ser. No. 93,833
Int. Cl. C07f 9/90
U.S. Cl. 260—446 18 Claims

A method for the preparation of esters of pentavalent antimony and mixed esters of trivalent antimony and pentavalent antimony with polyhydroxy compounds having vicinal hydroxy groups in solutions of the polyhydroxy compounds or other polar organic solvents, which comprises (1) oxidizing antimony trioxide with aqueous nitric acid in presence of hydrochloric acid to provide pentavalent antimony oxide and hydroxide or mixed trivalent and pentavalent antimony oxides and hydroxides, (2) adding the oxides and hydroxides to an excess of the polyhydroxy compound and heating to cause the components to react while simultaneously distilling under reduced pressure to remove water of reaction, and optionally (3) removing the bulk of the excess unreacted polyhydroxy compound by continued distillation to form a slurry of the ester or mixed esters in the remaining polyhydroxy compound, and either recovering the crystallized pentavalent antimony ester or dissolving the slurry in another polar organic solvent. The solutions are used to incorporate antimony into organic polymers to provide flame resistance.

3,676,477
ESTERS OF PENTAVALENT AND TRIVALENT ANTIMONY WITH A POLYHYDROXY COMPOUND AND THE PROCESS FOR MAKING THE SAME

Doug M. Chay; Charles Carmen Cumbo; Michael J. Randolph, and Paul C. Yates, all of Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 30, 1970, Ser. No. 93,834
Int. Cl. C07f 9/90
U.S. Cl. 260—446 26 Claims

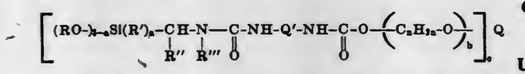
Esters of pentavalent antimony (Sb^{+5}) with polyhydroxy compounds having vicinal hydroxyl groups, and mixed esters composed of these pentavelent antimony esters in combination with trivalent antimony (Sb^{+3}) esters of polyhydroxy compounds having vicinal hydroxyl groups, which can be made by a process involving reacting antimony trioxide (Sb_2O_3) with a polyhydroxy compound having vicinal hydroxyl groups and hydrogen peroxide to oxidize at least a portion of the antimony to the pentavalent state. By removing substantially all of the water of reaction there can be produced a pentavalent antimony ester in which four of the valences of the antimony are satisfied by ester linkages through the hydroxyl groups of two molecules of the polyhydroxy compound and the fifth valence of the antimony is satisfied by an ester linkage through a vicinal hydroxyl group of a third molecule of the polyhydroxy compound. The products of the invention are soluble in polar organic solvents customarily used in processing organic polymers and can therefore be conveniently incorporated into polymers to provide increased flame resistance.

3,676,478
SILYL-SUBSTITUTED UREA DERIVATIVES

Hans Dietrich Golitz, Koeln-Stammheim; Eberhart Degener, Leverkusen; Gunter Oertel, Cologne-Flittard, all of Germany; Hans-Georg Schmelzer, New Martinsville, W. Va., and Walter Simmler, Odenthal-Schlinghofen, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

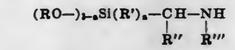
Filed Nov. 26, 1969, Ser. No. 880,430
Claims priority, application Germany, Dec. 4, 1968, P 18 12 562.7
Int. Cl. C07f 7/18
U.S. Cl. 260—448.2 N 6 Claims

New organosilyl- and carbamate-modified urea derivatives have the formula

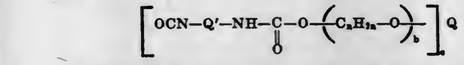


in which R and R' are monovalent hydrocarbon radicals, R'' and R''' are hydrogen atoms or monovalent hydrocarbon radicals, Q' is a bivalent hydrocarbon radical, Q is a monovalent to hexavalent hydrocarbon radical, *a* is 0, 1, 2 or 3, *n* is 2, 3 or 4, *b* is zero or an integer from 1 to 200, and *c* is the valency number of Q.

These urea derivatives are prepared by reacting at a temperature of from −20° to 150° C an aminoalkyl-silane derivative of the formula



with an isocyanate-modified carbamic acid ester of the formula



The products are to be used as priming agents imparting adhesion to synthetic resins on siliceous surfaces, as surfactants and as intermediates for organo-polysiloxane resins.

3,676,479
METHOD OF MANUFACTURING ALLYL N,N-DIALKYLTHIOLCARBAMATES

William C. Doyle, Jr., Leawood, Kans., assignor to Gulf Research & Development Company, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 625,603, March 4, 1967, Pat. No. 3,510,290. This application Nov. 10, 1969, Ser. No. 875,581
Int. Cl. C07c 155/08
U.S. Cl. 260—455 A 2 Claims

Allyl N,N-disubstituted thiocarbamates are manufactured by reacting a secondary amine with carbon disulfide and epichlorohydrin to yield a 2,3-epithiopropyl thiocarbamate, followed by desulfurization by heating or reaction with a desulfurizing reagent. The products are useful as pre-emergent herbicides.

3,676,480
α-ACYLHYDRAZINO-β-PHENYL-PROPIONITRILES

Meyer Sletzinger, North Plainfield; Sandor Karady, Elizabeth; Manuel G. Ly, New Brunswick, and Seemon H. Pines, Murray Hill, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Feb. 24, 1970, Ser. No. 13,770
Int. Cl. C07c 101/72, 103/38
U.S. Cl. 260—465 D 4 Claims

L-α-acylhydrazino-β-phenyl-propionitrile compounds useful as intermediates in the production of L-α-hydrazino-β-phenyl-propionic acids. Also included are processes for preparing the compounds of this invention by aminating L-α-acylamido-β-phenyl-propionitrile and processes for hydrolyzing the compounds of this invention to form L-α-hydrazino-β-phenyl-propionic acid compounds.

3,676,481
CATALYTIC ISOMERIZATION OF 2-METHYL-3-BUTENENITRILE TO LINEAR PENTENENITRILES IN THE PRESENCE OF CERTAIN METAL SALT AND/OR TRI(HYDROCARBYL)BORON PROMOTERS

Yuan-Tsan Chia, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 758,578, Sept. 9, 1968, abandoned, which is a continuation-in-part of Ser. No. 678,216, Oct. 26, 1967, abandoned. This application June 29, 1970, Ser. No. 50,907
Int. Cl. C07c 121/30
U.S. Cl. 260—465.9 27 Claims

The present invention discloses the isomerization of 2-methyl-3-butenenitrile to linear pentenenitriles in high yield by means of catalysts which comprise zero-valent nickel complexes promoted by certain metal salt and/or tri(hydrocarbyl)-boron promoters at temperatures in the range 10°–200° C. The linear pentenenitrile product, principally 3-pentenenitrile, is useful as an intermediate to adiponitrile.

3,676,482
RACEMIZATION OF AN ALPHA-METHYL DOPA DERIVATIVE

David F. Hinkley, Plainfield, and Robert L. Ellsworth, Basking Ridge, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 502,355, Oct. 22, 1965, abandoned. This application March 14, 1969, Ser. No. 839,739
Int. Cl. C07c 103/22
U.S. Cl. 260—471 H 1 Claim

A process for racemizing an optically active isomer of an amidoester in a lower alkanol by the use of ammonia which causes trace equilibration.

3,676,483
DISPERSANTS PREPARED FROM POLYAMINES AND ALKARYL CARBOXYLIC ACIDS

Shih-En Hu, Westfield, N.J., assignor to Esso Research and Engineering Company

Continuation-in-part of Ser. No. 706,683, Feb. 19, 1968, Pat. No. 3,526,661, which is a continuation-in-part of Ser. No. 354,756, March 25, 1964, abandoned. This application Nov. 28, 1969, Ser. No. 880,952. The portion of the term of this patent subsequent to Feb. 28, 1984, has been disclaimed.
Int. Cl. C07c 69/54
U.S. Cl. 260—475 N 11 Claims

An oil-soluble additive useful for improving the properties of a fuel oil, a lubricating oil, a heating oil, a gasoline or the like is prepared by heating an aliphatic polyamine or amino alcohol with an alkylated aryl carboxylic acid at a temperature that causes the splitting out of water. The carboxylic acid is prepared by thermal diene addition of an alkylated aromatic hydrocarbon such as paraffin-wax-alkylated naphthalene, or of a ring-substituted hydroxy, amino, or vinyl derivative of such hydrocarbon, with an unsaturated monobasic acid, or with an unsaturated polybasic acid or its anhydride, such as maleic acid, maleic anhydride, acrylic acid, methacrylic acid, or the like. The additive can be modified by treatment with phosphorous acid.

3,676,484
SYNTHESIS OF HYDROXYALKYL ESTERS OF CARBOXYLIC ACIDS

Jack G. Scruggs, and Donnie G. Brady, both of Bartlesville, Okla., assignors to Phillips Petroleum Company

Filed Feb. 10, 1970, Ser. No. 10,273
Int. Cl. C07c 67/00
U.S. Cl. 260—475 P 12 Claims

Preparation of esters by reaction of halocarbinols with alkali metal carboxylates using phosphonium salts as catalysts to avoid otherwise undesired side reactions, such as polymerization, while providing effective yields of the desired esters.

3,676,485
METHOD FOR USE IN A CONTINUOUS FLOW REACTION FOR PRODUCING A MONOMER AND OR A PROTOPOLYMER

Alan E. Lewis, and Frederick W. Voight, Jr., both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 12, 1968, Ser. No. 752,058
Int. Cl. C07c 69/82
U.S. Cl. 260—475 P 10 Claims

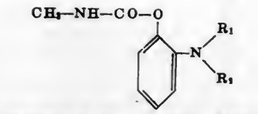
Method by which an esterification precursor is continuously converted to an esterification reaction product liquid by admixing a feed stream of the precursor into and with a circulating stream of the product liquid, heating the admixture to vaporize a low-boiling component, the heating being at a sufficient temperature and for a sufficient time to convert the precursor to the product liquid, maintaining circulation of the admixture by separating the low-boiling component therefrom, thereby establishing a flow of liquid from a more dense zone to a less dense zone in the circulating liquid stream, and continuously withdrawing a stream of the product liquid from the circulating admixture. The method further includes converting the precursor to a protopolymeric liquid having substantially uniformly suspended therein particulate solid matter.

3,676,486
AMINOPHENYLCARBAMATES

Erwin Nikles, Liestal, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland

Filed Oct. 20, 1969, Ser. No. 867,862
Claims priority, application Switzerland, Oct. 25, 1968, 16003/68; Oct. 31, 1968, 16212/68
Int. Cl. C07c 125/06
U.S. Cl. 260—479 C 10 Claims

New aminophenylcarbamates of the formula



wherein R_1 represents an alkyl residue containing not more than three carbon atoms and R_2 an alkyl residue containing two to four carbon atoms, have very good properties in combating insects and members of the order Acarina, but they possess especially outstanding properties in destroying blood-sucking arthropodes. These carbamates may be used as active ingredients in pesticidal preparations.

3,676,487
ISOMERIZATION OF 2-HYDROXY P-METHANE 1-CARBOXYLATE AND 2-HYDROXY-8-P-MENTHENE-1-CARBOXYLATE TO THE CORRESPONDING 1-HYDROXY-2-CARBOXYLATE COUNTERPART

Wilbur Gary, Jacksonville, Fla., assignor to SCM Corporation, Cleveland, Ohio

Filed May 20, 1971, Ser. No. 145,496
Int. Cl. C07c 67/00
U.S. Cl. 260—489 7 Claims

The isomerization of 2-hydroxy-1-carboxylates of 8-p-menthene and p-menthane to the 1-hydroxy-2-carboxylates is accomplished by heating the reactants to a temperature of between about 30° C. to 180° C. for a time sufficient to effect substantial isomerization.

3,676,488
PROCESS FOR PREPARING PHENYL SULFONE CARBOXYLIC ACIDS

Anatoli Onopchenko, Monroeville; Johann G. D. Schulz, Pittsburgh, and Roger C. Williamson, Allison Park, all of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed May 1, 1970, Ser. No. 33,946
Int. Cl. C07c 63/02, 147/06
U.S. Cl. 260—524 R 10 Claims

A process for preparing phenyl sulfone carboxylic acids which involves contacting an alkyl phenyl sulfone with molecular oxygen while the same is dissolved in a lower carboxylic acid containing cobalt and a methylenic ketone.

3,676,489
PROCESS FOR PRODUCING ORGANIC ACIDS

Alan F. Ellis, Murrysville; Alfred N. Kreage, Verona, and Richard Seekircher, Cheswick, all of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Nov. 28, 1969, Ser. No. 880,890
Int. Cl. C07c 51/32
U.S. Cl. 260—533 R 9 Claims

An improvement in a process for converting an unsaturated, acyclic hydrocarbon to an acid in which the unsaturated, acyclic hydrocarbon is reacted with oxygen containing a small amount of ozone at a low temperature to obtain an intermediate product in a first stage and the intermediate product is oxidized in a second stage with molecular oxygen at a higher temperature to obtain the desired carboxylic acid, which involves heating the intermediate product in the absence of additional oxygen prior to the second stage oxidation, whereby explosive hazards in the second stage are minimized.

3,676,490
NEW ANTIBIOTIC

Josef Thiemann; Yelahanka K. S. Murthy, both of Como, and Carolina Coronelli, Milan, all of Italy, assignors to Lepetit S.P.A., Milan Italy

Filed July 9, 1965, Ser. No. 470,884
Claims priority, application Great Britain, July 29, 1964, 30,116/64
Int. Cl. C07c 101/30; A61k 21/00
U.S. Cl. 260—534 6 Claims

The invention is concerned with a new antibiotic, named alanosine, whose chemical structure corresponds to L-(-)-2-

amino-3-nitrosohydroxylamino-propionic acid. It is obtained by cultivating a new species of Actinomyces of the genus Streptomyces, designated Streptomyces alanosinicus n.sp. ATCC 15710.

3,676,491

PROCESS FOR PREPARING TRIFLUOROACETIC ANHYDRIDE

Hiroyuki Wada, Suita-shi, and Heikitsu Sonoyama, Setsu-shi, both of Japan, assignors to Daikin Kogyo Co., Ltd.

Filed June 9, 1969, Ser. No. 831,758
Claims priority, application Japan, June 18, 1968, 44/42103
Int. Cl. C07c *51/54*
U.S. Cl. 260—546 **16 Claims**

A process for preparing trifluoroacetic anhydride which comprises the steps of reacting trifluoroacetyl chloride with a metal oxide (e.g. zinc oxide, copper oxide, cadmium oxide) at a temperature from 40° to 100° C. The reaction may be carried out in an inert solvent.

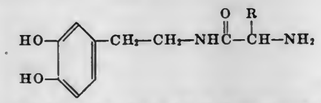
3,676,492

AMINO ACID AMIDES OF DISUBSTITUTED PHENETHYLAMINES

John Hans Biel, Lake Bluff, Ill., and Irwin L. Klundt, Brookfield, Wis., assignors to Aldrich Chemical Company

Filed Dec. 9, 1970, Ser. No. 96,615
Int. Cl. C07c *103/38*
U.S. Cl. 260—559 A **6 Claims**

Amino acid amides of disubstituted phenethylamines represented by the formula:



wherein R is hydrogen, lower alkyl, hydroxymethyl, hydroxybenzyl, β-hydroxyethyl, mercaptomethyl, methylmercaptoethyl, 3-indolylmethyl, carboxymethyl, β-carboxyethyl, γ-quanidinopropyl, Δ-aminobutyl, or 5-imidazolylmethyl; and the pharmaceutically acceptable acid addition salts thereof. The compounds are useful as renal vasodilators and antihypertensive agents.

3,676,493

ALKANOLAMINE DERIVATIVES

Leslie Harold Smith, Macclesfield, England, assignor to Imperial Chemical Industries Limited, London, England

Filed July 3, 1969, Ser. No. 839,810
Claims priority, application Great Britain, July 18, 1968, 34,255/68
Int. Cl. C07c *103/30*
U.S. Cl. 260—559 A **14 Claims**

The disclosure relates to 1-amino-3-(carbamoylphenoxy)-2-propanol derivatives, processes for their manufacture, pharmaceutical compositions containing them and a method of using them to produce cardiac β-adrenergic blockade in warm-blooded animals. Representative of the compounds disclosed is 3-(2-chloro-4-n-hexylcarbamoylphenoxy)-1-t-butylamino-2-propanol.

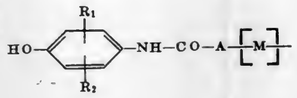
3,676,494

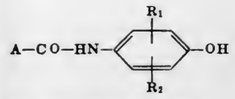
CARBOXYLIC ACID AMIDES

Hans Rudolf Biland, Gelterkinden, and Max Duennenberger, Frenkendorf, both of Switzerland, assignors to Ciba Limited, Basel, Switzerland

Filed Dec. 4, 1969, Ser. No. 882,302
Claims priority, application Switzerland, Dec. 13, 1968, 18664/68
Int. Cl. C07c *103/22*
U.S. Cl. 260—559 T **4 Claims**

The invention concerns new carboxylic acid amides of the formula





wherein M denotes a divalent bridge member of the series —S—, —S—A—S— and —S—CH_2CH_2—(O—CH_2—CH_2)$_p$—S—, A denotes an alkylene residue containing one to 18 carbon atoms, *p* denotes an integer from one to three, R_1 denotes an alkyl group and R_2 denotes alkyl or hydrogen.

These compounds are valuable antioxidants for polymers which are damaged by oxidative attacks.

3,676,495

2,4-BIS(4-AMINOCYCLOHEXYLMETHYL)CYCLOHEXYLAMINE

Guenther Kurt Hoeschele, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 741,847, July 2, 1968, Pat. No. 3,557,180. This application Sept. 16, 1970, Ser. No. 72,811
Int. Cl. C07c *87/42*
U.S. Cl. 260—563 R **1 Claim**

The triamine 2,4-bis(aminocyclohexylmethyl)cyclohexylamine is prepared by hydrogenation of 2,4-bis(p-aminobenzyl)aniline. The hydrogenated triamine is an intermediate for preparing the corresponding triisocyanate, which in-turn is useful in the preparation of polyurethane materials.

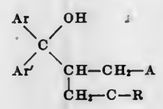
3,676,496

3-ALKOXY-OR 3-ARYLOXY-2-(DIARYL-HYDROXY)-METHYL-PROPYLAMINES

Roland Yves Mauvernay, Riom; Norbert Busch, Loubeyrat; Jacques Simond, Chamalieres, and Jacques Moleyre, Mozac, all of France, assignors to Centre Europeen De Recherches Mauvernay C.E.R.M.

Filed Jan. 2, 1970, Ser. No. 447
Claims priority, application Great Britain, Jan. 3, 1969, 452/69
Int. Cl. C07c *93/04*
U.S. Cl. 260—570 R **2 Claims**

A 3-alkoxy- or 3-aryloxy-2-(diaryl-hydroxy)-methylpropylamine of the formula



in which Ar and Ar′, which may be the same or different, are unsubstituted or substituted aryl groups, R is an aliphatic, aryl or arylaliphatic group, and A is a secondary or tertiary amino group, or an acid addition salt thereof. The compound has coronarodilating properties and central nervous system activity.

3,676,497

PROCESS FOR PREPARING DI(AMINOPHENYL)-METHANES

Frank P. Recchia, New Haven, and Henri Ulrich, North Branford, both of Conn., assignors to The Upjohn Company, Kalamazoo, Mich.

Filed Aug. 6, 1968, Ser. No. 750,454
Int. Cl. C07c *85/08*
U.S. Cl. 260—570 D **10 Claims**

Di(aminophenyl)methane having a high proportion of the o,p′-isomer (10 to 60 percent) and a substantial proportion of the o,o′-isomer (5 to 25 percent) is obtained by reacting at least 3.5 moles of aniline with 1 mole of formaldehyde, separating the water of condensation from the resulting mixture of aniline and anilino-acetal, heating the anhydrous mixture to 125° C. to 205° C. and adding a proton source (aniline hydrochloride preferred). The mixture of di(aminophenyl)-methane isomers can be separated from the mixture of polyamines so obtained and phosgenated to give a mixture of the corresponding isomeric di(isocyanatophenyl)methanes which mixture is a storage stable liquid. Alternatively the mixture of polyamines can be phosgenated, without separation of the di(aminophenyl)-methane, to give the corresponding mixture of polymethylene polyphenyl polyisocyanates. The latter mixture gives polyurethane foams of much lighter color than those obtained using comparable mixtures produced by prior art procedures.

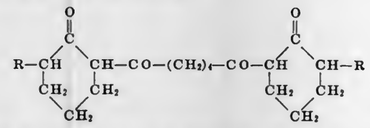
3,676,498

1,6-BIS(2-OXACYCLOHEXYL)-HEXANE-1,6-DIONES AND A PROCESS FOR PRODUCING THEM

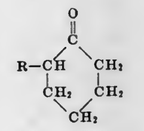
Stephen Blake, Fullwood, Preston, England, assignor to Pennwalt Corporation

Division of Ser. No. 527,474, Feb. 15, 1966, Pat. No. 3,441,605. This application Jan. 14, 1969, Ser. No. 801,909
Int. Cl. C07c *49/36, 48/00*
U.S. Cl. 260—586 R **6 Claims**

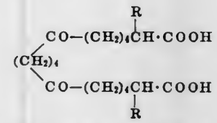
A tetraketone of the formula



wherein the groups R are the same and each is H or CH_3, is produced by a process which comprises reacting adipoyl dichloride with at least a 100 percent excess over the stoichiometric proportion of an enamine of a cyclohexanone, the cyclohexanone having the formula



The tetraketone can be hydrolyzed to form a diketo-dicarboxylic acid of the formula



which is useful as a cross-linking agent for polymers.

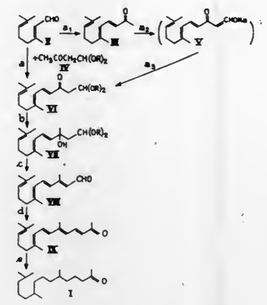
3,676,499

PROCESS OF PREPARING PHYTONE

Joseph Redel, Antony, and Jean Baptiste Christian Boch, Neris Les Bains, both of France, assignors to A.E.C. Societe de Chimie Organique et Biologique, Commentry, France

Continuation-in-part of Ser. No. 482,681, Aug. 26, 1965, abandoned. This application Oct. 31, 1968, Ser. No. 772,285
Claims priority, application France, Sept. 3, 1964, 64986944
Int. Cl. C07c *49/20, 49/06*
U.S. Cl. 260—593 R **2 Claims**

Phytone is prepared from citral or pseudo-ionone by conversion thereof into a C_{14}-pseudo-acetal or 7,11-dimethyl-4,6,10-dodecatriene-1,1-lower-dialkyoxy-3-one, reaction of this acetal with a methylmagnesium halide to a C_{18}-pseudo-



hydroxy-acetal, hydrolysis of the latter into the corresponding aldehyde which is condensed with acetone to the C_{18}-pseudo-ketone, and catalystic hydrogenation of the latter.

3,676,500

TERTIARY ALDEHYDE COMPOUNDS

Gerald J. Mantell, Allentwon, Pa., and Christian S. Rondestvedt, Jr., Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 432,399, Feb. 12, 1965, which is a continuation-in-part of Ser. No. 65,259, Oct. 27, 1960, abandoned. This application Jan. 26, 1967, Ser. No. 611,817
Int. Cl. C07c *47/18*
U.S. Cl. 260—602 **1 Claim**

As novel compositions of matter, β-alkoxy alde-hydes, such as β-isobutoxypivaladehyde, which, being like most aldehydes, are odoriferous compounds useable as aids in the composition of perfumes. The novel β-alkoxy aldehydes are also useful intermediates in the preparation of useful alcohols, carboxy acids, carboxy amides, etc. The novel β-alkoxy aldehydes of the invention are prepared by the unique vapor phase isomerization of meta-dioxanes catalyzed by weakly acidic surfaces such as pumice and silica gel.

3,676,501

PRODUCTS OF REACTION OF POLYOXYALKYLENE ALCOHOLS AND DI-GLYCIDYL ETHERS OF BIS-PHENOL COMPOUNDS

Virgil L. Seale; Billy Ray Moreland, and James Derwin De Shazo, all of Houston, Tex., assignors to Nalco Chemical Company, Chicago, Ill.

Continuation of Ser. Nos. 707,931, Feb. 26, 1968, abandoned, and Ser. No. , , which is a division of Ser. No. 523,971, Feb. 1, 1966, Pat. No. 3,383,325, which is a continuation-in-part of Ser. No. 350,112, March 6, 1964, Pat. No. 3,383,326. This application March 23, 1970, Ser. No. 20,452
Int. Cl. C07c *43/22*
U.S. Cl. 260—613 B **5 Claims**

Compositions of matter, and breaking water-in-oil petroleum emulsions therewith, which compositions comprise a substantially water-insoluble, at least partially oil-soluble product formed by the reaction of (A) a polyoxyalkylene alcohol in which the oxyalkylene groups consist essentially of a member from the group consisting of oxypropylene, oxybutylene, and both oxypropylene and oxybutylene, with at least one terminal 2-hydroxyethyl group and (B) a diglycidyl ether of a bisphenol compound in which about 60 to 90 percent of said

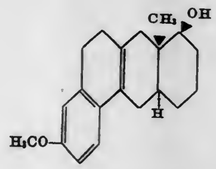
diglycidyl ether groups are reacted with the hydroxyl groups of said polyoxyalkylene glycol with the formation of ether linkages between the polyoxyalkylene glycol nuclei and the bis-phenol compound nuclei, the remaining, unreacted glycidyl ether groups of the resultant product being reacted with hydroxyl groups on (C) polyoxyalkylene groups of a polyoxyalkylated alkyl phenol-formaldehyde polycondensate with the formation of ether linkages between said reaction product of (A) and (B) and said polyoxyalkylated polycondensate, the alkyl groups of the phenol of (C) having an average of four to 15 carbons, said polycondensate having an average of about four to 15 phenolic nuclei per molecule, the oxyalkylene groups of (C) being selected from the group consisting of oxyethylene, oxypropylene, and both oxyethylene and oxypropylene, and the weight ratio of said last-mentioned oxyalkylene groups to said alkyl phenol-formaldehyde polycondensate being in the range of about 1:5 to 15:1, respectively, said diglycidyl ether being a member selected from the group consisting of diphenyldiglycidyl ether and a diglycidyl ether of diphenylmethane, with the remaining substituents on the methane carbon being selected from the group consisting of hydrogen and methyl.

3,676,502
BENZ <a> ANTHRACENE STEROID ANALOGUE

Colin G. Pitt, Durham, N.C., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Oct. 5, 1970, Ser. No. 78,149
Int. Cl. C07c *43/20*
U.S. Cl. 260—613 R **1 Claim**

A benz <a> anthracene of the formula:



synthesized from 5β-hydroxy-10β-methyl-trans-2-decalone.

3,676,503
PROCESS FOR PREPARING HYDROQUINONES

William Von E. Doering, Cambridge, Mass.; William J. Farrissey, Jr., Northford, and Floro F. Frulla, Wallingford, both of Conn., assignors to The Upjohn Company, Kalamazoo, Mich.

Filed April 16, 1970, Ser. No. 29,280
Int. Cl. C07c *39/02*
U.S. Cl. 260—621 H **6 Claims**

A one-step reductive hydrolytic method for preparing hydroquinone from p-nitrosophenol is disclosed.

Good yields of hydroquinone are obtained by heating p-nitrosophenol in a hydrogen atmosphere between 60° C – 150° C with a hydrogenation catalyst in an acid medium in the presence of an inert solvent.

3,676,504
PREPARATION OF A TEREPENE ALCOHOL

John C. Leffingwell, Winston-Salem, N.C., assignor to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.

Division of Ser. No. 711,500, March 8, 1968, Pat. No. 3,609,197. This application Sept. 10, 1970, Ser. No. 71,241
Int. Cl. C07c *35/18*; C11b *9/00*
U.S. Cl. 260—631.5 **1 Claim**

Synthesis of terpinene-4-ol from terpinolene.

3,676,505
4-(4-METHYLCYCLOHEX-3-EN-1-YL)PENT-4-EN-1-OL AND A PROCESS FOR ITS SYNTHESIS

Robert J. Crawford, Wyoming, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Dec. 29, 1969, Ser. No. 888,891
Int. Cl. C07c *35/00*
U.S. Cl. 260—631.5 **1 Claim**

Disclosed herein is the synthesis of 4-(4-methylcyclohex-3-en-1-yl)pent-4-en-1-ol, a novel compound useful as a starting reagent for the production of lanceol and lanceal, known perfume materials. Limonene is first metalated and then reacted with ethylene oxide to give the novel compound. This compound can then be converted to a known aldehyde which can be used to produce lanceol and lanceal by known processes.

3,676,506
SYNTHESIS OF NOVEL COMPOUNDS USEFUL FOR PRODUCTION OF JUVABIONE

Robert J. Crawford, Wyoming, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Dec. 29, 1969, Ser. No. 888,894
Int. Cl. C07c *35/00*
U.S. Cl. 260—631.5 **1 Claim**

Disclosed herein are processes for the production of 6-methyl-2-(4-methylcyclohex-3-en-1-yl)hept-1-en-4-ol and 2-methyl-6-(4-methylcyclohex-3-en-1-yl)heptan-4-ol using metalated limonene as the starting reactant. The novel compounds of the invention are useful in the synthesis of juvabione, a product having juvenile hormone activity.

3,676,507
STABILIZED TRICHLOROETHYLENE

Alastair Campbell, and Peter Robinson, both of Runcorn, England, assignors to Imperial Chemical Industries Limited, London, England

Filed Feb. 20, 1970, Ser. No. 13,203
Claims priority, application Great Britain, March 24, 1969, 15,306/69
Int. Cl. C07c *17/40*, *17/42*
U.S. Cl. 260—652.5 R **3 Claims**

A phenol which carries at least one substituent in an ortho position with respect to a hydroxy-group and phenol itself or a substituted phenol which carries no substituent in an ortho position with respect to a hydroxy-group are used as synergistically co-operative inhibitors of oxidation of trichloroethylene.

3,676,508
PROCESS FOR THE MANUFACTURE OF CARBON TETRACHLORIDE

Hans Krekeler, Wiesbaden; Helmut Meidert; Wilhelm Riemenschneider, both of Frankfurt/Main, all of Germany, and Lothar Heinz Hornig, deceased, late of Frankfurt/Main-Schwanheim, Germany (by Annelise Hornig, nee Munich, co-heiress), assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Main, Germany

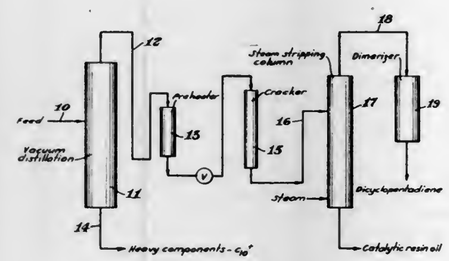
Filed Jan. 21, 1970, Ser. No. 4,748
Claims priority, application Germany, Jan. 30, 1969, P 19 04 426.9
Int. Cl. C07c *19/06*
U.S. Cl. 260—664 **2 Claims**

In the process for the manufacture of carbon tetrachloride from benzene, mixtures of benzene and chlorinated aliphatic or aromatic compounds, or chlorinated aromatic compounds, with chlorine in an excess amount of up to 300 percent, in the absence of catalysts in the gaseous phase in two reaction stages at a temperature in the first stage of from 6° to 400° C. and in the second stage of from 400° to 800° C. the space-time-yield is considerably increased by operating in both reaction stages under a pressure in the range of from 200 to 700 atmospheres. The reaction is carried out in a corrosion resistant reactor in continuous manner using 0.2 to 4 moles of organic compound or compounds per liter of reaction space per second.

3,676,509
RECOVERY OF DICYCLOPENTADIENE FROM CRACKED PETROLEUM

John C. Heiman, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed Jan. 20, 1971, Ser. No. 107,974
Int. Cl. C07c *13/00*
U.S. Cl. 260—666 PY **5 Claims**



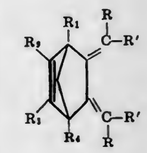
A process for recovering purified dicyclopentadiene from a C_5^+ by-product stream by separating the dicyclopentadiene-containing stream, cracking the dicyclopentadiene contained therein to cyclopentadiene, separating the cyclopentadiene from the other components and dimerizing the cyclopentadiene to a purified dicyclopentadiene.

3,676,510
POLYENE HYDROCARBONS AND PROCESS FOR OBTAINING SAME

Sergio Arrighetti, Milan; Eugenio Vajna, and Sebastiano Cesca, both of San Donato Milanese, all of Italy, assignors to Snam Progetti S.p.A., Milan, Italy

Filed Jan. 22, 1971, Ser. No. 109,007
Claims priority, application Italy, Jan. 22, 1970, 19658
Int. Cl. C07c *5/24*
U.S. Cl. 260—666 PY **3 Claims**

Triene hydrocarbons containing two conjugated double bonds, represented by the formula:



wherein R_1, R_2, R_3, R_4, R and R' may be hydrogen, alkyl or aryl radicals, and which may be prepared through a Diels-Alder reaction between a cyclopentadiene and (a) a dihalide-alkenyl compound, followed by dehydrohalogenation with basic agents, or (b) esters of fumaric or maleic acid, followed by reaction with a Grignard's reagent and then by dehydration of the alcohol, are disclosed.

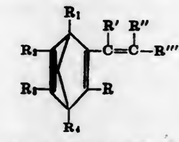
3,676,511
POLYENE HYDROCARBONS CONTAINING TWO CONJUGATED DOUBLE BONDS AND PROCESS FOR OBTAINING SAME

Sergio Arrighetti, Milan; Eugenio Vajna, and Sebastiano Cesca, both of San Donato Milanese, all of Italy, assignors to Snam Progetti S.p.A., Milan, Italy

Filed Jan. 22, 1971, Ser. No. 109,009
Claims priority, application Italy, Jan. 22, 1970, 19660 A/70
Int. Cl. C07c *5/24*
U.S. Cl. 260—666 PY **4 Claims**

0000

There are provided novel polyene hydrocarbons containing two conjugated double bonds and having the following general formula



wherein R is hydrogen or alkyl and R_1, R_2, R_3, R_4, R', R'' and R''' are hydrogen, alkyl or aryl.

3,676,512
POLYENE HYDROCARBONS CONTAINING AT LEAST TWO CONJUGATED DOUBLE BONDS AND PROCESS FOR OBTAINING SAME

Sergio Arrighetti, Milan; Eugenio Vajna, and Sebastiano Cesca, both of San Donato Milanese, all of Italy, assignors to Snam Progetti S.p.A., Milan, Italy

Filed Jan. 22, 1971, Ser. No. 109,034
Claims priority, application Italy, Jan. 22, 1970, 19654 A/70; Jan. 22, 1970, 19656 A/70
Int. Cl. C07c *5/24*
U.S. Cl. 260—666 PY **9 Claims**

There are provided novel triene hydrocarbons, having at least two conjugated double bonds, and being of the general formula

$$A-(C(R_a)_2)_n-(CH)_m=B$$

in which A is a radical consisting of a ring containing an endomethylene group; B may be both a linear alkadiene radical and a substituted and unsubstituted alkene or cycloalkene radical; R_a may be hydrogen, an aryl or an alkyl radical, n is a number ranging from 0 to 3; and m is 0 or 1. If *n* is not 0, m is 0; if *n* is 0, *m* is 0 or 1.

3,676,513
HYDROCARBON DEHYDROGENATION EMPLOYING METAL ANTIMONIDE CATALYSTS

Donald C. Tabler, Bartlesville, Okla., assignor to Phillips Petroleum Company

Filed Jan. 8, 1971, Ser. No. 105,110
Int. Cl. C07c *5/18*
U.S. Cl. 260—668 D **9 Claims**

Antimonides of cobalt and nickel are employed for dehydrogenating naphthenes and olefins.

3,676,514
PROCESS FOR ADDING METHYL SUBSTITUENTS TO AROMATIC HYDROCARBONS

Robert W. Rosenthal, Pittsburgh, Pa., assignor to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Sept. 5, 1959, Ser. No. 855,781
Int. Cl. C07c *15/02*
U.S. Cl. 260—668 **6 Claims**

A process for adding from one to two methyl substituents to an aromatic hydrocarbon which involves reacting the aro-

matic hydrocarbon with formaldehyde in an aqueous HCl medium in an atmosphere containing gaseous HCl at an elevated pressure to obtain a chloromethyl aromatic hydrocarbon, reacting the chloromethyl aromatic hydrocarbon with hydrogen in the presence of a hydrogenation catalyst and gaseous HCl at an elevated pressure to obtain the desired methyl aromatic hydrocarbon, hydrogen and gaseous HCl and recycling the latter hydrogen and gaseous HCl to the first stage of the process.

3,676,515

PROCESS FOR ALKYLATION OF AROMATIC COMPOUNDS

Richard K. McLeod, Dickerson, Tex., assignor to Monsanto Company, St. Louis, Mo

Filed March 17, 1971, Ser. No. 125,386
Int. Cl. C07c *3/56*
U.S. Cl. 260—671 C 15 Claims

Aromatic compounds are alkylated with olefins in the presence of a complex catalyst formed by reacting an alloy comprising mercury and aluminum with a hydrogen halide in a hydrocarbon medium.

3,676,516

PURIFICATION OF ETHYLENE OR PROPYLENE STREAMS CONTAINING CARBON MONOXIDE

Donald M. Haskell, and Bradley L. Munro, both of Bartlesville, Okla., assignors to Phillips Petroleum Company

Filed May 18, 1970, Ser. No. 38,524
Int. Cl. C07c *11/12*
U.S. Cl. 260—677 A 11 Claims

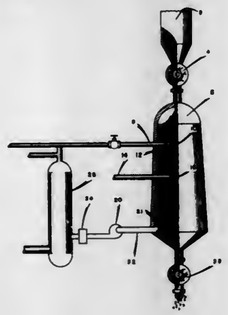
A propylene or ethylene stream containing small quantities of carbon monoxide is contacted with a supported copper oxide catalyst wherein 20 to 95 weight percent of the copper is in the cupric state and the remainder is in a lower valence state. The catalyst is advantageously prepared by treating an oxidized copper oxide catalyst with carbon monoxide or hydrogen.

3,676,517

PROCESS FOR THE PRODUCTION OF SYNTHESIS GAS, CRACKED HYDROCARBON AND CALCINED COKE

La Vaun S. Merrill, Jr., Englewood, and Robert E. Schilson, Littleton, both of Colo., assignors to Marathon Oil Company, Findlay, Ohio

Filed Sept. 12, 1969, Ser. No. 857,517
Int. Cl. C07c *11/24*
U.S. Cl. 260—679 R 8 Claims



Synthesis gases, cracked hydrocarbons, and calcined coke are produced in a calciner wherein hot combustion gases are passed through the hot coke, hydrocarbons and/or steam are injected into the calciner at a point below the combustion zone but into the soaking area, and the products are drawn out of the soaking area and recovered.

3,676,518

PREPARATION OF DIOLEFINS FROM TERTIARY AND SECONDARY ALKYL HALIDES CONTAINING ONLY FOUR CARBON ATOMS IN THE MAIN CHAIN

Frederic H. Hoppstock; Louis A. Falvo, both of Akron, and Kenneth J. Frech, Tallmadge, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Oct. 17, 1969, Ser. No. 867,395
Int. Cl. C07c *1/30*
U.S. Cl. 260—680 R 4 Claims

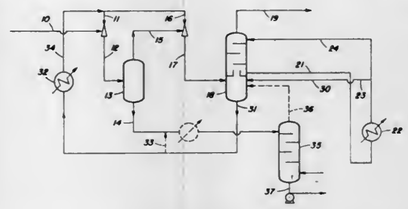
There is disclosed a method for the preparation of certain diolefins such as 1,3-butadiene, isoprene and 2,3-dimethyl-1,3-butadiene which comprises simultaneously dehydrohalogenating and dehydrogenating alkyl halides such as 2-halo-butanes, 2-methyl-2-halo-butanes, 3-methyl-2-halo-butanes and 2,3-dimethyl-2-halo-butanes. The process requires the use of catalysts which are preferably metal oxides of groups *Ib*, *IIa*, *IIb*, *IIIa*, *IVa*, *IVb*, *Va*, *Vb*, *VIb*, *VIIb*, *VIII and the lanthanum and actinium series of the Periodic System. Of these metal oxides it is preferred to employ silica and/or alumina.*

3,676,519

QUENCH PROCESS

Rolf K. Dorn, Berkeley Heights, and Theodore S. Williams, Middleton, both of N.J., assignors to The Lummus Company, Bloomfield, N.J.

Filed Jan. 2, 1970, Ser. No. 261
Int. Cl. C07c *11/24*
U.S. Cl. 260—683 1 Claim



A quench process wherein an effluent from a high temperature process, such as, the pyrolysis of hydrocarbons, is contacted with a hydrocarbon quench oil having upper and lower cut points somewhere within the range between 500° and 1,000° F. (converted to one atmosphere) to rapidly cool the effluent to a temperature at which side reactions are minimized, the quench oil being partially vaporized as a result of such contacting. A mixture of the effluent and vaporized quench oil is then contacted with a quench oil having cut points within the above described range to effect cooling thereof to a temperature at which the vaporized quench oil is condensed, the temperature being a temperature no less than 400° F. in order to effect recovery thereof at a temperature sufficient to generate usable steam. The quench oil is then passed through a waste heat boiler to effect cooling thereof and generation of high pressure steam, with the cooled quench oil being recycled to the quench operation.

3,676,520

CONVERSION OF OLEFINS

Louis F. Heckelsberg, Bartlesville, Okla., assignor to Phillips Petroleum Company

Filed Dec. 31, 1964, Ser. No. 422,550
Int. Cl. C07c *3/62*
U.S. Cl. 260—683 D 11 Claims

Olefin hydrocarbons are disproportionated by contacting with a catalyst comprising an oxide of rhenium.

3,676,521

SYNTHETIC LUBRICANTS FROM LOW MOLECULAR WEIGHT OLEFINS

Richard S. Stearns, Malvern; Irl N. Duling, West Chester, and David S. Gates, Swarthmore, all of Pa., assignors to Sun Oil Company, Philadelphia, Pa.

Continuation-in-part of Ser. No. 621,443, March 8, 1967, abandoned. This application Oct. 5, 1970, Ser. No. 78,191
Int. Cl. C07c *3/10, 3/26;* C10m *3/12*
U.S. Cl. 260—683.1 6 Claims

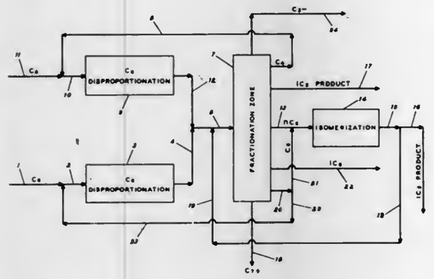
New ethylene-propylene copolymer oils containing 29–71 mol percent ethylene, the rest being at least substantially entirely propylene, said oils being of high viscosity index, low pour point, and high stability, are produced from monoolefin mixtures containing ethylene and propylene employing specified vanadium-aluminum or titanium-aluminum Ziegler-type catalyst systems. Hydrogen under pressure is used with the vanadium-aluminum catalyst system to control molecular weight. Oils of lubricating oil viscosity can be produced directly, or after cracking higher molecular weight oil, said cracking usually, but not necessarily, followed by hydrogenating. Dewaxing can be employed to reduce pour point. Oil fractions have similar desirable lubricating oil properties as the overall copolymer oil.

3,676,522

DISPROPORTIONATION AND ISOMERIZATION FOR ISOPENTANE PRODUCTION

Robert P. Sieg, Piedmont, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Jan. 18, 1971, Ser. No. 107,214
Int. Cl. C07c *5/24, 9/18*
U.S. Cl. 260—683.65 8 Claims



A process for producing isopentane which comprises: (a) disproportionating a normal butane-rich fraction in a C_4 disproportionation zone to obtain C_3 and n-pentane; (b) disproportionating a normal hexane-rich fraction in a C_6 disproportionation zone to obtain n-pentane and C_7; (c) fractionating the C_3, nC_5 effluent and the nC_5, C_7 effluent to obtain nC_5; and (d) isomerizing at least a portion of the normal pentane from both steps (a) and (b) in an isomerization zone to obtain isopentane. It is preferred to further integrate the disproportionation zones with the isomerization zone using common fractionation facilities.

3,676,523

ALPHA-OLEFIN PRODUCTION

Ronald F. Mason, Mill Valley, Calif., assignor to Shell Oil Company, New York, N.Y.

Filed July 16, 1971, Ser. No. 163,448
Int. Cl. C07c *3/10*
U.S. Cl. 260—683.15D 10 Claims

Ethylene is oligomerized to linear, alpha-olefins by reacting ethylene in liquid phase solution in the presence of a catalyst composition produced by contacting in the presence of ethylene (1) a simple divalent nickel salt (2) a boron hydride reducing agent and (3) an o-dihydrocarbylphosphinobenzoic acid or alkali metal salt thereof.

3,676,524

VINYL ESTER RESINS PREPARED WITH AN ADDITION COMPOUND OF A SECONDARY AMINE-ACID SALT CATALYST

Eiichiro Takiyama, Tokyo, and Sadakazu Hokamura, Yamato, both of Japan, assignors to Showa Highpolymer Co., Ltd., Tokyo, Japan

Filed July 27, 1970, Ser. No. 58,663
Int. Cl. C08g *45/04*
U.S. Cl. 260—837 R 10 Claims

A process for producing unsaturated ester resins which can use an accelerator containing an organic acid and an organic salt of cobalt in their cure, the process comprising heat reacting an epoxy resin having at least one epoxy group in its molecular structure with an unsaturated monobasic acid in the presence, as catalyst, of an addition compound of a secondary amine and an acid of the group consisting of inorganic and organic acids.

3,676,525

HIGH MOLECULAR WEIGHT AROMATIC POLYAMIDES HAVING AN AFFINITY FOR BASIC DYES

Gerhard D. Wolf, Dormagen; Gunter Blankenstein, Stommeln, and Gunter Nischk, Dormagen, all of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed April 7, 1971, Ser. No. 132,170
Claims priority, application Germany, April 13, 1970, P 20 17 509.1
Int. Cl. C08g *41/04*
U.S. Cl. 260—857 TW 3 Claims

A polyamide composition of matter that can be dyed with basic dyestuffs comprising a conventional high molecular weight aromatic polyamide and 3 to 30 percent by weight of an aromatic polyamide containing 30 – 100 Mol percent of removing structural units with disulfone imide structures.

3,676,526

POLYMERIC DISPERSION OF A DIENE-ACRYLONITRITE GRAFT COPOLYMER WITH A DIFFERENT GRAFT COPOLYMER

Eugene G. Sommerfeld, 1250 Providence Road, Apt. 91A, Secane, Pa.

Continuation-in-part of Ser. No. 643,049, June 2, 1967, abandoned. This application Feb. 2, 1970, Ser. No. 8,067
Int. Cl. C08d *9/08, 9/16*
U.S. Cl. 260—876 R 6 Claims

A dispersion of two different types of graft copolymers in an organic liquid. One of the types has a polymeric diene backbone component and a nitrile graft component; the other type has an unsaturated polymer backbone component and a graft component which is a polymer of a graft copolymerizable vinyl monomer.

The dispersion is useful as a coating composition, particularly for coating cans.

3,676,527

PROCESS FOR PREPARATION OF HIGH IMPACT POLYSTYRENE

Lyndon R. Babcock, Jr., Chicago, Ill., and Dale A. Walker, Cherry Hill, N.J., assignors to Shell Oil Company, New York, N.Y.

Continuation-in-part of Ser. No. 643,031, June 2, 1967, abandoned. This application Oct. 26, 1970, Ser. No. 84,225
Int. Cl. C08f *19/08, 41/12*
U.S. Cl. 260—876 R 5 Claims

An improved process for the preparation of high impact polystyrene which comprises: (a) polymerizing monomers

from the group consisting of styrene, or mixtures thereof with minor amounts of acrylonitrile and/or lower alkyl acrylates to a conversion between about 30 and about 55 percent by heating said monomers between about 90 and 120°C, (b) separately interpolymerizing a diene rubber with styrene at a rate between 5 and 17%w weight per hour to a conversion between 13 and 30 percent, and (c) admixing the two streams and (d) non-catalytically polymerizing substantially all of the polymerizable monomers in the resulting mixture to form the high-impact polystyrene composition.

3,676,528
PREPARATION OF POLYMERIC COMPOSITIONS OF HIGH IMPACT RESISTANCE
Febo Severini; Alberto Valvassori, and Carlo Tavazzani, all of Milan, Italy, assignors to Montecatini Edison S.p.A., Milan, Italy
Filed Dec. 7, 1970, Ser. No. 97,475
Claims priority, application Italy, Dec. 10, 1969, 25582 A/69
Int. Cl. C08f *25/00, 45/68, 45/70*
U.S. Cl. 260—878 R **8 Claims**

Graft polymers having high impact resistance are produced by polymerizing vinyl monomers in an aqueous emulsion of an olefinic rubber having a low degree of unsaturation, wherein the emulsion also contains an aromatic, aliphatic or cycloaliphatic hydrocarbon liquid stabilizer.

3,676,529
CURABLE GRAFT POLYMERS OF POLYALKYLENE OXIDES
Harry H. Fall, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Continuation-in-part of Ser. No. 649,469, June 28, 1967, abandoned. This application July 24, 1970, Ser. No. 58,184
Int. Cl. C08f *29/56*
U.S. Cl. 260—887 **9 Claims**

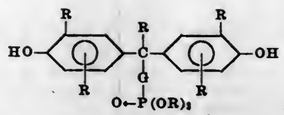
Substituted olefin monomers, such as diene and vinyl monomers, may be grafted to solid poly-1,2-alkylene oxide by employing a tertiary-butyl-perester catalyst at between 40° C. and 100° C. Diene and vinyl monomers may be grafter individually or as mixtures depending on the graft polymer properties desired. The inclusion of dienes yields a sulfur-curable gum stock whose vulcanizates have excellent physical properties for use as a general purpose rubber.

3,676,530
PHOSPHATE ESTERS HINDERED THIOBISPHENOLS
Michael Robin, Colonia, and Sheldon R. Schulte, Highland Park, both of N.J., assignors to Ashland Oil & Refining Company, Houston, Tex.
Filed June 16, 1969, Ser. No. 833,807
Int. Cl. C07f *9/12*; C08f *45/58*
U.S. Cl. 260—949 **6 Claims**

Reaction products of a phosphate ester-forming compound such as a phosphorous oxyhalide and a hindered thiobisphenol are obtained. Such products are useful as antioxidants in various compositions and materials.

3,676,531
BIS-(HINDERED PHENOL)-ALKANE PHOSPHONATES
John D. Spivack, Spring Valley, and Martin Dexter, Briarcliff Manor, both of N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.
Filed May 19, 1969, Ser. No. 825,918
Int. Cl. C07f *9/40*
U.S. Cl. 260—953 **7 Claims**

Bis-(hindered phenol)-alkane phosphonates having the formula



wherein R is alkyl or other groups can be prepared by condensation reactions. These compounds are useful as stabilizers of organic materials subject to oxidative deterioration.

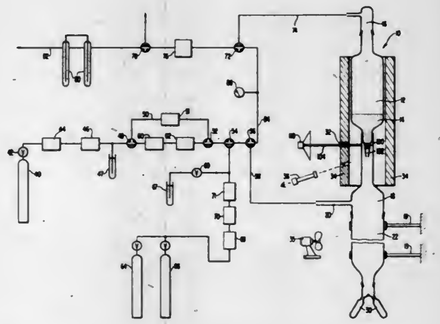
3,676,532
ALPHA-(DIALKOXYPHOSPHINYL)ARYL METHYL DIALKYL PHOSPHATES
Richard J. Turley, Derby, Conn., assignor to Olin Corporation
Filed Nov. 21, 1969, Ser. No. 878,928
Int. Cl. C07f *9/32*; C08g *22/44*
U.S. Cl. 260—970 **7 Claims**

A method for preparing alpha-(dialkoxyphosphinyl) arylmethyl dialkyl phosphates, useful for flame retardants in plastics, especially polyurethanes, condenses dialkyl phosphites with aroyl halides using tertiary alkylamines as hydrohalogen acid acceptors.

3,676,533
METHOD OF PREPARING PROPELLANT CHARGES FROM FIBROUS NITROCELLULOSE
Henry C. Dehm, Salt Lake City, Utah, and Dale F. Mellow, Sugar Grove, Va., assignors to Hercules Incorporated, Wilmington, Del.
Filed June 26, 1968, Ser. No. 740,073
Int. Cl. C06b *21/02*
U.S. Cl. 264—3 C **6 Claims**

A process for preparing propellant charges from fibrous nitrocellulose is provided. The fibrous nitrocellulose is plasticized and then molded into a consolidated charge in which the fibers retain their individual identity. The propellant charges can be used as caseless cartridges for caseless ammunition.

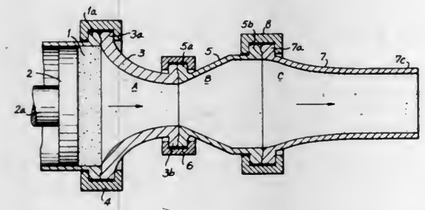
3,676,534
PROCESS RELATING TO ULTRA-PURE METAL HALIDE PARTICLES
Scott Anderson, 1116 W. Church St., Champaign, Ill.
Filed Sept. 26, 1969, Ser. No. 861,408
Int. Cl. B01j *2/18*
U.S. Cl. 264—9 **16 Claims**



Compositions are described including free-flowing particles of controlled size of purified metal halides such as sodium iodide and mixtures of sodium iodide with scandium iodide.

These ultra-pure metal halide particles are particularly useful as a vaporizable fill disposed within an arc tube of a high pressure electric discharge device. The preparation and identification of the coordination entity $Na^+ScI^-_4$ (III) is also described. The process for producing purified metal halides of accurately controlled particle size includes evaporating volatiles from the solid impure metal halide, melting the impure halide, passing hydrogen, hydrogen halide, hydrogen and halogen, or mixtures thereof through the halide, and then passing the molten halide through a vibrating discharge conduit or nozzle into an inert quenching atmosphere to form the particles of purified halide.

3,676,535
METHOD AND APPARATUS FOR CONTROLLING ORIENTATION OF NEEDLE-LIKE CARBON PARTICLES IN EXTRUDED CARBON STOCK
Leslie H. Juel, 611 Sandlewood Drive, Lewiston, N.Y.
Filed Nov. 7, 1969, Ser. No. 874,849
Int. Cl. B29f *3/04*; C04b *35/54*
U.S. Cl. 264—29 **19 Claims**

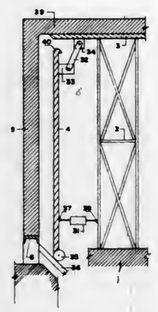


A means and method are provided for extruding compositions, particularly for extruding mixes of carbon and/or graphite particles and carbonizable binder, whereby the composition is subjected to greater working than normally encountered in conventional extrusion practices. This extrusion technique results in the elimination of or minimization of the effects of batch interfaces and in better consolidation of the mix. The means and method can additionally be employed to control the orientation of acicular particles in a composition during the extrusion thereof so as to control the properties of the extruded product.

In all cases, the extrusion die's internal configuration is defined by at least three "working" sections, (which may be interrupted by one or more sections of substantially constant cross section, e.g. cylindrical sections), consisting of a first converging section, then a diverging section, and then a second converging section. When employed in the extrusion of a carbonaceous mix containing needle-like carbon particles, dies of the present invention of appropriate design can be used to produce stock which after baking and graphitizing is characterized by having a transverse to longitudinal average coefficient of thermal expansion (CTE) ratio considerably less than that characteristic of corresponding stock in which the particles are all axially aligned.

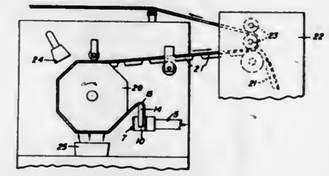
3,676,536
SYSTEM FOR PRODUCING MODULAR BUILDING BLOCKS
Shelley W. Shelley, Isla Verde, P.R., assignor to Shelley Systems Inc., Rio Piedras, P.R.
Filed Jan. 10, 1969, Ser. No. 790,305
Int. Cl. E04b *1/16*
U.S. Cl. 264—33 **8 Claims**

The disclosure sets forth a system for prefabricating modular boxlike units of concrete, in which the upper slab or top slab is poured together with the walls and then subsequently is lifted and placed upon a lower slab form, whereby the lower slab is poured to create monolithic structure with the top, side



and partition walls. The outside walls and partition walls may also be precast and then placed in position with the pouring of the upper or top slab and then stripped monolithically with the upper slab.

3,676,537
CONTINUOUS METHOD OF EXTRUDING AND THERO-FORMING SKIN-COVERED FOAMED THERMOPLASTIC ARTICLES
Thomas W. Winstead, 2 Overlook Lane, Baltimore, Md.
Continuation-in-part of Ser. No. 508,417, Nov. 18, 1965, abandoned. This application Dec. 8, 1969, Ser. No. 882,866
Int. Cl. B29d *7/04, 7/20, 7/24, 27/00*
U.S. Cl. 264—48 **4 Claims**

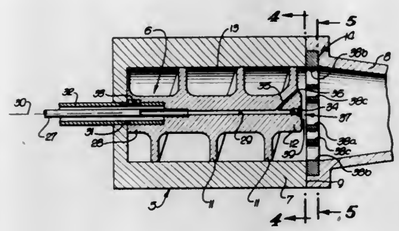


Three-dimensionally formed articles of foamed thermoplastic material having a low-density core and at least one integral, high-density, thin skin are produced on a continuous basis. A narrow strip of the thermoplastic material is extruded at a high linear rate from an arcuate mouth die, immediately surface-chilled to produce the skin, laterally expanded over a curved mandrel, and fed continuously to apparatus for three-dimensionally forming individual articles. The operating parameters are critically controlled to permit deep-draw three-dimensional forming by utilization of the heat of extrusion.

3,676,538
METHOD FOR SOAP BARS HAVING MARBLE-LIKE DECORATION
Charles B. Patterson, Lakewood, Calif., assignor to Purex Corporation, Ltd., Lakewood, Calif.
Filed Feb. 4, 1970, Ser. No. 8,494
Int. Cl. B29f *3/12*; B32b *31/30*; C11d *13/18*
U.S. Cl. 264—75 **14 Claims**

Method of producing marble-like appearance in a soap bar in which a saponaceous dye solution having color contrast

with the soap of the bar is injected through a screw end opening in a plodder screw and is distributed through a soap mass



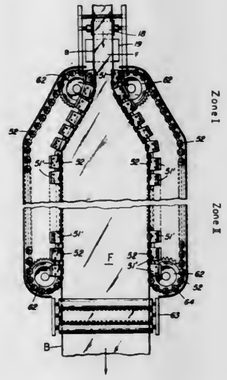
being extruded in a manner producing contrasting color streaks therethrough subdued at their boundaries for indistinct mergence with the extruded mass.

3,676,539

BIAXIAL ORIENTATION OF THERMOPLASTIC FILM

Robert E. Fisher, Fairport, N.Y., assignor to Mobil Oil Corporation

Filed Sept. 2, 1969, Ser. No. 854,471
Int. Cl. B29d *7/14, 7/24;* **D01d** *5/08*
U.S. Cl. 264—175 **1 Claim**



A continuous method for the production of biaxially oriented polypropylene film to produce an oriented film having uniform gauge and further characterized by having a high tensile modulus in the machine direction. The present method comprises extrusion of a molten base web into a pair of rotating nip rollers; passage of the polypropylene through the nip rollers into a quench bath whereby a solidified base film is formed, preheating the base film to an orientation temperature and thereafter stretching it in a transverse direction; subsequently stretching the transversely stretched film in the longitudinal direction. The temperature conditions during transverse direction orientation are maintained substantially isothermal as are the orientation temperatures during machine direction orientation, both transverse and machine direction orientation being accomplished within the confines of the single orientation chamber.

3,676,540

WET-SPINNING SHAPED FIBERS

Richard Neil Story, Cincinnati, Ohio, and Howard Bundegaard, Norwalk, Conn., assignors to American Cyanamid Company, Stamford, Conn.

Continuation of Ser. No. 696,495, Jan. 9, 1968, abandoned. This application March 15, 1971, Ser. No. 124,583
Int. Cl. B28b *21/54;* **D01f** *7/00*
U.S. Cl. 264—177 F **8 Claims**

A process for wet-spinning filaments of diversiform cross-sectional configuration comprising; extruding a fiber-forming polymer solution through orifices of diversiform cross-sectional configuration in a spinnerette of low thermal conductivity into a cold aqueous coagulating liquid while simultaneously and continuously withdrawing the resulting coagulum from said coagulating liquid at a linear velocity at least 0.5 times the average linear velocity of said polymer solution through said orifices.

3,676,541

CENTRIFUGAL CASTING METHOD

Seiya Nishi; Akira Oshio, both of Tokyo, and Kiyomitsu Eto, Kawaguchi, all of Japan, assignors to Onoda Cement Company Limited, Onoda-shi, Yamaguchi and Nippon Concrete Industries Company, Limited, Tokyo, Japan

Filed Sept. 8, 1970, Ser. No. 70,599
Claims priority, application Japan, Sept. 9, 1969, 44/71016
Int. Cl. B29c *25/00*
U.S. Cl. 264—234 **16 Claims**

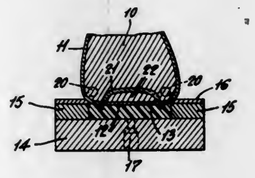
This invention relates to a method of making mortar or concrete pipes by centrifugal casting. The method is characterized by using mortar or concrete prepared from a cementiteous material incorporated with a salt of β-naphthalenesulfonic acid-formaldehyde condensate, and curing the mortar or concrete pipes made by the above condition with high pressure steam in an autoclave.

3,676,542

MANUFACTURE OF FOOTWEAR

Frank Vincent Maltby, Don Mills, Ontario, Canada, assignor to Bata Shoe Company, Inc., Belcamp, Md.

Filed Oct. 2, 1969, Ser. No. 864,290
Claims priority, application Great Britain, Oct. 2, 1968, 46,874/68
Int. Cl. B29h *7/08;* **B29f** *1/022;* **A43d** *65/00*
U.S. Cl. 264—244 **4 Claims**



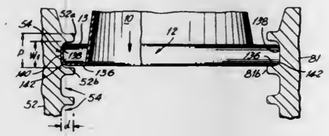
When hot injection molding thermoplastic soles onto textile components the sole portion of the last is heated to achieve better bonding. In order to markedly increase production, only the peripheral part of the sole portion of the last is heated, the middle (remaining) part is maintained at an effectively lower temperature. This is accomplished by providing a last having either an insulating layer between the middle and peripheral parts thereof, or, marking the middle part entirely of insulating material.

3,676,543

BRIM CURLING METHOD

Rheinhold Gerber, Rolling Meadows; James Edward Kerrigan, Arlington Heights, and Harry Ray Hawley, Lombard, all of Ill., assignors to American Can Company, New York, N.Y.

Division of Ser. No. 767,752, Oct. 15, 1968, Pat. No. 3,479,737. This application July 15, 1970, Ser. No. 62,742
Int. Cl. B29c *17/02*
U.S. Cl. 264—296 **6 Claims**



In forming a curled turned-in lip about the open mouth of a flexible walled, thermoplastic container, a plurality of threaded rollers engage the brim of the containers so that the faces of the thread progressively turn-in the brim as the container is advanced longitudinally of the rollers. The threaded rollers are arranged to bias the brim between the faces of the threads to facilitate formation of the turned-in lip as the rollers are rotated.

3,676,544

PROCESS FOR THE PRODUCTION OF POLYAMIDE MOULDINGS

Klaus Reinking, Krefeld; Helmut Vogel, Krefeld-Gartenstadt; Wilhelm Hechelhammer, and Kurt Schneider, both of Krefeld-Bockum, all of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed May 20, 1970, Ser. No. 39,140
Claims priority, application Germany, May 31, 1969, P 19 27 922.2
Int. Cl. B29f *1/08*
U.S. Cl. 264—329 **9 Claims**

This invention relates to a process for the production of polyamide mouldings which comprises polymerizing a mixture consisting of a lactam, a catalyst and an activator in a screw injection moulding machine, said mixture being delivered to said screw injection moulding machine under the effect of an external pressure. The mixture is delivered at a pressure of at least 2 atms. under the influence of a pressure generator through a feed opening to the feed zone and a screw injection moulding machine and is polymerized in the injection moulding machine to form a polyamide at a temperature above the melting temperature of the polyamide and the resulting polyamide melt is forced by the injection moulding machine into a mould.

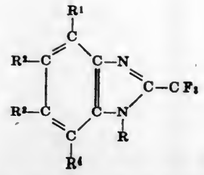
3,676,545

CERTAIN BENZIMIDAZOLE AS RODENTICIDES

David Thomas Saggers, Saffron Walden, England, assignor to Fisons Limited, Felixstowe, Suffolk, England

Filed Nov. 28, 1969, Ser. No. 880,938
Claims priority, application Great Britain, Dec. 3, 1968, 57,431/68
Int. Cl. A01n *9/22*
U.S. Cl. 424—273 **13 Claims**

Benzimidazole compounds of the formula



wherein R is alkyl of one to 12 carbon atoms and R^1, R^2, R^3 and R^4 are the same or different and are selected from the group consisting of hydrogen and halogen, not more than three of the groups R^1–R^4 being hydrogen are useful as rodenticides.

3,676,546

NEUTRALIZING COMPOSITIONS FOR PERMANENT WAVE OPERATION

Guilianna Ghilardi; Gregoire Kalopissis; Henry Philippe De Beaulieu, and Jean-Louis Abegg, all of Paris, France, assignors to Societe anonyme dite:L'Oreal, Paris, France

Filed July 24, 1969, Ser. No. 844,645
Claims priority, application Luxembourg, July 25, 1968, 56,584; July 9, 1969, 59,672
Int. Cl. A61k *7/10*
U.S. Cl. 424—71 **5 Claims**

A neutralizing composition to effect the second stage of neutralization of a permanent wave operation on the hair is an aqueous solution containing an N-methylol compound as an active compound in amounts of 0.5–12 percent by weight of the composition. An oxidizing agent can also be included in the composition in amounts such that the concentration of active compound and oxidizing agent is less than 1.7 moles/liter.

3,676,547

ASCARIS SUUM VACCINE

Reginald B. Galloway, Indianapolis, and Raymond F. Shumard, Greenfield, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Sept. 18, 1970, Ser. No. 73,620
Int. Cl. A61k *23/00*
U.S. Cl. 424—88 **3 Claims**

Ascaris suum vaccine containing antigen(s) obtained from second and third stage larvae and method of cultivation of such larvae.

3,676,548

METHOD OF VACCINATING SWINE AGAINST JOWL ABSCESS DISEASE

Earl E. Oee, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Sept. 18, 1970, Ser. No. 73,615
Int. Cl. C12k *5/00*
U.S. Cl. 424—92 **2 Claims**

Jowl abscess disease of swine is controlled by the addition of a live attenuated streptococcus group E vaccine to the drinking water of the swine. This vaccine may be combined with other orally-active vaccines effective against diseases of swine.

3,676,549

ADMINISTRATION OF ALKALI METAL SALTS OF SALICYLAMIDE

Takeru Higuchi, and Anwar Hussain, both of Lawrence, Kans., assignors to Alza Corporation

Continuation-in-part of Ser. No. 22,049, March 23, 1970. This application Sept. 30, 1970, Ser. No. 77,010
Int. Cl. A61k *9/00*
U.S. Cl. 424—44 **2 Claims**

Aqueous solutions of alkali metal salts of salicylamide are orally administered with significantly improved analgesic, anti-inflammatory, antipyretic and sedative results, as com-

pared with solid oral dosage forms of both salicylamide and the alkali or alkaline earth metal salts of salicylamide. The solutions are formed by dissolving in water an effervescent composition comprised of a unit dosage amount of an alkali metal salt of salicylamide.

3,676,550

MODIFICATION OF REDUCED KERATINOUS SUBSTRATES WITH A VINYL MONOMER

Giuseppe Anzuino, Vercelli, Italy, assignor to Colgate-Palmolive Company, New York, N.Y.

Filed May 29, 1969, Ser. No. 829,096
Int. Cl. A61k 7/10
U.S. Cl. 424—71 6 Claims

A process for the treatment of a keratinous substrate comprising the steps of (1) reduction of the substrate and (2) contacting same with a solution of vinyl monomer and free radical liberating catalyst, step (2) being effected in the presence of a water-soluble halide.

3,676,551

PROCESS FOR OBTAINING EXTRACTS FROM ANIMAL TISSUES

Yvonne Thuillier, Paris, France, assignor to Laboratories Albert Rolland, Paris, France

Continuation-in-part of Ser. No. 530,325, Feb. 28, 1966, which is a continuation-in-part of Ser. No. 247,827, Dec. 28, 1962, abandoned. This application Oct. 3, 1969, Ser. No. 863,696
Claims priority, application France, Jan. 19, 1962, 62885273
Int. Cl. A61k 17/00
U.S. Cl. 424—103 9 Claims

Extracts of animal organs, useful in opotherapy, are prepared by removing from the organ aseptically collected immediately after slaughtering the animal, foreign matter, debris and fat. The remainder is then very rapidly frozen to about a temperature of −78° C. and maintained at a temperature of about −20° C. Thereupon, the organ is crushed at a temperature of about 2° C. and subjected to moderate digestion at room temperature by activated trypsin. By removing insoluble matter a clear solution is obtained. Euglobulins present in the solution are removed by affixing on an insoluble sulfate which is thereupon removed and the resulting solution is clarified. Finally, the clarified solution is rapidly freeze-dried at a temperature of about −80° C.

3,676,552

STABLE INSULIN MATERIAL

Ezra Levin, Champaign, Ill., and Ezra Levin, Champaign, Ill., assignors to Violin Corporation, Champaign, Ill.

Filed Oct. 9, 1967, Ser. No. 673,958
Int. Cl. A61k 17/04
U.S. Cl. 424—110 8 Claims

A substantially dry and substantially defatted solid pancreatic tissue material which contains active insulin in hormonal levels corresponding to the amount in an equivalent amount of fresh pancreas, but said solid material being substantially free of pancreatic enzymes. The dry product is stable at room temperature and therefore provides an improved insulin source material which can be more economically handled because of markedly smaller weight and easier handling properties, and which can be later processed to separate the insulin.

The improved, stable insulin source material is prepared by deactivating the pancreatic enzymes with acid treatment, then removing substantially all the water from the pancreas by azeotropic distillation; and removing substantially all the fat by dissolving in a fat organic solvent which is also used to form the azeotrope. The insulin present in the dry, stable material may then be conventionally separated and converted into acceptable pharmaceutical forms.

3,676,553

THERAPEUTIC COMPOSITION

Beverly L. Reynolds, Dallas, Tex., assignor to Cybersol, Inc., Dallas, Tex.

Filed Dec. 15, 1969, Ser. No. 885,295
Int. Cl. A61k 27/00
U.S. Cl. 424—128 11 Claims

A therapeutic composition comprised of an aqueous medium containing about 75–150 millimoles of Na^+, about 5–50 millimoles of K^+, about 5–50 millimoles of HCO_3^-, about 75–150 millimoles of Cl^- and preferably containing about 1–30 millimoles of Mg^{++} and about 1–30 millimoles of HPO_4^{--} and/or SO_4^{--}; the solution having a pH of about 6.8–8.2 and an osmolality of about 170–460 and preferably about 260–340 and more preferably 290–310. The solution can be administered orally but preferably parenterally. Also, the anhydrous form of the composition in a tablet form as well as an oral composition containing flavoring agents is taught.

3,676,554

ANTI-ARTHRITIC COMPOSITIONS COMPRISING PHOSPHINE OR PHOSPHITE GOLD HALIDE COMPLEXES AND METHODS OF PRODUCING ANTI-ARTHRITIC ACTIVITY

Elizabeth R. McGusty, Philadelphia; Blaine M. Sutton, Hatboro, and Donald T. Walz, Drexel Hill, all of Pa., assignors to Smith Kline & French Laboratories, Philadelphia, Pa.

Continuation-in-part of Ser. No. 884,709, Dec. 12, 1969, abandoned. This application Oct. 30, 1970, Ser. No. 85,694
Int. Cl. A61k 27/00
U.S. Cl. 424—198 10 Claims

Pharmaceutical compositions having anti-arthritic activity comprising a phosphine or phosphite gold halide complex and methods of producing anti-arthritic activity by administering internally, preferably orally, said compositions.

3,676,555

INSECTICIDAL AND ACARICIDAL AMIDO-THIOLPHOSPHORIC ACID ESTERS

Gerhard Schrader, Wuppertal-Cronenberg; Walter Lorenz, Wuppertal-Vohwinkel; Gunter Unterstenhofer, Opladen, and Ingeborg Hammann, Cologne, all of Germany, assignors to Farbenfabriken bayer Aktiengesellschaft, Leverkusen, Germany

Division of Ser. No. 468,585, June 30, 1965. This application March 13, 1968, Ser. No. 712,626
Claims priority, application Germany, July 2, 1964, F 43328
Int. Cl. A01n 9/36
U.S. Cl. 424—220 30 Claims

Certain amido-thiophosphoric acid esters are disclosed which are useful as insecticides and acaricides.

3,676,556

METHOD OF STABILIZING NIALINAMIDE AGAINST CAKING

Elmer De Ritter, Glen Rock, and Joseph Edward Raymond, Saddle Brook, both of N.J., assignors to Hoffman-La Roche Inc., Nutley, N.J.

Continuation-in-part of Ser. No. 596,768, Nov. 25, 1966. This application Sept. 26, 1969, Ser. No. 861,473
Int. Cl. A61k 15/12
U.S. Cl. 424—266 3 Claims

A therapeutically active, tasteless niacinamide powder stable against caking during storage is described. Mixtures of fatty acid monoglycerides and diglycerides are used as the anti-caking component.

3,676,557

LONG-ACTING NARCOTIC ANTAGONIST FORMULATIONS

Leon Lachman, Manhasset; Roy H. Reiner, Baldwin Harbor; Elie Shami, Hempstead, and Walter Specter, Valley Stream, all of N.Y., assignors to Endo Laboratories, Inc., Garden City, N.Y.

Continuation-in-part of Ser. No. 56,975, July 21, 1970, abandoned. This application March 2, 1971, Ser. No. 120,336
Int. Cl. A61k 27/12
U.S. Cl. 424—260 3 Claims

The pamoate salts of N-(cyclopropylmethyl)-7,8-dihydro-14-hydroxynormorphinone and N-allyl-7,8-dihydro-14-hydroxynormorphinone, in oil suspension, are injectable, long-acting forms of these narcotic antagonists.

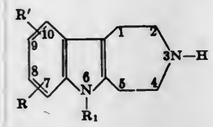
3,676,558

ANOREXIGENIC COMPOSITIONS COMPRISING 6-ALKYL-1,2,3,4,5,6-HEXAHYDROAZEPINO 4,5-INDOLES AS ACTIVE INGREDIENT AND PROCESS OF TREATMENT

Jackson B. Hester, Jr., Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 868,927, Oct. 23, 1969, which is a continuation of Ser. No. 548,880, May 10, 1966, abandoned. This application Aug. 28, 1970, Ser. No. 68,046
Int. Cl. A61k 27/00
U.S. Cl. 424—274 8 Claims

Compositions comprising 6-alkyl-1,2,3,4,5,6-hexahydroazepino[4,5-b]indole of the formula:



(Formula VI)

wherein R and R′ are selected from the group consisting of hydrogen, alkoxy and alkyl containing from one to three carbon atoms, inclusive, and halogen; wherein R_1 is alkyl defined as above; including pharmacologically acceptable acid addition salts of those compounds, in combination with conventional pharmaceutical carriers. The compositions are used to suppress hunger in mammals.

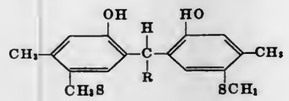
3,676,559

LAXATIVES COMPRISING SUBSTITUTED BIO(2-HYDROXY-4-METHYL-5-METHYLTHIOPHENYL)METHANES

Ronald J. Meyer; Orville E. Horsley, and Herman J. Eichel, all of Cincinnati, Ohio, assignors to American Hoechst Corporation, New York, N.Y.

Division of Ser. No. 740,054, June 28, 1968, Pat. No. 3,579,538. This application June 22, 1970, Ser. No. 59,809
Int. Cl. A61k 27/00
U.S. Cl. 424—275 2 Claims

Substituted bis(2-hydroxy-4-methyl-5-methylthiophenyl)methane compounds having laxative (cathartic) properties of the general formula:



3,676,560

PRODUCING DIURETIC AND SALURETIC EFFECTS WITH BENZOFURAN CARBOXYLIC ACID DERIVATIVES

Janos Zergenyi, Richen, and Ernst Habicht, Oberwil, both of Switzerland, assignors to Geigy Chemical Corporation, Ardsley, N.Y.

Division of Ser. No. 746,267, July 22, 1968, Pat. No. 3,557,152. This application May 6, 1970, Ser. No. 47,933
Int. Cl. A61k 27/00
U.S. Cl. 424—285 4 Claims

5-(2-Bromo-2-bromomethyl-alkanoyl)-benzofuran-2-carboxylic acids and their pharmaceutically acceptable salts with bases have diuretic and saluretic activities. A typical embodiment is 5-(2-bromo-2-bromomethyl-butyryl)-6-methyl-benzofuran-2-carboxylic acid. A method of producing a diuretic and simultaneously a saluretic effect comprising administering said compounds to warm-blooded animals as well as pharmaceutical composition containing said compounds are provided.

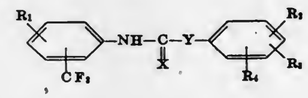
3,676,561

ANTHELMINTIC COMPOSITIONS CONTAINING NEW CARBAMATES AND THIOCARBAMATES AND METHOD OF USE

Walter Traber, Riehen; Alfred Margot, Basel, and Jean-Jacques Gallay, Baselland, all of Switzerland, assignors to Geigy Chemical Corporation, Greenburgh, N.Y.

Division of Ser. No. 549,497, May 12, 1966, Pat. No. 3,609,177. This application April 4, 1969, Ser. No. 835,276
Claims priority, application Switzerland, May 18, 1965, 6926/65; May 18, 1965, 6927/65; May 18, 1965, 6928/65
Int. Cl. A61k 27/00
U.S. Cl. 424—300 10 Claims

There are disclosed antheimintic compositions containing carbamates and thiocarbamates of the formula



in which each of R_1 and R_2 independently represents hydrogen, halogen or halogenoalkyl; R_3 represents hydrogen, halogen, nitro, cyano, hydroxyl, amino, carbamoyl, sulphamoyl, phenoxy or sulphonic acid group, alkyl, alkenyl, halogenoalkyl, aralkyl, alkoxy, alkylthio, alkoxyalkyl, alkylthioalkyl, alkylsulphinyl, alkylsulphonyl, S-alkylsulphonylamino, alkylsulphamoyl, dialkylsulphamoyl, alkyl-carbamoyl, dialkylcarbamoyl, alkylamino, dialkylamino, acylamino, acyl or carbalkoxy; R_4 represents hydrogen, halogen or alkyl; and X and Y each independently represents oxygen or sulphur. These compositions can also be incorporated into animal feeds.

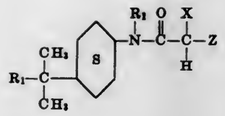
3,676,562

IRRITANT COMPOSITION COMPRISING N-DIHALOACETYL-4-ALKYLCYCLOHEXYLAMINE

Richard N. Knowles, Hockessin, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 634,131, April 2, 1967. This application Oct. 24, 1968, Ser. No. 770,445
Int. Cl. A01n 9/20
U.S. Cl. 424—320 8 Claims

Repelling animals with N-dihaloacetylcyclohexylamines of the formula:



wherein

R_1 is hydrogen or alkyl,
R_2 is hydrogen or alkyl,
X is halogen, and
Z is halogen.

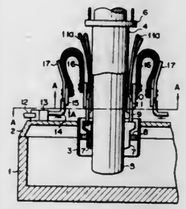
Typical is N-dichloroacetyl-4-t-butylcyclohexylamine useful for repelling animals.

3,676,563
HYPERBARIC BREATHING MIXTURE
Frederick T. Ormand, and Huey V. Auger, both of Basking Ridge, N.J., assignors to Airco, Inc., New York, N.Y.
Continuation of Ser. No. 687,426, Dec. 4, 1967, abandoned. This application April 6, 1970, Ser. No. 23,101
Int. Cl. A61k *13/00, 27/00*
U.S. Cl. 424—366 1 Claim

An oxygen component of suitable partial pressure for breathing is mixed with an inert component comprising carbon tetrafluoride (CF_4), or a mixture of carbon tetrafluoride and helium (He), the inert components having a combined pressure depending upon the pressure of the environment in which breathing is to be sustained. The relative volume percentages of the CF_4 and the He are adjusted to optimize certain properties of the breathing mixture to provide improvements over standard compressed air or helium-oxygen mixtures.

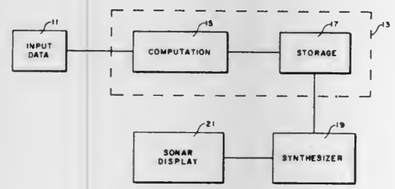
ELECTRICAL

3,676,564
POWER SUPPLY EQUIPMENT FOR ELECTRIC SMELTING FURNACE OF LARGE CAPACITY
Yoshiyuki Fujiwara, Tokyo, Japan, assignor to Tanabe Kakoki Co., Ltd., Niigata-ken, Japan
Filed Aug. 10, 1971, Ser. No. 170,457
Int. Cl. F27d *11/08*; H05b *7/12*
U.S. Cl. 13—12 4 Claims



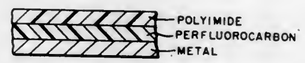
An improved power supply equipment for an electric smelting furnace of large capacity, which is characterized in that a plurality of conductors conveying electric power to the lower part of an electrode, each of which is connected to each segment of an electrode holder, are arranged in a manner that said conductor is not located on the side of the electrode facing the furnace center, and said conductors are connected to a fixed input terminal block in a manner that densities of electric currents in all the conductors are as equal as possible.

3,676,565
TIME DOMAIN WAVEFORM SYNTHESIZING METHOD
John Joseph Rowe, Bowie, Md., assignor to The Singer Company, New York, N.Y.
Filed Dec. 1, 1970, Ser. No. 93,979
Int. Cl. G09b *9/00*
U.S. Cl. 35—10.4 7 Claims



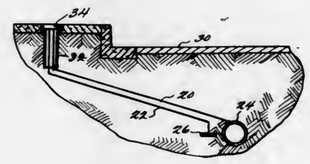
A method of synthesizing time domain waveforms from data in the frequency domain with improved resolution in the middle and lower frequencies. Frequency data is broken down into groups and each group processed through an inverse Fourier or fast Fourier transform to obtain time domain data which is then added together in the proper time relationship. The resulting composite digital information is then passed through a digital to analog converter to provide an analog time domain waveform.

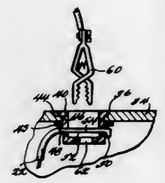
3,676,566
LAMINAR STRUCTURES OF POLYIMIDE AND FLUOROCARBON POLYMERS
Richard T. McBride, Buffalo, N.Y., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Continuation of Ser. No. 468,148, June 29, 1965, abandoned, which is a continuation-in-part of Ser. No. 313,079, Oct. 1, 1963, abandoned. This application Aug. 18, 1967, Ser. No. 661,509
Int. Cl. H01b *3/30, 7/34*; B32b *27/08*
U.S. Cl. 174—36 3 Claims



Laminar structures, electrical conductors therewith and the like composed of polyimide film, fluoropolymer film and thin metal sheet.

3,676,567
APPARATUS FOR USE IN TESTING FOR THE PRESENCE OF A GIVEN VOLTAGE WITH RESPECT TO GROUND ON A PIPELINE
Frank R. Zinn, Culpeper, Va., assignor to Bingham & Taylor, Culpeper, Va.
Filed Aug. 16, 1971, Ser. No. 172,116
Int. Cl. H02g *9/00*; C23f *13/00*
U.S. Cl. 174—37 10 Claims





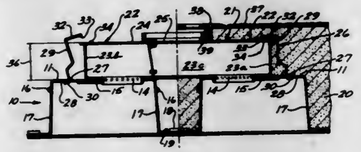
An apparatus for use in testing for the presence of a given voltage with respect to ground on a pipeline or the like whereby, in place of the conventional cover plate for the test station tube which houses the wires which connect to ground and the pipeline respectively and which must be removed to electrically connect a voltmeter to the wires, a cover having at least two passages through it with an electrically insulating plug disposed in each passage is employed. For testing two or more pipelines lying close together, the cover can be provided with a set of two apertures for each pipeline to be tested. Each plug has an internal space which is communicated to the interior of the test tube by at least a single opening through which a wire passes so that an uninsulated portion thereof is

disposed within the interior space. A further opening communicates the internal space to the open air so that a voltmeter can be connected to both wires without removing the cover plate. If desired, a further opening between the internal space and the interior of the test tube can be employed for draining the space.

3,676,568
HOLD-DOWN MEANS FOR UNDERFLOOR ACCESS HOUSING

Frank W. Fork, Allison Park, Pa., assignor to H. H. Robertson Company, Pittsburgh, Pa.

Filed July 9, 1971, Ser. No. 161,221
Int. Cl. H02g 3/04
U.S. Cl. 174—49 9 Claims

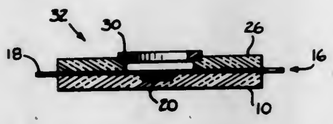


An underfloor access housing adapted for use with electrical raceway units of the type normally placed in building floors. The access housing spans the distance between adjacent cells and overlies the crests thereof. Separate hold-down means are provided for quickly connecting the access housing to the raceway unit.

3,676,569
INTEGRATED CIRCUIT PACKAGE

David F. Thompson, Warren, Pa., assignor to Sylvania Electric Products, Inc.

Filed Jan. 4, 1971, Ser. No. 103,387
Int. Cl. H05k 5/06
U.S. Cl. 174—52 S 5 Claims



Packages suitable for integrated circuits comprise

a. a ceramic supporting element of predetermined outside dimensions consisting essentially of from about 35 percent to about 45 percent aluminum oxide and the remainder an appropriate sealing glass, the element has a substantially flat lower external surface and an internal sealing surface with a substantially centrally located indentation,

b. an electrically conductive element comprising a frame portion extending around the perimeter of the package and external to the ceramic supporting element, a central pad portion in the indentation of the sealing surface of the ceramic supporting element, and a plurality of electrically conductive leads extending inwardly from the frame portion toward the central pad portion and having at least one lead connected to the pad portion and a major portion of the lower surface of the leads in contact with the sealing surface of the ceramic supporting element,

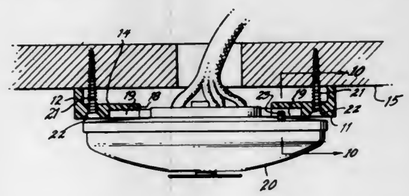
c. a ceramic sealing element consisting essentially of from about 20 to about 30 percent by weight of aluminum oxide and the remainder essentially an appropriate sealing glass, the sealing element covers a substantial portion of the electrically conductive element having outside dimensions substantially the same as the outside dimension of the ceramic supporting element and containing an access port to the central pad, the port having predetermined dimensions, a lower sealing surface that forms a seal over a substantial portion of the leads and to the sealing surface of the supporting element and an upper substantially flat external surface,

d. a metallic washer having an inside configuration substantially the same as the access port and in alignment therewith and the lower surface of the washer adhered to the external surface of the sealing element.

3,676,570
MOUNTING FOR FIRE DETECTOR DEVICES

William J. Gabb, Old Lyme, Conn., assignor to Fire Devices, Inc., Ivoryton, Conn.

Filed Aug. 4, 1971, Ser. No. 168,853
Int. Cl. H02g 3/20
U.S. Cl. 174—61 7 Claims

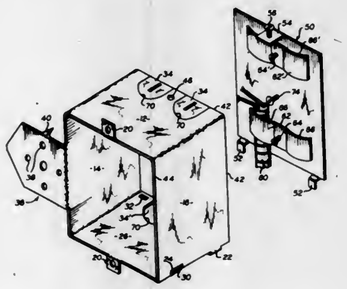


A mounting for fire detector devices is provided which comprises an adapter place of circular disc like shape with a plurality of spaced mounting holes and a rim extending from one face for flush mounting with said one face upwardly or on a junction box with said one face downwardly and for the attachment thereto of the fire detector device.

3,676,571
ELECTRICAL OUTLET BOX

Solomon Rubinstein, Fanwood, N.J., assignor to General Cable Corporation, New York, N.Y.

Filed March 10, 1971, Ser. No. 122,735
Int. Cl. H02g 3/08
U.S. Cl. 174—65 11 Claims

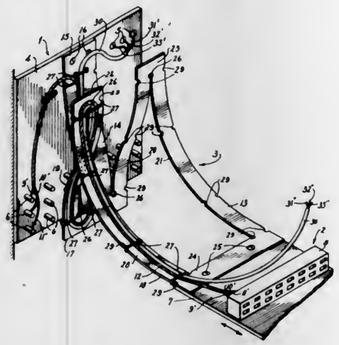


This electrical outlet or switch box is of two piece construction. One piece is the body which has an open front and an open back. A separate back plate incorporates the cable clamps and a ground wire terminating screw. This back plate attaches to the box after the cables have been connected to the back plate and after different connections between the cables have been made. It is particularly useful for preterminated wiring harnesses for factory built homes.

3,676,572
EXTENSIBLE CABLE STRUCTURE

Everett H. Davies, Rockford, Ill., assignor to Barber-Colman Company, Rockford, Ill.

Filed June 1, 1971, Ser. No. 148,650
Int. Cl. H01b 7/06
U.S. Cl. 174—69 8 Claims

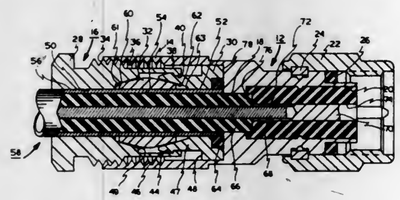


A self-reliant cable support of plane flexible insulating material is slit from opposite ends to form elongated strips, each joined to an adjacent strip at one end to produce a serpentine path from an end rigidly mounted on a first piece of equipment, such as an instrument rack, to another end rigidly mounted on a second piece of equipment, such as a measuring or control instrument, movable linearly with respect to the first piece. Wire or other flexible conductors are affixed in a single layer to one surface of the support along the serpentine path, forming a compact extensible structure to transmit signals between said pieces of equipment.

3,676,573
COAXIAL CONNECTOR HAVING ONE-PIECE CLAMP ASSEMBLY

Roger Peter Avery, Bethel, Conn., assignor to The Bunker-Ramo Corporation, Oak Brook, Ill.

Filed June 22, 1970, Ser. No. 48,059
Int. Cl. H02g 15/08
U.S. Cl. 174—75 C 12 Claims

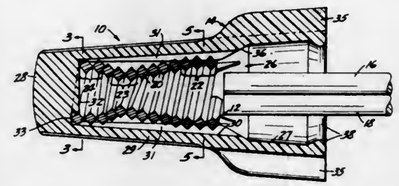


A clamp-type coaxial connector having a one-piece clamp assembly. The clamp assembly includes a clamp nut, a clamp bushing, and a clamp ferrule. The nut and bushing each include a member adapted to coact with the member of the other element to secure the nut and bushing together in a manner such as to permit limited axial movement between the elements. The nut is adapted to coact with a connector body to secure the clamp assembly to the body and to drive the nut and bushing toward each other. A counter-bore exists in the nut and/or the bushing in which the ferrule is captivated, the counter-bore having an angled surface which coacts with the ferrule as the nut and bushing are driven toward each other to clamp the ferrule against the outer conductor of a coaxial cable.

3,676,574
DEFORMABLE FIN SPRING CONNECTOR

Ronald C. Johansson, Oakdale, and Wayne Donald Weckhurst, Roseville, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Dec. 18, 1970, Ser. No. 99,365
Int. Cl. H02g 15/08
U.S. Cl. 174—87 5 Claims

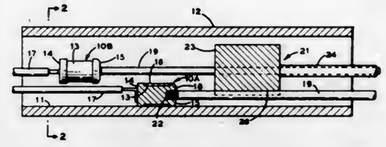


A tapered coiled spring wire secured within an insulating shell containing interior deformable fins for engagement with the spring wire to form retaining threads in the fins and avoid any substantial tensioning or deformation of the shell.

3,676,575
BRAZEABLE TERMINAL BODY

Galen K. Weaver; Howard A. Shaffer, and Stephen A. Coughlin, all of Alliance, Ohio, assignors to The Babcock & Wilcox Company, New York, N.Y.

Division of Ser. No. 754,889, Aug. 23, 1968, Pat. No. 3,553,812. This application Oct. 12, 1970, Ser. No. 79,934
Int. Cl. H02g 15/08
U.S. Cl. 174—94 R 1 Claim



A metal terminal body provided with an external coating of brazing material and a threaded portion for connecting the terminal body to a holding rod which is used for positioning and installing the terminal body, along with one or more conductor wires attached thereto, inside a metal tube. While held by the rod, the terminal body is braced against the tube wall at a selected location by means of a block inserted into the tube by means of another rod and which permits the block to be moved in sliding contact with the holding rod and the tube wall. The tube is externally heated to melt the brazing material on the terminal body to fuse same to the tube wall after which the block is withdrawn and the holding rod is disconnected from the terminal body.

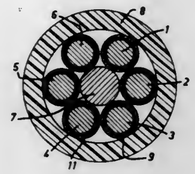
3,676,576
MULTICONDUCTOR STRANDED REMOTE-CONTROL CABLE

Robert Duberset, Chatillon-Sous-Bagneux, and Michele Sabatie, La Garenne-Colombes, both of France, assignors to Societe Nationale Industrielle Aerospatiale, Paris, France

Filed July 6, 1970, Ser. No. 52,178
Claims priority, application France, July 7, 1969, 6923008
Int. Cl. H01b 11/02
U.S. Cl. 174—113 R 5 Claims

Multiconductor cable comprising a plurality of metal wires of high unit tensile strength, at least two wires fulfilling wholly

or in part the function of an electrical conductor, a core withstanding the mechanical forces to which the cable is subjected when it is unwound, certain of the multiple wires being grouped to form a multi-strand single-channel conductor in



which the mechanical strength and the electrical resistance are locally distributed at distinct location, said cable receiving a plastic protective coating obtained by extrusion or impregnation.

3,676,577

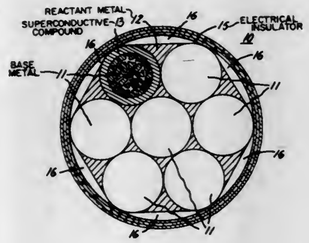
SUPERCONDUCTORS CONTAINING FLUX TRAPS

Donald L. Martin, Elnora, and Mark G. Benz, Burnt Hills, both of N.Y., assignors to General Electric Company

Continuation of Ser. No. 764,158, Oct., 1968, abandoned, which is a division of Ser. No. 467,577, June 28, 1965, Pat. No. 3,429,032, which is a continuation-in-part of Ser. No. 316,269, Oct. 15, 1963, abandoned. This application June 15, 1970, Ser. No. 57,418

Int. Cl. H01v *11/08*

U.S. Cl. 174—119 R **13 Claims**



The properties of superconductors of the niobium-tin type may be improved by the provision of flux trapping or pinning sites therein in the form of a dispersion of stable particles formed by the reaction between a metal such as zirconium for example, and a non-metal such as oxygen, nitrogen or carbon to form the corresponding metal oxides, nitrides or carbides. While the particle forming metal may be present as an alloying ingredient in either the tin bath through which the niobium strand is passed, or as an alloying ingredient in the niobium strand, where the superconductor is Nb_3Sn, it is preferred to use a niobium-zirconium alloy. In the process, a niobium-zirconium alloy strand is passed through a molten tin bath to form a tin coating thereon and subsequently heat treated in the presence of the non-metal reactant whereby an Nb_3Sn superconductive layer is formed containing the stable reaction product dispersion.

3,676,578

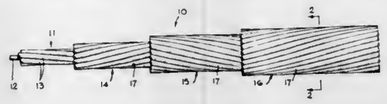
ELECTRIC CONDUCTOR CABLES FOR USE IN OVERHEAD POWER TRANSMISSIONS

Terence Cahill, Porthcawl, Wales, assignor to G.K.N. Somerset Wire Limited, Cardiff, Glamorgen County, Wales

Continuation-in-part of Ser. No. 800,223, Feb. 18, 1969, abandoned. This application Oct. 14, 1970, Ser. No. 80,688

Int. Cl. H01b *5/10*

U.S. Cl. 174—128 **12 Claims**



Overhead conductor cable, comprising a steel core around which is wound an electrically conducting aluminum winding, in which the degree of sag of the cable during its working life is reduced by having its resistance to creep under tensile loading substantially increased.

3,676,579

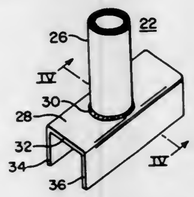
TRANSFORMER LEAD INSULATOR AND METHOD OF MAKING SAME

Thomas J. Lanoue, Muncie, and John G. De Neef, New Castle, both of Ind., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Aug. 2, 1971, Ser. No. 167,939

Int. Cl. H01b *17/58*; H01f *15/10, 27/32*

U.S. Cl. 174—138 R **6 Claims**



High voltage lead insulator for shell-form transformers and method of constructing same. Hollow cylindrical members, being constructed of pressboard and having one of their ends flared, are coaxially positioned with respect to each other and are mounted over a circular opening in a U-shaped channel member. Adhesive is disposed between the flared surfaces to reinforce the structure.

3,676,580

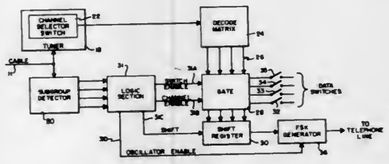
INTERROGATED TRANSPONDER SYSTEM

Joseph H. Beck, Kew Gardens, N.Y., assignor to Video Information Systems, Inc., New York, N.Y.

Filed June 1, 1970, Ser. No. 41,853

Int. Cl. H04n *1/44*

U.S. Cl. 178—5.1 **19 Claims**



An interrogated transponder system of the type which may be used for billing purposes with subscription television

systems, wherein a central station interrogates a large number of individual subscriber stations to determine the condition of the subscriber's receiver and/or an associated terminal device. Each transponder includes a storage register of the type in which data may be stored in parallel and read out in serial form. The information stored in the register may represent the channel to which the receiver is tuned or the condition of a plurality of data switches which enable the subscriber to transmit data back to the central station. The subscribers may be divided into groups and subgroups with each subgroup being responsive to a different combination of frequencies transmitted by the central station. This combination of frequencies is used as an address code which identifies each individual subscriber or terminal station. One of the transmitted frequencies is used as a source of shift pulses to shift the information from the storage register as well as part of the address code which identifies the subscriber station. The output of the shift register, in serial form, is transmitted back to the central station by FSK techniques, with the frequencies employed identifying the specific subscriber within the subgroup.

3,676,581

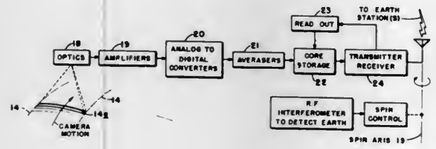
OPTICAL SCANNING SPACECRAFT SYSTEM

Charles J. Swet, Mount Airy, Md., assignor to The United States of America as represented by the Secretary of the Navy

Filed Feb. 1, 1971, Ser. No. 111,345

Int. Cl. H04n *1/46*

U.S. Cl. 178—5.4 R **10 Claims**



A method and apparatus for mapping the surface of a celestial body employs a spin stabilized spacecraft which is placed in a highly eccentric orbit about the celestial body to be mapped and whose spin axis is always Earth oriented. An optical line-scanning system is mounted aboard the spacecraft normal to the spacecraft spin axis and repeatedly sweeps out an elongated image strip or swath on the surface of the celestial body; the image swath advancing over the surface of the body as the spacecraft spins during its orbit about said body. The optical scanning system includes a mechanical slit which is dimensioned such that when it is projected onto the surface of the celestial body it forms one line of the desired image swath. Suitable spectral dispersing means receives the light passing through the mechanical slit and disperses it onto a mosaic of photosensors. The photosensor mosaic is arranged to produce output voltages indicative of the light intensity of the light image occurring at preselected spectral regions of the image. The highly eccentric orbit into which the spacecraft is placed about the celestial body permits close-up and broader coverage pictures to be obtained during each orbit of the spacecraft. It also helps to reduce the velocity change requirements for planetary capture, and lengthens the orbital period to permit continuous transmission to Earth of a complete picture at modest data rates.

3,676,582

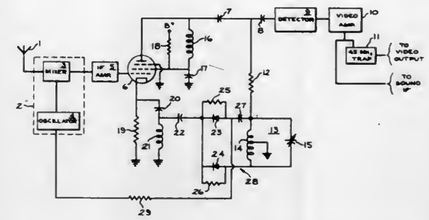
EMPHASIZED CARRIER CIRCUIT WITH INTEGRAL AFC OPERATION

John G. Humphrey, Chesapeake, Va., assignor to General Electric Company

Filed March 3, 1971, Ser. No. 120,500

Int. Cl. H04n *5/50*

U.S. Cl. 178—5.8 AF **4 Claims**



A resonant circuit is coupled to the output of the final IF amplifier stage of a television receiver for emphasizing the picture carrier portion of the signal outputted by the IF amplifier. Filter means are provided for abstracting the picture carrier frequency from the IF signal applied to the input of the final amplifier stage. A discriminator compares the phase of the signal provided by the resonant circuit with that of the signal abstracted from the IF amplifier input, and applies an output signal reflecting the relationship therebetween to the tuner stage of the receiver to minimize any difference between the frequency of the picture carrier and that of the resonant circuit.

3,676,583

JITTER CORRECTION SYSTEM

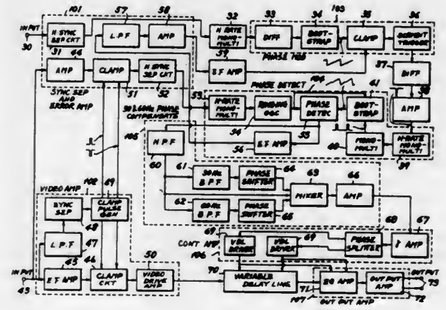
Akiyoshi Morita, and Yukio Itoh, both of Yokohama, Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Kanagawa-ken, Japan

Filed Aug. 13, 1970, Ser. No. 63,425

Claims priority, application Japan, Aug. 13, 1969, 44/64360

Int. Cl. H04n *5/04, 5/78*

U.S. Cl. 178—6.6 TC **6 Claims**

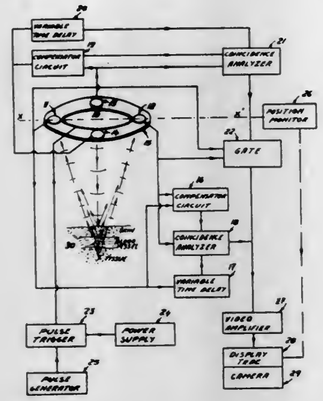


A jitter correction system detects and removes a jitter component, of relatively high frequency, from a reproduced video signal. A reference signal is phase modulated by a jitter component of relatively low frequency. The modulated reference signal and the reproduced signal are compared in phase. The jitter component of low frequency is taken out from the phase-compared error output and fed back to the phase modulating means. On the other hand, the jitter component of high frequency is effectively taken out from the error output.

3,676,584
ECHO COINCIDENCE ULTRASONIC SCANNING

Chris J. Pinkus, 606 Bloomington Road, Champaign, Ill., and Mee Soo Pinus, 65 Hawaii Avenue, Washington, D.C.

Filed July 13, 1970, Ser. No. 54,158
Int. Cl. H04a 7/00
U.S. Cl. 178—6.8 5 Claims



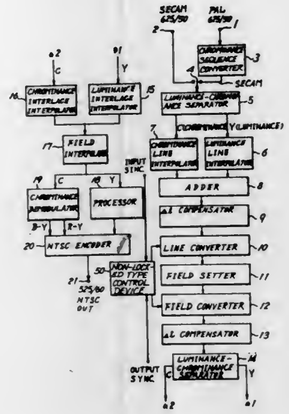
An ultrasonic visualization system for investigating human tissue structures, comprising pulse generator, power supply, pulse trigger, one transducer which transmits ultrasonic pulses, four transducers, arranged at 90° angles around the center transmitter, which receive reflected echoes, video amplifier and display tube. The output pulses of each pair of receivers 180° apart are connected through time coincidence circuitry to detect echoes originating only at the axis of the ultrasonic beam and to reject multiple reflection echoes, thus echograms of high resolution are obtained.

3,676,585
CONVERTING EQUIPMENT OF STANDARD TELEVISION BROADCASTING SIGNALS

Ryuichi Kaneko; Toshiya Saito; Yasushi Fujimura; Hiroshi Inamura, all of Tokyo; Tetaro Nakamura, Sagamihara, and Yukinaboro Ikeda, Tokyo, all of Japan, assignors to Nippon Hoso Kyokai, Tokyo, Japan

Filed Oct. 16, 1970, Ser. No. 81,253
Claims priority, application Japan, Nov. 10, 1969, 44/89273; Nov. 10, 1969, 44/89274
Int. Cl. H04a 5/02
U.S. Cl. 178—6.8 6 Claims

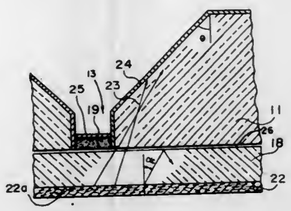
A converting equipment of television broadcasting signals using delay lines and effecting a conversion between different television standards using the different number of the scanning lines and the different number of fields and also the ratio of the input and output field numbers is not an integer number. More particularly, a non-locked type real time converting equipment effecting a conversion between a television standard using 625 scanning lines per frame and 50 fields per second mainly used in Europe and a television standard using 525 scanning lines per frame and 59.94 fields per second mainly used in the United States of America and Japan. The equipment comprises a signalling system having as main constructive elements, a line interpolator, a line converter, a field converter and a field interpolator and a controlling system controlling the signalling system and effecting a non-locked type television standard conversion. The non-locked type television standard system conversion may be effected by successively setting states or conditions of the conversions such as for instance, a field conversion, a line conversion, etc., starting from a conversion having a larger conversion unit period in accordance with a phase difference between input and output fields to be converted, and then to a conversion having a minimum conversion unit period and the line conversion and the field conversion are controlled with respect to the conditions of the conversion. The converting equipment can be used for the both way real time conversion and has an essential feature that the converted output signal is correctly locked to the synchronizing signal of the television signal of the output side.



3,676,586
THIN-WINDOW IMAGE PICK-UP AND RECORDING TUBE

Yoshihiro Uno, Osaka, Japan, assignor to Matsushita Electric Industrial Company, Kadoma City, Osaka, Japan

Filed July 21, 1970, Ser. No. 56,872
Claims priority, application Japan, July 23, 1969, 44/59565
Int. Cl. H04n 3/16
U.S. Cl. 178—7.2 15 Claims

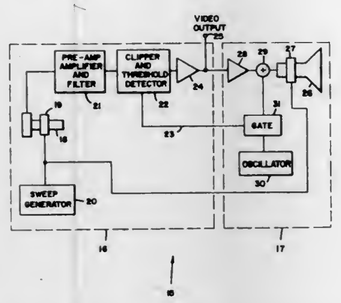


A thin-window image pick-up and recording tube comprising an evacuated envelope having a transparent face portion with an elongated thin window, a fluorescent layer being disposed within said window and at least one longitudinal wall of said window being formed to have at least one portion the normal to which is inclined from the normal to said face; deflecting means for deflecting the electron beam emitted from the electron gun to scan said fluorescent layer laterally of said window so that a flying spot is produced in said layer; a plate transparent to said flying spot and disposed on said face so as to cover said window. The thin-window tube is capable of not only recording but picking up optical images with a satisfactory image quality.

3,676,587
TELEVISION CAMERA OVEREXPOSURE WARNING SYSTEM

Donald D. Kline, Palo Alto, Calif., assignor to Commercial Electronics, Inc., Mountain View, Calif.

Filed Aug. 27, 1970, Ser. No. 67,454
Int. Cl. H04a 5/21, 5/34
U.S. Cl. 178—7.2 4 Claims

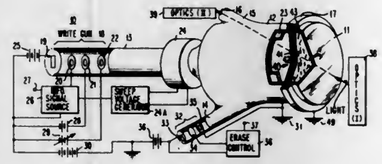


A television camera overexposure warning system in which those portions of the television image which exceed a desired level of illumination of the television camera tube are caused to blink at a visible rate on the screen of the television camera viewfinder or monitor. This is accomplished by providing a threshold detector which produces an electrical signal when the amplified output signal of the camera tube exceeds a level corresponding to the maximum desired level of illumination and a gate which couples an oscillator to the viewfinder finder or monitor video input in response to the electrical signal produced by the threshold detector. In a color television camera, threshold detectors may be provided for each of the camera tubes and associated video channels or a single threshold detector may be employed in association with one of the video channels, preferably the video channel produced by the green camera tube.

3,676,588
DEFORMOGRAPHIC TARGET ASSEMBLY WITH INTEGRAL CONDUCTIVE MEMBER

Eugene T. Kozol, Binghamton, N.Y., and Robert J. Wohl, San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 29, 1970, Ser. No. 85,187
Int. Cl. H04n 5/66; H01j 29/12; G02f 1/28
U.S. Cl. 178—7.5 D 7 Claims

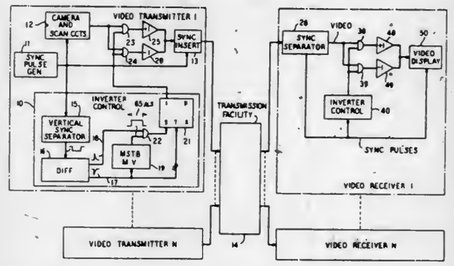


The conductive member associated with the target assembly of a deformographic display system is affixed to one side of the deformable dielectric member of the target assembly. The opposite side of the deformable dielectric member is affixed to the relatively non-deformable dielectric member, which is part of the target assembly and which stores the electrostatic charge pattern containing the information to be displayed. The conductive member is deformable and compatibly deforms with the deformable dielectric member in response to the deformations of the latter. The deformations of the dielectric member in turn are produced by the forces of the electrostatic field which results between the conductive member and the electron charge pattern. By affixing the conductive member to the deformable dielectric member, the deformations occur substantially in the same or one direction, i.e., in a direction towards the non-deformable dielectric member.

3,676,589
VIDEO INVERSION TECHNIQUE TO COUNTERACT SLOWLY MOVING INTERFERENCE PATTERNS IN A VIDEO COMMUNICATIONS SYSTEM

John J. Jetzt, Lincroft, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Nov. 16, 1970, Ser. No. 89,621
Int. Cl. H04a 5/14
U.S. Cl. 178—6.8 1 Claim

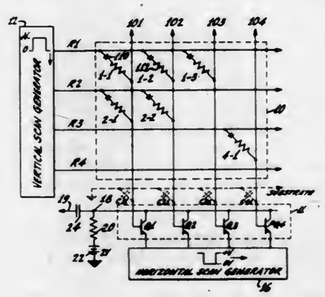


To virtually eliminate from a video channel the interference due to the horizontal synchronization pulses of another juxtaposed video channel, the video portion of each composite video signal is inverted in every other field prior to transmission of the same. Then at each receiver, the video is reinverted to recover the original video signal. As a result, the interfering horizontal pulses alternate in polarity in alternate scan fields and thus tend to be neutralized because of the integration effects of the human eye.

3,676,590
DECODERS AND COUPLING CIRCUITS FOR SOLID STATE VIDEO PICKUP

Paul Kessler Weimer, Princeton, N.J., assignor to RCA Corporation

Filed Sept. 25, 1970, Ser. No. 75,553
Int. Cl. H04a 5/30
U.S. Cl. 178—7.1 14 Claims



Circuit means for storing charge produced by elements of a matrix array and for producing an output signal indicative of

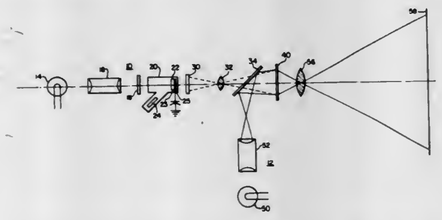
the amount of charge stored. In two of the circuits illustrated, each column of the array is coupled to the base of a transistor and to one terminal of a charge storage means and two valued sampling pulses are applied between the emitter of the transistor and the other terminal of the charge storage means. For one value of the sampling pulse the transistor is reversed biased and charge generated by one of said elements is accumulated on said charge storage means. For the other value of the sampling pulse, the transistor is forward biased for reading out the charge stored on said means and concurrently removing the accumulated charge on said storage means. In another of the circuits a pair of diodes are employed at each column rather than a transistor.

3,676,591

PHOTOCHROMIC DISPLAY DEVICE UTILIZING LIGHT VALVE ACTIVATION

Lawrence A. Nix, Jr., and David L. Balthis, both of Ellicott City, Md., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jan. 28, 1971, Ser. No. 110,423
Int. Cl. H04n *5/74*
U.S. Cl. 178—7.5 D **4 Claims**



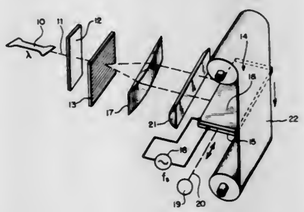
A photochromic display device in which a light valve projection system is utilized for activating the photochromic screen member to establish video information thereon. A uniform light source directs white light through the photochromic screen and is projected onto a viewing screen.

3,676,592

HIGH-RESOLUTION LINEAR OPTICAL SCANNING SYSTEM WITH TRAVELING WAVE ACOUSTIC LENS

Leigh Curtis Foster, Atherton, Calif., assignor to Zenith Radio Corporation, Chicago, Ill.

Filed Oct. 30, 1969, Ser. No. 872,559
Int. Cl. G02f *1/28, 1/36*; H04n *1/04*
U.S. Cl. 178—7.6 **24 Claims**



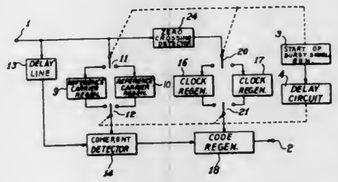
The focusing properties of a traveling elastic wave are employed to convert a low-resolution input light beam into a high resolution output beam, both beams scanning linearly in synchronism with the phase velocity of the elastic wave. The elastic wave can be a dilational wave in a transparent solid or liquid of, for example, acoustic character, or a flexural wave on a thin reflector. Specifically, scanning optical beam is projected through appropriate optics to focus on the input plane of the traveling-wave dynamic lens in such a way as to scan transversely at the velocity of a traveling acoustic wave. The acoustic wave is phased such that the instantaneous axis of symmetry of the traveling lens coincides with the optical axis of the scanning input beam, and this relationship is maintained throughout the duration of the line scan. The size of the input spot is restricted to cover a total of approximately one-fourth of an acoustic wavelength, in order to avoid aberrations in the dynamic lens.

3,676,593

DEMODULATION APPARATUS FOR A TIME-DIVISIONAL MULTIPLEX PHASE-SHIFT KEYED SIGNAL OF BURST MODE

Takuro Muratani; Akira Ogawa, and Kunishi Nosaka, all of Tokyo-to, Japan, assignors to Kokusai Denshin Denwa Kabushiki Kaisha, Tokyo-to, Japan

Filed Aug. 12, 1969, Ser. No. 849,946
Claims priority, application Japan, Aug. 15, 1968, 43/57785
Int. Cl. H04l *27/14*
U.S. Cl. 178—66 A **1 Claim**



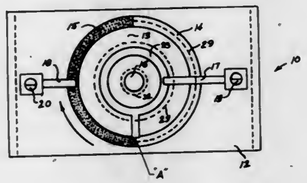
A demodulation apparatus for performing coherent detection and code regeneration of a time-divisional multiplex phase-shift keyed signal of burst mode (PSK signal), where the PSK signal and a detected base band signal are respectively applied to a coherent detector and a code regenerator after such signals are delayed by a time necessary to produce a reference-phase carrier wave for the coherent detection and by a time necessary to produce a clock wave for the code regeneration respectively, so that all bits of the PSK signal can be correctly regenerated even if there is no guard time between two successive bursts.

3,676,594

SOUND DISPERSER

Thomas H. Shore, 11010 24 Mile Road, Utica, Mich.

Filed Nov. 4, 1969, Ser. No. 873,984
Int. Cl. H04b *1/12*
U.S. Cl. 179—1 VL **4 Claims**



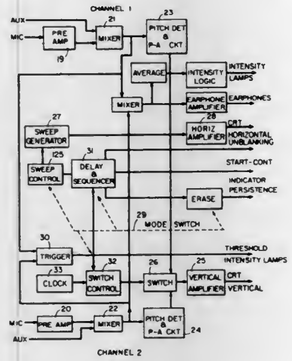
An audio system having an output which is varied by a rotating disc. The disc has sections of high and low resistance. The audio signal is coupled through a transformer and the resistive disc element to an output transducer, and is also coupled to a second output transducer without being coupled through the resistive disc element.

3,676,595

VOICED SOUND DISPLAY

Ladislav Dolansky, Weston, and Nathan D. Phillips, Stoneham, both of Mass., assignors to Research Corporation, New York, N.Y.

Filed April 20, 1970, Ser. No. 30,123
Int. Cl. G10l *1/14*
U.S. Cl. 179—1 VS **8 Claims**



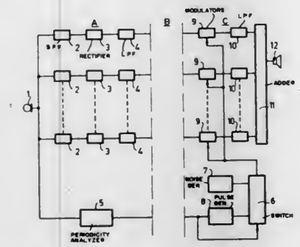
Voiced sounds are displayed by means of a pitch period indicating circuit including circuits for the suppression of those errors which arise from a minimal number of parameters. Automatic sequencing is provided in a compact setting to provide equipment ideally suited for instruction of young students.

3,676,596

PERIODICITY ANALYSER FOR A QUASI-PERIODIC SIGNAL INCLUDING A DETECTION CIRCUIT

Leonardus Franciskus Willems, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed July 6, 1970, Ser. No. 52,639
Claims priority, application Netherlands, July 9, 1969, 6910496
Int. Cl. G10l *1/02*
U.S. Cl. 179—1 SA **13 Claims**



A periodicity analyzer as a pitch meter for a quasi-periodic signal, for example speech, equipped with a detection circuit which converts the signal into a plurality of pulses the positions of which correspond to those of the peaks of the quasi-periodic signal, which detection circuit includes a peak detector the time constant of which is substantially equal to the shortest period of the quasi-periodic signal to be detected, while the pulses are applied to a cascade arrangement of a plurality of period filters the greater part of which have mutually different characteristic time durations.

The greater part of the time durations form an ascending series. With each period filter there is associated an auxiliary circuit comprising a stretcher and an input AND gate in order to distinguish the main periods from the sub-periods. Thus, by measuring the spacings between the peaks in the speech signal to be examined, which have been transformed into pulses, the pitch is directly determined. This is effected by means of a digital analog converter.

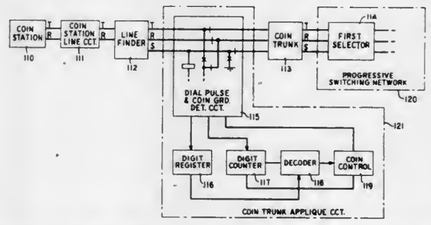
This periodicity analyzer can advantageously be used in a vocoder as a pitch detector.

3,676,597

COIN TELEPHONE NON-COIN SERVICE

Gerald Henry Peterson, Little Silver, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Dec. 28, 1970, Ser. No. 101,978
Int. Cl. H04m *17/00*
U.S. Cl. 179—6.3 R **11 Claims**



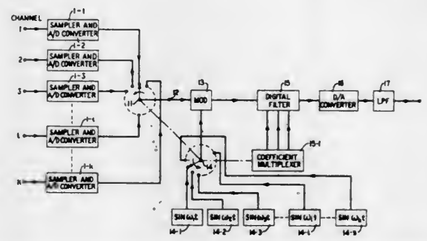
A circuit is disclosed for providing coin-free call service for certain specifiable dial codes and for prohibiting fraudulent calls. The circuit provides an initial dial tone and checks the first three digits dialed without any coins being deposited. If a coin-free code is dialed, the circuit allows the call to be completed. If a coin-free code is not dialed, the circuit performs a coin test and allows the call to be completed, if proper coinage is detected. Otherwise the already established connection through the network is caused to be taken down, and the calling party is connected to a recorded announcement.

3,676,598

FREQUENCY DIVISION MULTIPLEX SINGLE-SIDEBAND MODULATION SYSTEM

Carl Ferdinand Kurth, Andover, Mass., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed June 8, 1970, Ser. No. 44,030
Int. Cl. H04j *1/02*
U.S. Cl. 179—15 FD **19 Claims**



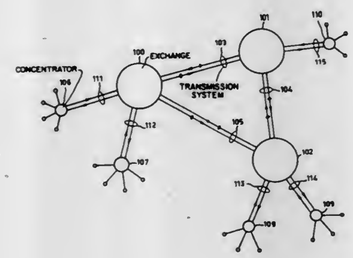
A frequency division multiplex single-sideband modulation system uses a multiplexed digital filter, the passband of which is sequentially shifted from one multiplexed channel to another in synchronization with an input time division mul-

tiplex commutator and a frequency multiplexer modulator. In other embodiments of the invention selected spectral components are advantageously emphasized by signal processing techniques employing repetitive sampling prior to modulation and filtering.

3,676,599
TELECOMMUNICATION DEVICE

Alphonsus Heetman, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 15, 1971, Ser. No. 106,797
Claims priority, application Netherlands, Jan. 23, 1970, 7000939
Int. Cl. H04j 3/06
U.S. Cl. 179—15 BS 1 Claim



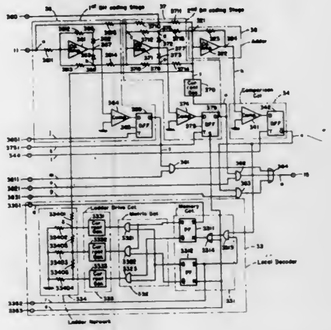
Telecommunication arrangement for receiving, storing and reading pulsecodemodulated, timemultiplex signals emanating from incoming multichannel transmission systems and received therefrom with varying periodic timescales or reception, which consist of equal channel intervals, in which each incoming multichannel transmission system is connected to a transposition arrangement for transducing the channel information of each incoming time channel into an associated local time channel, which is determined by a local clock and in which each local time channel has associated therewith a storage location for storing the channel informations that are transposed to said local time channel, there being provided an address modification arrangement for modifying the addresses for reading in the storage locations, when as a result of a shift of the time scale of reception, the correspondance that exists between the local time channels and the incoming time channels changes.

3,676,600
NONLINEAR ENCODER

Haruo Kaneko, and Kaoru Yano, both of Tokyo, Japan, assignors to Nippon Electric Company, Limited, Tokyo, Japan

Filed June 22, 1970, Ser. No. 48,425
Claims priority, application Japan, Nov. 10, 1969, 44/90326
Int. Cl. H04j 3/00
U.S. Cl. 179/15.55 T 11 Claims

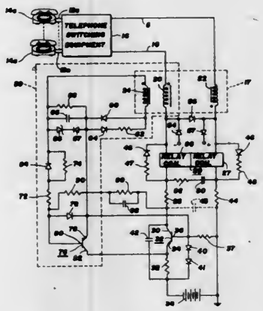
A multi-bit nonlinear apparatus for encoding an amplitude modulation pulse analog signal of positive and negative polarities into a series of bits in a pulse code modulation system, including two non-linear direct current amplifier stages for translating the input analog signal into first and second serial bits, and a mutli-stage feedback logic encoder for providing subsequent serial bits.



3,676,601
PULSING CIRCUIT INCLUDING A SWITCHING AND CURRENT REGULATOR CIRCUIT

William E. Shaffer, Rochester, N.Y., assignor to Stromberg-Carlson Corporation, Rochester, N.Y.

Filed Sept. 24, 1969, Ser. No. 860,645
Int. Cl. H04q 1/36
U.S. Cl. 179—16 E 18 Claims



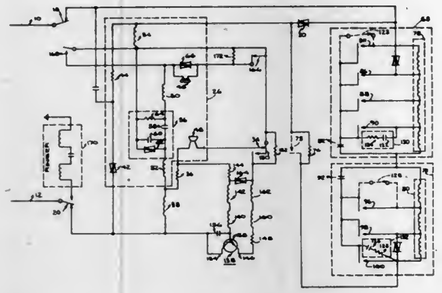
A current regulator circuit is connected in series with a control device, such as a relay or a saturable reactor, and a direct current power source, across a pair of conductors, adapted to be connected to a telephone line, so that the circuit functions as a pulsing circuit. A control circuit monitors the current flow in the series circuit to render the current regulator circuit momentarily non-conductive to briefly disconnect the power source when the telephone line is open circuited.

3,676,602
TELEPHONE SET IDENTIFICATION SYSTEM

Norman E. Goetchius, and Amin Y. Zaky, both of Rochester, N.Y., assignors to Stromberg-Carlson Corporation, Rochester, N.Y.

Filed Oct. 26, 1970, Ser. No. 83,699
Int. Cl. H04m 1/50
U.S. Cl. 179—17 A 11 Claims

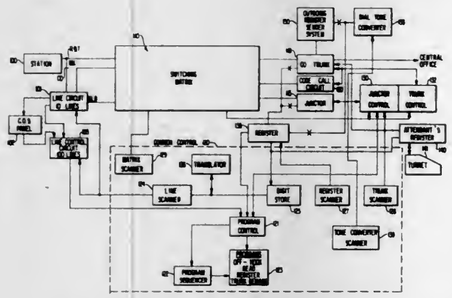
A telephone set identification system wherein telephones are equipped with circuits that are responsive to a high potential signal from the central office (when the telephone is off hook) to generate and transmit a preselected identification signal to the central office.



3,676,603
CODE CALL CIRCUIT FOR PAGING IN A PBX

Ignas Budrys, and Ernest O. Lee, Jr., both of Fairport, N.Y., assignors to Stromberg-Carlson Corporation, Rochester, N.Y.

Filed July 23, 1970, Ser. No. 57,735
Int. Cl. H04m 3/42
U.S. Cl. 179—18 BF 18 Claims



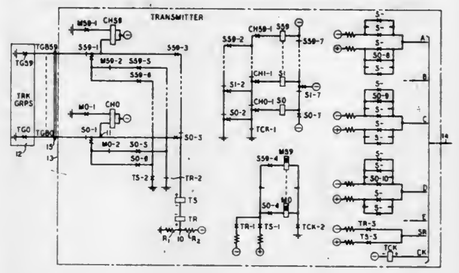
Code call circuit for use with a common control telephone system, particularly a PBX, wherein means is provided to mark the calling line circuit and totally release the code call circuit upon detection of an answer code from the subscriber being paged, so that the common control can connect the subscribers in the normal manner through a junctor circuit.

3,676,604
MULTIPLE TRUNK SIGNAL ARRANGEMENT

James Glenn Whitemyer, Reynoldsburg, Ohio, assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Aug. 12, 1970, Ser. No. 63,203
Int. Cl. H04m 3/32
U.S. Cl. 179—18 AB 16 Claims

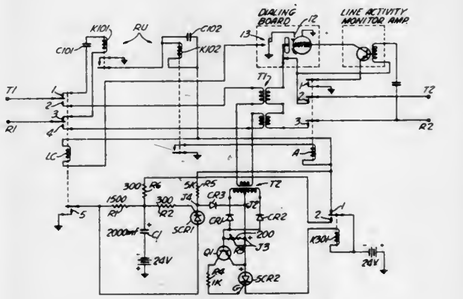
A group of trunk circuits exhibiting a particular signal condition is detected by a respective one of a plurality of detecting circuits associated with a corresponding plurality of trunk circuit groups. The identity of the detected trunk group is encoded, transmitted to a remote point for display purposes and a signal acknowledging correct receipt of the encoded identity is returned. The returned acknowledgment signal is employed to prime the detecting circuit to respond to the appearance of the opposite signal condition at the associated trunk group and, pending receipt of the acknowledgment signal, the detecting circuit is prevented from responding to any change in the signal condition of its associated trunk group.



3,676,605
SPIKE MONITORING APPARATUS

James W. Johnson, Culver City, Calif., assignor to Telephonic Equipment Corporation, Arcadia, Calif.

Filed March 18, 1969, Ser. No. 808,087
Int. Cl. H04m 3/54
U.S. Cl. 179—18 BE 8 Claims

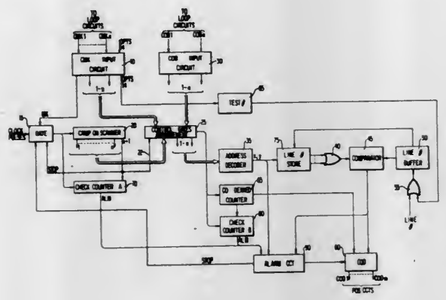


Monitoring apparatus for an electrical circuit, as a telephone circuit, operable to discriminate between various signals and a particular signal different from any thereof and for utilizing the detection of the particular signal to perform a useful function. By way of example, the monitor is useful to discriminate between the various normal signals typically involved in the operation of telephone circuitry and the "on hook" and "off hook" signal inherently generated as an incident to reseating or removing the handpiece relative to its cradle. The resulting spike signal, even though of microsecond duration, is detected and utilized to trigger a circuit effective to disengage automatically central station equipment essential to the operation of the circuit and making it available for immediate use by other telephone subscribers. The monitoring apparatus, conventionally located with the equipment to be released, operates to arm itself automatically as an incident to the establishment of a telephone circuit and includes means for restoring the components to their initial condition automatically in response to opening an established telephone circuit at any terminal thereof.

3,676,606
CAMP-ON BUSY CHECKING AND MONITOR CIRCUIT

Klaus Gueldenpfennig, Penfield; Uwe A. Pommerening, and Stanley L. Russell, both of Webster, all of N.Y., assignors to Stromberg-Carlson Corporation, Rochester, N.Y.

Filed March 5, 1971, Ser. No. 121,431
Int. Cl. H04m *3/42*
U.S. Cl. 179—18 B6 10 Claims

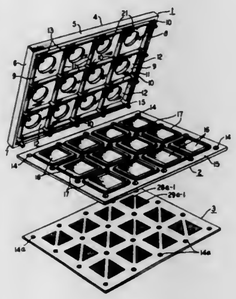


Camp-on busy checking and monitor circuit which permits only a single line to camp-on a given line at one time and limits the total number of camp-on connections through use of a memory providing information concerning the lines which are associated with a camp-on connection.

3,676,607
PUSHBUTTON TELEPHONE DIAL

Donald H. Nash, Colts Neck; Theodore P. Nenninger, East Brunswick, and Robert E. Prescott, Rumson, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Nov. 25, 1969, Ser. No. 879,803
Int. Cl. H04m *1/50*
U.S. Cl. 179—90 K 3 Claims

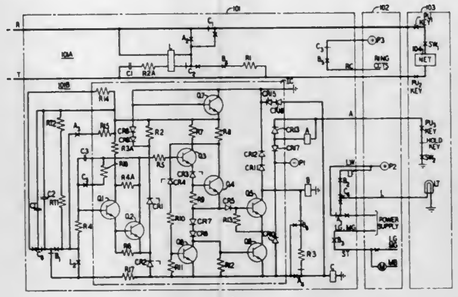


This disclosure describes a telephone station dial having a compliant membrane supporting an array of pushbuttons. A conductive region on the membrane beneath each button contacts, on depression, printed circuit paths associated with two trigger circuits that in turn connect to a specific pair of multifrequency oscillator inputs. The trigger circuits comprise field effect transistors which provide a specified, unvarying output signal in response to the impedance change, either resistive or capacitive.

3,676,608
LINE CIRCUIT FOR A KEY TELEPHONE SYSTEM

David Clayton Goldthorp, Oley, Pa.; Albert David Limifro, Denver, and John Paul Smith, Broomfield, both of Colo., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Oct. 20, 1970, Ser. No. 82,272
Int. Cl. H04m *1/00*
U.S. Cl. 179—81 R 7 Claims

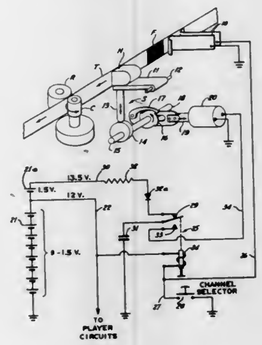


In a key telephone system line circuit employing relays and transistor control and logic circuitry, elimination of the conventional central office ground return path is achieved by substantially isolating a bridged ringing detector relay from the logic and control elements. Breakdown voltage limitations of integrated circuitry are met by the employment of a stacking arrangement for certain of the transistors of the control circuit that are utilized to drive one of the control relays.

3,676,609
CAPACITOR ENERGIZED CHANNEL STEPPING MEANS FOR BATTERY OPERATED TAPE PLAYERS

Jan Robert Coyle, 514 East Ghent Avenue, and Robert Walter Stevens, 1727 Via Alegre, both of San Dimas, Calif.

Filed Feb. 24, 1970, Ser. No. 13,711
Int. Cl. G11b *21/08*
U.S. Cl. 179—100.1 R 4 Claims

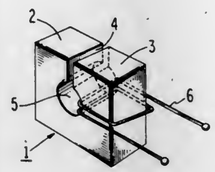


A tape deck and a power source therefor, the tape deck having a pick-up head which is progressively and repetitively shifted through a range of positions relative to a multi-track tape which moves past the head, shifting of the head being accomplished by a solenoid which is in a circuit with a capacitor adapted to energize the solenoid in response to completion of the capacitor-solenoid circuit either manually or automatically.

3,676,610
MAGNETIC HEAD WITH MODIFIED GRAIN BOUNDARIES

Herbert Irwin Moss, Yardley, Pa., and Eric Francis Hockings, Princeton, N.J., assignors to RCA Corporation

Filed April 3, 1970, Ser. No. 25,935
Int. Cl. G11b *5/14*; C22c *39/04*; H01f *1/02*
U.S. Cl. 179—100.2 C 11 Claims

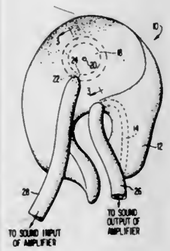


There is provided a transducing, magnetic head for use in magnetic recorder-reproducer systems. The head is fabricated of a material which consists of a majority or first phase of polycrystalline, small grained magnetic alloy which has an abrasion resistant second phase disposed in the grain boundaries throughout the alloy. The volume percent of the first and second phase materials are arranged to provide desired electrical and magnetic performance with prolonged head life through increased resistance to wear.

3,676,611
EARPIECE FOR HEARING AID HAVING SOUND INLET FOR HIGH FREQUENCIES

Stephens, Erwin E., 14-C Via Castilla, Laguna Hills, Calif.

Filed March 13, 1970, Ser. No. 19,271
Int. Cl. H04r *25/00*
U.S. Cl. 179—107 E 6 Claims

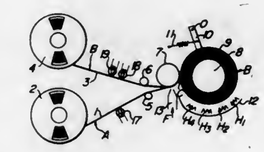


A hearing aid includes an earpiece worn in the ear and a sound amplifier worn externally of the ear. Sound waves impinging on the ear are transmitted through an opening in the outer surface of the earpiece to an inner chamber thereof and thence through a conduit to the sound input of the amplifier. The amplified sounds are fed from the output of the amplifier through a further opening extending through a portion of the earpiece positioned in the external meatus.

3,676,612
CURIE POINT MAGNETIC TAPE DUPLICATING APPARATUS WHEREIN THE MASTER AND SLAVE TAPES ARE WOUND ON A SINGLE TAKE-UP REEL

Fukashi Kobayashi, Hirakata; Mitsuaki Ono, and Akio Kuroe, both of Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Nov. 25, 1970, Ser. No. 92,793
Claims priority, application Japan, Dec. 9, 1969, 44/99668; Dec. 9, 1969, 44/99670; Dec. 9, 1969, 44/99671; Dec. 29, 1969, 45/712; Dec. 15, 1969, 44/120336; Dec. 17, 1969, 44/120849; Dec. 29, 1969, 45/344; Dec. 29, 1969, 45/345; Dec. 29, 1970, 45/65610
Int. Cl. G11b *5/86*
U.S. Cl. 179—100.2 E 12 Claims

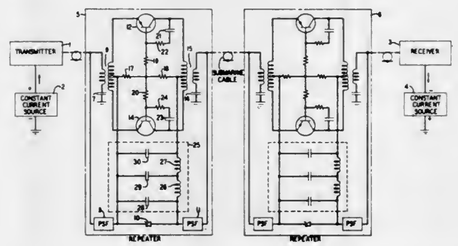


An apparatus for producing a copy of a magnetic tape in which a master tape having a record thereon and a slave tape heated to a temperature at least in the vicinity of the Curie point of a magnetic material coated thereon are continuously taken up on a single take-up reel in such a manner that they are in intimate contact with each other at their magnetic surfaces, and after cooling the master and slave tapes taken up on the take-up reel to a predetermined temperature, the master tape and the slave tape to which the signal recorded on the master tape is transferred are rewound on their respective supply reels.

3,676,613
REPEATERED SUBMARINE CABLE SYSTEM

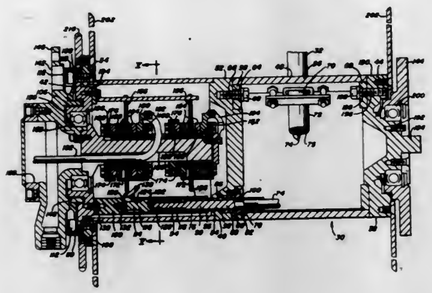
Sherman Theodore Brewer, Little Silver, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Dec. 16, 1970, Ser. No. 98,670
Int. Cl. H04b *3/58*
U.S. Cl. 179—170 T 6 Claims



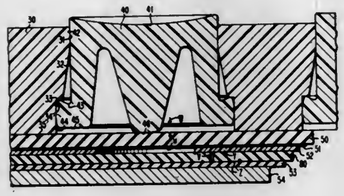
As we go to wider bands for submarine cable systems, it becomes difficult to achieve the required power output in undersea repeaters. Two key limitations in determining signal power output capability are the deliverable d.c. power and the temperature rise in the transistors. The present invention is directed to a repeater which employs a class B, rather than the usual class A, output amplifier with energy storage and regulation to overcome both limitations.

3,676,614
CABLE REEL
Victor H. Garmong, R.D. #1, Kennerdell, Pa.
Filed May 28, 1970, Ser. No. 41,250
Int. Cl. H01r 39/00; H02g 11/02
U.S. Cl. 191—12.2 12 Claims



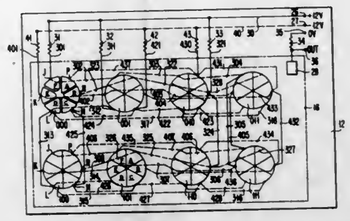
A cable reel assembly and more particularly a cable reel assembly of a type used to carry electrical trailing cable for a shuttle car and which reel assembly is provided with means which enable the rapid assembly and disassembly thereof.

3,676,615
PUSHBUTTON KEYBOARD SWITCH ARRAY AND ASSOCIATED PRINTED CIRCUIT LOGIC CARDS
Fritz S. Wiedmer, Saratoga, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed July 13, 1970, Ser. No. 54,300
Int. Cl. H01h 9/26, 13/52
U.S. Cl. 200—1 R 12 Claims



In a keyboard, an elastic diaphragm switch array and logic, including strobe and rollover protection. The switch includes a diaphragm, a separator, and a switch card. The diaphragm comprises a gold plated continuous sheet of thin spring material and serves as a ground or voltage plane. The switch card has a gold plated pie pattern or switch array at each key location, with generally as many pie sections as there are bits in the code to be produced. Each pie section is wired directly by double sided wiring and through-holes in the switch card to the appropriate output code pin. No decoding or encoding logic is required to produce the code. Strobe logic is provided for assuring that all pie sections have made contact with the diaphragm and rollover protection logic is provided for assuring that only one key is depressed. A key button is provided for pressing the diaphragm through the separator to make contact with the switch card pie pattern.

3,676,616
EDS SERIAL SWITCH ARRAY
Fritz S. Wiedmer, Saratoga, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 21, 1970, Ser. No. 99,864
Int. Cl. H01h 3/12
U.S. Cl. 200—5 R 10 Claims



In a keyboard, an elastic diaphragm switch array providing mechanical strobe and rollover protection, and/or a serial signal output. The switch includes a diaphragm, a separator, and a switch card. The diaphragm comprises a gold-plated continuous sheet of thin spring material and serves as a ground or voltage plane or voltage adder. The switch card has a conductive switch array (or pie section pattern) at each key location and may have twice as many pie sections as there are bits in the code to be produced or voltage transitions desired in the output, with additional service pie sections as desired. Each pie section is wired directly by double-sided wiring and through-holes in the switch card to the appropriate output code pin, a positive or negative voltage source, or other connection. A key button and distributor is provided for pressing the diaphragm smoothly through the separator to make contact with the corresponding switch card pie section. In each pie pattern, at least one of the pie sections is offset from the center of contact of the key button such that, as the key button is actuated and the diaphragm pressed through the separator, that pie section makes contact at a different point in time to provide a serial code signal output, or provide such service functions as strobe, rollover protection, switch battery power, or the like.

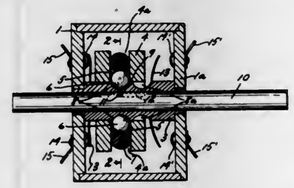
3,676,617
SWITCH HAVING SPIDER-SHAPED CONTACT CARRIER
Martin P. Miller, New York, N.Y., assignor to General Automotive Specialty Company, Inc., Carlstad, N.J.
Filed Oct. 16, 1970, Ser. No. 81,451
Int. Cl. H01h 1/28
U.S. Cl. 200—44 13 Claims



A movable contact shorting device is disclosed which may constitute an electrical component of a switch. The device is interposed between a fixed contact member and a movable actuator and includes a contact plate having a plurality of contact portions protruding from one surface and engageable with corresponding contact elements on the fixed member. A plurality of spring fingers integral with the plate depend longitudinally therefrom to bear against the actuator. The fingers may be formed from arcuate portions of the plate and serve to bias the plate against the fixed member. The contact portions may be arranged in any convenient pattern depending upon

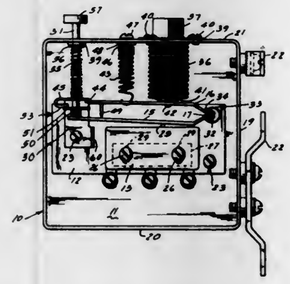
the requirements of the switch circuit. An open-ended enclosure or boot is sealably mountable on the switch to shield against adverse weather conditions and ambient foreign matter. The boot includes a transverse portion to overlie part of the switch and contains a passage through this portion having resilient walls to form a substantially weather-proof seal. The walls separate under pressure, as for example when a key is inserted, but conform to the shape of the key so as to maintain the seal. The boot may be rotatably mounted on the switch to turn with the key thereby minimizing any deformation tending to interfere with the seal.

3,676,618
PUSH-BUTTON SWITCH
Carl Emil Bartens, deceased, late of Copenhagen, Denmark; by Karl E. Bartens, and by Bjoern Bartens, both of Moerke, Denmark (heirs), assignors to Kristian Krog Sorensen, Sonderbro, Aalborg, Denmark
Filed March 25, 1971, Ser. No. 128,096
Claims priority, application Denmark, Nov. 8, 1968, 5437
Int. Cl. H01h 15/18
U.S. Cl. 200—77 8 Claims



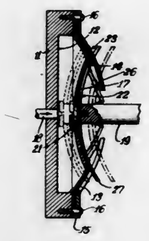
A snap acting switch includes a pair of spring contact arms carried at one end of a drum mounted for slidable movement on a stationary member and movable by an external force to a switch-closed position in which the spring contact arms are in pressure engagement with fixed contacts located exteriorly of the drum. The drum is held in switch-closed position against the spring pressure of the engaged contacts, by means of a plurality of balls located in through radial bores in the drum, and recessed seats in the stationary member receiving said balls. Biasing means, such as a rubber ring, is mounted on the drum and maintains said balls in seated positions in the recessed seats.

3,676,619
MANUAL OVERRIDE PRESSURE OPERATED SWITCH
Melvin S. Hook, La Salle, Ill., assignor to Burns Machine Co., Ottawa, Ill.
Filed Dec. 14, 1970, Ser. No. 97,783
Int. Cl. H01h 35/32, 35/26
U.S. Cl. 200—81 H 8 Claims



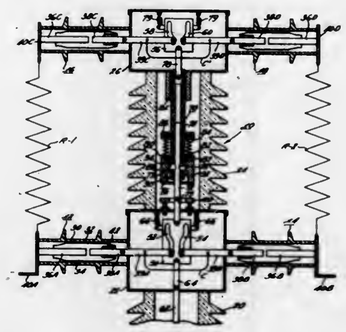
Pressure operated switch in which an expansible bellows actuates a switch arm in a switch operating direction upon predetermined pressure conditions and a manually operable plunger is guided to engage and actuate the switch arm independently of the bellows, to effect operation of the switch arm manually. A latching member engaged with the plunger holds the switch arm in a switch closing position and is released by operation of the bellows when moving the switch arm in a switch closing direction.

3,676,620
ADJUSTABLE PRESSURE RESPONSIVE TRANSDUCER
Edward E. Modes, 1417 Shawnee Trial, Deerfield, Ill.
Filed Nov. 18, 1970, Ser. No. 90,740
Int. Cl. H01h 35/34, 35/26
U.S. Cl. 200—835 15 Claims



A pressure responsive transducer having means for adjusting the effective back-up of a diaphragm to provide infinite adjustability in the output signal produced by movement or force of the diaphragm in response to pressure directed thereagainst.

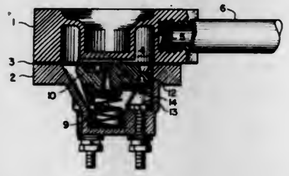
3,676,621
HIGH VOLTAGE ELECTRICAL CIRCUIT BREAKER WITH PREINSERTION RESISTOR DURING CLOSING
Herbert M. Pflanz, Westwood, Mass., assignor to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.
Filed May 28, 1971, Ser. No. 147,789
Int. Cl. H01h 33/16
U.S. Cl. 200—144 AP 16 Claims



A high voltage circuit breaker assembly adapted to reduce voltage surges which occur on prestriking of the switch during the closing stroke, such as when switching a capacitor bank onto a high voltage distribution line. The breaker assembly includes a first and a second breaker connected in parallel paths. Each breaker may be a vacuum interrupter. An operating mechanism causes the first breaker to close in series with a resistor during the closing stroke of the operating mechanism

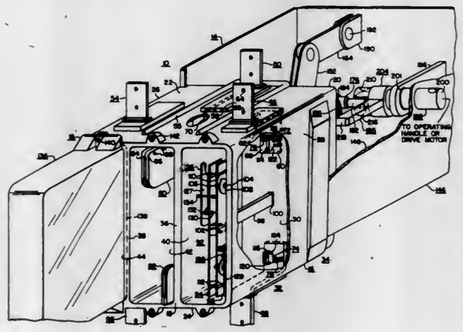
and during a later phase of the closing operation the operating mechanism causes closing of the second breaker to bypass the resistor. The operating mechanism includes means for maintaining the first breaker which is in series with the resistor open during the opening operation of the circuit breaker assembly, whereby to insure that the resistor is not in circuit during the opening operation so that the circuit is opened by the second breaker.

3,676,622
NON-SPARKING ELECTRICAL SWITCH
Joseph S. Brumbelow, 35 Winn Street, Burlington, Mass.
Filed May 28, 1971, Ser. No. 148,085
Int. Cl. H01h *33/16*
U.S. Cl. 200—144 AP **2 Claims**



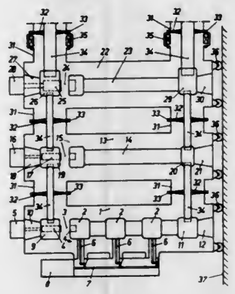
An electrical switch having contacts which make and break is provided with an inhibitor which inhibits sparking between the contacts. The switch has a movable contactor whose arms carry protruding contacts disposed to be brought against the fixed contacts of the switch. The inhibitor is mounted to move with the contactor and has resilient arms which diverge from the contactor arms when the switch is open. The inhibitor arms have apertures for receiving the protruding contacts of the contactor. The inhibitor's resistance is large relative to the resistance of the contactor. Closure of the switch causes the inhibitor arms to be first brought against the fixed contacts and then causes the divergence of the arms to decrease until the protruding contacts extend into the apertures and close upon the fixed contacts.

3,676,623
CIRCUIT INTERRUPTER
Robert H. Hollister; Garlington C. Wilburn, both of South Boston, Va., and Kurt G. Green, Golden Bridge, N.Y., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Dec. 17, 1970, Ser. No. 99,092
Int. Cl. H01h *33/12*
U.S. Cl. 200—146 R **12 Claims**



A circuit interrupter including conductive blade members mounted for movement relative to circuit contacts, with the blade members and circuit contacts disposed in a housing formed of a cast resinous insulation system. Substantially Z-shaped terminals are partially embedded in the cast resinous insulation system, to which the circuit contacts are fixed.

3,676,624
GAS BLAST POWER CIRCUIT BREAKER FOR HIGH OPERATING CURRENTS
Gerhard Mauthe, Wettingen, Switzerland, assignor to Aktiengesellschaft Brown, Boveri & Cie, Baden, Switzerland
Filed Sept. 24, 1970, Ser. No. 75,148
Claims priority, application Switzerland, Oct. 10, 1969, 15236/69
Int. Cl. H01h *33/54*
U.S. Cl. 200—148 B **3 Claims**

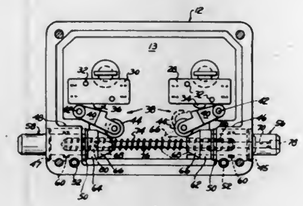


An electrical power circuit breaker assembly is constituted by a plurality of parallel arranged gas-filled tubular enclosed modules which respectively contain the various operating components. A plurality of power switching units and a voltage isolating switching unit, all connected in series constituting one such module, are located in one of the tubular enclosures and one or more of the other tubular enclosures contain other auxiliary modules such as a conductor bar which is connectible electrically in parallel with the series-connected power switching units through a disconnect switch to increase the rated current carrying capacity of the circuit breaker module during the period when the breaker contacts are closed by shunting current away from the latter. The parallel arranged tubular enclosed modules are interconnected at their ends by other tubular enclosure parts which enclose the necessary conducting members for electrically interconnecting the various modules and these latter enclosure parts include bulkhead insulators for sealing off the various parallel arranged gas-filled tubular enclosed modules each from the other.

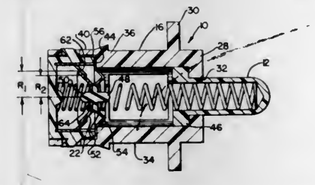
3,676,625
DUAL PLUNGER ACTUATED SEALED COMBINATION SAFETY AND INTERLOCK SWITCH MECHANISM
Leland F. Blatt, 790 Shoreham Road, Grosse Pointe Woods, Mich.
Filed April 9, 1971, Ser. No. 132,684
Int. Cl. H01h *3/42, 9/24*
U.S. Cl. 200—153 LA **5 Claims**

A pair of plunger actuated switches which are disposed in one portion of a sealed housing and the terminal connections for the switches are disposed in another portion of the sealed housing separate from the first portion. The switches are selectively actuatable by a pair of opposite co-axial aligned plungers which extend into the switch body portion of the housing; the plungers are oppositely biased outwardly and are interconnected by a slidable rod whose ends are inserted within both of the plungers in such fashion that, when one plunger is depressed the opposite plunger is locked against actuation; the inner ends of both plungers are chamfered and in contact with rollers on the switch actuation levers so that

when either plunger is depressed the switch actuator roller rides up on the chamfered end of the plunger to close switch contacts within each of the switches; the terminal strip in the terminal body portion of the housing is provided with a plurality of terminals; the terminal strip can be independently removed from the housing for rewiring or replacement without disturbing the arrangement in the plunger body portion of the housing.



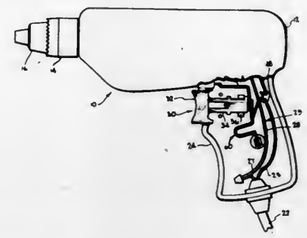
3,676,626
PUSHBUTTON SWITCH WITH LIQUID DRAINAGE FACILITATING CAGE BODY, AND DIAPHRAGM SEALING AND ACTUATING MEANS
Edward B. Mitchell, Belmont, Mass., assignor to TRW Inc., Cleveland, Ohio
Filed June 15, 1970, Ser. No. 46,390
Int. Cl. H01h *13/06*
U.S. Cl. 200—159 R **4 Claims**



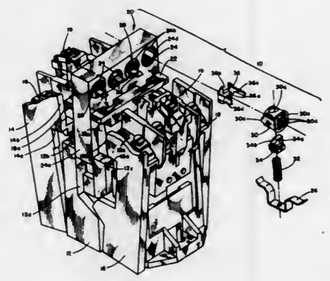
This is a switch which includes a flexible diaphragm adapted to flex when actuated by a plunger spring thereby providing both a water-proof seal and part of the actuating system of the switch. The switch body is formed of an upper circular member having an axial hole formed therethrough and a lower circular member having an axial hole formed therethrough, the two members connected by a pair of legs which are inspaced opposed relation to each other provoding an open cage like configuration which will allow water to drain outwardly and assist in waterproofing the switch.

3,676,627
SWITCH MECHANISM WITH UNITARY BIASING, CONTACT, AND DETENT SPRING
Reynold Happe, Jefferson City, Mo., assignor to McGraw-Edison Company, Elgin, Ill.
Filed April 20, 1971, Ser. No. 135,618
Int. Cl. H01h *13/08, 13/52*
U.S. Cl. 200—159 A **3 Claims**

A switch mechanism having an actuator or trigger supported to move within a housing between inner and outer positions corresponding to switch on and switch off conditions, separated electrical posts or terminals fixed on the housing spaced from but adjacent the trigger, and a single spring leaf element supported by the housing and urging the trigger to its outer switch off position, the spring leaf element having a detent portion that cooperates with an appropriate detent stop on the housing to releasably hold the trigger in said off position, and the spring leaf elements also having a contact spaced from the electrical terminals in the trigger off position but adapted to engage the terminals in the trigger on position for completing an electric circuit across the terminals.



3,676,628
REVERSIBLE MOVING CONTACT ARRANGEMENT
Hugh Kane, Freeport, Ill., assignor to Honeywell Inc., Minneapolis, Minn.
Filed Aug. 5, 1970, Ser. No. 61,190
Int. Cl. H01h *3/00, 9/00*
U.S. Cl. 200—166 BC **10 Claims**

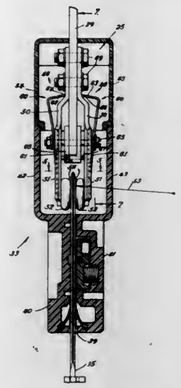


A moving contact arrangement, for a relay, for example, which allows for selective normally open and normally closed contact orientation with respect to fixed contacts by rotative movement between two opposite positions of a bridging bar carrying the moving contacts about an axis substantially parallel to and co-extensive with a straight line connecting the moving contacts.

3,676,629
SWITCH CONSTRUCTION WITH NON-BOUNCE CONTACTS
David Maurice Evans, Wheeling, and Roy Theodore, Riverside, both of Ill., assignors to S & C Electric Company, Chicago, Ill.
Filed April 5, 1971, Ser. No. 131,160
Int. Cl. H01h *1/42, 1/50*
U.S. Cl. 200—166 E **8 Claims**

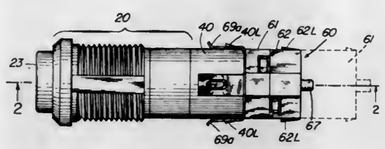
The switch blade is pivoted at high speed into and out of engagement with spring biased contacts having contact surfaces of large radius. The mass of the contacts and the spring forces applied thereto are so related to the velocity of the switch blade that bouncing of the contacts is minimized and the circuit is completed so rapidly that arcing is also minimized with normal current flowing only after actual engagement of the contacts by the switch blade. The contacts are mounted at the offset distal ends of relatively rigid contact plates which are secured to opposite sides of a terminal bracket. L-shaped

springs bias the contact plates and contacts into engagement with the switch blade. An equalizer extends through the springs and contact plates and through an insulating support



bracket that carries a spacing pin to limit movement of the contacts toward each other. The contact assembly is enclosed in an insulating arc extinguishing housing.

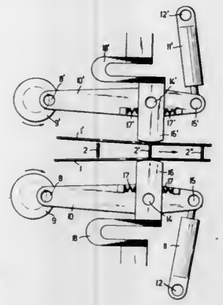
3,676,630
INTEGRATED LIGHTED PUSH BUTTON SWITCH DEVICE
John J. Dennison, Southington, Conn., assignor to Arrow-Hart, Inc., Hartford, Conn.
Filed Aug. 13, 1969, Ser. No. 849,771
Int. Cl. A01h *9/26*
U.S. Cl. 200—168 K **2 Claims**



A push-button switch-actuating mechanism is integrated with one or more switch units by adding on the switch unit or units to the actuating mechanism. Detachable connections between the actuating mechanism and the unit or units enable one or more units to be added on in tandem. Latch means in the actuating mechanism enables it to be maintained in actuated position on one operation and released by the next operation. Latching and releasing springs of hairpin type constitute a novel part of the actuating mechanism.

3,676,631
WELDING MACHINE AND METHOD
Josef Ritter; Hans Gott; Klaus Ritter, and Gerhard Ritter, all of Styria, Austria, assignors to EVG Entwicklungs-und Verwertungsgeseelschaft GmbH, Graz, Styria, Austria
Filed Oct. 2, 1970, Ser. No. 77,528
Claims priority, application Austria, Oct. 6, 1969, A 9411/69
Int. Cl. B23k *11/00*
U.S. Cl. 219—56 **5 Claims**

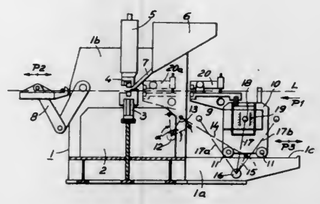
The invention relates to the welding of transverse rungs between longitudinal rods to form steel reinforcement, for concrete, known as "Bi-Steel." The rods are fed convergently and continuously through a resistance welding machine, the transverse rungs being successively positioned between the rods. A pair of welding electrodes are thrust from opposite sides against the rods to clamp each successive rung in position during welding by sequential spot welding. Each electrode travels around a closed path such that the electrode travels along with the rods when in contact therewith. The contact between the electrodes and the rods is preferably



rolling contact so that any discrepancy between the speeds of the rods and of the electrodes causes rolling rather than sliding of the electrodes along the rods.

The electrodes may be rollers mounted on rotating carrier discs between which the rods pass. In one example each disc carries twelve roller electrodes each urged by a spring radially outwardly of the disc. In another example two electrodes are used each mounted on a beam extending between a crank and a rocking arm.

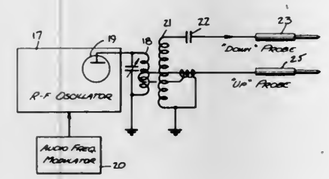
3,676,632
PROCESS FOR MANUFACTURING WELDED MESH
Klaus Ritter; Hans Gott; Josef Ritter, and Gert Ritter, all of Graz, Austria, assignors to EVG Entwicklungs-und Verwertungsgesellschaft GmbH, Graz, Austria
Filed July 10, 1970, Ser. No. 53,856
Claims priority, application Austria, July 15, 1969, A 6809/69
Int. Cl. B23k *1/00*
U.S. Cl. 219—58 **15 Claims**



The invention relates to the manufacture of welded wire mesh for use as concrete reinforcement. The mesh is manufactured by advancing an array of longitudinal wires through a welding machine having a row of electrodes and welding transverse wires to the array by means of resistence welding. To avoid embrittlement of the material of the wires in the region of the weld due to rapid temperature changes, preheaters are provided for preheating the longitudinal wires where the welding is to take place. The preheaters are movable mounted and preheat the longitudinal wires during at least a part of their advance through the machine.

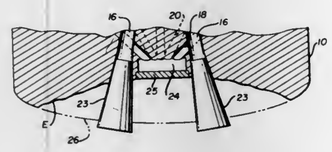
In one example the longitudinal wires are advanced intermittently past stationary welding electrodes and the preheaters alternately advance with the wires and then return to an initial position. In a second example the longitudinal wires are advanced continuously through the machine and both the electrodes and the preheaters alternately advance with the wires and return to initial positions. The alternating advance and return of the preheaters may be out of phase with respect to that of the electrodes.

3,676,633
ELECTRONIC TRIMMING OF MICROELECTRONIC RESISTORS
Alfonso Di Mino, Woodcliff Lake, N.J., assignor to ADM Tronics, New York, N.Y.
Division of Ser. No. 13,697, Feb. 24, 1970, Pat. No. 3,617,684.
This application May 26, 1971, Ser. No. 146,901
Int. Cl. B23p *1/08*
U.S. Cl. 219—69 C **4 Claims**



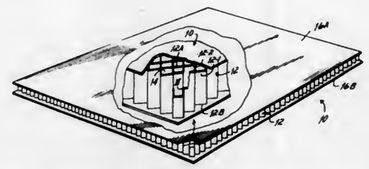
An electronic technique for changing the ohmic values of microelectronic resistors formed on a substrate, so as to either increase or decrease the values thereof without affecting their physical qualities. To bring about a decrease in value, the surface of the resistor is subjected to a corona discharge produced by radio-frequency energy having a low-frequency amplitude modulation component. The same energy source is used to effect an increase in ohmic value, this being effected by passing a heating current through the body of the resistor.

3,676,634
METHOD OF REBUILDING AN OXYGEN LANCE
Grant A. Oakes, R.D. #4, Cortland, Ohio
Filed Dec. 18, 1970, Ser. No. 99,570
Int. Cl. B22d *19/10*; **B23k** *9/04*
U.S. Cl. 219—76 **4 Claims**



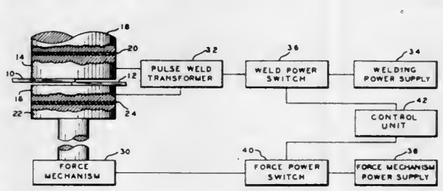
A method of rebuilding oxygen lance to improve the rebuilt structure is disclosed in connection with oxygen lances such as used by the steel industry in connection with introducing oxygen into open-hearth or basic oxygen furnaces containing molten steel. An oxygen lance having tubular coolant channels and an oxygen supply channel with an apertured brass casting forming the oxygen delivery tip is rebuilt to form a coolant chamber centrally of the tip of the lance and the burned away metal of the tip replaced by welding techniques. Coolant passageways in the tip portion of the lance are placed in communication with the coolant chamber for an improved cooling effect.

3,676,635
METHOD AND APPARATUS FOR WELDING HONEYCOMB CORE PANEL AND THE LIKE
George A. Page, Reynoldsburg; Robert R. Rathbun, Middletown, and Bruce E. Kramer, Loveland, all of Ohio, assignors to Aeronca, Inc., Middletown, Ohio
Filed Jan. 19, 1971, Ser. No. 107,727
Int. Cl. B23l *11/10*
U.S. Cl. 219—92 **3 Claims**



Process of welding, and apparatus therefor, in which two members to be welded are positioned relative to each other in an orientation susceptive of establishing localized zones of high electrical field intensity, which zones also exhibit high electrical resistance relative to the resistance of the individual members. An electrical potential is applied between the positioned members by electrodes in contact therewith to produce a spark discharge in the localized zones of high electrical field intensity and for a period sufficient to produce plasticity in the members only at the localized zones. An upset force is applied to the members while plastic in the localized zones to unite, by forging action, the plastic weld material of the members. A dielectric material, ultimately subjected to breakdown by the welding potential, preferably is positioned between the members to be welded at the zones of high electrical field intensity, enhancing the localized nature of the concentrated high electrical intensity field. A magnetic field may be established in the region of the electrodes to limit electrical shunting of the electrodes, and hence of the members to be welded through which the welding current desirably flows, by the shunting action of a previously welded section located adjacent the yet unwelded section.

3,676,636
ARTICLE OF MANUFACTURE AND METHOD OF MAKING THE SAME
David G. Anderson, Bloomfield Hills, Mich., assignor to Quanta Welding Company, Troy, Mich.
Filed Oct. 29, 1970, Ser. No. 85,105
Int. Cl. B23k *11/04*
U.S. Cl. 219—117 R **6 Claims**

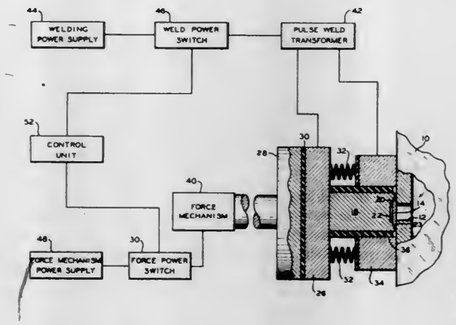


An article of manufacture consisting of at least two contacting parts of electrically conductive material disposed in overlapping relation having a solid state pulse resistance weld at the faying interface between the parts interconnecting the same into an integral unitary structure. The method of producing the unitary structure involves the disposition of the parts to be welded together in overlap relation followed by a timed phased application of a force pulse and an electrical energy pulse to the assembled parts to achieve the desired structure.

3,676,637
APERTURE COVER AND METHOD OF MAKING THE SAME

David G. Anderson, Bloomfield Hills, Mich., assignor to Quanta Welding Company, Troy, Mich.

Filed Oct. 15, 1970, Ser. No. 80,921
Int. Cl. B23k 11/04
U.S. Cl. 219—117 R 7 Claims

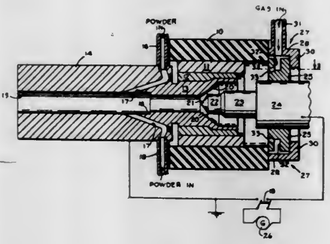


The method of producing the aperture cover wherein the parts being integrated are disposed in juxtaposed position followed by a time phased application of a force pulse and an electrical energy pulse to the assembled parts to produce a solid state resistance weld at the faying interface.

3,676,638
PLASMA SPRAY DEVICE AND METHOD

Mille Stand, New York, N.Y., assignor to Sealectro Corporation, Mamaroneck, N.Y.

Continuation-in-part of Ser. No. 834,292, June 18, 1969, abandoned. This application Jan. 25, 1971, Ser. No. 109,369
Int. Cl. B23k 9/00
U.S. Cl. 219—121 P 18 Claims

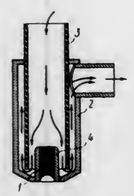


An improved plasma spray device which deposits heat fusible material onto a substrate to form a continuous film. The plasma is effected by passing an ionizable gas between two electrodes which support an electric arc. The material to be deposited on the substrate is added to the plasma during its passage through a large nozzle. The gas is directed into a helical path by a plurality of conduits formed in a large disk. The material rides on the cylindrical surface of the revolving gas before being ejected from either a nozzle with a constant interior diameter or a gradually changing diameter.

3,676,639
NON-CONSUMABLE ELECTRODE FOR ELECTRIC-ARC PROCESS

Eduard Migranovich Esiban, and Mikhail Evgenievich Danchenko, both of Kiev, U.S.S.R., assignors to Institut Elektrosvarki imeni E. O. Patona, Kiev, U.S.S.R.

Continuation of Ser. No. 819,318, April 25, 1969, abandoned. This application Sept. 8, 1970, Ser. No. 70,483
Int. Cl. B23k 9/00
U.S. Cl. 219—121 R 9 Claims

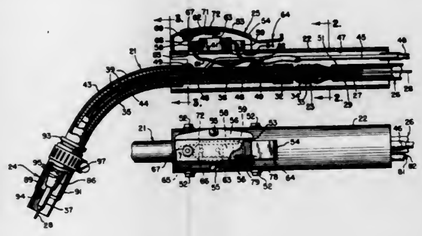


A non-consumable electrode for electric-arc processes, in which a metallic clip provided with an electrode insert is positioned in a hollow body so that it is cooled by a cooling medium surrounding the entire surface of the clip and the insert.

3,676,640
ARC WELDING GUN

Arthur A. Bernard, Beecher, and Richard A. Bernard, Flossmoor, both of Ill., assignors to Dover Corporation, New York, N.Y.

Division of Ser. No. 650,051, June 29, 1967, Pat. No. 3,469,070. This application June 5, 1969, Ser. No. 840,583
Int. Cl. B23k 9/00
U.S. Cl. 219—130 4 Claims

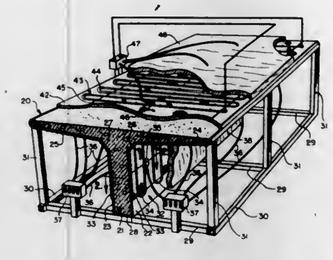


A high current capacity arc welding gun for gas-shielded, continuous feed, consumable electrode arc welding processes. Features include: a unique handle cooled by convection air flow; an improved head assembly having a unique electrical insulating ion impervious shield for preventing destructive arcing to the gas nozzle, an improved shielding gas flow path through the head assembly which additionally cooperates with the ion impervious shield to prevent gas nozzle arcing, a unique current contact tip which attaches to the head assembly by a novel curved wedge clamping concept and which is produced by an improved, versatile, and inexpensive method of manufacture that increases the copper density and refines the grain structure in the current contact tip for greater life; an improved gooseneck lining for longer life and reduced friction; a heat protected control switch assembly of rugged construction and unique trigger operation; and an improved welding cable connection assembly.

3,676,641
APPARATUS FOR ASSISTING IN THE CURING OF CONCRETE AND FOR HEATING

Wallace A. Olson, 500 South Kiwanis Avenue, Apt. 315, Sioux Falls, S. Dak.

Division of Ser. No. 770,163, Oct. 24, 1968. This application Jan. 15, 1971, Ser. No. 106,798
Int. Cl. H05b 1/00
U.S. Cl. 219—200 1 Claim

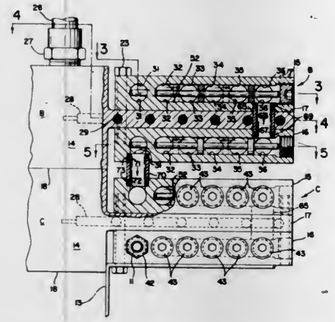


Disclosed is a flexible blanket that may be placed over the exposed upper surface of a curing concrete mix. The blanket includes one layer of flexible moisture-impervious material substantially reflective to ultraviolet rays and another layer of flexible material substantially reflective to visible light; also preferably included in the blanket is an electrically-energized flexible heating element that produces heat uniformly over the surface of the bottom layer.

3,676,642
MODULAR APPARATUS FOR HEATING CIRCULATING COATING MATERIAL

Samuel R. Rosen, Lorain; Alvin A. Rood, Westlake, and Donald R. Scharf, Amherst, all of Ohio, assignors to Nordson Corporation, Amherst, Ohio

Filed April 17, 1970, Ser. No. 29,409
Int. Cl. H05b 3/04, 3/70
U.S. Cl. 219—301 4 Claims

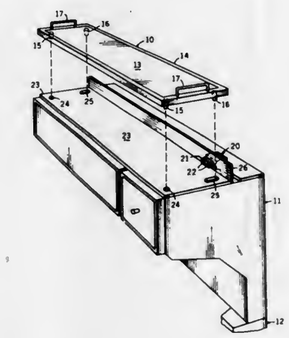


A modular apparatus for heating circulating liquids such as paint. The apparatus has a heater module that may be heated internally to a high temperature by electrical energy for example, and one or more interchangeable circuit modules having a relatively high thermal conductivity and positioned face to face against the heater module in heat transfer relationship therewith. Each circuit module has a group of generally parallel internal passages formed for example during extrusion and interconnected in pairs at their ends so as to define a sinuous circuit for liquid between inlet and outlet ports. One circuit module may be secured on each opposite face of the heater module with the two respective groups of passages interconnected through the interposed heater module to form a continuous series connection between the two circuit modules. Two or more such units may be ganged with a series circuit connection to enlarge the circuit and increase the volumetric capacity.

3,676,643
REMOVABLE WARNING TRAY ASSEMBLY

Elmer E. Vocke, Belleville, and Albert L. Baltz, Millstadt, both of Ill., assignors to Eagle Range & Manufacturing Company, Belleville, Ill.

Filed June 11, 1971, Ser. No. 152,148
Int. Cl. F27d 11/2
U.S. Cl. 219—432 5 Claims

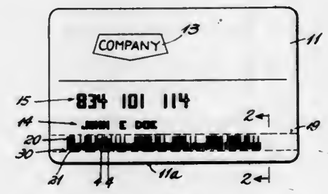


The assembly includes a base structure and an electrically heated, removable warming tray, the base and the tray each having compatible, interconnecting electrical connectors. The tray includes downwardly projecting legs and the base includes a support deck providing grooves receiving the legs to align and guide the tray into electrical connection with the base structure. The base includes front stops engagable by the legs to preclude inadvertent uncoupling of the tray and to retain the tray in position relative to the base

3,676,644
CODED DOCUMENT AND SYSTEM FOR AUTOMATICALLY READING SAME

Angelo Vaccaro, Port Washington, and Harold F. E. Dixon, Douglaston, both of N.Y., assignors to Columbia Controls Research Corporation, Glen Cove, N.Y.

Filed March 5, 1970, Ser. No. 16,858
Int. Cl. G06k 7/08, 19/06; G11b 5/68
U.S. Cl. 235—61.11 D 11 Claims



A document such as a credit card formed with magnetizable indicia in the form of short and long individual bars intermingled according to a code to produce, when read by a system having a magnetic reading head, an electrical representation of the indicia to enable automatic identification of the card.

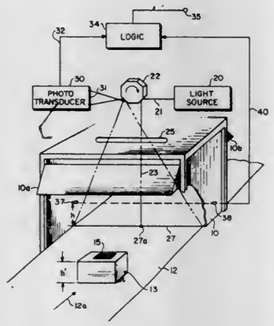
The document can be passed beneath the reading head over a wide range of speeds thereby enabling the use of an inexpensive reading system. When the document is a plural layer credit card, the code is formed on an inner surface of the card to prevent erosion and alteration of the code.

3,676,645

DEEP FIELD OPTICAL LABEL READER INCLUDING MEANS FOR CERTIFYING THE VALIDITY OF A LABEL READING

William E. Fickenscher, 1229 Knightswood Road, Baltimore, Md., and James E. Harris, 2 Harmon Road, Owings Mills, Md.

Filed April 9, 1970, Ser. No. 27,051
Int. Cl. G06k *7/14*; **G01d** *5/36*; **H04n** *3/34*; **G06k** *9/04*
U.S. Cl. 235—61.11 E **31 Claims**



A label reader includes a rotating faceted mirror which scans a beam from a low power gas laser repetitively across a conveyor. The beam path is within the viewing angle of a phototransducer. A package having a specially marked label thereon which passes through the beam excites the phototransducer in response to the label markings. The light received by the photosensor will thus be modulated in accordance with the label markings as scanned. The output of the phototransducer is thus a pulse train which is analyzed in a logic circuit to determine first that a label is being read and second to determine the validity of informational content on the label. Extreme depth of the reader field is provided by the laser which provides a coherent non-dispersive light source and additionally by a sensor which detects the distance of the label being read from the label reader and modifies the logic circuitry in accordance therewith.

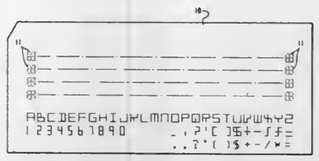
3,676,646

DOCUMENT WITH CHEMICALLY DEVELOPABLE PRECISELY DEFINED ALPHANUMERIC CHARACTERS

Donald W. Carlsen, Princeton Junction; John J. Kotla, Cranbury, and Arden A. Parker, Hightstown, all of N.J., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 31, 1970, Ser. No. 68,273
Int. Cl. B41m *3/14*; **G06k** *19/06*; **C08f** *45/66*; **B42d** *15/00*
U.S. Cl. 235—61.12 N **16 Claims**

A document processable in optical alphanumeric character readers has a plurality of identical constraint character patterns printed on an untreated substrate in an improved moisture-setting or lithographic ink that is visible to the human eye as a hand printing guide to the operator but not machine-recognizable until selectable portions of the pattern are developed by a developing solution applied by a pen to create a desired one of a plurality of alphanumeric characters of an intensity recognizable by such a machine. The discontinuous pattern configuration assures sharply defined distinctive machine-recognizable characters without undesirable feathered edges or "tics." The highly reflective developer provides no machine-recognizable image when inadvertently applied to uninked areas of the substrate.

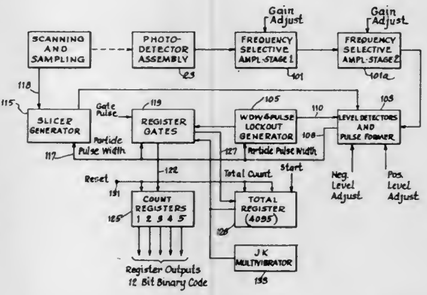


3,676,647

PARTICLE ANALYZING APPARATUS AND METHOD

Robert Staffin, Colonia; Roy J. Ricci, Red Bank, both of N.J., and Ronald J. Juels, New York, N.Y., assignors to Procedyne Corporation, New Brunswick, N.J.

Filed Dec. 4, 1969, Ser. No. 881,951
Int. Cl. G06m *11/04*
U.S. Cl. 235—92 PC **19 Claims**



On-line, real-time particle analyzing and counting apparatus operating continuously. The particles, suspended in a fluent medium flowing through a transparent chamber of pre-determined cross section, are scanned by a flying spot of minimum practical dimensions. A photodiode adjacent the face of the chamber opposite impingement of the spot is activated in accordance with interruption of the light transmitted through the flowing medium. Activation is proportional to the size and density of the particles and the output of the photodiode is translated into pulses which are measured and counted in accordance with their magnitude and frequency. The pulses are grouped within specified size ranges for convenience of counting.

3,676,648

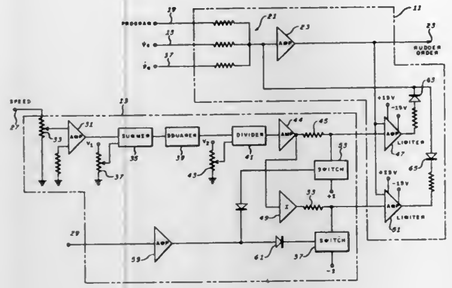
TURN HEEL LIMITING CIRCUIT

Charles R. Wesner, Crozet, Va., assignor to Sperry Rand Corporation

Filed May 4, 1971, Ser. No. 140,168
Int. Cl. B63h *25/04*; **G05b** *13/02*
U.S. Cl. 235—150.2 **6 Claims**

Heeling of a ship during a turning maneuver is restricted to a safe value in accordance with the ship's speed and heading rate. A limit computer accepts a signal indicative of the ship's speed and provides a rudder angle limiting signal which is a function of the reciprocal of the square of the ship's speed. The polarity of a second signal representing the rate-of-change of the ship's heading is used to limit only those rudder angles that would decrease the turning radius. Rudder order

command signals are ordinarily applied to the ship's steering mechanism without alterations. A command signal calling for an excessive rudder angle, however, is limited to the value of the rudder angle limiting signal.

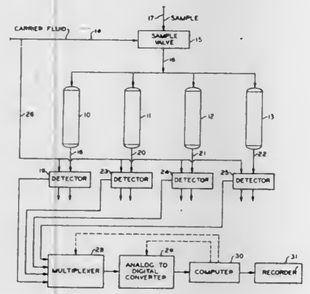


3,676,649

SIGNAL ANALYSIS AND RECORDING

Marvin C. Burk, Bartlesville, Okla., assignor to Phillips Petroleum Company

Filed May 8, 1970, Ser. No. 35,840
Int. Cl. G01n *31/08*; **G06f** *15/34*
U.S. Cl. 235—151.3 **3 Claims**



Areas of peaks in a chromatogram or similar signal are computed from measurements of the amplitudes at spaced time intervals. Amplitudes at selected sampling points between the spaced time intervals are calculated. The areas are computed by selectively summing the measured and calculated amplitudes.

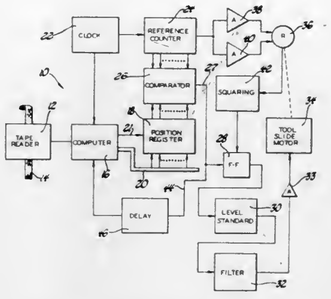
3,676,650

NUMERICAL CONTROL SYSTEM USING POSITION NUMBER GENERATOR

Hubert B. Henegar, Detroit, Mich., assignor to The Bendix Corporation

Filed Oct. 5, 1970, Ser. No. 77,770
Int. Cl. G05b *19/30*
U.S. Cl. 235—151.11 **17 Claims**

A variable phase signal generator for driving a phase analog loop in a numerical control system wherein a computer responds to program data to output position number sequences and digital means are provided for converting the numbers in the sequences to a variable phase pulse train.

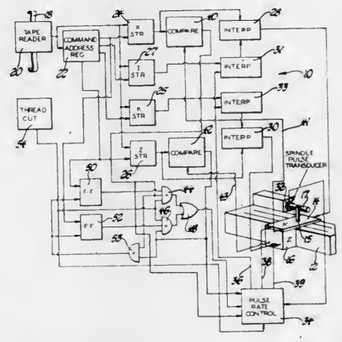


3,676,651

RAPID RETRACT FOR THREAD CUTTING

George H. McDaniel, Northville, Mich., assignor to The Bendix Corporation

Filed Sept. 21, 1970, Ser. No. 73,937
Int. Cl. G06f *15/46*
U.S. Cl. 235—151.11 **10 Claims**



A numerical control system for performing a thread cutting operation on a lathe and responding to programmed path and final position coordinates to immediately execute a rapid tool retraction whenever one of the two controlled axes is in the final coordinate position.

3,676,652

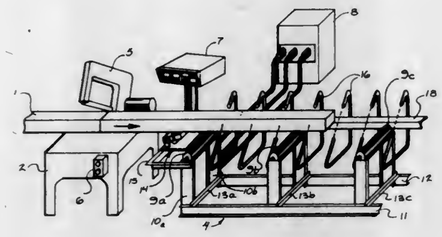
ELECTRONIC LINEAR MEASURING DEVICE

Hugh L. Millis, Jr., Anaheim, and Eugene A. Hoskinson, Tustin, both of Calif., assignors to Intertek Controls, Inc.

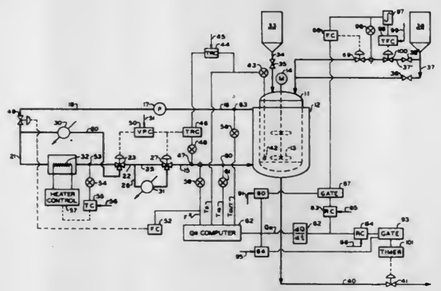
Filed Feb. 18, 1970, Ser. No. 12,256
Int. Cl. G06f *15/46*
U.S. Cl. 235—151.32 **11 Claims**

The present invention relates to an electronic digital measuring system for measuring and displaying the length a member extends beyond a measuring point, and, more particularly, to an electronic digital measuring system which

makes coarse and fine measurements by a pair of independent measuring units of the distance a member being measuring extends beyond a measurement point and additionally combines and displays the combined measurements.



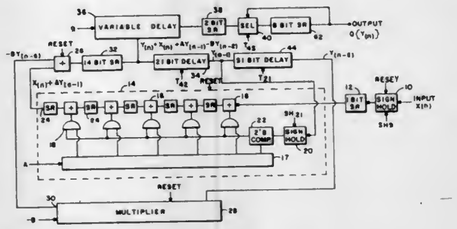
3,676,653
MEASUREMENT OF HEAT GENERATED IN EXOTHERMIC REACTION
James L. Arens, and Hi W. Staten, both of Bartlesville, Okla., assignors to Phillips Petroleum Company
Filed Aug. 28, 1970, Ser. No. 67,942
Int. Cl. G06g *7/58*
U.S. Cl. 235—151.3 **10 Claims**



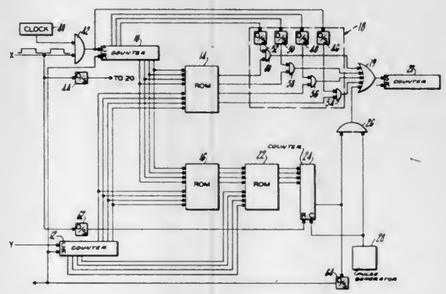
A batch reactor is controlled by measuring heat transfer from the reactor and integrating the measured signal. The computation is based on the flow of coolant and measured temperatures. When the integrated signal reaches a preselected value, the reaction is terminated. The integrated signal can also be used to control introduction of a reactant.

3,676,654
DIGITALIZED FILTER
William J. Melvin, Costa Mesa, Calif., assignor to Collins Radio Company, Cedar Rapids, Iowa
Filed May 21, 1970, Ser. No. 39,190
Int. Cl. G06f *15/34, 7/39*
U.S. Cl. 235—152 **13 Claims**

A digital filter constructed to digitally filter signals primarily of the sampled data format which filter will not oscillate due to overloading and which can be easily connected to a string of similar filters for performing complex filter operations due to internal word size and the manner of truncation of the output signal. Some embodiments of the filter may be constructed according to a general digital filter algorithm.



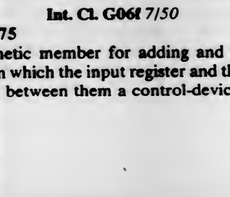
3,676,655
DIGITAL FUNCTION GENERATOR FOR TWO INDEPENDENT VARIABLES WITH INTERPOLATION
Anthony Ancona, Hartford, Conn., assignor to Chandler Evans Inc., West Hartford, Conn.
Filed July 31, 1970, Ser. No. 60,001
Int. Cl. G06f *15/34*
U.S. Cl. 235—152 **12 Claims**



A digital logic circuit for providing an output signal which is a function of a pair of independent variables is disclosed. The disclosed embodiment includes a two-dimensional function generator which operates as a pulse packet analyzer; the two-dimensional function generator providing a binary output signal which is an arbitrary function of a third variable with respect to the actual value of a first variable and a known value of a second variable. The disclosed embodiment also includes circuitry for interpolating the regions between curves as represented by the output of the two-dimensional function generator, as a function of the difference between the actual and known values of the second independent variable, in order to provide a binary signal which may be added to the two-dimensional function generator output to produce the desired output signal.

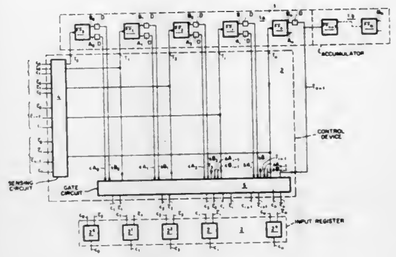
3,676,656
ELECTRONIC DIGITAL SLIDE RULE
Herman Schmidt, Binghamton, N.Y., assignor to General Electric Company, Schenectady, N.Y.
Filed June 30, 1969, Ser. No. 837,787
Int. Cl. G06f *7/385, 7/39, 15/34*
U.S. Cl. 235—156 **18 Claims**

An electronic digital slide rule in the form of a small hand-carried, battery powered digital electronic calculator capable of performing substantially all of the mathematical operations performed by the conventional mechanical slide rule. The electronic digital slide rule utilizes a computing technique based on integrating for a period of time proportional to one input variable x, a fixed or variable pulse rate signal, the magnitude of which may be proportional to another input variable y, to a constant, or to some other known function. The computing technique is implemented by a pulse rate generator producing a pulsetrain representative of one factor of a function whose solution is desired. First factor input means are provided for supplying the one factor to the input of the pulse rate generation means whose output is supplied to an output integrator and timing circuit. A second factor input means is coupled to and controls at least in part operation of the output integrator and timing circuit means. The electronic digital slide rule is completed by a function selector switching means that interconnects the pulse rate generation means to the second factor input means and to the output integrator and timing circuit means in a manner to perform a selected one of a plurality of different logical operations on the first and second input factors to thereby derive a desired output solution. In preferred embodiments of the slide rule, an output indicating means is coupled to the output from the output integrator and timing circuit means for displaying the solution in legible form. The plurality of different logical operations capable of being performed by the electronic digital slide rule include the arithmetic operations of addition, subtraction, multiplication, division, squaring and square rooting, and exponential, logarithmic and trigonometric operations. In constructing the electronic digital slide rule, the first and second factor input means may comprise mechanical switches having a plurality of discrete contact positions which also serve as in input memory for retaining the value of the input first and/or second factors. It is also preferred that the electronic digital slide rule operate from a battery operated power supply means for supplying energizing power to the slide rule through a start-stop switch which energizes the slide rule only during periods of use and conserves the battery power supply during periods of non-use. It is also anticipated that the electronic digital slide rule would be fabricated from micro-miniaturized integrated circuit structures mounted on a single supporting circuit board and housed in the form of a pocket size container for easy transport and use. A preferred embodiment of the electronic digital slide rule also includes a decimal point placement indicating means for visibly indicating to the user of the device the position of the decimal point in an output solution displayed by the output indicating means.

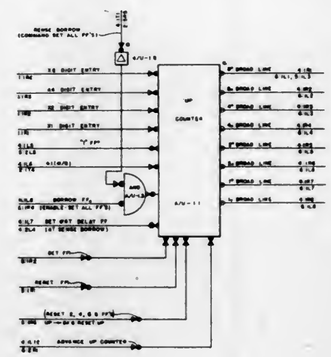


3,676,657
TWO REGISTER PARALLEL BINARY ADDER/SUBTRACTOR
Eeltje De Boer, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed June 4, 1970, Ser. No. 43,518
Claims priority, application Netherlands, June 7, 1969, 6908710
Int. Cl. G06f *7/50*
U.S. Cl. 235—175 **7 Claims**

Binary arithmetic member for adding and subtracting binary numbers, in which the input register and the accumulator have connected between them a control-device comprising a sensing circuit for sensing the least significant bit place, where the binary number to be added or subtracted has a bit value "1," whose outputs corresponding to the respective bit places of the binary number are connected to the corresponding inputs of the accumulator so that under the control of a starting pulse that bistable flip-flop of the accumulator changes its state which ordinally corresponds to said least significant bit place where the binary number to be added or subtracted has a bit value "1," said control-device comprising furthermore a gate circuit which, together with the sensing circuit, satisfies a given logical equation, so that a simple arithmetic member is obtained. A special device is provided for adding to or subtracting from the result in the accumulator an additional binary number 1 when the accumulator passes the zero position (FIGS. 2, 2*a*, 2*b*, 2*c*, 2*d*).

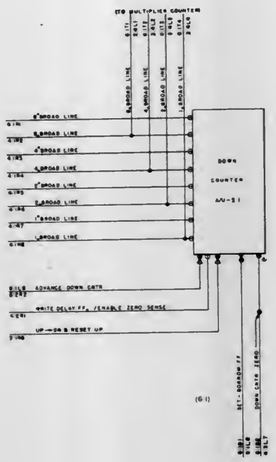


3,676,658
SERIAL ADDER/SUBTRACTER UTILIZING COUNTERS
Robert A. Ragen, Hayward, Calif., assignor to The Singer Company
Division of Ser. No. 398,902, Sept. 24, 1964, Pat. No. 3,523,282, which is a division of Ser. No. 319,273, Oct. 28, 1963, abandoned. This application Dec. 12, 1969, Ser. No. 889,802
Int. Cl. G06f *7/50*
U.S. Cl. 235—176 **8 Claims**



The disclosure relates to an electronic desk type calculator wherein a pair of four element counters acting together in

conjunction with timing and other circuitry are capable of performing the functions of shifting, addition, subtraction, multiplication and division.

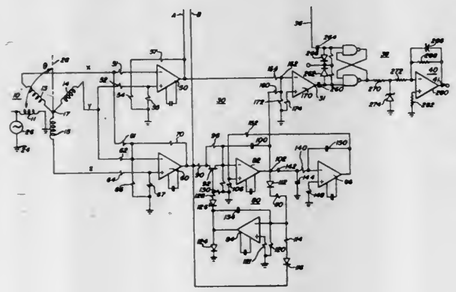


3,676,659

DEMODULATOR FOR ANGULARLY RELATED SIGNALS

Daniel R. Asmussen, Kirkland, Wash., assignor to United Control Corporation

Filed Oct. 19, 1970, Ser. No. 81,899
Int. Cl. C06g 7/22
U.S. Cl. 235—186 12 Claims



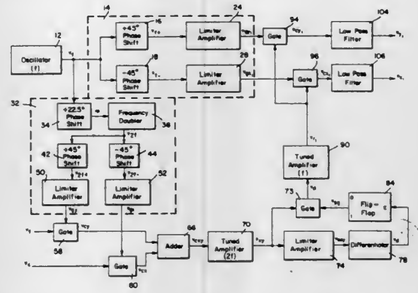
A demodulator for signals representing the angular position θ of a rotor in a synchro or resolver generates a corrected reference signal phase offset from the signal energizing the rotor winding by the amount of inherent phase shift ϕ occurring during signal transfer between the rotor and stator windings. The corrected reference signal is compared with a stator derived signal, produced by subtracting, adding, and 90° phase shifting signals from the stator windings, to produce a rectangular wave which is integrated to produce a DC voltage representing the true rotor angle θ. The 90° phase shift is accomplished by an operational amplifier integrator which includes an AGC amplifier and a drift stabilizing amplifier.

3,676,660

VECTOR HALF-ANGLE COMPUTER

Larry R. Miller, Berkeley, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed June 23, 1971, Ser. No. 155,926
Int. Cl. G06g 7/22
U.S. Cl. 235—186 8 Claims



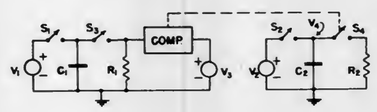
The disclosed analog computer develops from a pair of input signals representative of input quadrature component vectors, a pair of output signals representative of quadrature component vectors of a sum vector having the same magnitude but one-half of the angle of the sum vector of the input quadrature component vectors. Signal generating circuitry generates quadrature gating signals at both a first frequency and a second frequency equal to twice the first frequency. A first informational signal at the second frequency with a phase indicative of the input sum vector angle is developed from the combined output signals from circuits which gate the respective input signals with the second frequency quadrature gating signals. The first informational signal is gated with a phase coherent signal at the first frequency to produce a second informational signal at the first frequency with a phase indicative of one-half of the input sum vector angle. Computer output signals are obtained by gating the second informational signal with the first frequency quadrature gating signals and filtering the resultant gate output signals.

3,676,661

VOLTAGE-TIME-VOLTAGE COMPUTATION CIRCUIT USING R-C EXPONENTIAL DECAY CIRCUITS TO PERFORM MULTIPLICATION, DIVISION, ROOT-FINDING AND LOGARITHMIC CONVERSION

James A. Sprowl, 141 Greenbay Road, Wilmette, Ill.

Filed May 5, 1970, Ser. No. 34,772
Int. Cl. G06g 7/16, 7/24
U.S. Cl. 235—193 8 Claims



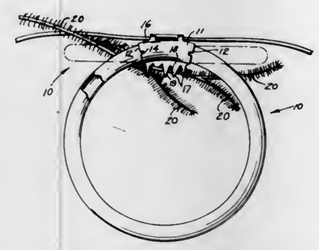
A new class of linear circuits can multiply and divide, find powers and roots, and perform both logarithmic and antilogarithmic conversions. The circuits convert incoming voltages into logarithmically related time intervals and simultaneously convert the time intervals back into antilogarithmically related voltages. Resistor-capacitor exponential decay circuits perform the voltage-time and time-voltage conversions under the control of comparators and switches.

3,676,662

CHRISTMAS TREE LIGHTS

James Vin Dick, W156 N8027 Pilgrim Road, Menomonee Falls, Wis.

Continuation of Ser. No. 759,083, Sept. 11, 1968, abandoned.
This application May 18, 1970, Ser. No. 38,583
Int. Cl. A47g 33/16; F21p 1/02
U.S. Cl. 240—10 T 3 Claims



A supporting socket for displaying a fluorescent lamp on a Christmas tree. This lamp support comprises a pair of fluorescent sockets mounted on a plate having a plurality of prongs for grasping the branches of the Christmas tree.

3,676,663

INDICATING FLASHLAMP

Gene K. Beare, Darien, Conn.; Bernard Kopelman, Salem, Mass., and Donald E. Seeger, Succasunna, N.J., assignors to Sylvania Electric Products Inc.

Filed Jan. 21, 1969, Ser. No. 792,314
Int. Cl. G03b 15/02
U.S. Cl. 240—1.3 6 Claims



A flashlamp in an enclosing envelope, such as a flashcube having a plastic cover, with a substance which will product a protuberance on said envelope as a result of the flash. In this way, a used flashlamp can be detected by the feel of the protuberance, without the operator's having to look at the lamp or cube itself. The substance can be a material which generates heat or explodes on being subjected to other heat or radiation. A mixture of potassium chlorate with lactose, or with sulfer can be used, or thermit or other suitable materials. An ignitor and an exothermic material, or a sugar with an oxidant can be used.

3,676,664

WORK AND SAFETY LAMP

Patrick T. Corvetti, 69 Glen St., Brooklyn, N.Y.

Filed Aug. 11, 1970, Ser. No. 62,966
Int. Cl. F21v 21/14; G08b 5/00; F21l 15/14
U.S. Cl. 240—6.4 W 2 Claims

A work and safety lamp to be worn on the head of the user consisting of an adjustable perforated headband which is suitable for mounting on the head of the user and including a forward projecting lamp mounted on the front portion of the headband and a flashing dome lamp extending above the headband. The batteries which power the dome lamp and the



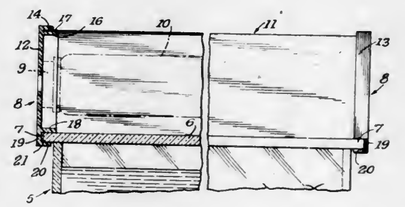
head lamp are also contained in the headband, which is designed to be lightweight and compact.

3,676,665

LAMP HOUSING STRUCTURE

Anthony Louis, Los Angeles, Calif., assignor to Aquaria, Inc., Los Angeles, Calif.

Filed April 12, 1971, Ser. No. 132,990
Int. Cl. F21v 17/00
U.S. Cl. 240—41.5 4 Claims



A lamp housing structure based upon a transparent cover of a household aquarium or like housing and comprising similar end caps of plastic material formed at their lower ends with grooves into which the opposite ends of said cover are frictionally fitted to, thereby, support and retain said caps in fixed relative position, and a sheet metal housing of inverted U-section having its ends telescopically and frictionally fitted into inwardly facing grooves in said caps, one or both said caps being provided with a fitting for a lamp that is enclosed by the housing and provides illumination for the interior of the aquarium.

3,676,666

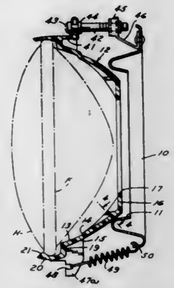
MOUNTING OF SEALED BEAM HEADLAMPS

Jay E. White, Bloomfield Hills, Mich., assignor to Reflex Corporation of Canada Limited, Amherstburg, Ontario, Canada

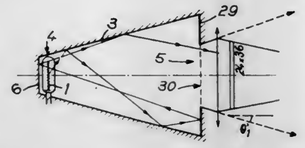
Filed July 16, 1970, Ser. No. 55,450
Int. Cl. F21v 17/00, 7/00
U.S. Cl. 240—41.5 7 Claims

An automobile adjustable headlamp mounting having a one-piece plastic housing comprising a relatively thin annular spherical wall with a frusto-spherical inner surface and a frusto-spherical outer surface for engaging an opening in a mounting bracket. A peripheral rim on the annular wall has radially inwardly extending beads for engaging the flange of a sealed beam headlamp. The housing has integral spring tabs on the wall radially inwardly of the rim for engaging the flange of the headlamp to hold the latter in the housing between the bead and the spring tabs. Circumferentially positioned integral mounting brackets are located on the the annular wall. A novel spring metal clip is provided along the peripheral rim and cooperates with the beads on the flange of the housing to removably hold the headlamp in position. In addition,

brackets on the housing are utilized to mount the housing on a mounting bracket. One of the mounting walls has a screw associated therewith which is held in position by a novel spring clip.

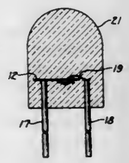


3,676,667
OPTICAL PROJECTOR DEVICE
Pierre Malifaud, 95, boulevard Jourdan, Paris 14e, France
Filed July 18, 1969, Ser. No. 842,883
Claims priority, application France, July 19, 1968, 68159972
Int. Cl. F21u *13/04*
U.S. Cl. 240—41.35 R **9 Claims**



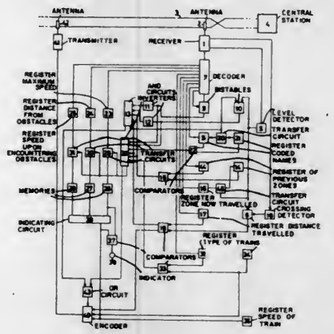
An optical projector device in which light is collected from substantially 4π steradians by means of two reflector systems. One system comprises a tapering reflector, and the other system can include planar tapered, spherical, ellipsoidal, or cylindrical reflector elements which reflect light from the remaining solid angle towards the entrance window of the first system. The tapering reflector may have the general shape of a truncated cone, prism, or pyramid.

3,676,668
SOLID STATE LAMP ASSEMBLY
Neil E. Collins, Richmond Heights; Elwyn W. Kerber, and Raymond R. Neville, both of Mayfield Heights, all of Ohio, assignors to General Electric Company
Filed Dec. 29, 1969, Ser. No. 888,485
Int. Cl. B60q *3/04;* **F21v** *7/14;* **H05b** *33/12*
U.S. Cl. 240—103 R **8 Claims**



A light-emitting diode element is mounted on a supporting tab, in a depression thereof having polished tapered sides. A dimple is provided in the depression, at the underside of the diode, so that only a small area of the bottom surface of the diode is in contact with the tab, thereby maximizing internal light reflection at the bottom surface and thus increasing the amount of light usefully emitted through the top and sides of the diode. The polished tapered sides of the depression in the tab reflect upwardly the light emitted through the sides of the diode, so as to be useful along with light emitted through the top of the diode. The assembly is encapsulated in glass or plastic.

3,676,669
APPARATUS FOR THE CENTRALIZED CONTROL OF THE OPERATION OF TRAINS
Christian Jauquet, Charleroi, Belgium, assignor to Ateliers de Constructions Electriques de Charleroi (ACEC), Charleroi, Belgium
Continuation-in-part of Ser. No. 672,170, Oct. 2, 1967, abandoned. This application May 14, 1970, Ser. No. 37,103
Claims priority, application Belgium, Oct. 5, 1966, 34179
Int. Cl. B61l *27/04*
U.S. Cl. 246—182 R **3 Claims**

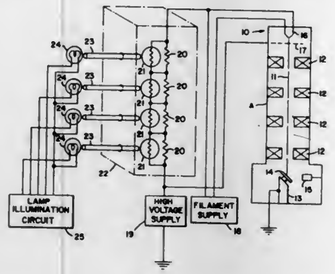


An apparatus for the centralized control of the operation of trains travelling in a network divided into zones, each zone being controlled by a central station that transmits coded messages to a bilateral communication system. A coded name is given by the central station to each train entering a zone. The train retains its coded name while in the zone and considers only messages intended to it. The train transmits to the central station data relating to its speed, its zone of origin and the distance it has travelled in the zone as well as other characteristics. Such data is stored in a memory portion of the central station and serves to send the coded messages to the train based on that data, on the obstacles lying ahead of the train and on the true distance travelled by the train at the time of sending the codes messages. The central station calculates at all times such true distance by means of the distance stored in the above-mentioned memory portion of the central station, of the speed of the train and of the time interval elapsed between the storing of the above-mentioned distance and the transmission of the coded messages.

3,676,670
ELECTRON GUN BIASING SYSTEM
James Dao, Alameda, and Nelson C. Yew, Los Altos, both of Calif., assignors to ETEC Corporation, Mountain View, Calif.
Filed Oct. 9, 1970, Ser. No. 79,419
Int. Cl. H01j *37/26;* **G01n** *23/00*
U.S. Cl. 250—49.5 A **16 Claims**

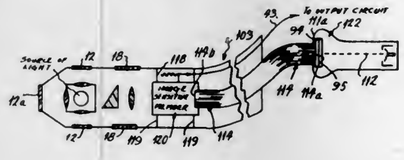
An electron gun biasing system, particularly adapted for use in an electron microscope, in which a plurality of resistors are

provided in series with the cathode of the electron gun. In parallel with each of the resistors is a photoconductor, and



means are provided for selectively illuminating the various photoconductors so as to short out various resistors, and thus vary the bias. Typically, the resistors and photoconductors may be located inside a shielded box, and a plurality of light pipes may be directed through openings in the shielded box, so that the ends of the light pipes will be adjacent the photoconductors. A plurality of lamps may then be disposed at the ends of the light pipes outside the box, the lamps being selectively illuminated by a simple lamp illumination circuit.

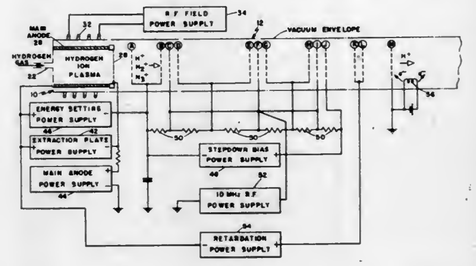
3,676,671
DEVICES OF FIBEROPTIC AND VACUUM TUBE CONSTRUCTION
Edward Emanuel Sheldon, 30 East 40th Street, New York, N.Y.
Division of Ser. No. 498,959, Oct. 20, 1965, Pat. No. 3,423,620, which is a division of Ser. No. 158,638, Dec. 4, 1961, Pat. No. 3,279,460, which is a continuation-in-part of Ser. No. 624,829, Nov. 28, 1956, Pat. No. 3,021,834. This application Oct. 1, 1968, Ser. No. 764,175. The portion of the term of this patent subsequent to Oct. 3, 1984, has been disclaimed.
Int. Cl. H01j *1/54*
U.S. Cl. 250—71 R **19 Claims**



This invention relates to novel fluorescent and photoelectric screens which comprise supporting means constructed by a plurality of light conducting novel guides operating by internal reflection of light and mounted in a two-dimensional array. The invention is also directed to the use of such means in photoelectric inspection devices.

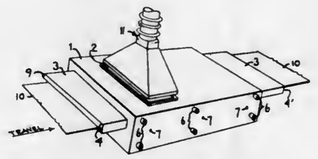
3,676,672
LARGE DIAMETER ION BEAM APPARATUS WITH AN APERTURED PLATE ELECTRODE TO MAINTAIN UNIFORM FLUX DENSITY ACROSS THE BEAM
Benjamin B. Meckel, 10191 Grandview Drive, and Robert L. Lebduska, 4367 Vista Way, both of La Mesa, Calif.
Filed Feb. 3, 1969, Ser. No. 795,862
Int. Cl. H01j *37/08, 39/34*
U.S. Cl. 250—41.9 SE **4 Claims**

The apparatus generates a high energy beam of large size, on the order of 12 centimeters or more in diameter, the beam being passed through a mass separator which extracts unwanted charged particles, leaving a pure single specie beam. The resultant beam is space charge neutralized to prevent coulombic spreading and maintains a substantially constant



flux density over the full beam cross section. Using appropriate gaseous material for ionization, the apparatus provides a particularly effective simulation of solar plasma wind, as one example of its utility.

3,676,673
APPARATUS FOR IRRADIATION IN A CONTROLLED ATMOSPHERE
George E. Coleman, Elmhurst, Ill., assignor to PPG Industries, Inc., Pittsburgh, Pa.
Filed Aug. 18, 1969, Ser. No. 850,926
Int. Cl. H01j *37/30*
U.S. Cl. 250—49.5 TE **15 Claims**

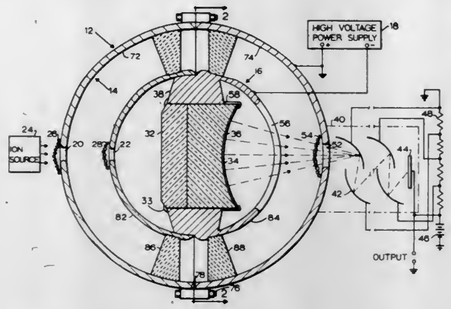


Apparatus which permits treatment of products with ionizing radiation in a controlled atmosphere comprises an inner chamber positioned within an outer chamber, the workpiece to be treated passing through the inner chamber. The outer chamber has a radiation-permeable window in one surface and the second chamber has means for the passage of radiation in juxtaposition with the window in the outer chamber. The apparatus may also contain means for carrying the product to be treated, as well as cooling means at the end of the radiation path.

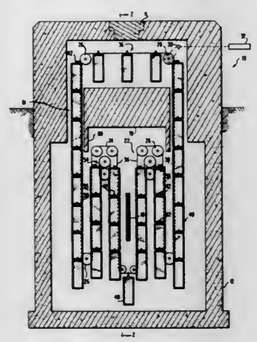
3,676,674
APPARATUS FOR IONIZATION ANALYSIS
Vladimir T. Zaviantseff, San Francisco, Calif., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration
Filed July 16, 1970, Ser. No. 55,536
Int. Cl. G01t *1/20*
U.S. Cl. 250—71.5 R **6 Claims**

Apparatus for ionization analysis comprising generally concentric outer and inner tubular shaped electrodes between which a d-c potential is applied so as to produce an electric field therebetween. Adjacent scintillating and photoemissive members are mounted inside the inner electrode, and generally aligned front and rear apertures are formed in the electrodes. Positive ions from a source of ions are directed through the front apertures and onto the scintillating member

for the production of light pulses therein. Light from the light pulses striking the photoemissive member produces photoelectrons which are directed outwardly from the electrodes through the rear apertures therein. Electron multiplying means may be positioned to receive the photoelectrons for amplifying the same. With this arrangement the d-c potential which produces the electric field functions to accelerate both the incident positive ion beam and the photoelectrons produced by the photoemissive member.

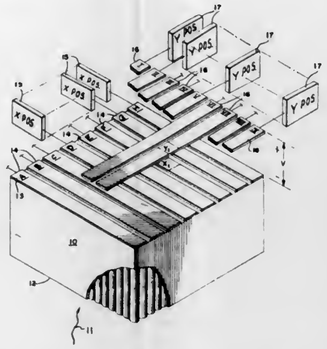


3,676,675
PRODUCTION IRRADIATOR
Jackson A. Ranschoff, Bethesda, and Lewis P. Sarkozi, Adamstown, both of Md., assignors to Neutron Products, Inc., Dickerson, Md.
Filed May 29, 1969, Ser. No. 829,080
Int. Cl. G21h *5/00*
U.S. Cl. 250—52 **7 Claims**



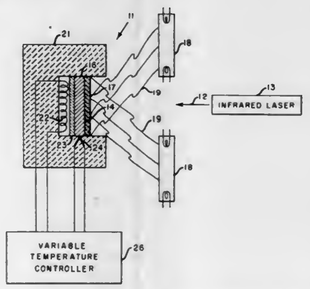
Irradiation of material in packages is carried out continuously by a unique conveyor arrangement which transports closely spaced carriers containing the packages in vertical runs past a radiation source. The radiation conveyor utilizes extension arms to increase the radius of outside turns and allow the carriers to be spaced closer to the source and to each other. A transfer conveyor is provided to obviate the need for inside turns so that individual carriers and adjacent vertical runs may be closely spaced in the radiation zone. A loading station provides means for the horizontal loading and unloading of the packages in increments to provide for the integration of the radiation dose horizontally across the carrier length. An effective labyrinth radiation shield above the source shields the loading station. The radiation dosage per pass through the system may be varied by varying the speed of the conveyor or the strength of the radiation source plaque.

3,676,676
LOW ENERGY PARTICLE COUNTER WITH TWO-DIMENSIONAL POSITION SENSING
Toivo A. Somer, Lake Orion, Mich., assignor to The Bendix Corporation
Filed Oct. 30, 1970, Ser. No. 85,593
Int. Cl. G01t *1/16*
U.S. Cl. 250—83 R **9 Claims**



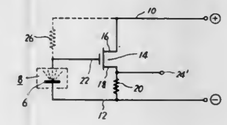
A system for detecting radiant energy, such as photons or charged particles, and yielding an output which is indicative of the position in the *x*, *y* plane of the input surface of the detection element at which the energy impacts the detection element. The system includes a radiation detector which is subjected to the radiant energy and which yields an output charge in response thereto. The output charge energizes a plurality of charge sensitive elements which give an indication of the position at which the radiant energy impacts the detection element in one direction. A second plurality of charge sensing elements is also energized by the output charge to yield a position indication in the other direction. The individual outputs from the two pluralities of charge sensitive elements can, therefore, be combined to indicate the position along two orthogonal axes at which the detected radiant energy impacted the radiation sensitive element.

3,676,677
VARIABLE SENSITIVITY VISUAL DISPLAYER FOR INFRARED LASER BEAMS
George A. Condas, Hayward, and Don W. Brown, Livermore, both of Calif., assignors to The United States of America as represented by the United States Atomic Energy Commission
Filed Aug. 11, 1970, Ser. No. 63,198
Int. Cl. G01t *5/00*
U.S. Cl. 250—83.3 H **9 Claims**



A thermographic phosphor screen caused to fluoresce by continuous ultraviolet excitation is impinged by an infrared laser beam which locally heats the phosphor to quench its fluroescence and thereby form an image of the beam as a dark pattern on the screen. Provision is made to vary the thermal bias on the screen over a range of phosphor temperatures commensurate with maximum optical resolution and sensitivity thru a wide range of impinging laser beam powers.

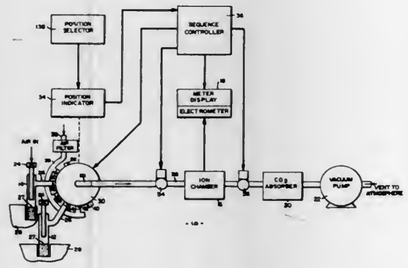
3,676,678
SINGLE CHAMBER IONIZATION SMOKE DETECTOR
Naoki Takahashi, Yokohama, Japan, assignor to Nittan Company Limited, Tokyo, Japan
Filed Feb. 10, 1970, Ser. No. 10,158
Claims priority, application Japan, April 25, 1969, 44/31475
Int. Cl. G01n *21/26*
U.S. Cl. 250—83.6 FT **3 Claims**



An ionization smoke detecotor having a single open ionization chamber which is connected with a field effect transistor and wherein the leakage impedance between the gate and drain of the transistor serves as a high impedance path. detector

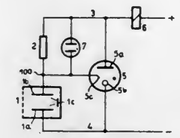
---

3,676,679
APPARATUS FOR DETECTING BIOLOGICAL ACTIVITY
John R. Waters, Towson, Md., assignor to Johnston Laboratories, Inc., Cockeysville, Md.
Continuation-in-part of Ser. No. 770,484, Oct. 25, 1968. This application April 22, 1970, Ser. No. 30,675
Int. Cl. G01t *1/18*
U.S. Cl. 250—83.6 FT **12 Claims**



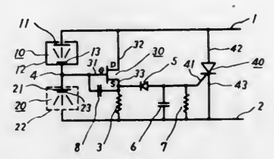
A sample of material such as blood, urine, spinal fluid, or the like to be tested for the presence of biological activity is placed into a sterile container together with a suitable growth medium which includes a C^{14} carbon containing carbon source (such as C^{14} substituted glucose) which is fermentable to produce gaseous $C^{14}O_2$. An incubator is provided for exposing the container and its contents to conditions conducive to growth. After a suitable incubation period, a portion of the gaseous atmosphere in the container is withdrawn and analyzed in gaseous form in an ionization chamber for the presence of radioactivity. Valve and conduit means are provided for analyzing a number of samples sequentially.

3,676,680
IONIZATION FIRE ALARM WITH INSULATION MONITORING SYSTEM
Andreas Scheidweiler, Stafa, and Otto Meier, Herrliberg, both of Switzerland, assignors to Cerberus AG, Mannedorf, Switzerland
Filed June 8, 1970, Ser. No. 44,091
Claims priority, application Switzerland, June 24, 1969, 9662/69
Int. Cl. G01t *1/18*; **H01j** *39/28*
U.S. Cl. 250—83.6 FT **23 Claims**



An ionization fire alarm comprising a measuring ionization chamber which is connected in series with at least one resistance element, preferably constructed as a reference ionization chamber, at a voltage source. An electrical amplifier and/or threshold value detector circuit is also provided, the input of which is electrically coupled with the junction point of the measuring ionization chamber and the resistance element. According to an important aspect of the invention the electric circuit of the ionization fire alarm system is constructed such that a signal is released when the input potential exceeds an upper threshold value or drops below a lower threshold value.

3,676,681
IONIZATION SMOKE DETECTOR
Akihiro Kobayashi, Fujisawa, Japan, assignor to Nittan Company Limited, Toyko, Japan
Filed July 17, 1970, Ser. No. 55,844
Claims priority, application Japan, July 22, 1969, 44/57367
Int. Cl. G08b *17/10*
U.S. Cl. 250—83.6 FT **3 Claims**

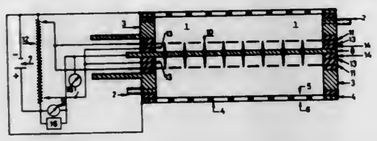


An ionization smoke detector having an open and a closed chamber, each including a pair of electrodes, the electrodes in the chambers being connected in series across a voltage supply. A field effect transistor interconnected with the chambers and the voltage supply to sense a change in impedance in the open chamber upon the admission of smoke and sensitivity controlling means interconnected with the field effect transistor to prevent the production of an erroneous signal from the transistor as a result of momentary increases of smoke concentrations in the ambient air.

3,676,682
ABSORBED IONIZING RADIATION MEASURING DEVICE
Fred W. Falk, 36 Philipp Schmitt Str., Sandhausen, Germany
Filed Oct. 30, 1968, Ser. No. 774,569
Int. Cl. G01t *1/18*; **H01j** *39/26*
U.S. Cl. 250—83.6 **4 Claims**

An ionization chamber for measuring absorbed radiation is disclosed, the chamber including a housing which incor-

porates an anode, a cathode, and a space charge electrode. The anode comprises a conducting plate which has a plurality of protruding needle points with each of the needle points and the conducting plate being at the same electrical potential.



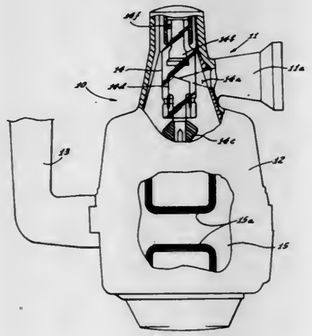
The space charge electrode has a plurality of holes therein and is physically displaced from the anode with the holes of the space charge electrode being in registry with the needle points of the anode. The potential of the space charge electrode is less than that of the anode itself.

3,676,683

DENTAL X-RAY HEAD

Cornelius Keith Vandervelden, Kansas City, Mo., assignor to Litton Medical Products, Inc., Des Plaines, Ill.

Filed Dec. 31, 1969, Ser. No. 889,503
Int. Cl. H01j *35/00*
U.S. Cl. 250—90 **9 Claims**



A dental X-ray head having a bucket-shaped end and an exaggerated cone-shaped end. The bucket-shaped end is connected to a suspension system for supporting the dental X-ray head and contains a high voltage transformer and various connections thereto, while the relatively smaller exaggerated cone-shaped end houses an X-ray tube and the contour of the exaggerated cone-shaped end follows the slope of the electrical potential established across the X-ray tube.

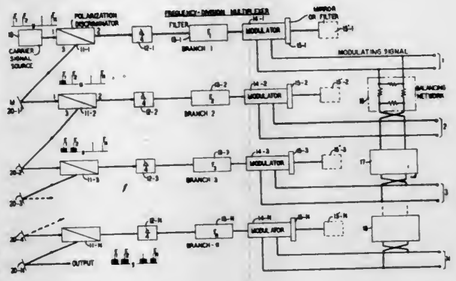
3,676,684

FREQUENCY-DIVISION MULTIPLEX COMMUNICATION SYSTEM

Owen Edward De Lange, Rumson, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Sept. 23, 1970, Ser. No. 74,768
Int. Cl. H04b *9/00*
U.S. Cl. 250—199 **15 Claims**

A frequency-division multiplex communication system is described wherein the multiplexer comprises a plurality of branches, each one of which selectively isolates and modulates one of a plurality of input carrier signals. The modulated signals are either reflected to rejoin the unmodulated carriers or they are separated and combined in a separate output circuit. At the receiver a demultiplexer selectively isolates the several modulated carriers by means of a network similar to



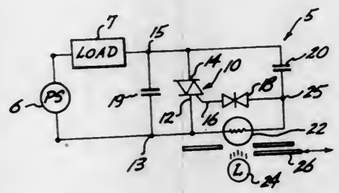
the multiplexer, and demodulates them in turn. A repeater, using a demultiplexer-multiplexer pair is also shown.

3,676,685

LIGHT-RESPONSIVE SWITCHING CIRCUIT

Clifford E. Myer, Forest Grove, Oreg., assignor to Xercon, Inc., Portland, Oreg.

Continuation-in-part of Ser. No. 6,055, Jan. 27, 1970, abandoned. This application May 4, 1970, Ser. No. 34,430
Int. Cl. H01j *39/12*
U.S. Cl. 250—206 **7 Claims**



A modularized light-responsive switching circuit capable of use in relatively high power applications. The circuit includes a Triac connected as a switching element in series with a power source and a load. The gate electrode of the Triac is connected to a light-responsive gating circuit including a capacitor and at least one light-responsive resistor switchable between two resistance levels. The capacitor is charged when the light-responsive resistor assumes one resistance level and is discharged into the gate of the Triac when the light-dependent resistor assumes the other resistance level. The components of the switching circuit are encapsulated in a cylindrical module having a screen therein, through which the active surface of the light-responsive resistor can receive light, and having a pair of terminals to connect the module directly into a power circuit.

3,676,686

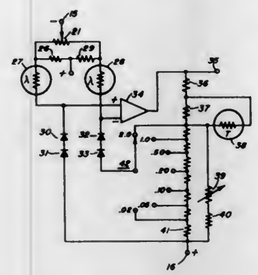
HIGH SENSITIVITY LIGHT ABSORBANCE APPARATUS

Robert W. Allington, Lincoln, Nebr., assignor to Instrumentation Specialties, Inc., Lincoln, Nebr.

Filed July 24, 1970, Ser. No. 58,020
Int. Cl. H01j *39/12*
U.S. Cl. 250—206 **11 Claims**

An arrangement for measuring very small changes in the absorbance of light within an optical cell by means of a photoresistive photocell, the photocell being connected in a circuit wherein the electrical load impedance presented to the

photocell is very small compared to that of the photocell, and including circuitry so that the output voltage is very nearly



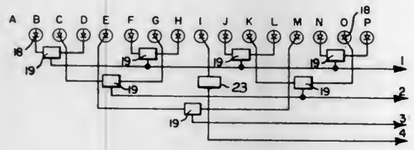
proportional to the logarithm of the light intensity striking the photocell.

3,676,687

SHADOW EDGE POSITION DETECTOR USING LINEAR ARRAY OF DIODES WITH LOGIC TO GENERATE GRAY CODE

Morris D. Freedman, Southfield, Mich., assignor to The Bendix Corporation

Filed Sept. 4, 1970, Ser. No. 69,755
Int. Cl. G01n *21/30*; **H03k** *3/42, 19/20*
U.S. Cl. 250—209 **10 Claims**



A system for detecting shadow edges by use of a linear array of photodiodes whose output is a Gray Type Code is described. Because of the unique connections of the diodes into pairs and the appropriate use of logic circuitry, the diodes can be arranged in a linear, or single line, array. As a result of the Gray Code type of output, the shadow edge is unambiguously located within a single diode spacing.

3,676,688

PHOTOSENSITIVE DEVICES INCORPORATING POLYMERIC ELEMENTS WHICH GIVE HIGH ABSOLUTE PHOTO-CURRENTS

Allan Sharples; Arthur John Rostron, and Graeme McGibbon, all of Edinburgh, Scotland, assignors to Ilford Limited, Ilford, Essex, England

Filed Aug. 26, 1969, Ser. No. 853,208
Claims priority, application Great Britain, Aug. 29, 1968, 41,380/68; Feb. 26, 1969, 10,226/69
Int. Cl. H01j *39/12*
U.S. Cl. 250—211 R **6 Claims**

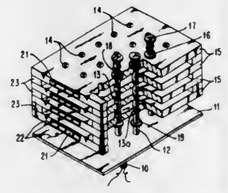
This application describes a photosensitive device which comprises a thin sheet of a polymeric compound having an electrode directly on each face, the relationship of the work functions of the polymer and of the material of at least one of the electrodes being such that there is charge transfer across the interface when the device is illuminated. The polymeric compound is one in which there is a high degree of electronic orbital overlap between hydrogen atoms in adjacent polymer chains, or is a polymeric vinyl compound which carries groups on carbon atoms of the polymer chain which have a high electronegativity. Typically useful polymers are polyvinyl fluoride, polyvinyl acetate, polyvinyl alcohol, nylons, polyurethanes and polyacrylamides and copolymers of vinylidene fluoride and hexafluoropropene. On application of 100 V between the electrodes in the dark and under conditions of illumination of 1000 lux, a difference in dark and photocurrents of at least a factor of 10 may be obtained.

3,676,689

OPTICAL CODE GENERATING APPARATUS

Delbert M. Knepper, Sr., Durham, N.C., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 30, 1970, Ser. No. 102,727
Int. Cl. G01n *21/30*
U.S. Cl. 250—219 **10 Claims**



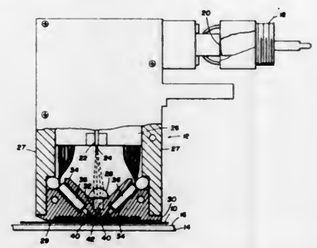
An optical encoding apparatus in which selected ones of a number of light conducting members are illuminated by a movable, independently selectable member, is disclosed. This movable member carries a coded array of illuminating areas. Photosensitive devices are associated with each of the light conductive members to indicate the illuminated condition of a given member, or array of members, in response to their being illuminated by the illuminating areas of the movable member. These photosensitive devices provide a coded output signal in the form of voltage or current information for use by other equipment which may utilize or be responsive to, or transmit the coded signals so produced.

3,676,690

REFLECTED LIGHT DOCUMENT READING HEAD

John V. McMillin, and D. Larry Miller, both of Iowa City, Iowa, assignors to Westinghouse Learning Corporation

Filed Jan. 4, 1971, Ser. No. 103,416
Int. Cl. G01n *21/30*
U.S. Cl. 250—219 D **5 Claims**



A device for converting information in the form of marks or punched holes on documents into electronic signals which are translated into a form acceptable to a computer. The device, commonly called a reading head, senses the intensity of light reflected from the document being read, the light being directed upon the document from a controlled, remote light source. The light is focused onto the document surface from the remote source through a system of lenses and optical

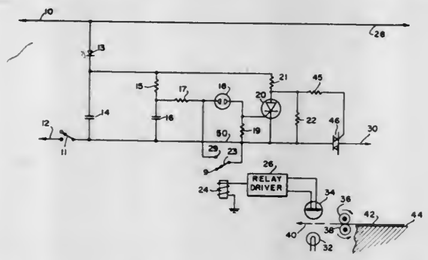
fibers. Phototransistors on each side of the focused light sense the intensity reflected from the document. By focusing the light and mounting the phototransistors at a proper angle close to the document surface, greatly improved accuracy and results are obtained.

3,676,691

AUTOMATIC SHUT-OFF CIRCUIT FOR COPYING MACHINE

Richard Nordine, Oakland Park, Fla., assignor to Copystatics Manufacturing Corporation, Miami Lakes, Fla.

Filed Oct. 5, 1970, Ser. No. 77,950
Int. Cl. G06m 7/00
U.S. Cl. 250—222 R **9 Claims**



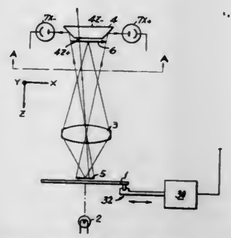
An automatic shut-off circuit for a copying machine. A Triac is included in one of the two power leads extended to the machine. A control circuit, connected across the power line, includes a 60-second timing circuit and an SCR. The SCR is triggered at the end of the 60-second timing period and causes the Triac to turn off, thus cutting off power to the machine. Whenever an original document inserted into the machine is detected, the timing circuit is reset. Only if no new document has been fed into the machine for a period of 60 seconds is the machine automatically shut off.

3,676,692

POSITIONING APPARATUS FOR ARTICLE WITH PORTION DETERMINING PORTION OF PREDETERMINED CONFIGURATION

Yukiyasu Nishikawa, Saitama-ken, and Tsuneo Hidaka, Tokyo, both of Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo-to, Japan

Filed June 26, 1970, Ser. No. 50,069
Int. Cl. G01d 5/34
U.S. Cl. 250—231 R **9 Claims**



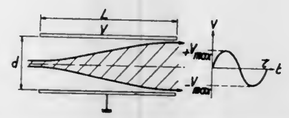
An article-positioning apparatus for precisely determining the location of an article either with respect to another article or with respect to a given reference. The article has a position-determining portion of a predetermined configuration. A prism which has the shape of a truncated pyramid is provided with opposed end faces one of which is smaller than the other with both of these end faces having the predetermined configuration of the position-determining portion of the article. An optical projector projects onto the smaller end face of the prism an image of the position-determining portion of the article, and the deviation of this image from a position of precise alignment with the smaller end face of the prism is determined so that the article can be positioned at a location where the image of the position-determining portion thereof is indeed precisely aligned with the smaller end face of the pyramid, whereupon it is known that the article is then precisely situated at the desired location.

3,676,693

METHOD FOR THE PRODUCTION OF AN ION BEAM HAVING A LARGE CROSS-SECTIONAL AREA

Georges Guernet, Grenoble, France, assignor to Commissariat A L'Energie Atomique, Paris, France

Filed June 18, 1970, Ser. No. 47,389
Claims priority, application France, June 26, 1969, 6921490
Int. Cl. H01j 37/00; G01n 23/00
U.S. Cl. 250—49.5 C **3 Claims**



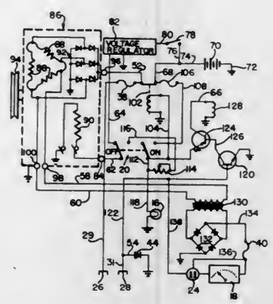
A method and a device for the production of a substantially parallel ion beam having a large cross-sectional area, wherein a first double deflection of a parallel incident-ion pencil is carried out in a same plane X and a second double deflection is carried out in a perpendicular plane Y by means of at least two alternating fields having different periods, said fields being parallel to said planes X and Y and perpendicular to the direction of the incident-ion beam.

3,676,694

POWER OUTPUT ACCESSORY UNIT

Franklin R. Schneider, Seattle, and Jerry D. Lanphear, Everett, both of Wash., assignors to Modern Industries, Incorporated, Seattle, Wash.

Filed June 4, 1971, Ser. No. 150,073
Int. Cl. H02j 7/14
U.S. Cl. 307—10 R **19 Claims**



An accessory unit for use with an engine powered vehicle having a conventional electrical system including a battery, voltage regulator and a dynamo of the alternator type having exposed AC and DC taps which in normal operation supplies DC power to the engine electrical system and, in some embodiments, to the electrical system of a host vehicle. A switch is provided to disconnect the dynamo from the engine electrical system. Also provided is a manually adjustable potentiometer through which the alternator output may be controlled. Circuit means feed the DC output of the dynamo to a welding terminal and the AC output of the dynamo to a step up transformer. A rectifying circuit rectifies the boosted AC output of the transformer and an outlet receptacle permits delivery of a 110–120 volt DC power output to power tools and like loads.

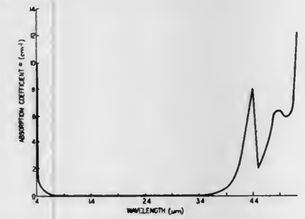
Both the DC welding output terminals and the DC outlet receptacle have a common ground return through resistance means. Placement of a load across either the welding terminals or the DC outlet receptacle produces a voltage drop across the said resistance means, and this voltage drop is utilized to actuate a throttle control circuit including a control transistor, a power transistor and a solenoid type throttle control, functioning to increase the speed of the host vehicle engine when substantial load current is called for at either power output.

3,676,695

NONLINEAR OPTICAL DEVICES UTILIZING SUBSTANTIALLY HEXAGONAL SILICON CARBIDE DEVICES

Shobha Singh, Summit, and Le Grand Gerard Van Uitert, Morris Twsp., Morris County, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed July 23, 1971, Ser. No. 165,075
Int. Cl. H03f 7/04
U.S. Cl. 307—88.3 **5 Claims**



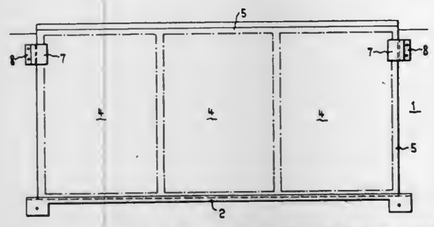
Optical devices depending for their function upon the incorporation of substantially hexagonal silicon carbide are useful for electromagnetic radiation frequency conversion at near infrared wavelengths. Such devices may be operated inter alia as second harmonic generators or as parametric downshifters.

3,676,696

TIME MEASURING SYSTEM FOR SWIMMING COMPETITIONS

Francois J. Leu, Evilard; Peter M. Tosin, Biel, and Ernst Werner, Safnern, all of Switzerland, assignors to Omega Louis Brandt & Frere S.A., Berne, Switzerland

Filed Dec. 15, 1970, Ser. No. 98,361
Claims priority, application Switzerland, Dec. 23, 1969, 11076/69
Int. Cl. H01h 35/00
U.S. Cl. 307—119 **9 Claims**



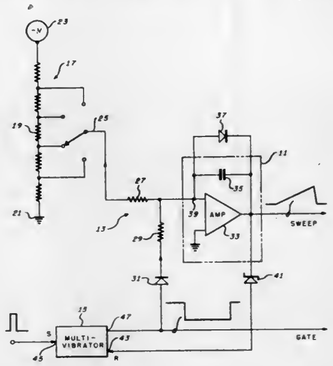
A time measuring system for swimming competitions, wherein a plate is attached to the wall of the swimming pool and electrical control signals for a time counter are produced when the plate is touched by a competitor. The control signals are produced by contact-free transducers such as piezo-electric, electromagnetic or electrodynamic transducers of high sensitivity and reliability.

3,676,697

SWEEP AND GATE GENERATOR

Arthur B. Davenport, Charlottesville, Va., assignor to Sperry Rand Corporation

Filed Oct. 23, 1970, Ser. No. 83,376
Int. Cl. H03k 4/08
U.S. Cl. 307—228 **1 Claim**



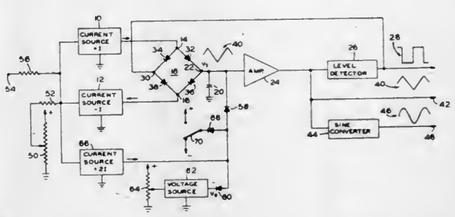
A variable frequency sawtooth generator contains a high input impedance integrating amplifier driven through a resistance network from a bistable multivibrator and an adjustable voltage divider energized from a steady DC source. The multivibrator is driven into a first stable state by an externally generated trigger pulse and into a second stable state when the output voltage from the amplifier exceeds a predetermined threshold value. In the latter state, the voltage from the multivibrator balances out the voltage from the DC source and a diode shunted around the amplifier clamps the amplifier input and output circuits together. When the multivibrator is subsequently driven into the first stable state, the voltage from the multivibrator is blocked by a series diode so that only the voltage derived from the DC source is applied to the amplifier. The diode shunted around the amplifier is back-biased under these conditions and a voltage appears at the output of the amplifier which increases at a steady rate determined by the selected magnitude of the adjustable voltage.

3,676,698

CONTROLLABLE WAVEFORM GENERATOR

Lloyd Wayne Hunter, Beaverton, Oreg., assignor to Exact Electronics, Inc., Hillsboro, Oreg.

Filed Feb. 19, 1971, Ser. No. 116,901
Int. Cl. H03k 4/08
U.S. Cl. 307—228 **12 Claims**



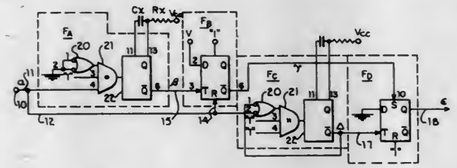
A waveform generator includes an integrating circuit alternately provided with oppositely directed, adjustable input currents, under the control of a level detector responsive to predetermined positive and negative extremes of the integrated output. Adjustment of input current is effective for

changing the frequency of operation. The triangular waveform produced may be terminated at a selectable level therealong through operation of a gating means which interrupts an aforementioned input current when the integration reaches a predetermined intermediate voltage level. Waveform generation is subsequently resumed at this same level. When interrupted, the input current returns to a current source providing a current adjustably proportioned relative to the input current.

3,676,699
ASYNCHRONOUS PULSE WIDTH FILTER

Samuel C. Warren, Indianapolis, Ind., assignor to The United States of America as represented by the Secretary of the Navy

Filed Sept. 13, 1971, Ser. No. 179,865
Int. Cl. H03k *5/20*
U.S. Cl. 307—234 **4 Claims**

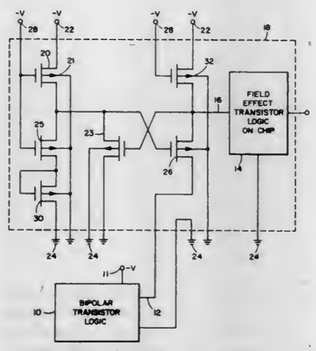


An asynchronous pulse width filter having four two-state logic circuits, the first having a retriggerable circuit capable of delaying the leading edge of an input pulse by a presettable time Δt, coupled to a second logic circuit capable of detecting the trailing edge of the input pulse after the delayed leading edge, coupled to a third logic circuit of non-retriggerable capabilities but capable of delaying the trailing edge from the prior logic circuit a fixed amount of time Δt and coupled to a fourth logic circuit capable of triggering a leading edge at the trailing edge of the output pulse of the second logic circuit and of triggering a trailing edge at the trailing edge of the delayed output Δt of the third logic circuit to provide discrimination of pulse width to reproduce valid pulses precisely in pulse width and in relative position.

3,676,700
INTERFACE CIRCUIT FOR COUPLING BIPOLAR TO FIELD EFFECT TRANSISTORS

John K. Buchanan, Tempe, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Feb. 10, 1971, Ser. No. 114,223
Int. Cl. H03k *19/08, 17/60*
U.S. Cl. 307—205 **2 Claims**

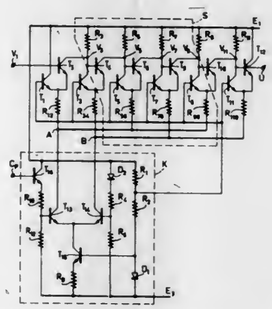


Bipolar and field effect transistors have different threshold voltage and different voltage swings during operation, and furthermore, the threshold voltage for a field effect transistor may be unpredictable when the field effect transistor is applied to a monolithic IC chip. A circuit is disclosed whereby the output of a bipolar transistor circuit such as a logic circuit may drive the input of a large scale integrated field effect transistor circuit, which may involve other logic circuits.

3,676,701
SHIFT REGISTER

Wolfdietrich Georg Kasperkovitz, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed April 1, 1971, Ser. No. 130,186
Claims priority, application Netherlands, April 3, 1970, 7004766
Int. Cl. G11c *19/00;* **H03k** *23/08*
U.S. Cl. 307—221 R **5 Claims**

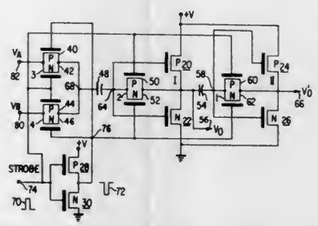


A shift register comprising a sequence of shift register elements which each include a first and a second transistor the emitters of which are interconnected and have clock pulse signals applied to them. The base of the second transistor and the collector of the first transistor of each of the shift register elements are interconnected. The base of the first transistors of all the shift register elements are connected to a point of reference potential, whilst the collector of second transistor of each of the shift register elements is connected to the collector of the first transistor of the succeeding shift register element.

3,676,702
COMPARATOR CIRCUIT

Ellwood Patrick McGrogan, Jr., Camden, N.J., assignor to RCA Corporation

Filed Jan. 4, 1971, Ser. No. 103,736
Int. Cl. H03k *5/20*
U.S. Cl. 307—235 **11 Claims**

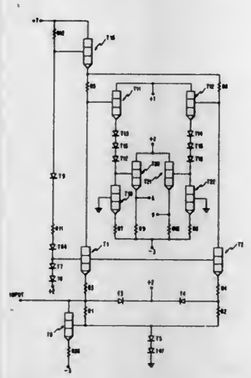


A voltage comparator utilizing complementary MOS techniques. The comparator circuit includes an inverter network and switching circuitry for selectively supplying reference or monitored signals to the inverter network. A signal representative of the relationship between the reference and monitored signals is produced by the inverter network.

3,676,703
SENSE AMPLIFIER LATCH FOR MONOLITHIC MEMORIES

John E. Gersbach, Hyde Park, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Sept. 22, 1970, Ser. No. 74,247
Int. Cl. H03k *5/20, 5/08*
U.S. Cl. 307—235 **7 Claims**

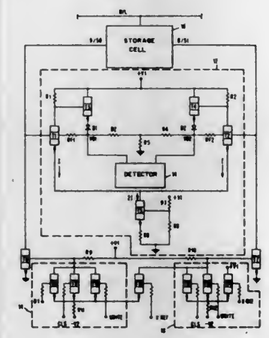


A sense amplifier latching circuit for accepting signals from a monolithic memory array. The input signal from the monolithic memory is amplified, the logical sense of the input is determined and held in the latch, and the signal is translated down to current switch logic circuit levels having a capability for large fan-out and fan-in (dot or). The input to the sense amplifier latch has a grounded base clamp providing a very low impedance input in the presence of bi-polar noise current. The sense amplifier latch circuit further includes threshold tracking, temperature compensating, and power supply compensating circuits. The entire circuit includes emitter follower and grounded base circuits providing a high band width resulting in fast rise-time and low propagation delay.

3,676,704
MONOLITHIC MEMORY SENSE AMPLIFIER/BIT DRIVER

Nicholas M. Donofrio, Wappingers Falls, and Jehoshua N. Pomeranz, Monsey, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 29, 1970, Ser. No. 102,368
Int. Cl. H03k *5/20*
U.S. Cl. 307—235 **5 Claims**

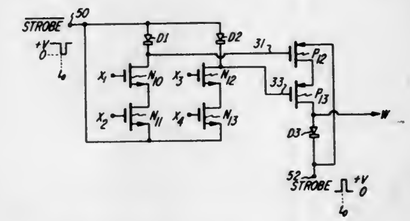


This specification describes a sense amplifier/bit driver circuit for a monolithic memory storage cell with a double ended output. The sense amplifier consists of two shunt feedback amplifiers connected differentially across the double ended output of the storage cell. There is a resistive connection between the outputs of the two shunt feedback amplifiers to make each input of the two shunt feedback amplifiers relatively insensitive to large changes at the other input. The bit driver for the circuit contains two current switch circuits for controlling the potential at each end of the double ended output of the storage cell. These current switch circuits are cross-coupled by a transistor which eliminates the need for inverting one of the control pulses to the bit driver.

3,676,705
LOGIC CIRCUITS EMPLOYING SWITCHES SUCH AS FIELD-EFFECT DEVICES

John Evert Meyer, Trenton, N.J., assignor to RCA Corporation

Filed May 11, 1970, Ser. No. 36,190
Int. Cl. H03k *17/00*
U.S. Cl. 307—251 **6 Claims**

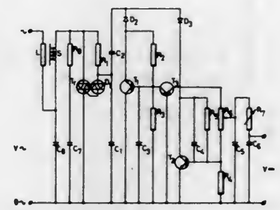


A decoder employing switches such as metal oxide semiconductor (MOS) field-effect devices and diodes in a number of series circuits, each such circuit forming a ring. In the absence of strobe and strobe signals, one diode in one series circuit connects the decoder output terminal to ground. In the presence of strobe and strobe signals, the output terminal is disconnected from ground and, if the control voltages applied to certain of the devices in certain of the series circuits all represent the desired binary value, the strobe signal is conducted via certain of the devices in said one series path to said output terminal.

3,676,706
A.C. CONTROL DEVICES

Robert Ronald Laupman, Wijchen, Netherlands, assignor to N.V. Avco, Wijchen, Netherlands

Filed Jan. 5, 1971, Ser. No. 104,011
Claims priority, application Netherlands, Jan. 9, 1970, 00280/70
Int. Cl. H03k *17/00*
U.S. Cl. 307—252 B **7 Claims**



A circuit arrangement for controlling an alternating current through a load in response to a direct-current control signal applied to its input terminals is provided with a specific organization of a firing circuit arrangement comprising the three

basic transistor circuit configurations. With a suitable dimensioning of the resistors and capacitors associated with the three transistors, a desired voltage waveform is produced serving to fire a semi-conductor switch element through its gate control terminal in dependence on the D.C. control signal applied to the input of said firing circuit arrangement.

3,676,707
JITTER FREE TRIGGER PULSE GENERATOR

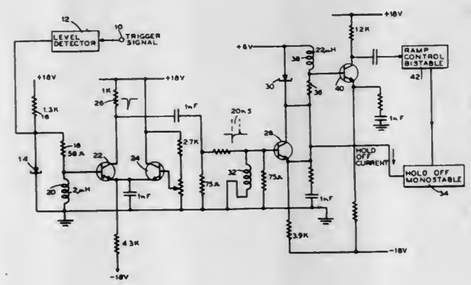
John Harold Conrad; Anthony Edward St. Aubyn Reynolds, and Edward George Gadd, all of Farnborough, England, assignors to The Solartron Electronic Group Limited, Farnborough, England

Filed March 10, 1971, Ser. No. 122,876

Claims priority, application Great Britain, March 12, 1970, 11,998/70

Int. Cl. H03k *5/00, 3/315*

U.S. Cl. 307—260 **4 Claims**



In a trigger pulse generator for an oscillator jitter is liable to occur in the trigger pulses because of uncertainties in the timing of the end of the hold-off signal relative to the instants at which a trigger signal reaches a trigger level. Jitter is eliminated by arming an output circuit when the hold-off signal ends and a first pre-trigger pulse is generated in response to the trigger signal reaching the trigger level.

The output circuit generates a trigger pulse, when it is armed, in response to a second pre-trigger pulse which is generated in timed relation to the trigger signal reaching the same trigger level, either that is by delaying the first pre-trigger pulse a predetermined amount or by generating the first and second pre-trigger pulses off opposite going edges respectively of the squared trigger signal.

3,676,708
PULSE GENERATOR FOR FAST RISE-TIME PULSES

Kozo Uchida, Tokyo-to, Japan, assignor to Iwasaki Tsushinki Kabushiki Kaisha aikala Iwatsu Electric Co.,, Tokyo-to, Japan

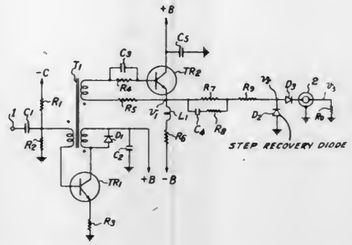
Filed May 19, 1969, Ser. No. 825,864

Claims priority, application Japan, May 21, 1968, 43/34201; May 21, 1968, 43/34202; May 21, 1968, 43/34203; May 21, 1968, 43/34204

Int. Cl. H03k *5/12, 3/26*

U.S. Cl. 307—263 **6 Claims**

Disclosed herein is a pulse generator for producing repetitive uni-directional pulses or single signal-initiated unidirectional pulses by use of pulse generation means, in which output pulses each having an extremely short rise time can be obtained by applying the output pulses of the pulse generation means to a step recovery diode to render the diode non-conductive during such pulses; while the step recovery diode is



otherwise maintained conductive, in the absence of a pulse from the pulse generation means, by flowing a forward dc current therethrough.

3,676,709
FOUR-PHASE DELAY ELEMENT

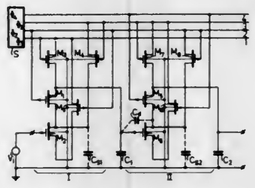
Jean Martial Ducamus, Paris, and Claude-Jane Fernandez, Montrouge, both of France, assignors to U.S. Philips Corporation, New York, N.Y.

Filed May 10, 1971, Ser. No. 141,494

Claims priority, application France, May 13, 1970, 7017392

Int. Cl. H03k *3/26*

U.S. Cl. 307—279 **3 Claims**



A four-phase logic delay circuit using two cascaded stages of field-effect transistors where each stage has two cascaded field-effect transistors for the storage of logic signals and two additional field-effect transistors for the isolation of the storage field-effect transistors for the duration of two phases of the four-phase signal.

3,676,710
LOW-LEVEL SIGNAL DETECTOR CIRCUIT

David A. Jones, Burnsville, Minn., assignor to Control Data Corporation, Bloomington, Minn.

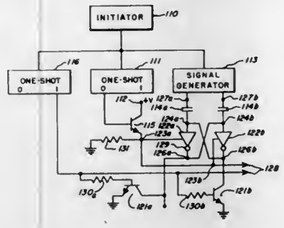
Filed Feb. 16, 1971, Ser. No. 115,359

Int. Cl. H03k *3/26, 3/286*

U.S. Cl. 307—289 **8 Claims**

Method and apparatus for increasing the sensitivity of several flip-flop designs to duplex binary signals too weak to affect the state of the flip-flop during normal operation. For detecting practically any type of weak signal, sensitivity can be dramatically improved by dropping power to the flip-flop and then reapplying power while the signal is being applied to the flip-flop terminals. In addition, when bipolar pulses are to be detected, capacitors interposed between the signal source and

the flip-flop terminals can be grounded during the first quarter of the signals and disconnected from ground for the remaining



portion of the signal. This effectively doubles the maximum signal voltage applied to each flip-flop terminal.

3,676,711
DELAY LINE USING INTEGRATED MOS CIRCUITRY

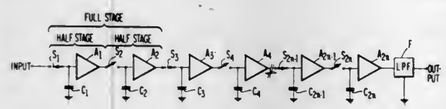
Richard Wilfred Ahrons, Somerville, N.J., assignor to RCA Corporation

Filed Feb. 19, 1970, Ser. No. 12,613

Claims priority, application Great Britain, Nov. 17, 1969, 56,222/69

Int. Cl. H03k *17/28*

U.S. Cl. 307—293 **10 Claims**



"Bucket brigade" type of delay line is realized in integrated circuit form with MOS devices serving all switching, storage, amplifier and amplifier load functions. Configurations wherein devices are all of the same channel conductivity type are disclosed, as well as configurations employing complementary devices. Certain embodiments utilize a pair of complementary switching waveforms for interleaved switching operations, while in other embodiments a single switching waveform suffices. Modifications for minimizing coupling of the switching signal into the delayed signal are also shown.

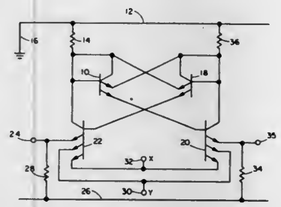
3,676,712
MONOLITHIC NON-SATURATING STORAGE CIRCUIT

Donald D. Schendel, Jr., Scottsdale, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.

Filed March 22, 1971, Ser. No. 126,598

Int. Cl. H03k *3/286*

U.S. Cl. 307—291 **10 Claims**



Flip-flop circuits have many uses in electronics and particularly in logic circuits. Since, in logic circuits, speed of operation is highly desirable, a flip-flop circuit which can change its state in a very short period of time is desirable. A flip-flop circuit is disclosed including means to prevent either of the transistors comprising the flip-flop circuit from becoming saturated during operation thereof, whereby the speed of operation of the flip-flop circuit is increased.

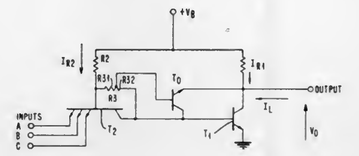
3,676,713
SATURATION CONTROL SCHEME FOR TTL CIRCUIT

Siegfried K. Wiedmann, Poughkeepsie, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed April 23, 1971, Ser. No. 136,700

Int. Cl. H03k *17/04*

U.S. Cl. 307—300 **2 Claims**



This specification discloses a technique of saturation control for a transistor transistor logic (TTL) circuit which is also applicable to other types of circuits. The saturation control device is a transistor whose emitter is connected to the collector of the output transistor of the TTL circuit, its collector is connected to the base of the output transistor for the TTL circuit and its base is connected through a resistive divider network between the base and collector of the input transistor for the TTL circuit. This saturation control transistor is formed in the same isolation pocket with the input transistor for the TTL circuit by providing the input transistor with an extended base region and an additional emitter diffusion which is spaced from the other emitter diffusions and the collector contact for the input transistor so that the sections of the extended base region between the additional emitter diffusion and the other emitter diffusions and between the additional emitter diffusion and the collector contact form the resistors of the divider network.

3,676,714
SEMICONDUCTOR DEVICE

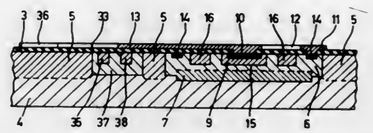
Bernardus Leonardus Wensink, and Adriaan Cense, both of Nijmegen, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed April 1, 1970, Ser. No. 24,558

Claims priority, application Netherlands, April 15, 1969, 6906105

Int. Cl. H01l *19/00*

U.S. Cl. 307—303 **4 Claims**

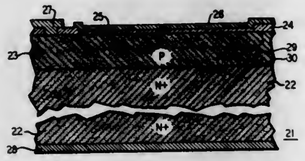


A p-n junction isolated integrated circuit bipolar transistor with means to prevent parasitic transistor action between the base of the transistor and the substrate due to accidental forward bias of the base-collector junction. Said means include an auxilliary region disposed in the collector region to collect minority carriers injected into the collector from the base during forward bias. Feedback means connected to the auxilliary region remove the forward bias voltage.

3,676,715
SEMICONDUCTOR APPARATUS FOR IMAGE SENSING AND DYNAMIC STORAGE

Samuel Brojdo, Westfield, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed June 26, 1970, Ser. No. 50,198
Int. Cl. H01l *11/14, 15/00*
U.S. Cl. 307—304 **13 Claims**

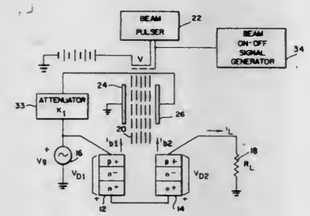


Semiconductor apparatus for use in image sensing and/or dynamic storage applications. The apparatus includes a matrix of basic functional elements, each element including an MIS surface portion and an underlying PN junction. Conduction paths associated with each row and column of the matrix enable interrogation of the basic elements in either word organized or bit organized fashion. In operation, minority carriers are temporarily stored in surface inversion layers associated with each MIS portion after having been photogenerated or electronically injected from the underlying PN junction. Interrogation is accomplished by removing the voltage across an MIS portion to release the stored minority carriers and reverse-biasing the underlying junction to collect the released carriers.

3,676,716
FAST SWITCH UTILIZING HYBRID ELECTRON-BEAM-SEMICONDUCTOR DEVICES

Donald J. Hanrahan, Falls Church, Va., assignor to The United States of America as represented by the Secretary of the Navy

Filed May 19, 1971, Ser. No. 144,955
Int. Cl. H01j *29/52*; **H03k** *17/56, 17/88*
U.S. Cl. 307—308 **6 Claims**

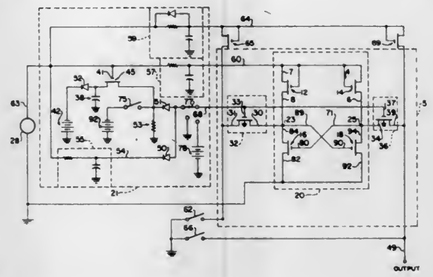


A fast switching device employing at least two semiconductor p-n junction devices in a back-to-back arrangement with the voltage which is to be switched applied across the semiconductor devices. If the output is to be a replica of the switched voltage, the latter is also applied to control an electron beam which irradiates one or both semiconductor devices when the switch is to be closed. A square-wave output can be produced by utilizing an electron beam which is not proportional to the switched voltage but is simply turned on and off in synchronism with it and has a constant value when it is on.

3,676,717
NONVOLATILE FLIP-FLOP MEMORY CELL

George C. Lockwood, Kettering, Ohio, assignor to The National Cash Register Company, Dayton, Ohio

Filed Nov. 2, 1970, Ser. No. 86,190
Int. Cl. H03k *23/08*
U.S. Cl. 307—304 **15 Claims**



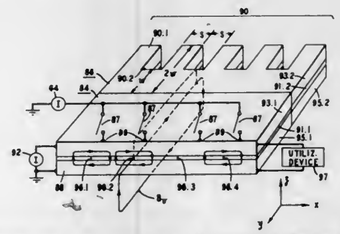
The present invention relates to a nonvolatile flip-flop memory cell in which an alterable threshold voltage nonvolatile MNOS field effect transistor is connected to each bistable terminal of a volatile flip-flop circuit. The nonvolatile MNOS field effect transistors nonvolatilely retain the state of the volatile flip-flop circuit during a power failure to the flip-flop circuit. During the power failure to the volatile flip-flop circuit, the threshold voltage of one of the nonvolatile MNOS field effect transistors is changed, to nonvolatilely retain the state of the volatile flip-flop circuit. The state of the flip-flop circuit is reset when power is restored, with the aid of the nonvolatile MNOS field effect transistors.

When a power failure to the volatile flip-flop circuit is sensed, a high negative potential is applied to the gates of the nonvolatile MNOS transistors to change the threshold of the nonvolatile MNOS transistor which is connected to the zero potential terminal of the volatile flip-flop circuit. The state of the volatile flip-flop circuit is retained in said nonvolatile MNOS field effect transistors. The binary bit of information nonvolatilely stored in the nonvolatile memory cell is read back into the volatile flip-flop circuit when power is restored.

3,676,718
SUPERCURRENT STRUCTURES UTILIZING MOBIL FLUX VORTICES

Philip Warren Anderson, New Vernon; Robert Carr Dynes, and Theodore Alan Fulton, both of Berkeley Heights, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed March 26, 1971, Ser. No. 128,445
Int. Cl. H03k *3/38*; **G11c** *19/00*
U.S. Cl. 307—306 **41 Claims**

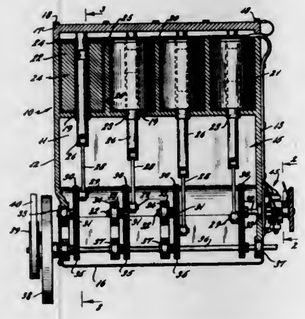


A supercurrent logic structure of extended dimensions is capable of sustaining a plurality of trapped magnetic field vortices each of which supports one flux quantum. Such a vortex prefers to position itself in a region such that a local minimum of the sum of the magnetic energy plus the Josephson coupling energy is established. A variety of ways to create such preferred regions are disclosed. A vortex is moved from one such region to another in shift register fashion by applying a force thereto as, for example, by applying a local current or magnetic field near to the vortex.

3,676,719
ELECTROMAGNETIC MOTOR WITH PLURAL RECIPROCATING MEMBERS

Angelo A. Pecci, 1 Sixth Street, Clifton, N.J.

Filed July 22, 1971, Ser. No. 165,228
Int. Cl. H02k *7/06*
U.S. Cl. 310—24 **5 Claims**

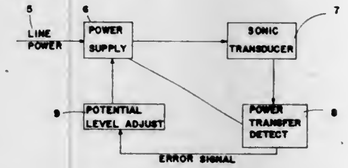


Apparatus for converting electrical energy into rotary motion for performing work, such as driving a wheeled vehicle. The apparatus includes a plurality of electromagnetic solenoids with the core of each solenoid being eccentrically connected to a driving gear which meshes with a driven gear carried by a drive shaft to gain a mechanical advantage and cause rotation of the drive shaft. The solenoids are energized sequentially to cause continuous rotation of the drive shaft.

3,676,720
METHOD AND APPARATUS FOR CONTROLLING FREQUENCY OF PIEZOELECTRIC TRANSDUCERS

Charles C. Libby, and Raymond C. McDaniel, both of Columbus, Ohio, assignors to The Ohio State University, Columbus, Ohio

Filed Jan. 26, 1971, Ser. No. 109,816
Int. Cl. H01v *7/00*
U.S. Cl. 310—8.1 **4 Claims**

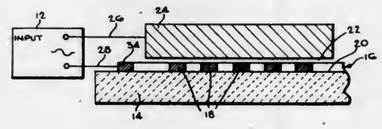


The resonant frequency of a high Q piezoelectric transducer is selectively varied by adjusting the magnitude of the supply voltage for the said transducer. In one apparatus embodiment, the supply voltage to the transducer is automatically adjusted, so as to maintain the resonant frequency of the transducer nearly constant in the presence of external factors tending to shift the said frequency. The system is especially suited to transducers operating from a constant frequency supply system.

3,676,721
COMPOSITE SURFACE-WAVE TRANSDUCER

Anthony P. Van Den Heuvel, Homewood; Ronald W. Richter, Chicago, both of Ill., and Shrinivas G. Joshi, Bangalore, India, assignors to IIT Research Institute, Chicago, Ill.

Filed Aug. 28, 1970, Ser. No. 67,767
Int. Cl. H01v *7/00*
U.S. Cl. 310—8.3 **16 Claims**

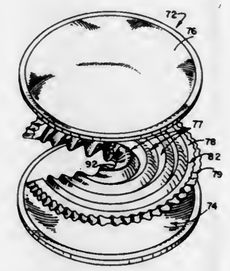


A transducer for generating and detecting surface elastic waves in a piezoelectric material may include a metalic grating on the material forming one electrode of the transducer and a counter-electrode separated from the grating by a dielectric layer.

3,676,722
STRUCTURE FOR BIMORPH OR MONOMORPH BENDERS

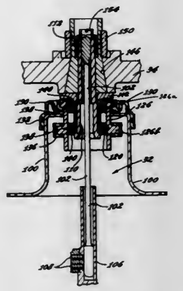
Hugo W. Schafft, Des Plaines, Ill., assignor to Motorola, Inc., Franklin Park, Ill.

Continuation-in-part of Ser. No. 863,836, Oct. 6, 1969, abandoned. This application April 15, 1971, Ser. No. 134,279
Int. Cl. H04r *17/00*
U.S. Cl. 310—8.6 **14 Claims**



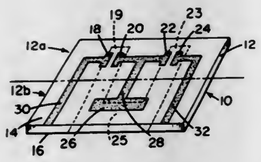
Bimorph benders comprised of a pair of piezoelectric wafers with a center vane of conductive material disposed therebetween or monomorph benders comprised of one piezoelectric wafer and one wafer of piezoelectrically inactive material with a center vane of conductive material disposed therebetween have one portion rigidly held in place and another portion coupled to move or be moved by a mechanical load thereby applying a distribution of bending forces to the bender. By selectively constructing the center vane so that the stiffness of the assembly varies in proportion to the magnitude of the bending force applied to the bender and by bending the wafers to conform to the shape of the center vane, increased coefficient of electromechanical coupling, strength, high frequency response, and linearity result.

3,676,723
HIGH SPEED CENTRIFUGE DRIVE ASSEMBLY
Kenneth G. Drucker, Astoria, Oreg., assignor to Bio-Consultants, Inc., South Gate, Calif.
Filed March 2, 1970, Ser. No. 15,761
Int. Cl. H02k 11/00
U.S. Cl. 310—68 B 9 Claims



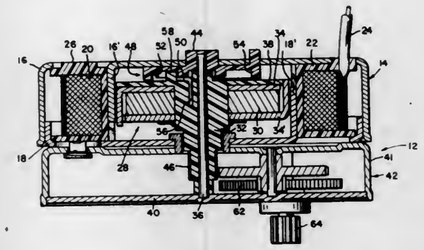
A drive assembly for a motor driven centrifuge, or other rotatable mechanisms, is provided which includes a resilient rotatably driven spindle. The rotating spindle and centrifuge rotor normally create gyroscopic effects so that the rotor is rotated with minimal radial vibration about a mass center, even in the presence of some unbalancing of the rotor assembly. The apparatus also includes contact means associated with the spindle for providing a desired electrical control signal should the rotor unbalancing exceed a safe threshold. The control signal is used normally to de-energize the drive motor and to cause the rotor to stop.

3,676,724
MULTI-ELEMENT PIEZOELECTRIC CIRCUIT COMPONENT
Don A. Berlincourt, Chagrin Falls, and Kendall A. Pim, Cleveland Heights, both of Ohio, assignors to Vernitron Corporation, Bedford, Ohio
Continuation-in-part of Ser. No. 865,365, Oct. 10, 1969, abandoned. This application June 24, 1970, Ser. No. 49,498
Int. Cl. H01v 7/00
U.S. Cl. 310—8.2 21 Claims



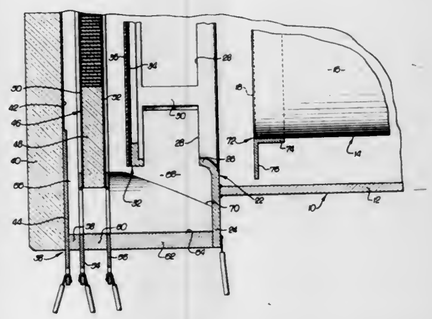
There is disclosed a multi-element piezoelectric circuit component comprising a thin wafer of material, at least a part of which is piezoelectric, having two major surfaces whereon a plurality of spaced electrodes and counter electrode means provides in coaction with the intervening material a combination of two or more elements consisting of acoustically isolated coupled mode filters, acoustically isolated resonators and capacitors. Acoustical isolation of the elements can be effected by use of damping or lossy material on the wafer in addition to spacial arrangements of the electrodes. Capacitor elements are formed on a section of the wafer having little or no piezoelectric activity.

3,676,725
MEANS CONNECTING A SYNCHRONOUS MOTOR TO A GEAR TRAIN HOUSING
Joseph E. Wiser, and Peter H. Gerhardt, both of Indianapolis, Ind., assignors to P. R. Lallory & Co., Inc., Indianapolis, Ind.
Filed Sept. 23, 1970, Ser. No. 74,599
Int. Cl. H02k 5/00
U.S. Cl. 310—89 5 Claims



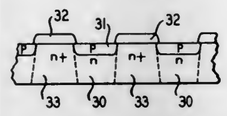
A synchronous motor is coupled to a gear train through their respective housings. The housings are coupled together by tabs which extend from the motor housing to engage the gear train housing through apertures formed in its housing.

3,676,726
STORAGE TUBE CONSTRUCTION
Johann Battesta Beeli, Sylmar, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.
Filed Nov. 1, 1968, Ser. No. 772,524
Int. Cl. H01j 31/26
U.S. Cl. 313—65 11 Claims



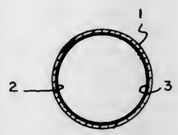
A television camera-type storage vacuum tube wherein a channel-type electron multiplier and the storage target are mounted on support structure which is apertured to reduce photo cathode-to-target capacitance, electron multiplier-to-target capacitance, and target-to-electron gun capacitance; and annular light shield means interposed between the electron gun and apertured support structure to prevent light emanating from the cathode heater of the electron gun from penetrating through the support structure to the photo multiplier section of the tube. The reduced capacitance produces improved frequency response of the tube, while the light shield means cooperates to preserve low light level performance and hence good contrast, resolution and sensitivity of the tube.

3,676,727
DIODE-ARRAY TARGET INCLUDING ISOLATING LOW RESISTIVITY REGIONS
John Vincent Dalton, Oldwick, N.J., and Edward Franklin Labuda, Allentown, Pa., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed March 30, 1970, Ser. No. 23,871
Int. Cl. H01j 31/26, 31/28; H01l 15/00
U.S. Cl. 313—66 5 Claims



The specification describes an improved diode array target for an electron beam storage tube. The target is an improvement of the device described in U.S. Pat. Nos. 3,403,284 and 3,419,746. The target is modified so as to include an N^+ layer in the surface region of the semiconductor substrate between the diodes. This layer serves to isolate the diodes, to reduce the dark current generation, and to increase the resolution of the camera tube.

3,676,728
POLYSPECTRAL FLUORESCENT LAMP
Willy P. Schreurs, Danvers, Mass., assignor to Sylvania Electric Products Inc.
Filed March 12, 1970, Ser. No. 18,815
Int. Cl. H01j 61/20, 61/44
U.S. Cl. 313—109 3 Claims



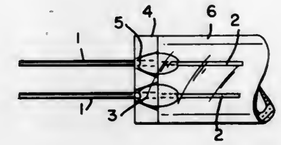
The inner surface of a tubular fluorescent lamp has at least two separate and distinct phosphor coatings on different longitudinal segments thereof, the color of light emitted by each phosphor coating differing from that of the other. The lamp is rotatably mounted in a fixture having an aperture parallel to the lamp. By suitable rotation of the lamp within the fixture, light from either of the phosphors may be preferentially directed through the aperture for illumination purposes.

3,676,729
ARC DISCHARGE LAMP HAVING A THIN CONTINUOUS FILM OF INDIUM OXIDE ON THE INNER SURFACE THEREOF
Richard A. Menelly, Danvers, Mass., assignor to Sylvania Electric Products Inc.
Filed June 23, 1969, Ser. No. 835,753
Int. Cl. H01j 61/35
U.S. Cl. 313—109 1 Claim

An arc discharge lamp has a clear glass envelope on the inner surface of which is disposed a thin, continuous film of indium oxide. The film transmits visible light but absorbs ultraviolet radiation. A phosphor coating may be disposed on the indium oxide film.

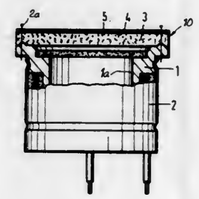
In order to form the film, a solution of an indium salt of a pre-selected organic acid is applied to the glass, dried under controlled conditions and heated to a predetermined temperature to convert the indium salt to indium oxide.

3,676,730
SEAL ARRANGEMENTS FOR LAMPS
Frederick A. Loughridge, Manchester; Wilfrid G. Matheson, Marblehead, and Edmund M. Passmore, Wilmington, all of Mass., assignors to Sylvania Electric Products Inc.
Filed Dec. 29, 1969, Ser. No. 888,299
Int. Cl. H01j 5/32
U.S. Cl. 313—318 7 Claims



Lead-in wires of lamps are disposed in a vitreous silica envelope through the use of a graded seal in which two abutting segments of refractory metal wires are coated with a cermet formed of an admixture of powdered refractory metal and vitreous silica. These lead-in wires are disposed in an aperture in a wafer which, in turn, is sealed to a vitreous silica envelope.

3,676,731
DISPENSER CATHODE STRUCTURE
Horst Hofmann, and Helmut Katz, both of Munich, Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany
Filed March 3, 1971, Ser. No. 120,637
Claims priority, application Germany, March 5, 1970, P 20 10 479.4
Int. Cl. H01j 1/14, 19/06
U.S. Cl. 313—346 DC 4 Claims



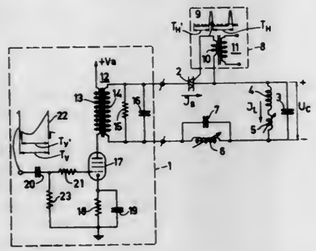
A dispenser MK-type cathode structure adapted for prolonged storage and handling with subsequent activation and a method of producing the same whereby a supply source material capable of yielding barium, such as alkaline-earth oxides or carbonates, i.e., barium carbonates or barium oxide, is positioned in an open-ended storage chamber of a suitable member and a porously sintered cover member seals the supply source material within the storage chamber. The cover member is composed of tungsten and includes coatings of osmium and/or rhenium on its active or emission surface. Such cover member is further provided with a tightly adhering protective coating that is vapor and humidity impermeable and is composed of a hydrophobic material, such as paraffin or methyl mathacrylate resin or other heat-vaporizable hydrophobic material.

3,676,732
PHOTO-ELECTRONIC IMAGING APPARATUS
Dennis Gabor, London, England, assignor to Columbia Broadcasting Systems, Inc., New York, N.Y.
Division of Ser. No. 644,248, June 7, 1967, Pat. No. 3,509,276.
This application Sept. 8, 1969, Ser. No. 868,263
Int. Cl. H01j 29/46
U.S. Cl. 315—10 7 Claims



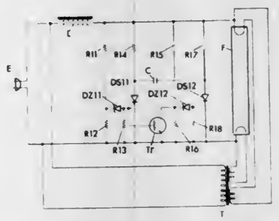
In the particular embodiments of the invention described herein, a frequency selective photo-electronic image transducer includes an insulating plate having minute closely spaced prismatic ridges, the surfaces of which are covered with a capacitive sandwich structure comprising an electrode coated on the plate, an insulating layer and a photo-emissive material at the outer surface, the latter being in the form of a mosaic of isolated elements. The electrodes on alternate ridges, or in another form on corresponding sides of every ridge, are connected together and to an alternating potential source operating at the desired frequency of selection, the other electrodes being grounded. An illuminated object containing light modulated with information at the selected frequency is imaged onto the surface of the plate intermittently and, between exposures, a line scan tube image onto the surface reads out the charge accumulated at the various elemental areas in succession. The frequency-selected image is then reproduced on a display tube. In an alternative embodiment, light from an image of the object is conveyed to the photo-sensitive plate by a fiber-optics array and a mask is provided to compensate for inequalities in the sensitivities of the photo-emissive elements.

3,676,733
CIRCUIT ARRANGEMENT FOR GENERATING A LINE FREQUENCY PARABOLICALLY MODULATED SAWTOOTH CURRENT OF FIELD FREQUENCY THROUGH A FIELD DEFLECTION COIL
Hannspeter Eulenberg, Bauweg, Germany, and Gerardus Antonius Wilhelmus Van Veldhoven, Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
Filed June 13, 1969, Ser. No. 832,970
Claims priority, application Netherlands, June 22, 1968, 6808845
Int. Cl. H01j 29/70
U.S. Cl. 315—27 GD 12 Claims



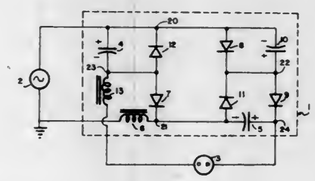
A TV deflection system that includes a circuit for generating a sawtooth field current parabolically modulated at the line frequency in the field deflection coil. The circuit includes a resonant circuit composed of a capacitor and the field deflection coil with a resonant frequency that is approximately one fifth of the line frequency for deriving the parabolic modulation component of line frequency. The sawtooth field deflection generator periodically excites the resonant circuit via a bidirectional electronic switch that is periodically switched in synchronism with the line flyback pulses.

3,676,734
ELECTRIC CIRCUIT FOR RAPIDLY IGNITING A DISCHARGE TUBE
Tetsuji Shimizu, and Makoto Iwakura, both of Nagoya, Japan, assignors to Kabushiki Kaisha Tokai Rika Denki Seisakusho, Nishikasugai-gun, Aichi prefecture, Japan
Filed Nov. 14, 1969, Ser. No. 876,898
Claims priority, application Japan, Nov. 15, 1968, 43/83232
Int. Cl. H05b 37/00
U.S. Cl. 315—200 17 Claims



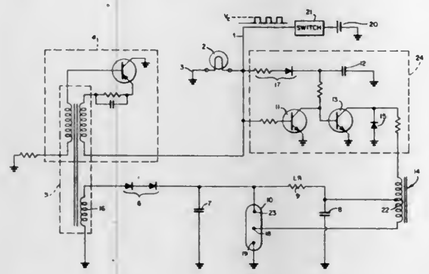
This invention discloses a circuit for rapidly and certainly igniting a discharge tube such as a fluorescent lamp, mercury-arc lamp, neon tube lamp or the like, which comprises a capacitor adapted to effect charge or discharge thereof at substantially the peak value of AC wave of power source by the action of a switching means, a transformer or ballast choke coil which is adapted to produce high voltage pulse in response to said charge or discharge of the capacitor, said high voltage pulse being applied to a discharge tube at its electrodes which are preliminarily heated thereby to ignite the discharge tube. According to this invention, simultaneously when a power source is closed, a high voltage is generated at substantially the peak value of positive and/or negative half cycle of the AC power source by the operation of a specific circuit, thereby enabling the discharge tube to be rapidly or instantaneously ignited. The present circuit is very useful for various commercial purposes.

3,676,735
RESONATOR BALLAST FOR ARC DISCHARGE LAMPS
William J. Roche, Merrimac, Mass., assignor to Sylvania Electric Products Inc.
Filed Sept. 25, 1969, Ser. No. 860,985
Int. Cl. H05b 37/00, 39/00, 41/14
U.S. Cl. 315—207 3 Claims



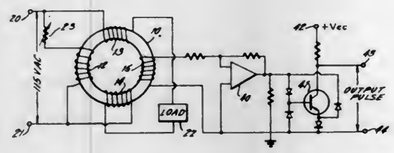
An alternating current electronic ballast for an arc discharge lamp has two sets of capacitors and diodes arranged so that each set of capacitors can be charged and discharged only during opposite polarities of an AC supply. The ballast can develop a high voltage for starting the lamp and also can efficiently regulate the current flow through the lamp.

3,676,736
AIRCRAFT FLASHER UNIT
Robert L. Starer, Rydal, Pa., assignor to Physitech, Inc., Willow Grove, Pa.
Filed June 6, 1969, Ser. No. 831,113
Int. Cl. B64d 47/06
U.S. Cl. 315—241 R 8 Claims



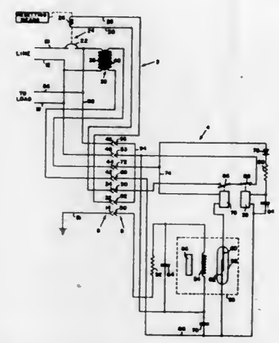
Apparatus is disclosed which provides for the pulsing of a plurality of high intensity white lights, which lights are synchronized to flash simultaneously, and during the off period of navigation lights already installed on the airplane. Each high intensity light is controlled by a transistorized circuit coupled to the power supply lead which supplies the navigation light. Said circuit charges two storage capacitors and holds the charge on same during the on period of the navigation lights. During the off period of same, a short circuit is presented, causing a discharge of one of the capacitors, which acts to trigger the high intensity light, the burst of light being energized by the discharge of the other capacitor.

3,676,737
GROUND-FAULT DETECTOR USING SQUARE HYSTERESIS LOOP REACTOR CORE
Ruben D. Garzon, Malvern, Pa., assignor to I-T-E Imperial Corporation, Philadelphia, Pa.
Filed April 5, 1971, Ser. No. 131,253
Int. Cl. H02h 3/32, 3/16
U.S. Cl. 317—18 D 7 Claims



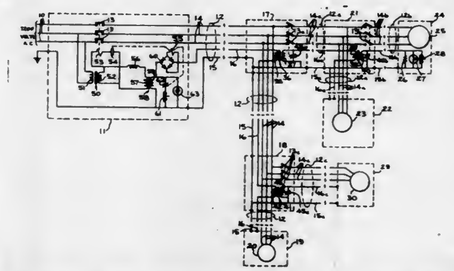
A ground-fault detector for determining ground-fault currents of less than 5 milliamperes consists of a square hysteresis loop core which is biased by a biasing winding which supplies core loss such that a small change in magnetizing force due to a small current change will cause a large flux change. Two control windings having an identical configuration and connected to induce opposing magnetomotive forces are formed on the core and are connected in series with an input circuit and are connected to opposite sides of a load which might develop a ground fault. An output winding on the core is then connected to an operational amplifier which, in turn, produces a triggering signal output for controlling a circuit interrupter or relay in response to flux change due to a ground-fault current detected as a difference of current in the two control windings.

3,676,738
SAFETY DEVICE FOR PREVENTING ELECTRIC SHOCK
Warren F. Scanlan, Philadelphia, Pa., assignor to United Kingdom Atomic Energy Authority, London, England
Filed March 24, 1970, Ser. No. 22,152
Int. Cl. H02h 3/16
U.S. Cl. 317—18 R 8 Claims



A ground fault interrupter circuit utilizes the potential difference between the neutral supply line and ground to sense faults. An ordinary resettable magnetic circuit breaker is used, but delay circuitry prevents immediate reenergization of the breaker coil resulting from a surge when resetting is attempted.

3,676,739
MINE POWER SYSTEM GROUND CONTINUITY CHECK CIRCUIT
Donald E. Neuhouser, Fort Wayne, Ind., assignor to General Electric Company
Filed Sept. 7, 1971, Ser. No. 178,338
Int. Cl. H02h 3/16
U.S. Cl. 317—18 C 9 Claims



A ground cable continuity check circuit for a power supply cable system having a grounding and a pilot conductor electrically interconnected remotely from the power supply. A source of electrical energy for the check circuit is provided through a constant current transformer having its secondary connected between the grounding and pilot conductors. A circuit including the coil of an undervoltage relay and the contacts of a current relay is connected across the constant cur-

rent transformer primary. The current relay coil is connected in series with the constant current transformer secondary and the grounding and pilot conductors. A voltage breakdown device is connected across the constant current transformer secondary to divert current from the current relay coil when a high impedance appears in the ground circuit for opening the current relay contacts to disable the under voltage relay. The power supply system may have a main cable and at least one branch cable in which case the grounding and pilot conductor loops of the main cable and branch cable are interconnected by a current transformer having one coil connected in the main grounding and pilot conductor loop and the other coil connected between the grounding and pilot conductors of the branch circuit.

3,676,740

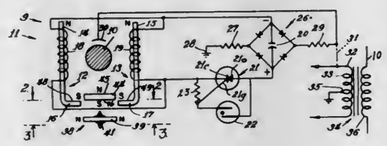
AUTOMATICALLY RESETTABLE FAULT INDICATOR

Edmund O. Schweitzer, Jr., Northbrook, Ill., assignor to E. O. Schweitzer Manufacturing Co., Inc., Mundelein, Del.

Filed June 1, 1971, Ser. No. 148,687

Int. Cl. G01r *13/00*

U.S. Cl. 317—22 **10 Claims**



A pair of opposed L-shaped pole pieces of demagnetizable low coercive force material is arranged to embrace an alternating current carrying conductor with the short legs in opposition and the long legs carrying reset windings which are energized with unidirectional current from a capacitor that is charged by a rectifier energized from a capacitor plate electrostatically related to the conductor or a secondary winding of a transformer the primary winding of which is energized from the conductor. A four pole fault indicating rotor is held in a normal position by the magnetic fields from the short legs. A biasing permanent magnet, having magnetic poles of opposite polarity, is offset from the short legs and biases the rotor to fault indicating position when the L-shaped pole pieces are demagnetized by alternating magnetic flux generated by flow of fault current in the conductor. Permanent magnets at the distal ends of the long legs of the L-shaped pole pieces are effective to change the fault current response of the rotor.

3,676,741

SEMICONDUCTOR TARGET STRUCTURE FOR IMAGE CONVERTING DEVICE COMPRISING AN ARRAY OF SILVER CONTACTS HAVING DISCONTINUOUS NODULAR STRUCTURE

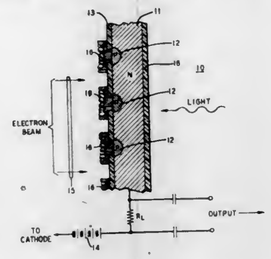
Steve Michael Forst, and Horst Alfred Reinheimer, both of Reading, Pa., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 9, 1970, Ser. No. 96,352

Int. Cl. H01l *3/00, 5/00*

U.S. Cl. 317—234 R **4 Claims**

Conductive metal islands are applied over each diode region and the adjacent oxide to minimize adverse charge build up on the insulating layer of the target surface of a semiconductor diode array target structure. These conductive metal islands are made by the plating of silver from a silver nitrate and hydrofluoride bath. The process produces a deposited



silver button having an irregular, somewhat nodular, configuration.

3,676,742

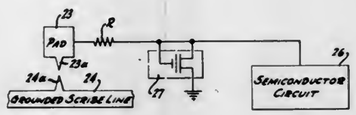
MEANS INCLUDING A SPARK GAP FOR PROTECTING AN INTEGRATED CIRCUIT FROM ELECTRICAL DISCHARGE

Lewis K. Russell, San Jose, and James L. Banks, Santa Clara, both of Calif., assignors to Signetics Corporation, Sunnyvale, Calif.

Filed May 24, 1971, Ser. No. 146,055

Int. Cl. H02h *1/04;* **H05f** *3/00*

U.S. Cl. 317—33 R **12 Claims**



An integrated circuit chip has one or more semiconductor devices and one or more bonding pads on the chip. The one or more bonding pads are electrically coupled to the semiconductor devices. A conductor which is adapted to be connected to a reference potential is also disposed on the integrated circuit chip. The conductor has a portion of its periphery in proximity to the portion of the periphery of a bonding pad and cooperates therewith to form a spark gap for protecting the semiconductor devices against electrical discharges. The proximate portions of the peripheries of the bonding pad and the conductor can be rectilinear or formed in tooth-like projections.

3,676,743

GAS-DISCHARGE OVERVOLTAGE ARRESTER

Alex Bahr, and Gerhard Peche, both of Berlin, Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Sept. 24, 1970, Ser. No. 75,140

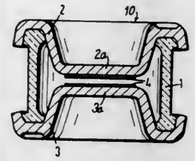
Claims priority, application Germany, Oct. 3, 1969, P 19 50 090.4

Int. Cl. H02h *9/06*

U.S. Cl. 317—61 **10 Claims**

A voltage overload arrester comprising a pair of shaped electrodes having surface portions in spaced adjacent relation to each other and gas impermeably sealed within an insulating housing. The adjacent surface portions of each electrode are provided with a thin coating of an alloy of a material having a high electron emission ability, such as Ba, and a material having a stabilizing effect on the electron work function of such

emission material, such as Al. The method comprises forming the alloy-coated electrodes and subjecting them to heat of



about 700° to 900° C. so as to eliminate all impurities from the alloy coating.

3,676,744

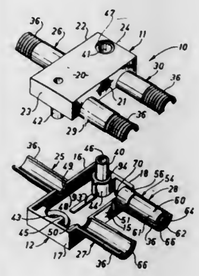
SIGNAL SPLITTER

Frank Chester Pennypacker, Lindsay, Ontario, Canada, assignor to Lindsay Specialty Products Limited, Lindsay, Ontario, Canada

Filed Aug. 10, 1970, Ser. No. 62,561

Int. Cl. H01r *13/46;* **H01p** *5/12;* **H03h** *7/46*

U.S. Cl. 317—99 **6 Claims**



A connector box for connecting the individual electrodes of a plurality of coaxial cables and especially useful as a splitter box for a television antenna lead-in comprises a two-part casing. Mating upper and lower casing members are cast with corresponding semi-cylindrical out-ward extensions which fit together when the two casing members are placed face to face to provide externally threaded tubular extensions onto which internally threaded collars of coaxial cable connectors can be screwed in turn to clamp such two casing members firmly together. Sleeve connectors are provided within the tubular extensions for effecting electrical connection to the core electrodes of the cables while connection between the sheath electrodes of the cables is usefully effected through the metallic casing of the connector box.

3,676,745

ELECTRONIC ASSEMBLY UTILIZING THERMAL PANEL FOR HEAT SINK

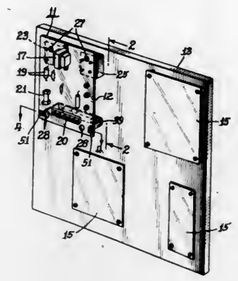
John C. Traweek, 9 Kensington Drive, Deerfield, Ill.

Filed Sept. 4, 1970, Ser. No. 69,691

Int. Cl. H02b *1/04;* **H05k** *7/20*

U.S. Cl. 317—100 **1 Claim**

An improved heat sink for dissipation of heat in an electronic assembly is provided. The assembly includes a printed circuit board on which components including various heat developing components are mounted. The heat developing components are contained or encapsulated in respective



blocks which are positioned to dissipate heat to an associated mounting panel.

3,676,746

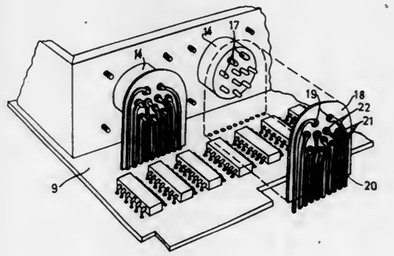
COMPATIBLE MODULAR CIRCUIT BOARD CONNECTOR

Georges Kassabgi, Paris, France, and Giampiero Compare, Milano, Italy, assignors to Honeywell Information Systems Italia, Milan, Italy

Filed Dec. 23, 1970, Ser. No. 100,987

Int. Cl. H05k *7/02, 1/14*

U.S. Cl. 317—101 CC **6 Claims**



A modular structure for providing connections between a plurality of printed circuit boards, wherein connectors for remote connection cables are supported directly on a circuit board.

3,676,747

PRINTED CIRCUIT CARD ARRANGEMENT

Adam A. Jorgensen, Pittsford; William Bentley, Penfield, and Edward Urycki, Buffalo, all of N.Y., assignors to Stromberg-Carlson Corporation, Rochester, N.Y.

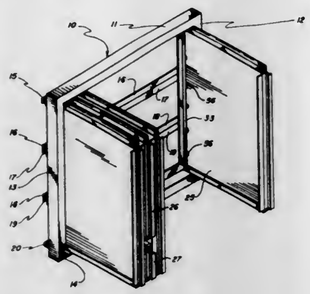
Continuation-in-part of Ser. No. 809,072, March 21, 1969. This application Feb. 19, 1971, Ser. No. 117,026. The portion of the term of this patent subsequent to Feb. 23, 1988, has been disclaimed.

Int. Cl. H05k *5/02, 5/04*

U.S. Cl. 317—101 **28 Claims**

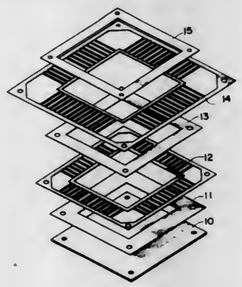
A printed circuit card arrangement including a printed cir-

cuit card and a rigid frame secured thereto, and a module of



printed circuit card arrangements supported on a gate in spaced parallel arrangement.

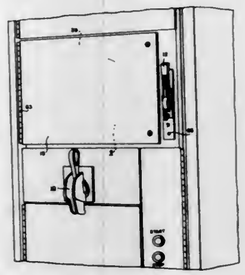
3,676,748
FRAME STRUCTURES FOR ELECTRONIC CIRCUITS
Seihin Kobayashi, and Michihiro Torii, both of Shizuoka, Japan, assignors to Fuji Denki Kagaku Kabushiki Kaisha, Tokyo, Japan
Filed March 30, 1971, Ser. No. 129,356
Claims priority, application Japan, April 1, 1970, 45/31218
Int. Cl. H05k 1/04
U.S. Cl. 317—101 CM **9 Claims**



A frame for electronic circuits is provided which comprises a plurality of terminal groups in a laminated relation, each of said terminal groups having a number of terminal metal members arranged substantially on the same plane, and a plurality of insulated frame members sandwiching said terminal groups, each of said terminal metal members being connected at its inner end to an associated conductive wire of the electronic circuit and projected at its outer end to the outside of said frame members.

3,676,749
SWITCH-OPERATING MECHANISM WITH PARTICULAR APPLICATION THEREOF TO POTENTIAL-TRANSFORMER DISCONNECTING ASSEMBLY
John R. Wilson, Darien, and Sedig A. Shariff, Hickory Hills, both of Ill., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Oct. 28, 1970, Ser. No. 84,752
Int. Cl. H02b 1/18; H01h 9/22
U.S. Cl. 317—103 **10 Claims**

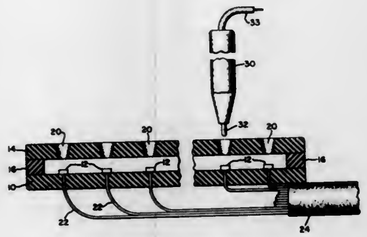
An improved switch-operating mechanism is provided for translating linear motion of an actuating member, such as a handle mechanism, for example, into the rotary motion of a tray, or other rotatable member, which may carry, for example, one or more rotatably-actuated switch members. The switch members may take the form of movable finger assemblies, which electrically connect into the circuit one or more potential transformers to energized lines. Additionally, the improved switch mechanism of the present invention may be utilized for load-break switch application capable of interrupt-



ing load currents, or, in addition, the switch mechanism of the present invention may also be used for actuating non-load-breaking switch members.

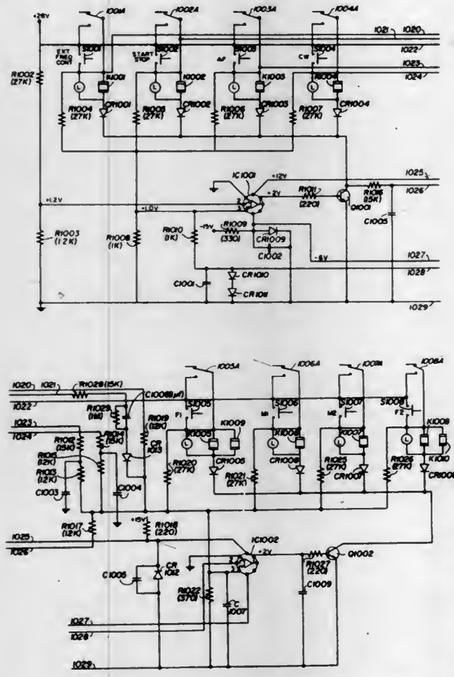
The rotatable potential-transformer disconnecting assembly of the present invention has particular application to enclosed switchgear, in which cell units, or cabinets, are utilized, and stacked vertically for metal-enclosed switch-gear assemblies used, for example, in connection with line starters for controlling electrical motors.

3,676,750
DATA INPUT DEVICE WITH HAND-HELD SELECTIVE CIRCUIT CLOSING MEANS
John D. Hawks, Lynchburg, Va., assignor to General Electric Company
Filed Sept. 15, 1970, Ser. No. 72,343
Int. Cl. H01r 9/08
U.S. Cl. 317—112 **1 Claim**



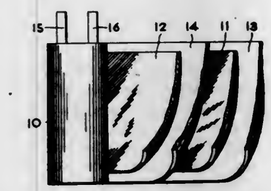
A personal data input device has a base plate with contacts, each of which represents a selected character, and a face plate positioned above the base plate. The face plate has an opening adjacent each contact so that a hand-held stylus can be inserted through a selected opening to engage or operate the corresponding contact, and thereby receive data which operates an encoder. The stylus can either close an electrical circuit to the selected contact by engagement, or can operate the contact by motion or other means.

3,676,751
SELECTION CIRCUITRY
Jerry Hausner, Flushing, N.Y., assignor to The Narda Microwave Corporation, Plainview, N.Y.
Filed Jan. 4, 1971, Ser. No. 103,778
Int. Cl. H01h 47/04
U.S. Cl. 317—137 **3 Claims**



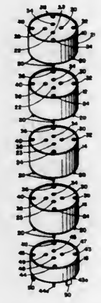
A broad band high frequency sweep generator is disclosed wherein the operating modes and critical frequencies are selected by pushbutton actuated switches. The switches are interconnected in order to insure that each mode discretely controls operation of the generator and the critical frequencies required for any particular mode only are selected.

3,676,752
ALUMINUM ELECTROLYTIC CAPACITOR
Francis J. P. J. Burger, and Jie Chu Wu, both of Toronto, Ontario, Canada, assignors to Sprague Electric Company, North Adams, Mass.
Filed March 19, 1971, Ser. No. 126,234
Int. Cl. H01g 9/02
U.S. Cl. 317—230 **5 Claims**



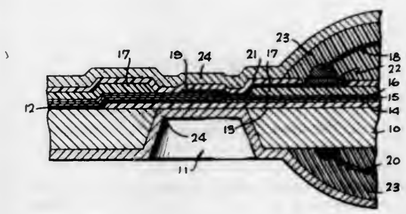
Undesirable anodic side reactions in aluminum electrolytic capacitors are controlled by employing glycol-based electrolytes which include additives of less than 2 percent of selected alpha-hydroxy carboxylic acids and their salts.

3,676,753
ELECTRICAL CAPACITOR ASSEMBLY WITH REPLACEABLE UNITS
Rayford M. Norman, Sr., 2117 Windover Drive, N.E., Huntsville, Ala.
Filed June 3, 1971, Ser. No. 149,653
Int. Cl. H01g 9/08
U.S. Cl. 317—230 **9 Claims**



An electrical capacitor assembly consisting of a base having a plurality of like spaced pairs of electrical receptacles and a plurality of stacked cylindrical electrolytic capacitor elements, each element having a plurality of pairs of receptacle-like terminals passing through, end-to-end of the capacitor element and wherein one pair serves to electrically connect to the plates of the capacitor of that element and the other pairs serve as feed through conductors and receptacles for the other, like, stacked capacitor elements. In this fashion a composite capacitor assembly is made up of a desired selected combination of stacked capacitor elements interconnected by pin connectors coupling receptacles of adjacent capacitor elements.

3,676,754
THIN-FILM TEMPERATURE SENSOR AND METHOD OF MAKING SAME
Joseph Maserjian, and John R. Gatewood, both of La Crescenta, Calif., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration
Filed July 13, 1971, Ser. No. 162,230
Int. Cl. H01g 9/05
U.S. Cl. 317—230 **18 Claims**



A thin-film temperature sensor for fast response is disclosed, formed on a foil of tantalum using a self-supporting oxide of the foil as a substrate and using vapor-deposition

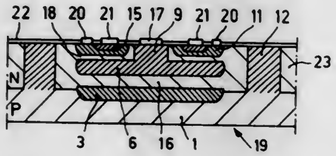
techniques to deposit a temperature-sensitive capacitor having a dielectric material sandwiched between layers of aluminum which serve as capacitor electrodes. An insulation layer of SiO_2 is deposited before the outer electrode, except over the active region of the capacitor, and a passivation film of Al_2O_3 is deposited over the entire device except an area where a lead is soldered to the outer electrode. The entire assembly is coated with Parylene C.

3,676,755

SEMICONDUCTOR DEVICE AND METHOD OF MANUFACTURING SAID DEVICE

Rene Glaise, Caen, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 11, 1970, Ser. No. 10,518
Claims priority, application France, Feb. 13, 1969, 6903480
Int. Cl. H01l *13/00*
U.S. Cl. 317--235 R **4 Claims**



A semiconductor device having a semiconductor body comprising a first region of a first conductivity type in the form of a layer adjoining a surface and situated on a second region of the body, a thyristor having four successive zones of alternate conductivity types being provided in the first region.

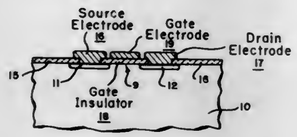
The device is characterized in that the thyristor is constructed from a first surface zone of the first conductivity type which is fully surrounded within the semiconductor body by a second surface zone of the second conductivity type, a buried zone of the second conductivity type situated below the second surface zone and separated from the second surface zone and from the said second region by the said first region, and a connection zone of the second surface zone and from the said second region by the said first region, and a connection zone of the second conductivity type separated from the second surface zone adjoining the surface which connection zone adjoins the said buried zone.

3,676,756

INSULATED GATE FIELD EFFECT DEVICE HAVING GLASS GATE INSULATOR

Seymour Merrin, Fairfield, Conn., assignor to Innotech Corporation, Norwalk, Conn.

Filed Sept. 18, 1969, Ser. No. 859,012
Int. Cl. H01l *11/14*
U.S. Cl. 317—235 **18 Claims**



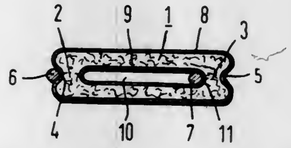
An insulated gate field effect transistor having a glass gate insulator is fabricated by diffusing into a semiconductor substrate the impurities required to produce the channel, source and drain, exposing the substrate by etching away any remaining masking layer, forming a gate insulator of thin film ion impermeable glass on the exposed substrate and then metalizing and packaging the resulting device. Advantageously, the thin glass film is also used as a passivating layer. IGFET'S fabricated in this manner are significantly more resistant to contamination than are prior art devices using oxide insulated gates and passivating layers. As a consequence they are more economical to fabricate and more reliable in operation.

3,676,757

ELECTRIC CONDENSER WITH A FLAT TUBULAR DIELECTRIC

Emil Ramisch, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed June 16, 1971, Ser. No. 153,560
Claims priority, application Germany, Sept. 3, 1970, P 20 43 770.1
Int. Cl. H01g *1/14*
U.S. Cl. 317—242 **3 Claims**



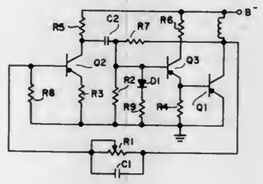
A flat tubular condenser is provided with a longitudinal groove along each of its outer edges of an outer condenser plate to improve production during extrusion of the tubular plate and to provide improved connection of an electrical conductor in one of the grooves.

3,676,758

MOVING COIL DIRECT CURRENT RECIPROCATING MOTOR

Joseph W. Mathews, 3762 Swansea Drive, Mobile, Ala.

Continuation-in-part of Ser. No. 858,942, Sept. 18, 1969, Pat. No. 3,575,649, which is a continuation-in-part of Ser. No. 542,116, April 12, 1966, Pat. No. 3,469,163. This application July 9, 1970, Ser. No. 53,478
Int. Cl. H02k *33/18*
U.S. Cl. 318—128 **25 Claims**



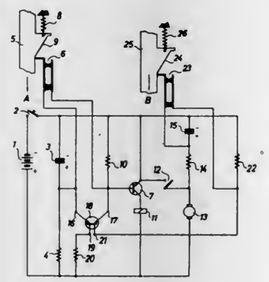
A direct current motor having a coil moving in a magnetic field to provide force to drive a piston in one direction and a spring for driving the piston in the opposite direction. A circuit is provided for controlling the flow of current through the coil, including a transistor connected in series with the coil and a d.c. source. A capacitor whose state of charge varies as a function of the back EMF generated by the coil is connected for controlling the conductivity state of the transistor as a function of the capacitor's state of charge.

3,676,759

ON-OFF MOTOR CONTROL PUSH BUTTON SWITCH FOR PHOTOGRAPHIC APPARATUS

Helmut Mayr; Richard Pelte; Theo Hubert, and Helmut Strasser, all of Munich, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Munich, Germany

Filed Sept. 22, 1970, Ser. No. 74,353
Claims priority, application Germany, Sept. 26, 1969, P 19 48 631.8
Int. Cl. H02p *1/10*
U.S. Cl. 318—446 **10 Claims**



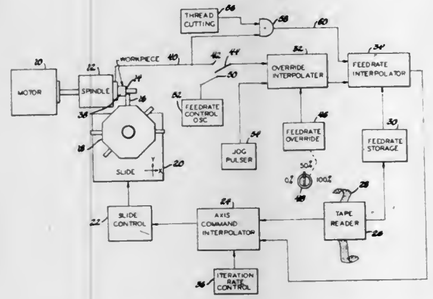
Pressing a release turns on, or triggers, a bistable electronic switch, such as a multivibrator or a semiconductor tetrode, which in turn renders an amplifying transistor conductive through which an electromagnet is energized, closing a switch that operates the motor of the photographic apparatus. Repressing the release shuts off, or reverses the state, of the bistable switch, and thereby turns off the amplifying transistor. Another release is so connected that the bistable multivibrator is conductive, or triggered to the right state, as long as the release is depressed. The two releases can be combined into a single release by using a selector switch.

3,676,760

FEEDRATE CONTROL SYSTEM

George H. McDaniel, Northville, Mich., assignor to The Bendix Corporation

Filed Aug. 5, 1970, Ser. No. 62,235
Int. Cl. G05b *19/24*
U.S. Cl. 318—571 **2 Claims**



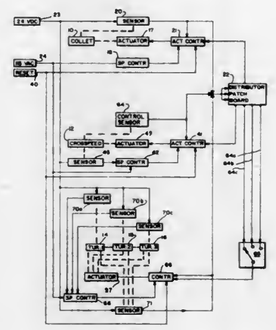
A feedrate control system having an IPR capability including a spindle pulse transducer and three interpolators for override, feedrate, and axis command functions.

3,676,761

AUTOMATIC TOOL SYSTEM AND METHOD FOR CONTROL

William S. Fortune, 14250 Dearborn Street, Panorama City, Calif.

Filed Feb. 19, 1970, Ser. No. 12,727
Int. Cl. G05b *19/22*
U.S. Cl. 318—574 **18 Claims**



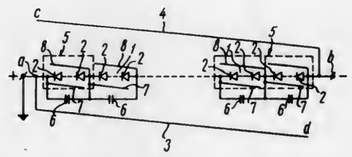
A circuit particularly useful for automating a standard machine-shop turret lathe. The circuit includes the capability of programming a sequence of events to be performed by the lathe. Mechanical actuators such as electrical motors and pneumatic pistons provide the capability of imparting movement to those lathe mechanisms usually operated manually. The operations of these lathe mechanisms are monitored by sensors such as photocells and microswitches. Pulses produced by the sensors are routed through the circuitry in a prescribed manner to produce the desired sequence of events.

3,676,762

HIGH-VOLTAGE SEMICONDUCTOR RECTIFIER UNIT

Anton Lavrentievich Saralidze, ulitsa Sovetskaya, 87, and Antoly Lazarevich Efremidi, ulitsa Antonelli, 18, both of Tbilisi, U.S.S.R.

Filed Oct. 26, 1970, Ser. No. 83,683
Int. Cl. H02m *7/00*
U.S. Cl. 321—8 R **4 Claims**

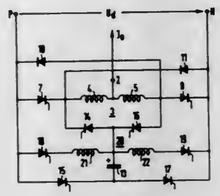


A high-voltage semiconductor rectifier unit is provided which comprises a chain of series-connected diodes and bypass capacitors disposed between common symmetrical metal screens so that each end of said chain is connected to a respective one of said common metal screens while the spacing between the end of the chain connected to one of common metal screens and the same screen increases at greater distances from said end of the chain. The diode chain can be divided into groups each group being disposed between symmetrical group metal screens.

3,676,763
SELF-COMMUTATING DIRECT-TO-ALTERNATING CURRENT INVERTER

Hermann Tappeiner, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Feb. 17, 1971, Ser. No. 116,198
Claims priority, application Germany, Feb. 19, 1970, P 20 07 567.6
Int. Cl. H02m 7/52
U.S. Cl. 321—45 C 5 Claims

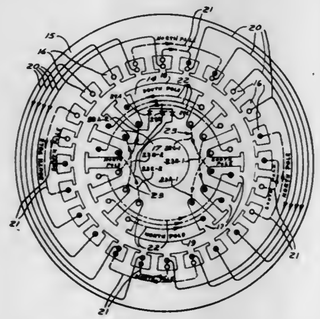


A self-controlled inverter with constrained commutation comprises between its main positive and negative buses a series connection of two controlable main valves, such as thyristors, with an appertaining quenching network. A commutating reactor interconnects the two main valves in series with each other and has a midtap to which the load to be energized is attached. The quenching network has a quenching capacitor common to the two main valves and is connected, independently of the main valves, between a direct-voltage supply whose terminal polarity is selectable with respect to the electrodes of the quenching capacitor. The direct-voltage supply may either be constituted by the main buses of the inverter itself, or they may consist of a separate voltage source. In either case an after-charging network is preferably provided for replenishing the charge of the commutating reactor, the after-charging network having an inductance means connected between the quenching capacitor and the buses or other voltage supply.

3,676,764
BRUSHLESS ALTERNATING CURRENT GENERATOR

Charles D. Syverson, North Mankato, Minn., assignor to Kohler Co., Kohler, Wis.

Continuation-in-part of Ser. No. 860,264, Sept. 23, 1969, abandoned. This application Jan. 29, 1971, Ser. No. 111,124
Int. Cl. H02k 19/28
U.S. Cl. 322—51 6 Claims

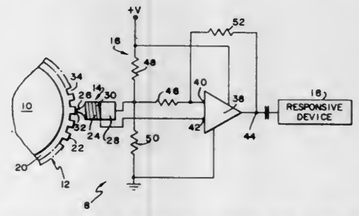


A self-excited brushless alternating current generator utilizes a four-pole direct current excitation winding wound on a stator and operable to generate an exciter flux which induces an alternating current in a field excitation winding wound on a rotor. The field excitation winding connects through rectifiers to a d-c main field winding also wound on the rotor. The main field winding generates a main field flux which induces an alternating current in a two-pole a-c output winding wound on the stator. No brushes are required and the excitor windings are wound on the same magnetic core with the generator windings.

3,676,765
TACHOMETER GENERATOR

Vernon C. Westcott, Lincoln, Mass., assignor to Trans-Sonics, Inc., Lexington, Mass.

Continuation of Ser. No. 835,133, June 20, 1969, abandoned. This application June 30, 1970, Ser. No. 56,100
Int. Cl. H02k 11/00
U.S. Cl. 322—58 6 Claims

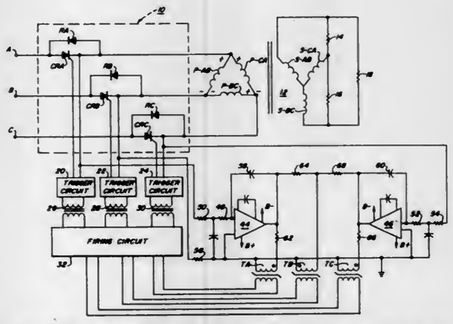


A tachometer generator for use in a high noise environment comprises a multi-pole rotor of magnetic material and a single-pole stator. The stator includes a magnet arranged to pass flux through the stator and into the rotor, and a coil that develops a voltage in response to changes in the stator flux. Movement of the rotor poles past the stator provides changes in reluctance that are reflected in changes in the stator flux. The coil thereby develops a signal whose frequency is proportional to the rotational speed of the rotor. This signal is applied to a signal-conditioning amplifier housed with the stator. The amplifier has a high gain and hysteresis, which combine to provide a square wave output having a large amplitude and substantially immune to noise picked up by the generator.

3,676,766
MULTIPHASE ALTERNATING CURRENT REGULATION SYSTEM FOR TRANSFORMER-COUPLED LOADS

Ronald C. Blackmond, Allison Park, Pa., assignor to Robicon Corporation, Pittsburgh, Pa.

Filed Dec. 11, 1970, Ser. No. 97,260
Int. Cl. G05f 1/38, 1/56
U.S. Cl. 323—6 7 Claims

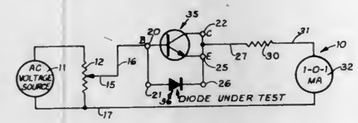


In a multiphase alternating current regulating system employing controlled rectifiers operated in accordance with phase commutation techniques, the improvement of circuitry for eliminating direct current components across loads supplied by the three-phase system which would otherwise occur when the loads become unbalanced.

3,676,767
DEVICE FOR AUTOMATICALLY IDENTIFYING UNKNOWN TRANSISTORS

Donald A. Boelter, Indianapolis, Ind., assignor to General Aviation Electronics, Inc., Indianapolis, Ind.

Filed July 25, 1969, Ser. No. 844,814
Int. Cl. G01r 31/22
U.S. Cl. 324—158 D 4 Claims

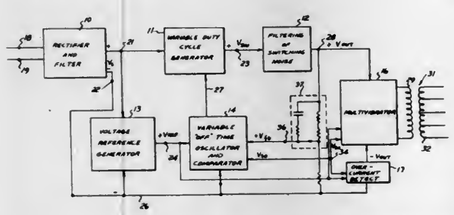


Process and apparatus for checking transistors and diodes to determine whether a transistor is NPN or PNP, to determine whether the transistor is germanium or silicon and also to determine the polarity of a diode. The checking device may include a pair of spaced terminals, a known alternating voltage source and a known resistance, with the terminals, source and resistance in a chain whereby connecting of the base of the transistor to one terminal and the collector and emitter to the other terminal places the source, terminals, transistor and resistance in a series circuit. A meter may then be used to measure the direction and amplitude of current through the circuit or, alternatively, the direction and amplitude of current can be used to actuate indicating devices, and, if desired, further electrical circuitry for performing additional tests on the transistors.

3,676,768
SOURCE INDEPENDENT POWER SUPPLY

Walter T. Morrey, Cambridge, Mass., assignor to The Bendix Corporation

Filed Jan. 27, 1971, Ser. No. 110,200
Int. Cl. G05f 1/58
U.S. Cl. 323—22 T 9 Claims



A power supply which yields one or more constant output voltages independently of the input voltage level and irrespective of whether the energizing source is AC or DC, and irrespective of the frequency of the source. The input voltage energizes a variable duty cycle generator, the duty cycle of which is controlled by a variable off-time oscillator. The off time of the oscillator is established by a reference voltage and the system output voltage so that the output voltage is regulated irrespective of the input voltage.

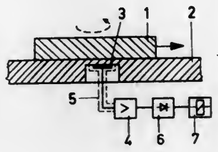
ERRATUM

For Class 324—158 D see:
Patent No. 3,676,767

3,676,769
METHOD AND APPARATUS FOR DETECTING A RELATIVE MOVEMENT BETWEEN TWO BODIES BEING IN FRICTIONAL CONTACT WITH EACH OTHER

Erich Loepfe, Zellikerberg, Switzerland, assignor to Aktiengesellschaft Loepfe, Zurich, Switzerland

Filed June 13, 1969, Ser. No. 833,030
Claims priority, application Switzerland, June 17, 1968, 9225/68; Oct. 24, 1968, 16038/68; April 30, 1969, 6679/69
Int. Cl. G01r 29/12
U.S. Cl. 324—32 13 Claims

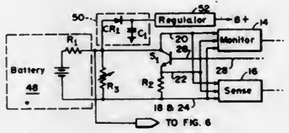


An apparatus is provided for determining a relative movement between two bodies wherein the movement causes a sliding friction between the bodies. The friction causes changes in electrical charges in the friction zone. An electrical conductor is located within the operative range of these changes. The conductor is connected with a device amplifying and further processing the potential fluctuations of the conductor occurring during the relative movement which is to be determined.

3,676,770
PULSE SAMPLING BATTERY FUEL GAUGING AND RESISTANCE METERING METHOD AND MEANS

Harold M. Sharaf, Milton, and Richard L. Eby, South Weymouth, both of Mass., assignors to Anderson Power Products, Inc., Boston, Mass.

Filed May 15, 1970, Ser. No. 37,630
Int. Cl. G01n 27/46
U.S. Cl. 324—29.5 12 Claims

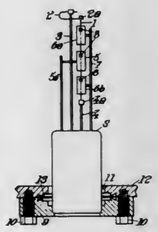


A continuously operating low dissipation system for sensing the electrical resistance of an element while the element carries a normal operating current. A pulse of electrical energy having a regulated ohm's law related first parameter is switched through the element while a second ohm's law related parameter of the element's response to the energy pulse is simultaneously measured. These two known parameters provide the information necessary to determine the element's resistance using Ohm's law. In the preferred embodiment voltage and current are used as the two parameters. The system is calibrated for the regulated level of the first parameter while the second parameter is amplified and stored in a sampling circuit for continuous display between pulses as an indication of resistance. The pulse techniques of this disclosure allow continuous operation of the system without heating of the resistive element or excessive power use. The resistance indication is additionally useful for indicating the remaining charge in a battery where the indicated resistance is the battery's internal resistance. A distinct battery terminal voltage indication is also given.

3,676,771
METHOD FOR MEASUREMENT OF PARTIAL PRESSURES OF A GASEOUS SUBSTANCE USING A METALLIC COMPOUND OF THE GASEOUS SUBSTANCE

Jean-Pierre Olivier Loup, Olivet; Jacques Emile Gutknecht, L'Hay Les Roses, and Anne-Marie Anthony, nee Barbier, Meudon, all of France, assignors to Agence Nationale De Valorisation De La Recherche (Anvar), Puteaux, France

Filed Dec. 30, 1969, Ser. No. 889,263
Claims priority, application France, Dec. 31, 1968, 182836
Int. Cl. G01n 27/62
U.S. Cl. 324—33 3 Claims



Partial pressures (P) less than 10^{-3} atmospheres of O_2 or S are measured by placing a metallic oxide or sulfide compound in the atmosphere to be measured, bringing the compound to a temperature (T) and measuring its thermoelectronic emission (J) or its work function ($E\phi$). The equations then applied are

$$\log J = K_1 - z \log P$$

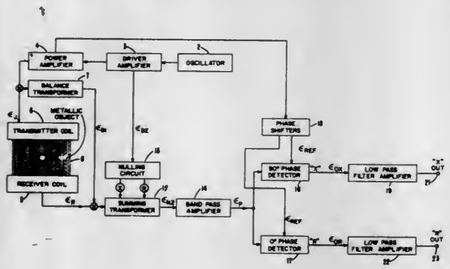
$$E\phi = K_2 + zkT \log P$$

where k, K_1, and K_2 are constants and z is a characteristic value of the defects of the structure of the compound.

3,676,772
METALLIC INTRUSION DETECTOR SYSTEM

Robert D. Lee, San Mateo, Calif., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration

Filed Aug. 18, 1970, Ser. No. 64,709
Int. Cl. G01r 33/00, 33/12
U.S. Cl. 324—41 2 Claims

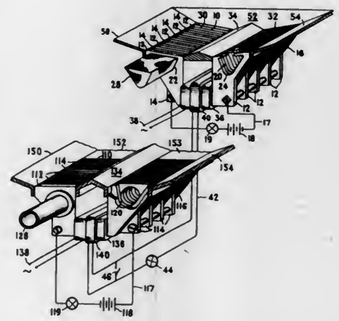


A metal detection system comprising an electro-magnetic transmitter with a single transmitting coil and a receiver with a single receiving coil. The receiving coil is coupled to the radiated electromagnetic energy and the receiver generates a signal that may be used to indicate the intrusion into the electromagnetic field of a metallic object, to indicate whether such object is ferrous or non-ferrous, and to indicate the relative size of the metallic object.

3,676,773
APPARATUS FOR DETECTING ELECTRICALLY CONDUCTIVE PARTICLES USING A GAS PERMEABLE, BUT LIQUID IMPERMEABLE SURFACE

Hans A. Eckhardt, 55 Crescent Bend, Allendale, N.J.

Filed Feb. 3, 1969, Ser. No. 795,888
Int. Cl. G01r 33/00
U.S. Cl. 324—41 23 Claims



An apparatus for detecting tramp metal contained in electrically non-conductive fluid material has a surface supporting the fluid material, formed by the ends of the laminae of a laminated magnet alternately connected to the terminals of a battery in a circuit with a current indicator. Tramp metal forming a bridge between the pole ends of two alternate laminae close the circuit and are thus monitored by the current indicator. An opening extends through the laminated magnet traversing the laminae, and the insulation is removed between the opening and the pole ends of the laminae. The opening has a gas-permeable non-conductive liner, so that air introduced into the opening flows through the liner and between the laminae to the surface and into the fluid material. Tramp metal is thus caused to settle downward in the fluidized material.

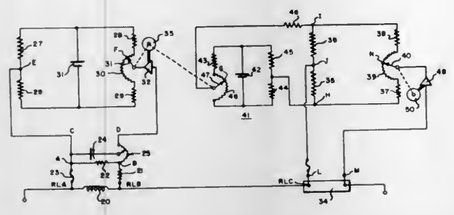
The magnet has a primary winding which induces into a secondary winding a voltage changed by tramp metal changing the magnetic field, and indicating such tramp metal. A second identical magnet with identical primary winding has an identical secondary winding arranged in a secondary circuit in opposition to and in series with the first secondary winding, so that their induced voltages normally balance each other. Tramp metal upsets the balance and a resultant current flows in the secondary circuit indicating the tramp metal.

3,676,774
POTENTIOMETRIC RESISTANCE MEASURING SYSTEM

Joseph F. Stokes, Middlebury, and George E. Van Vessem, Naugatuck, both of Conn., assignors to American Chain & Cable Company, Inc., New York, N.Y.

Filed May 5, 1970, Ser. No. 34,850
Int. Cl. G01r 31/00, 27/00
U.S. Cl. 324—57 6 Claims

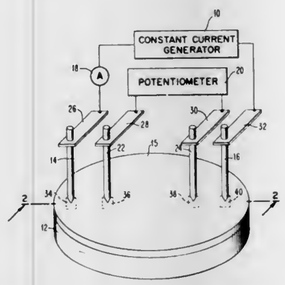
A system for measuring the resistance of a current-carrying inductive element comprises a pair of coupled, self-balancing potentiometers and an adjustable voltage delay circuit. One of the potentiometers is adapted for measuring the element voltage (after it is subjected to a predetermined time delay) by comparing it with a constant reference voltage. The other potentiometer is adapted for measuring the element resistance by comparing this measured element voltage with a voltage corresponding to the current through the element. The time delay introduced in the voltage measurement is chosen to delay voltage transients by a time equal to the inductive time lag of the element current, so that the resistance measurement is not significantly affected by such transients.



3,676,775
METHOD FOR MEASURING RESISTIVITY

Andrew Dupnock, Fishkill; Edward F. Gorey, Beacon, and William A. Keenan, Poughkeepsie, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 7, 1971, Ser. No. 141,307
Int. Cl. G01r 27/14
U.S. Cl. 324—64 6 Claims



The method for measuring the bulk resistivity of an epitaxial semiconductor layer on a monocrystalline semiconductor base with a 4-point probe apparatus wherein the base has at least two high conductivity diffused regions, positioning two current probes directly over two separate diffused regions in contact with the surface of the epitaxial layer, placing two spaced voltage probes in contact with the epitaxial layer in a generally intermediate position relative to the current probes, inducing a current through the current probes and measuring the voltage drop between the voltage probes, calculating the bulk resistivity in accordance with the expression:

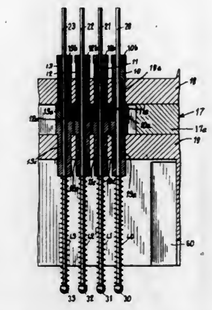
$$\rho = \frac{\text{voltage} \times \text{correction factor} \times \text{thickness of the layer}}{\text{CURRENT}}.$$

3,676,776
TESTING PROBE CONSTRUCTION

Franz Bauer, Pullach; Karl Friedrich Besemer, Planegg, and Gotthard Kinner, Munich, all of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Jan. 19, 1970, Ser. No. 3,726
Int. Cl. G01r 31/02
U.S. Cl. 324—72.5 10 Claims

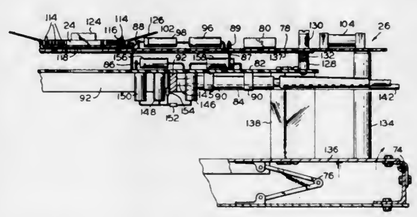
Precise testing of printed circuit boards having closely spaced contact bores is made possible by an apparatus comprising a plurality of predisposed, closely spaced contact needle probes each of which has a flexible, slender construction to automatically compensate for spacing variations of the contacts within manufacturing tolerances and each of which may have a detachable contact head to compensate for variations in contact bore diameters. A generally spherical contact probe head surface assures a uniform contact with the edge of the bore and hence equal contact resistances, regardless of the angle of the probe with the bore.



3,676,777
APPARATUS FOR AUTOMATICALLY TESTING INTEGRATED CIRCUIT DEVICES

Thomas H. Charters, Portland, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Aug. 10, 1970, Ser. No. 62,292
Int. Cl. G01r 15/12
U.S. Cl. 324—73 R 22 Claims

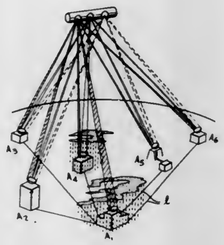


An integrated circuit test system is described including a programmable test fixture controlled by a computer for automatically performing D.C., dynamic, and functional tests on integrated circuit devices to provide 100 measurements per second with a rise time of 1 nanosecond. The test fixture includes a first circuit board on which a plurality of test probes are mounted, a second circuit board connected to such first board by connector pins and having a plurality of different loads, D.C. bias voltage sources, and associated switches mounted thereon for selectively connecting them to active connector terminals connected to the pins of the device under test, and a third circuit board having a socket for such device releasably connected to the load board. A fourth circuit board with loads mounted thereon may be attached to the socket board for testing extremely high speed devices and extends perpendicular through central openings in the other boards. The sampling probes are plugged into sockets on a grounded mounting ring attached to the probe board and extend radially outward from such ring in parallel to such probe board to reduce inductance and require less space. The load board is provided with a plurality of ground terminals positioned between adjacent active connector terminals for further reducing the inductance to ground.

3,676,778
SATELLITE COMMUNICATION SYSTEM

Yoshibumi Mori, Tokyo, Japan, assignor to Nippon Telegraph and Telephone Public Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 738,069, June 18, 1968, abandoned. This application Aug. 20, 1970, Ser. No. 65,653
Int. Cl. H04b *1/54*
U.S. Cl. 325—4 4 Claims



Attenuation caused by precipitation in a radio satellite communication system is minimized by monitoring transmission between the stations and the rate of precipitation at each station so that frequency bands having low attenuation to precipitation may be assigned to the stations in accordance with their rate of precipitation. A local monitor and controller provides switching information in response to the rate of precipitation to switch the transmission and reception respectively to transmitting and receiving frequency converters which operate in selected frequency bands.

3,676,779
SIGNAL DEVICE

Merle E. Faulring, and John A. Faulring, both of 13275 Stage Road, Rte. #2, Akron, N.Y.

Filed May 26, 1970, Ser. No. 40,561
Int. Cl. H04b *1/02*
U.S. Cl. 325—115 2 Claims

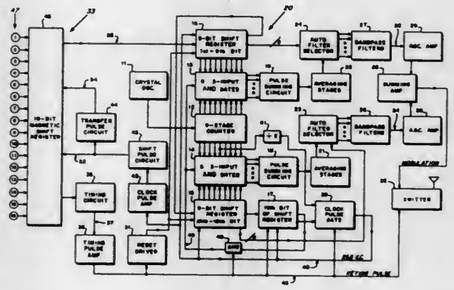


A balloon package is folded onto an ejection platform which becomes propelled outwardly from an enclosure. A gas cartridge inflates the balloon as the latter is ejected from the enclosure causing the balloon's inflation. A radio transmitter attached to the balloon is actuated when the balloon is ejected so that a coded radio signal can issue forth from the location of the balloon. Manual and automatic trigger means are provided for ejecting the balloon.

3,676,780
DIGITAL FREQUENCY GENERATOR FOR CODED INTERROGATION

George W. Niemann, and Charles N. Shannon, both of Dallas, Tex., assignors to The United States of America as represented by the Secretary of the Navy

No Drawing. Filed June 9, 1966, Ser. No. 556,836
Int. Cl. H04b *1/02*
U.S. Cl. 325—155 14 Claims

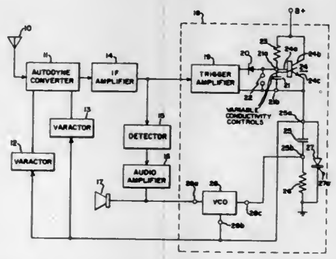


A command control sonobuoy system is provided in which a large number of buoys are commanded on a single frequency from a remote position. A single radio frequency carrier signal is modulated with selected two tone signals from a plurality of discrete tones derived from digital elements upon the receipt of instructions from an operator or a computer. In operation, a generate provides a plurality of signals of different frequency in response to the receipt of a coded address signal. The signals of different frequency are then combined to provide a modulated signal for application to a transmitter.

3,676,781
AUDIO FREQUENCY INDICATOR FOR SCAN TUNED RADIO RECEIVER

Joseph A. Worcester, Frankfort, N.Y., assignor to General Electric Company

Filed Dec. 29, 1970, Ser. No. 102,404
Int. Cl. H04b *1/36*
U.S. Cl. 325—455 5 Claims

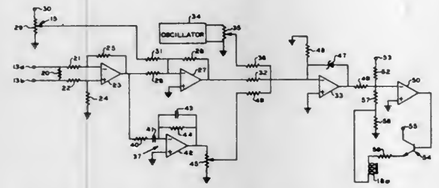


An audible frequency indicator for use in a radio receiver employing automatic frequency scan tuning. A variable scan control signal, corresponding to the frequency location of the scan within a given frequency band is applied to a voltage controlled oscillator. The voltage controlled oscillator produces an output in the audible range, whose pitch is a function of the frequency location of the scan, and that is terminated when a station is tuned in.

3,676,782
MODIFIED ON-OFF CONTROL

Donald W. Lane, and Troy J. Pemberton, both of Bartlesville, Okla., assignors to Phillips Petroleum Company

Filed June 22, 1970, Ser. No. 48,343
Int. Cl. H03k *17/00*
U.S. Cl. 328—1 6 Claims

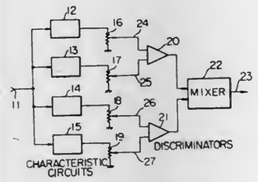


A modified on-off controller is formed by adding an alternating signal to the error signal. The frequency of the added signal is sufficiently high to prevent the control element from responding at this frequency. A derivative signal can also be added.

3,676,783
WAVEFORM DISCRIMINATING CIRCUIT

Setsuro Kinbara, and Tadashi Kumahara, both of Naka-gun, Ibaragi-ken, Japan, assignors to Japan Atomic Energy Research Institute, Tokyo, Japan

Filed March 25, 1969, Ser. No. 810,223
Claims priority, application Japan, April 23, 1968, 43/27280
Int. Cl. H05k *5/20*
U.S. Cl. 328—117 4 Claims

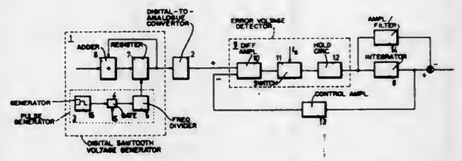


A pulse shape discriminating circuit comprising an input terminal for receiving an input signal, a plurality of characteristic circuits having their inputs connected in common to said input terminal, first and second amplitude discriminating circuits each receiving shaped pulses from the characteristic circuits associated therewith, and a mixing circuit for combining the pulses from said first and second amplitude discriminating circuits. The first amplitude discriminating circuit generates a first step pulse representative of the time which corresponds to a first point on said input signal, said first point having a value equal to a first preselected percentage of the peak value of said input signal, the second amplitude discriminating circuit generates a second step pulse representative of the time which corresponds to a second point on said input signal, said second point having a value equal to a second preselected percentage of the peak value of said input signal, and the mixing circuit generates a rectangular pulse waveform having width equal to the time interval between said first and second points.

3,676,784
APPARATUS FOR GENERATING AN ANALOGUE SAWTOOTH VOLTAGE, THE SLOPE OF WHICH CORRESPONDS WITH THE MEAN SLOPE OF A STEPPED SAWTOOTH VOLTAGE

Corstiaan Le Comte, Huizen, Netherlands, assignor to N. V. Hollandse Signaalapparaten, Hengelo, Netherlands

Filed Jan. 25, 1971, Ser. No. 109,213
Claims priority, application Netherlands, Jan. 29, 1970, 7001235
Int. Cl. H03k *4/10, 4/02*
U.S. Cl. 328—181 1 Claim

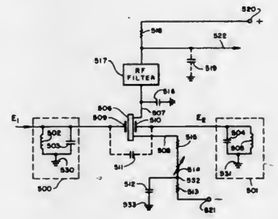


A sawtooth generator provided with a device for generating a digital sawtooth function, said device being connected to a digital-to-analogue converter, also containing an integrator and an error voltage detector to convert differences occuring at discrete moments between the output voltage of the digital-to-analogue converter and the output voltage of the integrator to a control voltage varying in steps, which, fed to the integrator causes the output voltage of the integrator to form an approach of the function to be generated shaped as an angled line.

3,676,785
HIGH GAIN, ULTRA LINEAR DETECTOR FOR FREQUENCY MODULATION

Henri T. Pichal, St. Petersburg, Fla., assignor to Honeywell Information Systems Inc., Waltham, Mass.

Filed Dec. 10, 1970, Ser. No. 96,802
Int. Cl. H03d *3/14*
U.S. Cl. 329—103 11 Claims



A detector for providing quadrature detection of frequency modulated signals is disclosed. An FET (Field Effect Transistor) device having two gates, a source and a drain, has one gate coupled to the frequency modulated incoming signal and the other gate coupled through a 90° phase shifter to the incoming signal. The demodulated signal appears at the drain electrode of the FET.

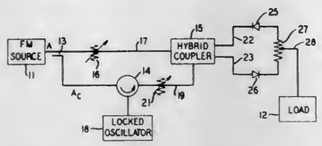
3,676,786
LOCKED OSCILLATOR CIRCUITS

Herbert Neil Carlson, Berkeley Heights, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 30, 1970, Ser. No. 93,771
Int. Cl. H03d *3/24*
U.S. Cl. 329—122 4 Claims

One embodiment of a microwave FM demodulator comprises first and second branches to which the input FM signal

is applied. The signal on the first branch controls the output phase of an injection-locked oscillator. The output of the oscillator and the signal on the second branch are combined by a hybrid coupler and applied to a balanced phase-sensitive detector comprising first and second oppositely-poled diodes connected to opposite sides of an output resistance. A center



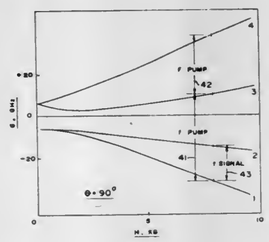
tap on the output resistor derives a voltage having an amplitude proportional to the input signal frequency. In another embodiment, the locked oscillator is connected to a reflection-type transmission line with transmission line probes used for deriving inputs to the balanced detector. In other embodiments, the output voltage is used to make the locked oscillator center frequency track the input locking frequency.

3,676,787

MASER FOR FREQUENCIES IN THE 7–20 GHZ RANGE

George M. Low, Acting Administrator of the National Aeronautics and Space Administration with respect to an invention of; Robert C. Clauss, and Rex B. Quinn, both of La Crescenta, Calif.

Filed Aug. 11, 1970, Ser. No. 63,144
Int. Cl. H01s *1/00*
U.S. Cl. 330—4 **9 Claims**



A traveling wave maser (TWM) of the comb type is disclosed for operation in the 7–20 GHz frequency range. The TWM is loaded with 0-degree Czochralski grown ruby with its C-axis at angle $\theta=90°$ with respect to the magnetic field. The TWM is pumped in the push-push mode between levels 1–3 and 3–4 with two different frequencies.

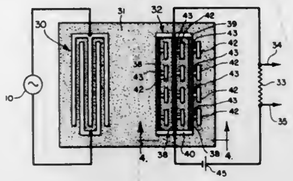
3,676,788

ACOUSTIC SURFACE WAVE TRANSMISSION DEVICE WITH AMPLIFICATION

Mino Green, London, England, assignor to Zenith Radio Corporation, Chicago, Ill.

Filed June 21, 1971, Ser. No. 155,006
Int. Cl. H03f *3/04*
U.S. Cl. 330—5.5 **5 Claims**

A signal transmission device includes a piezoelectric substrate upon which surface waves are launched by an input transducer which may, for example, be composed of a pair of interleaved combs of conductive electrodes. An output transducer responds to the surface waves to develop an output signal. The output transducer includes a plurality of strips of semi-conductive material individually disposed across the path of the surface waves, with successive strips spaced apart by one acoustic wavelength. Spaced from each strip by an effective ½ wavelength distance are at least one and preferably a plurality of spaced conductive ribbons disposed end-to-end across the path of the surface waves. A plurality of conductive



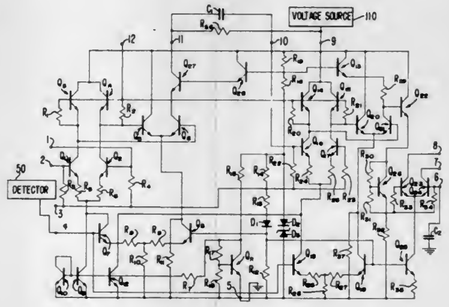
bridges individually join different portions of each strip to different portions of each associated ribbon. Across the opposing ends of the strips are connected a source of current and a load which derives signals from the currents in the strips that are modulated by the surface waves.

3,676,789

LOW DISTORTION AGC AMPLIFIER

Derek Bray, Fuchstanzstrasse 12, Stierstadt/Taunus, Germany

Continuation-in-part of Ser. No. 827,749, May 26, 1969, abandoned. This application Nov. 16, 1970, Ser. No. 89,994
Int. Cl. H03g *3/30*
U.S. Cl. 330—29 **10 Claims**



A linear amplifier in an automatic gain control circuit whose gain is a function of the ratio of two bias currents is obtained by selectively coupling two pairs of semiconductor devices such that the effects of nonlinearities due to the logarithmic relationship between voltage and current across a PN junction cancel. The relationship between the two pairs of devices is such that the output signal from the second pair of devices is linearly related to the input signal driving the first pair of devices.

3,676,790

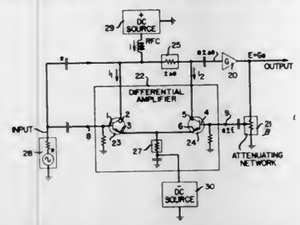
DIFFERENTIAL FEEDBACK AMPLIFIER

Henry Richard Beurrier, Chester, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed June 3, 1971, Ser. No. 149,666
Int. Cl. H03f *3/68*
U.S. Cl. 330—30 D **4 Claims**

The signal at the output of a signal amplifier is compared, in a differential amplifier, with the input signal to the signal amplifier. Any difference between these two voltages causes an error-correcting voltage to be generated across an impedance in series between the signal source and the signal amplifier

input port. This error-correcting voltage is added to the input signal in phase to cancel the output signal error. By using a differential amplifier to produce the error signal, there is no feedback to the signal source, resulting in a high degree of stability.

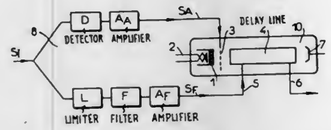


3,676,791

MICROWAVE TUBE AMPLIFIER CIRCUIT FOR APLITUDE MODULATED AND FREQUENCY MODULATED MICROWAVE SIGNAL

Pierre Guenard, Paris, France, assignor to Thomson-CSF

Filed March 12, 1971, Ser. No. 123,582
Claims priority, application France, March 17, 1970, 7009520
Int. Cl. H03f *3/58*
U.S. Cl. 330—43 **2 Claims**



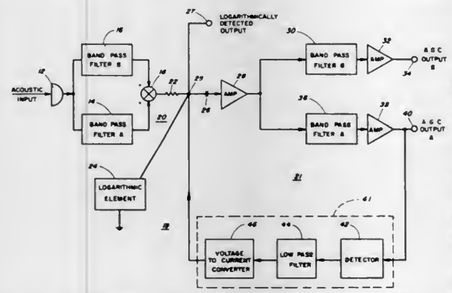
Circuit improving the efficiency of microwave tubes for amplification of an amplitude and frequency modulated signal, comprising a conventional amplifier tube with an electron current control electrode, and a device for splitting the signal into two separate signals, one of them being the amplitude modulation envelope to be sent to said control electrode, the other being the microwave frequency-modulated signal alone, to be sent to the amplifier microwave input.

3,676,792

FREQUENCY MULTIPLEXING AGC AMPLIFIER

Victor S. Newton, Takoma Park, Md., assignor to The United States of America as represented by the Secretary of the Navy

Filed June 9, 1970, Ser. No. 44,828
Int. Cl. H03g *5/16*
U.S. Cl. 330—52 **2 Claims**



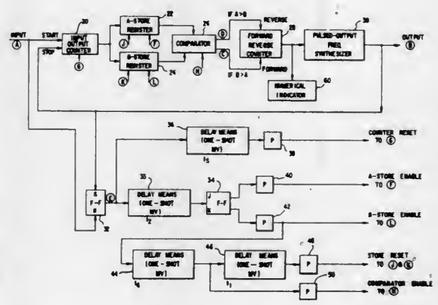
A circuit for AGC amplification of signals in different acoustic frequency bands so that the signals in all frequency bands are normalized to the signal in one particular band by using a single logarithmic detector responsive to signals in the band to which the other bands are normalized.

3,676,793

DIGITAL FREQUENCY LOCK GENERATOR

Bruce J. Brown, Alexandria, Va., assignor to The United States of America as represented by the Secretary of the Navy

Filed April 19, 1971, Ser. No. 134,942
Int. Cl. H03b *3/04*
U.S. Cl. 331—1 A **9 Claims**



A digital frequency lock generator having an input-output pulse-train counter, A-store register, B-store register, comparator, forwardareverse counter, free-running, pulsed-output frequency synthesizer and control logic circuit for timing the components requiring setting and resetting pulses. The time interval between the first input pulse and the next succeeding output pulse is measured and stored in the A-store register. The time interval between the second input pulse and the succeeding output pulse is measured and stored in the B-store register. The comparator compares the two time intervals and sends a pulse to that terminal of the forward-reverse counter which will act to correct the difference in time intervals. The output of the forward-reverse counter commands the frequency of the frequency synthesizer pulse train output. The circuit is then set for the next two pulse-pair measurements.

3,676,794

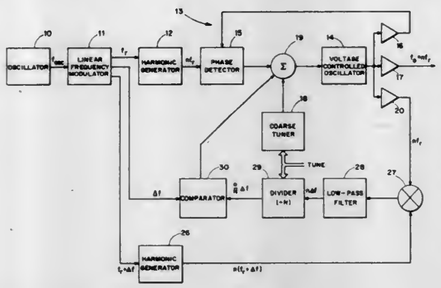
FREQUENCY SYNTHESIZER APPARATUS HAVING AUTOMATIC FINE TUNING

Frederick W. Bidell, Grand Island, and Richard J. Hughes, Williamsville, both of N.Y., assignors to GTE Sylvania Incorporated

Filed Aug. 30, 1971, Ser. No. 175,840
Int. Cl. H03b *3/04*
U.S. Cl. 331—11 **12 Claims**

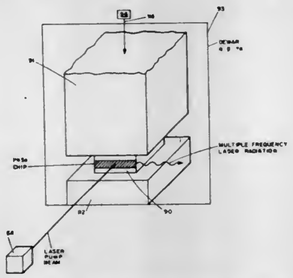
Harmonic generator type of frequency synthesizer employing a reference frequency signal equal to the spacing between adjacent channels, a displaced reference frequency signal which differs from the reference frequency by a few hertz, and a differential frequency signal equal to the difference between the reference frequency and the displaced reference frequency. The reference frequency signal is applied to a first harmonic generator which generates a spectrum of harmonics of the reference frequency. The spectrum is applied to a phase-locked loop which produces an output frequency signal equal to a particular one of the harmonics of the reference frequency. The displaced reference frequency signal is applied to a second harmonic generator which generates a spectrum of harmonics of the displaced reference frequency. This spectrum is combined with the output signal of the phase-locked loop in a mixer and the output of the mixer is applied to a low-

pass filter. The frequency of the only output signal from the filter is equal to the same particular harmonic to which the



phase-locked loop is locked times the difference in frequency between the reference frequency and the displaced reference frequency.

3,676,795
MULTIPLE-FREQUENCY LASER APPARATUS AND METHOD
George W. Pratt, Jr., Wayland, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.
Continuation-in-part of Ser. No. 684,155, Nov. 20, 1967, abandoned. This application July 13, 1970, Ser. No. 54,459
Int. Cl. H01s *3/18*
U.S. Cl. 331—94.5 **28 Claims**

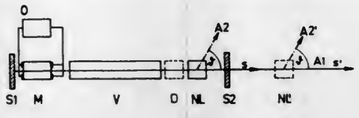


Apparatus for providing a multiple-frequency laser beam wherein a multi-valley semiconductor device, having an optical resonant cavity or forming at least a part of an optical resonant cavity is pumped and a shear stress or uniaxial stress exerted upon the device to produce different-valued energy gaps within the semiconductor material.

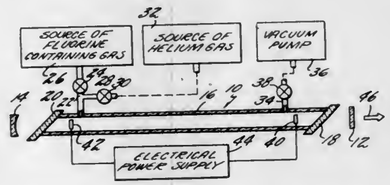
The invention herein described was made in the course of contracts with the Office of the Secretary of Defense, Advanced Research Projects Agency.

3,676,796
PROCESS AND DEVICE FOR THE GENERATION OF A SINGLE-FREQUENCY LIGHT RAY
Heinz Weber, Munchenbuchsee, Switzerland, assignor to Institut fur angewandte Physik der Universitat Bern, Bern, Switzerland
Continuation of Ser. No. 718,810, April 4, 1968, abandoned. This application Nov. 18, 1970, Ser. No. 90,840
Claims priority, application Switzerland, April 13, 1967, 5218/67
Int. Cl. H01s *3/10*
U.S. Cl. 331—94.5 **5 Claims**

A method of generating a single frequency laser light ray comprising: frequency modulating two oscillating modes or self-oscillations of a laser oscillator at a modulation frequency which approximates the frequency distance of adjacent modes; orthogonally polarizing these rays and passing them through an optically non-linear, birefringeant element the optical axis of which is inclined to their path at such an angle as to produce a maximum interaction therebetween. Due to the maximum non-linear interaction an unmodulated, single frequency output ray is obtained the frequency of which equals the sum of the carrier frequencies of respective rays.

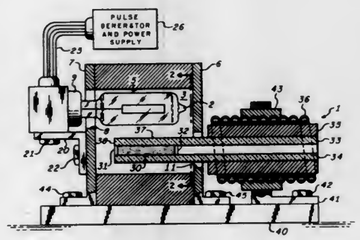


3,676,797
ATOMIC FLUORINE LASER
Mark A. Kovacs, Manchester, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.
Filed Dec. 21, 1970, Ser. No. 100,201
Int. Cl. H01s *3/22*
U.S. Cl. 331—94.5 **4 Claims**



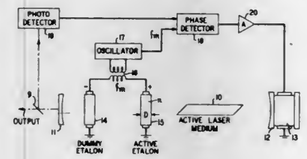
Compound gases having fluorine as a constituent are combined with helium in an enclosure within an optical cavity and are subjected to the discharge of electrical energy. The electric discharge dissociates the compound gas providing fluorine atoms and excites the fluorine providing a population inversion of electronic energy levels. The fluorine lases in the optical cavity producing a visible beam of laser energy at 7039, 7129 and 7204 Angstroms.

3,676,798
COOLING SYSTEM FOR LASING MEDIA
Donald H. McMahon, Carlisle, Mass., assignor to Sperry Rand Corporation
Filed Oct. 13, 1969, Ser. No. 865,910
Int. Cl. H01s *3/04*; **F28f** *7/00*
U.S. Cl. 331—94.5 **2 Claims**



Heat generated within a lasing medium operating in a laser pumping cavity is efficiently removed from the pumping cavity by use of a heat sink located exterior of the cavity. A tube formed of a single crystal of sapphire surrounds the laser medium and extends through an end wall of the pumping cavity. There, the sapphire tube is in turn surrounded by a metal heat exchanger element that may be operated at cryogenic temperatures. Undesired condensation is prevented from forming adjacent the laser medium by forming the pumping cavity as a sealed chamber and evacuating it to a relatively low gas pressure.

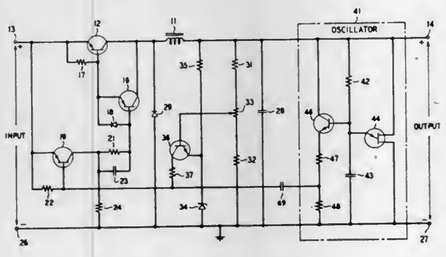
3,676,799
FREQUENCY STABILIZED LASER
Hans Guenter Danielmeyer, Matawan, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Dec. 28, 1970, Ser. No. 101,798
Int. Cl. H01s *3/00*
U.S. Cl. 331—94.5 **4 Claims**



Single frequency laser oscillation is realized by including within the laser cavity a resonant etalon, tuned to the desired laser frequency. This has the effect of suppressing all other modes while permitting the laser to oscillate at the desired single frequency. In addition, the etalon tuning is frequency modulated about the desired frequency, producing an amplitude modulation of the laser signal. The amplitude modulation thus produced is sensed by a phase detector which generates an error signal whenever the laser frequency tends to deviate from the mean, etalon frequency. The error signal is used, in turn, to retune the laser cavity.

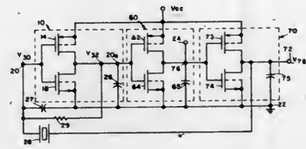
It is an advantage of the present arrangement that spurious frequency modulation of the laser frequency, introduced by the stabilization system, is substantially less than that produced by comparable prior art stabilization circuits. Furthermore, such modulation can be conveniently reduced, or eliminated, by the addition of a dummy etalon driven in antiphase to the active etalon.

3,676,800
SYNCHRONIZED SELF-OSCILLATING SWITCHING REGULATOR
Herbert Rudolf Weischedel, Rockaway, and George Raymond Westerman, Denville, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Dec. 24, 1970, Ser. No. 101,344
Int. Cl. H03b *3/02*
U.S. Cl. 331—111 **6 Claims**



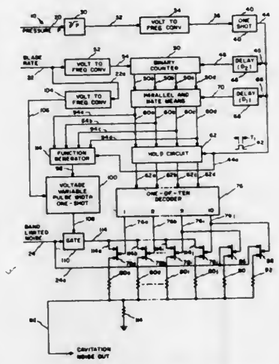
A periodic synchronizing signal of constant frequency is coupled to the feedback loop of a self-oscillating switching regulator to hold the switching frequency constant. The synchronizing signal is added directly to the feedback signal to drive the switch ON and OFF. The waveform of the synchronizing signal is not critical; a relaxation oscillator and a resonant circuit shock excited by the switching are shown as synchronizing signal sources.

3,676,801
STABILIZED COMPLEMENTARY MICRO-POWER SQUARE WAVE OSCILLATOR
Fuad H. Musa, Tempe, Ariz., assignor to Motorola Inc., Franklin Park, Ill.
Filed Oct. 28, 1970, Ser. No. 84,602
Int. Cl. H03b *5/36*
U.S. Cl. 331—116 R **10 Claims**



A square wave oscillator is shown utilizing a P channel and an N channel Metal-Oxide-Silicon Field Effect Transistor (MOSFET) in combination with a quartz crystal for generating a frequency stabilized square wave signal suitable for use in a wristwatch.

3,676,802
SUBMARINE PROPELLER CAVITATION NOISE SIMULATOR
Francis J. Murphree, Winter Park, and Paul S. Catano, Orlando, both of Fla., assignors to The United States of America as represented by the Secretary of the Navy
Filed June 21, 1971, Ser. No. 155,053
Int. Cl. G08b *3/10*
U.S. Cl. 332—9 R **4 Claims**

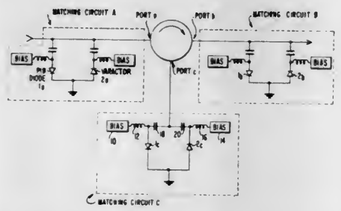


Simulation of submarine propeller cavitation as it varies with speed and depth of submergence is effected by feeding a frequency proportional to blade rate to a counter which is periodically read out and reset at a rate proportional to the square root of pressure. The read out is used to control noise attenuator means including a one of N decoder and N attenuators scaled to provide relative noise according to a curve characteristic of the submarine to be simulated. The noise output is modulated in pulse width and repetition rate by a function generator also controlled by the counter read-out.

3,676,803
ELECTRONICALLY TUNABLE MATCHING CIRCUIT FOR CIRCULATORS

William J. Simmons, Torrance, Calif., assignor to Communications Satellite Corporation

Filed May 1, 1970, Ser. No. 33,762
Int. Cl. H01p 1/32
U.S. Cl. 333—1.1 1 Claim

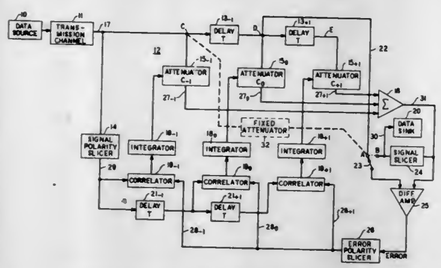


A novel matching circuit for a circulator of the type requiring a resistance and capacitance for tuning and matching the circulator. The matching circuit includes an electronically variable resistance and capacitance means for enabling optimum performance of the circulator over the range of its operating frequencies.

3,676,804
INITIALIZATION OF ADAPTIVE CONTROL SYSTEMS

Kurt Hugo Mueller, Matawan, N.J., assignor to Bell Telephone Laboratories Incorporated, Murry Hill, Berkeley Heights, N.J.

Filed Feb. 22, 1971, Ser. No. 117,389
Int. Cl. H04b 3/04
U.S. Cl. 333—18 8 Claims



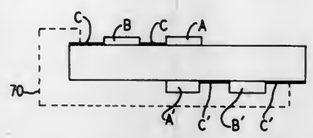
Adaptive control systems are brought to a predetermined reference state with respect to a plurality of attenuation coefficients by taking the signal at a preselected reference location rather than the normalized overall output as the signal to be approximated. In this way the adaptive process brings all variable subsystem attenuators to base level settings and the reference attenuator to a normalized level setting in response to an arbitrary input.

3,676,805
MONOLITHIC CRYSTAL FILTER WITH AUXILIARY FILTER SHORTING TABS

Warren Perry Mason, West Orange, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Oct. 12, 1970, Ser. No. 79,880
Int. Cl. H03h 7/02, 9/32
U.S. Cl. 333—72 10 Claims

Energy loss in the short-circuiting tabs of the interior resonators of monolithic crystal filters is reduced by constructing the tabs in the form of auxiliary trapped energy filters having a passband with a center frequency that differs from the center frequency of the passband of the primary

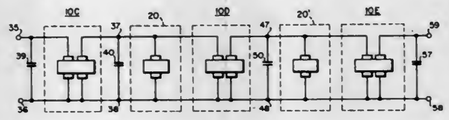


filter. The tabs or auxiliary filters act as reflectors that direct the energy that otherwise would be dissipated back into the trapped energy region of the main electrodes, thus enhancing overall filter efficiency.

3,676,806
POLYLITHIC CRYSTAL BANDPASS FILTER HAVING ATTENUATION POLE FREQUENCIES IN THE LOWER STOPBAND

Henry J. Orchard, San Mateo, and Desmond F. Sheahan, San Carlos, both of Calif., assignors to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Nov. 6, 1969, Ser. No. 874,522
Int. Cl. H03h 9/20, 9/32
U.S. Cl. 333—72 5 Claims

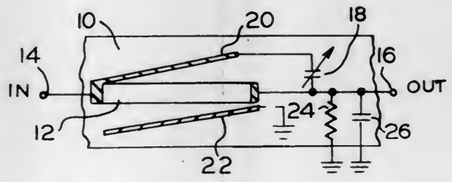


A bandpass crystal filter of the type which uses coupled resonators and has a shunt capacitor at the junction between pairs of coupled resonators exhibits a stopband loss-frequency characteristic which is approximately symmetrical and monotonic. In some applications, it is necessary to sharpen up at least one side of the filter and this extra loss could be obtained if one or more frequencies of infinite loss could be added in the adjacent stopband. By connecting the parallel combination of a capacitor and a two-terminal quartz resonator across the junction between pairs of coupled resonators, the loss-frequency characteristic may be modified to include frequencies of infinite loss in the lower stopband.

3,676,807
FILM ATTENUATOR WITH DISTRIBUTED CAPACITANCE HIGH FREQUENCY COMPENSATION

Machiel Boer, Beaverton, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed May 19, 1971, Ser. No. 144,787
Int. Cl. H03h 7/24
U.S. Cl. 333—81 A 10 Claims



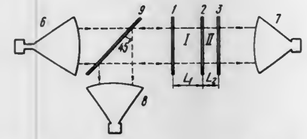
A thick film attenuator including series and shunt resistances coated on an insulator substrate is described in

which the first distributed capacitance of a lead conductor connecting a variable capacitor in parallel with the series resistance is compensated by the second distributed capacitance of a ground conductor on the opposite side of such series resistance. This prevents the attenuation ratio from changing with frequency for high frequency input signals which tends to be caused by such first distributed capacitance with high impedance attenuators due to the greater length of the series resistance. The spacing between the lead conductor and the series resistance decreases with distance along such resistor from the terminal connected to the variable capacitor, while the spacing between the ground conductor and the series resistance increases with such distance to provide the first and second distributed capacitances which change hyperbolically with such distance so that the attenuation ratio of the capacitance divider is the same as that of the resistance divider at any point along the series resistance.

3,676,808
RESONATOR FOR ELECTROMAGNETIC WAVES OF THE MILLIMETRIC AND SUBMILLIMETRIC BAND

Evgeny Alexandrovich Vinogradov, Kozhevnicheskaya ulitsa, Ib, kv. 33, and Nataliya Alexandrovna Irisova, ulitsa Vavilova, 44, korpus 4, kv. 74, both of Moscow, U.S.S.R.

Filed June 29, 1970, Ser. No. 50,428
Int. Cl. H01p 7/06
U.S. Cl. 333—83 3 Claims

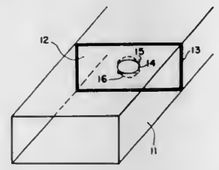


A resonator for electromagnetic waves of the millimetric and submillimetric band, comprising main reflectors in the form of mountings wherein parallel conductors are strung at a spacing smaller than the length of electromagnetic waves in the selected band, and at least one additional reflector identical to, and disposed between, said main deflectors, the plane of said additional reflector being parallel to the planes of the main reflectors.

3,676,809
THIN FILM MICROWAVE IRIS

T. O. Paine, Administrator of the National Aeronautics and Space Administration with respect to an invention of; Robert L. Ramey; Hugh S. Landes, both of Charlottesville, and Eugene A. Manus, Blacksburg, all of Va.

Filed May 28, 1970, Ser. No. 41,345
Int. Cl. H01p 1/00, 5/02
U.S. Cl. 333—98 R 1 Claim

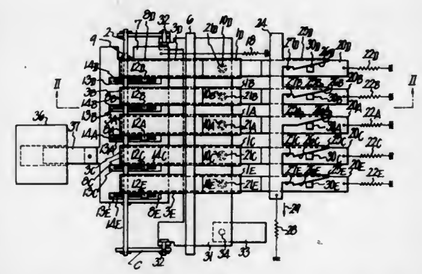


A thin film microwave iris including an aperture, inside a microwave waveguide transverse to the flow of microwave energy in the waveguide with the thin film electrically connected to the walls of the waveguide. Due to the flow of energy through the film as well as through the aperture, the characteristics of thin film irises are different from the characteristics of conventional irises.

3,676,810
PUSH BUTTON ASSEMBLY

Tetsuo Machida, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed May 18, 1971, Ser. No. 144,580
Claims priority, application Japan, May 19, 1970, 45/42709; Aug. 29, 1970, 45/75792
Int. Cl. H01h 9/26
U.S. Cl. 335—159 11 Claims

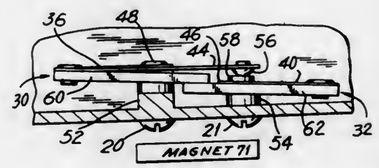


A push button assembly, for example, for selecting the operating condition or mode of a magnetic recording and reproducing apparatus or the like, has a single driving solenoid, motor or the like means which moves an actuator upon its energization in response to closing of a switch by depression of any one of a plurality of selecting members that are individually depressable. The selecting members are all movable as a group with the actuator of the driving means and, where depressed, each selecting member is coupled with a respective operating member to also move the latter with the actuator and thereby establish the desired operating condition. A locking means is provided to hold each operating member in its displaced position until another of the operating members is displaced. Further, each selecting member has a latch associated therewith to hold the selecting member depressed until the actuator of the drive means completes its movement.

3,676,811
MAGNETIC SWITCH

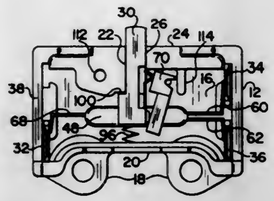
Philip Joseph Parlato, Kings Park, N.Y., assignor to Alarm Products International, Inc., Long Island City, N.Y.

Filed March 19, 1971, Ser. No. 126,068
Int. Cl. H01h 9/00
U.S. Cl. 335—205 9 Claims



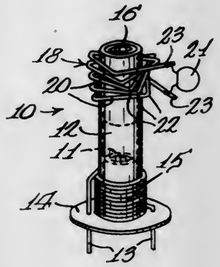
A magnetic switch device comprises a housing, two substantially planar bifurcated flexible members arranged in opposing relationship with one pair of distal ends of corresponding leg segments overlapping and being free to move while the other pair of distal ends are fixed to the housing. Armatures are attached to the corresponding leg segments and are moved responsive to a magnetic force to cause contacts on the overlapping distal ends to move together with a brushing motion.

3,676,812
PLUNGER OPERATED REED RELAY SWITCH
Voyta E. Wrabetz, Hubertus, Wis., assignor to Square D Company, Park Ridge, Ill.
Filed July 14, 1971, Ser. No. 162,496
Int. Cl. H01h 5/00
U.S. Cl. 335—205 10 Claims



The invention relates to a plunger operated reed relay switch module that incorporates a novel permanent magnet and mounting for the magnet which permits the plunger which operates the magnet to have the same travel characteristics as a plunger which actuates the contacts in a plunger operated snap switch. The switch module thus may be used as a replacement for a snap switch in a device when the device is required to control the input signals in a solid state logic circuit.

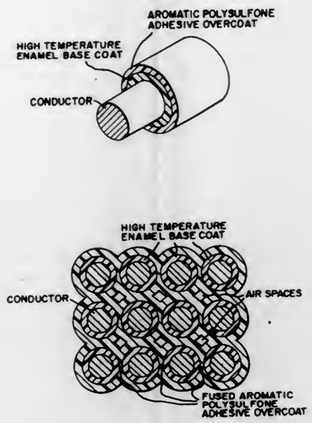
3,676,813
NON-CIRCULAR HIGH Q COILS
John O. Renskers, Crystal Lake, Ill., assignor to Collcraft, Inc., Cary, Ill.
Continuation-in-part of Ser. No. 812,836, April 2, 1969, abandoned. This application May 12, 1971, Ser. No. 142,723
Int. Cl. H01f 27/28
U.S. Cl. 336—189 7 Claims



A low cost, high Q mounted coil consisting of a non-circular, close wound coil having a turn length substantially longer than the circumference of the inscribed cylinder thereof mounted on a cylindrical coil form.

3,676,814
HIGH TEMPERATURE ADHESIVE OVERCOAT FOR MAGNET WIRE
Floyd F. Trunzo, Monroeville, and David A. Scheidmantel, Pittsburgh, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Feb. 6, 1970, Ser. No. 9,372
Int. Cl. H01b 3/42; H01f 27/30
U.S. Cl. 336—205 9 Claims

An electrical conductor is coated with a high temperature thermosetting wire enamel base coat and overcoat of an aromatic thermoplastic polysulfone adhesive to form a composite insulated electrical conductor.

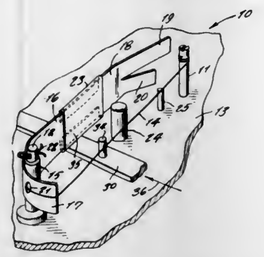


3,676,815
THERMALLY SENSITIVE CONTROLS FOR ELECTRIC CIRCUITS
Gideon A. Du Rocher, Mount Clemens, Mich., assignor to Essex International, Inc., Fort Wayne, Ind.
Filed July 28, 1969, Ser. No. 845,467
Int. Cl. H01h 37/32, 37/50; G01k 5/48
U.S. Cl. 337—140 17 Claims

A control for an electric circuit of the kind having switching means adjustable between circuit making and breaking relations and wherein the adjustment of the switching means is effected by a thermally sensitive force applying member acting on the switching means, the force exerted by the force applying member being substantially instantaneously variable in response to changes in its temperature to and from a predetermined critical temperature. The force applying member is dimensionally stable until it is heated to or cooled below its critical temperature whereupon it either expands or contracts suddenly and with the ability to do substantial work. The force applying member may either expand or contract in response to an increase in temperature depending upon the manner in which the member is formed.

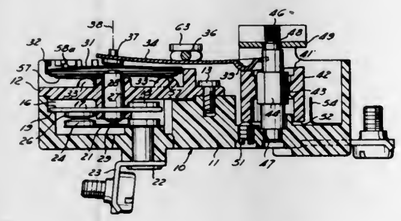
3,676,816
INSTANT OPERATING COILLESS RELAY
Carl J. Drathschmidt, 57 Sullivan St., New York, N.Y.
Filed March 2, 1971, Ser. No. 120,109
Int. Cl. H01h 51/00, 61/06, 71/18
U.S. Cl. 337—134 3 Claims

A relay of coilless type wherein there are a pair of spaced apart conductor posts, and a resistance wire therebetween carrying an electric current from one post to the other, in series with operating coil or resistor, causing the wire to heat up and expand so to release a phosphor bronze spring strip which



is pulled sidewardly by a permanent magnet due to small piece of steel shim stock being bent around the phosphor bronze spring strip.

3,676,817
ADJUSTABLE THERMOSTAT
Howard W. Bletz, Mansfield, Ohio, assignor to Therm-O-Disc Incorporated, Mansfield, Ohio
Filed Feb. 22, 1971, Ser. No. 117,443
Int. Cl. H01h 37/18, 37/20, 37/52
U.S. Cl. 337—347 18 Claims



An adjustable thermostat in which an adjusting spring applies an adjustable force to a bimetal snap disc. The adjusting spring is also formed of bimetal and its temperature induced forces add to the temperature induced forces of the disc so that the sum thereof is available for switch operation. The spring rate of the adjusting spring can be adjusted by moving a fulcrum lengthwise of the adjusting spring to provide the thermostat with the desired differential temperature in operation. Such differential temperature adjustment does not materially alter the temperature adjusting range provided by a cam which engages the end of the adjusting spring. The bimetal snap disc is supported in a cup element having cam surfaces along one side so that the position of the snap disc is adjusted by rotating the support cup, thus minimizing or reducing the necessity of selective fitting of the thermostat elements.

3,676,818
CONTROL STICK TRANSDUCER
Kenneth L. Oliver, Phoenix, Ariz., assignor to Sperry Rand Corporation
Filed May 10, 1971, Ser. No. 141,898
Int. Cl. G01l 1/22
U.S. Cl. 338—2 8 Claims

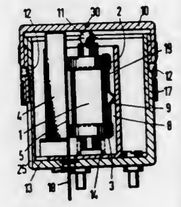
A transducer for monitoring forces applied to an aircraft control stick includes a spring flexure which acts as a primary restraint to loads applied to the control stick.

The spring flexure is secured to the transducer housing and disposed in a horizontal plane. The control stick handgrip is supported above the spring flexure by means of a vertical member passing through a central hub of the spring flexure so that the flexure provides a resilient mounting responsive to forces applied to the handgrip in any horizontal direction. A counterbalance suspended from the same hub of the flexure cancels the effect of any acceleration forces parallel to the spring flexure that may be induced in the mass of the handgrip and its mounting.



Cantilevered load beams are arranged to deflect in response to loads applied to the handgrip in excess of an adjustable threshold value. Strain gauges are used to measure the deflection of the load beams and thus provide electrical output signals indicative of the amount of command force applied to the handgrip. Stop members limit the deflection of the spring flexure to values suitable for use with the strain gauges.

3,676,819
CONTACT-FREE POTENTIOMETER
Werner Keller, Olching, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany
Filed Dec. 11, 1969, Ser. No. 884,167
Claims priority, application Germany, Dec. 17, 1968, P 18 15 160.5
Int. Cl. H01c 7/16
U.S. Cl. 338—32 R 13 Claims

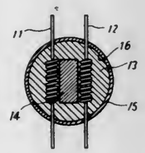


A stationary elongated armature body and a permanent magnet are connected in a magnetic circuit. A guide plate of non-magnetic material is interposed between the armature body and the magnet. The guide plate is adjacent the armature body and has a recess formed therethrough and a galvanomagnetic resistor is embedded in the recess. The guide plate guides the magnet in gliding relation.

3,676,820
GAS DETECTING ELEMENT AND METHOD OF MANUFACTURING SAME

Naoyoshi Taguchi, 1-2, Ikedauemachi, Nagata-ku, Kobe, Japan

Filed Jan. 30, 1970, Ser. No. 7,150
Claims priority, application Japan, Feb. 6, 1969, 44/9088; Feb. 6, 1969, 44/9089
Int. Cl. H01c 13/00, 17/00
U.S. Cl. 338—34 8 Claims

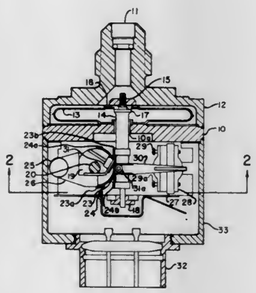


A gas detecting element formed of a semiconductor material capable of adsorbing gases and exhibiting a relatively high change in electrical conductivity, the semiconductor material containing gold, gold oxide or a compound convertible into gold or gold oxide after mixture with said semiconductor material and the method for making such an improved detector.

3,676,821
FLUID-PRESSURE TRANSDUCER

Roy R. Segerdahl, Belmore, and Joseph L. Jonke, Bethpage, both of N.Y., assignors to The Bunker-Ramo Corporation, Oak Brook, Ill.

Filed Dec. 5, 1968, Ser. No. 781,333
Int. Cl. H01c 13/00
U.S. Cl. 338—41 3 Claims

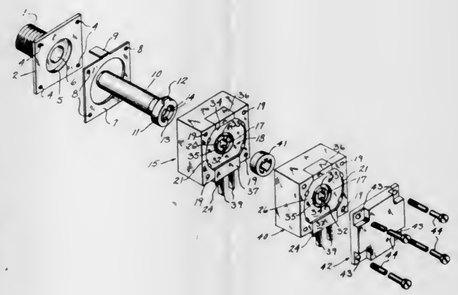


Apparatus for converting a change in fluid-pressure into mechanical motion of a part, which motion can be used to generate a suitable output signal. Two bands affixed to a sheave are wound thereon, side by side, in opposite directions. The free ends of the bands are connected to a pushrod which is in the same plane and at right angle to the axis of the sheave. The clockwise wound band is connected to the right of the axis of the sheave and other band is connected to the left thereof. The pushrod is connected at one of its ends to a pressure capsule which deflects when the fluid-pressure acting thereon is changed. This deflection causes the sheave to rotate and generate the desired output effect.

3,676,822
MODULAR POTENTIOMETER

James E. Slagg, South Milwaukee; Grant W. Nelson, Milwaukee; Jerry T. Moffitt, Cudahy, and Joseph A. Balint, Wauwatosa, all of Wis., assignors to Allen-Bradley Company

Filed April 8, 1971, Ser. No. 132,463
Int. Cl. H01c 9/02
U.S. Cl. 338—132 24 Claims



A potentiometer module, containing circular resistance and collector paths with a sliding control bridging between the paths, is combined with other similar modules in side by side, stacked relation to form one of a possible assortment of multiple potentiometer controls. The modules are fastened together by four stack bolts extending through them and screwed at one end into a face plate formed on the back of a threaded bushing. The face plate and bushing are at one end of the stacked modules, and a shaft inserted through the bushing controls all modules simultaneously. Several alternative arrangements of the modules are shown, and in one, for example, two concentric shafts each control selected modules. Each potentiometer module has a rectangular case containing a rotor with a movable contact. A collector ring is disposed axially to one side of the movable contact and a resistance track deposited on a base is disposed to the other side of the movable contact. The rotor passes completely through the module and has an opening through it to allow passage of shafts connected to other modules.

3,676,823
MINIATURE VARIABLE RESISTOR WITH GUIDE MEANS FOR SLIDING CONTACTS

Tatsuo Fujii, and Yutaka Watano, both of Tokyo, Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

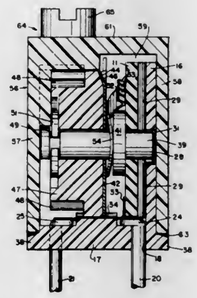
Continuation of Ser. No. 10,366, Feb. 2, 1972, abandoned. This application May 10, 1971, Ser. No. 142,060
Claims priority, application Japan, Feb. 19, 1969, 44/13811; Feb. 19, 1969, 44/13812
Int. Cl. H01c 9/02
U.S. Cl. 338—139 7 Claims

A variable resistor of rotary type has a metallic thin film resistor vacuum deposited on a disk and a brush slidably contacting with said resistor. The contact member slides over the path in a plane, and a tap portion partially overlapping with a slide resistor and having a surface resistance lower than that of the resistor is disposed below the path. The resistance between the terminal at one end of the resistor and the contact is varied in response to the displacement over the path of the brush on the resistor. The contact can be assured to move along the same path in radial and circumferential directions, and the reproducibility of the position of the contact is attained with high accuracy.

3,676,824
GEAR-DRIVEN TRIMMING POTENTIOMETER

John J. Mulqueen, Hopatcong, and Edward Schoettly, Madison, both of N.J., assignors to Vishay Intertechnology, Inc., Malvern, Pa.

Continuation-in-part of Ser. No. 7,562, Feb. 2, 1970, abandoned. This application Sept. 18, 1970, Ser. No. 73,580
Int. Cl. H01c 9/02
U.S. Cl. 338—162 6 Claims

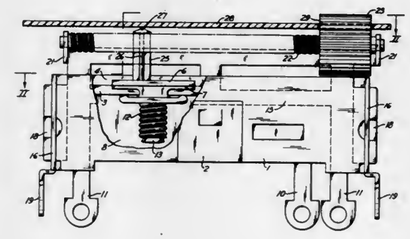


A trimming potentiometer comprising a base with a flange extending perpendicular to it and a cover that encloses the flange and is sealed to the base. Supported on the flange is an assembly comprising a post, a non-conductive plate on which an arcuate resistive path is disposed, a contact plate with a contact finger that presses against the resistive element, and a gear journaled on the shaft and releasably coupled to the plate to move the finger along the arcuate resistive path. The shaft, the plate and finger, and the gear are joined together, and a spring is provided to force the plate into engagement with the gear. The cover has a lead screw mounted in it with a head available to the outside and the threaded portion in mesh with the gear. The axial direction of the screw may be either perpendicular to the base or parallel with it.

3,676,825
SCREW ACTUATED LINEAR MOTION POTENTIOMETER

David A. Olson, Ridgway, Pa., assignor to Stackpole Carbon Company, St. Marys, Pa.

Filed July 8, 1971, Ser. No. 160,619
Int. Cl. H01c 9/02
U.S. Cl. 338—181 7 Claims

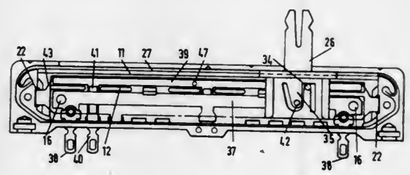


The front wall of the oblong case of a linear motion potentiometer is provided with a longitudinal slot, in which a slide is disposed. The slide carries a bridging contact inside the case, where it engages spaced parallel resistor and collector elements. In front of the case and parallel to the slot is a lead screw rotatably supported from the case. Rigidly mounted on one end of the screw is a member for rotating it. An arm that is rigidly joined to the slide extends outwardly across the screw and is provided with a portion registering with the screw thread. When the screw is turned, it will move the arm and slide lengthwise of the case.

3,676,826
SLIDE POTENTIOMETER

Henry Gazeley Howitt, Glamorgan, South Wales, assignor to A.B. Electronic Components Limited, Glamorgan, South Wales

Filed Oct. 20, 1971, Ser. No. 190,805
Int. Cl. H01c 5/02
U.S. Cl. 338—183 6 Claims

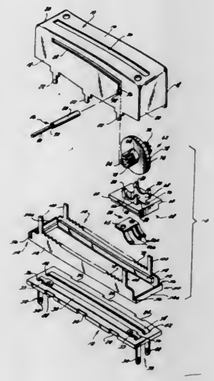


A pair of substantially identical body halves are jointed face to face to leave a slot in one surface for a slider. One or both body halves have a resistive track and a collector track including a center terminal. The slider has sliding contacts to connect the resistive track and collector track. A dust shield is mounted so as to be stationary in the body to prevent ingress of dust through the slot. The slider has cooperating body parts on either side of the dust shield so as to be slidable without moving the dust shield.

3,676,827
CONTROL MECHANISM FOR ADJUSTABLE ELECTRICAL DEVICE INCLUDING INDICATING MEANS

Yukihiko Nomura, Tokyo, Japan, assignor to Alps Electric Co., Ltd., Tokyo, Japan

Filed Nov. 24, 1971, Ser. No. 201,751
Int. Cl. H01c 9/02
U.S. Cl. 338—183 16 Claims



A control means for adjusting an electrical device having an adjustable parameter is provided in a simple, inexpensive and compact design. In the disclosed embodiment, the electrical device is a variable impedance device of the type having an electrical contact linearly movable within an elongated housing. The contact is carried by a slide which in turn is controlled by a rotatable control member operatively drivingly connected to the housing frame and having a control wheel extending through an elongated slot in the housing. The control member is provided with an axially located aperture receiving one end of an indicating pointer, that pointer having a portion of reduced cross section extending through a second longitudinal slot in the housing. The pointer is retained in its operative position within the aperture of the rotatable control member by the engagement of a shoulder thereon with the inner surface of the housing wall and is movable linearly along the housing with the slider and contact.

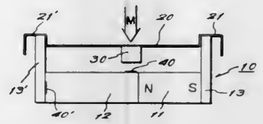
A scale means is adapted to cooperate with the pointer to provide accurate readout of the adjusted impedance value. In a preferred embodiment, that scale means is in the form of a transparent window opening in an outer casing generally in registration with the path of the pointer along the housing.

3,676,828
MAGNETIC SWITCHING APPARATUS

Noboru Masuda, Kawaguchi, and Tunekazu Kobayashi, Kawasaki City, both of Japan, assignors to Denki Onkyo Co. Ltd., Tokyo, Japan

Filed Oct. 14, 1970, Ser. No. 80,601
Claims priority, application Japan, Oct. 16, 1969, 44/98424; Oct. 16, 1969, 44/98425; Oct. 25, 1969, 44/101030
Int. Cl. H01c 7/16
U.S. Cl. 338—32 H 10 Claims

A switching apparatus comprised of a base with a magnet and a block made of magnetic material coupled to the magnet while contacting a magnetic pole surface of the magnet, a spring plate which is magnetically coupled to the base and which is extended between both ends of the base, a short-circuiting portion made of magnetic material which is located at a position opposite to and near the magnetic pole of the magnet of the block made of magnetic material of the base while the short-circuiting portion remains away from the base whenever the spring plate is at the home position, and at least one galvano-magnetro effect device which is located at a position

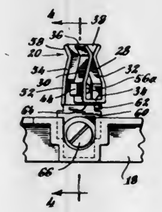


on the said magnetic block of the base so that the quantity of magnetic flux to which the galvano-magnetro effect device is exposed varies when the short-circuiting portion contacts the base.

3,676,829
CONTACT SPRING ASSEMBLY

Albert J. Gartland, Jr., Trumbull, and Michael J. D'Amato, New Haven, both of Conn., assignors to Harvey Hubbell Incorporated, Bridgeport, Conn.

Filed Oct. 30, 1970, Ser. No. 85,471
Int. Cl. H01r 27/00
U.S. Cl. 339—33 10 Claims



A female power contact assembly is provided for both parallel and tandem blades or any combination thereof. The assembly comprises two contact arms constituting a U-shaped contact for tandem blades, and a single contact arm riveted to one side of the U-shaped contact and constituting a second contact therewith for parallel blades. The single contact arm is part of a combination of a contact arm and binding plate.

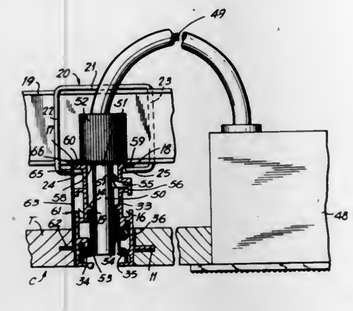
3,676,830
MULTIPLE ACCESS ELECTRIC POWER DISTRIBUTION ASSEMBLY

Anthony C. Donato, Westfield, N.J., assignor to Lightoller Incorporated, New York, N.Y.

Filed Sept. 16, 1970, Ser. No. 72,615
Int. Cl. H01r 9/00
U.S. Cl. 339—21 R 11 Claims

An elongated electrical distribution assembly in the nature of a channel or track and connectors therefor, adapted to be

incorporated in a ceiling structure and providing access for readily effecting electrical connection from both above and

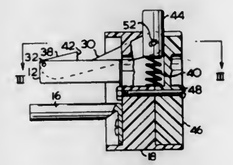


below the supported ceiling structure at multiple displaced positions along the length thereof.

3,676,831
ELECTRIC PLUG

Carey Bergwall, 1005 1st St. S.W., Calgary 3, Alberta, Canada

Filed March 12, 1970, Ser. No. 18,898
Claims priority, application Canada, Dec. 5, 1969, 069,106
Int. Cl. H01r 13/62
U.S. Cl. 339—74 R 8 Claims

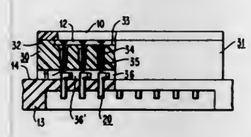


A simple inexpensive electric plug will lock into a wall socket. It accommodates a latch which fits, edgewise into a pin so as to give a great depth of locking surface. A cam-like incline automatically depresses the latch as it enters the socket or receptacle and a spring causes the latch to engage with the rear face of the receptacle front moulding. The latch may be depressed (so that the plug may be removed) by means of a pushbutton.

3,676,832
CONNECTOR

Robert L. Judge, and Eugene S. Pearson, both of Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 28, 1970, Ser. No. 101,662
Int. Cl. H01r 13/62
U.S. Cl. 339—75 M 10 Claims

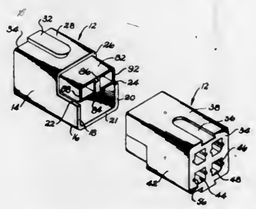


A female connector for insertion into a printed circuit board and the like, the connector comprising an axially extending conductive tubular body portion having a loop-type receptacle at one terminal end of the body portion, the loop having a greater dimension than the diameter of a male connector-type pin so as to permit essentially zero axial force insertion of the pin into the receptacle. The receptacle includes a pair of resilient, radially projecting arms which converge from the receptacle and in conjunction with the receptacle define a converging path between the receptacle and the arms whereby relative lateral motion between the pin and female connector causes the pin to be engaged and retained by and between the pair of resilient arms. Also disclosed is apparatus for shifting one of or creating relative lateral movement between the pin and connector when the connectors are mounted respectively in a module element and a substrate element.

3,676,833
HERMAPHORODITE ELECTRICAL CONNECTOR

George S. Johnson, Canoga Park, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Oct. 30, 1970, Ser. No. 85,361
Int. Cl. H01r 25/00
U.S. Cl. 339—49 R 2 Claims

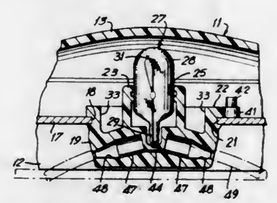


An electrical connector formed of an insulating member having a plurality of contact passageways. The passageways have an enlarged slotted section which divide each passageway into a first portion and a second portion. A contact terminal inserted in the passageway contains a pair of folded sections whose width is less than the width of the first portion but greater than the width of the second portion. A mounting flange portion which is formed adjacent a mating surface section of one of the folded sections of the contact terminal is insertable in the slotted section and one folded section is positioned in the first portion of the passageway. The insulator member is matable with a second identical insulator member utilizing identical contacts. The contacts are removably mounted in the housing.

3,676,834
VEHICLE LAMP

Robert M. Kaldor, Laurelton, Long Island, N.Y.; Joseph V. Borruso, Edison, N.J., and Elliott Goldbaum, Brooklyn, N.Y., assignors to Signal-Stat Corporation, New York, N.Y.

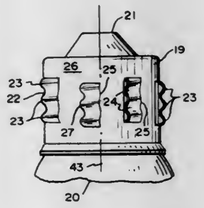
Filed Nov. 12, 1970, Ser. No. 88,788
Int. Cl. H01r 13/48
U.S. Cl. 339—59 L 9 Claims



A vehicle lamp especially suitable for resiliently mounting and electrically connecting a wedge-type bulb. The rigid lamp

base receives a resilient socket having integrally molded contacts and the bulb is gripped above its base on the envelope portion to retain it in the socket and resiliently isolate it from road shocks.

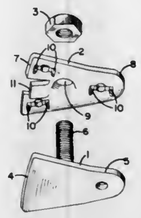
3,676,835
ELECTRICAL CONNECTOR
James A. Holly, Richton Park, Ill., assignor to Hollymatic Corporation, Park Forest, Ill.
Continuation-in-part of Ser. No. 111,571, Feb. 1, 1971, abandoned. This application April 20, 1971, Ser. No. 135,553
Int. Cl. H01r *9/12, 17/04*
U.S. Cl. 339—73 **11 Claims**



An electric current carrying device such as an electric light bulb releasably receivable in a socket in which the device comprises a mounting base with an electrically conducting peripheral wall which may be of metal, an inner electrically conducting wall which may also be of metal in the socket for receiving the base in electrical contact, a helical screw thread on either the base or the socket wall and a plurality of circumferentially spaced spring tabs on the other wall. Each tab has a plurality of ridges spaced from each other in a direction parallel to the axis of the base or socket with each ridge lying along a section of a helix of substantially the same pitch and dimensions as those of the screw thread for engaging in the screw thread and retaining the base in the socket in its innermost position. The spring tabs are elongated and each has one edge that is parallel to the axis fixed to its wall as by being integral therewith and an opposite edge free in a cantilever construction and spaced from its wall with the result that when the base is inserted in the socket the tabs are compressed toward their wall to exert a holding spring action serving to retain the base in the socket and the helical section ridges on the tabs engage the screw thread at a plurality of circumferentially spaced areas not only to securely retain the base in the socket but also to provide good electrical contact between the walls and, as in the case of a light bulb, between the end contact members on the base and socket.

3,676,836
UNIVERSAL SHEATH BOND FOR COMMUNICATIONS CABLE
George W. Gillemot, 2615 Naple, Venice, Calif., and John T. Thompson, 19201 Wells Drive, Tarzana, Calif.
Continuation of Ser. No. 765,158, Oct. 4, 1968, abandoned. This application Oct. 1, 1970, Ser. No. 77,371
Int. Cl. H01r *7/18*
U.S. Cl. 339—97 R **57 Claims**

A universal attachment for bonding all sizes of shielded cables comprising a wedge-shaped shoe adapted to be inserted under the shielding of the cable, the shoe supporting a threaded post, and an anchor plate adapted to be positioned over the post whereupon a locking nut tightly secures substantial areas of the cable sheath and the shielding compressed between the shoe and anchor plate. The threaded post permits bonding of the shielding of the cable to that of other cables by means of an elongated strip of metal having holes therein adapted to fit over the post and be locked in place with a



second locking nut. An extension on the anchor plate permits the ready grounding of the shielding.

3,676,837
MULTIPLE CONDUCTOR CABLE CONNECTOR
Albert P. Newman, Springfield Township, Hamilton County, Ohio, assignor to Empire Products, Inc., Cincinnati, Ohio
Division of Ser. No. 761,254, Sept. 20, 1968, Pat. No. 3,588,783. This application July 1, 1970, Ser. No. 60,198
Int. Cl. H01r *13/58*
U.S. Cl. 339—103 R **1 Claim**

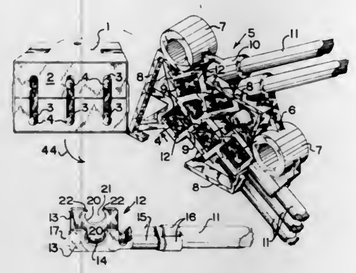


A terminal connector for a multiple conductor electrical cable is provided which may readily be applied to the cable by the user rather than being integrally molded to the cable by a connector manufacturer. Union of leads to contacts is made, such contacts being within a contact holder, and the contact holder is then bodily incorporated into an insulating sleeve of resilient material. Despite the resiliency of the material of the sleeve, once the contact holder and sleeve are integrated, separation is prevented by providing a rib in one which extends into a groove in the other, and disposing a close fitting rigid jacket about the sleeve so that flexibility of the resilient sleeve is diminished. Retention of cable within sleeve by means of a partial ring, and of a female contact which spring loads an entering male contact, are both also contemplated.

3,676,838
ELECTRICAL CONNECTORS
Marvin E. Hartz, Grosse Pointe Farms; Anthony J. Tsormina, Detroit, and Stephen J. Grebik, Roseville, all of Mich., assignors to Essex International, Inc., Fort Wayne, Ind.
Filed May 22, 1970, Ser. No. 39,658
Int. Cl. H01r *11/22*
U.S. Cl. 335—217 R **8 Claims**

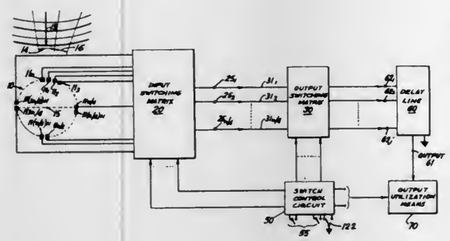
An electrical connector assembly comprises a spherical or ball terminal and a socket adapted to receive the ball and having a substantially U-shaped configuration including a pair of opposed sides or arms spaced apart a distance less than the diameter of the ball, each of the arms having an opening therein of smaller diameter than that of the ball. Preferably,

each of the arms of the socket has a slot which communicates with its associated opening, each slot including an inwardly



tapering throat portion which functions to guide the ball terminal into the openings.

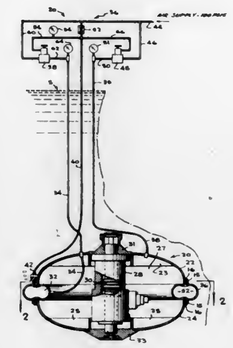
3,676,839
SWITCHING APPARATUS FOR A PHASED TRANSDUCER ARRAY
Charles J. Wohl, Englewood Cliffs, N.J.; Jonathan L. Schere, Hartsdale, and Thomas V. Costello, Bronx, both of N.Y., assignors to Edco Corporation, College Point, N.Y.
Filed Nov. 10, 1969, Ser. No. 875,315
Int. Cl. G01s *3/00*
U.S. Cl. 340—6 R **5 Claims**



Analog switching apparatus electrically focuses a phased transducer array by interconnecting the outputs of selected transducer elements with selected taps of a multitapped electrical delay line. A first portion of the switching apparatus selects a subset of the transducer array to define a focusing search sector, and a second switching apparatus portion sequentially advances through a complete switching cycle for each transducer subset selection to traverse the focus of the array across the search sector in discrete increments.

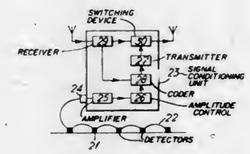
3,676,840
UNDERWATER SEISMIC ACOUSTIC ENERGY SIGNAL SOURCE
Marvin G. Bays, Jackson, Miss., assignor to Delta Exploration Company, Inc., Jackson, Miss.
Filed Sept. 9, 1970, Ser. No. 70,794
Int. Cl. H04b *11/00*
U.S. Cl. 340—12 **13 Claims**

An acoustic signal means is provided with two signal radiating hollow shell members which are connected by a hydraulic cylinder for outward relative movement with an inflatable toroidal connector member connecting circular edges of the shell members to define a main interior chamber with the shell members and pressure regulating means for maintaining pressure on the interior of the toroidal member at a level slightly higher than the maximum pressure differential between the main interior chamber and the external environment and also



having pressure regulating means for maintaining an average pressure in the internal chamber substantially equal to the external pressure.

3,676,841
SEISMIC PROSPECTING WITH A CONTINUOUS SEISMIC SOURCE
Nigel Allister Anstey, 12, Percival Road, Orpington, Kent, England
Filed Sept. 11, 1969, Ser. No. 857,123
Claims priority, application Great Britain, Sept. 13, 1968, 43,640/68
Int. Cl. G01v *1/28*
U.S. Cl. 340—15.5 CC **11 Claims**

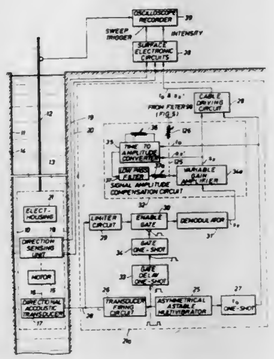


A method of seismic prospecting involves making seismic records utilizing a seismic source in substantially continuous operation and motion, and in which a first signal representative of the time-variant and space-variant waveform radiated from the moving seismic source is derived directly therefrom, while a second signal is derived indirectly therefrom via a detector array, and after filtering these signals if necessary the first signal is divided into segments which are each cross-correlated and matched with their counterpart(s) in a segment of the second signal having the same starting time as the first-signal segment but a duration extended beyond that of the first-signal segment by a period representing the maximum seismic travel time of interest, the time-shift between the first-signal segment and its counterpart(s) in the second-signal segment being detected and recorded. Apparatus for performing this method of seismic prospecting is also provided, which consists essentially of a continuous seismic source, a transducer responsive directly to that source, a detector array, communication linkages and a recording station.

3,676,842
WELL LOGGING METHODS AND APPARATUS

Jimmy G. Lee, Houston, Tex., assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed Dec. 29, 1969, Ser. No. 888,579
Int. Cl. G01v 1/28, 1/36
U.S. Cl. 340—15.5 BH **26 Claims**

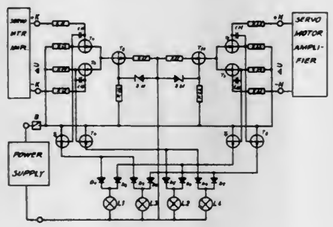


In accordance with illustrative embodiments of the present invention, techniques are disclosed for compensating acoustic well logging measurements for variations in one or more conditions of a well bore. More particularly, these measurements are compensated for variations in well bore cross-section, and well bore fluid acoustic impedance and velocity. These compensation techniques have particular significance in connection with systems of the type which scan a well bore wall by rotating a transducer means which emits directional bursts of high frequency acoustic energy and receives energy reflected off the bore wall. The electrical signals produced by this received energy are suitably processed to provide information relative to the character of the media forming the well bore wall.

3,676,843
DIRECTIONAL AND PITCH TRIM INDICATOR FOR AUTOMATIC PILOTS

Karlhans Schwartz, Owingen, Germany, assignor to Bodenseewerk Gerätetechnik GmbH, Uberlingen/Bodensee, Germany

Filed April 27, 1970, Ser. No. 32,068
Claims priority, application Germany, Apr. 30, 1969, P 19 22 076.9
Int. Cl. B64c 13/18
U.S. Cl. 340—27 R **2 Claims**

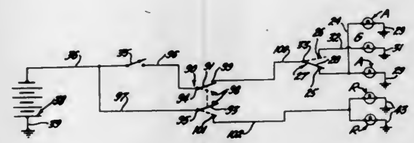


Four lights are positioned in a square. When a directional correctional signal from an autopilot exists for a predetermined length of time and is above a given magnitude, lights at one or the other sides of the square are lighted to indicate that face and the direction involved. When a pitch correctional signal from the autopilot exists for a predetermined length of time and is above a given magnitude, lights at one or the other ends of the square are lighted to indicate that fact and the particular pitch involved.

3,676,844
AUTOMOTIVE VEHICLE SIGNAL LIGHT WARNING METHOD

Jack R. Hendrickson, 3665 Burning Tree Drive, Bloomfield Hills, Mich.

Division of Ser. No. 728,935, May 14, 1968, abandoned. This application April 26, 1971, Ser. No. 137,511
Int. Cl. B60q 1/26
U.S. Cl. 340—71 **6 Claims**

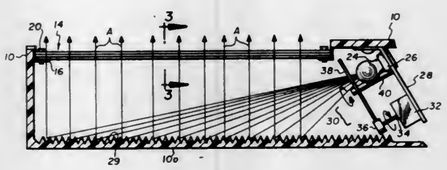


An automotive vehicle rear end signal light warning method for signaling changes in the condition of an automotive vehicle's accelerator for use with an automotive vehicle which utilizes a convention method of warning as to application of the vehicle's brakes consisting of energizing at least one red light visible from the rear of said vehicle. Said warning method comprising signaling one or the other of two conditions of the vehicle, to wit: the under power and not under power conditions of the vehicle, by utilizing a first switch other than said brake switch in one position thereof to energize at least one colored signal light other than a red brake signal light visible from the rear of said vehicle, signaling a change from one to the other of said two conditions of the vehicle by throwing said first switch to another position to de-energize said colored signal light, signaling a change from the other to the one of said two conditions of the vehicle by throwing said first switch from said other position to said one position to re-energize said colored signal light, and disabling said colored signal light from being energized by opening a normally closed actuated open second switch other than said brake switch upon closing of said brake switch, said method operative in conjunction with said conventional method of warning as to application of the vehicle's brakes.

3,676,845
TURN SIGNAL INDICATING SYSTEM

Anthony Siksai, 2705 Lahser Road, Bloomfield Hills, Mich.

Filed Feb. 19, 1970, Ser. No. 12,603
Int. Cl. B60q 1/38
U.S. Cl. 340—87 **9 Claims**

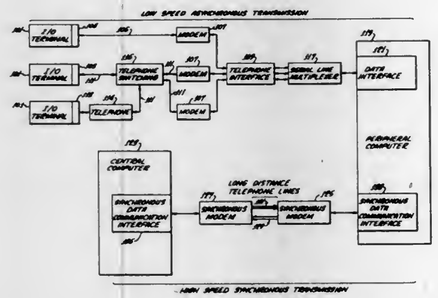


A turn signal indicating system for a vehicle wherein a rotary and a stationary polarized sheet are mounted with respect to an end of a vehicle, along with a light source. A light intercepting sheet having a pattern of embossed lines formed thereon is disposed in the path of the light between the polarized sheets so that, upon rotation of the rotary sheet, traveling shadows are produced which give the illusion of linear motion in the direction to be turned.

3,676,846
MESSAGE BUFFERING COMMUNICATION SYSTEM

Michael D. Busch, Corona Del Mar, Calif., assignor to Call-A-Computer, Inc.

Division of Ser. No. 766,384, Oct. 9, 1968, Pat. No. 3,560,936.
This application July 9, 1970, Ser. No. 61,007
Int. Cl. G08c 25/00
U.S. Cl. 340—146.1 BA **8 Claims**



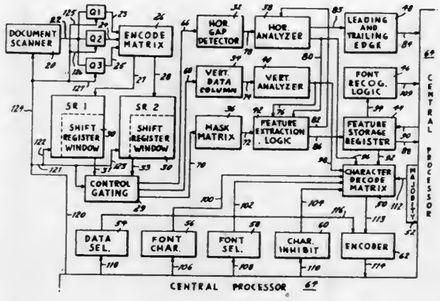
Apparatus and method for transmitting data on a time-shared basis between a plurality of low-speed sources and a high-speed source over a communication circuit. Byte-serial data is initially transmitted at a relatively low rate from a plurality of remote sources (terminals) to a nearby peripheral computer which temporarily stores the incoming data in a memory unit and arranges it into strings of data blocks. The stored data is later transmitted as messages of one or more data blocks at a much faster rate over a communication circuit to a central computer. These data blocks may be either text blocks containing the temporarily stored data or control blocks containing information regarding the status of remote terminals. In addition, each message contains an acknowledge block whose purpose is to facilitate the detection and correction of data transmission errors. The central computer checks all incoming blocks for errors and acknowledges only those that have been correctly received. Blocks received in error by the central computer are not acknowledged, and are retransmitted by the peripheral computer until they are correctly received. Conversely, messages consisting of acknowledge, text, and control blocks are transmitted from the central computer to the peripheral computer over the communication circuit at high speed, the data is temporarily stored in the peripheral computer's memory and is later transmitted to the correct remote destination (terminal) at low speed. Error detection and correction performed on these messages is similar to those performed on messages traveling in the opposite direction.

3,676,847
CHARACTER RECOGNITION SYSTEM WITH SIMULTANEOUS QUANTIZATION AT A PLURALITY OF LEVELS

Melvin E. Partin, Montgomeryville, Pa., assignor to Scan-Data Corporation, Norristown, Pa.

Filed June 15, 1970, Ser. No. 46,091
Int. Cl. G06k 9/10
U.S. Cl. 340—146.3 AC **5 Claims**

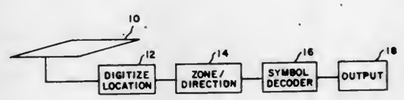
A character recognition system is provided which includes a plurality of quantizers for generating a binary quantization signal at a plurality of levels of a character pattern sampled within a field on a document. The character recognition system also includes means for sampling the character pattern at each of the plurality of levels of quantization substantially concurrently.



3,676,848
MACHINE RECOGNITION OF SYMBOLS

Ronald Edward Hall, Denver, and Larry Norman Hulbert, Littleton, both of Colo., assignors to Ferroxcube Corporation, Saugerties, N.Y.

Filed Oct. 13, 1970, Ser. No. 80,261
Int. Cl. G06k 9/00
U.S. Cl. 340—146.3 AC **6 Claims**



Character recognition system employing zone and direction encoding and decoding to recognize hand drawn real-time characters.

3,676,849
MULTI DIGIT VERIFICATION APPARATUS AND METHOD

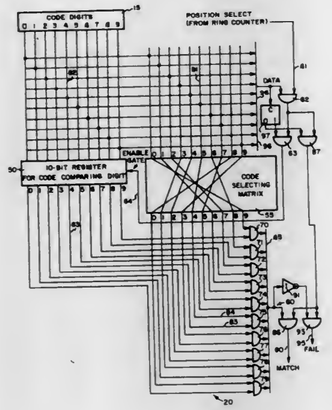
George H. Malandro, 306 Dana St., Fremont, Calif.; Peter White, 2811 Woolsey St., Berkeley, Calif., and Henry J. Javora, 1499 Crosley Lane, San Jose, Calif.

Filed June 5, 1970, Ser. No. 43,674
Int. Cl. G08b 29/00; G08c 9/00; G06f 11/10
U.S. Cl. 340—149 R **17 Claims**

Apparatus for verifying an intended user of an identification code. An operator enters the characters of the identification code into the apparatus by a suitable device, such as a keyboard, and the entered identification code is compared for verification by a predetermined relationship among the characters of the identification code. The predetermined relationship is checked by the apparatus of the present invention to control the operation of a signalling device or a control mechanism.

Each identification code comprises a plurality of sets of characters. Each set of characters includes a code selecting character and a code comparing character. There is a comparator circuit for each code selecting character position in the entered identification code. Each comparator circuit serves to compare for verification the code comparing character of its associated set of characters with the preselected code within the apparatus selected by the code selecting character of the associated set of characters. Should

all the comparator circuits produce match output signals, then the apparatus verifies the user as an intended user. Should one or more comparator circuits fail to produce a match output signal, then the apparatus does not verify the user as an intended user.



3,676,850

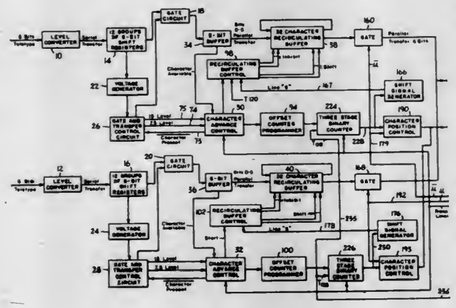
VIDEO DISPLAY SYSTEM

David A. Goldman, Yorktown Heights, and Henry N. Oppenheimer, Larchmont, both of N.Y., assignors to Columbia Broadcasting System, Inc., New York, N.Y.

Continuation of Ser. No. 734,082, June 3, 1968, abandoned. This application Feb. 11, 1971, Ser. No. 114,669

Int. Cl. G08b *23/00*

U.S. Cl. 340—154 **5 Claims**



Teletype information signals from two different stock exchanges are stored in respective recirculating registers. Under the control of timing signals, the contents of the two registers are periodically advanced and alternately supplied to a character generator which converts the coded teletype information into an electronic array of corresponding letters or figures. Each array is sequentially scanned by a controlled electrical commutator and the scanned signals are supplied to a cathode ray tube for reproduction. The horizontal and vertical scanning coils for the tube are rotated 90° from their usual positions such that information signals are displayed as advancing transversely across the face of the device.

3,676,851

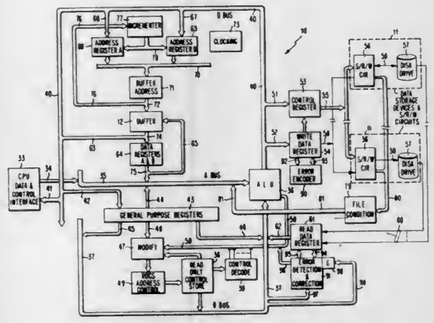
INFORMATION RETRIEVAL SYSTEM AND METHOD

Hal P. Eastman, Del Mar, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed March 31, 1970, Ser. No. 24,266

Int. Cl. G06f *11/00, 71/28*

U.S. Cl. 340—172.5 **11 Claims**



Information retrieval employing a search argument which is compared to a specified part of each of the stored data records that are searched. The search is conducted sequentially in the specified part of the record until a decision of non-equality is made or the entire part searched and found equal. A small portion of the record spanning the point of non-equality is stored. The search is then continued, called a "second search," until another decision of non-equality is made or the remainder of the part searched and found equal. Error detection of the record is then made. The resultant error syndrome is checked to determine whether an error occurred and, if so, whether it occurred in the specified part at or before the point of decision. If either no error occurred or it occurred after the point of decision, the result of the first search is correct and no error correction is required for the search. If the error occurred at the point of decision, the error is corrected and the corrected portion compared to the corresponding portion of the search argument and the result analyzed together with the first and second searches to determine the results of the search. If the error occurred prior to the point of decision, the specified part of the record is again read and the correction made to the erroneous portion thereof and analyzed to determine the results of the search.

3,676,852

MULTIPLE PROGRAM DIGITAL COMPUTER

Roger E. Abernathy, Boca Raton, Fla., and Nicholas S. Mitrofanoff, Rochester, Mich., assignors to International Business Machines Corporation, Armonk, N.Y.

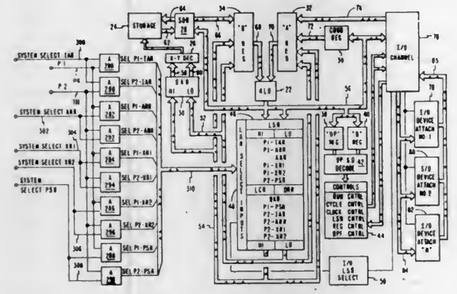
Filed July 20, 1970, Ser. No. 57,380

Int. Cl. G06f *9/18*

U.S. Cl. 340—172.5 **11 Claims**

A programmed data processor having addressable core storage, a central processing unit having one or more I/O

devices connected with it, two sets of program control registers—one for each of two program levels, and a switching mechanism for operating the central processing unit in two different program levels.



3,676,853

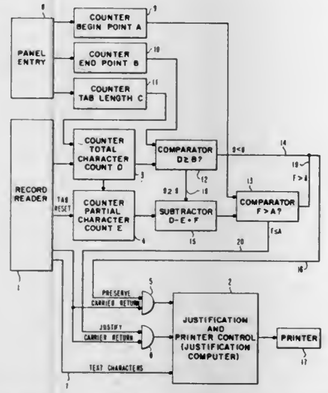
SYSTEM FOR CONTROLLING FORMAT

David W. Terry, Georgetown, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed April 6, 1970, Ser. No. 25,710

Int. Cl. H04q *1/18;* **G05b** *1/01*

U.S. Cl. 340—172.5 **6 Claims**



A system which accepts an input tape and provides an output copy having both preserved line endings and justified lines which are controlled and determined by means of a variable width control zone. The width of the zone may be varied to assure proper line endings. The occurrence of a total overlap of the zone will result in justified lines, whereas a partial, or no overlap will result in preserved line ending regardless of the side of the zone involved.

3,676,854

KEYBOARD TO TAPE DATA INPUT PREPARATION UNIT

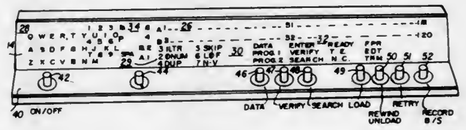
Heinz H. Findeisen, Milford, Mass.; James D. Kallmeyer, Springfield, Ill.; David G. Sokol, Auburn; James H. Stein, Auburn, Ill.; Thomas R. Thomas, Springfield, Ill., and Jack R. Bowers, Petersburg, Ill., assignors to Sangamo Electric Company, Springfield, Ill.

Filed May 1, 1970, Ser. No. 33,723

Int. Cl. G06f *3/06, 3/10*

U.S. Cl. 340—172.5 **34 Claims**

A data input preparation machine having keyboard means for use in entering data into buffer storage and processing such data to and from magnetic tape. The buffer storage includes a plurality of positions, each of which positions has storage means for both program and data information. Automatic verification means provide automatic verification of program entries at machine speeds, and memory and field backspace keys permit automatic backspacing to the previously keyed character of the most significant position of a field. The most significant position entries in the program section of buffer storage are also used for the LOF sequences for individual characters in such field, the transport being from the more significant positions of the field to the less significant positions of the field. Alphanumeric display means provide display of characters in a pattern identical to the character pattern on the keyboard; individual members for identifying the selected positions in memory, and alphanumeric program field identifiers all of which materially reduce operator time in the data processing operation. Novel register and memory arrangements using a reduced amount of equipment minimize the cycle process time for both program and data entry.



3,676,855

CONNECTING NETWORK ARRANGEMENT FOR TIME SWITCHING

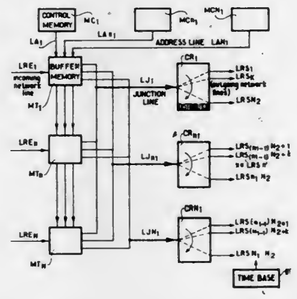
Francois Tallegas, La Clarte Ploumanach, France, assignor to C.I.T.-Compagnie Industrielle des Telecommunications, Paris and Societe Lannionnaise D'Electronique, Lannion, France

Continuation-in-part of Ser. No. 692,144, Dec. 20, 1967, abandoned. This application Aug. 11, 1970, Ser. No. 62,935

Claims priority, application France, Dec. 23, 1966, 6688745

Int. Cl. H04m *3/00, 9/00*

U.S. Cl. 340—172.5 **6 Claims**

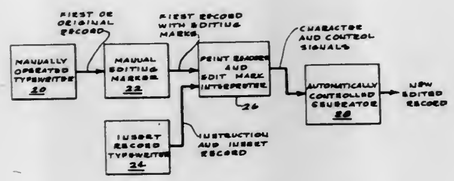


The invention relates to a connecting network arrangement, in a system for the time switching of analog or digital data comprising one buffer memory per incoming network line, a distributor serving a certain number of outgoing network lines, a junction line serving each distributor, and a control memory being allocated to each junction line.

3,676,856
AUTOMATIC EDITING SYSTEM AND METHOD

Ron Manly, P.O. Box 201, Hawthorne, Calif.

Continuation of Ser. No. 275,415, April 24, 1963. This application Aug. 11, 1970, Ser. No. 63,020
Int. Cl. G06f 11/00; B41j 5/30
U.S. Cl. 340—172.5 59 Claims

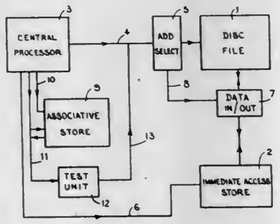


This specification and drawings disclose how to avoid manually retyping or rekeyboarding textual material when revising or correcting the information contained in a record either while originally preparing the information or at a later date. The use of print readers or character recognition devices to accomplish this "editing" is disclosed, as well as editing using paper tape typewriters, display devices, and other means such as using editing instructions. Methods are also disclosed for automatically reformatting the information into lines after insertions, deletions, or other changes requiring shifting of the line layout of the information.

3,676,857
DATA STORAGE SYSTEMS

Howard Rodney Jackson, Hadfield, Hyde, England, assignor to International Computers Limited, Putney, London, England

Filed Aug. 12, 1970, Ser. No. 63,163
Claims priority, application Great Britain, Aug. 26, 1969, 42,337/69
Int. Cl. G06f 7/22
U.S. Cl. 340—172.5 6 Claims

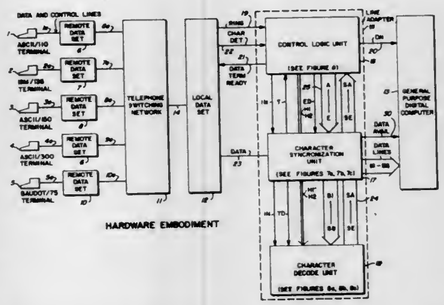


A system for storing data in which data is read out of and written into a large, addressable, bulk store by means of an immediate access store. An associative store is initially loaded with address information and upon a signal from a central processor unit, the address information is read out of the associative store to a test unit which calculates a desired address in the bulk store. The address is then applied to an address selection circuit which allows data to be read out of or written into a desired storage location in the bulk store.

3,676,858
METHOD, APPARATUS AND COMPUTER PROGRAM FOR DETERMINING THE TRANSMISSION RATE AND CODING CONFIGURATION OF REMOTE TERMINALS

De Ver C. Finch, and James A. Kennedy, both of Phoenix, Ariz., assignors to Honeywell Information Systems Inc.

Filed Sept. 30, 1970, Ser. No. 76,726
Int. Cl. G06f 3/00
U.S. Cl. 340—172.5 10 Claims

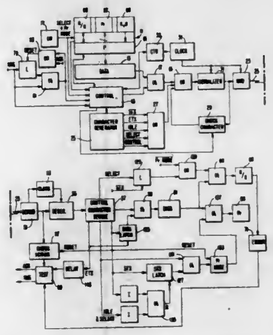


A method, an apparatus, and a computer program are disclosed for determining the transmission rate and coding configuration which characterize dissimilar remote terminals in a time-shared computer system. Electrical communication is established between an individual remote terminal and a line adapter unit, a single standard character is then transmitted from the remote terminal to the line adapter unit. The standard character is immediately analyzed either by hardware or by software to determine which one of a variety of transmission rates and code configurations characterize the particular terminal. In response to the analysis of the standard character, data communication is established between the remote terminal and the computer at the indicated transmission rate and in the indicated code.

3,676,859
DATA COMMUNICATION SYSTEM INCORPORATING DEVICE SELECTION CONTROL

John T. Hollaway, Austin, Tex., and Carl O. Pingry, III, Lexington, Ky., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 23, 1970, Ser. No. 100,998
Int. Cl. G06f 3/04, 3/10; H04l 7/00
U.S. Cl. 340—172.5 6 Claims



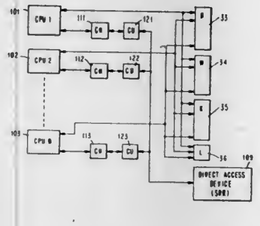
A data communication system incorporating control means at the transmitting station for selecting which of several output

devices at the receiving station will record the transmitted data. Selection of the output device governs the data rate of the transmitted information. Error control means at the receiving station operates to signal the transmitting station to select a predesignated output device for recording messages previously received in error on another output device. The error control means is responsive both to errors induced by the communication channel and recording errors induced by the output device.

3,676,860
INTERACTIVE TIE-BREAKING SYSTEM

William W. Collier, and Ronald M. Smith, both of Wappingers Falls, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 28, 1970, Ser. No. 101,720
Int. Cl. G06f 9/18; G05b 19/22; G06r 15/16
U.S. Cl. 340—172.5 10 Claims



A multiple processor tie-breaking method separately and asynchronously used by each of any number of plural processors contending for a serially reusable resource (SRR). The contending processors independently and asynchronously interact in their use of the tie-breaking method to choose among themselves which processor will get the SRR.

The method uses a common group of registers (or fields) accessible to all contending processors. The method permits uncoordinated fetching and storing of bits in those registers. Only one bit at a time need be fetched or changed by any processor. In fact, the plural independent processors can concurrently fetch or store the same bit in the common group of registers without affecting the reliability of the method.

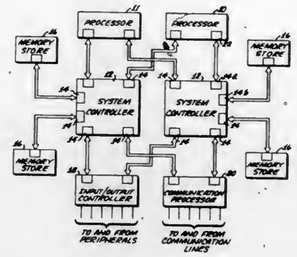
The priorities among processors dynamically change with every contention in a manner which gives each processor an equitable and equal chance of getting the SRR.

3,676,861
MULTIPLE MASK REGISTERS FOR SERVICING INTERRUPTS IN A MULTIPROCESSOR SYSTEM

Richard L. Ruth, Paradise Valley, Ariz., assignor to Honeywell Information Systems Inc., Waltham, Mass.

Filed Dec. 30, 1970, Ser. No. 102,771
Int. Cl. G06f 13/00, 15/16
U.S. Cl. 340—172.5 10 Claims

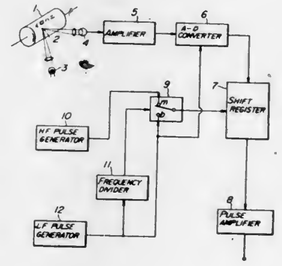
Multiple mask registers located in a system communication controller enable each processor in a multiprocessing system to be a control processor and thereby select and execute interrupts on a priority basis. An executive program which supervises a processor loads its mask register with information according to the priority of the operation to be performed by the processor to control the answering of communication from itself and other modules of the processing system. The system controller includes an interrupt cells register associated with all of the mask registers. The interrupt cells store the existence of an interrupt request and are arranged in a predetermined priority which is altered by each mask register for each control processor.



3,676,862
SIGNAL CONVERSION SYSTEM WITH TIME BASE COMPRESSION OF THE INPUT DATA

Kaoru Sasabe, Ikeda, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 740,348, June 26, 1968, abandoned. This application June 30, 1971, Ser. No. 158,514
Claims priority, application Japan, June 30, 1967, 42/42714
Int. Cl. G06f 5/06
U.S. Cl. 340—172.5 3 Claims



A signal conversion system in which coded signal pulses to be transmitted to a remote place, for example, pulses of coded facsimile signal, are stored in at least one shift register in synchronization with clock pulses and said signal pulses stored in the shift register are let out by quickening the shift cycle of the shift register when a predetermined number of said signal pulses have been entered in the shift register, thereby providing compressed and discrete sequences of signal pulses which can be put in, for example, the horizontal or the vertical flyback interval of a television signal to be transmitted through the latter's transmission channel.

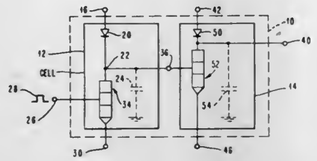
3,676,863
MONOLITHIC BIPOLAR DYNAMIC SHIFT REGISTER

Irving T. Ho, Poughkeepsie, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed March 11, 1970, Ser. No. 18,583
Int. Cl. G11c 11/24, 19/00
U.S. Cl. 340—173 CA 9 Claims

A monolithic memory including a plurality of intercon-

nected cells. Each cell includes a diode in series with bipolar



device or transistor which is dynamically or pulse powered. Parasitic capacitors are used as storage elements.

3,676,864

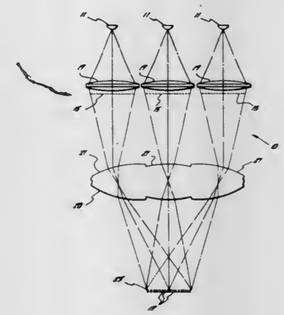
OPTICAL MEMORY APPARATUS

Douglas Raymond Maure, Santa Ana, and Barry Glenn Broome, Azusa, both of Calif., assignors to Optical Memory Systems, Inc., Santa Ana, Calif.

Filed June 29, 1970, Ser. No. 50,367

Int. Cl. G11c *13/04*

U.S. Cl. 340—173 LM **18 Claims**



An optical apparatus is disclosed having a lens system positioned between an array of light emitters and an array of light sensors for ensuring optimum energy transfer therebetween. In the apparatus, optical masks are positioned between the arrays of light emitters and light sensors with each mask having a bit location defined where each light transmission path between an emitter and a sensor intersects the mask. The lens system comprises an array of condenser lenses for concentrating the light energy from the emitters and projecting it through each mask to either a segmented primary lens or an image relay lens-combining lens combination, either of which functions to superimpose the images of all the masks onto a common image plane. The light sensors are positioned at the respective superimposed bit locations on the image plane for receiving the light energy projected thereon.

3,676,865

HIGH FREQUENCY SIGNAL MEMORY AND REGENERATOR

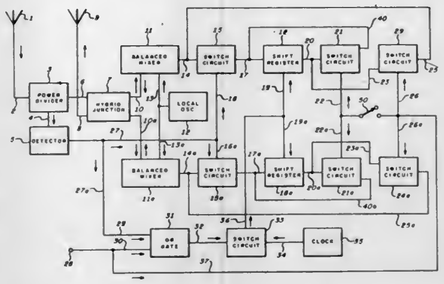
Harry F. Strenglein, Clearwater, Fla., assignor to Sperry Rand Corporation

Filed Jan. 6, 1971, Ser. No. 104,370

Int. Cl. G11c *19/00, 21/00*

U.S. Cl. 340—173 RC **12 Claims**

Apparatus for storing high frequency pulse signals affording cycle-by-cycle storage of the carrier wave without degenera-



tion over large periods of time permits undistorted regeneration of the original pulse signal on command.

3,676,866

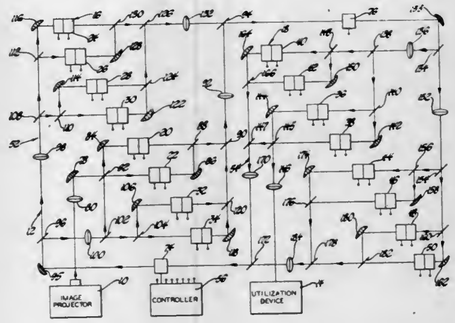
OPTICAL IMAGE DATA PROCESSING SYSTEM

Morris D. Freedman, Southfield, Mich., assignor to The Bendix Corporation

Filed Jan. 6, 1971, Ser. No. 104,406

Int. Cl. G11c *5/00, 11/32, 19/00*

U.S. Cl. 340—173 LT **16 Claims**



An optical image data processing system incorporating a processor that includes arrays of image storage devices each having write, store and read modes of operation and each being capable of inverting an image. The image storage devices are coupled by optical networks so that each receives the proper illumination and in a programmed sequence determined by a controller which determines the operating mode of the devices. One array of the devices is capable of shifting the optical image to facilitate analyzing the optical image for different information while another array can store this information.

3,676,867

USE OF MNALGE IN MAGNETIC STORAGE DEVICES

Donald Dingley Bacon, Somerset; Ethan Allen Nesbitt, Berkeley Heights; Richard Curry Sherwood, New Providence, and Jack Harry Wernick, Madison, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

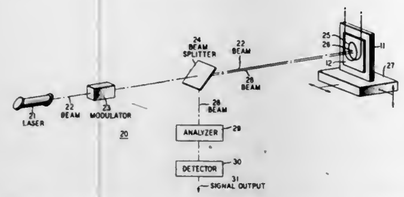
Filed Dec. 7, 1970, Ser. No. 95,707

Int. Cl. G11c *11/14, 11/42*

U.S. Cl. 340—174 YC **10 Claims**

It has been found that vapor deposition of the ferromagnetic material MnAlGe onto a substrate will give a thin film having

the easy direction of magnetization normal to the substrate. This unusual capability does not depend on epitaxial growth and, indeed, the preferred embodiment calls for the use of an



amorphous substrate. This inherent property of MnAlGe makes it useful for the class of magnetic devices operating on the principle of the reversal of the direction of magnetization of isolated regions for the purpose of information storage.

3,676,868

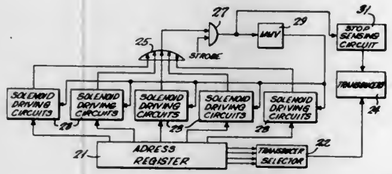
RANDOM ACCESS MAGNETIC STORAGE SYSTEM WITH MOVABLE TRANSDUCER

Eleuthere Poumakis, 50 Oak Court, Danville, Calif.

Continuation of Ser. No. 581,593, Sept. 23, 1966, abandoned. This application Dec. 10, 1969, Ser. No. 886,311

Int. Cl. G11b *21/08*

U.S. Cl. 340—174.1 C **15 Claims**



In a random access magnetic storage system, a set of transducers are positioned by means of a mechanical linkage in response to the positions of solenoid operated control means. The system generates a motion anticipation signal upon the registration of each new address in an address register if the new address requires movement of the set of transducers. The transducers are disabled until the transducers are positioned in their new position in response to a motion anticipation signal. If no motion anticipation signal is produced the transducing operations are permitted immediately after registration of the new address in the address register.

3,676,869

INTEGRATED LOW-LEVEL MAGNETIC DECODER

Jean-Pierre Lazzari, Seyssinet, and Igor Melnick, Grenoble, both of France, assignors to Commissariat A L'Energie Atomique, Paris and Compagnie International Pour L'Informatique, Lowvecennes, France

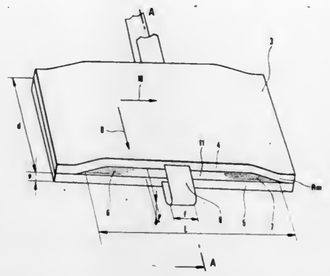
Filed Feb. 2, 1971, Ser. No. 111,856

Claims priority, application France, Feb. 13, 1970, 7005127

Int. Cl. G11c *11/14*

U.S. Cl. 340—174 QA **3 Claims**

The decoder comprises a magnetic circuit in the form of a closed loop consisting of two parallel components which are formed of identical magnetic material having the same thickness and are joined together at their extremities, a primary winding and a secondary winding each housed within the interior and at one end of the loop, a control winding located between the primary and secondary windings and passed through the center of each component along the axis of easy magnetization of the magnetic circuit, the space formed



within the interior of the loop being filled with insulating material.

3,676,870

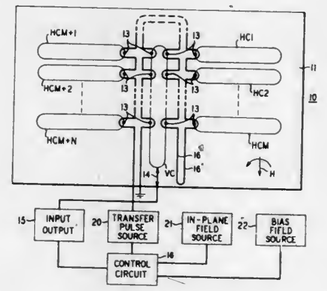
SINGLE WALL DOMAIN TRANSFER CIRCUIT

Andrew Henry Bobeck, Chatham, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed May 13, 1971, Ser. No. 142,900

Int. Cl. G11c *11/14*

U.S. Cl. 340—174 TF **9 Claims**



Single wall domains are moved in a layer of a host magnetic material in response to magnetic poles generated in channel defining elements in response to a magnetic field reorienting in the plane of the layer in what is called a "field access" mode of operation. Domains are transferred herein between channels, so defined, by the in-plane field when the originating and receiving positions for a domain at each transfer location are encompassed by a conductor loop which, when pulsed, defines a magnetic fence about the positions.

3,676,871

DOMAIN LOGIC ARRANGEMENT

John Alexander Copeland, III, Gillette, N.J., assignor to Bell Telephone Laboratories, Incorporated, Berkeley Heights, N.J.

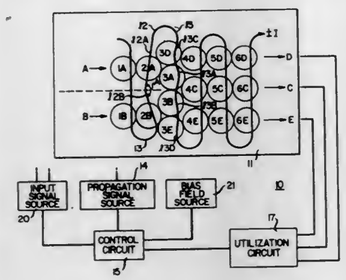
Filed May 21, 1971, Ser. No. 145,771

Int. Cl. G11c *19/00, 11/14*

U.S. Cl. 340—174 TF **8 Claims**

A single wall domain logic arrangement is defined by a serpentine propagation conductor in a layer of material in which single wall domains can be moved. The conductor, when ener-

gized, provides a drive field for domains in a number of channels between a plurality of inputs and outputs. The arrangement exhibits a signal at outputs determined by the pattern of domains at the inputs.

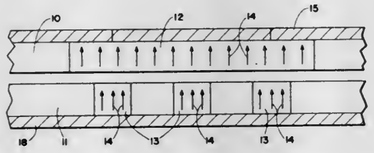


3,676,872

PROPAGATION OF MAGNETIC BUBBLE DOMAINS

Roger David Lock, Manotick, Ontario, Canada, assignor to Bell Canada-Northern Electric Research Limited, Ottawa, Ontario, Canada

Filed June 21, 1971, Ser. No. 155,043
Int. Cl. G11c *11/14, 19/00*
U.S. Cl. 340—174 TF **14 Claims**



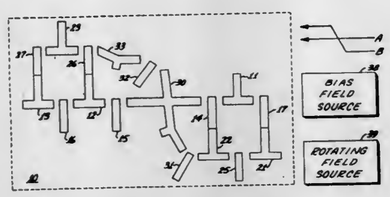
Propagation of small magnetic bubble domains by larger magnetic bubble domains. Small domains—called bubbles—can be propagated singly or in groups under the control of a larger bubble. Control is easier as conductor patterns can be larger than required for the small bubbles. Also small bubbles of a size which hitherto have proved difficult or impossible to control can be controlled by use of the invention.

3,676,873

MAGNETIC BUBBLE CROSSOVER CIRCUIT

Fred S. Lee, Phoenix, Ariz., assignor to Honeywell Information Systems Inc., Waltham, Mass.

Filed Nov. 1, 1971, Ser. No. 194,375
Int. Cl. G11c *11/14, 19/00*
U.S. Cl. 340—174 TF **6 Claims**



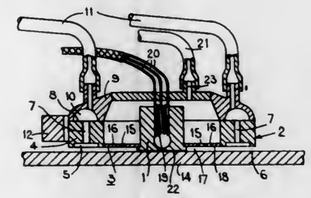
A magnetic bubble crossover circuit is provided in which the circuit paths are defined by an array of magnetic elements overlaying a magnetic bubble propagation substrate. A magnetic bias field provides bubble stability in the substrate and a rotating magnetic field causes the bubbles to propagate along the defined circuit paths. At the crossover point, in the array of magnetic elements, a common element is provided which has the property of steering the bubbles in respective paths so that they pass through separated in time and space.

3,676,874

FLUID SUPPORTED PAD WITH MEANS TO PRODUCE CONTACT BETWEEN HEAD AND RECORD MEDIUM

Ian Turner, Stevenage, England, assignor to International Computers Limited, London, England

Filed March 9, 1970, Ser. No. 17,727
Claims priority, application Great Britain, March 12, 1969, 12,928/69; March 12, 1969, 12,929/69
Int. Cl. G11b *5/60*
U.S. Cl. 340—174.1 E **4 Claims**



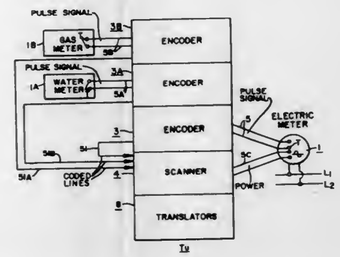
A magnetic transducing head assembly with a magnetic head being maintained in contact with a record member during relative motion between the head and record member. The head is resiliently mounted on a pad by a diaphragm. A source of pressure produces a cushion of air which separates the pad from the record member by a desired distance with the head protruding from the pad by at least the desired distance. The diaphragm urges the head into contact with the record member when the pad is separated from the record member by the desired distance. In another embodiment, high and low pressure areas are produced to separate the pad from the record member and to maintain the head in contact with the record member.

3,676,875

METHOD AND APPARATUS FOR TRANSMITTING INFORMATION IN METER READING

Rodney V. Adams, and Roger E. Medlin, both of Raleigh, N.C., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed March 10, 1970, Ser. No. 18,188
Int. Cl. G08c *19/28, 15/12*
U.S. Cl. 340—183 **7 Claims**



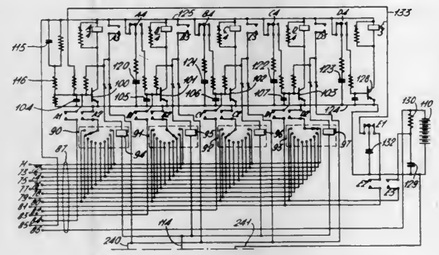
For transmitting information representing the readings of a plurality of meters a separate translating unit is provided. This unit includes a separate encoder for each of the meters which converts analog information derived from the associated meter into digital information. The translating unit preferably includes a scanner for interrogating successively the outputs of the encoders. Information from the scanner is transmitted to a translator which may comprise a device for recording the transmitted information or which may comprise a computer for performing desired operations on the information. If the output of the scanner is to be modified before transmission to the translator the translating unit desirably may include an interface for performing the desired modification. If the meters to be read include an electric meter and a fluid meter preferably electric energy required for operating the translating unit is derived from the source of electric energy being measured by the electric meter.

3,676,876

METER READING UNITS

Desmond Dransfield; Patrick Bass; Roy Ernest White, and Leslie Thomas Bracker, all of London, England, assignors to United Gas Industries Limited, London, England

Continuation of Ser. No. 688,759, Dec. 7, 1969, abandoned.
This application Feb. 26, 1971, Ser. No. 119,364
Int. Cl. G08c *09/00;* **G01r** *17/06*
U.S. Cl. 340—188 **7 Claims**



A meter reading unit by means of which a reading may be made without sight of a meter includes a plurality of indicators, one corresponding to each digit of the meter reading, a switch associated with each indicator, and electrical connections provided for connection to switches at a meter which are set according to the meter reading whereby particular ones of the electrical connections are made according to the setting of the switches at the meter, and means to set the indicators according to the setting of the switches at the meter.

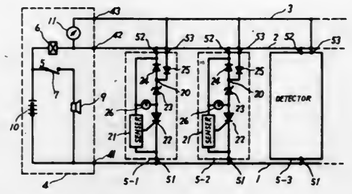
3,676,877

FIRE ALARM SYSTEM WITH FIRE ZONE LOCATOR USING ZENER DIODE VOLTAGE MONITORING

Tetsuo Kobayashi, Tokyo, Japan, assignor to Mittan Company Limited, Tokyo, Japan

Filed April 7, 1971, Ser. No. 132,039
Claims priority, application Japan, April 22, 1970, 45/33843; Aug. 22, 1970, 45/73142; April 18, 1970, 45/32669
Int. Cl. G08b *17/06*
U.S. Cl. 340—227 R **4 Claims**

A fire alarm system having a plurality of detectors operably to actuate a single receiver to sound an alarm upon the presence of fire, said detectors each having a zener diode interposed in the conduction path so that at least part of the current flows through the zener diode, each zener diode having a voltage differing from the zener diodes of the other detectors and said receiver including means sensing the specific zener diode voltage of an actuated detector in order to determine the detector that has been actuated.

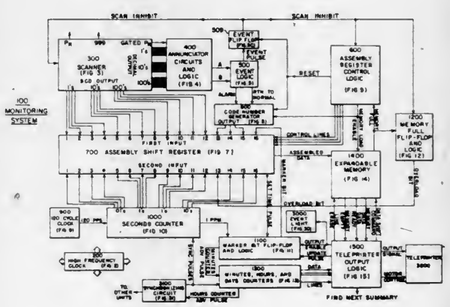


3,676,878

VARIABLE MONITORING SYSTEM

Kenneth C. Linder, Arlington Heights, Ill., assignor to The Riley Company, Skokie, Ill.

Filed Oct. 14, 1968, Ser. No. 767,456
Int. Cl. G08b *26/00*
U.S. Cl. 340—408 **13 Claims**

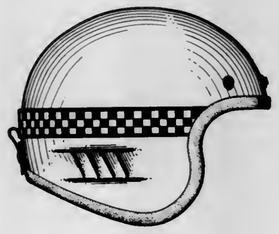


An alarm system for monitoring a large number of variables and for producing a permanent printed record of the exact times when variables changed their state. A scanner counter periodically scans a plurality of annunciator circuits, each of which is associated with a variable. Whenever the scanner locates an annunciator circuit whose state indicates that the associated variable has changed its state since the last scan, the number of the associated variable is retrieved from the scanner counter and the time in seconds and fractions of a second is retrieved from a counter clock. This data and other data is assembled and fed serially into an expandable shift register memory. A teleprinter output logic circuit then retrieves the data from the other end of the expandable memory and feeds it slowly to a teleprinter, along with the time in minutes and hours, and the date in days.

DESIGNS

JULY 11, 1972

224,182
HELMET
Eitaro Kamata, Tokyo, Japan, assignor to Shoei Kakoh Co., Ltd., Tokyo, Japan
Filed Apr. 14, 1971, Ser. No. 134,117
Claims priority, application Japan Oct. 15, 1970
Term of patent 7 years
Int. Cl. D2—*03*
U.S. Cl. D2—232



224,183
BOOT
Dorothy A. Straub and Astrid Morris, both of 19 Center St., Westport, Conn. 06880
Filed Mar. 16, 1971, Ser. No. 125,012
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—273



224,184
BOOT
Dorothy A. Straub and Astrid Morris, both of 19 Center St., Westport, Conn. 06880
Filed Mar. 16, 1971, Ser. No. 125,014
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—273



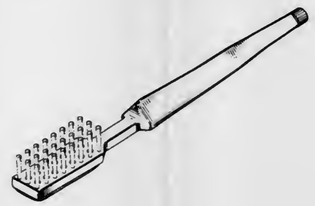
224,185
LADY'S SLIPPER OR SIMILAR ARTICLE
Eugenia Schenker, 147—19 Sanford Ave., Flushing, N.Y. 11355
Filed Dec. 18, 1970, Ser. No. 26,561
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—283



224,186
SASH
Melvin V. Zakarin, 23 Ogden Lane, Englishtown, N.J. 07726
Filed July 20, 1970, Ser. No. 24,017
Term of patent 3½ years
Int. Cl. D2—*07*
U.S. Cl. D2—385



224,187
HEAD AND HANDLE FOR TOOTHBRUSH OR THE LIKE
McClellan J. Klepper, R.R. 1, Higginsville, Mo. 64037
Filed Nov. 27, 1970, Ser. No. 26,191
Term of patent 14 years
Int. Cl. D4—*02*
U.S. Cl. D4—25



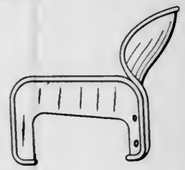
224,188
CHAIR
Gardner Leaver, New York, N.Y., assignor to Steelcase Inc., Grand Rapids, Mich.
Continuation-in-part of design application Ser. No. 16,351, Mar. 20, 1969. This application Sept. 4, 1970, Ser. No. 24,841
Term of patent 14 years
Int. Cl. D6—*02*
U.S. Cl. D6—20



224,189
CHAIR OR THE LIKE
Marvin Gorelick, 60 E. 12th St., New York, N.Y. 10013
Filed Oct. 16, 1970, Ser. No. 25,529
Term of patent 14 years
Int. Cl. D6—*02*
U.S. Cl. D6—20



224,190
CHAIR
Alex Strässle, CH–9533, Kirchberg, Switzerland
Filed Oct. 15, 1970, Ser. No. 25,515
Claims priority, application Great Britain July 17, 1970
Term of patent 14 years
Int. Cl. D6—*02*
U.S. Cl. D6—65



224,191
CHAIR OR SIMILAR ARTICLE
Alex Strässle, CH–9533, Kirchberg, Switzerland
Filed Oct. 15, 1970, Ser. No. 25,513
Claims priority, application Austria Apr. 27, 1970
Term of patent 14 years
Int. Cl. D6—*02*
U.S. Cl. D6—66



224,192
CHAIR
Raymond Grosfillex, Arbent, France, assignor to Societe Grosfillex, Societe a Responsabilite Limitee, Arbent, France
Filed May 11, 1970, Ser. No. 22,908
Term of patent 7 years
Int. Cl. D6—*02*
U.S. Cl. D6—70



224,193
CHAIR
Raymond Grosfillex, Arbent, France, assignor to Societe Grosfillex, Societe a Responsabilite Limitee, Arbent, France
Filed May 11, 1970, Ser. No. 22,910
Term of patent 7 years
Int. Cl. D6—*02*
U.S. Cl. D6—70



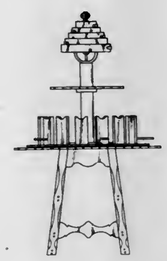
224,194
SEPARABLE LAP TRAY TABLE UNIT
Ralph H. Logan, High Point, N.C., assignor to Burlington Industries, Inc., Greensboro, N.C.
Filed June 8, 1970, Ser. No. 23,366
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—138



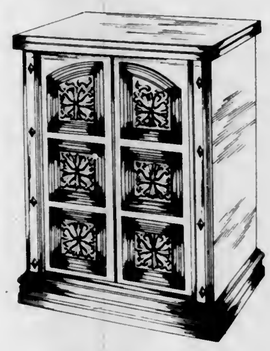
224,195
MOBILE COCKTAIL BAR
Vincent J. Intorcio, 7123 Mentor Ave. (Willoughby P.O.), Mentor, Ohio 44094
Filed Sept. 9, 1970, Ser. No. 24,896
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—144



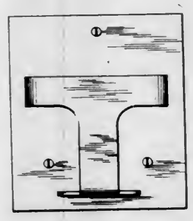
224,196
BOOKCASE
Ransom Reaves, 679 E. McKellar, Memphis, Tenn. 38106
Filed June 1, 1970, Ser. No. 23,237
Term of patent 7 years
Int. Cl. D6—*04*
U.S. Cl. D6—148



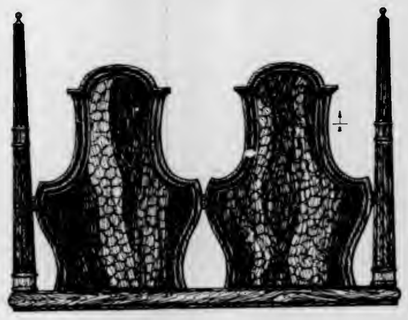
224,197
SEWING MACHINE CABINET
Howard Peters, Dyersburg, Tenn., assignor to U.S. Industries, Inc., New York, N.Y.
Filed July 13, 1970, Ser. No. 23,913
Term of patent 3½ years
Int. Cl. D6—*04*
U.S. Cl. D6—181



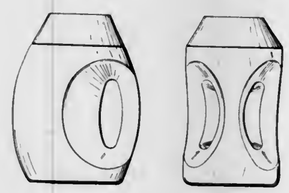
224,198
MAGAZINE RACK
Raymond I. Hastings, Ridgefield, Conn., assignor to Professional Sports Marketing, Inc., New York, N.Y.
Filed Sept. 4, 1970, Ser. No. 24,840
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. D6—184



224,199
HEADBOARD FOR A BEDSTEAD OR SIMILAR ARTICLE
Huey T. Keller, High Point, N.C., assignor to Empire Furniture Corporation, Johnson City, Tenn.
Filed Aug. 10, 1970, Ser. No. 24,401
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—198



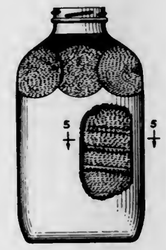
224,200
COMBINED JUG AND CLOSURE
Edward J. Kretz, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio
Filed Apr. 29, 1971, Ser. No. 138,848
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—41



224,201
BOTTLE OR SIMILAR ARTICLE
Ted L. Beaver, Roselle, Ill., assignor to Continental Can Company, Inc., New York, N.Y.
Filed June 28, 1971, Ser. No. 157,794
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—42



224,202
BOTTLE
Joseph Boden, Chicago, Ill., assignor to Boden Products, Inc., Franklin Park, Ill.
Filed Mar. 29, 1971, Ser. No. 129,288
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—44

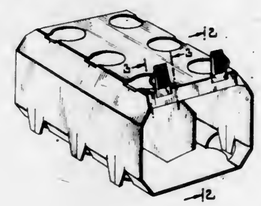


224,203
BOTTLE
Robert J. Donoghue, 900 Windsor Ave., Windsor, Conn. 06095
Filed Sept. 8, 1970, Ser. No. 24,875
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—131

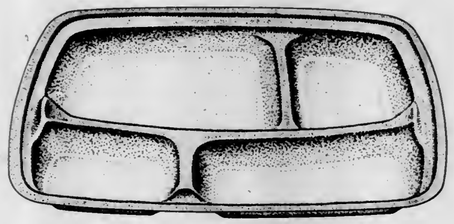


224,204
BOTTLE CARTON
Earl J. Graser, Monroe, La., assignor to Olinkraft, Inc.
Continuation-in-part of design application Ser. No. 20,360, Dec. 4, 1969. This application Oct. 8, 1970, Ser. No. 25,377
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—176

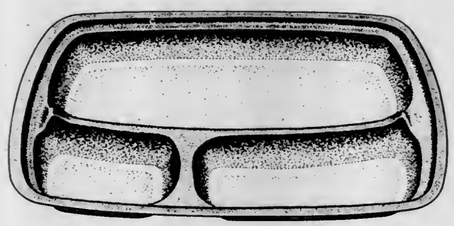
224,205
BOTTLE CARTON
Earl J. Graser, Monroe, La., assignor to Olinkraft, Inc.
Continuation-in-part of design application Ser. No. 20,471, Dec. 3, 1969. This application Oct. 8, 1970, Ser. No. 25,907
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—176



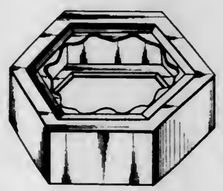
224,206
COMPARTMENTED TRAY
Steven J. Cyr and Mark W. Whelan, Chippewa Falls, Wis., assignors to Standard Oil Company, Chicago, Ill.
Filed Aug. 28, 1970, Ser. No. 24,753
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—185



224,207
COMPARTMENTED TRAY
Steve Cyr and Mark Whelan, Chippewa Falls, Wis., assignors to Standard Oil Company, Chicago, Ill.
Filed July 28, 1970, Ser. No. 24,188
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—185



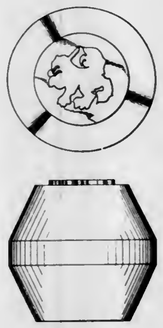
224,208
DISPLAY BOX
Joseph Kuchar, Montreal, Quebec, Canada, assignor to Record Chemical Co. Inc., Montreal, Quebec, Canada
Filed July 13, 1970, Ser. No. 23,938
Claims priority, application Canada Apr. 7, 1970
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—242



224,209
CONTAINER END
Christian Frederick Kinkel, Arlington Heights, and Burton Frank Pillnik, Cary, Ill., assignors to American Can Company, Greenwich, Conn.
Filed May 7, 1971, Ser. No. 141,456
Term of patent 14 years
Int. Cl. D9—*07*
U.S. Cl. D9—255



224,210
BOTTLE CAP
Andrew Apicella, 42—22 Ketcham St., Elmhurst, N.Y. 11373
Filed Apr. 5, 1971, Ser. No. 131,570
Term of patent 14 years
Int. Cl. D9—*07*
U.S. Cl. D9—284



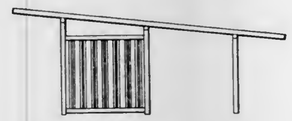
224,211
COMPONENT FOR GRILL WORKS, RAILINGS, COLUMNS AND THE LIKE
Ellis de Loy Larson, 225 E. State Road, Pleasant Grove, Utah 84062
Filed Feb. 18, 1971, Ser. No. 116,734
Term of patent 14 years
Int. Cl. D25—*02*
U.S. Cl. D13—1

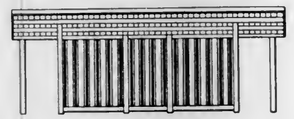


224,212
COMPONENT FOR RAILINGS, GRILL WORKS, COLUMNS AND THE LIKE
Ellis De Loy Larson, 225 E. State Road, Pleasant Grove, Utah 84062
Filed Mar. 1, 1971, Ser. No. 120,004
Term of patent 14 years
Int. Cl. D25—*02*
U.S. Cl. D13—1

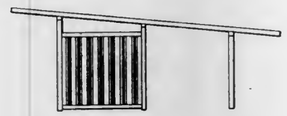


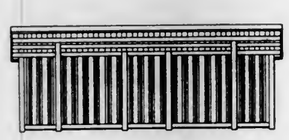
224,213
SHELTER
Robert S. Wormser, Hillsdale, Mich., assignor to Game Time, Inc., Litchfield, Mich.
Filed Mar. 18, 1971, Ser. No. 125,904
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1





224,214
CAMPING SHELTER
Robert S. Wormser, Hillsdale, Mich., assignor to Game Time. Inc., Litchfield, Mich.
Filed Mar. 18, 1971, Ser. No. 125,906
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1

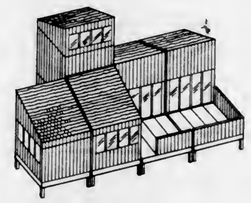




224,215
VENDING STAND
Gary L. Baldwin, Oklahoma City, Okla., assignor to SBI Incorporated, Phoenix, Ariz.
Filed May 12, 1971, Ser. No. 142,861
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1



224,216
PRE-ASSEMBLED MODULAR HOUSING STRUCTURE
Edward D. Kelbish, 280 Vanderbilt Ave., Brooklyn, N.Y. 11205
Filed May 26, 1971, Ser. No. 147,299
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1



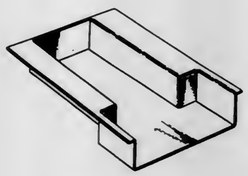
224,217
PRE-ASSEMBLED MODULAR HOUSING STRUCTURE
Edward D. Kelbish, 280 Vanderbilt Ave., Brooklyn, N.Y. 11205
Filed May 26, 1971, Ser. No. 147,300
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1



224,218
PRE-ASSEMBLED MODULAR HOUSING STRUCTURE
Edward D. Kelbish, 280 Vanderbilt Ave., Brooklyn, N.Y. 11205
Filed May 26, 1971, Ser. No. 147,302
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1



224,219
LINER FOR A PICKUP TRUCK
Jack V. Ritter, Puyallup, Wash., assignor to Research Marketing, Inc.
Filed Apr. 27, 1970, Ser. No. 22,676
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D14—6



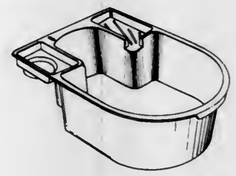
224,220
STROLLER
James Alan Boultbee, 39 Dickson Ave., Artarmon, New South Wales, Australia
Filed Aug. 3, 1970, Ser. No. 24,272
Claims priority, application Australia Feb. 5, 1970
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. D14—14



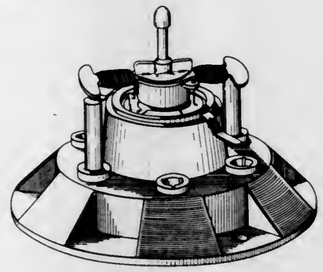
224,221
VEHICLE SPOKE WHEEL
Frank A. De Puydt and Eugene P. Conradi, Des Moines, Iowa, assignors to Dico Company, Inc., Des Moines, Iowa
Filed Dec. 14, 1970, Ser. No. 26,480
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D14—30



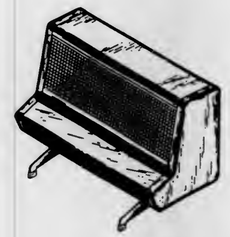
224,222
WASH BASIN
Delmas E. Collins, West Lafayette, Ohio, assignor to Jones-Zylon, Inc., West Lafayette, Ohio
Filed Oct. 30, 1970, Ser. No. 25,753
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—48



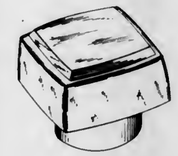
224,223
ELECTRICAL MEASUREMENT DEMONSTRATOR OR SIMILAR ARTICLE
David E. Munn, Framingham, and Robert Maddestra, Hyde Park, Mass., assignors to Damon Corporation, Needham, Mass.
Filed Mar. 29, 1971, Ser. No. 129,295
Term of patent 14 years
Int. Cl. D19—*07*
U.S. Cl. D25—1



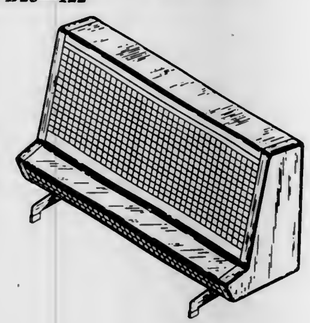
224,224
HEATER
Joseph R. Mango, Midlothian, Ill., assignor to Sunbeam Corporation, Chicago, Ill.
Filed Feb. 2, 1970, Ser. No. 21,186
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—122



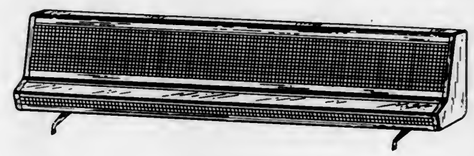
224,225
HANDLE FOR PLUMBING FIXTURE
Donald W. Doman, Janesville, Wis., assignor to Kohler Co., Kohler, Wis.
Filed Dec. 21, 1970, Ser. No. 26,593
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—28



224,226
HEATER
Joseph R. Mango, Midlothian, Ill., assignor to Sunbeam Corporation, Chicago, Ill.
Filed Feb. 2, 1970, Ser. No. 21,187
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—122



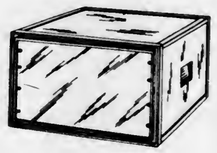
224,227
HEATER
Joseph R. Mango, Midlothian, Ill., assignor to Sunbeam Corporation, Chicago, Ill.
Filed Feb. 2, 1970, Ser. No. 21,210
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—122



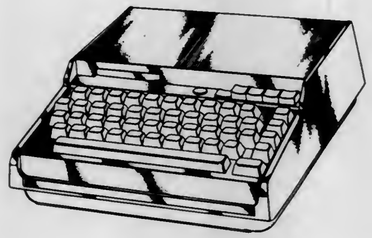
224,228
FRACTIONAL HORSEPOWER DC CONTROLLER
Daniel M. Flynn, Hampden, Stanley J. Bandoski, Jr., Springfield, and William R. Clow, Agawam, Mass., assignors to Hampden Engineering Company, East Longmeadow, Mass.
Filed July 27, 1970, Ser. No. 24,154
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—13



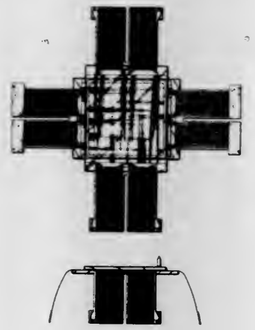
224,229
HOUSING FOR ELECTRONIC EQUIPMENT
Leon Gordon Miller, Shaker Heights, Ohio, assignor to Bud Radio, Incorporated, Willoughby, Ohio
Filed Aug. 28, 1970, Ser. No. 24,748
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5



224,230
DATA INPUT TERMINAL
James W. Kelso, Pacific Palisades, Calif., assignor to MSI Data Corporation, Montclair, Calif.
Filed Dec. 7, 1970, Ser. No. 26,339
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5



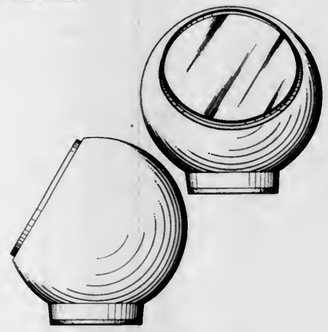
224,231
COMBINED LIGHT EMITTING GAS DISCHARGE MATRIX DISPLAY PANEL AND CONNECTING CABLES
Larry J. Schmersal and Gerald E. Wojcik, Toledo, Ohio, assignors to Owens-Illinois, Inc.
Filed Apr. 23, 1971, Ser. No. 137,097
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5



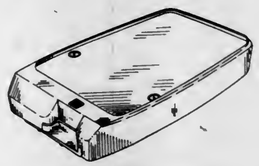
224,232
FRACTIONAL HORSEPOWER AC CONTROLLER
Daniel M. Flynn, Hampden, Stanley J. Bandoski, Jr., Springfield, and William R. Clow, Agawam, Mass., assignors to Hampden Engineering Company, East Longmeadow, Mass.
Filed July 28, 1970, Ser. No. 24,173
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—13



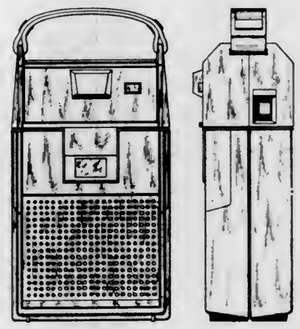
224,233
HOUSING FOR AN ELECTRONIC COMMUNICATION APPARATUS
Ryuzo Fujita, Suidobashi Bldg., 4–4, 1-chome, Hongo, Bunkyo-ku, Tokyo, Japan
Filed Feb. 3, 1971, Ser. No. 112,521
Claims priority, application Japan Aug. 3, 1970
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14



224,234
TELEPHONE BASE WITH UNIT FOR READING AND STORING DATA FROM CODED CARDS
John George Laycock Rhodes, Leatherhead, England, assignor to Telephone Manufacturing Company Limited, London, England
Filed Sept. 9, 1970, Ser. No. 25,150
Claims priority, application Great Britain Mar. 10, 1971
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14



224,235
PORTABLE TAPE RECORDER
Andrew Kainass, Syracuse, N.Y., assignor to General Electric Company
Filed June 23, 1971, Ser. No. 156,172
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D26—14



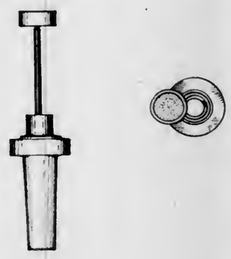
224,236
NOVELTY TREE
Dominic F. Notarianni, 5179 Bronson Drive, Lewiston, N.Y. 14092
Filed May 22, 1970, Ser. No. 23,104
Term of patent 14 years
Int. Cl. D11—*04*
U.S. Cl. D29—1



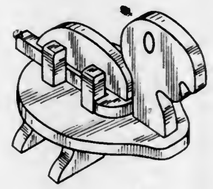
224,237
DECORATIVE REFLECTOR FOR A CHRISTMAS LIGHT
Terry Hermanson, New York, N.Y., assignor to Mr. Christmas Incorporated, New York, N.Y.
Filed June 16, 1971, Ser. No. 153,930
Term of patent 14 years
Int. Cl. D11—*05*
U.S. Cl. D29—1



224,238
AQUARIUM AERATOR
Allan H. Willinger, New Rochelle, N.Y., assignor to Metaframe Corporation, Maywood, N.J.
Filed Dec. 11, 1970, Ser. No. 26,415
Term of patent 14 years
Int. Cl. D30—*99*
U.S. Cl. D30—12



224,239
THREE-DIMENSIONAL TURTLE FIGURE
Harry Meth and Susan Lake, Cincinnati, Ohio, assignors to General Mills Fun Group, Inc., Minneapolis, Minn.
Filed Oct. 26, 1970, Ser. No. 25,665
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—2



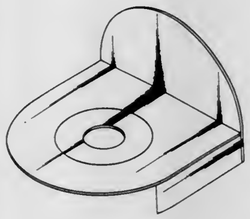
224,240
FIGURE TOY OR THE LIKE
Sidney Bass, Los Angeles, Armando M. Baeza, Whittier, and Joyce H. Christopher, Long Beach, Calif., assignors to Mattel, Inc., Hawthorne, Calif.
Filed Dec. 8, 1970, Ser. No. 26,358
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—4



224,241
INFLATABLE WADING POOL
Bernard Tytel, New York, N.Y., assignor to Award International, Inc., Bergen, N.J.
Filed Sept. 21, 1970, Ser. No. 25,119
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5



224,242
PITCHING GAME TARGET
Thirl W. Waddle, Fort Worth, and Jackie D. Wood and Verner L. Jackson, Weatherford, Tex.; said Wood and said Jackson assignors to J. Lloyd Patton, Fort Worth, Tex.
Filed Dec. 18, 1970, Ser. No. 26,565
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5



224,243
PLAYGROUND APPARATUS OR THE LIKE
Donal D. Hock, Herrin, and Robert E. Feigenbaum and Erwin N. Korte, Carbondale, Ill., and William R. Baynes, Palos Verdes Peninsula, Calif., assignors to Mattel, Inc., Hawthorne, Calif.
Filed Jan. 7, 1971, Ser. No. 104,824
Term of patent 14 years
Int. Cl. D21—*03*
U.S. Cl. D34—5



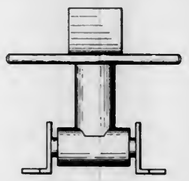
224,244
SWING SEAT OR THE LIKE
Donal D. Hock, Herrin, Ill., assignor to Mattel, Inc., Hawthorne, Calif.
Filed Jan. 7, 1971, Ser. No. 104,826
Term of patent 14 years
Int. Cl. D21—*03*
U.S. Cl. D34—5



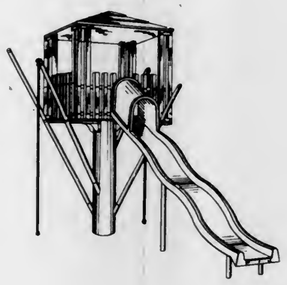
224,245
COMBINED PLAYGROUND CLIMBER AND SUPPORT FOR SWINGS OR THE LIKE
Donal D. Hock, Herrin, Ill., assignor to Mattel, Inc., Hawthorne, Calif.
Filed Jan. 7, 1971, Ser. No. 104,828
Term of patent 14 years
Int. Cl. D21—*03*
U.S. Cl. D34—5



224,246
PLAYGROUND EQUIPMENT SUPPORT
Ronald L. Ewers, Hillsdale, Mich., assignor to Game Time, Inc., Litchfield, Mich.
Filed Mar. 18, 1971, Ser. No. 125,903
Term of patent 14 years
Int. Cl. D21—*03*
U.S. Cl. D34—5



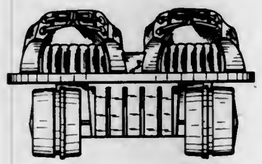
224,247
COMBINED PLAYGROUND TREE HOUSE AND SLIDE
Grant E. Jamison, Los Angeles, Calif., assignor to Jamison, Inc., Los Angeles, Calif.
Filed Apr. 29, 1971, Ser. No. 138,862
Term of patent 14 years
Int. Cl. D21—*03*
U.S. Cl. D34—5



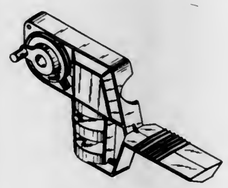
224,248
PASSENGER CARRYING TOW KITE
William Edward Bennett, 12001 Gerald Ave., Granada Hills, Calif. 91344
Filed Sept. 24, 1969, Ser. No. 19,272
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—15



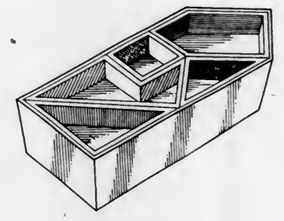
224,249
FREELY ROLLING SUPPORT FOR FIGURE TOY OR THE LIKE
Sidney Bass, Los Angeles, Armando M. Baeza, Whittier, Joyce H. Christopher, Long Beach, and Frank J. Kuchta, Redondo Beach, Calif., assignors to Mattel, Inc., Hawthorne, Calif.
Filed Dec. 7, 1970, Ser. No. 26,319
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15



224,250
LAUNCHER FOR TOY AIRCRAFT OR THE LIKE
Philip W. Crain, Redondo Beach, Floyd E. Schlau, Palos Verdes Estates, and Paul Tam, Los Angeles, Calif., assignors to Mattel, Inc., Hawthorne, Calif.
Filed Jan. 22, 1971, Ser. No. 109,076
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15



224,251
THREE DIMENSIONAL PUZZLE
Wilbur H. Adams, 66 E. 83rd St., New York, N.Y. 10028
Filed Aug. 7, 1970, Ser. No. 24,361
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15



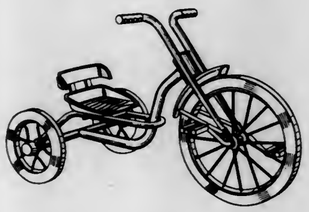
224,252
TOY JAIL PLAYHOUSE
Larry G. Clark, 5532 Hollister Drive, Indianapolis, Ind. 46224
Filed Aug. 21, 1970, Ser. No. 24,622
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15



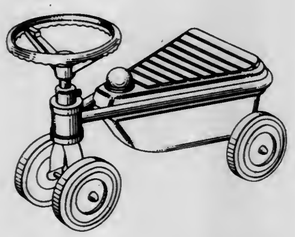
224,253
TOY TOWER FOR SIMULATED FLIGHT CONTROL
Robert B. Lovejoy, Hermosa Beach, Bruce Ashby, Torrance, Denis V. Bosley, Palos Verdes Peninsula, and Raymond J. Douglas, Lomita, Calif., assignors to Mattel, Inc., Hawthorne, Calif.
Filed Apr. 2, 1971, Ser. No. 130,860
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15



224,254
TRICYCLE
Loran R. Hill, Olney, Ill., assignor to AMF Incorporated
Filed Apr. 20, 1971, Ser. No. 135,828
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D34—15



224,255
CHILD'S COASTER VEHICLE
Stanley M. Novak, Jr., Olney, Ill., assignor to AMF Incorporated
Filed May 17, 1971, Ser. No. 144,372
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15



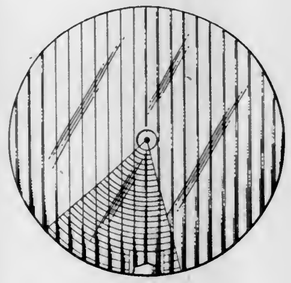
224,256
CHAFING DISH FOR FONDUE OR THE LIKE
Morton Ocuin, New York, N.Y., assignor to The Gailstyn Company, Inc.
Filed Nov. 9, 1970, Ser. No. 25,906
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D44—15



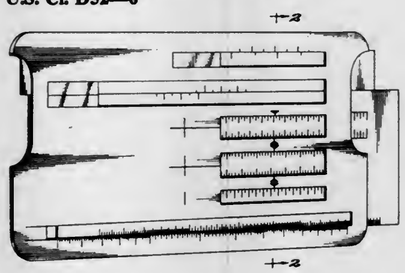
224,257
BRACELET
Robert M. Lee, 16 E. 53rd St., New York, N.Y. 10022
Filed Oct. 28, 1970, Ser. No. 25,702
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D45—7



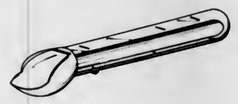
224,258
WARNING LENS
Robert I. Nagel, Skokie, Ill., assignor to R. E. Dietz Company, Syracuse, N.Y.
Filed Sept. 15, 1970, Ser. No. 24,998
Term of patent 14 years
Int. Cl. D26—*06*
U.S. Cl. D48—32



224,259
SLIDE RULE CALCULATOR
Cesare A. Raimondi, Los Angeles, Calif. (10050 Debra Ave., Sepulveda, Calif. 91343)
Filed Oct. 30, 1970, Ser. No. 25,725
Term of patent 14 years
Int. Cl. D10—*99*
U.S. Cl. D52—6



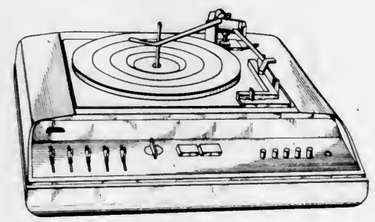
224,260
MEDICAMENT DISPENSER SPOON
Bruce Zeitzer and Louis Brodosky, Parlin, N.J., assignors to E. R. Squibb & Sons, Inc., New York, N.Y.
Filed May 28, 1971, Ser. No. 148,302
Term of patent 14 years
Int. Cl. D7—*03;* D28—*01;* D24—*02*
U.S. Cl. D52—1



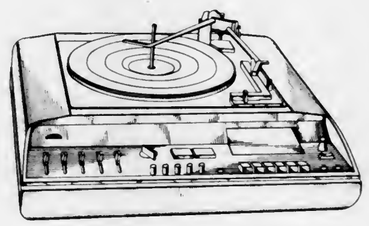
224,261
SPOON OR SIMILAR ARTICLE
Ellen B. Manderfield, Syracuse, N.Y., assignor to Oneida Ltd., Oneida, N.Y.
Filed May 10, 1971, Ser. No. 142,092
Term of patent 14 years
Int. Cl. D7—*03*
U.S. Cl. D54—12



224,262
PHONOGRAPH
Carl Yurdin, Port Washington, N.Y., assignor to Harman-Kardon, Incorporated, Plainview, Long Island, N.Y.
Filed Mar. 3, 1971, Ser. No. 120,788
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D56—4



224,263
COMBINED RADIO-PHONOGRAPH AND TAPE PLAYER OR SIMILAR ARTICLE
Carl Yurdin, Port Washington, N.Y., assignor to Harman-Kardon, Incorporated, Plainview, Long Island, N.Y.
Filed Mar. 3, 1971, Ser. No. 120,789
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D56—4



224,264
SPOON OR SIMILAR ARTICLE
Ellen B. Manderfield, Syracuse, N.Y., assignor to Oneida Ltd., Oneida, N.Y.
Filed Feb. 4, 1971, Ser. No. 112,840
Term of patent 14 years
Int. Cl. D7—*03*
U.S. Cl. D54—12



224,265
SPOON OR SIMILAR ARTICLE
Ellen B. Manderfield, Syracuse, N.Y., assignor to Oneida Ltd., Oneida, N.Y.
Filed Apr. 12, 1971, Ser. No. 133,482
Term of patent 14 years
Int. Cl. D7—*03*
U.S. Cl. D54—12



224,266
SPOON OR SIMILAR ARTICLE
Frank R. Perry, Oneida, N.Y., assignor to Oneida Ltd., Oneida, N.Y.
Filed May 6, 1971, Ser. No. 141,066
Term of patent 14 years
Int. Cl. D7—*03*
U.S. Cl. D54—12



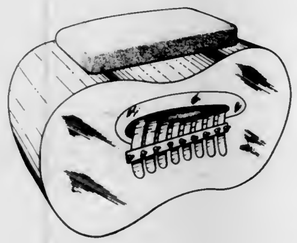
224,267
SPOON OR SIMILAR ARTICLE
Ellen B. Manderfield, Syracuse, N.Y., assignor to Oneida Ltd., Oneida, N.Y.
Filed May 10, 1971, Ser. No. 142,093
Term of patent 14 years
Int. Cl. D7—*03*
U.S. Cl. D54—12



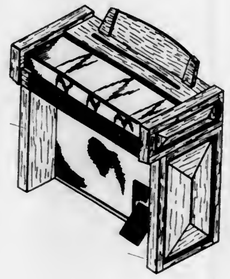
224,268
HARMONICA
William De Warel Switzer, Jr., Berkeley, Calif. (General Delivery, Woodacre, Calif. 94973)
Filed Aug. 24, 1970, Ser. No. 24,658
Term of patent 14 years
Int. Cl. D17—*02*
U.S. Cl. D56—1



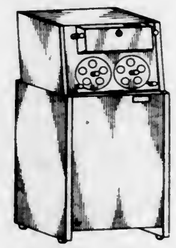
224,269
COMBINED SEAT AND VIBRATABLE REED MUSICAL INSTRUMENT
Joseph Raymond Esquina, 11442 Angell St., Norwalk, Calif. 90650, and James Daryl Addy, 2403 Seville St., Anaheim, Calif. 92806
Filed Jan. 7, 1971, Ser. No. 104,840
Term of patent 14 years
Int. Cl. D17—*03*
U.S. Cl. D56—1



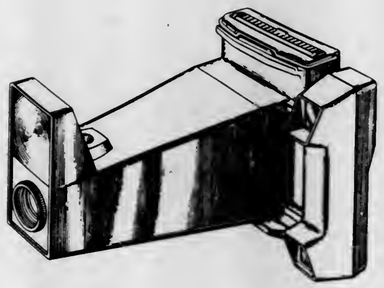
224,270
CABINET FOR KEYBOARD INSTRUMENT OR THE LIKE
Salvatore Merendino, Pasadena, Edward Barczak, Los Angeles, and Adolph D. Lambach, Fountain Valley, Calif., assignors to Mattel, Inc., Hawthorne, Calif.
Filed Jan. 11, 1971, Ser. No. 105,793
Term of patent 14 years
Int. Cl. D17—*01*
U.S. Cl. D56—2



224,271
PHOTOGRAPHIC FILM NOTCHER
Francesco Milani, Bellinzona, Switzerland, assignor to Gretag Aktiengesellschaft, Regensdorf, Switzerland
Filed Nov. 23, 1970, Ser. No. 26,142
Term of patent 14 years
Int. Cl. D16—*04*
U.S. Cl. D61—1



224,272
PHOTOGRAPHIC CAMERA OR SIMILAR ARTICLE
James M. Conner, Mamaroneck, N.Y., and Richard H. Davison, Sudbury, Milton S. Dietz, Lexington, and Bruce K. Johnson, Andover, Mass., assignors to Polaroid Corporation, Cambridge, Mass.
Continuation-in-part of design application Ser. No. 23,741, June 23, 1970. This application Apr. 15, 1971, Ser. No. 134,522
Term of patent 14 years
Int. Cl. D16—*01*
U.S. Cl. D61—1



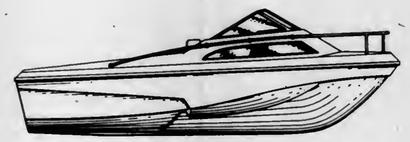
224,273
CALCULATING MACHINE
Mititaka Yamamoto, Kyoto, Koichi Yaida, Osaka, and Hisashi Maeda, Kyoto, Japan, assignors to Omron Tateisi Electronics Co., Kyoto-shi, Kyoto-fu, Japan
Filed Jan. 19, 1971, Ser. No. 107,872
Claims priority, application Japan July 21, 1970
Term of patent 14 years
Int. Cl. D18—*01*
U.S. Cl. D64—11



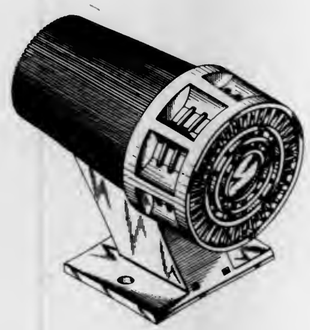
224,274
FONT OF TYPE
William Beck, 57B Troy Hills Village, Rte. 46, Parsippany, N.J. 07054
Filed Oct. 26, 1970, Ser. No. 25,636
Term of patent 3½ years
Int. Cl. D18—*04*
U.S. Cl. D64—12



224,275
POWER BOAT
Richard C. Cole, 19701 Whispering Pines Road, Miami, Fla. 33157
Filed Dec. 21, 1970, Ser. No. 26,606
Term of patent 14 years
Int. Cl. D12—*06*
U.S. Cl. D71—1



224,276
SIREN
Robert D. Kahn, Rockville Centre, N.Y., assignor to Fedtro, Inc., Rockville Centre, N.Y.
Filed Feb. 3, 1971, Ser. No. 113,518
Term of patent 14 years
Int. Cl. D29—*99*
U.S. Cl. D72—1

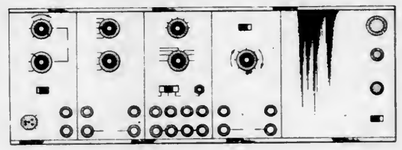


224,277
FACE MASK
Howard J. Venaleck, 162 Marble Drive, Rochester, N.Y. 14615
Filed Sept. 28, 1970, Ser. No. 25,220
Term of patent 14 years
Int. Cl. D24—*05;* D2—*03*
U.S. Cl. D83—1





224,278
ELECTRONIC ASSEMBLY FOR BIOLOGICAL STUDIES
Jan A. van den Broek, Ann Arbor, Mich., assignor to Transidyne General Corporation, Ann Arbor, Mich.
Filed Oct. 2, 1970, Ser. No. 25,310
Term of patent 14 years
Int. Cl. D24—*01*
U.S. Cl. D83—1



224,279
SMOKING APPLIANCE
Jesse L. Nubla, P.O. Box 2556, Manila, Philippine Republic
Filed Nov. 17, 1970, Ser. No. 26,043
Claims priority, application Philippines July 16, 1970
Term of patent 14 years
Int. Cl. D27—*02*
U.S. Cl. D85—8



224,280
SNOWMOBILE ACCESSORY CARRIER
Russell L. Price, 3275 Kenwood Ave., Minneapolis, Minn. 55416
Filed Sept. 30, 1970, Ser. No. 25,276
Term of patent 14 years
Int. Cl. D3—*99*
U.S. Cl. D87—1



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 11TH DAY OF JULY, 1972

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A & T Development Corporation: *See*—
Avril, Arthur C., 3,675,790.

A. E. C. Societe de Chimie Organique et Biologique: *See*—
Redel, Joseph; and Boch, Jean Baptiste Christian, 3,676,499.

A/S Selvaagbygg: *See*—
Nustad, Per Eirik, 3,675,368.

AB Cold-Bound Pellets: *See*—
Kihlstedt, Per G., 3,676,104.

A.B. Electronic Components Limited: *See*—
Howitt, Henry Gazeley, 3,676,826.

Abbott, Earl: *See*—
Lickliter, Robert Paul; Abbott, Earl; and Reeves, John F., 3,675,957.

Abcor, Inc.: *See*—
Cooper, William W., IV; and Shea, Edward M., 3,676,193.

Abegg, Jean-Louis: *See*—
Ghilardi, Guiliana; Kalopissis, Gregoire; De Beaulieu, Henry Philippe; and Abegg, Jean-Louis, 3,676,546.

Abernathy, Roger E.; and Mitrofanoff, Nicholas S., to International Business Machines Corporation. Multiple program digital computer. 3,676,852, Cl. 340-172.500.

Abitboul, Georges D., to Audio Magnetics Corporation. Vibration processing of magnetic tape. 3,676,216, Cl. 117-237.000.

Aboytes, Peter, to Huber, J. M., Corporation. Bonding metals to elastomer systems. 3,676,256, Cl. 156-306.000.

Abrams, Andrew M., to Union Camp Corporation. Block structure with a reinforcing filler. 3,675,345, Cl. 35-69.000.

Abu Aktiebolag: *See*—
Borgstrom, Gote Ingvar, 3,675,847.

Acushnet Company: *See*—
Le Goff, Loman H., 3,675,698.

Adair, Robert S., to United States of America, Navy. Vertical reference pendulum. 3,675,549, Cl. 95-1.100.

Adams, Ladd M., to Balon Corporation. Valve actuator. 3,675,420, Cl. 60-51.000.

Adams, Rodney V.; and Medlin, Roger E., to Westinghouse Electric Corporation. Method and apparatus for transmitting information in meter reading. 3,676,875, Cl. 340-183.000.

Adams, Whitney B., to Scott Paper Company. Method for forming pyrolyzed structures. 3,676,173, Cl. 117-21.

Addressograph-Multigraph Corporation: *See*—
Botkin, Carl, 3,676,001.

ADM Tronics: *See*—
Di Mino, Alfonson, 3,676,633.

Aerojet-General Corporation: *See*—
Lucas, JamesM., 3,676,232.

Aeronautics and Space Administration with respect: *See*—
Paine, T. O., Administrator of the National; Aeronautics and Space Administration with respect; to an invention of; Moser, Billy G.; and Landel, Robert F., 3,675,712.

Aeronca, Inc.: *See*—
Page, George A.; Rathbun, Robert R.; and Kramer, Bruce E., 3,676,635.

Aerospace America, Inc.: *See*—
Kontranowski, Edward S., 3,675,730.

Agence Nationale de Valorisation de la Recherche: *See*—
Loup, Jean-Pierre Olivier; Gutknecht, Jacques Emile; and Anthony, Anne-Marie, nee Barbier, 3,676,771.

Agens, Maynard C.; and Kantor, Simon W., to General Electric Company. Laminates containing stannous compound in bonding resin. 3,676,285, Cl. 161-93.000.

Agfa-Gevaert: *See*—
Carpentier, Jan Albert; and De Pauw, Alfons Jozef, 3,676,142.
De Haes, Louis Maria, 3,676,125.
Depoorter, Henri; and Ghys, Theofiel Hubert, 3,676,119.
Poot, Albert Lucien; Van Besauw, Jan Frans; and Depoorter, Henri, 3,676,133.
Poot, Albert Lucien; and Depoorter, Henri, 3,676,138.
Poot, Albert Lucien; and Depoorter, Henri, 3,676,140.
Willems, Jozef Frans; Heugebaert, Frans Clement; and Brinckman, Eric Maria, 3,676,131.

Agfa-Gevaert Aktiengesellschaft: *See*—
Browatzki, Kurt; Gref, Hans; Herzhoff, Peter; Maus, Fritz; Platz, Stephan; Schaum, Gustav; Schweicher, Wolfgang; and Wasser, Willi, 3,676,178.
Hellmig, Ehrhard, 3,676,122.
Himmelmann, Wolfgang; Schranz, Karl-Wilhelm; Sobel, Johannes; and Van Veelen, George Frans, 3,676,143.
Mayr, Helmut; Pelte, Richard; Hubert, Theo; and Strasser, Helmut, 3,676,759.
Schulz, Gunter; Himmelmann, Wolfgang; and Randolph, August, 3,676,144.
Wilsch, Herbert; and Muller, Hermann, 3,675,996.
Winkler, Alfred; Wilsch, Herbert; and Winkler, Friedrich, 3,675,992.

Ahrens, William J. Truck with sliding roof. 3,675,967, Cl. 296-137.00b.

Ahrons, Richard Wilfred, to RCA Corporation. Delay line using integrated MOS circuitry. 3,676,711, Cl. 307-293.000.

Aikinson, James D.; Lepley, James W.; Nussbaum, Claire E.; and Stolzfus, John E. Fill pipe for silo. 3,675,796, Cl. 214-17.00c.

Air-Shields, Inc.: *See*—
Crowley, Charles L.; Grosholz, James R.; and Hutter, Charles G., III, 3,675,653.

Airco, Inc.: *See*—
Ormand, Frederick T.; and Auger, Huey V., 3,676,563.

Aisenberg, Sol; and Dodge, James B., to Whittaker Corporation, mesne. Extrusion system. 3,675,451, Cl. 72-20.000.

Aisin Seiki Kabushiki Kaisha: *See*—
Hirozawa, Koichiro, 3,675,512.

Ajax Hardware Manufacturing Corporation: *See*—
Holmes, Frank; Arias, Henry, Jr.; and Read, George, 3,675,883.

Ajax Magnethermic Corporation: *See*—
Amend, Clifford L., 3,675,908.

Akaiki, Seiji; and Morinaga, Akira, to Nissan Motor Company Limited and Atsugi Motor Parts Company, Limited. Apparatus for separating lubricant from a refrigerant lubricant mixture in a reciprocating type automotive air conditioner compresser. 3,676,024, Cl. 417-372.000.

Akashi, Goro; Suzuki, Osamu; and Nakamura, Matsuaki, to Fuji Photo Film Co., Ltd. Magnetic recording medium. 3,676,217, Cl. 117-239.000.

Akers, Richard L.; and Oplinger, Donald W., to Du Pont de Nemours, E. I., and Company. Yarn winding apparatus barrel cam and method of making the cam groove. 3,675,863, Cl. 242-43.000.

Aktiebolaget Kanthal: *See*—
Schrewelius, Nils Gustav, 3,676,093.

Aktiengesellschaft Brown, Boveri & Cie: *See*—
Mauthe, Gerhard, 3,676,624.

Aktiengesellschaft fur Brauerei-Industrie: *See*—
Raible, Karl J., 3,676,367.

Aktiengesellschaft Loepfe: *See*—
Loepfe, Erich, 3,676,769.

Akzona Incorporated: *See*—
Helmut, Werner; Frank, Dieter; and Drachenberg, Werner, 3,676,245.
Schwaller, Lando J.; Razal Albert J.; and White, John G., 3,675,450.

Alarm Products International, Inc.: *See*—
Parlato, Philip Joseph, 3,676,811.

Albers, Edwin W.: *See*—
Scherzer, Julius; and Albers, Edwin W., 3,676,368.

Albertson, Robert V. Stepwise movable V-belt drive pulley. 3,675,500, Cl. 74-230.17e.

Albertson, Robert V. Axial flow pump. 3,676,013, Cl. 415-128.000.

Albus, Peter, to Siemens Aktiengesellschaft. Planar technique for producing semiconductor microcomponents. 3,676,126, Cl. 96-36.200.

Alcan Research and Development Limited: *See*—
Mc Leod, Melvin Elliott; Deutschman, John Edward; Percival, Herbert Warren; and Spoel, Han, 3,676,105.

Alden, Milton, to Alden Research Foundation. Paper cutter. 3,675,523, Cl. 83-167.000.

Alden Research Foundation: *See*—
Alden, Milton, 3,675,523.

Alden Self-Transit Systems Corporation: *See*—
Hall, Edwin F., 3,675,584.

Aldrich Chemical Company: *See*—
Biel, John Hans; and Klundt, Irwin L., 3,676,492.

Alexander, David Lee: *See*—
Sweeney, William M.; and Alexander, David Lee, 3,675,671.

Alfano, Marco, to Silma. Cinematographic apparatus. 3,675,873, Cl. 242-192.000.

All-Steel Equipment Inc.: *See*—
Beaver, Donald V., 3,676,279.

Allen, Richard A., to Avco Corporation. Fade testing method and device using filtered ultra-violet radiation. 3,675,477, Cl. 73-150.000.

Allen, William J.; and Barber, Michael D., to Seaview Enterprises, Inc. Golf putter with three prong shaft attachment. 3,675,923, Cl. 273-80.200.

Allen-Bradley Company: *See*—
Slagg, James E.; Nelson, Grant W.; Moffitt, Jerry T.; and Balint, Joseph A., 3,676,822.

Allied Chemical Corporation: *See*—

Degginger, Edward R., 3,676,169.
Schroeder, Kenneth H.; and Kelly, George J., Jr., 3,676,219.
Stephenson, Robert L., 3,675,281.

Allington, Robert W., to Instrumentation Specialties, Inc. High sensitivity light absorbance apparatus. 3,676,686, Cl. 250-206.000.

Allington, Trevor Richard, to RCA Corporation. Method of electrically mounting components in hybrid circuits. 3,676,252, Cl. 156-277.000.

Allis-Chalmers Manufacturing Company: *See—*
Pflanz, Herbert M., 3,676,621.

Allnutt, Anthony J.: *See—*
West, Robert N.; Brook, Richard A.; Shaw, Richard G.; Lobb, Daniel R.; and Allnutt, Anthony J., 3,676,008.

Alpha Industries, Inc., mesne: *See—*
Levi, Clifford A., 3,675,314.

Alps Electric Co., Ltd.: *See—*
Nomura, Yukihiko, 3,676,827.

Altec, Inc.: *See—*
Castleberry, Joseph C., 3,676,017.

Alza Corporation: *See—*
Higuchi, Takeru; and Hussain, Anwar, 3,676,549.
Pharriss, Bruce B.; and Anliker, Max, 3,675,647.
Pharriss, Bruce B.; and Anliker, Max, 3,675,648.

Amano Corporation: *See—*
Sato, Reiji, 3,675,415.

Amano, Hiroyuki; Nishio, Fumihiki; Tauji, Nobuo; and Shirasu, Kazuo, to Fuji Shashin Film Kabushiki Kaisha; now and Fuji Photo Film Co., Ltd. Color photographic printing paper. 3,676,139, Cl. 96-82.000.

Amburn, Raymond D. Apparatus for magnetically treating seeds. 3,675,367, Cl. 47-1.300.

Amend, Clifford L., to Ajax Magnethermic Corporation. Quenching device. 3,675,908, Cl. 266-6.00s.

American Bank Note Company, mesne: *See—*
Wicker, Ralph C., 3,675,948.

American Can Company: *See—*
Gerber, Reinhold; Kerrigan, James Edward; and Hawley, Harry Ray, 3,676,543.
Hake, Walter Thomas; and Stieglitz, Henry Gilbert, 3,676,271.
Hein, Matthew Edward, 3,675,824.
Wendricks, Roland Norbert, 3,676,034.

American Chain & Cable Company, Inc.: *See—*
Stokes, Joseph F.; and Van Vessem, George E., 3,676,774.

American Cyanamid Company: *See—*
Gallacher, Lawrence Vincent, 3,675,391.
Song, John, 3,676,449.
Story, Richard-Neil; and Bundegaard, Howard, 3,676,540.

American Export Isbrandtsen Lines, Inc.: *See—*
Dluhy, Herbert, 3,675,795.

American Hoechst Corporation: *See—*
Meyer, Ronald J.; Horsley, Orville E.; and Eichel, Herman J., 3,676,559.

American Home Products Corporation: *See—*
Zilliken, Frederick William; and Egge, Heinz, 3,676,472.

American Optical Corporation: *See—*
Wilton, Henry T., 3,675,998.

Ametek, Inc.: *See—*
Summers, Stanely E.; and Seltzer, Clyde W., 3,675,282.

AMF Incorporated: *See—*
Des Jardins, Joseph A., 3,675,912.

AMH Corporation: *See—*
Moden, James R., 3,675,279.

AMSTED Industries Incorporated: *See—*
Becque, John H., 3,675,494.
Germain, Andrew G.; and Dressel, William G., 3,675,518.
Mulcahy, Harry W.; and Russell, Thomas B., 3,675,350.
Peck, Richard O., 3,675,889.

Amusin, Boris Zinovievich: *See—*
Silvestrov, Sergei Nikolaevich; Sinichkin, Moisei Mikhailovich; Shirokov, Grigory Ivanovich; Soloviev, Jury Filippovich; Silvestrov, Nikolai Demyanovich; and Amusin, Boris Zinovievich, 3,675,433.

Amvit: *See—*
Potter, Charles, 3,675,685.

Ancona, Anthony, to Chandler Evans, Inc. Digital function generator for two independent variables with interpolation. 3,676,655, Cl. 235-152.000.

Anderson, David G., to Quanta Welding Company. Article of manufacture and method of making the same. 3,676,636, Cl. 219-117.00r.

Anderson, David G., to Quanta Welding Company. Aperture cover and method of making the same. 3,676,637, Cl. 219-117.00r.

Anderson, Glenn H.: *See—*
Tsai, James H.; and Anderson, Glenn H., 3,676,474.

Anderson, John E.; and Sinnett, Homer Dayle, to State of Nebraska. Surface elevation profile measuring device. 3,675,545, Cl. 94-46.000.

Anderson, John Wallace; and Loughridge, Frederick Ardel, to Sylvania Electric Products, Inc. Photoflash lamp having laminated glass envelope. 3,676,043, Cl. 431-93.000.

Anderson, Keith B.: *See—*
Best, Albert M.; and Anderson, Keith B., 3,675,802.

Anderson, Philip Warren; Dynes, Robert Carr; and Fulton, Theodore Alan, to Bell Telephone Laboratories, Incorporated. Supercurrent structures utilizing mobil flux vortices. 3,676,718, Cl. 307-306.000.

Anderson Power Products, Inc.: *See—*
Sharaf, Harold M.; and Eby, Richard L., 3,676,770.

Anderson, Scott. Process relating to ultra-pure metal halide particles. 3,676,534, Cl. 264-9.000.

Anderson, Terry P.; and Parker, Fred W., to Du Pont de Nemours, E. I., and Company. Process for preparing a thermosetting acrylic enamel modified with cellulose acetate butyrate. 3,676,377, Cl. 260-15.000.

Andersson, Per-Erik; and Bergholm, Carl Arne, to Svenska Cellulosa Aktiebolaget. Process and device for recovering sulfur dioxide from waste sulfite liquor. 3,675,707, Cl. 159-20.000.

Andreasen, Howard P.; Ankeny, Jay H.; Foddy, Harold W.; and Reynolds, David W., to Delavan Manufacturing Co. Compensated hydraulic device. 3,676,020, Cl. 417-222.000.

Andruchiw, Roman. Method of illuminating preselected areas of a display. 3,675,997, Cl. 353-28.000.

Andrusenko, Petr Ivanovich; Dolganov, Kint Evgenievich; Kovalev, Alexandr Ivanovich; Berezovsky, Pavel Iosipovich; Dmitrenko, Vladimir Ilich; Shukshin, Nikolai Pavolich; Gutarevich, Jury Feodosievich; Kialov, Vladimir Grigorievich; Chevtaev, Andrei Vasilievich; Koshman, Eduard Ivanovich; and Filippov, Vladimir Vasilievich. Fuel pump for internal combustion engines. 3,676,023, Cl. 417-253.000.

Anellux Systems Corporation, mesne: *See—*
Rosebrook, Roy, Sr., 3,675,890.

Ankeny, Jay H.: *See—*
Andreasen, Howard P.; Ankeny, Jay H.; Foddy, Harold W.; and Reynolds, David W., 3,676,020.

Anliker, Max: *See—*
Pharriss, Bruce B.; and Anliker, Max, 3,675,647.
Pharriss, Bruce B.; and Anliker, Max, 3,675,648.

Ansaks Industries, Inc.: *See—*
Austin, Leonard H., 3,675,390.

Anstey, Nigel Allister. Seismic prospecting with a continuous seismic source. 3,676,841, Cl. 340-15.5cc.

Anthony, Anne-Marie, nee Barbier: *See—*
Loup, Jean-Pierre Olivier; Gutknecht, Jacques Emile; and Anthony, Anne-Marie, nee Barbier, 3,676,771.

Anthony, William H.: *See—*
Pryor, Michael J.; and Anthony, William H., 3,676,113.

Anzuino, Giuseppe, to Colgate-Palmolive Company. Modification of reduced keratinous substrates with a vinyl monomer. 3,676,550, Cl. 424-71.000.

Appleby, Paul E.; Folden, Denver C.; and Kubinski, Donald C., to Goodyear Tire & Rubber Company, The. Tire building apparatus having a plurality of component applying stations and drums. 3,676,259, Cl. 156-395.000.

Appleby, Paul E.; Riggs, Robert S.; and Woodhall, Edwin S., to Goodyear Tire & Rubber Company, The. Tire building apparatus. 3,676,260, Cl. 156-396.000.

Appleby, Paul E.; Folden, Denver C.; and Peck, Arland A., to Goodyear Tire & Rubber Company, The. Bead setting and ply turnup apparatus. 3,676,261, Cl. 156-401.000.

Appleton, Tony E. Machine for assembling a pre-hung door unit. 3,675,297, Cl. 29-200.00r.

Applied Power Industries, Inc.: *See—*
MacMillan, Charles W., 3,675,495.

Aquaria, Inc.: *See—*
Louis, Anthony, 3,676,665.

Arai, Kiyoyuki: *See—*
Kikuchi, Tomio; and Arai, Kiyoyuki, 3,675,548.

Araki, Kazumi: *See—*
Nakajima, Junichi; Araki, Kazumi; and Morinaga, Kenzo, 3,676,301.

Arblaster, Dennis. Double action spring clip. 3,675,275, Cl. 24-81.0hs.

Arcadia Refining Company: *See—*
Hix, Charles M., Jr., 3,675,427.

Archer, Sydney; and Schulenberg, John W., to Sterling Drug Inc. Haloalkanoyltetrahydroisoquinolinecarboxylic acid esters. 3,676,444, Cl. 260-287.00r.

Arel, Robert W.; and Meyer, Donald R., to Oster, John, Manufacturing Co. Automatic electric can opener. 3,675,321, Cl. 30-4.00r.

Arens, James L.; and Staten, Hi W., to Phillips Petroleum Company. Measurement of heat generated in exothermic reaction. 3,676,653, Cl. 235-151.300.

Argay, Rudolf: *See—*
Kangle, Purushottam Janardan; Ramanathan, Visvanathan; and Argay, Rudolf, 3,676,051.

Arias, Alan, to United States of America, National Aeronautics and Space Administration. Apparatus for producing metal powders. 3,675,910, Cl. 266-24.000.

Arias, Henry, Jr.: *See—*
Holmes, Frank; Arias, Henry, Jr.; and Read, George, 3,675,883.

Arndt, Charles J., to Harsco Corporation. Apparatus for placing concrete mix or the like. 3,675,762, Cl. 198-233.000.

Arrighetti, Sergio; Vajna, Eugenio; and Cesca, Sebastiano, to Snam Progetti S.p.A. Polyene hydrocarbons and process for obtaining same. 3,676,510, Cl. 260-666.0py.

Arrighetti, Sergio; Vajna, Eugenio; and Cesca, Sebastiano, to Snam Progetti S.p.A. Polyene hydrocarbons containing two conjugated double bonds and process for obtaining same. 3,676,511, Cl. 260-666.0py.

Arrighetti, Sergio; Vajna, Eugenio; and Cesca, Sebastiano, to Snam Progetti S.p.A. Polyene hydrocarbons containing at least two conjugated double bonds and process for obtaining same. 3,676,512, Cl. 260-666.0py.

Arrow-Hart, Inc.: *See—*
Dennison, John J., 3,676,630.

Arsenius, Torsten Henry; and Hallstedt, Carl Goran Albin, to SKF Industrial Trading and Development Company, N.V. Bearing for supporting heavy rotating machinery. 3,675,977, Cl. 308-9.000.

Arthur, Jett C., Jr.; and Singh, Sujan, to United States of America, Agriculture. High energy radiation stabilization of cellulose obtained by esterifying with thenoyl chloride. 3,676,056, Cl. 8-120.000.

Artz, Kenneth W., to Grace, W. R., & Co. Vending container with cover therefor. 3,675,811, Cl. 220-20.000.

Asahi Kogaku Kogyo Kabushiki Kaisha: *See—*
Nishikawa, Yukiyasu; and Hidaka, Tsuneo, 3,676,692.

Ashland Oil & Refining Company: *See—*
Robin, Michael; and Schulte, Sheldon R., 3,676,530.

Ashland Oil Inc.: *See—*
Robins, Janis, 3,676,392.

Askins, Ralph W. Cigarette receptacle and extinguisher. 3,675,662, Cl. 131-235.

Asmus, Rodger W., to International Harvester Company. Low effort shuttle block selector spool modification for the manual feathering control and overspeed control for a hydrostatic transmission. 3,675,421, Cl. 60-53.00r.

Asmussen, Daniel R., to United Control Corporation. Demodulator for angularly related signals. 3,676,659, Cl. 235-186.000.

Astrom, Klas Johan: *See—*
Schoeps, Knut Christian; and Astrom, Klas Johan, 3,675,726.

Ateliers de Construction Electriques Charleroi (ACEC): *See—*
Jauquet, Christian, 3,676,669.

Atkins & Merrill, Inc.: *See—*
Koch, John H., 3,675,880.

Atlantic Richfield Company: *See—*
Borchert, Alfred E.; and Capaldi, Eugene C., 3,676,375.
Faulk, Joseph H.; Kern, Loyd R.; and King, Graham E., 3,675,728.
Haimula, Norman E., 3,675,430.

Atlas Copco Aktiebolag: *See—*
Schoeps, Knut Christian; and Astrom, Klas Johan, 3,675,726.

Atsugi Motor Parts Company, Limited: *See—*
Akaiki, Seiji; and Morinaga, Akira, 3,676,024.

Atwood, Lamar T.; and Gidge, Lester, to Union Carbide Corporation. Apparatus for changing mesh size of non-woven netting. 3,675,285, Cl. 28-1.0cl.

Audio Magnetics Corporation: *See—*
Abitboul, Georges D., 3,676,216.

Aufderhaar, Ernest: *See—*
Bosshard, Rene; Gubler, Kurt; Aufderhaar, Ernest; and Brenneisen, Paul, 3,676,450.

Auger, Huey V.: *See—*
Ormand, Frederick T.; and Auger, Huey V., 3,676,563.

Austin, Leonard H., to Ansaks Industries, Inc. Capsule filling apparatus. 3,675,390, Cl. 53-282.000.

Australian Paper Manufacturers Limited: *See—*
Morris, Andrew W.; and Norman, Reginald J., 3,676,247.

Automatic Flag Poles, Inc.: *See—*
Stangarone, Gene; Cassara, Frank A.; and Dupont, Eugene F., 3,675,615.

Avco Corporation: *See—*
Allen, Richard A., 3,675,477.
Stiff, Bernard G. E.; and Finelli, Thomas M., 3,675,980.

Avelines, Raymond Andre, to Crane S.A. Cock with spherical casing. 3,675,893, Cl. 251-152.

Avent Industries, Inc.: *See—*
Ettlinger, Ralph, Jr.; and Strobl, Frederick P., Jr., 3,675,770.

Avery, Roger Peter, to Bunker-Ramo Corporation, The. Coaxial connector having one-piece clamp assembly. 3,676,573, Cl. 174-75.00c.

Avril, Arthur C., to A & T Development Corporation. Bag stacking machine. 3,675,790, Cl. 214-6.00p.

Axelrod, Norman Nathan, to Bell Telephone Laboratories, Incorporated. Group III-V Schottky barrier diodes. 3,675,316, Cl. 29-576.000.

B & J Manufacturing Company, mesne: *See—*
Corless, Lee M., 3,675,705.

Babcock & Wilcox Company, The: *See—*
Weaver, Galen K.; Shaffer, Howard A.; and Coughlin, Stephen A., 3,676,575.

Babcock, Lyndon R., Jr.; and Walker, Dale A., to Shell Oil Company. Process for preparation of high impact polystyrene. 3,676,527, Cl. 260-876.00r.

Bach, Walter H. Stacked battery construction having insulating disks between cells joined by welds. 3,676,221, Cl. 136-111.000.

Bacon, Donald Dingley; Nesbitt, Ethan Allen; Sherwood, Richard Curry; and Wernick, Jack Harry, to Bell Telephone Laboratories, Incorporated. Use of MnAlGe in magnetic storage devices. 3,676,867, Cl. 340-174.0yc.

Badalich, Frank C.; and Watterlohn, Roy H., to Bell & Howell Company. Filmstrip projector with synchronized sound. 3,675,994, Cl. 352-163.000.

Bader, Jorg; and Gatzi, Karl, to Ciba-Geigy Corporation. 3-Arylimino-1,2-dithiols. 3,676,459, Cl. 260-327.00c.

Badia, Frank Arthur; and Kirby, Gary Neil, to International Nickel Company, The. High strength copper-nickel alloy. 3,676,226, Cl. 148-32.000.

Badische Anilin- & Soda-Fabrik Aktiengesellschaft: *See—*
Heil, Eduard; Trieschmann, Hans-Georg; Willersinn, Herbert; Bolte, Herbert; and Bronstert, Klaus, 3,676,378.

Bahr, Alex; and Peche, Gerhard, to Siemens Aktiengesellschaft. Gas-discharge overvoltage arrester. 3,676,743, Cl. 317-61.000.

Bailey, Loren C., 50% to Thompson, James C. Ladder mounting means for chalk line. 3,675,735, Cl. 182-129.000.

Bailey, Robert A.; and Michelsen, Arve, to United States of America, Navy. Coruscative shaped charge having improved jet characteristics. 3,675,575, Cl. 102-24.0hc.

Bailly, Roger Gaston, to Societe Anonyme, Societe Minere et Metallurgique de Penanoya. Portable metering charges for low viscosity materials. 3,675,827, Cl. 222-194.000.

Baker, Joseph S.; Marsan, Mario S.; and Duncan, Robert C., to Procter & Gamble Company, The. Disposable article with moisture-actuated indicating agent. 3,675,654, Cl. 128-287.000.

Baker, William J.; and Hurst, Richard J., to Gardner-Denver Company. Conductor wrapping tool. 3,675,861, Cl. 242-7.170.

Baker-Roos, Inc.: *See—*
Roggie, William Clark, 3,675,736.

Bakoledis, Andrew G., to Olin Corporation. Muzzle bushing assembly for power-actuated fastening tools. 3,675,838, Cl. 227-8.000.

Baldwin, Walton B.; and Burger, Donald A., to Bendix Corporation, The. Fluidic fuel system. 3,675,906, Cl. 261-23.00a.

Balint, Joseph A.: *See—*
Slagg, James E.; Nelson, Grant W.; Moffitt, Jerry T.; and Balint, Joseph A., 3,676,822.

Balmes, Mark E., Sr., to General Fire Extinguisher Corporation. Pressure indicator. 3,675,722, Cl. 169-30.000.

Balon Corporation: *See—*
Adams, Ladd M., 3,675,420.

Balthis, David L.: *See—*
Nix, Lawrence A., Jr.; and Balthis, David L., 3,676,591.

Baltz, Albert L.: *See—*
Vocke, Elmer E.; and Baltz, Albert L., 3,676,643.

Baltz, Albert L.; and Voeke, Elmer E., to Eagle Range and Manufacturing Company. Runner construction for oven rack. 3,675,638, Cl. 126-339.000.

Bancroft, Joseph, & Sons, Co.: *See—*
Cabello, Charles R., 3,675,286.

Banks, James L.: *See—*
Russell, Lewis K.; and Banks, James L., 3,676,742.

Barach, Howard J.: *See—*
Marshall, Robert A.; and Barach, Howard J., 3,675,780.

Baranowski, Leslie B., to Keene Corporation. Apparatus for the purification of oils and the like. 3,675,395, Cl. 55-164.000.

Barber, Michael D.: *See—*
Allen, William J.; and Barber, Michael D., 3,675,923.

Barber-Colman Company: *See—*
Davies, Everett H., 3,676,572.

Bardoneschi, Roland: *See—*
Muller, Georges; and Bardoneschi, Roland, 3,676,461.

Barger, William R., Jr.: *See—*
Garrett, William D.; and Barger, William R., Jr., 3,676,359.

Barlow, John W. Screw and screw driver combination. 3,675,694, Cl. 145-50.00a.

Barnard, Paul G.; Starliper, Aaron G.; and Stephenson, James B., to United States of America, Interior. Refining iron-bearing wastes. 3,676,107, Cl. 75-109.000.

Barr, Robert D. Carrying rack for motorcycle or similar vehicle. 3,675,833, Cl. 224-29.00r.

Barron, Charles D.; Peterson, Earl A.; Stark, Gary K.; and Wilms, Carl A., to Jackson, Byron, Inc. Motion compensating hoist. 3,675,900, Cl. 254-172.

Barron, Daniel. Sonar range prediction and tactical computer. 3,675,352, Cl. 40-31.000.

Barten, Antonius Martinus: *See—*
Vermeulen, Geert Jan; and Barten, Antonius Martinus, 3,675,687.

Bartens, Bjoern: *See—*
Bartens, Carl Emil, 3,676,618.

Bartens, Carl Emil; deceased (by Bartens, Karl E.; and Bartens, Bjoern; heirs), to Kristian Krog Sorensen. Push-button switch. 3,676,618, Cl. 200-77.000.

Bartens, Karl E.: *See—*
Bartens, Carl Emil, 3,676,618.

Bartlett, Wilford O.: *See—*
Scala, Luciano C.; and Bartlett, Wilford O., 3,676,383.

Bartolomeo, Blase J.: *See—*
La Rocca, James J.; and Bartolomeo, Blase J., 3,675,668.

BASF Wyandotte Corporation: *See—*
Ciko, John D., 3,676,353.
Kaneko, Thomas M.; Schmolka, Irving R.; and Compton, John W., 3,676,354.

Basham, Edgar William James; and Tizard, Kenneth Wilfrid, to Westland Aircraft Limited. Electronically controlled oxygen regulators. 3,675,649, Cl. 128-142.00r.

Bass, Patrick: *See—*
Dransfield, Desmond; Bass, Patrick; White, Roy Ernest; and Bracken, Leslie Thomas, 3,676,876.

Bata Shoe Company, Inc.: *See—*
Maltby, Frank Vincent, 3,676,542.

Bateson, Norman E.; and Pringle, William L., to Pullman Incorporated. Truss-type cargo carrying vehicle. 3,675,592, Cl. 105-368.00r.

Battelle Development Corporation, mesne: *See—*
Pederson, Arthur M., 3,675,484.

Batzer, Hans: *See—*
Haug, Theobald; and Batzer, Hans, 3,676,455.

Bauer, Franz; Besemer, Karl Friedrich; and Kinner, Gotthard, to Siemens Aktiengesellschaft. Testing probe construction. 3,676,776, Cl. 324-72.500.
Bauer, Peter, to Bowles Fluidics Corporation. Bi-directional fluidic elements and circuits. 3,675,669, Cl. 137-1.000.
Bauer, Richard G.; and Patitsas, George P., to Goodyear Tire & Rubber Company, The. Ethylhexyl acrylate-acrylonitrile-divinylbenzene terpolymers. 3,676,410, Cl. 260-80.810.
Baughman, Gaylord G., to Cascade Corporation. Load-handling apparatus with reach mechanism. 3,675,803, Cl. 214-730.000.
Baukal, Albert Jozel: *See*—
Viktora, Josef Karel; and Baukal, Albert Jozel, 3,675,488.
Baustin, Michel M. Means for recording medicinal dosages. 3,675,620, Cl. 116-121.000.
Bawduniak, Joseph A.: *See*—
Macartney, Carl H.; and Bawduniak, Joseph A., 3,675,469.
Bayer, Bernd: *See*—
Riess, Werner; Schaefer, Helmut; and Bayer, Bernd, 3,676,180.
Baya, Marvin G., to Delta Exploration Company, Inc. Underwater seismic acoustic energy signal source. 3,676,840, Cl. 340-12.000.
Beare, Gene K.; Kopelman, Bernard; and Seeger, Donald E., to Sylvania Electric Products Inc. Indicating flashlamp. 3,676,663, Cl. 240-1.300.
Beaver, Donald V., to All-Steel Equipment Inc. Sandwich top construction for office furniture. 3,676,279, Cl. 161-44.000.
Beck, Hansludwig: *See*—
Brandenburg, Helmut; and Beck, Hansludwig, 3,676,268.
Beck, Joseph H., to Video Information Systems, Inc. Interrogated transponder system. 3,676,580, Cl. 178-5.100.
Becque, John H., to AMSTED Industries Incorporated. Pipe testing. 3,675,494, Cl. 73-432.00r.
Bedetti, Gianfranco, to Montecatini Edison S.p.A. Apparatus for the combustion of titanium tetrachloride with oxygen for the production of titanium dioxide pigment. 3,676,060, Cl. 23-277.00r.
Beehler, Vernon D.: *See*—
Sawyer, Harold T., 3,676,218.
Beeli, Johann Battesta, to International Telephone and Telegraph Corporation. Storage tube construction. 3,676,726, Cl. 313-65.00r.
Beene, Calvin D., to Schlumberger Technology Corporation. Articles of manufacture including cylindrical members having specially terminated protective coatings. 3,675,950, Cl. 285-45.000.
Behrendt, Lothar: *See*—
Schorr, Manfred; Durckbeimer, Walter; Behrendt, Lothar; and Duwel, Dieter, 3,676,446.
Belew, Robert R., to United States of America, National Aeronautics and Space Administration. Thermal compensating structural member. 3,675,376, Cl. 52-1.000.
Bell & Howell Company: *See*—
Badalich, Frank C.; and Watterlohn, Roy H., 3,675,994.
Cherniavsky, Jaroslav, 3,675,995.
Freeland, Stanley R., 3,675,559.
Grant, Peter H., 3,675,869.
Rempala, Chester S., 3,675,877.
Bell and Howell Company: *See*—
Upadhyay, Pravin M., 3,675,503.
Bell Canada-Northern Electric Research Limited: *See*—
Lock, Roger David, 3,676,872.
Bell, Norman; and Lam, Hung-Kei H., to Kaiser Aluminum & Chemical Corporation. Purification of magnesium chloride solutions. 3,676,077, Cl. 23-296.000.
Bell Telephone Laboratories, Incorporated: *See*—
Anderson, Philip Warren; Dynes, Robert Carr; and Fulton, Theodore Alan, 3,676,718.
Axelrod, Norman Nathan, 3,675,316.
Bacon, Donald Dingley; Nesbitt, Ethan Allen; Sherwood, Richard Curry; and Wernick, Jack Harry, 3,676,867.
Beurrier, Henry Richard, 3,676,790.
Bobeck, Andrew Henry, 3,676,870.
Brewer, Sherman Theodore, 3,676,613.
Brojdo, Samuel, 3,676,715.
Burckhardt, Christoph B.; and Doherty, Edward T., 3,676,130.
Carlson, Herbert Neil, 3,676,786.
Copeland, John Alexander, III, 3,676,871.
Dalton, John Vincent; and Labuda, Edward Franklin, 3,676,727.
Danielmeyer, Hans Guenter, 3,676,799.
De Lange, Owen Edward, 3,676,684.
English, Alan Taylour; and Turner, Paul Anthony, 3,676,214.
Fetterman, Gerald Burt, 3,676,087.
Flanagan, James Loton; Kronmeyer, James Hughes; and Nelson, John Richard, 3,675,513.
Forst, Steve Michael; and Reinheimer, Horst Alfred, 3,676,741.
Gloge, Detlef Christoph, 3,675,985.
Goldthorp, David Clayton; Limiero, Albert David; and Smith, John Paul, 3,676,608.
Hara, Katsuyuki; and Schoahorn, Harold, 3,676,289.
Jetzt, John J., 3,676,589.
Kogelnik, Herwig Werner; and Shank, Charles Vernon, 3,675,990.
Kurth, Carl Ferdinand, 3,676,598.
La Macchia, John Thomas, 3,675,983.
Mason, Warren Perry, 3,676,805.
Michaelis, Paul Charles, 3,675,298.
Mueller, Kurt Hugo, 3,676,804.
Murray, Robert W.; and Story, Paul R., 3,676,394.
Nash, Donald H.; Nenninger, Theodore P.; and Prescott, Robert E., 3,676,607.
Peterson, Gerald Henry, 3,676,597.
Retajczyk, Theodore Frank, Jr., 3,676,240.
Singh, Shobha; and Van Uitert, Legrand Gerard, 3,676,695.
Smith, George Elwood, 3,675,319.
Vazirani, Hargovind Nihchaldas, 3,676,223.
Weischedel, Herbert Rudolf; and Westerman, George Raymond, 3,676,800.
Whiteyer, James Glenn, 3,676,604.
Zebe, Charles, 3,675,315.
Bellaton, Roland: *See*—
Ride, Jean-Louis; and Bellaton, Roland, 3,675,870.
Beller, Hans Albert, to ITT Industries, Inc. Spot-type disc brake. 3,675,744, Cl. 188-73.600.
Beller, Zoltan: *See*—
Domokos, Jozsef; Benedek, Gyorgy; Kiss, Bela; Winkler, Laszlo; and Beller, Zoltan, 3,673,316.
Domokos, Jozsef; Benedek, Gyorgy; Kiss, Bela; Winkler, Laszlo; and Beller, Zoltan, 3,676,316.
Beloit Corporation: *See*—
Daane, Robert A., 3,675,337.
Bendix Corporation: *See*—
Somer, Toivo A., 3,676,676.
Bendix Corporation, The: *See*—
Baldwin, Walton B.; and Burger, Donald A., 3,675,906.
Freedman, Morris D., 3,676,687.
Freedman, Morris D., 3,676,866.
Frei, Karl; and Hood, Edwin Elliott, 3,675,740.
Frei, Karl; and Hood, Edwin Elliott, 3,675,741.
Henegar, Hubert B., 3,676,650.
McDaniel, George H., 3,676,651.
McDaniel, George H., 3,676,760.
Morrey, Walter T., 3,676,768.
Bendler, Hellmut: *See*—
Gawlick, Heinz; and Bendler, Hellmut, 3,675,533.
Benedek, Gyorgy: *See*—
Domokos, Jozsef; Benedek, Gyorgy; Kiss, Bela; Winkler, Laszlo; and Beller, Zoltan, 3,673,316.
Domokos, Jozsef; Benedek, Gyorgy; Kiss, Bela; Winkler, Laszlo; and Beller, Zoltan, 3,676,316.
Bengtsson, Bigge, to TeBe Elprodukter AB. Closet means. 3,675,250, Cl. 4-111.000.
Beninger, Darrell J.: *See*—
Martin, John P.; Beninger, Darrell J.; and Lemon, John R., 3,675,317.
Benson, Gustav E.: *See*—
Marzocchi, Alfred; Benson, Gustav E.; and Leach, Robert E., 3,675,704.
Bentley, William: *See*—
Jorgensen, Adam A.; Bentley, William; and Urycki, Edward, 3,676,747.
Bentz, Alan P.; and Scarpellino, Richard, to General Foods Corporation. Flavor enhancing materials and method of preparing same. 3,676,156, Cl. 99-140.00r.
Benz, Mark G.: *See*—
Martin, Donald L.; and Benz, Mark G., 3,676,577.
Bereday, Sigmund. Seat construction. 3,675,970, Cl. 297-452.
Beres, Steven W., to VCA Corporation. Tamperproof aerosol dispenser. 3,675,831, Cl. 222-402.110.
Beretta, Pier Carlo, to Fabrica d'Armi P. Beretta S.p.A. Automatic rifle. 3,675,534, Cl. 89-185.000.
Berezovsky, Pavel Iosipovich: *See*—
Andrusenko, Petr Ivanovich; Dolganov, Kint Evgenievich; Kovalev, Alexandr Ivanovich; Berezovsky, Pavel Iosipovich; Dmitrenko, Vladimir Ilich; Shukshin, Nikolai Pavolich; Gutarevich, Jury Feodosievich; Kislov, Vladimir Grigorievich; Chevtaev, Andrei Vasilievich; Koshman, Eduard Ivanovich; and Filippov, Vladimir Vasilievich, 3,676,023.
Berg, Louis L., to Creative Tool Company. High energy impact wrench assembly. 3,675,515, Cl. 81-121.000.
Berg, Markus: *See*—
Fries, Walter; Berg, Markus; Dohr, Manfred; and Kirstahler, Alfred, 3,676,338.
Berg, Markus; Fries, Walter; and Kirstahler, Alfred, to Henkel & Cie G.m.b.H. Combinations of detergents with controlled foaming properties and washing agents containing them. 3,676,340, Cl. 252-8.750.
Berg, Richard E.: *See*—
Cummings, John P.; and Berg, Richard E., 3,676,321.
Bergh Bros. Co., Inc.: *See*—
Bergh, George G.; and Bergh, Robert G., 3,675,842.
Bergh, George G.; and Bergh, Robert G., to Bergh Bros. Co., Inc. Decorative covering for a container component. 3,675,842, Cl. 229-6.00r.
Bergh, Robert G.: *See*—
Bergh, George G.; and Bergh, Robert G., 3,675,842.
Bergholm, Carl Arne: *See*—
Andersson, Per-Erik; and Bergholm, Carl Arne, 3,675,707.
Bergwall, Carey. Electric plug. 3,676,831, Cl. 339-74.00r.
Berlincourt, Don A.; and Pim, Kendall A., to Vernitron Corporation. Multi-element piezoelectric circuit component. 3,676,724, Cl. 310-8.200.
Bernard, Arthur A.; and Bernard, Richard A., to Dover Corporation, mesne. Arc welding gun. 3,676,640, Cl. 219-130.000.
Bernard, Richard A.: *See*—
Bernard, Arthur A.; and Bernard, Richard A., 3,676,640.

Berndt, Claus. Rivet head arrangement for a wobble riveting machine. 3,675,461, Cl. 72-406.000.
Berol Corporation, mesne: *See*—
Kampmier, Thomas R., 3,675,886.
Besemer, Karl Friedrich: *See*—
Bauer, Franz; Besemer, Karl Friedrich; and Kinner, Gotthard, 3,676,776.
Best, Albert M.; and Anderson, Keith B., to Sperry Rand Corporation. Bale wagon. 3,675,802, Cl. 214-520.000.
Beurrier, Henry Richard, to Bell Telephone Laboratories Incorporated. Differential feedback amplifier. 3,676,790, Cl. 330-30.00d.
Bevan, Robert H.; and Buffone, Vincent D., to Goulds Pumps, Incorporated. Pump. 3,676,014, Cl. 415-200.000.
Biard, Daniel Guy Jean: *See*—
Zaki, Wahib Nassif; and Biard, Daniel Guy Jean, 3,676,374.
Bickerdike, Robert Lewis; and Hughes, Garyth, to National Research Development Corporation. Carbon materials and articles. 3,676,160, Cl. 106-38.900.
Bidell, Frederick W.; and Hughes, Richard J., to GTE Sylvania Incorporated. Frequency synthesizer apparatus having automatic fine tuning. 3,676,794, Cl. 331-11.000.
Biel, John Hans; and Klundt, Irwin L., to Aldrich Chemical Company. Amino acid amides of disubstituted phenethylamines. 3,676,492, Cl. 260-559.
Biermann, William A., to Controls Company of America. Metering valve. 3,675,892, Cl. 251-121.000.
Biland, Hans Rudolf; and Duennenberger, Max, to Ciba Limited. Carboxylic acid amides. 3,676,494, Cl. 260-559.00t.
Bilinski, Donald J.; Galowin, Lawrence S.; and Napolitano, Michael, to Singer Company, The, mesne. Thermal shield. 3,675,711, Cl. 165-32.000.
Bingham & Taylor: *See*—
Zinn, Frank R., 3,676,567.
Bio-Analytical Laboratories, Inc.: *See*—
Fiore, John M., 3,675,641.
Bio-Consultants, Inc.: *See*—
Drucker, Kenneth G., 3,676,723.
Drucker, Kenneth Gus, 3,675,846.
Bishop, Nigel Douglas: *See*—
Snell, Brian Kenneth; and Bishop, Nigel Douglas, 3,676,443.
Black, Charles A., to Detrex Chemical Industries Inc. Percolator distillation system. 3,676,307, Cl. 203-20.000.
Blackmond, Ronald C., to Robicon Corporation. Multiphase alternating current regulation system for transformer-coupled loads. 3,676,766, Cl. 323-6.000.
Blackwell, Dana J., to Lewis Engineering Company, The. Remote controlled clock reset device. 3,675,410, Cl. 58-35.00r.
Blagg, Leon. Coupler-aligning trailer hitch. 3,675,947, Cl. 280-500.000.
Blair, George S.: *See*—
Burrage, Benjamin S.; and Blair, George S., 3,675,760.
Blake, Stephen, to Pennwalt Corporation, mesne. 1,6-Bis(2-oxacyclohexyl)-hexane-1,6-diones and a process for producing them. 3,676,498, Cl. 260-586.00r.
Blanchard, Eugene J.: *See*—
Lofton, John T.; Harper, Robert J., Jr.; and Blanchard, Eugene J., 3,676,207.
Blank, Wallace J., to Oshkosh Truck Corporation. Powershift transmission. 3,675,508, Cl. 74-745.000.
Blankenstein, Gunter: *See*—
Wolf, Gerhard D.; Blankenstein, Gunter; and Nischk, Gunter, 3,676,525.
Blatt, Leland F. Pressure safety release industrial air exhaust silencer. 3,675,733, Cl. 181-37.000.
Blatt, Leland F. Dual plunger actuated sealed combination safety and interlock switch mechanism. 3,676,625, Cl. 200-153.01a.
Blatt, Leland Francis; and Wiesenhofer, Frank H. Silencer with frequency separating and modulating baffle. 3,675,734, Cl. 181-56.000.
Blazek, William S., to TRW Inc. Method of making accurate cores. 3,675,708, Cl. 164-35.000.
Bletz, Howard W., to Therm-O-Disc, Incorporated. Adjustable thermostat. 3,676,817, Cl. 337-347.000.
Block, Hans-Jurgen: *See*—
Netzer, Theodor; and Block, Hans-Jurgen, 3,676,233.
Blommers, Elizabeth, to Koppers Company, Inc. Reinforced foam polystyrene laminate. 3,676,284, Cl. 161-93.000.
Blomquist, Arnold W., to Sci-Med, Inc., mesne. Detection system for insecticides. 3,675,490, Cl. 73-425.000.
Bluestein, Bernard B., to Sunbeam Corporation. Steaming apparatus with removable brush. 3,675,449, Cl. 68-222.000.
Bobeck, Andrew Henry, to Bell Telephone Laboratories, Incorporated. Single wall domain transfer circuit. 3,676,870, Cl. 340-174.0tf.
Boch, Jean Baptiste Christian: *See*—
Redel, Joseph; and Boch, Jean Baptiste Christian, 3,676,499.
Bodenseewerk Geratetechnik GmbH: *See*—
Schwarz, Karlhans, 3,676,843.
Boel, Michel; and Decheane, Roger, to Solvay & Cie. Process for the polymerization and copolymerization of vinyl monomers and the resin compositions obtained thereby. 3,676,413, Cl. 260-87.500.
Boelter, Donald A., to General Aviation Electronics, Inc. Device for automatically identifying unksown transistors. 3,676,767, Cl. 324-158.00d.
Boer, Machiel, to Tektronix, Inc. Film attenuator with distributed capacitance high frequency compensation. 3,676,807, Cl. 333-81.00a.
Bokros, Jack C., to Gulf Oil Corporation. Coated article and method for making same. 3,676,179, Cl. 117-46.0cg.
Bolte, Herbert: *See*—
Heil, Eduard; Trieschmann, Hans-Georg; Willersinn, Herbert; Bolte, Herbert; and Bronstert, Klaus, 3,676,378.
Bond, Leo H. Method of coating a vehicle headlight lens. 3,676,191, Cl. 117-77.000.
Bonded Products, Inc.: *See*—
Hight, Hanford Z.; and Lesky, Stephen, 3,676,254.
Bonnet, Maurice, to Etablissement Public: Agence Nationale de Valorisation de la Recherche (ANVAR). Device for recording and reproducing. 3,675,554, Cl. 95-18.00p.
Bonzom, Albert; and Tramier, Bernard, to Societe Nationale des Petroles d'Aquitaine. Synthesis of pyrazines. 3,676,442, Cl. 260-250.00r.
Boothe, Willis A.: *See*—
Kantola, Robert A.; and Boothe, Willis A., 3,675,473.
Borchert, Alfred E.; and Capaldi, Eugene C., to Atlantic Richfield Company. Adamantyl eporide polymers. 3,676,375, Cl. 260-2.00a.
Borgstrom, Gote Ingvar, to Abu Aktiebolag. Taximeter having a stamping mechanism. 3,675,847, Cl. 235-30.000.
Borkoski, Stanley B., to Pre-Heat Welding Company, Inc. Process for reconditioning cylinder heads. 3,675,309, Cl. 29-401.000.
Borruso, Joseph V.: *See*—
Kaldor, Robert M.; Borruso, Joseph V.; and Goldbaum, Elliott, 3,676,834.
Bosch, Robert, Photokino GmbH: *See*—
Riedel, Wolfgang, 3,675,874.
Bosley, Denis V.: *See*—
Schlau, Floyd E.; Bosley, Denis V.; Crain, Philip W.; and Douglas, Raymond J., 3,675,361.
Boeshard, Rene; Gubler, Kurt; Aufderhaar, Ernest; and Brenneisen, Paul, to Ciba-Geigy Corporation. 4-(Isothiocyanophenyl)-thiazoles. 3,676,450, Cl. 260-302.00s.
Boswell, Kay H.: *See*—
Shen, Tsung-Ying; and Boswell, Kay H., 3,676,422.
Botkin, Carl, to Addressograph-Multigraph Corporation. Process for making duplicates of microfilm. 3,676,001, Cl. 355-132.000.
Bottrell, Neil L.: *See*—
Furlong, Owen Desmond Arthur Charles; and Bottrell, Neil L., 3,676,238.
Bouche, Raymond R. Method of measuring vibration characteristics of structures. 3,675,471, Cl. 73-67.000.
Bouhot, Marcel Pierre Alexis. Double acting free wheel. 3,675,745, Cl. 188-134.000.
Bourke, Edgar R., II; and Snow, Robert C., to Digital Security Systems, Inc. Currency dispensing apparatus. 3,675,816, Cl. 221-13.000.
Bourton, Hubert. Snow vehicle for distributing dust on snow surfaces. 3,675,857, Cl. 239-668.000.
Bowen Tools, Inc.: *See*—
Slator, Damon T.; and Peil, Archie W., 3,675,719.
Bowers, Jack R.: *See*—
Findeisen, Heinz H.; Kallmeyer, James D.; Sokol David G.; Stein, James H.; Thomas, Thomas R.; and Bowers, Jack R., 3,676,854.
Bowles Fluidics Corporation: *See*—
Bauer, Peter, 3,675,669.
Freeman, Peter A., 3,675,672.
Boyer, Simone L.; and Caridi, Roger, to Eastman Kodak Company. Method of spectrally sensitizing photographic silver halide emulsions. 3,676,147, Cl. 96-130.000.
Boylan, Joseph S., to McNeil Corporation. In-plant cleaning system. 3,675,849, Cl. 239-124.000.
BP Chemicals (U.K.) Limited: *See*—
Capp, Clifford William; Harris, Brian Walton; and Hawkins, Edwin George Edward, 3,676,430.
Capp, Clifford William; and Denbigh, Keith Warwick, 3,676,431.
Bracken, Leslie Thomas: *See*—
Dransfield, Desmond; Bass, Patrick; White, Roy Ernest; and Bracken, Leslie Thomas, 3,676,876.
Brady, Donnie G.: *See*—
Scruggs, Jack G.; and Brady, Donnie G., 3,676,484.
Braginetz, Paul A., to Morris, Philip, Incorporated. Disposable preassembled plastic razor. 3,675,323, Cl. 30-32.000.
Brand S. Corporation: *See*—
Russell, Phillips G.; Guggenbickler, Leon E.; and Crawford, John H., 3,675,791.
Brand, Werner: *See*—
Tonne, Franz; Brand, Werner; and Wolowitz, Benno, 3,675,593.
Brandenburg, Helmut; and Beck, Hansludwig, to Gebr. Eickoff, Maschinenfabrik und Eisengiessair m.b.H. Machine for making double faced corrugated paperboard comprising a plurality of rows of axially spaced staggered pressure rolls. 3,676,268, Cl. 156-548.000.
Braner Engineering, Inc.: *See*—
Moor, Herman L., 3,675,569.
Brauer, Gerhard M.: *See*—
Huget, Eugene F.; Brauer, Gerhard M.; Kumpula, John W.; and Civjan, Simon, 3,675,327.
Braun, Jurgen: *See*—
Uhlig, Fritz; and Braun, Jurgen, 3,676,134.
Bray, Derek. Low distortion AGC amplifier. 3,676,789, Cl. 330-29.000.

Breen, William J. Flush valve assembly. 3,675,249, Cl. 4-57.00p.
Bremmer, James S.; Koste, Bernard F., deceased (by Koste, Elsie E., executrix). Agitator apparatus. 367,904, Cl. 259-108.000.
Bremmer, James S.; and Koste, Bernard F; deceased (by Koste, Elsie E.; executrix). Agitator apparatus. 3,675,904, Cl. 259-108.000.
Brendemuehl, Roger C., to Warner Electric Brake & Clutch Company. Photoelectric discontinuity and the like detector for multi-element arrays. 3,676,009, Cl. 356-199.000.
Brena, Gemma Adriana. Spectacles having bands that reduce facial wrinkles. 3,675,991, Cl. 351-41.000.
Brenneisen, Paul: *See—*
Boeshard, Rene; Gubler, Kurt; Aufderhaar, Ernest; and Brenneisen, Paul, 3,676,450.
Brenner, Mannie; Chase, Fred L.; and Leydon, Arthur J., to Grace, W. R., & Co. Gasket-forming solvent-based compositions containing styrene-butadiene block copolymers. 3,676,386, Cl. 260-27.000.
Bretschneider, Erich, to Siemag Siegener Maschinenbau, G.m.b.H. Roll stand with working rolls supported in chocks. 3,675,455, Cl. 72-238.000.
Brewer, Sherman Theodore, to Bell Telephone Laboratories, Incorporated. Repeatered submarine cable system. 3,676,613, Cl. 179-170.00t.
Brick, Edmund J., 50% to Brick, Thomas J., 21% to Roberts, Theresa A. and 21% to Young, William E. Tambourine. 3,675,528, Cl. 84-418.000.
Brick, Thomas J.: *See—*
Brick, Edmund J., 3,675,528.
Brinckman, Eric Maria: *See—*
Willems, Jozef Frans; Heugebaert, Frans Clement; and Brinckman, Eric Maria, 3,676,131.
Brink, Delbert L. Knockdown foamed plastic shipping container. 3,675,808, Cl. 220-7.000.
British Cellophone Limited: *See—*
Phillips, Cyril Howard; Brunton, James Charles; and Pearce, Geoffrey Downing, 3,676,185.
British Scientific Instrument Research Association: *See—*
West, Robert N.; Brook, Richard A.; Shaw, Richard G.; Lobb, Daniel R.; and Allnutt, Anthony J., 3,676,008.
Brockie, Thomas H., to Chrysler Corporation. Noise reduction apparatus. 3,676,012, Cl. 415-119.000.
Brodrene Gam A/S: *See—*
Gram, Hans, 3,675,443.
Broersma, Frank R.: *See—*
Elo, Arpad, Jr.; and Broersma, Frank R., 3,676,063.
Brojdo, Samuel, to Bell Telephone Laboratories, Incorporated. Semiconductor apparatus for image sensing and dynamic storage. 3,676,715, Cl. 307-304.000.
Bronstert, Klaus: *See—*
Heil, Eduard; Trieschmann, Hans-Georg; Willersinn, Herbert; Bolte, Herbert; and Bronstert, Klaus, 3,676,378.
Brook, Richard A.: *See—*
West, Robert N.; Brook, Richard A.; Shaw, Richard G.; Lobb, Daniel R.; and Allnutt, Anthony J., 3,676,008.
Broome, Barry Glenn: *See—*
Maure, Douglas Raymond; and Broome, Barry Glenn, 3,676,864.
Brother Kogyo Kabushiki Kaisha: *See—*
Yamashita, Chikao, 3,675,603.
Browatzki, Kurt; Gref, Hans; Herzhoff, Peter; Maus, Fritz; Platz, Stephan; Schaum, Gustav; Schweicher, Wolfgang; and Wasser, Willi, to Agfa-Gevaert Aktiengesellschaft. Process and apparatus for coating web supports. 3,676,178, Cl. 117-34.000.
Brown, Bruce J., to United States of America, Navy. Digital frequency lock generator. 3,676,793, Cl. 331-1.00a.
Brown, Don W.: *See—*
Condas, George A.; and Brown, Don W., 3,676,677.
Brown, Donald J., to Morehouse Industries, Inc., mesne. Connection fitting device with clean-out. 3,675,674, Cl. 137-244.000.
Brown, Henry, to Udylite Corporation. Electrolytic codeposition of polyvinylidene and copolymer particles with copper. 3,676,308, Cl. 204-16.000.
Brown, Thomas Desmond, to I.W.S. Nominee Company Limited. Textile process. 3,676,057, Cl. 8-128.000.
Browne, Roger Drury; McCurrich, Laurence Henry; Parkinson, John David; and Heffer, Edward Charles, to Woodrow, Taylor, Construction Limited. Strain gauges. 3,675,474, Cl. 73-88.00e.
Brownstein, Henry J., to Hysan Products Company. Treatment device. 3,675,254, Cl. 4-231.000.
Brumbelow, Joseph S. Non-sparking electrical switch. 3,676,622, Cl. 200-144.0ap.
Bruno, Joseph S.: *See—*
Harper, Robert J., Jr.; Bruno, Joseph S.; and Gautreaux, Gloria A., 3,676,052.
Brunton, James Charles: *See—*
Phillips, Cyril Howard; Brunton, James Charles; and Pearce, Geoffrey Downing, 3,676,185.
Bryan, Graham W.; and Green, David T., to United States Surgical Corporation. Instrument for ligating, suturing and dividing organic tubular structures. 3,675,688, Cl. 140-93.00d.
Buchanan, John K., to Motorola, Inc. Interface circuit for coupling bipolar to field effect transistors. 3,676,700, Cl. 307-205.000.
Buck, Ollie G.: *See—*
Hsieh, Henry L.; and Buck, Ollie G., 3,676,407.
Budrys, Ignas; and Lee, Ernest O., Jr., to Stromberg-Carlson Corporation. Code call circuit for paging in a PBX. 3,676,603, Cl. 179-18.0bf.
Buell, Halsey W., to Carborundum Company, The. Oversized abrasive coated products. 3,676,092, Cl. 51-295.000.
Buffone, Vincent D.: *See—*
Bevan, Robert H.; and Buffone, Vincent D., 3,676,014.
Buford, Claude W.: *See—*
Spiller, Lester L.; and Buford, Claude W., 3,676,171.
Bugaut, Andree: *See—*
Kalopissis, Gregoire; and Bugaut, Andree, 3,676,049.
Buhles, Herman, Jr. Dispensing machine. 3,675,828, Cl. 222-362.000.
Bundegaard, Howard: *See—*
Story, Richard-Neil; and Bundegaard, Howard, 3,676,540.
Bunker-Ramo Corporation, The: *See—*
Avery, Roger Peter, 3,676,573.
Segerdahl, Roy R.; and Jonke, Joseph L., 3,676,821.
Buonaiuto, Robert B. Apparatus for making thermoplastic cellular products. 3,676,033, Cl. 425-174.000.
Burckhardt, Christoph B.; and Doberty, Edward T., to Bell Telephone Laboratories, Incorporated. Beaded plate integral photography. 3,676,130, Cl. 96-40.000.
Burd, John W., to Monsanto Company. Apparatus for production of epitaxial films. 3,675,619, Cl. 118-48.000.
Burdett, Roy. Folding bed assembly for a vehicle. 3,675,965, Cl. 296-23.000.
Burger, Donald A.: *See—*
Baldwin, Walton B.; and Burger, Donald A., 3,675,906.
Burger, Francis J. P. J.; and Wu, Jie Chu, to Sprague Electric Company. Aluminum electrolytic capacitor. 3,676,752, Cl. 317-230.000.
Burgess, Donald M.: *See—*
Burgess, Kenneth M.; and Burgess, Donald M., 3,675,261.
Burgess, Kenneth M.; and Burgess, Donald M. Pool cleaning apparatus. 3,675,261, Cl. 15-1.700.
Burk, Marvin C., to Phillips Petroleum Company. Signal analysis and recording. 3,676,649, Cl. 235-151.300.
Burkhalter, Robert, Jr.: *See—*
Heskett, Don E.; Hoover, Frank Kryder; and Burkhalter, Robert, Jr., 3,675,777.
Burns Machine Co.: *See—*
Hook, Melvin S., 3,676,619.
Burrage, Benjamin S.; and Blair, George S., to Gerrard Company Ltd., mesne. Roller slat conveyor. 3,675,760, Cl. 198-183.000.
Burroughs Corporation: *See—*
Frederick, Harold M., 3,675,876.
Gosnell, Earl J.; and Taylor, Jerry H., 3,675,572.
Busch, Michael D., to Call-A-Computer, Inc., mesne. Message buffering communication system. 3,676,846, Cl. 340-146.1ba.
Busch, Norbert: *See—*
Mauvernay, Roland Yves; Busch, Norbert; Simond, Jacques; and Moleyre, Jacques, 3,676,496.
Buschbom, Floyd E.; Hansen, Glen D.; and Johnson, Roger L., to Van Dale Corporation. Livestock feeding apparatus. 3,675,758, Cl. 198-110.000.
Bush, Vannevar. Engine sealing. 3,675,738, Cl. 184-18.000.
Bush, William R. Saw assembly for sheet material. 3,675,526, Cl. 83-676.000.
CPC International Inc.: *See—*
Horn, Harold Edwin; Kimball, Bruce Allan; and Godzicki, Martin, 3,676,155.
Cabello, Charles R., to Bancroft, Joseph, & Sons, Co. Synchronizing yarn winding to stuffer crimper output. 3,675,286, Cl. 28-1.700.
Caccamesi, Vincent C.; and Der Marderosian, Aaron C., to Raytheon Company. Leak testing apparatus and method. 3,675,468, Cl. 73-40.700.
Cachelin, Gerard, to Fabique d'Horlogerie Ch. Tissot & Fils S.A. Wrist watches. 3,675,414, Cl. 58-88.00w.
Cahill Manufacturing Company, Inc.: *See—*
Cahill, William S., 3,675,706.
Cahill, Terence, to G. K. N. Somerset Wire Limited. Electric conductor cables for use in overhead power transmissions. 3,676,578, Cl. 174-128.000.
Cahill, William S., to Cahill Manufacturing Company, Inc. Tire buffing machine. 3,675,706, Cl. 157-13.000.
Calandra, Sam S. Hair roller. 3,675,663, Cl. 132-40.000.
Caldwell, William F., to Huntington Rubber Mills. Bushing for vibration-isolating mounting. 3,675,881, Cl. 248-9.000.
Call-A-Computer, Inc., mesne: *See—*
Busch, Michael D., 3,676,846.
Cama, Gerardo, to Coltex, S.L. Apparatus for cleaning metallic parts. 3,675,666, Cl. 134-105.000.
Cambridge Thermionic Corporation: *See—*
Cox, Irvin W., 3,676,253.
Campbell, Alastair; and Robinson, Peter, to Imperial Chemical Industries Limited. Stabilised trichloroethylene. 3,676,507, Cl. 260-652.50r.
Campo, Philip. Filter device. 3,675,776, Cl. 210-232.000.
Canon Kabushiki Kaisha: *See—*
Komori, Shigehiro; and Hattori, Hiroyuki, 3,675,999.
Sanada, Noriaki; and Ito, Masaharu, 3,675,562.
Uchiyama, Takashi; Ito, Tadashi; and Matsuda, Mutsuhide, 3,675,547.
Capaldi, Eugene C.: *See—*
Borchert, Alfred E.; and Capaldi, Eugene C., 3,676,375.
Capp, Clifford William; Harris, Brian Walton; and Hawkins, Edwin George Edward, to BP Chemicals (U.K.) Limited. Production of caprolactam. 3,676,430, Cl. 260-239.301.
Capp, Clifford William; and Denbigh, Keith Warwick, to BP Chemicals (U.K.) Limited. Production of caprolactam. 3,676,431, Cl. 260-239.30a.
Carborundum Company, The: *See—*

Buell, Halsey W., 3,676,092.
Wilder, Harvey H., 3,675,374.
Carder, Victor H.; and Cook, Kenneth L., to Cochran Western Corporation. Container transporter apparatus. 3,675,798, Cl. 214-84.000.
Caridi, Roger: *See—*
Boyer, Simone L.; and Caridi, Roger, 3,676,147.
Carl Zeiss-Stiftung; d/b/a: *See—*
Prugger, Hans; and Torge, Reimund, 3,676,004.
Carlsen, Donald W.; Kotla, John J.; and Parker, Arden A., to International Business Machines Corporation. Document with chemically developable precisely defined alphanumeric characters. 3,676,646, Cl. 235-61.12n.
Carlson, Edgar; and Lehrian, William R., to Gulf Research & Development Company. Hydrodesulfurization utilizing multiple hydrogen recycle streams. 3,676,333, Cl. 208-209.000.
Carlson, Harold C. R. Spring tester. 3,675,479, Cl. 73-161.000.
Carlson, Herbert Neil, to Bell Telephone Laboratories, Incorporated. Locked oscillator circuits. 3,676,786, Cl. 329-122.000.
Carpentier, Jan Albert; and De Pauw, Alfons Jozef, to Agfa-Gevaert. Method of incorporating photographic ingredients into photographic collois compositions. 3,676,142, Cl. 96-100.000.
Carrier, Louis F.; and Spanke, Edwin A., to U.S. Industries, Inc. Gibs. 3,675,976, Cl. 308-3.000.
Carter, Sadie,: *See—*
Glicksman, Martin; Farkas, Elizabeth H.; and Carter, Sadie,, 3,676,150.
Casali, Gino; and Casali, Joseph P. Tube squeezer. 3,675,822, Cl. 222-103.000.
Casali, Joseph P.: *See—*
Casali, Gino; and Casali, Joseph P., 3,675,822.
Cascade Corporation: *See—*
Baughman, Gaylord G., 3,675,803.
Cassara, Frank A.: *See—*
Stangarone, Gene; Cassara, Frank A.; and Dupont, Eugene F., 3,675,615.
Castleberry, Joseph C., to Altec, Inc. Speed control. 3,676,017, Cl. 412-34.000.
Catano, Paul S.: *See—*
Murphree, Francis J.; and Catano, Paul S., 3,676,802.
Cathers, William P., to PPG Industries, Inc. Glass turnover and packing device. 3,675,788, Cl. 214-1.00q.
Catlett, John C., 1/3 to Gilson, James R. and 1/3 to Horwitz, Sam. Automatic balanced door with concealed drive. 3,675,370, Cl. 49-253.000.
Cavagnero, Erman V.; and Loftus, Joseph F., to Torin Corporation. Four-slide machine with improved mandrel for producing bearings and the like. 3,675,460, Cl. 72-399.000.
Cavins Co., The: *See—*
Fortner, William D., 3,675,751.
Cegedur GP: *See—*
Colas, Francois, 3,675,596.
Celanese Corporation: *See—*
Soehngen, John W., 3,676,239.
Cense, Adriaan: *See—*
Wensink, Bernardus Leonardus; and Cense, Adriaan, 3,676,714.
Centre Europeen de Recherches Mauvernay C.E.R.M.: *See—*
Mauvernay, Roland Yves; Busch, Norbert; Simond, Jacques; and Moleyre, Jacques, 3,676,496.
Century Engineering Corporation: *See—*
Merfeld, Michael J.; and Truesdell, Merlyn R., 3,675,851.
Cerberus AG: *See—*
Scheidweiler, Andreas; and Meier, Otto, 3,676,680.
Cesca, Sebastiano: *See—*
Arrighetti, Sergio; Vajna, Eugenio; and Cesca, Sebastiano, 3,676,510.
Arrighetti, Sergio; Vajna, Eugenio; and Cesca, Sebastiano, 3,676,511.
Arrighetti, Sergio; Vajna, Eugenio; and Cesca, Sebastiano, 3,676,512.
Ceska, Miroslav: *See—*
Ingelman, Bjorn G.; and Ceska, Miroslav, 3,676,303.
Chamberlin, Coleman R. File drawer divider. 3,675,781, Cl. 211-11.000.
Chambers, Walter S.: *See—*
Swiatosz, Edmund; and Chambers, Walter S., 3,675,343.
Chan, Charles S., to Metallic Building Company. Method of constructing parking garage structures. 3,675,385, Cl. 52-741.000.
Chance, Britton. Rapid-scanning dual wavelength spectrophotometer. 3,676,005, Cl. 356-97.000.
Chandler Evans, Inc.: *See—*
Ancona, Anthony, 3,676,655.
Chapa, Ruben F. End stop assembly for an automatic cut-off saw. 3,675,690, Cl. 143-46.00f.
Chapou, Yves. Mixing faucet. 3,675,683, Cl. 137-637.400.
Charbonnages de France: *See—*
Vergne, Jean; Solaux, Leon; Robinet, Jean-Claude; and Lacroix, Philippe, 3,676,390.
Charters, Thomas H., to Tektronix, Inc. Apparatus for automatically testing integrated circuit devices. 3,676,777, Cl. 324-73.00r.
Chase, Fred L.: *See—*
Brenner, Mannie; Chase, Fred L.; and Leydon, Arthur J., 3,676,386.
Chay, Dong M.; and Iler, Ralph K., to Du Pont de Nemours, E. I., and Company. Metal/carbide-oxide composite. 3,676,086, Cl. 29-195.000.
Chay, Dong M.; Cumbo, Charles Carmen; Randolph, Michael J.; and Yates, Paul C., to Du Pont de Nemours, E. I., and Company. Esters of pentavalent and trivalent antimony with a polyhydroxy compound and the process for making the same. 3,676,477, Cl. 260-446.000.
Chemiefaser Lemzing Aktiengesellschaft: *See—*
Sabhofer, Franz; and Krassig, Johannes, 3,676,243.
Chemtob, Elie M.; White, William R.; and Marcote, Rolando V., to Occidental Petroleum Corporation. Flotation separation of glaserite from sodium chloride and other salts. 3,675,773, Cl. 209-166.000.
Cheney, Richard F.; and Parsons, Donald S., to Sylvania Electric Products, Inc. Molybdenum base alloys. 3,676,083, Cl. 29-182.000.
Cheng, Paul J.: *See—*
Vanderveen, John W.; Cheng, Paul J.; Mills, K. Louis, Jr.; Venable, Charles R., Jr.; and Johnson, Paul H., 3,676,070.
Cherniavsky, Jaroslav, to Bell & Howell Company. Reversing mechanism for motion picture projectors. 3,675,995, Cl. 352-173.000.
Chesnokov, Alexandr Sergeevich: *See—*
Strelets, Khaim Lipovich; Chesnokov, Alexandr Sergeevich; Devyatkin, Vladimir Nikolaevich; Tatakin, Alexandr Nikolaevich; Krasikov, Evsei Dmitrievich; Leonova, Ljudmila Sergeevna; Medvetskaya, Galina Arkadievna; and Nechaeva, Tatyana Georgievna, 3,676,323.
Chevron Research Company: *See—*
Sharman, Samuel H., 3,676,372.
Sieg, Robert P., 3,676,522.
Chevtaev, Andrei Vasilievich: *See—*
Andrusenko, Petr Ivanovich; Dolganov, Kint Evgenievich; Kovalev, Alexandr Ivanovich; Berezovsky, Pavel Iosipovich; Dmitrenko, Vladimir Ilich; Shukshin, Nikolai Pavolich; Gutarevich, Jury Feodosievich; Kislov, Vladimir Grigorievich; Chevtaev, Andrei Vasilievich; Koshman, Eduard Ivanovich; and Filippov, Vladimir Vasilievich, 3,676,023.
Chia, Yuan-Tsan, to Du Pont de Nemours, E. I., and Company. Catalytic isomerization of 2-methyl-3-butenenitrile to linear pentenenitriles in the presence of certain metal salt and/or tri(hydrocarbyl)boron promoters. 3,676,481, Cl. 260-465.900.
Chicago Rawhide Manufacturing Company: *See—*
Hatch, Seymour A., 3,675,936.
Chmela, Stephen M. Lubricator for roll feed. 3,675,737, Cl. 184-17.000.
Chore-Time Equipment, Inc.: *See—*
Myers, Lawrence A., 3,675,627.
Christena, Ray C.; and Johnston, Earnest L., to Vulcan Materials Company. Polyesteramides. 3,676,291, Cl. 161-195.000.
Christena, Ray C.; and Johnston, Earnest L., to Vulcan Materials Company. Aziridine salts of dibasic acids. 3,676,424, Cl. 260-239.00e.
Christensen, Orla, to Disa Elektronik A/S. Method for depositing thin films on thin elongated electrically insulating substrates. 3,676,320, Cl. 204-192.000.
Christie, Christopher E.; and Martin, Eugene Earl, to Goodyear Tire & Rubber Company, The. Apparatus for building a foam inflated tire. 3,676,028, Cl. 425-38.000.
Chrysler Corporation: *See—*
Brockie, Thomas H., 3,676,012.
Mark, Alfred J., 3,675,289.
Churchill, Charles, Limited: *See—*
Pratt, Leslie Raymond, 3,675,454.
Ciba Limited: *See—*
Biland, Hans Rudolf; and Duennenberger, Max, 3,676,494.
Ciba-Geigy AG: *See—*
Kangle, Purushottam Janardan; Ramanathan, Visvanathan; and Argay, Rudolf, 3,676,051.
Nikles, Erwin, 3,676,441.
Nikles, Erwin, 3,676,486.
Rembold, Heinz; and Losert, Ewald, 3,676,200.
Ciba-Geigy Corporation: *See—*
Bader, Jorg; and Gatzi, Karl, 3,676,459.
Boeshard, Rene; Gubler, Kurt; Aufderhaar, Ernest; and Brenneisen, Paul, 3,676,450.
Gruenfeld, Norbert, 3,676,456.
Haug, Theobald; and Batzer, Hans, 3,676,455.
Hubele, Adolf; and Rohr, Otto, 3,676,457.
Spivack, John D.; and Dexter, Martin, 3,676,531.
Ciccarelli, Roger N., to Xerox Corporation. Removing undesired potential from the blocking electrode in a photoelectrophoretic imaging system. 3,676,313, Cl. 204-181.000.
Ciko, John D., to BASF Wyandotte Corporation. Nonflouride laundry sour containing fumaric acid. 3,676,353, Cl. 252-136.000.
Cimber, Hugo S. Device for and method of temporary sterilizing a female. 3,675,639, Cl. 128-1.000.
Cincinnati Milacron Inc.: *See—*
Harper, Robert C., 3,675,903.
C.I.T.-Compagnie Industrielle des Telecommunications: *See—*
Tallegas, Francois, 3,676,855.
Ciuti, Brunello; and Del Ross, Sergio, to Snam Progetti S.p.A. Compositions useful for eliminating water surface pollution caused by organic substances. 3,676,357, Cl. 252-259.500.
Civjan, Simon: *See—*
Huget, Eugene F.; Brauer, Gerhard M.; Kumpula, John W.; and Civjan, Simon, 3,675,327.

Clapper, Thomas W.: *See—*
Goens, Duane N.; and Clapper, Thomas W., 3,676,315.
Clark, Arthur R.; and Clark, Margaret M. Method of treating plants. 3,676,102, Cl. 71-127.000.
Clark Equipment Company: *See—*
Hunter, Calvin W., 3,675,589.
Ibrahim, Fayez F., 3,675,440.
Perez, Arthur, 3,675,441.
Clark, Forrester A.: *See—*
Speller Frank N., Jr., 3,675,715.
Clark, Hubert M.: *See—*
Drutchas, Gilbert H.; and Clark, Hubert M., 3,675,422.
Clark, J. L., Manufacturing Co.: *See—*
Foster, John A., 3,675,812.
Clark, Margaret M.: *See—*
Clark, Arthur R.; and Clark, Margaret M., 3,676,102.
Clark, Wallace. Apparatus and method for governing the operation of down-hole earth boring motors. 3,675,727, Cl. 175-26.000.
Clarke, James A., to Dow Chemical Company, The. Oxazolidinone-containing epoxy resins and process for their preparation. 3,676,397, Cl. 260-47.0ep.
Clarkson Industries, Inc.: *See—*
Hoag, Don H., 3,675,778.
Clebel Inc.: *See—*
Gauthier, Oscar, 3,675,657.
Clement, Clyde H., 50% to Larson, Leland B. Beverage pump dispenser. 3,675,830, Cl. 222-385.000.
Clenaglass Electric Washer Limited: *See—*
Durham, Charles Edward, 3,675,263.
Clifford, Thomas J.; and Nelson, Robert C., to Hazeltine Corporation. Wire guide assembly for multiple coil winding machine. 3,675,860, Cl. 242-7.110.
Clinton Industries, Inc.: *See—*
Pirrello, Angelo, 3,675,602.
Clinton, Raymond O., to Sterling Drug Inc. 2-(1-Hydroxyalkyliden)-3-oxo steroids. 3,676,426, Cl. 260-239.55r.
Closa, Jose, to Super Caster Corporation. Tilted roller caster. 3,675,269, Cl. 16-18.00a.
Coast Marine & Industrial Supply Inc.: *See—*
Hagluad, Bernard F.; and Salvarezza, Robert M., 3,675,257.
Coates, John Stuart, to Du Pont de Nemours, E. I., and Company. Regeneration of nickel-aluminum catalysts by polycarboxylic acid washing. 3,676,364, Cl. 252-413.000.
Cochran Western Corporation: *See—*
Carder, Victor H.; and Cook, Kenneth L., 3,675,798.
Cockerill-Ougree-Prodicence et Esperance-Longdoz: *See—*
Martelee, Ghislain Antoine Jean-Marie, 3,675,568.
Coded Signatures, Inc.: *See—*
Mayer, George L., Jr.; and Dobbins, David L., 3,676,000.
Coilcraft, Inc.: *See—*
Renskers, John O., 3,676,813.
Colas, Francois, to Cegedur GP. Load-carrying pallet. 3,675,596, Cl. 108-51.000.
Cole National Corporation: *See—*
Hungerford, Philip C., Jr.; Gereby, John L.; and Richens, Robert H., 3,675,536.
Coleman, George E., to PPG Industries, Inc. Apparatus for irradiation in a controlled atmosphere. 3,676,673, Cl. 250-49.5te.
Coleman, Larry R., to Honeywell Information systems, Inc., mesne. Apparatus for opening packages of laminated construction. 3,675,524, Cl. 83-459.000.
Colgate-Palmolive Company: *See—*
Anzuino, Giuseppe, 3,676,550.
Gerecht, John Fred; and Wixon, Harold Eugene, 3,676,341.
Hewitt, Gordon Trent; and Giordano, Annie Sue, 3,676,199.
Collier, William W.; and Smith, Ronald M., to International Business Machines Corporation. Interactive tie-breaking system. 3,676,860, Cl. 340-172.500.
Collins, Neil E.; Kerber, Elwyn W.; and Neville, Raymond R., to General Electric Company. Solid state lamp assembly. 3,676,668, Cl. 240-103.00r.
Collins Radio Company: *See—*
Melvin, William J., 3,676,654.
Colorado Business Development Corporation, mesne: *See—*
Whitney, Charles D., 3,675,576.
Colorado State University Research Foundation: *See—*
Story, Albert G., 3,675,769.
Coltex, S.L.: *See—*
Cama, Gerardo, 3,675,666.
Columbia Broadcasting System, Inc.: *See—*
Goldman, David A.; and Oppenheimer, Henry N., 3,676,850.
Columbia Broadcasting Systems, Inc.: *See—*
Gabor, Dennis, 3,676,732.
Columbia Controls Research Corporation: *See—*
Vaccaro, Angelo; and Dixon, Harold F. E., 3,676,644.
Combined Paper Mills, Inc.: *See—*
Spearin, Walter E.; and Vanderhei, Harold S., 3,676,184.
Combustion Engineering, Inc.: *See—*
Vigus, Cebron T., 3,675,915.
Commercial Electronics, Inc.: *See—*
Kline, Donald D., 3,676,587.
Commercial Solvents Corporation: *See—*
Schwoyer, William L., 3,676,234.
Commissariat a l'Energie Atomique: *See—*
Guernet, Georges, 3,676,693.
Lazzari, Jean-Pierre; and Melnick, Igor, 3,676,869.
Communications Satellite Corporation: *See—*
Simmons, William J., 3,676,803.
Compagnie Generale de Ceophysique: *See—*
Loeb, Julien M., 3,675,485.
Compagnie Generale des Etablissements Michelin raison sociale Michelin & Cie: *See—*
Verdier, Henri, 3,675,700.
Compagnie International pour l'Informatique: *See—*
Lazzari, Jean-Pierre; and Melnick, Igor, 3,676,869.
Compare, Giampiero: *See—*
Kassabgi, Georges; and Compare, Giampiero, 3,676,746.
Compo Industries, Inc.: *See—*
Palm, William E., Jr., 3,676,250.
Compton, John W.: *See—*
Kaneko, Thomas M.; Schmolka, Irving R.; and Compton, John W., 3,676,354.
Compur-Werk Gesellschaft mit beschrankter Haftung & Co.: *See—*
Schwarz, Gerhard, 3,675,561.
Computer Industries, Inc.: *See—*
Towell, Le Roy Dean, 3,675,840.
Conch International Methane Limited: *See—*
Jackson, Robert G., 3,675,431.
Condas, George A.; and Brown, Don W., to United States of America, Atomic Energy Commission. Variable sensitivity visual displayer for infrared laser beams. 3,676,677, Cl. 250-83.30h.
Conenco International Limited: *See—*
Stinton, Frederick M.; and Slater, William M., 3,676,031.
Conklin, Cornelius Stephen, Jr.: *See—*
Lenkeit, Carl Heinz; and Conklin, Cornelius Stephen, Jr., 3,675,418.
Conrad, John Harold; Reynolds, Anthony Edward St. Aubyn; and Gadd, Edward George, to Solartron Electronic Group Limited, The. Jitter free trigger pulse generator. 3,676,707, Cl. 307-260.000.
Conradty, C.: *See—*
Zollner, Dieter; Koziol, Konrad; Reichelt, Bernhard; and Lippert, Wolfgang, 3,676,371.
Consalvo, Dante V.: *See—*
Ross, Thorvald S., Jr.; and Consalvo, Dante V., 3,675,810.
Consalvo, Dante V., assor to: *See—*
Ross, Thorvald S., Jr.; and Consalvo, Dante V., 3,675,810.
Consortium fur Elektrochemische Industrie GmbH: *See—*
Vogerl, Manfred; Daxer, Hilmar; Roder, Manfred; and Dietz, Wolfgang, 3,675,709.
Continental Can Company, Inc.: *See—*
La Rocca, James J.; and Bartolomeo, Blase J., 3,675,668.
Winkless, Robert A., 3,675,617.
Continental Gummi-Werke Aktiengesellschaft: *See—*
Volmer, Edmund, 3,676,282.
Control Data Corporation: *See—*
Jones, David A., 3,676,710.
Control Research Products, Inc., mesne: *See—*
Hawryluk, Alexandra S.; and Hawryluk, John, 3,675,396.
Controls Company of America: *See—*
Biermann, William A., 3,675,892.
Cook, Graham Bramwell: *See—*
Kay, Leslie; Maginness, Maxwell Glynn; and Cook, Graham Bramwell, 3,675,472.
Cook, Kenneth L.: *See—*
Carder, Victor H.; and Cook, Kenneth L., 3,675,798.
Cooke, Albert Edward, to Trip-Lite Limited. Positive feed system for circular knitting machines. 3,675,446, Cl. 66-132.00t.
Cooling, Robert O.: *See—*
Samiran, David; Cooling, Robert O.; and Fitch, Melvin G., 3,675,645.
Cooper, Hugh S., to Cooper Metallurgical Corporation. Rust and heat resisting ferrous base alloys containing chromium and aluminum. 3,676,109, Cl. 75-124.000.
Cooper Metallurgical Corporation: *See—*
Cooper, Hugh S., 3,676,109.
Cooper Tire & Rubber Company: *See—*
Klose, Karl W., 3,675,520.
Cooper, William W., IV; and Shea, Edward M., to Abcor, Inc. Process for casting integrally supported tubular membranes. 3,676,193, Cl. 117-94.000.
Copeland, Clinton R.: *See—*
McLeod, Garth M.; Copeland, Clinton R.; and Rieger, Gilbert N., 3,675,287.
Copeland, John Alexander, III, to Bell Telephone Laboratories, Incorporated. Domain logic arrangement. 3,676,871, Cl. 340-174.0tf.
Copine and said Corbellini assors. to Olaer Patent Company: *See—*
Mercier, Jacques H.; Copine, Fernand; and Corbellini, Carlo, 3,675,684.
Copine, Fernand: *See—*
Mercier, Jacques H.; Copine, Fernand; and Corbellini, Carlo, 3,675,684.
Copystatics Manufacturing Corporation: *See—*
Nordine, Richard, 3,676,691.
Corbellini, Carlo: *See—*
Mercier, Jacques H.; Copine, Fernand; and Corbellini, Carlo, 3,675,684.
Corcoran, Joseph D. Traction cradle appliance. 3,675,646, Cl. 128-75.000.

Cordes, Ronald A., to Esso Research and Engineering Company. Cyclones to lessen fouling. 3,675,401, Cl. 55-394.000.
Corless, Lee M., to B & J Manufacturing Company, mesne. Tire bead seating and inflation apparatus. 3,675,705, Cl. 157-1.100.
Coronelli, Carolina: *See—*
Thiemann, Josef; Murthy, Yelahanka K. S.; and Coronelli, Carolina, 3,676,490.
Corvetti, Patrick T. Work and safety lamp. 3,676,664, Cl. 240-6.40w.
Costello, Thomas V.: *See—*
Wohl, Charles J.; Schere, Jonathan L.; and Costello, Thomas V., 3,676,839.
Coster Tecnologie Speciali S.p.A.: *See—*
Ruscitti, Tomasco, 3,675,832.
Cote, Paul T.: *See—*
Watrous, Donald L.; and Cote, Paul T., 3,676,045.
Coughlin, Stephen A.: *See—*
Weaver, Galen K.; Shaffer, Howard A.; and Coughlin, Stephen A., 3,676,575.
Cowking, Charles Brian: *See—*
Linning, David Lees; and Cowking, Charles Brian, 3,676,296.
Cox, Irvin W., to Cambridge Thermionic Corporation. Process of making flocked plate structure for electric batteries. 3,676,253, Cl. 156-279.000.
Coyle, Jan Robert; and Stevens, Robert Walter. Capacitor energized channel stepping means for battery operated tape players. 3,676,609, Cl. 179-100.10r.
Crain, Philip W.: *See—*
Schlau, Floyd E.; Bosley, Denis V.; Crain, Philip W.; and Douglas, Raymond J., 3,675,361.
Crane Packing Company: *See—*
Nappe, William D., 3,675,933.
Crane S.A.: *See—*
Avelines, Raymond Andre, 3,675,893.
Crawford, Duffer B.; and Norenburg, Johannes C., to Pullman Incorporated. Separation of low-boiling gas mixtures. 3,675,434, Cl. 62-23.000.
Crawford, John H.: *See—*
Russell, Phillips G.; Guggenbickler, Leon E.; and Crawford, John H., 3,675,791.
Crawford, Robert J., to Procter & Gamble Company, The. 4-(4-Methylcyclohex-3-en-1-yl)pent-4-en-1-ol and a process for its synthesis. 3,676,505, Cl. 260-631.500.
Crawford, Robert J., to Procter & Gamble Company, The. Synthesis of novel compounds useful for production of juvabione. 3,676,506, Cl. 260-631.500.
Creative Tool Company: *See—*
Berg, Louis L., 3,675,515.
Cremer, Walter, to Heinrich Koppers Gesellschaft mit beschrankter Haftung. Dust collector for a by-product coke oven. 3,676,305, Cl. 202-263.000.
Crookston, James R. Mobile trash cart. 3,675,940, Cl. 280-47.260.
Crosser, Orrin K.: *See—*
Schwaneke, Alfred E.; Falke, Wilbert L.; and Crosser, Orrin K., 3,675,310.
Crowe Manufacturing Company: *See—*
Durham, Nolan B., 3,675,974.
Crowley, Charles L.; Grosholz, James R.; and Hutter, Charles G., III, to Air-Shields, Inc. Wound drainage equipment. 3,675,653, Cl. 128-278.000.
Cubic Corporation: *See—*
Neumann, Malcolm A.; and Hunsberger, Arnold, 3,675,378.
Cuda, Charles H. Timed variable output pump. 3,675,498, Cl. 74-55.000.
Cumbo, Charles Carmen: *See—*
Chay, Dong M.; Cumbo, Charles Carmen; Randolph, Michael J.; and Yates, Paul C., 3,676,477.
Cummings, John P.; and Berg, Richard E., to Honeywell, Inc. Electrochemical oxygen demand system. 3,676,321, Cl. 204-195.00r.
Custom Tool & Machine Co., Inc.: *See—*
Nelson, Leonard; and Wilson, Thomas, 3,676,120.
Cybersol, Inc., mesne: *See—*
Reynolds, Beverly L., 3,676,553.
Cynober, Simon: *See—*
Wiart, Albert; and Cynober, Simon, 3,675,585.
Daane, Robert A., to Beloit Corporation. Dryer drum. 3,675,337, Cl. 34-41.000.
Daikin Kogyo Co., Ltd.: *See—*
Wada, Hiroyuki; and Sonoyama, Heikitsu, 3,676,491.
Dale, Ernest A.; and Thomas, Martha J. B., to Sylvania Electric Products, Inc. Atomizing, spray-drying and flame process for manufacturing phosphors. 3,676,358, Cl. 252-301.40p.
D'Alelio, Gaetano F., to PPG Industries, Inc. Polymerizable crosslinkable esters of polyepoxy compounds. 3,676,398, Cl. 260-47.0ep.
Dalson, Milton H.; Gallagher, James P.; and Pfefferle, William C. Reforming with five platinum rhenium catalyst beds. 3,676,328, Cl. 208-65.000.
Dalson, Milton H.; and Pfefferle, William C. Reforming with four or five platinum rhenium catalyst beds. 3,676,329, Cl. 208-65.000.
Dalton, John Junior: *See—*
Quist, Stephen Mark; and Dalton, John Junior, 3,676,196.
Dalton, John Vincent; and Labuda, Edward Franklin, to Bell Telephone Laboratories, Incorporated. Diode-array target including isolating low resistivity regions. 3,676,727, Cl. 313-66.000.
D'Amato, Michael J.: *See—*
Gartland, Albert J., Jr.; and D'Amato, Michael J., 3,676,829.
Danchenko, Mikhail Evgenievich: *See—*
Esiban, Eduard Migranovich; and Danchenko, Mikhail Evgenievich, 3,676,639.
Dane, Ernest Blaney, Jr. Scraper bucket apparatus for deep sea mining systems. 3,675,348, Cl. 37-69.000.
Danielmeyer, Hans Guenter, to Bell Telephone Laboratories, Incorporated. Frequency stabilized laser. 3,676,799, Cl. 331-94.500.
Danzker, Zarul I. Swimming pool construction. 3,675,253, Cl. 4-172.190.
Dao, James; and Yew, Nelson C., to ETEC Corporation. Electron gun biasing system. 3,676,670, Cl. 250-49.50a.
Datta, Ranajit Kumar, to General Electric Company. Ternary alkaline-earth pyrosilicate luminescent materials activated with divalent europium. 3,676,361, Cl. 252-301.40f.
Davenport, Arthur B., to Sperry Rand Corporation. Sweep and gate generator. 3,676,697, Cl. 307-228.000.
Davidson, Donald J.: *See—*
O'Connor, Maurice J.; and Davidson, Donald J., 3,675,676.
Davidson, Kenneth H.; and Morris, Carrol V., to Snorkel Fire Equipment Company. Fire fighting apparatus with telescoping boom. 3,675,721, Cl. 169-24.000.
Davie, William R., to Porter Pain Co., mesne. Method of preparing antifoulant coating compositions and resulting product. 3,676,388, Cl. 260-28.
Davies, Everett H., to Barber-Colman Company. Extensible cable structure. 3,676,572, Cl. 174-69.000.
Davis, James E. Electro-mechanical educational apparatus. 3,675,340, Cl. 35-9.00d.
Davis, Quinton C., IV. Water surface depth instrument. 3,675,483, Cl. 73-327.000.
Davy and United Engineering Company Limited: *See—*
Sturdy, Clifford, 3,675,789.
Dawson, James A., to McDonnell Douglas Corporation. Coupling fitting for connecting two pipes. 3,675,949, Cl. 285-354.000.
Dawson, Ralph E.; and Mahaffey, Donald M., to United States of America, Army, mesne. Process for the separation of HMX from mixtures comprising RDX and HMX. 3,676,425, Cl. 260-239.0hm.
Daxer, Hilmar: *See—*
Vogerl, Manfred; Daxer, Hilmar; Roder, Manfred; and Dietz, Wolfgang, 3,675,709.
Day, John W. Bolo clasp. 3,675,277, Cl. 24-49.00s.
DCA Food Industries Inc.: *See—*
Fischer, Leonard G.; and Wong, Philip, 3,676,158.
De Beaulieu, Henry Philippe: *See—*
Ghilardi, Guiliana; Kalopissis, Gregoire; De Beaulieu, Henry Philippe; and Abegg, Jean-Louis, 3,676,546.
De Boer, Eeltje, to U.S. Philips Corporation. Two register parallel binary adder/subtracter. 3,676,657, Cl. 235-175.000.
de Gelder, Jacob; and Phillips, Gary E., to Mattel, Inc. Doll display stage with movable doll support. 3,675,362, Cl. 46-13.000.
De Haes, Louis Maria, to Agfa-Gevaert. Method of producing planographic printing plates. 3,676,125, Cl. 96-33.000.
De Kanter, Hendrik, to De Kanter-American Quality. Disposable thermometer. 3,675,501, Cl. 73-358.000.
De Kanter-American Quality: *See—*
De Kanter, Hendrik, 3,675,501.
De La Rue Instruments Limited: *See—*
Sels, Victor Richard, 3,675,386.
De Lange, Owen Edward, to Bell Telephone Laboratories, Incorporated. Frequency-division multiplex communication system. 3,676,684, Cl. 250-199.000.
De Neef, John G.: *See—*
Lanoue, Thomas J.; and De Neef, John G., 3,676,579.
De Pauw, Alfons Jozef: *See—*
Carpentier, Jan Albert; and De Pauw, Alfons Jozef, 3,676,142.
De Ritter, Elmer; and Raymond, Joseph Edward, to Hoffman-La Roche Inc. Method of stabilizing niacinamide against caking. 3,676,556, Cl. 424-266.000.
De Rossi, Frank, to Dexter Corporation, The. Coating compositions for polyolefin substrates. 3,676,391, Cl. 260-33.6ua.
De Shazo, James Derwin: *See—*
Seale, Virgil L.; Moreland, Billy Ray; and De Shazo, James Derwin, 3,676,501.
De Weese, Duane G.; and Hanck, Ronald C., to SCM Corporation. Edible comestibles and process for making same. 3,676,148, Cl. 99-1.000.
Deabon, James S. Method and apparatus for removing entrained dust particles from a gaseous stream. 3,675,397, Cl. 55-227.000.
Decatur Iron and Steel Company: *See—*
Lentz, Tommy L.; and Terry, Alton L., 3,675,369.
Dechenne, Roger: *See—*
Boel, Michel; and Dechenne, Roger, 3,676,413.
Dedrick, Dallas S., to Weyerhaeuser Company. Method for drying wood. 3,675,336, Cl. 34-9.500.
Deep Oil Technology, Inc.: *See—*
Walker, Raymond W., 3,675,514.
Deering Milliken Research Corporation: *See—*
Eschenbach, Paul W., 3,675,864.
Eschenbach, Paul W., 3,675,865.
Young, William O., Jr.; and Quattlebaum, Walter J., 3,675,836.
Young, William O., Jr.; and Quattlebaum, Walter J., 3,676,251.
Degener, Eberhart: *See—*
Golitz, Hans Dietrich; Degener, Eberhart; Oertel, Gunter; Schmelzer, Hans-Georg; and Simmler, Walter, 3,676,478.

Degginger, Edward R., to Allied Chemical Corporation. Fire retarding process comprising converging separate solutions of polyvinyl alcohol and alkali metal borate. 3,676,169, Cl. 117-3.000.

Dehm, Henry C.; and Mellow, Dale F., to Hercules Incorporated. Method of preparing propellant charges from fibrous nitrocellulose. 3,676,533, Cl. 264-3.00c.

Deibert, Max C., to Monsanto Research Corporation. Conductive carbon membrane electrode. 3,676,222, Cl. 136-121.000.

Del Ross, Sergio: *See*—
Ciuti, Brunello; and Del Ross, Sergio, 3,676,357.

Delavan Manufacturing Co.: *See*—
Andreasen, Howard P.; Ankeny, Jay H.; Foddy, Harold W.; and Reynolds, David W., 3,676,020.

Delta Exploration Company, Inc.: *See*—
Bays, Marvin G., 3,676,840.

Dempco, Inc.: *See*—
Vik, Albam M., 3,675,939.

Denbigh, Keith Warwick: *See*—
Capp, Clifford William; and Denbigh, Keith Warwick, 3,676,431.

Denki Onkyo Co., Ltd.: *See*—
Masuda, Noboru; and Koba-ashi, Tunekazu, 3,676,828.

Dennison, John J., to Arrow-Hart, Inc. Integrated lighted push button switch device. 3,676,630, Cl. 200-168.00k.

Denovan, John J.; and Kurelek, John, to Koehring-Waterous, Ltd. Tree harvesting apparatus. 3,675,691, Cl. 144-3.00d.

Denton, John L. Machine for harvesting and cleaning nuts and the like. 3,675,405, Cl. 56-328.00r.

Depoorter, Henri: *See*—
Poot, Albert Lucien; Van Besauw, Jan Frans; and Depoorter, Henri, 3,676,133.
Poot, Albert Lucien; and Depoorter, Henri, 3,676,138.
Poot, Albert Lucien; and Depoorter, Henri, 3,676,140.

Depoorter, Henri; and Ghys, Theofiel Hubert, to Agfa-Gevaert. Spectral sensitization of photoconductive compositions. 3,676,119, Cl. 96-1.700.

Der Marderosian, Aaron C.: *See*—
Caccamesi, Vincent C.; and Der Marderosian, Aaron C., 3,675,468.

Des Jardins, Joseph A., to AMF Incorporated. Anti-spring buckling device. 3,675,912, Cl. 267-166.000.

Desmarets, Paul Jules Rene Joseph. Arrangement for rendering detachable the intermediate parts of a fitted dental prosthesis or the fixed intermediate parts of a partially removable and irremovable prosthesis of dokder bar type. 3,675,326, Cl. 32-5.000.

DeSoto, Inc.: *See*—
Sekmakas, Kazys, 3,676,312.

Detrex Chemical Industries Inc.: *See*—
Black, Charles A., 3,676,307.

Deutsch Advance Produktion GmbH: *See*—
Eggensperger, Heinz; Franzen, Volker; and Kloss, Wilfried, 3,676,471.

Deutsche Babcock & Wilcox Aktiengesellschaft: *See*—
Dorschel, Jurgen, 3,675,607.

Deutschman, John Edward: *See*—
Mc Leod, Melvin Elliott; Deutschman, John Edward; Percival, Herbert Warren; and Spoel, Han, 3,676,105.

Devanney, Raymond H., to Veeder Industries Inc. Variator. 3,675,848, Cl. 235-61.00m.

Devlin assor. to said Henc: *See*—
Henc, Edward V.; and Devlin, Edmund F. X., 3,675,918.

Devlin, Edmund F. X.: *See*—
Henc, Edward V.; and Devlin, Edmund F. X., 3,675,918.

Devyatkin, Vladimir Nikolaevich: *See*—
Strelets, Khaim Lipovich; Chesnokov, Alexandr Sergeevich; Devyatkin, Vladimir Nikolaevich; Tatakin, Alexandr Nikolaevich; Krasikov, Evsei Dmitrievich; Leonova, Ljudmila Sergeevna; Medvetskaya, Galina Arkadievna; and Nechaeva, Tatyana Georgievna, 3,676,323.

Dexter Automatic Products Co., Inc.: *See*—
Tupper, Willis E.; and Hanson, John R., 3,676,026.

Dexter Corporation, The: *See*—
De Rossi, Frank, 3,676,391.

Dexter, Martin: *See*—
Spivack, John D.; and Dexter, Martin, 3,676,531.

Di Mino, Alfonson, to ADM Tronics. Electronic trimming of microelectronic resistors. 3,676,633, Cl. 219-69.00c.

Dibble, Douglas D. Wall shelf mounting. 3,675,882, Cl. 248-235.000.

Didier-Werke A.G.: *See*—
Mahler, Ernst, 3,676,162.

Diedrich, Bernd; Keil, Karl Diether; and Rust, Kurt, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Process for polymerizing α-olefins. 3,676,414, Cl. 260-88.200.

Diedrich, Bernd; Keil, Karl Diether; and Rust, Kurt, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Process for polymerizing α-olefins. 3,676,415, Cl. 260-88.200.

Dietz, John W., to Du Pont de Nemours, E. I., and Company. Amorphous boron-silicon-nitride materials. 3,676,343, Cl. 252-25.000.

Dietz, Wolfgang: *See*—
Vogerl, Manfred; Daxer, Hilmar; Roder, Manfred; and Dietz, Wolfgang, 3,675,709.

Digital Security Systems, Inc.: *See*—
Bourke, Edgar R., II; and Snow, Robert C., 3,675,816.

Disa Elektronik A/S: *See*—
Christensen, Orla, 3,676,320.

Dixon, Harold F. E.: *See*—
Vaccaro, Angelo; and Dixon, Harold F. E., 3,676,644.

Dixon, Paul H. Automatic assembly machine. 3,675,302, Cl. 29-211.000.

Dluhy, Herbert, to American Export Isbrandtsen Lines, Inc. Shipping container with racks for supporting vehicles therein. 3,675,795, Cl. 214-16.1cc.

Dmitrenko, Vladimir Ilich: *See*—
Andrusenko, Petr Ivanovich; Dolganov, Kint Evgenievich; Kovalev, Alexandr Ivanovich; Berezovsky, Pavel Iosipovich; Dmitrenko, Vladimir Ilich; Shukshin, Nikolai Pavolich; Gutarevich, Jury Feodosievich; Kislov, Vladimir Grigorievich; Chevtaev, Andrei Vasilievich; Koshman, Eduard Ivanovich; and Filippov, Vladimir Vasilievich, 3,676,023.

Dobbelstein, Arnold; Hille, Hans-Dieter; and Momm, Anneliese Geb. Koziolek, to Herberts, Kurt, Dr., & Co. vorm. Otto Louis Herberts. Process for the production of insulating coatings on electric conductors. 3,676,403, Cl. 260-75.

Dobbins, David L.: *See*—
Mayer, George L., Jr.; and Dobbins, David L., 3,676,000.

Dobroskokov, Anatoly Lukich: *See*—
Zhukovsky, Alexandr Ivanovich; Dobroskokov, Anatoly Lukich; and Orlovsky, Vasily Ivanovich, 3,675,772.

Dodge, James B.: *See*—
Aisenberg, Sol; and Dodge, James B., 3,675,451.

Doering, William Von E.; Farrissey, William J., Jr.; and Frulla, Floro F., to Upjohn Company, The. Process for preparing hydroquinones. 3,676,503, Cl. 265-621.00h.

Doerrfeld, Robert E.: *See*—
Hansen, John A.; and Doerrfeld, Robert E., 3,675,959.

Doherty, Edward T.: *See*—
Burckhardt, Christoph B.; and Doherty, Edward T., 3,676,130.

Dohmann, Fritz. Method for manufacturing bevel gears. 3,675,459, Cl. 72-352.000.

Dohr, Manfred: *See*—
Fries, Walter; Berg, Markus; Dohr, Manfred; and Kirstahler, Alfred, 3,676,338.

Dolansky, Ladislav; and Phillips, Nathan D., to Research Corporation. Voiced sound display. 3,676,595, Cl. 179-1.0vs.

Dolganov, Kint Evgenievich: *See*—
Andrusenko, Petr Ivanovich; Dolganov, Kint Evgenievich; Kovalev, Alexandr Ivanovich; Berezovsky, Pavel Iosipovich; Dmitrenko, Vladimir Ilich; Shukshin, Nikolai Pavolich; Gutarevich, Jury Feodosievich; Kislov, Vladimir Grigorievich; Chevtaev, Andrei Vasilievich; Koshman, Eduard Ivanovich; and Filippov, Vladimir Vasilievich, 3,676,023.

Dollinger, Robert E., to Phillips Petroleum Company. Carbon black manufacture. 3,676,168, Cl. 106-307.000.

Dolomont, Allan A., to Olin Mathieson Chemical Corporation. Aluminum welding wire electrode with an alumina coating containing phosphate. 3,676,309, Cl. 204-27.000.

Domokos, Jozsef; Benedek, Gyorgy; Kiss, Bela; Winkler, Laszlo; and Beller, Zoltan, to Hajtomu-es Felvonogyar. Method for coating metal workpieces with water soluble or colloidal coloring matter emulsified in water. 3,673,316, Cl. 204-181.

Domokos, Jozsef; Benedek, Gyorgy; Kiss, Bela; Winkler, Laszlo; and Beller, Zoltan, to Hajtomu-es Felvonogyar. Method for coating metal workpieces with water soluble or colloidal coloring matter emulsified in water. 3,676,316, Cl. 204-181.

Domyan, Frank F.; Lantz, Joseph C.; and Sibley, Richard D. Diving helmet. 3,675,650, Cl. 128-142.700.

Domyan, Frank Francis: *See*—
Keller, William Fredrick; and Domyan, Frank Francis, 3,675,538.

Donato, Anthony C., to Lightolier Incorporated. Multiple access electric power distribution assembly. 3,676,830, Cl. 339-21.00r.

Donlon, Richard H.: *See*—
Sobey, Albert J.; and Donlon, Richard H., 3,675,583.

Donofrio, Nicholas M.; and Pomeranz, Jehoshua N., to International Business Machines Corporation. Monolithic memory sense amplifier/bit driver. 3,676,704, Cl. 307-235.000.

Dore, James E.: *See*—
Wieser, Peter F.; and Dore, James E., 3,676,111.

Dorken & Mankel KG, Firma: *See*—
Jentsch, Dietrich, 3,675,270.

Dorn, Ludwig: *See*—
Podschus, Ernst; Dorn, Ludwig; and Heinze, Gerhard, 3,676,366.

Dorn, Peter: *See*—
Morris, Herbert C.; and Dorn, Peter, 3,676,089.

Dorn, Rolf K.; and Williams, Theodore S., to Lummus Company, The. Quench process. 3,676,519, Cl. 260-683.000.

Dorschel, Jurgen, to Deutsche Babcock & Wilcox Aktiengesellschaft. Method and apparatus for controlling depth of submergence of an underwater vehicle. 3,675,607, Cl. 114-16.00r.

Doss, Richard C.; and Jones, Faber B., to Phillips Petroleum Company. Adhesive coated vinyl chloride film. 3,676,201, Cl. 117-122.00h.

Dotson, Donald A.: *See*—
Roberts, George C.; and Dotson, Donald A., 3,675,774.

Douglas, Gary D.; and Eaves, Billy J., to Phillips Petroleum Company. Apparatus for testing and detonating blasting caps. 3,675,578, Cl. 102-70.200.

Douglas, James B. Tablet arm assembly for seats. 3,675,968, Cl. 297-162.000.

Douglas, Raymond J.: *See*—
Schlau, Floyd E.; Bosley, Denis V.; Crain, Philip W.; and Douglas, Raymond J., 3,675,361.

Douglass, Carl E. Engine stand. 3,675,914, Cl. 269-55.000.

Dover Corporation, mesne: *See*—
Bernard, Arthur A.; and Bernard, Richard A., 3,676,640.

Dow Chemical Company, The: *See*—
Clarke, James A., 3,676,397.
Heiman, John C., 3,676,509.
Parrish, Donald Bob; and Pruitt, Ronnie Mac, 3,676,379.
Symm, Richard H., 3,676,054.
Tsai, James H.; and Anderson, Glenn H., 3,676,474.

Dow Corning Limited: *See*—
Fulton, Michael; Jones, John Darrell; and Pearce, Christopher A., 3,676,420.

Down, Russell J. Method for growing oysters. 3,675,626, Cl. 119-4.000.

Downing, Arthur C., to General Electric Company. Steam iron and valve structure. 3,675,351, Cl. 38-77.830.

Doyle, William C., Jr., to Gulf Research & Development Company. Method of manufacturing allyl N,N-dialkylthiolcarbamates. 3,676,479, Cl. 260-455.00a.

Drachenberg, Werner: *See*—
Helmut, Werner; Frank, Dieter; and Drachenberg, Werner, 3,676,245.

Dransfield, Desmond; Bass, Patrick; White, Roy Ernest; and Bracken, Leslie Thomas, to United Gas Industries Limited. Meter reading units. 3,676,876, Cl. 340-188.000.

Drapen, Myron E.; and Henry, Ormond Lee. Polishing device. 3,675,330, Cl. 32-59.000.

Drathschmidt, Carl J. Instant operating coilless relay. 3,676,816, Cl. 337-134.000.

Dressel, William G.: *See*—
Germain, Andrew G.; and Dressel, William G., 3,675,518.

Drinkard, William C., Jr.; and Lindsey, Richard V., to Du Pont de Nemours, E. I., and Company. Hydrides of nickel coordination compounds. 3,676,475, Cl. 260-439.00r.

Driver, Michael C.; and Geisler, Martin J., to Westinghouse Electric Corporation. Process for producing self aligned gate field effect transistor. 3,675,313, Cl. 29-571.000.

Drucker, Kenneth G., to Bio-Consultants, Inc. High speed centrifuge drive assembly. 3,676,723, Cl. 310-68.00b.

Drucker, Kenneth Gus, to Bio-Consultants, Inc. Continuous flow centrifuge head construction. 3,675,846, Cl. 233-26.000.

Drummond, Warren W., to PPG Industries, Inc. Glass fiber forming and supply package. 3,675,872, Cl. 242-174.000.

Drutchas, Gilbert H.; and Clark, Hubert M., to TRW Inc. Full power braking system with skid control and redundant power steering. 3,675,422, Cl. 60-54.50p.

Du Pont de Nemours, E. I., and Company: *See*—
Akers, Richard L.; and Oplinger, Donald W., 3,675,863.
Anderson, Terry P.; and Parker, Fred W., 3,676,377.
Chay, Dong M.; and Iler, Ralph K., 3,676,086.
Chay, Dong M.; Cumbo, Charles Carmen; Randolph, Michael J.; and Yates, Paul C., 3,676,477.
Chia, Yuan-Tsan, 3,676,481.
Coates, John Stuart, 3,676,364.
Dietz, John W., 3,676,343.
Drinkard, William C., Jr.; and Lindsey, Richard V., 3,676,475.
Dyk, John W.; and Wu, Dao-Tsing, 3,676,172.
Graves, Irving Stuart, 3,676,273.
Hoeschele, Guenther Kurt, 3,676,495.
James, Daniel S., 3,676,050.
Knowles, Richard N., 3,676,562.
Kohan, Melvin I.; Martin, Wayne H.; and Rosenbaum, Chester K., 3,676,400.
Kowalewski, Alexander Joseph, 3,676,181.
Mantell, Gerald J.; and Rondestvedt, Christian S., Jr., 3,676,500.
McBride, Richard T., 3,676,566.
Randolph, Michael J., 3,676,476.
Sands, Seymour, 3,676,280.
Schmidt, Paul Gordon, 3,675,875.
Walus, Aloysius N., 3,676,385.
Werner, Alfred John, 3,676,167.
Yates, Paul C., 3,676,161.
Yates, Paul C., 3,676,362.

Dubernet, Robert; and Sabatie, Michele, to Societe Nationale Industrielle Aerospatiale. Multiconductor stranded remote-control cable. 3,676,576, Cl. 174-113.00r.

Ducamus, Jean Matital; and Fernandez, Claude-Jane, to U.S. Philips Corporation. Four-phase delay element. 3,676,709, Cl. 307-279.000.

Duck, Edward William; Ridgewell, Brian John; and Locke, John Michael, to International Synthetic Rubber Company Limited, The. Co- and terpolymers of alpha olefins with cyclo propane derivatives. 3,676,409, Cl. 260-80.780.

Dudley, James M. Hanger for sheet material. 3,675,782, Cl. 211-50.000.

Dudley, Leslie Peter, to Dudley Optical Laboratories, Inc. Methods of integral photography. 3,675,553, Cl. 95-18.00p.

Dudley Optical Laboratories, Inc.: *See*—
Dudley, Leslie Peter, 3,675,553.

Duennenberger, Max: *See*—
Biland, Hans Rudolf; and Duennenberger, Max, 3,676,494.

Duffy, William B., to TRW Inc., mesne. Sheet metal panel fastener. 3,675,958, Cl. 287-189.36d.

Duggar, Anderson, Jr. Speed reducer. 3,675,510, Cl. 74-801.000.

Duling, Irl N.: *See*—
Stearns, Richard S.; Duling, Irl N.; and Gates, David S., 3,676,521.

Duncan, James D.: *See*—
Klima, Frank J.; and Duncan, James D., 3,676,236.

Duncan, Robert C.: *See*—
Baker, Joseph S.; Marsan, Mario S.; and Duncan, Robert C., 3,675,654.

Dunham-Bush, Inc.: *See*—
Lambert, Kenneth W.; and Krichbaum, Donald W., 3,675,379.

Dupnock, Andrew; Gorey, Edward F.; and Keenan, William A., to International Business Machines Corporation. Method for measuring resisitivity. 3,676,775, Cl. 324-64.000.

Dupont, Eugene F.: *See*—
Stangarone, Gene; Cassara, Frank A.; and Dupont, Eugene F., 3,675,615.

Durckbeimer, Walter: *See*—
Schorr, Manfred; Durckbeimer, Walter; Behrendt, Lothar; and Duwel, Dieter, 3,676,446.

Durham, Charles Edward, to Clenaglass Electric Washer Limited. Brushes for cleaning glasses and other drinking vessels. 3,675,263, Cl. 15-76.000.

Durham, Nolan B., 1/2 to Crowe Manufacturing Company. Dual wheel assembly and clamp therefor. 3,675,974, Cl. 301-13.0am.

DuRocher, Gideon A., to Essex International, Inc. Thermally sensitive controls for electric circuits. 3,676,815, Cl. 337-140.000.

Dutcher, Daniel P., to Hoerner Waldorf Corporation. Covered tray package. 3,675,764, Cl. 206-45.340.

Duwel, Dieter: *See*—
Schorr, Manfred; Durckbeimer, Walter; Behrendt, Lothar; and Duwel, Dieter, 3,676,446.

Dwyer Instruments, Inc.: *See*—
Phillips, James W., 3,675,481.

Dyk, John W.; and Wu, Dao-Tsing, to Du Pont de Nemours, E. I., and Company. Vapor coalescence of powder coatings. 3,676,172, Cl. 117-21.000.

Dynes, Robert Carr: *See*—
Anderson, Philip Warren; Dynes, Robert Carr; and Fulton, Theodore Alan, 3,676,718.

Eagle Range & Manufacturing Company: *See*—
Vocke, Elmer E.; and Baltz, Albert L., 3,676,643.

Eagle Range and Manufacturing Company: *See*—
Baltz, Albert L.; and Voeke, Elmer E., 3,675,638.

Eagle-Picher Industries, Inc.: *See*—
Logan, Robert P., 3,676,281.

Eastman, Hal P., to International Business Machines Corporation. Information retrieval system and method. 3,676,851, Cl. 340-172.500.

Eastman Kodak Company: *See*—
Boyer, Simone L.; and Caridi, Roger, 3,676,147.
Garth, Leonid G., 3,676,183.
Henry, James William, 3,676,401.
Lewis, Alan E.; and Voight, Frederick W., Jr., 3,676,485.
Mowrey, Rowland G., 3,676,136.
Musliner, Walter J., 3,676,135.
Pagel, Armin B., 3,675,565.
Wright, John F.; and Olson, James R., 3,676,350.

Eaton Corporation: *See*—
Obermaier, Frank E., 3,675,681.

Eaves, Billy J.: *See*—
Douglas, Gary D.; and Eaves, Billy J., 3,675,578.

Ebeling, Dorothy Stott: *See*—
Ebeling, William C., 3,675,993.

Ebeling, William C.; deceased (by Ebeling, Dorothy Stott; executrix). Visual system. 3,675,993, Cl. 352-92.000.

Ebert, Herman G. Reactively driven rotary liquid distributor. 3,675,850, Cl. 239-254.000.

Eby, Richard L.: *See*—
Sharaf, Harold M.; and Eby, Richard L., 3,676,770.

Eckhardt, Hans A. Apparatus for processing plastic materials. 3,676,035, Cl. 18-12.0sm.

Eckhardt, Hans A. Apparatus for detecting electrically conductive particles using a gas permeable, but liquid impermeable surface. 3,676,773, Cl. 324-41.000.

Ecodyne Corporation: *See*—
O'Brien, Dennis M.; and Miller, Cole R., 3,676,336.

Edco Corporation: *See*—
Wohl, Charles J.; Schere, Jonathan L.; and Costello, Thomas V., 3,676,839.

Edelson, Leo: *See*—
Oddsen, Trygve R.; Oddsen, Gustav A.; and Edelson, Leo, 3,675,597.

Edgar, D. Brown, Jr., to General Electric Company. Lubricating compositions containing halogen and alkoxy, acyloxy, or hydroxy groups. 3,676,349, Cl. 252-54.600.

Edwards, Harry, to Imperial Chemical Industries Limited. Manufacture of laminated articles. 3,676,265, Cl. 156-500.000.

Edwards, James B.; and Haug, Warren R., to Procter & Gamble Company, The. Unleavened, fine grain high volume layer cake mix. 3,676,152, Cl. 99-94.000.

Efremidi, Anatoly Lazarevich: *See*—
Saralidze, Anton Lavrentievich; and Efremidi, Anatoly Lazarevich, 3,676,762.

Egge, Heinz: *See*—
Zilliken, Frederick William; and Egge, Heinz, 3,676,472.

Eggensperger, Heinz; Franzen, Volker; and Kloss, Wilfried, to Deutsch Advance Produktion GmbH. 4-(Betahydroxyethoxy-2-hydroxybenzophenones) and esters thereof. 3,676,471, Cl. 260-410.500.

Eichel, Herman J.: *See*—

Meyer, Ronald J.; Horsley, Orville E.; and Eichel, Herman J., 3,676,559.

Einthoven, Willem Gerard; Jetter, Evelyn Speter; and Wheatley, Carl Franklin, Jr., to RCA Corporation. Method for making transistors including base sheet resistivity determining step. 3,676,229, Cl. 148-186.000.

Elam, Richard C.: *See—*
Evans, Dennis J.; and Elam, Richard C., 3,676,085.

Elazar, Shmuel: *See—*
Funfstuck, Horst; and Elazar, Shmuel, 3,675,643.

Electro Medical Systems, Inc.: *See—*
Sittner, Weldon Rex, 3,675,655.

Electronic Assistance Corporation: *See—*
Mitchell, Chauncey L., III, 3,675,859.

Elizer, Lee H., to Hubinger Company, The. Textile treatment with amphoteric starch. 3,676,205, Cl. 117-139.50c.

Elizer, Lee H., to Hubinger Company, The. Amphoteric cellulose and process for the preparation thereof. 3,676,423, Cl. 260-212.000.

Ellis, Alan F., to Gulf Research & Development Company. Process for preparing organic acids. 3,676,473, Cl. 260-413.000.

Ellis, Alan F.; Kresge, Alfred N.; and Seekircher, Richard, to Gulf Research & Development Company. Process for producing organic acids. 3,676,489, Cl. 260-533.00r.

Ellison, William C. Machine for cutting rolls of sheet material. 3,675,525, Cl. 83-629.000.

Ellsworth, Robert L.: *See—*
Hinkley, David F.; and Ellsworth, Robert L., 3,676,482.

Elo, Arpad, Jr.; and Broersma, Frank R., to Nalco Chemical Company. Process for preparing synthetic crystalline zeolitic sodium aluminosilicate. 3,676,063, Cl. 23-113.000.

Empire Products, Inc., mesne: *See—*
Newman, Albert P., 3,676,837.

Empire Tool Company: *See—*
Girardin, Howard N., 3,675,291.

Enabnit, Robert S.; and Wolfe, Merritt W., to Goodyear Tire & Rubber Company, The. Method for measuring the thickness of buffed tires. 3,675,375, Cl. 51-281.00r.

Endo Laboratories, Inc.: *See—*
Lachman, Leon; Reiner, Roy H.; Shami, Elie; and Spector, Walter, 3,676,557.

Engine Power Corporation: *See—*
Silverstein, Joseph J., 3,676,381.

English, Alan Taylour; and Turner, Paul Anthony, to Bell Telephone Laboratories, Incorporated. Technique for enhancing the stability of transition metal-gold thin film composites. 3,676,214, Cl. 117-217.000.

Enterprise Machine and Development Corporation: *See—*
Taylor, Lewis A., 3,675,623.

Entwisle, John Hubert: *See—*
Smith, Frank; and Entwisle, John Hubert, 3,676,325.

Envirometrics, Inc., mesne: *See—*
Feldman, Stephen Lew, 3,675,480.

Envirotech Corporation, mesne: *See—*
Zuckerman, Mathew M.; and Molof, Alan H., 3,676,334.

Epoch Company, Ltd.: *See—*
Matsumoto, Teruo, 3,675,341.

Eppler, Richard Andrew, to SCM Corporation. Composition and process for glazing ceramic ware. 3,676,204, Cl. 117-125.000.

Equipment Sales Company, Inc.: *See—*
McKinnon, Benjamin I., 3,675,303.

Erlichman, Irving: *See—*
Land, Edwin H.; and Erlichman, Irving, 3,675,551.

Erlinder, Atwood E. Lift having self-folding platform. 3,675,739, Cl. 187-1.000.

Ernst, Alfons; and Hofling, Rudolf, to Heidenhain, Johannes, Dr. Apparatus for the measurable displacement of an object. 3,675,331, Cl. 33-1.00m.

Eschenbach, Paul W., to Deering Milliken Research Corporation. Yarn package and apparatus for producing same. 3,675,864, Cl. 242-47.000.

Eschenbach, Paul W., to Deering Milliken Research Corporation. Apparatus for increasing the density of yarn packages. 3,675,865, Cl. 242-47.000.

Esiban, Eduard Migranovich; and Danchenko, Mikhail Evgenievich, to Institut Elektrosvari imeni E. O. Patona. Non-consumable electrode for electric-arc process. 3,676,639, Cl. 219-121.00r.

Essex International, Inc.: *See—*
DuRocher, Gideon A., 3,676,815.
Hartz, Marvin E.; Taormina, Anthony J.; and Grebik, Stephen J., 3,676,838.
Reust, Paul H.; and Taube, Donald R., 3,675,300.

Esso Production Research Company: *See—*
Kanady, William E., 3,675,718.
Willman, Bertram T., 3,675,429.

Esso Research and Engineering Company: *See—*
Cordes, Ronald A., 3,675,401.
Foroulis, Zisis Andrew, 3,676,327.
Gathman, Albert; and Gleim, George W., 3,676,342.
Hu, Shih-en, 3,676,346.
Hu, Shih-En, 3,676,483.
Prentice, James S., 3,676,242.
Winkler, John C.; and Senyard, Corley P., 3,676,412.

Etablissement Public: Agence Nationale de Valorisation de la Recherche (ANVAR): *See—*
Bonnet, Maurice, 3,675,554.
Vulmiere, Jacques Claude; and Vulmiere, Huguette Nelly, 3,675,984.

Etablissements Public: Agence Nationale de Valorisation de la Recherche (ANVAR): *See—*
Moczar, Madeleine Csanadi; Moczar, Elemer; and Payrau, Paul Bertrand, 3,676,298.

Etablissements Tiflex: *See—*
Leopold, Henri; and Pomathios, Jacques, 3,676,128.

ETEC Corporation: *See—*
Dao, James; and Yew, Nelson C., 3,676,670.

Ethyl Corporation: *See—*
Stephens, Ruth E., 3,676,370.
Unick, Alvin J.; and Gault, Kenneth W., 3,676,348.

Eto, Kiyomitsu: *See—*
Nishi, Seiya; Oshio, Akira; and Eto, Kiyomitsu, 3,676,541.

Ets. Carpano & Pons: *See—*
Laszlo, Nicolar, 3,675,937.

Ettlinger, Ralph, Jr.; and Strobl, Frederick P., Jr., to Avent Industries, Inc. Silverware sorting means. 3,675,770, Cl. 209-97.000.

Eulenberg, Hannspeter; and Van Veldhoven, Gerardus Antonius Wilhelmus, to U.S. Philips Corporation. Circuit arrangement for generating a line frequency parabolically modulated sawtooth current of field frequency through a field deflection coil. 3,676,733, Cl. 315-27.0gd.

Eutectic Welding Alloys Corporation: *See—*
Wishnie, Frederick T., 3,676,310.

Evans, David Maurice; and Theodore, Roy, to S & C Electric Company. Switch construction with non-bounce contacts. 3,676,629, Cl. 200-166.00e.

Evans, Dennis J.; and Elam, Richard C., to United Aircraft Corporation. Cobalt base coating for the superalloys. 3,676,085, Cl. 29-194.000.

Everflex Products, Inc.: *See—*
Morin, Louis F., 3,675,951.

EVG Entwicklungs-und Verwertungsgesellschaft m.b.H.: *See—*
Ritter, Josef; Gott, Hans; Ritter, Klaus; and Ritter, Gerhard, 3,676,631.
Ritter, Klaus; Gott, Hans; Ritter, Josef; and Ritter, Gert, 3,676,632.

Ewers, Ronald L., to Game Time, Inc. Rubber spring supported playground apparatus. 3,675,919, Cl. 272-54.000.

Exact Electronics, Inc.: *See—*
Hunter, Lloyd Wayne, 3,676,698.

Exact Weight Scale Corporation: *See—*
Koppe, Robert G., 3,675,759.

Fabique d'Horlogerie Ch. Tissot & Fils S.A.: *See—*
Cachelin, Gerard, 3,675,414.

Fabrica d'Armi P. Beretta S.p.A.: *See—*
Beretta, Pier Carlo, 3,675,534.

Factory Mutual Research Corporation: *See—*
Livingston, William L., 3,675,854.

Fahey, Darryl R., to Phillips Petroleum Company. Ortho-chlorination of azobenzene. 3,676,421, Cl. 26-205.000.

Fairbanks, Theodore H., to FMC Corporation. Apparatus for making cellular structures. 3,676,267, Cl. 156-523.000.

Falk, Fred W. Absorbed ionizing radiation measuring device. 3,676,682, Cl. 250-83.600.

Falke, Wilbert L.: *See—*
Schwaneke, Alfred E.; Falke, Wilbert L.; and Crosser, Orrin K., 3,675,310.

Fall, Harry H., to Goodyear Tire & Rubber Company, The. Curable graft polymers of polyalkylene oxides. 3,676,529, Cl. 260-887.000.

Fallowfield, Derek, to Grace, W. R., & Co. Thermoformed reusable package having a reclosable lid. 3,676,159, Cl. 99-174.000.

Falvo, Louis A.: *See—*
Hoppstock, Frederic H.; Falvo, Louis A.; and Frech, Kenneth J., 3,676,518.

Farbenfabriken Bayer Akteingesellschaft: *See—*
Golitz, Hans Dietrich; Degener, Eberhart; Oertel, Gunter; Schmelzer, Hans-Georg; and Simmler, Walter, 3,676,478.

Farbenfabriken Bayer Aktiengesellschaft: *See—*
Podschus, Ernst; Dorn, Ludwig; and Heinze, Gerhard, 3,676,366.
Reinking, Klaus; Vogel, Helmut; Hechelhammer, Wilhelm; and Schneider, Kurt, 3,676,544.
Schrader, Gerhard; Lorenz, Walter; Unterstenhofer, Gunter; and Hammann, Ingeborg, 3,676,555.
Wolf, Gerhard D.; Blankenstein, Gunter; and Nischk, Gunter, 3,676,525.

Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning: *See—*
Diedrich, Bernd; Keil, Karl Diether; and Rust, Kurt, 3,676,414.
Diedrich, Bernd; Keil, Karl Diether; and Rust, Kurt, 3,676,415.
Krekeler, Hans; Meidert, Helmut; Riemenschneider, Wilhelm; and Hornig, Lothar Heinz, 3,676,508.
Schorr, Manfred; Durckheimer, Walter; Behrendt, Lothar; and Duwel, Dieter, 3,676,446.

Farkas, Elizabeth H.: *See—*
Glicksman, Martin; Farkas, Elizabeth H.; and Carter, Sadie,, 3,676,150.

Farmer, Robert F., III; and Lawson, Jimmie B., to Shell Oil Company. Heat-stable calcium-compatible waterflood surfactant. 3,675,716, Cl. 166-275.000.

Farrissey, William J., Jr.: *See—*
Doering, William Von E.; Farrissey, William J., Jr.; and Frulla, Floro F., 3,676,503.

Fattor, Arthur P.; and Hortenstius, William. Devices for drawing wires through conduits. 3,675,898, Cl. 254-134.3ft.

Faulk, Joseph H.; Kern, Loyd R.; and King, Graham E., to Atlantic Richfield Company. Slim hole drilling. 3,675,728, Cl. 175-57.000.

Faulring, John A.: *See—*
Faulring, Merle E.; and Faulring, John A., 3,676,779.

Faulring, Merle E.; and Faulring, John A. Signal device. 3,676,779, Cl. 325-115.000.

Fawcett Printing Corporation, The: *See—*
McKinney, Paul W., 3,676,040.

Federal-Mogul Corporation: *See—*
Le Brasse, Gordon J.; and Stolarski, Boniface, 3,676,103.

Fefferman, Gerald Burt, to Bell Telephone Laboratories, Incorporated. Technique for the fabrication of a photolithographically definable, glass covered gold conductor pattern. 3,676,087, Cl. 29-195.00g.

Feldman, Stephen Lew, to Envirometrics, Inc., mesne. Pressure demand meter for fluid flow measurement. 3,675,480, Cl. 73-199.000.

Feldmuehle Aktiengesellschaft: *See—*
Opderbeck, Fritz; Ploetz, Theodor; Thamm, Rudolf; and Westerhuis, Popko J., 3,676,294.

Feller, Gilbert, to Metalem S.A. Method for fabrication of rings for a watch dial. 3,675,295, Cl. 29-177.000.

Fellwock, Charles G.; and Tuley, Donald L., to Whirlpool Corporation. Reversible hinge for refrigerator. 3,675,271, Cl. 16-170.000.

Fennell, John Richard; and Harvey, Robert J., to Meditron, Inc. Taste-modifying composition containing miraculin and method of preparation. 3,676,149, Cl. 99-140.00r.

Fernandez, Claude-Jane: *See—*
Ducamus, Jean Matital; and Fernandez, Claude-Jane, 3,676,709.

Feroy, Arne. Controllable pitch propellers. 3,676,016, Cl. 416-157.000.

Ferrell, John O., to Tights, Inc. Method for fabricating panty hose. 3,675,247, Cl. 2-224.00r.

Ferroxcube Corporation: *See—*
Hall, Ronald Edward; and Hulbert, Larry Norman, 3,676,848.

Fibreboard Corporation, mesne: *See—*
Smith, James A., 3,675,897.

Fickenscher, William E.; and Harris, James E. Deep field optical label reader including means for certifying the validity of a label reading. 3,676,645, Cl. 235-61.11e.

Filippov, Vladimir Vasilievich: *See—*
Andrusenko, Petr Ivanovich; Dolganov, Kint Evgenievich; Kovalev, Alexandr Ivanovich; Berezovsky, Pavel Iosipovich; Dmitrenko, Vladimir Ilich; Shukshin, Nikolai Pavolich; Gutarevich, Jury Feodosievich; Kislov, Vladimir Grigorievich; Chevtaev, Andrei Vasilievich; Koshman, Eduard Ivanovich; and Filippov, Vladimir Vasilievich, 3,676,023.

Filper Corporation: *See—*
Meissner, Konrad E.; and McClelland, Etheride R., 3,675,695.

Finch, DeVer C.; and Kennedy, James A., to Honeywell Information Systems, Inc., mesne. Method, apparatus and computer program for determining the transmission rate and coding configuration of remote terminals. 3,676,858, Cl. 340-172.500.

Findeisen, Heinz H.; Kallmeyer, James D.; Sokol David G.; Stein, James H.; Thomas, Thomas R.; and Bowers, Jack R., to Sangamo Electric Company. Keyboard to tape data input preparation unit. 3,676,854, Cl. 340-172.500.

Finelli, Thomas M.: *See—*
Stiff, Bernard G. E.; and Finelli, Thomas M., 3,675,980.

Fiore, John M., to Bio-Analytical Laboratories, Inc. Speculum instrument and isolated light means therefor. 3,675,641, Cl. 28-6.000.

Fire Devices, Inc.: *See—*
Gabb, William J., 3,676,570.

Firestone Tire & Rubber Company: *See—*
Wakefield, Lynn B., 3,676,396.

Fisans Limited: *See—*
Saggers, David Thomas, 3,676,545.

Fischer, Leonard G.; and Wong, Philip, to DCA Food Industries Inc. Method of forming an adherent coating on foods. 3,676,158, Cl. 99-166.000.

Fischer, Raymond G., to International Harvester Company. Duplex implement hitch. 3,675,945, Cl. 280-411.00c.

Fisher, Robert E., to Mobil Oil Corporation. Biaxial orientation of thermoplastic film. 3,676,539, Cl. 264-175.000.

Fister, Louis P.: *See—*
Scheublein, William A., Jr.; and Fister, Louis P., 3,675,941.

Fitch, Melvin G.: *See—*
Samiran, David; Cooling, Robert O.; and Fitch, Melvin G., 3,675,645.

Flanagan, James Loton; Kronmeyer, James Hughes; and Nelson, John Richard, to Bell Telephone Laboratories, Incorporated. Communications system for alphanumeric information employing audio tone signalling. 3,675,513, Cl. 179-84.0vf.

Flangeklamp Corporation: *See—*
Lickliter, Robert Paul; and Reeves, John F., 3,675,382.
Lickliter, Robert Paul; Abbott, Earl; and Reeves, John F., 3,675,957.

Flautt, Martin C.; Moran, Leland G.; and McCombs, Frank P., to Owens-Corning Fiberglas Corporation. Glass fiber-reinforced elastomers. 3,676,287, Cl. 161-140.000.

Fluck, Josef, to Schild, A., S.A. Watch movement having totalizers. 3,675,413, Cl. 58-74.000.

Fluor Corporation: *See—*
Jackson, Steven B.; Freieich, Ernest; and Hammond, James D., 3,675,435.

FMC Corporation: *See—*
Fairbanks, Theodore H., 3,676,267.

Foddy, Harold W.: *See—*
Andreasen, Howard P.; Ankeny, Jay H.; Foddy, Harold W.; and Reynolds, David W., 3,676,020.

Foden, Frederick Roger; and O'Mant, Derrick Michael, to Imperial Chemical Industries Limited. 2-Substituted benzylidene-4-phenyl-3-hydroxy 5-oxo-2,5-dihydrofuran derivatives. 3,676,464, Cl. 260-343.600.

Folden, Denver C.: *See—*
Appleby, Paul E.; Folden, Denver C.; and Kubinski, Donald C., 3,676,259.
Appleby, Paul E.; Folden, Denver C.; and Peck, Arland A., 3,676,261.

Follett, Harold E. Novelty bathing garment. 3,675,245, Cl. 2-67.000.

Ford Motor Company: *See—*
Labana, Santokh S., 3,676,405.

Fork, Frank W., to Robertson, H. H., Company. Hold-down means for underfloor access housing. 3,676,568, Cl. 174-49.000.

Formax, Inc.: *See—*
Lekan, Henry N., 3,675,387.

Foroulis, Zisis Andrew, to Esso Research and Engineering Company. Inhibition of corrosion by hydrotreater effluent. 3,676,327, Cl. 208-47.000.

Forst, Steve Michael; and Reinheimer, Horst Alfred, to Bell Telephone Laboratories, Incorporated. Semiconductor target structure for image converting device comprising an array of silver contacts having discontinuous nodular structure. 3,676,741, Cl. 317-234.00r.

Forster, Mark. Wire cutting gauge. 3,675,335, Cl. 33-168.00r.

Fort Howard Paper Company: *See—*
Zapfe, Paul C., 3,675,476.

Fortner, William D., to Cavins Co., The. Torque or motion responsive apparatus. 3,675,751, Cl. 192-150.000.

Fortune, William S. Automatic tool system and method for control. 3,676,761, Cl. 318-574.000.

Foster, John A., to Clark, J. L., Manufacturing Co. Plastic cover with hinged closure and molding dies therefor. 3,675,812, Cl. 220-31.00a.

Foster, Leigh Curtis, to Zenith Radio Corporation. High-resolution linear optical scanning system with traveling wave acoustic lens. 3,676,592, Cl. 178-7.600.

Foster Wheeler Corporation: *See—*
Stevens, William D., 3,675,629.

Fowler, Gerald: *See—*
McHugh, John; and Fowler, Gerald, 3,675,566.

Frangatos, Gerassimos, to Mobil Oil Corporation. Lubricant and hydrocarbon fuel compositions. 3,676,347, Cl. 252-51.50r.

Frank, Dieter: *See—*
Helmut, Werner; Frank, Dieter; and Drachenberg, Werner, 3,676,245.

Frank, Victor S.; Stahly, Eldon E.; and Rice, Rip G., to Grace, W. R., & Co. Burn-resistant compositions containing a polythiol and a phosphonitrilic polymer. 3,676,311, Cl. 204-159.140.

Franzen, Volker: *See—*
Eggensperger, Heinz; Franzen, Volker; and Kloss, Wilfried, 3,676,471.

Fraser, John P.; and Hartman, David E., to Shell Oil Company. Method for forming and circulating plugs in a pipeline. 3,676,091, Cl. 48-190.000.

Frech, Kenneth J.: *See—*
Hoppstock, Frederic H.; Falvo, Louis A.; and Frech, Kenneth J., 3,676,518.

Frederick, Harold M., to Burroughs Corporation. Automatically disengaging, tape handler. 3,675,876, Cl. 242-198.000.

Freedman, Morris D., to Bendix Corporation, The. Shadow edge position detector using linear array of diodes with logic to generate gray code. 3,676,687, Cl. 250-209.000.

Freedman, Morris D., to Bendix Corporation, The. Optical image data processing system. 3,676,866, Cl. 340-173.0lt.

Freeland, Stanley R., to Bell & Howell Company. Pendulous type rangefinder for optical instrument. 3,675,559, Cl. 95-44.00c.

Freeman Chemical Corporation: *See—*
Svoboda, Glenn R.; and Reineck, Ronald W., 3,676,376.

Freeman, Peter A., to Bowles Fluidics Corporation. Fluidic irrigation. 3,675,672, Cl. 137-81.500.

Frei, Karl; and Hood, Edwin Elliott, to Bendix Corporation, The. Bicycle disc brake. 3,675,740, Cl. 188-26.000.

Frei, Karl; and Hood, Edwin Elliott, to Bendix Corporation, The. Bicycle disc brake. 3,675,741, Cl. 188-26.000.

Freieich, Ernest: *See—*
Jackson, Steven B.; Freieich, Ernest; and Hammond, James D., 3,675,435.

Frenyo, Pal; Hafer, Karl-Heinz; Karkutt, Reimund; and Pelka, Walter, to Gebr. Eickhoff Maschinenfabrik und Eisengiesserei m.b.H. Coal plow. 3,675,971, Cl. 299-34.000.

Fried, Alan J.; and Fried, Louis. Napkin. 3,675,274, Cl. 24-67.00r.

Fried, Louis: *See—*
Fried, Alan J.; and Fried, Louis, 3,675,274.

Friedell, Morley V., to Martin-Marietta Corporation. Eyelid hybrid butterfly type poppet valve. 3,675,894, Cl. 251-163.000.

Fries, Walter: *See—*
Berg, Markus; Fries, Walter; and Kirstahler, Alfred, 3,676,340.

Fries, Walter; Berg, Markus; Dohr, Manfred; and Kirstahler, Alfred, to Henkel & Cie G.m.b.H. Detergent compositions containing a textile softener. 3,676,338, Cl. 252-8.750.

Frohlich, Josef; and Leguyt, Jacob, to Mannesmann Aktiengesellschaft. Jointed delivery equipment for fluids, particularly low temperature liquids. 3,675,680, Cl. 137-615.000.

Frost, Wade W., to Oxford Industries, Inc. Garment cutting and stacking method. 3,675,604, Cl. 112-262.000.

Frulla, Floro F.: *See—*
Doering, William Von E.; Farrissey, William J., Jr.; and Frulla, Floro F., 3,676,503.

Fry's Metals Limited: *See—*
Strauss, Rudolf Siegfried; and Teitz, Peter David, 3,675,307.

Fuchs, Harry B. Method and means for creating artificial gravity in spacecraft. 3,675,879, Cl. 244-1.0sc.

Fugono, Takeshi: *See—*
Yamamoto, Hiroichi; Suzuki Takashi; Higashide, Eiji; Fugono, Takeshi; and Mizuno, Komei, 3,676,300.

Fuji Denki Kagaku Kabushiki Kaisha: *See—*
Kobayashi, Seihin; and Torii, Michihiro, 3,676,748.

Fuji Heavy Industries, Ltd.: *See—*
Ogawa, Osamu, 3,675,670.

Fuji Photo Film Co., Ltd.: *See—*
Akashi, Goro; Suzuki, Osamu; and Nakamura, Matsuaki, 3,676,217.
Amano, Hiroyuki; Nishio, Fumihiki; Tsuji, Nobuo; and Shirasu, Kazuo, 3,676,139.
Hara, Hikoharu; Oishi, Yasushi; and Nagao, Kameji, 3,676,141.
Mizuki, Eiichi; Oishi, Yasushi; and Sawahara, Masao, 3,676,137.
Ohkubo Kinji; Hayashi, Katsumi; and Sano, Kazuya, 3,676,124.
Yabuta, Yukio, 3,675,757.

Fuji Shashin Film Kabushiki Kaisha; now: *See—*
Amano, Hiroyuki; Nishio, Fumihiki; Tsuji, Nobuo; and Shirasu, Kazuo, 3,676,139.

Fujii, Tatsuo; and Watano, Yutaka, to Nippon Kogaku K.K. Miniature variable resistor with guide means for sliding contacts. 3,676,823, Cl. 338-139.000.

Fujimura, Yasushi: *See—*
Kaneko, Ryuichi; Saito, Toshiya; Fujimura, Yasushi; Tanimura, Hiroshi; Nakamura, Totaro; and Ikeda, Yukisaburo, 3,676,585.

Fujiwara, Yoshiyuki, to Tanabe Kakoki Co., Ltd. Power supply equipment for electric smelting furnace of large capacity. 3,676,564, Cl. 13-12.000.

Fulton, Michael; Jones, John Darrell; and Pearce, Christopher A., to Dow Corning Limited. Room temperature vulcanizable silicone rubber composition. 3,676,420, Cl. 260-185.000.

Fulton, Theodore Alan: *See—*
Anderson, Philip Warren; Dynes, Robert Carr; and Fulton, Theodore Alan, 3,676,718.

Fultz, Palmer. Glass melting furnace and control means for the flow of molten silicates therein. 3,676,099, Cl. 65-162.000.

Funfstuck, Horst; and Elazar, Shmuel, to Statham Instruments, Inc. Cardiac tachometer. 3,675,643, Cl. 128-2.06f.

Furlong, Owen Desmond Arthur Charles; and Bottrell, Neil L., to Westland Aircraft Limited. Manufacture of fluid logic components for fluidic circuits. 3,676,238, Cl. 156-3.000.

Furst, Andor; Muller, Peter; Muller, Marcel; and Kagi, Dieter, to Hoffman-La Roche Inc. 15, 16 Substituted steroids and derivatives. 3,676,467, Cl. 260-397.300.

Furukawa Electric Company, The: *See—*
Kamata, Yoshihiro; and Hirose, Takashi, 3,676,322.

G. K. N. Somerset Wire Limited: *See—*
Cahill, Terence, 3,676,578.

Gabb, William J., to Fire Devices, Inc. Mounting for fire detector devices. 3,676,570, Cl. 174-61.000.

Gabor, Dennis, to Columbia Broadcasting Systems, Inc. Photo-electronic imaging apparatus. 3,676,732, Cl. 315-10.000.

Gadd, Edward George: *See—*
Conrad, John Harold; Reynolds, Anthony Edward St. Aubyn; and Gadd, Edward George, 3,676,707.

GAF Corporation: *See—*
Mackey, E. Scudder; and Miceli, Vincent J., 3,676,209.
Schultz, Herman S.; Katzenstein, William; and Williams, Earl P., 3,676,408.

Gage, Charles H. Chair-arm cup receptacle. 3,675,969, Cl. 297-194.000.

Gailay, Jean-Jacques: *See—*
Traber, Walter; Margot, Alfred; and Gailay, Jean-Jacques, 3,676,561.

Gaj, Emil A. Flood control system. 3,675,248, Cl. 4-1.000.

Gallacher, Lawrence Vincent, to American Cyanamid Company. Breathable waterproof fabric. 3,675,391, Cl. 55-16.000.

Gallagher, James P.: *See—*
Dalson, Milton H.; Gallagher, James P.; and Pfefferle, William C., 3,676,328.

Galloway, Reginald B.; and Shumard, Raymond F., to Lilly, Eli, and Company. Ascaris suum vaccine. 3,676,547, Cl. 424-88.000.

Galowin, Lawrence S.: *See—*
Bilinski, Donald J.; Galowin, Lawrence S.; and Napolitano, Michael, 3,675,711.

Game Time, Inc.: *See—*
Ewers, Ronald L., 3,675,919.

Ganiaris, Neophytos, to Struthers Scientific and International Corporation. Desalination process. 3,675,436, Cl. 62-58.000.

Garbark, Roman F.: *See—*
Gottlieb, Alvin J.; Neyens, Wayne E.; Smith, Robert T.; and Garbark, Roman F., 3,675,927.

Gardner-Denver Company: *See—*
Baker, William J.; and Hurst, Richard J., 3,675,861.

Garilli, Francesco; and Marino, Michelangelo, to Montecatini Edison S.p.A. Apparatus for the drawing of samples of gaseous mixtures to be analyzed. 3,675,489, Cl. 73-421.50r.

Garmong, Victor H. Cable reel. 3,676,614, Cl. 191-12.200.

Garrett, William D.; and Barger, William R., Jr., to United States of America, Navy. Chemical sea surface marker. 3,676,359, Cl. 252-301.30r.

Garrison, George E. Auxiliary tire track. 3,675,701, Cl. 152-225.000.

Garth, Leonid G., to Eastman Kodak Company. Process for preparing high gloss photographic paper. 3,676,183, Cl. 117-64.00r.

Gartland, Albert J., Jr.; and D'Amato, Michael J., to Hubbell, Harvey, Incorporated. Contact spring assembly. 3,676,829, Cl. 339-33.000.

Gary, Wilbur, to SCM Corporation. Isomerization of 2-hydroxy p-menthane 1-carboxylate and 2-hydroxy-8-p-menthene-1-carboxylate to the corresponding 1-hydroxy-2-carboxylate counterpart. 3,676,487, Cl. 260-489.000.

Garzon, Ruben D., to I-T-E Imperial Corporation. Ground-fault detector using square hysteresis loop reactor core. 3,676,737, Cl. 317-18.00d.

Gates, David S.: *See—*
Stearns, Richard S.; Duling, Irl N.; and Gates, David S., 3,676,521.

Gatewood, John R.: *See—*
Maserjian, Joseph; and Gatewood, John R., 3,676,754.

Gathman, Albert; and Gleim, George W., to Esso Research and Engineering Company. Lubricant for textile machinery. 3,676,342, Cl. 252-18.000.

Gatts, James D. Method and apparatus for dynamic health testing evaluation and treatment. 3,675,640, Cl. 128-2.05r.

Gatzi, Karl: *See—*
Bader, Jorg; and Gatzi, Karl, 3,676,459.

Gault, Kenneth W.: *See—*
Unick, Alvin J.; and Gault, Kenneth W., 3,676,348.

Gauthier, Oscar, to Clebel Inc. Tourniquet. 3,675,657, Cl. 128-327.000.

Gautreaux, Gloria A.: *See—*
Harper, Robert J., Jr.; Bruno, Joseph S.; and Gautreaux, Gloria A., 3,676,052.

Gawlick, Heinz; and Bendler, Hellmut. Fastening means severable by ignition of an explosive charge. 3,675,533, Cl. 89-113.000.

Gaynor, Paul E. Ski lift apparatus. 3,675,588, Cl. 104-173.000.

Gebr. Eickhoff Maschinenfabrik und Eisengiesserei m.b.H.: *See—*
Frenyo, Pal; Hafer, Karl-Heinz; Karkutt, Reimund; and Pelka, Walter, 3,675,971.

Gebr. Eickoff, Maschinenfabrik und Eisengiessair m.b.H.: *See—*
Brandenburg, Helmut; and Beck, Hansludwig, 3,676,268.

Gebruder Buhler AG: *See—*
Muller, Roman, 3,675,697.

Geigy Chemical Corporation: *See—*
Traber, Walter; Margot, Alfred; and Gailay, Jean-Jacques, 3,676,561.
Tscharner, Christopher Johannes, 3,676,339.
Zergenyi, Janos; and Habicht, Ernst, 3,676,560.

Geisler, Martin J.: *See—*
Driver, Michael C.; and Geisler, Martin J., 3,675,313.

General Aniline & Film Corporation: *See—*
Webb, Albert E., 3,675,354.

General Automotive Specialty Company, Inc.: *See—*
Miller, Martin P., 3,676,617.

General Aviation Electronics, Inc.: *See—*
Boelter, Donald A., 3,676,767.

General Cable Corporation: *See—*
Rubinstein, Solomon, 3,676,571.

General Electric and English Electric Companies, Limited, The: *See—*
Ingram, David John; and Maillardet, Frederick James, 3,675,794.

General Electric Company: *See—*
Agens, Maynard C.; and Kantor, Simon W., 3,676,285.
Collins, Neil E.; Kerber, Elwyn W.; and Neville, Raymond R., 3,676,668.
Datta, Ranajit Kumar, 3,676,361.
Downing, Arthur C., 3,675,351.
Edgar, D. Brown, Jr., 3,676,349.
Girard, Roland T., 3,676,314.
Hawks, John D., 3,676,750.
Humphrey, John G., 3,676,582.
Kantola, Robert A.; and Boothe, Willis A., 3,675,473.
Kim, Sang-Chul, 3,676,044.
Laskowski, Edward L., 3,676,046.
Martin, Donald L.; and Benz, Mark G., 3,676,577.
Neuhouser, Donald E., 3,676,739.
Schmidt, Herman, 3,676,656.
Ward, William J., III, 3,676,220.
Watrous, Donald L.; and Cote, Paul T., 3,676,045.
Whipple, Edward R., 3,675,444.
Wirth, Joseph G., 3,676,448.
Worcester, Joseph A., 3,676,781.

General Fire Extinguisher Corporation: *See—*
Balmes, Mark E., Sr., 3,675,722.

General Foods Corporation: *See—*
Bentz, Alan P.; and Scarpellino, Richard, 3,676,156.
Glasser, George; Sjonvall, Ragnar Edward; and Kaplow, Milton, 3,676,154.
Glicksman, Martin; Farkas, Elizabeth H.; and Carter, Sadie,, 3,676,150.

Scharschmidt, Rudolph K., 3,676,151.

Gentile, Salvatore A. Impact safety hockey puck. 3,675,928, Cl. 273-128.00r.

George, Hal E.: *See—*
Zajac, Theodore S.; and George, Hal E., 3,675,539.

Gerber, Reinhold; Kerrigan, James Edward; and Hawley, Harry Ray, to American Can Company. Brim curling. 3,676,543, Cl. 264-296.000.

Gereby, John L.: *See—*
Hungerford, Philip C., Jr.; Gereby, John L.; and Richens, Robert H., 3,675,536.

Gerecht, John Fred; and Wixon, Harold Eugene, to Colgate-Palmolive Company. Textile softening compositions. 3,676,341, Cl. 252-8.800.

Gerhardt, Peter H.: *See—*
Wiser, Joseph E.; and Gerhardt, Peter H., 3,676,725.

Gerhardt, Wilfried; and Harnisch, Heinz, to Knapsack Aktiengesellschaft. Process for producing a stabilized suspension NPK, NP or PK fertilizer. 3,676,100, Cl. 71-37.000.

Germain, Andrew G.; and Dressel, William G., to Amsted Industries, Incorporated. Stopper renewal device. 3,675,518, Cl. 82-1.00b.

Gerould, David S., to Weld-Motion, Inc. Wire feeder. 3,675,837, Cl. 226-187.000.

Gerrard Company Ltd., mesne: *See—*
Burrage, Benjamin S.; and Blair, George S., 3,675,760.

Gersbach, John E., to International Business Machines Corporation. Sense amplifier latch for monolithic memories. 3,676,703, Cl. 307-235.000.

Getman, Anatoly Fedorovich: *See—*
Shulzhenko, Alexandr Alexandrovich; and Getman, Anatoly Fedorovich, 3,676,068.

Ghilardi, Guiliana; Kalopissis, Gregoire; De Beaulieu, Henry Philippe; and Abegg, Jean-Louis, to Societe anonyme dite: L'Oreal. Neutralizing compositions for permanent wave operation. 3,676,546, Cl. 424-71.000.

Ghiz, George J. Pop-up head for water jet-pool cleaning system. 3,675,252, Cl. 4-172.170.

Ghys, Theofiel Hubert: *See—*
Depoorter, Henri; and Ghys, Theofiel Hubert, 3,676,119.

Giarrizzo, Lawrence P. Exhaust filter attachment. 3,675,398, Cl. 55-316.000.

Giarrusso, Gino A.: *See—*
Silverman, Herbert P.; and Giarrusso, Gino A., 3,676,188.

Gidge, Lester: *See—*
Atwood, Lamar T.; and Gidge, Lester, 3,675,285.

Gilchrist, David W. Aquatic vehicle. 3,675,259, Cl. 9-310.00g.

Gille, John P.: *See—*
McGrew, Jay L.; and Gille, John P., 3,675,809.

Gillemot, George W.; and Thompson, John T. Universal sheath bond for communications cable. 3,676,836, Cl. 339-97.00r.

Gillette Company, The: *See—*
Perry, Roger L., 3,675,322.

Gilmoure, Harold J., to Sales Promotion Products, Inc. Banner mounting device. 3,675,356, Cl. 40-145.000.

Gilson, James R.: *See—*
Catlett, John C., 3,675,370.

Gimbel, William T.: *See—*
Larson, Carl B.; and Gimbel, William T., 3,675,801.

Giordano, Annie Sue: *See—*
Hewitt, Gordon Trent; and Giordano, Annie Sue, 3,676,199.

Girard, Peter F.; and Peterson, John M., to Teledyne Ryan Aeronautical Company. Mass transportation system. 3,675,582, Cl. 104-23.00r.

Girard, Roland T., to General Electric Company. Method of electrodepositing vitreous coatings atop a multiapertured substrate. 3,676,314, Cl. 204-181.

Girardin, Howard N., to Empire Tool Company. Combination cut-off and chamfer tool. 3,675,291, Cl. 29-97.000.

Girodat, Joseph C. F., to Massey-Ferguson Industries Limited. Combine stone trap door. 3,675,660, Cl. 130-27.0jt.

Glaise, Rene, to U.S. Philips Corporation. Semiconductor device and method of manufacturing said device. 3,676,755, Cl. 317-235.00r.

Glanzstoff AG: *See—*
Riess, Werner; Schaefer, Helmut; and Bayer, Bernd, 3,676,180.

Glass, John P. Jet steering boat. 3,675,611, Cl. 115-12.00r.

Glass Laboratories Company: *See—*
Shanok, Victor; and Shanok, Jesse P., 3,675,355.

Glasser, George; Sjonvall, Ragnar Edward; and Kaplow, Milton, to General Foods Corporation. Shelf stable tomato soup concentrate. 3,676,154, Cl. 99-124.000.

Glatz, Albert. Ball joint. 3,675,953, Cl. 287-12.000.

Glaverbel S.A.: *See—*
Plumat, Emile; and Van Laethem, Robert, 3,676,097.

Glaxo Laboratories Limited: *See—*
Siddons, Phillip Thomas, 3,676,437.

Gleim, George W.: *See—*
Gathman, Albert; and Gleim, George W., 3,676,342.

Gleisberg, Dietrich: *See—*
Schneider-Arnoldi, Alfred; Kampmann, Friedrich-Wilhelm; Thiel, Hans-Dieter; Kandler, Joachim; and Gleisberg, Dietrich, 3,676,165.

Glicksman, Martin; Farkas, Elizabeth H.; and Carter, Sadie,, to General Foods Corporation. Low calorie yeast leavened baked products. 3,676,150, Cl. 99-90.00r.

Globe-Union Inc.: *See—*
Mishler, Ralph Ephraim, 3,676,212.

Globus Maskinfabrik A/S: *See—*
Kverneland, Finn, 3,675,856.

Gloge, Detlef Christoph, to Bell Telephone Laboratories, Incorporated. Optical autocorrelator for autocorrelating picosecond optical pulses. 3,675,985, Cl. 350-157.000.

Godzicki, Martin Michael: *See—*
Horn, Harold Edwin; Kimball, Bruce Allan; and Godzicki, Martin Michael, 3,676,155.

Goens, Duane N.; and Clapper, Thomas W., to Kerr-McGee Chemical Corporation. Production of sodium chlorate. 3,676,315, Cl. 204-95.000.

Goetchius, Norman E.; and Zaky, Amin Y., to Stromberg-Carlson Corporation. Telephone set identification system. 3,676,602, Cl. 179-17.00a.

Goff, Don L.: *See—*
Tallarico, Robert A.; and Goff, Don L., 3,675,256.

Goins, William C., Jr.; and McGlothlin, Bruce B., to Gulf Research & Development Company. Method of gravel packing wells. 3,675,717, Cl. 166-278.000.

Goldbaum, Elliott: *See—*
Kaldor, Robert M.; Borruso, Joseph V.; and Goldbaum, Elliott, 3,676,834.

Golde, H. T., GmbH, Firma: *See—*
Golde, Hans; Herrmann, Friedrich; Kouth, Herbert; and Marr, Fritz, 3,675,371.

Golde, Hans; Herrmann, Friedrich; Kouth, Herbert; and Marr, Fritz, to Golde, H. T., GmbH, Firma. Spring closeable window operating mechanism. 3,675,371, Cl. 49-352.000.

Goldman, David A.; and Oppenheimer, Henry N., to Columbia Broadcasting System, Inc. Video display system. 3,676,850, Cl. 340-154.000.

Goldman, Irving M.; and Larson, Jerry K., to Pfizer Inc. Dibenzodiazacyclotetra decadiene compounds. 3,676,428, Cl. 260-239.0dd.

Goldthorp, David Clayton; Limiero, Albert David; and Smith, John Paul, to Bell Telephone Laboratories, Incorporated. Line circuit for a key telephone system. 3,676,608, Cl. 179-81.00r.

Golitz, Hans Dietrich; Degener, Eberhart; Oertel, Gunter; Schmelzer, Hans-Georg; and Simmler, Walter, to Farbenfabriken Bayer Akteingesellschaft. Silyl-substituted urea derivatives. 3,676,478, Cl. 260-448.20n.

Goodyear Tire & Rubber Company: *See—*
Hewitt, John H., 3,675,482.

Goodyear Tire & Rubber Company, The: *See—*
Appleby, Paul E.; Folden, Denver C.; and Kubinski, Donald C., 3,676,259.
Appleby, Paul E.; Riggs, Robert S.; and Woodhall, Edwin S., 3,676,260.
Appleby, Paul E.; Folden, Denver C.; and Peck, Arland A., 3,676,261.
Bauer, Richard G.; and Patitsas, George P., 3,676,410.
Christie, Christopher E.; and Martin, Eugene Earl, 3,676,028.
Enabnit, Robert S.; and Wolfe, Merritt W., 3,675,375.
Fall, Harry H., 3,676,529.
Griffin, Theodore F.; and Rye, Grover W., 3,675,621.
Griffin, Theodore F., 3,675,622.
Hoppstock, Frederic H.; Falvo, Louis A.; and Frech, Kenneth J., 3,676,518.
LaRue, James F., 3,675,407.
Piirma, Aleksander, 3,676,393.
Suter, Charles A., 3,675,377.
Throckmorton, Morford C.; and Saitman, William M., 3,676,411.
Watts, George T.; and Yeager, Robert W., 3,675,703.

Gordon, Bruce L.: *See—*
Wideman, Gilder L., 3,675,659.

Gorey, Edward F.: *See—*
Dupnock, Andrew; Gorey, Edward F.; and Keenan, William A., 3,676,775.

Gorman, John R. Balancing game. 3,675,920, Cl. 273-1.00r.

Gosnell, Earl J.; and Taylor, Jerry H., to Burroughs Corporation. Gravure printing plate making process. 3,675,572, Cl. 101-401.100.

Goto, Jugo: *See—*
Matsui, Yutaka; Mise, Noritoshi; Goto, Jugo; and Yokoo, Makoto, 3,676,402.

Gott, Hans: *See—*
Ritter, Josef; Gott, Hans; Ritter, Klaus; and Ritter, Gerhard, 3,676,631.
Ritter, Klaus; Gott, Hans; Ritter, Josef; and Ritter, Gert, 3,676,632.

Gottlieb, Alvin J.; Neyens, Wayne E.; Smith, Robert T.; and Garbark, Roman F., to Gottlieb, D., & Company. Two-player pinball machine. 3,675,927, Cl. 273-119.00a.

Gottlieb, D., & Company: *See—*
Gottlieb, Alvin J.; Neyens, Wayne E.; Smith, Robert T.; and Garbark, Roman F., 3,675,927.

Gould, Inc., mesne: *See—*
Wilson, Gardner P., 3,675,333.

Goulds Pumps, Incorporated: *See—*
Bevan, Robert H.; and Buffone, Vincent D., 3,676,014.

Grace, W. R., & Co.: *See—*
Artz, Kenneth W., 3,675,811.
Brenner, Mannie; Chase, Fred L.; and Leydon, Arthur J., 3,676,386.
Fallowfield, Derek, 3,676,159.
Frank, Victor S.; Stahly, Eldon E.; and Rice, Rip G., 3,676,311.
Kehr, Clifton L.; and Wszolek, Walter R., 3,676,195.
Kehr, Clifton L.; and Wszolek, Walter R., 3,676,283.
Los, Lenore J., 3,676,440.
Scherzer, Julius; and Albers, Edwin W., 3,676,368.
Taylor, Monroe F., 3,675,767.

Gradko Glass Laboratories, Inc.: *See—*
Grady, Dennis R., 3,676,076.
Grady, Dennis R., to Gradko Glass Laboratories, Inc. Disposable container. 3,676,076, Cl. 23-292.000.
Graf, Edwin H. Auxiliary carrier for portable boxes. 3,675,814, Cl. 220-85.00r.
Gram, Hans, to Brodrene Gam A/S. Table for rotating freezing apparatus. 3,675,443, Cl. 62-345.000.
Granchelli, Felix E.: *See—*
Para, Harry G.; and Granchelli, Felix E., 3,676,462.
Grant, David C.; and Lamson, Byron A. Berry picking machine. 3,675,406, Cl. 56-330.000.
Grant, Peter H., to Bell & Howell Company. Film retaining insert for reels. 3,675,869, Cl. 242-74.000.
Graser, Toni; and Hirs, Joseph, said Hirs assor. to said Graser. Electronic ignition device for internal combustion engines. 3,675,635, Cl. 123-148.00e.
Graves, Irving Stuart, to Du Pont de Nemours, E. I., and Company. Films containing superimposed curved configurations of magnetically orieatated pigment. 3,676,273, Cl. 161-3.000.
Gravlee, L. Clark: *See—*
Wideman, Gilder L., 3,675,659.
Gray Industries, Inc.: *See—*
Gray, Oscar S., 3,676,058.
Gray, Oscar S., to Gray Industries, Inc. Microwave treating apparatus and method. 3,676,058, Cl. 21-54.00r.
Great Lakes Carbon Corporation: *See—*
Winstead, Thomas W., 3,676,537.
Grebik, Stephen J.: *See—*
Hartz, Marvin E.; Taormina, Anthony J.; and Grebik, Stephen J., 3,676,838.
Green, David T.: *See—*
Bryan, Graham W.; and Green, David T., 3,675,688.
Green, Don: *See—*
Wideman, Gilder L., 3,675,659.
Green, Kurt G.: *See—*
Hollister, Robert H.; Wilburn, Garlington C.; and Green, Kurt G., 3,676,623.
Green, Mino, to Zenith Radio Corporation. Acoustic surface wave transmission device with amplification. 3,676,788, Cl. 330-5.500.
Green, Wesley R.: *See—*
McGroarty, Bryan M., 3,676,198.
Greer, Edward M., to Greer Hydraulics, Inc. Method of making pressure vessel. 3,675,306, Cl. 29-487.000.
Greer Hydraulics, Inc.: *See—*
Greer, Edward M., 3,675,306.
Gref, Hans: *See—*
Browatzki, Kurt; Gref, Hans; Herzhoff, Peter; Maus, Fritz; Platz, Stephan; Schaum, Gustav; Schweicher, Wolfgang; and Wasser, Willi, 3,676,178.
Gregorovic, Dragutin T. Attachment devices for elongate members. 3,675,283, Cl. 05/01/72.
Griffin, Ivan E., to Griffin, Raymond R. Anti-slip surfaced article. 3,676,208, Cl. 117-161.0zb.
Griffin, Raymond R.: *See—*
Griffin, Ivan E., 3,676,208.
Griffin, Theodore F.; and Rye, Grover W., to Goodyear Tire & Rubber Company, The. Device for removing excess liquid coating from a moving fabric. 3,675,621, Cl. 118-122.000.
Griffin, Theodore F., to Goodyear Tire & Rubber Company, The. Dip tank used in coating fabric. 3,675,622, Cl. 118-421.000.
Grimm, Dieter; Kandler, Joachim; Merkenich, Karl; and Pirig, Wolf-Dieter. Process for the manufacture of enzyme and perborate-containing detergent compositions. 3,676,352, Cl. 252-99.000.
Griner, Arthur J.; and Ryder, George, to National Biscuit Company. Cracker stacking and segregating apparatus. 3,675,792, Cl. 214-6.0ba.
Grinnell Corporation: *See—*
Mears, James W., 3,675,952.
Groos, Horst Hans, to Schloemann Aktiengesellschaft. Metal-tube extrusion press. 3,675,457, Cl. 72-265.000.
Grosh, James L., to United Aircraft Corporation. Method for longitudinal reinforcing plastic pipes. 3,676,246, Cl. 156-188.000.
Grosholz, James R.: *See—*
Crowley, Charles L.; Grosholz, James R.; and Hutter, Charles G., III, 3,675,653.
Gruber, Bernard A., to Monsanto Company. Laminated article. 3,676,293, Cl. 161-206.000.
Gruenfeld, Norbert, to Ciba-Geigy Corporation. Derivatives of 3-aryl-5-alkylhydantoins. 3,676,456, Cl. 260-309.500.
Grutsch, James F.; and Mallatt, Russell C., to Standard Oil Company. Apparatus used in purifying waste water. 3,675,779, Cl. 210-242.000.
GTE Automatic Electric Laboratories, Incorporated: *See—*
Orchard, Henry J.; and Sheahan, Desmond F., 3,676,806.
GTE Sylvania Incorporated: *See—*
Bidell, Frederick W.; and Hughes, Richard J., 3,676,794.
Guarino, Michael J., Sr., 2/3 to La Marca, Thomas, Jr. Golf tee. 3,675,929, Cl. 273-183.00a.
Gubler, Kurt: *See—*
Boshard, Rene; Gubler, Kurt; Aufderhaar, Ernest; and Brenneisen, Paul, 3,676,450.
Gueldenpfennig, Klaus; Pommerening, Uwe A.; and Russell, Stanley L., to Stromberg-Carlson Corporation. Camp-on busy checking and monitor circuit. 3,676,606, Cl. 179-18.0bg.
Guenard, Pierre, to Thomson-CSF. Microwave tube amplifier circuit for amplitude modulated and frequency modulated microwave signal. 3,676,791, Cl. 330-43.000.
Guernet, Georges, to Commissariat a l'Energie Atomique. Method for the production of an ion beam having a large cross-sectional area. 3,676,693, Cl. 250-49.50c.
Guggenbickler, Leon E.: *See—*
Russell, Phillips G.; Guggenbickler, Leon E.; and Crawford, John H., 3,675,791.
Guillet, Philippe Robert, to L'Oreal. Device for withdrawing samples. 3,675,491, Cl. 73-425.40r.
Gulf Oil Corporation: *See—*
Bokros, Jack C., 3,676,179.
Klima, Frank J.; and Duncan, James D., 3,676,236.
Gulf Research & Development Company: *See—*
Carlson, Edgar; and Lehrian, William R., 3,676,333.
Doyle, William C., Jr., 3,676,479.
Ellis, Alan F., 3,676,473.
Ellis, Alan F.; Kresge, Alfred N.; and Seekircher, Richard, 3,676,489.
Goins, William C., Jr.; and McGlothlin, Bruce B., 3,675,717.
Onopchenko, Anatoli; Schulz, Johann G. D.; and Williamson, Roger C., 3,676,488.
Paviak, Stanley C., 3,676,373.
Rosenthal, Robert W., 3,676,514.
Gundlach, Robert W., to Xerox Corporation. Imaging system. 3,676,215, Cl. 117-230.000.
Gutarevich, Jury Feodosievich: *See—*
Andrusenko, Petr Ivanovich; Dolganov, Kint Evgenievich; Kovalev, Alexandr Ivanovich; Berezovsky, Pavel Iosipovich; Dmitrenko, Vladimir Ilich; Shukshin, Nikolai Pavolich; Gutarevich, Jury Feodosievich; Kislov, Vladimir Grigorievich; Chevtaev, Andrei Vasilievich; Koshman, Eduard Ivanovich; and Filippov, Vladimir Vasilievich, 3,676,023.
Gutknecht, Jacques Emile: *See—*
Loup, Jean-Pierre Olivier; Gutknecht, Jacques Emile; and Anthony, Anne-Marie, nee Barbier, 3,676,771.
Gutlhuber, Friedrich; and Kasper, Lothar. Apparatus for automatic execution of machining operations, such as welding. 3,675,841, Cl. 228-25.000.
Habicht, Ernst: *See—*
Zergenyi, Janos; and Habicht, Ernst, 3,676,560.
Haddad, Albert G. Control system for dual rail model electric vehicles. 3,675,586, Cl. 104-149.000.
Hafer, Karl-Heinz: *See—*
Frenyo, Pal; Hafer, Karl-Heinz; Karkutt, Reimund; and Pelka, Walter, 3,675,971.
Haglund, Bernard F.; and Salvarezza, Robert M., to Coast Marine & Industrial Supply Inc. Quick-release storage of a life ring. 3,675,257, Cl. 9-14.000.
Hahn, Ernest A., to PPG Industries, Inc. Crosslinked polyvinyl chloride or polyvinylidene fluoride film. 3,676,192, Cl. 117-93.310.
Haimula, Norman E., to Atlantic Richfield Company. Arctic construction and drilling. 3,675,430, Cl. 61-46.000.
Hajduk, Frank R., to Regis Manufacturing Company. Method of locating a bracket. 3,675,293, Cl. 29-150.000.
Hajduk, Frank R., to Regis Manufacturing Company. Cabinet bracket. 3,675,955, Cl. 287-20.927.
Hajduk, Jeno; and Katai, Mihaly, to Nikex Nehezipari Kulkereskedelmi Vallalat. Outer nozzle for the cutting head of a flame cutter. 3,675,852, Cl. 239-822.000.
Hajtomu-es Felvonogyar: *See—*
Domokos, Jozsef; Benedek, Gyorgy; Kiss, Bela; Winkler, Laszlo; and Beller, Zoltan, 3,673,316.
Domokos, Jozsef; Benedek, Gyorgy; Kiss, Bela; Winkler, Laszlo; and Beller, Zoltan, 3,676,316.
Hake, Walter Thomas; and Stieglitz, Henry Gilbert, to American Can Company. Apparatus for applying a strip member to a cylindrical container body. 3,676,271, Cl. 156-567.000.
Hakim, Salomon. Fluid operatable hemostat. 3,675,656, Cl. 128-325.000.
Haley, Thomas W.: *See—*
Orzechowski, John F.; and Haley, Thomas W., 3,676,038.
Halff, Albert H.; and Reid, Allen F. Apparatus for emptying and refilling liquid in a reservoir. 3,675,829, Cl. 222-204.000.
Hall, C. F., Company of Illinois, The: *See—*
Kuceski, Vincent P., 3,676,344.
Kuceski, Vincent P., 3,676,345.
Hall, Edwin F., to Alden Self-Transit Systems Corporation. Transportation system. 3,675,584, Cl. 104-28.000.
Hall, Floyd V., to Liggett & Myers Incorporated. Automatic cigarette feed machine having a vacuum belt conveyor. 3,675,761, Cl. 198-184.
Hall, Harold R., to Libbey-Owens-Ford Company. Method of bending glass sheets. 3,676,098, Cl. 65-106.000.
Hall, Ronald Edward; and Hulbert, Larry Norman, to Ferroxcube Corporation. Machine recognition of symbols. 3,676,848, Cl. 340-146.3ac.
Hallerback, Stig Lennart, to SKF Industrial Trading and Development Company, N.V. Rolling bearings comprising annular washers or cylindrical sleeves provided with a number of ball grooves. 3,675,979, Cl. 308-230.000.
Hallstedt, Carl Goran Albin: *See—*
Arsenius, Torsten Henry; and Hallstedt, Carl Goran Albin, 3,675,977.

Halpern, Arthur, to M. I. Sales Co., Inc. Pin wheel toy. 3,675,364, Cl. 46-58.000.
Hammann, Ingeborg: *See—*
Schrader, Gerhard; Lorenz, Walter; Unterstenhofer, Gunter; and Hammann, Ingeborg, 3,676,555.
Hammond, James D.: *See—*
Jackson, Steven B.; Freieich, Ernest; and Hammond, James D., 3,675,435.
Hammond, Michael J.; and Haynes, James W., to Sylvania Electric Products, Inc. Method of stabilizing rare earth oxide phosphor in dichromate sensitized coating slurry. 3,676,177, Cl. 04/24/70.
Hanck, Ronald C.: *See—*
De Weese, Duane G.; and Hanck, Ronald C., 3,676,148.
Hanrahan, Donald J., to United States of America, Navy. Fast switch utilizing hybrid electron-beam-semiconductor devices. 3,676,716, Cl. 307-308.000.
Hanselman, Larry R.: *See—*
Miller, Timothy A.; and Hanselman, Larry R., 3,675,625.
Hansen, A. L., Mfg. Co.: *See—*
Hansen, John A.; and Doerrfeld, Robert E., 3,675,959.
Hansen, Glen D.: *See—*
Buschbom, Floyd E.; Hansen, Glen D.; and Johnson, Roger L., 3,675,758.
Hansen, John A.; and Doerrfeld, Robert E., to Hansen, A. L., Mfg. Co. Door holder. 3,675,959, Cl. 292-70.000.
Hansen, Marvin E.: *See—*
Quigley, Norman R.; and Hansen, Marvin E., 3,675,752.
Hansen, Quinten A. Single lever selectively actuated forward and reverse clutches. 3,675,748, Cl. 192-51.000.
Hanson, John R.: *See—*
Tupper, Willis E.; and Hanson, John R., 3,676,026.
Hanson, Theodore L., to Vendo Company, The. Floating ingredient-tank sold-out system for beverage dispensing machines. 3,675,819, Cl. 222-51.000.
Happe, Reynold, to McGraw-Edison Company. Switch mechanism with unitary biasing, contact, and detent spring. 3,676,627, Cl. 200-159.00a.
Hara, Hikoharu; Oishi, Yasushi; and Nagao, Kameji, to Fuji Photo Film Co., Ltd. Process for the preparation of color-photographic sensitive materials using nonionic and anionic surface active agents. 3,676,141, Cl. 96-100.000.
Hara, Katsuyuki; and Schonhorn, Harold, to Bell Telephone Laboratories, Incorporated. Techniques for forming seals between polyethylene and fluorocarbon polymers. 3,676,289, Cl. 161-189.000.
Hare, George Anthony; and Smith, Alan Ernest William, to National Research Development Corporation. Zinc alloys. 3,676,115, Cl. 75-178.0am.
Harkins, Patrick A., Jr., to Stromberg Datagraphix, Inc. Sputter etching process. 3,676,317, Cl. 204-192.000.
Harnisch, Heinz: *See—*
Gerhardt, Wilfried; and Harnisch, Heinz, 3,676,100.
Harper, Robert C., to Cincinnati Milacron Inc. Mixing device. 3,675,903, Cl. 259-8.000.
Harper, Robert J., Jr.: *See—*
Lofton, John T.; Harper, Robert J., Jr.; and Blanchard, Eugene J., 3,676,207.
Harper, Robert J., Jr.; Bruno, Joseph S.; and Gautreaux, Gloria A., to United States of America, Agriculture. Polypropylene glycols and substituted polypropylene glycols are used in conjunction with crosslinking agents to produce durable press fabrics with improved soil release performance. 3,676,052, Cl. 8-115.600.
Harriman, Allen C.: *See—*
Kamborian, Jacob S.; Harriman, Allen C.; and Vornberger, Karl F., 3,675,260.
Harris, Brian Walton: *See—*
Capp, Clifford William; Harris, Brian Walton; and Hawkins, Edwin George Edward, 3,676,430.
Harris, James E.: *See—*
Fickenscher, William E.; and Harris, James E., 3,676,645.
Harrison, David; and Sainz, Raul T., to Ransburg Electro-Coating Corporation. Method of projecting plural component material upon a suitable base. 3,676,197, Cl. 117-105.500.
Harsco Corporation: *See—*
Arndt, Charles J., 3,675,762.
Hartford Spinning (Canada) Ltd.: *See—*
Rosenstein, Nathan, 3,675,409.
Hartman, David E.: *See—*
Fraser, John P.; and Hartman, David E., 3,676,091.
Hartung, Kuhn & Co., Maschinenfabrik G.m.b.H.: *See—*
Kubsch, Wilhelm, 3,675,400.
Hartz, Marvin E.; Taormina, Anthony J.; and Grebik, Stephen J., to Essex International, Inc. Electrical connectors. 3,676,838, Cl. 339-217.000.
Harvey, Robert J.: *See—*
Fennell, John Richard; and Harvey, Robert J., 3,676,149.
Harwood, Charles C.; and Holtz, William E., Jr., to Quaker Oats Company, The. Spray discharge nozzle. 3,675,855, Cl. 239-597.000.
Hashino, Shinsuke: *See—*
Miyachi, Kiyoichi; Hashino, Shinsuke; and Hongu, Tomokazu, 3,675,346.
Haskell, Donald M.; and Munro, Bradley L., to Phillips Petroleum Company. Purification of ethylene or propylene streams containing carbon monoxide. 3,676,516, Cl. 260-677.00a.
Hata, Go: *See—*
Takahashi, Kuniyuki; Hata, Go; and Miyake, Akihisa, 3,676,470.
Hatch, Seymour A., to Chicago Rawhide Manufacturing Company. Track pin seal. 3,675,936, Cl. 277-94.000.
Hattori, Hiroyuki: *See—*
Komori, Shigehiro; and Hattori, Hiroyuki, 3,675,999.
Haug, Theobald; and Batzer, Hans, to Ciba-Geigy Corporation. Hydantoin diisocyanates. 3,676,455, Cl. 260-309.500.
Haug, Warren R.: *See—*
Edwards, James B.; and Haug, Warren R., 3,676,152.
Hausner, Jerry, to Narda Microwave Corporation, The. Selection circuitry. 3,676,751, Cl. 317-137.000.
Hawkins, Edwin George Edward: *See—*
Capp, Clifford William; Harris, Brian Walton; and Hawkins, Edwin George Edward, 3,676,430.
Hawks, John D., to General Electric Company. Data input device with hand-held selective circuit closing means. 3,676,750, Cl. 317-112.000.
Hawks, Ronald W., to Roberts & Porter, Inc. Blanket bar and adapter bar assembly for printing blanket. 3,675,573, Cl. 101-415.100.
Hawley, Harry Ray: *See—*
Gerber, Reinhold; Kerrigan, James Edward; and Hawley, Harry Ray, 3,676,543.
Hawley Products Company: *See—*
Stewart, John S., 3,676,278.
Hawryluk, Alexandra S.; and Hawryluk, John, to Control Research Products, Inc., mesne. Gas purifier unit. 3,675,396, Cl. 55-225.000.
Hawryluk, John: *See—*
Hawryluk, Alexandra S.; and Hawryluk, John, 3,675,396.
Hayakawa, Shigeru: *See—*
Taki, Hiromitsu; Hayakawa, Shigeru; and Nagase, Kaneomi, 3,676,351.
Hayashi, Katsumi: *See—*
Ohkubo Kinji; Hayashi, Katsumi; and Sano, Kazuya, 3,676,124.
Hayashi, Roshio: *See—*
Miyake, Yasuhiko; Takayanagi, Eifu; Narita, Shigeo; Shin, Masaaki; Hayashi, Roshio; and Sakurai, Koichi, 3,676,053.
Hayashi, Yoshimasa: *See—*
Nakajima, Yasuo; and Hayashi, Yoshimasa, 3,675,633.
Haynes, James W.: *See—*
Hammond, Michael J.; and Haynes, James W., 3,676,177.
Hazard Sensor Inc.: *See—*
Scanlan, Warren F., 3,676,738.
Hazeltine Corporation: *See—*
Clifford, Thomas J.; and Nelson, Robert C., 3,675,860.
Hazen Research, Inc.: *See—*
Hazen, Wayne C., 3,676,106.
Hazen, Wayne C., to Hazen Research, Inc. Ion exchange process for the recovery of metals with cation exchange agents. 3,676,106, Cl. 75-101.00r.
Hechelhammer, Wilhelm: *See—*
Reinking, Klaus; Vogel, Helmut; Hechelhammer, Wilhelm; and Schneider, Kurt, 3,676,544.
Heckelsberg, Louis F., to Phillips Petroleum Company. Conversion of olefins. 3,676,520, Cl. 260-683.00d.
Heetman, Alphonsus, to U.S. Philips Corporation. Telecommunication device. 3,676,599, Cl. 179-15.0bs.
Heffer, Edward Charles: *See—*
Browne, Roger Drury; McCurrich, Laurence Henry; Parkinson, John David; and Heffer, Edward Charles, 3,675,474.
Heidelberger Druckmaschinen Aktiengesellschaft: *See—*
Wirz, Arno, 3,675,917.
Heidenhain, Johannes, Dr.: *See—*
Ernst, Alfons; and Hofling, Rudolf, 3,675,331.
Heil, Eduard; Trieschmann, Hans-Georg; Willersinn, Herbert; Bolte, Herbert; and Bronstert, Klaus, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Continuous production of expandable thermoplastics. 3,676,378, Cl. 260-2.50e.
Heiman, John C., to Dow Chemical Company, The. Recovery of dicyclopentadiene from cracked petroleum. 3,676,509, Cl. 260-666.0py.
Hein, Matthew Edward, to American Can Company. Aerosol can with propellant actuated slide piston. 3,675,824, Cl. 222-145.000.
Heinrich Koppers Gesellschaft mit beschrankter Haftung: *See—*
Cremer, Walter, 3,676,305.
Heinze, Gerhard: *See—*
Podschus, Ernst; Dorn, Ludwig; and Heinze, Gerhard, 3,676,366.
Heisler, Raymond A. Method and apparatus for applying plastic grips to wire bail handles. 3,675,305, Cl. 29-439.000.
Hellmig, Ehrhard, to Agfa-Gevaert Aktiengesellschaft. Process for the production of negative or positive continuous-tone or screened images thereof. 3,676,122, Cl. 96-23.000.
Helmut, Werner; Frank, Dieter; and Drachenberg, Werner, to Akzona Incorporated. Process for the production of nonwoven webs of continuous filaments. 3,676,245, Cl. 156-181.000.
Helsley, Grover Cleveland, to Robins, A. H., Company, Incorporated. 11, 12-Dihydrodibenz [b,f] azocin-6 (5H)-ones. 3,676,432, Cl. 260-239.30t.
Henc, Edward V.; and Devlin, Edmund F. X., said Devlin assor. to said Henc. Air cushioned kicker feed bar. 3,675,918, Cl. 271-44.000.
Hendrickson, Jack R. Automotive vehicle signal light warning method. 3,676,844. Cl. 340-71.000.
Henegar, Hubert B., to Bendix Corporation, The. Numerical control system using position number generator. 3,676,650, Cl. 235-151.110.
Henkel & Cie G.m.b.H.: *See—*

Berg, Markus; Fries, Walter; and Kirstahler, Alfred, 3,676,340.
Fries, Walter; Berg, Markus; Dohr, Manfred; and Kirstahler, Alfred, 3,676,338.
Stolpa, Gerhard, 3,676,468.

Henning, Bodo, to Volkswagenwerk Aktiengesellschaft. Safety steering wheel for power vehicles. 3,675,505, Cl. 74-552.000.

Henry Beakbane (FORTOX) Limited: *See—*
Moseley, Royston L.; and Knowles, Peter M., 3,676,286.

Heary, James William, to Eastman Kodak Company. Environmentally disintegratable plastic compositions comprising copolymers of ethylene and carbon monoxide and a degradation accelerator. 3,676,401, Cl. 260-63.0cq.

Henry, Ormond Lee: *See—*
Drapen, Myron E.; and Henry, Ormond Lee, 3,675,330.

Herbell, Thomas P.: *See—*
Quatinetz Max; Weeton, John W.; and Herbell, Thomas P., 3,676,084.

Herberts, Kurt, Dr., & Co. vorm. Otto Louis Herberts: *See—*
Dobbelstein, Arnold; Hille, Hans-Dieter; and Momm, Anneliese Geb. Koziolek, 3,676,403.

Herbaman, Abraham M.; deceased (by Kates, Clarke Merle; administrator). Compositions of matter and method of treating internal combustion engine fuel gases. 3,676,090, Cl. 44-72.000.

Hercules Incorporated: *See—*
Dehm, Henry C.; and Mellow, Dale F., 3,676,533.
Spurlin, Harold M., 3,676,466.

Herderhorst, Wilfred W.: *See—*
Shultz, John E.; and Herderhorst, Wilfred W., 3,676,025.

Herman, Patricio. Method for joining abutting elements by concealed means. 3,675,312, Cl. 29-526.000.

Herrmann, Friedrich: *See—*
Golde, Hans; Herrmann, Friedrich; Kouth, Herbert; and Marr, Fritz, 3,675,371.

Herzhoff, Peter: *See—*
Browatzki, Kurt; Gref, Hans; Herzhoff, Peter; Maus, Fritz; Platz, Stephan; Schaum, Gustav; Schweicher, Wolfgang; and Wasser, Willi, 3,676,178.

Heskett, Don E.; Hoover, Frank Kryder; and Burkhalter, Robert, Jr., to Morton-Norwich Products, Inc. Fluid treating cartridge with integral seal. 3,675,777, Cl. 210-232.000.

Hester, Jackson B., Jr., to Upjohn Company, The. Anorexigenic compositions comprising 6-alkyl-1,2,3, 4,5,6-hexahydroazepino 4,5-indoles as active ingredient and process of treatment. 3,676,558, Cl. 424-274.000.

Heston, Eugene E. Screen changer mounting. 3,675,934, Cl. 277-12.000.

Hetrick, Richard R., to Westinghouse Electric Corporation. Polyvinyl fluoride surfaced laminates. 3,676,290, Cl. 161-189.000.

Heugebaert, Frans Clement: *See—*
Willems, Jozef Frans; Heugebaert, Frans Clement; and Brinckman, Eric Maria, 3,676,131.

Hewitt, Gordon Trent; and Giordano, Annie Sue, to Colgate-Palmolive Company. Fabric conditioning article and use thereof. 3,676,199, Cl. 117-109.000.

Hewitt, John H., to Goodyear Tire & Rubber Company. Automatic tension sensing apparatus for belt conveyor. 3,675,482, Cl. 73-144.000.

Hewlett-Packard Company: *See—*
Stephanoff, Nicholas N., 3,675,858.

Hexcel Corporation: *See—*
Hull, Harold Robert, 3,675,522.

Heyden, Herbert Frank. Yarn cones. 3,675,871, Cl. 242-118.300.

Hicks, David G.; and Varner, Lawrence P. Grout expansion pressure meter and method for using same. 3,675,493, Cl. 73-432.00r.

Hidaka, Tsuneo: *See—*
Nishikawa, Yukiyasu; and Hidaka, Tsuneo, 3,676,692.

Higashide, Eiji: *See—*
Yamamoto, Hiroichi; Suzuki Takashi; Higashide, Eiji; Fugono, Takeshi; and Mizuno, Komei, 3,676,300.

Hight, Hanford Z.; and Lesky, Stephen, to Bonded Products, Inc. Internally sealing pipe joint. 3,676,254, Cl. 156-286.000.

Higuchi, Akio: *See—*
Tsukuma, Shin; and Higuchi, Akio, 3,675,862.

Higuchi, Takeru; and Hussain, Anwar, to Alza Corporation. Administration of alkali metal salts of salicylamide. 3,676,549, Cl. 424-44.000.

Hille, Hans-Dieter: *See—*
Dobbelstein, Arnold; Hille, Hans-Dieter; and Momm, Anneliese Geb. Koziolek, 3,676,403.

Himmelmann, Wolfgang: *See—*
Schulz, Gunter; Himmelmann, Wolfgang; and Randolph, August, 3,676,144.

Himmelmann, Wolfgang; Schranz, Karl-Wilhelm; Sobel, Johannes; and Van Veelen, George Frans, to Agfa-Gevaert Aktiengesellschaft. Treatment of exposed silver halide emulsion with acidic hardening bath following by alkaline activating bath. 3,676,143, Cl. 96-111.000.

Hini, Paul, to Siemens Aktiengesellschaft. Ignition device for internal combustion engines. 3,675,636, Cl. 123-148.00e.

Hinkley, David F.; and Ellsworth, Robert L., to Merck & Co., Inc. Racemization of an alpha-methyl DOPA derivative. 3,676,482, Cl. 260-471.00a.

Hirohashi, Toshiyuki; Izumi, Takahiro; and Yamamoto, Hisao, to Sumitomo Chemical Company, Ltd. Benzoxazepine derivatives. 3,676,460, Cl. 260-333.000.

Hirose, Takashi: *See—*
Kamata, Yoshihiro; and Hirose, Takashi, 3,676,322.

Hiroshima Kasei, Ltd.: *See—*
Miyachi, Kiyoichi; Hashino, Shinsuke; and Hongu, Tomokazu, 3,675,346.

Hirozawa, Koichiro, to Aisin Seiki Kabushiki Kaisha. Control mechanism for automatic speed change assembly. 3,675,512, Cl. 74-869.

Hirs assor. to said Graser: *See—*
Graser, Toni; and Hirs, Joseph, 3,675,635.

Hirs, Joseph: *See—*
Graser, Toni; and Hirs, Joseph, 3,675,635.

Hirshen, Sanford; and Van Der Ryn, Sim, to Hirshen/Van der Ryn. Endless inflatable device. 3,676,276, Cl. 161-17.

Hirshen/Van der Ryn: *See—*
Hirshen, Sanford; and Van Der Ryn, Sim, 3,676,276.

Hix, Charles M., Jr., to Arcadia Refining Company. Underwater storage device. 3,675,427, Cl. 61-.500.

Hixson, William J. Adjustable cam follower. 3,675,631, Cl. 123-90.520.

Ho, Irving T., to International Business Machines Corporation. Monolithic bipolar dynamic shift register. 3,676,863, Cl. 340-173.0ca.

Hoag, Don H., to Clarkson Industries, Inc. Sludge tank with self-cleaning screen and screen for use therein. 3,675,778, Cl. 210-237.000.

Hobbs, James W.; and Long, George W., to Phillips Petroleum Company. Control of fractionation column reboiler. 3,676,304, Cl. 202-160.000.

Hockings, Eric Francis: *See—*
Moss, Herbert Irwin; and Hockings, Eric Francis, 3,676,610.

Hodges, William & Co., Inc.: *See—*
Kesilman, Sol; Kravitz, Milton; and Penn, Hyman B., 3,675,598.

Hodgman Manufacturing Company, Inc.: *See—*
Hodgman, Willis K., Jr., 3,676,015.

Hodgman, Willis K., Jr., to Hodgman Manufacturing Company, Inc. Water motor. 3,676,015, Cl. 415-202.000.

Hoerner Waldorf Corporation: *See—*
Dutcher, Daniel P., 3,675,764.

Hoeschele, Guenther Kurt, to Du Pont de Nemours, E. I., and Company. 2,4-Bis (4-aminocyclohexylmethyl)cyclohexylamine. 3,676,495, Cl. 260-563.00r.

Hoffer, Max, to Hoffmann-La Roche Inc. 5,6-Dihydro-9, 8-dimethyl-3-nitro-8H imidazo (2-1-c) (1,4)oxazine. 3,676,439, Cl. 260-244.00r.

Hoffman-La Roche Inc.: *See—*
De Ritter, Elmer; and Raymond, Joseph Edward, 3,676,556.
Furst, Andor; Muller, Peter; Muller, Marcel; and Kagi, Dieter, 3,676,467.

Hoffmann-La Roche Inc.: *See—*
Hoffer, Max, 3,676,439.
Richterich, Roland, 3,676,080.

Hofling, Rudolf: *See—*
Ernst, Alfons; and Hofling, Rudolf, 3,675,331.

Hofmann, Horst; and Katz, Helmut, to Siemens Aktiengesellschaft. Dispenser cathode structure. 3,676,731, Cl. 313-346.0dc.

Hohlfeld, Harald: *See—*
Schuller, Wolfgang; and Hohlfeld, Harald, 3,676,096.

Hokamura, Sadakazu: *See—*
Takiyama, Eiichiro; and Hokamura, Sadakazu, 3,676,524.

Holland Hitch Company: *See—*
Korodi, Miklos B.; and Runyan, Clarence R., 3,675,946.

Hollaway, John T.; and Pingry, Carl O., III, to International Business Machines Corporation. Data communication system incorporating device selection control. 3,676,859, Cl. 340-172.500.

Hollister, Robert H.; Wilburn, Garlington C.; and Green, Kurt G., to Westinghouse Electric Corporation. Circuit interrupter. 3,676,623, Cl. 200-146.00r.

Holly, James A., to Hollymatic Corporation. Electrical connector. 3,676,835, Cl. 339-73.000.

Hollymatic Corporation: *See—*
Holly, James A., 3,676,835.

Holmes, Frank; Arias, Henry, Jr.; and Read, George, to Ajax Hardware Manufacturing Corporation. Adjustable bracket assembly for use as a rear drawer slide bracket and the like. 3,675,883, Cl. 248-251.000.

Holtz, William E., Jr.: *See—*
Harwood, Charles C.; and Holtz, William E., Jr., 3,675,855.

Honda Giken Kogyo Kabushiki Kaisha: *See—*
Kobayashi, Yozaburo, 3,675,944.

Honda, Masakazu: *See—*
Tokitomo, Soichi; Honda, Masakazu; Nakayama, Fumio; and Ueno, Keisiro, 3,675,541.

Honeywell, Inc.: *See—*
Cummings, John P.; and Berg, Richard E., 3,676,321.
Kane, Hugh, 3,676,628.
Murata, Eiji; and Ito, Kohuku, 3,675,540.

Honeywell Information Systems Inc.: *See—*
Lee, Fred S., 3,676,873.
Pichal, Henri T., 3,676,785.
Ruth, Richard L., 3,676,861.

Honeywell Information systems, Inc., mesne: *See—*
Coleman, Larry R., 3,675,524.
Finch, DeVer C.; and Kennedy, James A., 3,676,858.

Honeywell Information Systems Italia: *See—*
Kassabgi, Georges; and Compare, Giampiero, 3,676,746.

Hongu, Tomokazu: *See—*
Miyachi, Kiyoichi; Hashino, Shinsuke; and Hongu, Tomokazu, 3,675,346.

Hood, Edwin Elliott: *See—*
Frei, Karl; and Hood, Edwin Elliott, 3,675,740.
Frei, Karl; and Hood, Edwin Elliott, 3,675,741.

Hook, Melvin S., to Burns Machine Co. Manual override pressure operated switch. 3,676,619, Cl. 200-81.00h.

Hoover Ball and Bearing Company: *See—*
Ziegler, William E., 3,675,521.

Hoover, Frank Kryder: *See—*
Heskett, Don E.; Hoover, Frank Kryder; and Burkhalter, Robert, Jr., 3,675,777.

Hopkin, Peter. Pelletizing apparatus. 3,676,029, Cl. 425-67.000.

Hoppstock, Frederic H.; Falvo, Louis A.; and Frech, Kenneth J., to Goodyear Tire & Rubber Company, The. Preparation of diolefins from tertiary and secondary alkyl halides containing only four carbon atoms in the main chain. 3,676,518, Cl. 260-680.00r.

Hopwood-Jones, Charles Douglas, to Northern Electric Company Limited. Orienting and feeding small discs. 3,675,755, Cl. 198-33.00r.

Hori, Koichi: *See—*
Takezawa, Isoe; Muto, Masataro; and Hori, Koichi, 3,675,606.

Horn, Harold Edwin; Kimball, Bruce Allan; and Godzicki, Martin Michael, to CPC International Inc., Dextrose icings. 3,676,155, Cl. 99-139.000.

Hornig, Anneliese, nee Munich: *See—*
Krekeler, Hans; Meidert, Helmut; Riemenschneider, Wilhelm; and Hornig, Lothar Heinz, 3,676,508.

Hornig, Lothar Heinz: *See—*
Krekeler, Hans; Meidert, Helmut; Riemenschneider, Wilhelm; and Hornig, Lothar Heinz, 3,676,508.

Horsley, Orville E.: *See—*
Meyer, Ronald J.; Horsley, Orville E.; and Eichel, Herman J., 3,676,559.

Hortensius, William: *See—*
Fattor, Arthur P.; and Hortensius, William, 3,675,898.

Horvath, Bertalan, to Phillips Petroleum Company. Polymerization using a supported chromia activated with a tin on gallium compound. 3,676,417, Cl. 260-94.90d.

Horwitz, Sam: *See—*
Catlett, John C., 3,675,370.

Hosegood, Samuel Brittan: *See—*
Rennie, Compton Alexander; Lockett, George Edward; and Hosegood, Samuel Brittan, 3,676,297.

Hoskinson, Eugene A.: *See—*
Millis, Hugh L., Jr.; and Hoskinson, Eugene A., 3,676,652.

Howitt, Henry Gazeley, to A.B. Electronic Components Limited. Slide potentiometer. 3,676,826, Cl. 338-183.000.

Hoyle, Albert G., to Kendall Company, The. Low-density bonded nonwoven fabrics and process therefor. 3,676,288, Cl. 161-158.000.

Hsieh, Henry L.; and Buck, Ollie G., to Phillips Petroleum Company. Tetrapolymers and process for production thereof. 3,676,407, Cl. 260-77.50r.

Hu, Shih-en, to Esso Research and Engineering Company. Lubricating oil compositions containing improved sludge inhibiting additives. 3,676,346, Cl. 252-47.500.

Hu, Shih-En, to Esso Research and Engineering Company. Dispersants prepared from polyamines and alkaryl carboxylic acids. 3,676,483, Cl. 260-475.00n.

Hubbell, Harvey, Incorporated: *See—*
Gartland, Albert J., Jr.; and D'Amato, Michael J., 3,676,829.

Hubele, Adolf; and Rohr, Otto, to Ciba-Geigy Corporation. N-[3-Trifluoromethyl-4-chlorophenyl]-carbamates. 3,676,457, Cl. 260-347.400.

Huber, J. M., Corporation: *See—*
Aboytes, Peter, 3,676,256.
Voet, Andries, 3,676,255.

Huber, John F., to Unidynamics/Phoenix, Inc. Collision survival system. 3,675,942, Cl. 280-150.0ab.

Hubert, Theo: *See—*
Mayr, Helmut; Pelte, Richard; Hubert, Theo; and Strasser, Helmut, 3,676,759.

Hubinger Company, The: *See—*
Elizer, Lee H., 3,676,205.
Elizer, Lee H., 3,676,423.

Huget, Eugene F.; Brauer, Gerhard M.; Kumpula, John W.; and Civjan, Simon, to United States of America, Army. Filled cold-curing acrylic resin as a splinting material. 3,675,327, Cl. 32-6.000.

Hughes Aircraft Company: *See—*
Miller, Larry R., 3,676,660.

Hughes, Garyth: *See—*
Bickerdike, Robert Lewis; and Hughes, Garyth, 3,676,160.

Hughes, Richard J.: *See—*
Bidell, Frederick W.; and Hughes, Richard J., 3,676,794.

Huizen, Corstiaan Le Comte, to N.V. Hollandse Signaalapparaten. Apparatus for generating an analogue sawtooth voltage, the slope of which corresponds with the mean slope of a stepped sawtooth voltage. 3,676,784, Cl. 328-181.000.

Hulbert, Larry Norman: *See—*
Hall, Ronald Edward; and Hulbert, Larry Norman, 3,676,848.

Hull, Harold Robert, to Hexcel Corporation. Method and apparatus for stacking sheets. 3,675,522, Cl. 83-14.000.

Hulstein, Calvin, to Monsanto Company. Variable orifice extrusion head. 3,676,039, Cl. 425-466.000.

Humphrey, John G., to General Electric Company. Emphasized carrier circuit with integral AFC operation. 3,676,582, Cl. 178-5.8af.

Hungerford, Philip C., Jr.; Gereby, John L.; and Richens, Robert H., to Cole National Corporation. Key cutting machine. 3,675,536, Cl. 90-13.050.

Hunsberger, Arnold: *See—*
Neumann, Malcolm A.; and Hunsberger, Arnold, 3,675,378.

Hunt, Sydney Edwin: *See—*
Lindsey, Alan Sidney; and Hunt, Sydney Edwin, 3,676,399.

Hunter, Calvin W., to Clark Equipment Company. Transfer car guidance system. 3,675,589, Cl. 104-247.000.

Hunter, Lloyd Wayne, to Exact Electronics, Inc. Controllable waveform generator. 3,676,698, Cl. 307-228.000.

Huntington Rubber Mills: *See—*
Caldwell, William F., 3,675,881.

Hunts, Barney D.; and Lyon, William O., to Singer Company, The. Apparatus for rotating work for thin film deposition. 3,675,624, Cl. 118-503.000.

Hurst, Richard J.: *See—*
Baker, William J.; and Hurst, Richard J., 3,675,861.

Hussain, Anwar: *See—*
Higuchi, Takeru; and Hussain, Anwar, 3,676,549.

Hutter, Charles G., III: *See—*
Crowley, Charles L.; Grosholz, James R.; and Hutter, Charles G., III, 3,675,653.

Hydronautics-Israel, Ltd.: *See—*
Linenberg, Amos, 3,675,466.

Hysan Products Company: *See—*
Brownstein, Henry J., 3,675,254.

I-T-E Imperial Corporation: *See—*
Garzon, Ruben D., 3,676,737.
Reighter, David H., 3,675,392.

I'Anson, Thomas. Chipper cutter and holders therefor. 3,675,693, Cl. 144-241.000.

Ibrahim, Fayez F., to Clark Equipment Company. Refrigerated display case. 3,675,440, Cl. 62-256.000.

Ichikawa, Hirohiko: *See—*
Shirai, Yoshihiro; Ichikawa, Hirohiko; Yoshida, Akira; Uchida, Naotake; Tsuji, Masaru; and Matsumoto, Zenji, 3,676,365.

I.C.I. Organics Inc.: *See—*
Perrino, Albert C.; and Israel, Michael G., 3,676,406.

IIT Research Institute: *See—*
Van Den Heuvel, Anthony P.; Richter, Ronald W.; and Joshi, Shrinivas G., 3,676,721.

Ikeda, Yukisaburo: *See—*
Kaneko, Ryuichi; Saito, Toshiya; Fujimura, Yasushi; Tanimura, Hiroshi; Nakamura, Totaro; and Ikeda, Yukisaburo, 3,676,585.

Ikegai Tekko Kabushiki Kaisha: *See—*
Izumi, Tadayoshi, 3,675,517.

Ikejmima, Yoritaka: *See—*
Yamada, Norio; Tanaka, Yoshimasa; Ono, Taisuke; and Ikejmima, Yoritaka, 3,675,324.

Iler, Ralph K.: *See—*
Chay, Dong M.; and Iler, Ralph K., 3,676,086.

Ilford Limited: *See—*
Sharples, Allan; Rostron, Arthur John; and Mc Gibbon, Graeme, 3,676,688.

Imperial Chemical Industries Limited: *See—*
Campbell, Alastair; and Robinson, Peter, 3,676,507.
Edwards, Harry, 3,676,265.
Foden, Frederick Roger; and O'Mant, Derrick Michael, 3,676,464.
Nield, Eric, 3,676,404.
Pacini, Bruno Marcio; Price, Desmond Alfred; and Parikh, Anil Chandrakant, 3,675,408.
Smith, Frank; and Entwisle, John Hubert, 3,676,325.
Smith, Leslie Harold, 3,676,493.
Snell, Brian Kenneth; and Bishop, Nigel Douglas, 3,676,443.

Inagaki, Shotaro: *See—*
Kuramoto, Yoshio; and Inagaki, Shotaro, 3,675,558.

Indiana University Foundation: *See—*
Muhler, Joseph C., 3,676,112.

Industrial Nucleonics Corporation: *See—*
Rice, James S., 3,676,295.

Industrial Washing Machine Corporation: *See—*
Sadwith, Howard M., 3,675,665.

Ingalls, James E. Method of and apparatus for applying labels to articles or packages. 3,676,257, Cl. 156-351.000.

Ingelman, Bjorn G.; and Ceska, Miroslav, to Pharmacia AB. Method for determining endohydrolases capable of breaking down polysaccharides and reagents for carrying out the method. 3,676,303, Cl. 195-103.500.

Ingram, David John; and Maillardet, Frederick James, to General Electric and English Electric Companies, Limited, The. Winch arrangements. 3,675,794, Cl. 214-13.000.

Innotech Corporation: *See—*
Merrin, Seymour, 3,676,756.

Institut Elektrosvari imeni E. O. Patona: *See—*
Esiban, Eduard Migranovich; and Danchenko, Mikhail Evgenievich, 3,676,639.

Institut fur angewandte Physik der Universitat Bern: *See—*
Weber, Heinz, 3,676,796.

Instrumentation Specialties, Inc.: *See—*
Allington, Robert W., 3,676,686.

Inter-Locked Fasteners Limited: *See—*
Winslade, Harry Herbert, 3,675,280.

Interlas N.V.: *See—*
Stijger, Adrianus G., 3,675,963.

International Business Machines Corporation: *See—*
Abernathy, Roger E.; and Mitrofanoff, Nicholas S., 3,676,852.

Carlsen, Donald W.; Kotla, John J.; and Parker, Arden A., 3,676,646.
Collier, William W.; and Smith, Ronald M., 3,676,860.
Donofrio, Nicholas M.; and Pomeranz, Jehoshua N., 3,676,704.
Dupnock, Andrew; Gorey, Edward F.; and Keenan, William A., 3,676,775.
Eastman, Hal P., 3,676,851.
Gersbach, John E., 3,676,703.
Ho, Irving T., 3,676,863.
Hollaway, John T.; and Pingry, Carl O., III, 3,676,859.
Judge, Robert L.; and Pearson, Eugene S., 3,676,832.
Knepper, Delbert M., Sr., 3,676,689.
Kozol, Eugene T.; and Wohl, Robert J., 3,676,588.
Medvecky, Bartholomew P.; Oberai, Avtar S.; and Platt, Alan, 3,676,231.
Metreaud, Claude G., 3,675,563.
Moreau, Wayne M.; and Rottmann, Hans R., 3,676,002.
Putnam, David T., 3,675,373.
Shattuck, Meredith David; and Weiche, William J., 3,676,210.
Terry, David W., 3,676,853.
Wiedmann, Siegfried K., 3,676,713.
Wiedmer, Fritz S., 3,676,615.
Wiedmer, Fritz S., 3,676,616.

International Computers Limited: *See—*
Jackson, Howard Rodney, 3,676,857.
Turner, Ian, 3,676,874.

International Harvester Company: *See—*
Asmus, Rodger W., 3,675,421.
Fischer, Raymond G., 3,675,945.
Luft, Robert G., 3,675,966.

International Nickel Company, The: *See—*
Badia, Frank Arthur; and Kirby, Gary Neil, 3,676,226.

International Salt Company: *See—*
Jacoby, Charles H., 3,676,078.

International Silver Company, The: *See—*
Landen, William James; and Lundquist, Gunnar, 3,675,265.

International Synthetic Rubber Company Limited, The: *See—*
Duck, Edward William; Ridgewell, Brian John; and Locke, John Michael, 3,676,409.

International Telephone and Telegraph Corporation: *See—*
Beeli, Johann Battesta, 3,676,726.
Johnson, George S., 3,676,833.
Keller, William Fredrick; and Domyan, Frank Francis, 3,675,538.

Intertek Controls, Inc.: *See—*
Millis, Hugh L., Jr.; and Hoskinson, Eugene A., 3,676,652.

Irisova, Nataliya Alexandrovna: *See—*
Vinogradov, Evgeny Alexandrovich; and Irisova, Nataliya Alexandrovna, 3,676,808.

Irvine, Alvin R., to United States of America, Atomic Energy Commission. Impact energy absorber. 3,675,746, Cl. 188-1.00c.

Isard, Arsene; and Weiss, Francis, to Ugine Kuhlmann. 4-Hydroxy-1-methylol 6-oxa(3.2.1.1 ^{3,8}) tricylononane. 3,676,465, Cl. 260-346.200.

Ishizaka, Sunao, to Nippon Kogaku K.K. Device for correcting the open aperture ratio of interchangeable lenses in a camera self-containing a TTL exposure meter. 3,675,550, Cl. 95-10.00c.

Israel, Michael G.: *See—*
Perrino, Albert C.; and Israel, Michael G., 3,676,406.

Ito, Kohuku: *See—*
Murata, Eiji; and Ito, Kohuku, 3,675,540.

Ito, Masaharu: *See—*
Sanada, Noriaki; and Ito, Masaharu, 3,675,562.

Ito, Mitsuru. Blank for forming a garment. 3,675,246, Cl. 2-115.000.

Ito, Shin: *See—*
Wakamatsu, Hisato; Kawai, Hisasi; Ito, Shin; and Kubo, Seitoku Kaisha, 3,675,511.

Ito, Tadashi: *See—*
Uchiyama, Takashi; Ito, Tadashi; and Matsuda, Mutsuhide, 3,675,547.

Itoh, Yukio: *See—*
Morita, Akiyoshi; and Itoh, Yukio, 3,676,583.

ITT Industries, Inc.: *See—*
Beller, Hans Albert, 3,675,744.
Ziegler, Helmut, 3,675,308.

Iwakura, Makoto: *See—*
Shimizu, Tetsuji; and Iwakura, Makoto, 3,676,734.

Iwasaki Tsushinki Kabushiki Kaisha; a/k/a: *See—*
Uchida, Kozo, 3,676,708.

Iwatsu Electric Co., Ltd.: *See—*
Uchida, Kozo, 3,676,708.

I.W.S. Nominee Company Limited: *See—*
Brown, Thomas Desmond, 3,676,057.

Izakson, Khanaan Ilich. Hillside combine harvester. 3,675,404, Cl. 56-209.000.

Izumi, Tadayoshi, to Ikegai Tekko Kabushiki Kaisha. Adaptive and numerical control machine tool. 3,675,517, Cl. 82-2.00b.

Izumi, Takahiro: *See—*
Hirohashi, Toshiyuki; Izumi, Takahiro; and Yamamoto, Hisao, 3,676,460.

Jackson, Byron, Inc.: *See—*
Barron, Charles D.; Peterson, Earl A.; Stark, Gary K.; and Wilms, Carl A., 3,675,900.

Jackson, Carl Thomas, to True Temper Corporation. Apparatus for producing fiber glass articles. 3,676,258, Cl. 156-392.000.

Jackson, George E., to Union Carbide Corporation. Simulated-weave, warp-knit fabric, and method for making the same. 3,675,447, Cl. 66-192.000.

Jackson, Howard Rodney, to International Computers Limited. Data storage systems. 3,676,857, Cl. 340-172.500.

Jackson, Robert G., to Conch International Methane Limited. Offshore storage tanks. 3,675,431, Cl. 61-46.000.

Jackson, Steven B.; Freieich, Ernest; and Hammond, James D., to Fluor Corporation. Low pressure ethylene recovery process. 3,675,435, Cl. 62-26.000.

Jacoby, Charles H., to International Salt Company. Salt solution mining and geothermal heat utilization system. 3,676,078, Cl. 23-299.000.

James, Daniel S., to Du Pont de Nemours, E. I., and Company. Aqueous dyeing of acid-dyeable polyamide fibers using yellow-to-orange disazo dyes. 3,676,050, Cl. 8-41.00b.

Jamesbury Corporation: *See—*
Schwartz, Frederich William, Jr., 3,675,679.

Japan Atomic Energy Research Institute: *See—*
Kinbara, Setsuro; and Kumahara, Tadashi, 3,676,783.
Takehisa, Masaaki; Senrui, Shiro; and Nakajima, Hayato, 3,676,419.

Jauquet, Christian, to Ateliers de Construction Electriques Charleroi (ACEC). Apparatus for the centralized control of the operation of trains. 3,676,669, Cl. 146-182.00r.

Javora, Henry J.: *See—*
Malandro, George H.; and White, Peter, 3,676,849.

Jeans, Graham Wilton. Method of making articles from fibre board. 3,675,692, Cl. 144-317.000.

Jensen, Robert A.; and Johnson, Orville M., to Minnesota Mining and Manufacturing Company. Adhesive tape dispenser. 3,676,266, Cl. 156-521.000.

Jentsch, Dietrich, to Dorken & Mankel KG, Firma. Closing device for doors and analogous structural elements. 3,675,270, Cl. 16-53.000.

Jerome, Chester W. Apparatus for removing excess of material projecting from the true periphery of a bowling ball without modifying such true periphery. 3,675,535, Cl. 90-11.00r.

Jetter, Evelyn Speter: *See—*
Einthoven, Willem Gerard; Jetter, Evelyn Speter; and Wheatley, Carl Franklin, Jr., 3,676,229.

Jetzt, John J., to Bell Telephone Laboratories, Incorporated. Video inversion technique to counteract slowly moving interference patterns in a vidio communications system. 3,676,589, Cl. 178-6.800.

Jeumont-Schmeider: *See—*
Wiart, Albert; and Cynober, Simon, 3,675,585.

Johansson, Hans A. V. Bath litter for therapeutical treatment. 3,675,255, Cl. 5-82.000.

Johansson, John G.: *See—*
Skinner, Wilfred A.; Johansson, John G.; and Johnson, Howard L., 3,676,447.

Johansson, Ronald C.; and Weeklund, Wayne Donald, to Minnesota Mining and Manufacturing Company. Deformable fin spring connector. 3,676,574, Cl. 174-87.000.

John, Ansel N. One step lock and release cycle stand. 3,675,784, Cl. 211-22.000.

Johns-Manville Corporation: *See—*
Quint, Stephen Mark; and Dalton, John Junior, 3,676,196.

Johnson & Johnson: *See—*
Korpman, Ralf, 3,676,202.
Ruffo, Angelo P., 3,675,403.

Johnson, Carl E.: *See—*
Roberts, Melvin L.; Johnson, Carl E.; and Miller, Richard C., 3,676,356.

Johnson, George S., to International Telephone and Telegraph Corporation. Hermaphorodit electrical connector. 3,676,833, Cl. 339-49.000.

Johnson, Howard L.: *See—*
Skinner, Wilfred A.; Johansson, John G.; and Johnson, Howard L., 3,676,447.

Johnson, James W., to Telephonic Equipment Corporation. Spike monitoring apparatus. 3,676,605, Cl. 179-18.0be.

Johnson, Marvin M.; and Tabler, Donald C., to Phillips Petroleum Company. Hydrogenation with a molybdenum arsenic catalyst. 3,676,332, Cl. 208-143.000.

Johnson, Matthey & Co., Limited: *See—*
Selman, Gordon Leslie, 3,676,114.

Johnson, Orville M.: *See—*
Jensen, Robert A.; and Johnson, Orville M., 3,676,266.

Johnson, Paul H.: *See—*
Vanderveen, John W.; Cheng, Paul J.; Mills, K. Louis, Jr.; Venable, Charles R., Jr.; and Johnson, Paul H., 3,676,070.

Johnson, Roger L.: *See—*
Buschbom, Floyd E.; Hansen, Glen D.; and Johnson, Roger L., 3,675,758.

Johnston, Earnest L.: *See—*
Christena, Ray C.; and Johnston, Earnest L., 3,676,291.
Christena, Ray C.; and Johnston, Earnest L., 3,676,424.

Johnston Laboratories, Inc.: *See—*
Waters, John R., 3,676,679.

Jones, Allen J., to Michel Lumber Company. Recirculating dryer system. 3,675,600, Cl. 110-8.00r.

Jones, David A., to Control Data Corporation. Low-level signal detector circuit. 3,676,710, Cl. 307-289.000.

Jones, Faber B.: *See—*
Doss, Richard C.; and Jones, Faber B., 3,676,201.

Jones, Ferris E. Fishing lure. 3,675,358, Cl. 43-42.090.

Jones, John Darrell: *See—*
Fulton, Michael; Jones, John Darrell; and Pearce, Christopher A., 3,676,420.

Jones, Rexford W.; and Thompson, William B., to Staley, A. E., Manufacturing Company. Multi-color reproductions. 3,676,121, Cl. 96-13.000.

Jonke, Joseph L.: *See—*
Segerdahl, Roy R.; and Jonke, Joseph L., 3,676,821.

Jordan, James I., Jr. Separation of purified vinylidene chloride. 3,676,306, Cl. 203-8.000.

Jorgensen, Adam A.; Bentley, William; and Urycki, Edward, to Stromberg-Carlson Corporation. Printed circuit card arrangement. 3,676,747, Cl. 317-101.000.

Joshi, Shrinivas G.: *See—*
Van Den Heuvel, Anthony P.; Richter, Ronald W.; and Joshi, Shrinivas G., 3,676,721.

Judge, Robert L.; and Pearson, Eugene S., to International Business Machines Corporation. Connector. 3,676,832, Cl. 339-75.00m.

Juel, Leslie H. Method and apparatus for controlling orientation of needle-like carbon particles in extruded carbon stock. 3,676,535, Cl. 264-29.000.

Juels, Ronald J.: *See—*
Staffin, Robert; Ricci, Roy J.; and Juels, Ronald J., 3,676,647.

Kaar, Kenneth B.: *See—*
Weyant, Romer G.; and Kaar, Kenneth B., 3,675,800.

Kabushiki Kaisha Daini Seikosha: *See—*
Sakuma, Tadashi, 3,675,411.

Kabushiki Kaisha Kawai Gakki Susakusho: *See—*
Watanabe, Takashi, 3,675,320.

Kabushiki Kaisha Koparu: *See—*
Kikuchi, Tomio; and Arai, Kiyoyuki, 3,675,548.

Kabushiki Kaisha Rinnai Seisakusho: *See—*
Soma, Shinichi, 3,676,047.

Kabushiki Kaisha Tokai Rika Denki Seisakusho: *See—*
Shimizu, Tetsuji; and Iwakura, Makoto, 3,676,734.

Kadin, Saul B., to Pfizer Inc. Oxobenzofuran carboxamides. 3,676,463, Cl. 260-343.300.

Kagi, Dieter: *See—*
Furst, Andor; Muller, Peter; Muller, Marcel; and Kagi, Dieter, 3,676,467.

Kaiser Aluminum & Chemical Corporation: *See—*
Bell, Norman; and Lam, Hung-Kei H., 3,676,077.
Nuscher, Edwin H.; and Slater, Jack D., 3,676,235.

Kaiser, Carl; and Zirkle, Charles L., to Smith Kline & French Laboratories. 1-(Hydroxy-1-phenyl-4-aminobutenyl) adamantane derivatives. 3,676,435, Cl. 260/240/0tc.

Kaldor, Robert M.; Borruso, Joseph V.; and Goldbaum, Elliott, to Signal-Stat Corporation, mesne. Vehicle lamp. 3,676,834, Cl. 339-59.001.

Kalle Aktiengesellschaft: *See—*
Scheler, Siegfried; and Munder, Johannes, 3,676,132.
Uhlig, Fritz; and Braun, Jurgen, 3,676,134.

Kallmeyer, James D.: *See—*
Findeisen, Heinz H.; Kallmeyer, James D.; Sokol David G.; Stein, James H.; Thomas, Thomas R.; and Bowers, Jack R., 3,676,854.

Kalopissis, Gregoire: *See—*
Ghilardi, Guiliana; Kalopissis, Gregoire; De Beaulieu, Henry Philippe; and Abegg, Jean-Louis, 3,676,546.

Kalopissis, Gregoire; and Bugaut, Andree, to L'Oreal. Dyeing hair with derivatives of nitroparaphenylenediamine. 3,676,049, Cl. 8-10.000.

Kamata, Yoshihiro; and Hirose, Takashi, to Furukawa Electric Company, The. Apparatus and method for continuous production of electrolytically treated wires. 3,676,322, Cl. 204-206.000.

Kamborian, Jacob S.: *See—*
Kamborian, Jacob S.; Harriman, Allen C.; and Vornberger, Karl F., 3,675,260.

Kamborian, Jacob S.; Harriman, Allen C.; and Vornberger, Karl F., to Kamborian, Jacob S. Apparatus for applying cement between a shoe upper and a shoe insole. 3,675,260, Cl. 12-12.000.

Kampf, Leo. Brick treatment. 3,676,187, Cl. 117-70.00a.

Kampmann, Friedrich-Wilhelm: *See—*
Schneider-Arnoldi, Alfred; Kampmann, Friedrich-Wilhelm; Thiel, Hans-Dieter; Kandler, Joachim; and Gleisberg, Dietrich, 3,676,165.

Kampmier, Thomas R., to Berol Corporation, mesne. Manually releasable vacuum holding base construction. 3,675,886, Cl. 248-363.000.

Kanady, William E., to Esso Production Research Company. Conducting operations in a well through a normally closed valve. 3,675,718, Cl. 166-297.000.

Kandler, Joachim: *See—*
Grimm, Dieter; Kandler, Joachim; Merkenich, Karl; and Pirig, Wolf-Dieter, 3,676,352.
Schneider-Arnoldi, Alfred; Kampmann, Friedrich-Wilhelm; Thiel, Hans-Dieter; Kandler, Joachim; and Gleisberg, Dietrich, 3,676,165.

Kane, Hugh, to Honeywell Inc. Reversible moving contact arrangement. 3,676,628, Cl. 200-166.0bc.

Kaneko, Haruo; and Yano, Kaoru, to Nippon Electric Company, Limited. Nonlinear encoder. 3,676,600, Cl. 179-15.55t.

Kaneko, Ryuichi; Saito, Toshiya; Fujimura, Yasushi; Tanimura, Hiroshi; Nakamura, Totaro; and Ikeda, Yukisaburo, to Nippon Hoso-Kyokai. Converting equipment of standard television broadcasting signals. 3,676,585, Cl. 178-6.800.

Kaneko, Thomas M.; Schmolka, Irving R.; and Compton, John W., to BASF Wyandotte Corporation. Corrosion inhibitor for hydrochloric acid pickling of steele. 3,676,354, Cl. 252-147.000.

Kangle, Purusbottam Janardan; Ramanathan, Visvanathan; and Argay, Rudolf, to Ciba-Geigy AG. Process for dyeing and printing textile materials made from synthetic organic fibres. 3,676,051, Cl. 8-65.000.

Kantola, Robert A.; and Boothe, Willis A., to General Electric Company. Open-loop fluidic analog accelerometer. 3,675,473, Cl. 73-70.100.

Kantor, Simon W.: *See—*
Agens, Maynard C.; and Kantor, Simon W., 3,676,285.

Kaplow, Milton: *See—*
Glasser, George; Sjonvall, Ragnar Edward; and Kaplow, Milton, 3,676,154.

Kapun, Walter, to Wiener Schwachstromwerke Gesellschaft m.b.H. Arrangement for discharging predetermined amounts of molten metal from a vessel. 3,675,911, Cl. 266-38.000.

Karady, Sandor: *See—*
Sletzinger, Meyer; Karady, Sandor; Ly, Manuel G.; and Pines, Seemon H., 3,676,480.

Karkutt, Reimund: *See—*
Frenyo, Pal; Hafer, Karl-Heinz; Karkutt, Reimund; and Pelka, Walter, 3,675,971.

Karlin, George H.: *See—*
McQuary, Kenneth L.; Karlin, George H.; and Lane, Bert, 3,675,301.

Kartasuk, Raymond H.; and Smierciak, Walter, to Wilton Corporation. Vise assembly. 3,675,916, Cl. 269-69.000.

Kasai, Toshiyuki: *See—*
Yamamoto, Tadaaki; and Kasai, Toshiyuki, 3,675,986.

Kasper, Lothar: *See—*
Gutlhuber, Friedrich; and Kasper, Lothar, 3,675,841.

Kasperkovitz, Wolfdietrich Georg, to U.S. Philips Corporation. Shift register. 3,676,701, Cl. 307-221.00r.

Kassabgi, Georges; and Compare, Giampiero, to Honeywell Information Systems Italia. Compatible modular circuit board connector. 3,676,746, Cl. 317-101.0cc.

Katai, Mihaly: *See—*
Hajduk, Jeno; and Katai, Mihaly, 3,675,852.

Kates, Clarke Merle: *See—*
Herbsman, Abraham M., 3,676,090.

Katsuragawa Denki Kabushiki Kaisha: *See—*
Kinoshita, Koichi, 3,676,117.

Katz, Helmut: *See—*
Hofmann, Horst; and Katz, Helmut, 3,676,731.

Katz, Howard: *See—*
Sternberg, Hyman M.; Piacesi, Dante, Jr.; and Katz, Howard, 3,675,577.

Katzenstein, William: *See—*
Schultz, Herman S.; Katzenstein, William; and Williams, Earl P., 3,676,408.

Kaufman, Jack: *See—*
Lund, Alvin R.; and Kaufman, Jack, 3,675,807.

Kawaguchi, Kanzi: *See—*
Mito, Satoru; Shimotori, Kazumi; Kawai, Mituo; and Kawaguchi, Kanzi, 3,676,110.

Kawai, Hisasi: *See—*
Wakamatsu, Hisato; Kawai, Hisasi; Ito, Shin; and Kubo, Seitoku Kaisha, 3,675,511.

Kawai, Mituo: *See—*
Mito, Satoru; Shimotori, Kazumi; Kawai, Mituo; and Kawaguchi, Kanzi, 3,676,110.

Kay, Lealie; Maginness, Maxwell Glynn; and Cook, Graham Bramwell, to National Research Development Corporation. Apparatus and method for images of the interior structure of solid objects. 3,675,472, Cl. 73-67.50r.

Keenan, William A.: *See—*
Dupnock, Andrew; Gorey, Edward F.; and Keenan, William A., 3,676,775.

Keene Corporation: *See—*
Baranowski, Leslie B., 3,675,395.

Keene, William A., to Phillips Petroleum Company. Pipeline construction. 3,675,432, Cl. 61-72.100.

Kehr, Clifton L.; and Wszolek, Walter R., to Grace, W. R., & Co. Water-resistant materials, and methods of production and use of same. 3,676,195, Cl. 117-93.310.

Kehr, Clifton L.; and Wszolek, Walter R., to Grace, W. R., & Co. Laminate and process for laminating with polythiol polyene reaction product. 3,676,283, Cl. 161-88.000.

Keil, Karl Diether: *See—*
Diedrich, Bernd; Keil, Karl Diether; and Rust, Kurt, 3,676,414.
Diedrich, Bernd; Keil, Karl Diether; and Rust, Kurt, 3,676,415.

Kelco Company: *See—*
Winterndorff, Peter, 3,676,157.

Keller, Allen B.: *See—*
Ward, John T.; and Keller, Allen B., 3,675,614.

Keller, Werner, to Siemens Aktiengesellschaft. Contact-free potentiometer. 3,676,819, Cl. 338-32.00r.

Keller, William Fredrick; and Domyan, Frank Francis, to International Telephone and Telegraph Corporation. Hydraulic control system. 3,675,538, Cl. 91-1.000.

Kelly, George J., Jr.: *See—*
Schroeder, Kenneth H.; and Kelly, George J., Jr., 3,676,219.

Kempthorne, Richard Lewis, to Sprayon Research Corporation. Method for spraying a high density insulating mat. 3,676,170, Cl. 117-16.000.

Kendall Company, The: *See—*
Hoyle, Albert G., 3,676,288.
Taylor, Glenn N., 3,675,658.
Vida, Julius A., 3,676,454.

Kennedy, George C., to Teledyne, Inc. Method for manufacturing diamonds in a hydrogen free environment. 3,676,069, Cl. 23-209.100.

Kennedy, James A.: *See—*
Finch, DeVer C.; and Kennedy, James A., 3,676,858.

Kerber, Elwyn W.: *See—*
Collins, Neil E.; Kerber, Elwyn W.; and Nevillé, Raymond R., 3,676,668.

Kera, Loyd R.: *See—*
Faulk, Joseph H.; Kern, Loyd R.; and King, Graham E., 3,675,728.

Kerr-McGee Chemical Corporation: *See—*
Goens, Duane N.; and Clapper, Thomas W., 3,676,315.

Kerrigan, James Edward: *See—*
Gerber, Reinhold; Kerrigan, James Edward; and Hawley, Harry Ray, 3,676,543.

Kershaw Manufacturing Company, Inc.: *See—*
Kershaw, Royce G., 3,675,580.

Kershaw, Royce G., to Kershaw Manufacturing Company, Inc. Apparatus for replacing old cross tie with new cross tie. 3,675,580, Cl. 104-9.000.

Kesilman, Sol; Kravitz, Milton; and Penn, Hyman B., to Hodges, William & Co., Inc. Adjustable shelving. 3,675,598, Cl. 108-144.000.

Khoe, Teng H.: *See—*
Rheineck, Alfred E.; Nielsen, Paul L.; and Khoe, Teng H., 3,676,384.

Kienzle Apparate GmbH: *See—*
Schuh, Eduard, 3,675,504.

Kiess Instruments, Inc.: *See—*
Kiess, Raymond W., 3,676,007.

Kiess, Raymond W., to Kiess Instruments, Inc. Direct reading filter photometer. 3,676,007, Cl. 356-184.000.

Kihlstedt, Per G., to AB Cold-Bound Pellets. Pre-treatment of metal-bearing mineral products. 3,676,104, Cl. 75-3.000.

Kikuchi, Tomio; and Arai, Kiyoyuki, to Kabushiki Kaisha Koparu. Exposure time indicating device for photographic cameras equipped with an electronically controlled shutter. 3,675,548, Cl. 95-10.0ct.

Kim, Dong W., to Monsanto Company. Process for forming high strength spunbonded fabric by autogenous bonding of filaments. 3,676,244, Cl. 156-181.000.

Kim, Sang-Chul, to General Electric Company. Circuit utilizing magnetized cores for sequentially flashing photoflash lamps. 3,676,044, Cl. 431-95.000.

Kimball, Bruce Allan: *See—*
Horn, Harold Edwin; Kimball, Bruce Allan; and Godzicki, Martin Michael, 3,676,155.

Kimball, Lawrence W.: *See—*
Schreurs, Willy P.; and Kimball, Lawrence W., 3,676,176.

Kinbara, Setsuro; and Kumahara, Tadashi, to Japan Atomic Energy Research Institute. Waveform discriminating circuit. 3,676,783, Cl. 328-117.000.

King, Graham E.: *See—*
Faulk, Joseph H.; Kern, Loyd R.; and King, Graham E., 3,675,728.

Kinner, Gotthard: *See—*
Bauer, Franz; Besemer, Karl Friedrich; and Kinner, Gotthard, 3,676,776.

Kinoshita, Koichi, to Katsuragawa Denki Kabushiki Kaisha. Method of electrophotography. 3,676,117, Cl. 96-1.00r.

Kirby, Gary Neil: *See—*
Badia, Frank Arthur; and Kirby, Gary Neil, 3,676,226.

Kirch, Paul W. Applicatory-liquid feeding and applying apparatus. 3,676,010, Cl. 401-188.

Kirstahler, Alfred: *See—*
Berg, Markus; Fries, Walter; and Kirstahler, Alfred, 3,676,340.
Fries, Walter; Berg, Markus; Dohr, Manfred; and Kirstahler, Alfred, 3,676,338.

Kislov, Vladimir Grigorievich: *See—*
Andrusenko, Petr Ivanovich; Dolganov, Kint Evgenievich; Kovalev, Alexandr Ivanovich; Berezovsky, Pavel Iosipovich; Dmitrenko, Vladimir Ilich; Shukshin, Nikolai Pavolich; Gutarevich, Jury Feodosievich; Kislov, Vladimir Grigorievich; Chevtaev, Andrei Vasilievich; Koshman, Eduard Ivanovich; and Filippov, Vladimir Vasilievich, 3,676,023.

Kiss, Bela: *See—*
Domokos, Jozsef; Benedek, Gyorgy; Kiss, Bela; Winkler, Laszlo; and Beller, Zoltan, 3,673,316.
Domokos, Jozsef; Benedek, Gyorgy; Kiss, Bela; Winkler, Laszlo; and Beller, Zoltan, 3,676,316.

Kisten, Jurgen Manfred, to Radiometer A/S. Electrode, half cell and electrode component for the measurement of electromotive force. 3,676,319, Cl. 204-195.00f.

Kitowski, George J. Coin holder with removeable mounting bracket. 3,675,664, Cl. 133-6.000.

Kizilyaev, Anatoly Serafimovich: *See—*
Osmolovsky, Jury Anatolievich; and Kizilyaev, Anatoly Serafimovich, 3,675,452.

Klawitter, Vernon L. Power vacuum truck. 3,675,267, Cl. 15-340.

Klima, Frank J.; and Duncan, James D., to Gulf Oil Corporation. Method of forming in place a gelled suspension explosive. 3,676,236, Cl. 149-41.000.

Kline, Donald D., to Commercial Electronics, Inc. Television camera overexposure warning system. 3,676,587, Cl. 178-7.200.

Klose, Karl W., to Cooper Tire & Rubber Company. Tire awling apparatus. 3,675,520, Cl. 83-2.000.

Kloss, Wilfried: *See—*
Eggensperger, Heinz; Franzen, Volker; and Kloss, Wilfried, 3,676,471.

Klundt, Irwin L.: *See—*
Biel, John Hans; and Klundt, Irwin L., 3,676,492.

Knapsack Aktiengesellschaft: *See—*
Gerhardt, Wilfried; and Harnisch, Heinz, 3,676,100.
Schneider-Arnoldi, Alfred; Kampmann, Friedrich-Wilhelm; Thiel, Hans-Dieter; Kandler, Joachim; and Gleisberg, Dietrich, 3,676,165.

Knecht, Walter L. Flooring construction. 3,675,384, Cl. 52-250.000.

Knepper, Delbert M., Sr., to International Business Machines Corporation. Optical code generating apparatus. 3,676,689, Cl. 250-219.000.

Knerr, Hugh S. Ship or boat hull construction. 3,675,605, Cl. 114-61.000.

Knowles, Peter M.: *See—*
Moseley, Royston L.; and Knowles, Peter M., 3,676,286.

Knowles, Richard N., to Du Pont de Nemours, E. I., and Company. Irritant composition comprising N-dihaloacetyl-4-alkylcyclohexylamine. 3,676,562, Cl. 424-320.000.

Knudsen, Ra-mond G.; Price, James W.; and Olson, Gene E., to Snap-On Tools Corporation. Wrench splines, apline drives and similar couplers. 3,675,516, Cl. 81-121.000.

Koba-ashi, Tunekazu: *See—*
Masuda, Noboru; and Koba-ashi, Tunekazu, 3,676,828.

Kobayashi, Akihiro, to Nittan Company Limited. Ionization smoke detector. 3,676,681, Cl. 250-83.6ft.

Kobayashi, Fukashi; Ono, Mitsuaki; and Kuroe, Akio, to Matsushita Electric Industrial Co., Ltd. Curie point magnetic tape duplicating apparatus wherein the master and slave tapes are wound on a single take-up reel. 3,676,612, Cl. 179-100.20e.

Kobayashi, Koichi: *See—*
Yasuda, Atsuhiro; and Kobayashi, Koichi, 3,675,496.

Kobayashi, Seihin; and Torii, Michihiro, to Fuji Denki Kagaku Kabushiki Kaisha. Frame structures for electronic circuits. 3,676,748, Cl. 317-101.0cm.

Kobayashi, Tetsuo, to Mittan Company Limited. Fire alarm system with fire zone locator using zener diode voltage monitoring. 3,676,877, Cl. 340-227.00r.

Kobayashi, Yozaburo, to Honda Giken Kogyo Kabushiki Kaisha. Apparatus for attaching a front-wheel fork to a head pipe in a two-wheeled vehicle or the like. 3,675,944, Cl. 280-278.000.

Koch, John H., to Atkins & Merrill, Inc. Modular aircraft pedestal. 3,675,880, Cl. 244-83.00r.

Koehring-Waterous, Ltd.: *See—*
Denovan, John J.; and Kurelek, John, 3,675,691.

Kogelnik, Herwig Werner; and Shank, Charles Vernon, to Bell Telephone Laboratories, Incorporated. Reflective-type narrow bank filter. 3,675,990, Cl. 350-311.000.

Kohan, Melvin I.; Martin, Wayne H.; and Rosenbaum, Chester K., to Du Pont de Nemours, E. I., and Company. Thermoplastic blends of high-amine-end poly-amides and acid-containing olefin polymers. 3,676,400, Cl. 260-857.00l.

Kohler Co.: *See—*
Syverson, Charles D., 3,676,764.

Kohring, Walter. Mooring structure. 3,675,609, Cl. 114-230.000.

Kohring, Walter. Mooring structure in combination with a fender. 3,675,610, Cl. 114-230.000.

Kokusai Denshin Denwa Kabushiki Kaisha: *See—*
Muratani, Takuro; Ogawa, Akira; and Nosaka, Kunishi, 3,676,593.

Kolm, Henry H., to Massachusetts Institute of Technology. Process for magnetic separation. 3,676,337, Cl. 210-42.000.

Komada, Hitoshi: *See—*
Takemasa, Kazuo; and Komada, Hitoshi, 3,675,438.

Komori, Shigehiro; and Hattori, Hiroyuki, to Canon Kabushiki Kaisha. Photocopying apparatus provided with original inverting device. 3,675,999, Cl. 355-8.000.

Konig, Gustav. Structural assembly. 3,675,954, Cl. 287-20.92w.

Koninklijke Nederlandsche Gist-en Spiritusfabriek N.V.: *See—*
Weissenburger, Helmut Wilhelm Otto, 3,676,429.

Konoshima Chemical Co., Ltd.: *See—*
Taga, Koji; and Noguchi, Masahiko, 3,676,061.
Taga, Koji; and Noguchi, Masahiko, 3,676,062.

Kontranowski, Edward S., to Aerospace America, Inc. Vehicle wheeled driving mechanism. 3,675,730, Cl. 180-55.000.

Kopelman, Bernard: *See—*
Beare, Gene K.; Kopelman, Bernard; and Seeger, Donald E., 3,676,663.

Koppe, Robert G., to Exact Weight Scale Corporation. Interchangeable carton holder for chain conveyor. 3,675,759, Cl. 198-131.000.

Koppers Company, Inc.: *See—*
Blommers, Elizabeth, 3,676,284.
Wright, John, 3,675,750.

Kornfeld, Edmund Carl, to Lilly, Eli, and Company. (Indolylmethyl)malonate compound. 3,676,458, Cl. 260-326.14t.

Korodi, Miklos B.; and Runyan, Clarence R., to Holland Hitch Company. Impact fifth wheel. 3,675,946, Cl. 280-440.000.

Korpman, Ralf, to Johnson & Johnson. Pressure-sensitive adhesive tape. 3,676,202, Cl. 117-122.00p.

Koshman, Eduard Ivanovich: *See—*
Andrusenko, Petr Ivanovich; Dolganov, Kint Evgenievich; Kovalev, Alexandr Ivanovich; Berezovsky, Pavel Iosipovich; Dmitrenko, Vladimir Ilich; Shukshin, Nikolai Pavolich; Gutarevich, Jury Feodosievich; Kislov, Vladimir Grigorievich; Chevtaev, Andrei Vasilievich; Koshman, Eduard Ivanovich; and Filippov, Vladimir Vasilievich, 3,676,023.

Koste, Bernard F: *See—*
Bremmer, James S.; and Koste, Bernard F, 3,675,904.

Koste, Bernard F., deceased: *See—*
Bremmer, James S.; Koste, Bernard F., deceased, 367,904.

Koste, Elsie E.: *See—*
Bremmer, James S.; and Koste, Bernard F, 3,675,904.

Koste, Elsie E., executrix: *See—*
Bremmer, James S.; Koste, Bernard F., deceased, 367,904.

Kotla, John J.: *See—*
Carlsen, Donald W.; Kotla, John J.; and Parker, Arden A., 3,676,646.

Kourtesis, John G.; and Marcoux, Leo, to Texas Instruments, Incorporated. Contact system for electrically conductive ceramic-like material. 3,676,211, Cl. 117-212.000.

Kouth, Herbert: *See—*
Golde, Hans; Herrmann, Friedrich; Kouth, Herbert; and Marr, Fritz, 3,675,371.

Kovacs, Mark A., to United Aircraft Corporation. Atomic fluorine laser. 3,676,797, Cl. 331-94.500.

Kovalev, Alexandr Ivanovich: *See—*
Andrusenko, Petr Ivanovich; Dolganov, Kint Evgenievich; Kovalev, Alexandr Ivanovich; Berezovsky, Pavel Iosipovich; Dmitrenko, Vladimir Ilich; Shukshin, Nikolai Pavolich; Gutarevich, Jury Feodosievich; Kislov, Vladimir Grigorievich; Chevtaev, Andrei Vasilievich; Koshman, Eduard Ivanovich; and Filippov, Vladimir Vasilievich, 3,676,023.

Kowalewski, Alexander Joseph, to Du Pont de Nemours, E. I., and Company. Electrical discharge treatment of tetrafluoroethylene/hexafluoropropylene copolymer in acetone. 3,676,181, Cl. 117-47.00a.

Koziol, Konrad: *See—*
Zollner, Dieter; Koziol, Konrad; Reichelt, Bernhard; and Lippert, Wolfgang, 3,676,371.

Kozol, Eugene T.; and Wohl, Robert J., to International Business Machines Corporation. Deformographic target assembly with integral conductive member. 3,676,588, Cl. 178-7.50d.

Kramer, Bruce E.: *See—*
Page, George A.; Rathbun, Robert R.; and Kramer, Bruce E., 3,676,635.

Krasikov, Evsei Dmitrievich: *See—*
Strelets, Khaim Lipovich; Chesnokov, Alexandr Sergeevich; Devyatkin, Vladimir Nikolaevich; Tatakin, Alexandr Nikolaevich; Krasikov, Evsei Dmitrievich; Leonova, Ljudmila Sergeevna; Medvetskaya, Galina Arkadievna; and Nechaeva, Tatyana Georgievna, 3,676,323.

Krassig, Johannes: *See—*
Sabhofer, Franz; and Krassig, Johannes, 3,676,243.

Krauskopf, Willism B. Elastomeric interlock to prevent vertical disengagement of railway car couples. 3,675,787, Cl. 213-153.000.

Kravitz, Milton: *See—*
Kesilman, Sol; Kravitz, Milton; and Penn, Hyman B., 3,675,598.

Krekeler, Hans; Meidert, Helmut; Riemenschneider, Wilhelm; and Hornig, Lothar Heinz; deceased (Hornig, Anneliese, nee Munich; co-heiress), to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Process for the manufacture of carbon tetrachloride. 3,676,508, Cl. 260-664.000.

Kresge, Alfred N.: *See—*
Ellis, Alan F.; Kresge, Alfred N.; and Seekircher, Richard, 3,676,489.

Krichbaum, Donald W.: *See—*
Lambert, Kenneth W.; and Krichbaum, Donald W., 3,675,379.

Kristian Krog Sorensen: *See—*
Bartens, Carl Emil, 3,676,618.

Kritske, Victor J., to Mayline Company, Inc. Drafting table. 3,675,594, Cl. 108-2.000.

Krivis, Alan F., to Portage Research & Development Corporation. Breath test for marijuana smokers and apparatus therefor. 3,676,072, Cl. 23-232.00r.

Krohn, Ivar T.; Page, Geoffrey A.; and Reinis, Gedeminas J., to Xerox Corporation. Image reversal in manifold imaging using an electrically conductive receiver sheet. 3,676,116, Cl. 96-1.300.

Kronmeyer, James Hughes: *See—*
Flanagan, James Loton; Kronmeyer, James Hughes; and Nelson, John Richard, 3,675,513.

Kubinski, Donald C.: *See—*
Appleby, Paul E.; Folden, Denver C.; and Kubinski, Donald C., 3,676,259.

Kubo, Seitoku Kaisha: *See—*
Wakamatsu, Hisato; Kawai, Hisasi; Ito, Shin; and Kubo, Seitoku Kaisha, 3,675,511.

Kubsch, Wilhelm, to Hartung, Kuhn & Co., Maschinenfabrik G.m.b.H. Collecting hood for coke-quenching cars. 3,675,400, Cl. 55-385.000.

Kuceski, Vincent P., to Hall, C. P., Company of Illinois, The. Ether amides in aqueous lubricants. 3,676,344, Cl. 252-49.300.

Kuceski, Vincent P., to Hall, C. P., Company of Illinois, The. Aqueous lubricant. 3,676,345, Cl. 252-49.300.

Kumahara, Tadashi: *See—*
Kinbara, Setsuro; and Kumahara, Tadashi, 3,676,783.

Kumpula, John W.: *See—*
Huget, Eugene F.; Brauer, Gerhard M.; Kumpula, John W.; and Civjan, Simon, 3,675,327.

Kuramoto, Yoshio; and Inagaki, Shotaro, to Minolta Camera Kabushiki Kaisha. Optical system for a single lens reflex camera. 3,675,558, Cl. 95-42.000.

Kuraray Co., Ltd.: *See—*
Makimoto, Tsutomu, 3,676,416.

Kurelek, John: *See—*
Denovan, John J.; and Kurelek, John, 3,675,691.

Kurihara, Shigeru: *See—*
Yokozato, Junichi; and Kurihara, Shigeru, 3,675,557.

Kuroe, Akio: *See—*
Kobayashi, Fukashi; Ono, Mitsuaki; and Kuroe, Akio, 3,676,612.

Kurth, Carl Ferdinand, to Bell Telephone Laboratories, Incorporated. Frequency division multiplex single-sideband modulation system. 3,676,598, Cl. 179-15.0fd.

Kushigian, Anthony. Clearance grinding machine. 3,675,372, Cl. 51-5.000.

Kverneland, Finn, to Globus Maskinfabrik A/S. Machine for distributing seed, fertilizer and other grain or powder masses. 3,675,856, Cl. 239-654.000.

Kyowa Hakko Kogyo Kabushiki Kaisha: *See—*
Nakajima, Junichi; Araki, Kazumi; and Morinaga, Kenzo, 3,676,301.

L. & C. Steinmuller G.m.b.H.: *See—*
Seibold, Rudolf, 3,675,628.

La Force, Phil D.: *See—*
Scannell, Paul R.; La Force, Phil D.; and O'Connell, Wayne T., 3,675,425.

La Macchia, John Thomas, to Bell Telephone Laboratories, Incorporated. Large capacity digital memory. 3,675,983, Cl. 350-3.500.

La Marca, Thomas, Jr.: *See—*
Guarino, Michael J., Sr., 3,675,929.

La Rocca, James J.; and Bartolomeo, Blase J., to Continental Can Company, Inc. Method and fluidic control system for operating a can closing machine. 3,675,668, Cl. 137-1.000.

Labana, Santokh S., to Ford Motor Company. Thermoset resins with hydroxy acrylate, methyl methacrylate and blocked isocyanate. 3,676,405, Cl. 260-77.5cr.

Laboratories Albert Rolland: *See—*
Thuillier, Yvonne, 3,676,551.

Labuda, Edward Franklin: *See—*
Dalton, John Vincent; and Labuda, Edward Franklin, 3,676,727.

Lacey, Robert E.; and Mintz, Milton S., 1/2 to Southern Research Institute and 1/2 to United States of America, Interior. Process for effecting changes in solution concentrations. 3,676,335, Cl. 210-23.000.

Lachman, Leon; Reiner, Roy H.; Shami, Elie; and Spector, Walter, to Endo Laboratories, Inc. Long-acting narcotic antagonist formulations. 3,676,557, Cl. 424-260.000.

Lacroix, Philippe: *See—*
Vergne, Jean; Solaux, Leon; Robinet, Jean-Claude; and Lacroix, Philippe, 3,676,390.

Lake, Donald; Perrin, Badger; and Nolan, Frederick J., to TRW Inc. Fastening device. 3,675,817, Cl. 221-95.000.

Lam, Hung-Kei H.: *See—*
Bell, Norman; and Lam, Hung-Kei H., 3,676,077.

LaMarca, Joseph. Keyboard teaching machine. 3,675,339, Cl. 35-5.000.

Lambert, Kenneth W.; and Krichbaum, Donald W., to Dunham-Bush, Inc. Weatherproof enclosure. 3,675,379, Cl. 52-79.000.

Lamping, Robert F., to Modern Engineering Company, Inc. High pressure regulator. 3,675,678, Cl. 137-505.220.

Lamson, Byron A.: *See—*
Grant, David C.; and Lamson, Byron A., 3,675,406.

Land, Edwin H.; and Erlichman, Irving, to Polaroid Corporation. Film storage chamber. 3,675,551, Cl. 95-11.00r.

Landel, Robert F.: *See—*
United States of America, National Aeronautics and Space Administration, 3,675,712.

Landen, William James; and Lundquist, Gunnar, to International Silver Company, The. Brush construction. 3,675,265, Cl. 15-193.000.

Landes, Hugh S.: *See—*
United States of America, National Aeronautics and Space Administration, 3,676,809.

Landler, Yvan; and Lebel, Pierre Henri. Graft copolymers and process of making same. 3,676,190, Cl. 117-76.

Lane, Bert: *See—*
McQuary, Kenneth L.; Karlin, George H.; and Lane, Bert, 3,675,301.

Lane, Donald W.; and Pemberton, Troy J., to Phillips Petroleum Company. Modified on-off control. 3,676,782, Cl. 328-1.000.

Lanoue, Thomas J.; and De Neef, John G., to Westinghouse Electric Corporation. Transformer lead insulator and method of making same. 3,676,579, Cl. 174-138.00r.

Lanphear, Jerry D.: *See—*
Schneider, Franklin R.; and Lanphear, Jerry D., 3,676,694.

Lantz, Joseph C.: *See—*

Domyan, Frank F.; Lantz, Joseph C.; and Sibley, Richard D., 3,675,650.

Lapera, Dominic J., to Parker-Hannifin Corporation. Fuel nozzle with modulating primary nozzle. 3,675,853, Cl. 239-464.000.

Larson, Carl B.; and Gimbel, William T. Apparatus for conveying, handling, loading, and unloading of palletized materials. 3,675,801, Cl. 214-310.000.

Larson, Jerry K.: *See—*
Goldman, Irving M.; and Larson, Jerry K., 3,676,428.

Larson, Kenneth R., to Snap-On-Tools Corporation. Portable testing and checking apparatus with adjustable mounts. 3,675,464, Cl. 73-1.00c.

Larson, Leland B.: *See—*
Clement, Clyde H., 3,675,830.

LaRue, James F., to Goodyear Tire & Rubber Company, The. Machine for splicing tire cord. 3,675,407, Cl. 57-22.000.

Laskowitz, Joseph F. Massage apparatus. 3,675,644, Cl. 128-58.000.

Laskowski, Edward L., to General Electric Company. Resistor circuit assembly for sequentially flashing photoflash lamps. 3,676,046, Cl. 431-95.000.

Laszlo, Nicolar, to Ets. Carpano & Pons. Safety bindings for skis. 3,675,937, Cl. 280-11.35t.

Lauer, James L. Apparatus for removing sulfur dioxide from stack gases. 3,676,318, Cl. 204-193.000.

Laupman, Robert Ronald, to N.V. Auco. A.C. control devices. 3,676,706, Cl. 307-252.00b.

Lawson, Jimmie B.: *See—*
Farmer, Robert F., III; and Lawson, Jimmie B., 3,675,716.

Lawson-Tancred, Henry: *See—*
Steed, Frank Streeton; and Lawson-Tancred, Henry, 3,675,799.

Lazzari, Jean-Pierre; and Melnick, Igor, to Commissariat a l'Engerie Atomique and Compagnie International pour l'Informatique. Integrated low-level magnetic decoder. 3,676,869, Cl. 340-174.0qa.

Le Brasse, Gordon J.; and Stolarski, Boniface, to Federal-Mogul Corporation. Pre-alloyed nickel-free silicon-free minimal-oxide low-alloy iron powder and method of making same. 3,676,103, Cl. 75-.5ba.

Le Goff, Loman H., to Acushnet Company. Protective piping for golf bags. 3,675,698, Cl. 150-1.50r.

Le Voy's, Inc.: *See—*
Reynolds, Gordon S.; Pannier, Karl A., Jr.; and Sorenson, James L., 3,675,891.

Leach, Robert E.: *See—*
Marzocchi, Alfred; Benson, Gustav E.; and Leach, Robert E., 3,675,704.

Lebduska, Robert L.: *See—*
Meckel, Benjamin B.; and Lebduska, Robert L., 3,676,672.

Lebel, Pierre Henri: *See—*
Landler, Yvan; and Lebel, Pierre Henri, 3,676,190.

Leblond, Jean, to Uniroyal Englebert France S.A. Tire building drum having a magnetized surface. 3,676,262, Cl. 156-417.000.

Lee, Ernest O., Jr.: *See—*
Budrys, Ignas; and Lee, Ernest O., Jr., 3,676,603.

Lee, Fred S., to Honeywell Information Systems Inc. Magnetic bubble crossover circuit. 3,676,873, Cl. 340-174.0tf.

Lee, Jimmy G., to Schlumberger Technology Corporation. Well logging methods and apparatus. 3,676,842, Cl. 340-15.5bi.

Lee, Robert D., to United States of America, National Aeronautics and Space Administration. Metallic intrusion detector system. 3,676,772, Cl. 324-41.000.

Leeds and Micallef: *See—*
Micalief, Lewis A., 3,675,804.

Leffingwell, John C., to Reynolds, R. J., Tobacco Company. Preparation of a terepene alcohol. 3,676,504, Cl. 260-631.500.

Legorreta-Sanchez, Gildardo. Method and apparatus for classifying and segregating particles with electric and optical means. 3,675,768, Cl. 209-4.000.

Leguyt, Jacob: *See—*
Frohlich, Josef; and Leguyt, Jacob, 3,675,680.

Lehmacher, Hans: *See—*
Lehmacher, Michael; and Lehmacher, Hans, 3,676,270.

Lehmacher, Michael; and Lehmacher, Hans. Machine for processing of web stock, particularly of thermoplastic synthetic plastic material. 3,676,270, Cl. 156-553.000.

Lehman, Kenneth G., to Norco, Inc. Releasable panel fastener. 3,675,531, Cl. 85-70.000.

Lehrian, William R.: *See—*
Carlson, Edgar; and Lehrian, William R., 3,676,333.

Lekan, Henry N., to Formax, Inc. Paper interleaver device. 3,675,387, Cl. 53-157.000.

Lemelson, Jerome H. Irradiation method for production of fiber-reinforced polymeric composites. 3,676,249, Cl. 156-244.000.

Lemke, Donald L.; and Ostrander, Ronald D., to Murray Machinery, Inc. Apparatus for handling pneumatic web roll winding shafts. 3,675,866, Cl. 242-55.000.

Lemoine, Jacques: *See—*
Vidal, Jean; and Lemoine, Jacques, 3,675,423.
Vidal, Jean; Parisot, Jean; and Lemoine, Jacques, 3,675,426.

Lemon, John R.: *See—*
Martin, John P.; Beninger, Darrell J.; and Lemon, John R., 3,675,317.

Lems, Peter, to Signode Corporation. Load bagging apparatus. 3,675,388, Cl. 53-187.000.

Lenkeit, Carl Heinz; and Conklin, Cornelius Stephen, Jr., to United Aircraft Corporation. Jet engine force frame. 3,675,418, Cl. 60-39.310.

Lentz, Tommy L.; and Terry, Alton L., to Decatur Iron and Steel Company. Apparatus for selecting and controlling the operation of cell doors. 3,675,369, Cl. 49-20.000.

Leone, Nick A. Magnetic rotor assembly. 3,675,506, Cl. 74-572.000.

Leonova, Ljudmila Sergeevna: *See—*
Strelets, Khaim Lipovich; Chesnokov, Alexandr Sergeevich; Devyatkin, Vladimir Nikolaevich; Tatakin, Alexandr Nikolaevich; Krasikov, Evsei Dmitrievich; Leonova, Ljudmila Sergeevna; Medvetskaya, Galina Arkadievna; and Nechaeva, Tatyana Georgievna, 3,676,323.

Leopold, Henri; and Pomathios, Jacques, to Etablissements Tiflex. Complex film for obtaining silk screen stencils. 3,676,128, Cl. 96-36.400.

Lepetit S.p.A.: *See—*
Thiemann, Josef; Murthy, Yelahanka K. S.; and Coronelli, Carolina, 3,676,490.

Lepley, James W.: *See—*
Aikinson, James D.; Lepley, James W.; Nussbaum, Claire E.; and Stolzfus, John E., 3,675,796.

Lesky, Stephen: *See—*
Hight, Hanford Z.; and Lesky, Stephen, 3,676,254.

Leu, Francois J.; Tosin, Peter M.; and Werner, Ernst, to Omega Louis Brandt & Frere S.A. Time measuring system for swimming competitions. 3,676,696, Cl. 307-119.000.

Levi, Clifford A., to Alpha Industries, Inc., mesne. Method of producing semiconductor devices. 3,675,314, Cl. 29-528.000.

Levin, Ezra, to VioBin Corporation, mesne. Stable insulin material. 3,676,552, Cl. 424-110.000.

Levine, Seymour D., to Squibb, E. R., & Sons, Inc. Acenaphthyloxazole derivatives. 3,676,452, Cl. 260-307.00d.

Lewis, Alan E.; and Voight, Frederick W., Jr., to Eastman Kodak Company. Method for use in a continuous flow reaction for producing a monomer and or a protopolymer. 3,676,485, Cl. 260-475.00p.

Lewis, Bernard L.: *See—*
Pietsch, Roy; and Lewis, Bernard L., 3,675,989.

Lewis Engineering Company, The: *See—*
Blackwell, Dana J., 3,675,410.

Leydon, Arthur J.: *See—*
Brenner, Mannie; Chase, Fred L.; and Leydon, Arthur J., 3,676,386.

Lezak, Jay R. Fingerprinting apparatus. 3,675,618, Cl. 118-31.500.

Libbey-Owens-Ford Company: *See—*
Hall, Harold R., 3,676,098.

Libby, Charles C.; and McDaniel, Raymond C., to Ohio State University, The. Method and apparatus for controlling frequency of piezoelectric transducers. 3,676,720, Cl. 310-8.100.

Libman, Max L.: *See—*
Rabinow, Jacob, 3,675,932.

Lickliter, Robert Paul; and Reeves, John F., to Flangeklamp Corporation. Wall structure having a window support assembly. 3,675,382, Cl. 52-214.000.

Lickliter, Robert Paul; Abbott, Earl; and Reeves, John F., to Flangeklamp Corporation. Locking connection for supporting grid systems. 3,675,957, Cl. 287-189.36a.

Liggett & Myers Incorporated: *See—*
Hall, Floyd V., 3,675,761.

Lightolier Incorporated: *See—*
Donato, Anthony C., 3,676,830.

Lilly, Eli, and Company: *See—*
Galloway, Reginald B.; and Shumard, Raymond F., 3,676,547.
Kornfeld, Edmund Carl, 3,676,458.
Massey, Eddie H., 3,676,434.
Neuss, Norbert, 3,676,438.
Ose, Earl E., 3,676,548.
Pitt, Colin G., 3,676,502.

Limiero, Albert David: *See—*
Goldthorp, David Clayton; Limiero, Albert David; and Smith, John Paul, 3,676,608.

Linder, Kenneth C., to Riley Company, The Company, The. Variable monitoring system. 3,676,878, Cl. 340-408.000.

Lindlof, James A., to Minnesota Mining and Manufacturing Company. Stable elastomeric polymer-oil combinations. 3,676,387, Cl. 260-28.50b.

Lindsay Specialty Products Limited: *See—*
Pennypacker, Frank Chester, 3,676,744.

Lindsey, Alan Sidney; and Hunt, Sydney Edwin, to National Research Development Corporation. Polybenzoxazole amides, esters and thioesters, polybenzthiazole amides, esters and thioesters and preparation thereof. 3,676,399, Cl. 260-47.0co.

Lindsey, Richard V.: *See—*
Drinkard, William C., Jr.; and Lindsey, Richard V., 3,676,475.

Linenberg, Amos, to Hydronautics-Israel, Ltd. Sampling valve and system for the detection of predetermined compounds in air. 3,675,466, Cl. 73-23.100.

Linning, David Lees; and Cowking, Charles Brian, to United Kingdom Atomic Energy Authority. Nuclear reactor with secondary shut down control rod. 3,676,296, Cl. 176-35.000.

Linstromberg, William J., to Whirlpool Corporation. Water fill shut-off control for a domestic icemaker. 3,675,437, Cl. 62-137.000.

Lippert, Wolfgang: *See—*
Zollner, Dieter; Koziol, Konrad; Reichelt, Bernhard; and Lippert, Wolfgang, 3,676,371.

LIPS N.V.: *See—*
Oosterveld, Marinus Willem Cornelis, 3,675,424.

Little, Arthur D., Inc.: *See—*
Pars, Harry G.; and Granchelli, Felix E., 3,676,462.

Litton Medical Products, Inc.: *See—*
Vandervelden, Cornelius Keith, 3,676,683.

Litvak Meat Company Inc.: *See—*
Sheldon, Richard, 3,676,153.

Livingston, William L., to Factory Mutual Research Corporation. Snap-off tab nozzle. 3,675,854, Cl. 239-490.000.

Lobb, Daniel R.: *See—*
West, Robert N.; Brook, Richard A.; Shaw, Richard G.; Lobb, Daniel R.; and Allnutt, Anthony J., 3,676,008.

Lock, Roger David, to Bell Canada-Northern Electric Research Limited. Propagation of magnetic bubble domains. 3,676,872, Cl. 340-174.0tf.

Locke, John Michael: *See—*
Duck, Edward William; Ridgewell, Brian John; and Locke, John Michael, 3,676,409.

Lockett, George Edward: *See—*
Rennie, Compton Alexander; Lockett, George Edward; and Hosegood, Samuel Brittan, 3,676,297.

Lockwood, George C., to National Cash Register Company, The. Non-volatile flip-flop memory cell. 3,676,717, Cl. 307-304.000.

Loeb, Julien M., to Compagnie Generale de Ceophysique. Method and apparatus for measuring variations in a quantity with respect to a known reference value. 3,675,485, Cl. 73-382.000.

Loepfe, Erich, to Aktiengesellschaft Loepfe. Method and apparatus for detecting a relative movement between two bodies being in frictional contact with each other. 3,676,769, Cl. 324-32.000.

Loftus, John T.; Harper, Robert J., Jr.; and Blanchard, Eugene J., to United States of America, Agriculture. Permanent sizing of yarns and fibers with durable polymers and copolymers for the production of fabrics with improved properties for particular end uses. 3,676,207, Cl. 117-143.00a.

Loftus, Joseph F.: *See—*
Cavagnero, Erman V.; and Loftus, Joseph F., 3,675,460.

Logan, Robert P., to Eagle-Picker Industries, Inc. Sign support material. 3,676,281, Cl. 161-85.000.

Long, George W.: *See—*
Hobbs, James W.; and Long, George W., 3,676,304.

Lord, Peter Herent. Rectal cone for use in postoperative treatment. 3,675,642, Cl. 128-1.000.

L'Oreal: *See—*
Guillet, Philippe Robert, 3,675,491.
Kalopissis, Gregoire; and Bugaut, Andree, 3,676,049.
Morane, Bruno; Paoletti, Charles; and Terrasse, Gilles, 3,675,821.
Morane, Bruno P., 3,675,825.

Lorenz, Walter: *See—*
Schrader, Gerhard; Lorenz, Walter; Unterstenhofer, Gunter; and Hammann, Ingeborg, 3,676,555.

Lorren, Robert E. Pitcher with a flexible inner container forming the spout. 3,675,826, Cl. 222-183.000.

Los, Lenore J., to Grace, W. R., & Co. Isocyanurate-containing polythiols. 3,676,440, Cl. 260-248.0ns.

Losert, Ewald: *See—*
Rembold, Heinz; and Losert, Ewald, 3,676,200.

Loughridge, Frederick A.; Matheson, Wilfrid G.; and Passmore, Edmund M., to Sylvania Electric Products, Inc. Seal arrangements for lamps. 3,676,730, Cl. 313-318.000.

Loughridge, Frederick Ardel: *See—*
Anderson, John Wallace; and Loughridge, Frederick Ardel, 3,676,043.

Louis, Anthony, to Aquaria, Inc. Lamp housing structure. 3,676,665, Cl. 240-41.500.

Loup, Jean-Pierre Olivier; Gutknecht, Jacques Emile; and Anthony, Anne-Marie, nee Barbier, to Agence Nationale de Valorisation de la Recherche. Method for measurement of partial pressures of a gaseous substance using a metallic compound of the gaseous substance. 3,676,771, Cl. 324-33.000.

Louthan, Rector P., to Phillips Petroleum Company. Plasticized sulfur compositions. 3,676,166, Cl. 106-241.000.

Low, George M., Acting Administrator of the National Aeronautics and Space Administration with respect to an invention of; Clauss, Robert; and Quinn, Rex B. Maser for frequencies in the 7–20 GHz range. 3,676,787. Cl. 330-004.000.

Lubrizol Corporation, The: *See—*
Snee, Charles Thomas, 3,676,224.

Lucas, JamesM., to Aerojet-General Corporation. Preparation of uniform and storable fuel mixtures. 3,676,232, Cl. 149-6.000.

Luck, Dieter G., to Orenstein and Koppel Limited. Ripping tool supported scoop for excavator. 3,675,349, Cl. 37-117.500.

Luckey, Manley J. Alveolar breath volumetric analysis for alcohol. 3,676,073, Cl. 23-232.00r.

Ludwig, Lawrence P.; and Strom, Thomas N., to United States of America, National Aeronautics and Space Administration. Spiral groove seal. 3,675,935, Cl. 277-27.000.

Luft, Robert G., to International Harvester Company. Elevating compartment. 3,675,966, Cl. 296-28.00c.

Lummus Company, The: *See—*
Dorn, Rolf K.; and Williams, Theodore S., 3,676,519.

Lund, Alvin R.; and Kaufman, Jack, to Markstone Manufacturing Company. Recessed lighting fixture housing. 3,675,807, Cl. 220-3.940.

Lundquist, Gunnar: *See—*
Landen, William James; and Lundquist, Gunnar, 3,675,265.

Ly, Manuel G.: *See—*
Sletzinger, Meyer; Karady, Sandor; Ly, Manuel G.; and Pines, Seemon H., 3,676,480.

Lyon, John K., to Price-Pfister Brass Mfg. Co. Self-sealing mixture valve unit for single-handled sink or lavatory fixture. 3,675,682, Cl. 137-625.170.

Lyon, William O.: *See—*
Hunta, Barney D.; and Lyon, William O., 3,675,624.

M. I. Sales Co., Inc.: *See—*
Halpern, Arthur, 3,675,364.

Macartney, Carl H.; and Bawduniak, Joseph A., to Merck & Co., Inc. Apparatus for detecting aerosol leakage. 3,675,469, Cl. 73-40.700.

Machida, Tetsuo, to Sony Corporation. Push button assembly. 3,676,810, Cl. 335-159.000.

Mackey, E. Scudder; and Miceli, Vincent J., to GAF Corporation. Antistatic film properties using methyl vinyl ether/maleic acid interpolymer. 3,676,209, Cl. 117-161.0uc.

MacMillan, Charles W., to Applied Power Industries, Inc. Wheel balancing apparatus. 3,675,495, Cl. 73-466.000.

Maeda, Riichi, to Nissan Motor Company Limited. Vapour power plant. 3,675,416, Cl. 60-36.000.

Magee, Harry H. Cattle identification apparatus. 3,675,357, Cl. 40-300.000.

Magidson, William H.: *See—*
Protzman, Thomas F.; and Magidson, William H., 3,676,127.

Maginness, Maxwell Glynn: *See—*
Kay, Leslie; Maginness, Maxwell Glynn; and Cook, Graham Bramwell, 3,675,472.

Mahaffey, Donald M.: *See—*
Dawson, Ralph E.; and Mahaffey, Donald M., 3,676,425.

Mahler, Ernst, to Didier-Werke A.G. Magnesite refractory materials. 3,676,162, Cl. 106-58.000.

Maillardet, Frederick James: *See—*
Ingram, David John; and Maillardet, Frederick James, 3,675,794.

Maki, John O. Drip dryer for drip dry clothing. 3,675,338, Cl. 34-239.000.

Makimoto, Tsutomu, to Kuraray Co., Ltd. Isoprene polymerization process and catalyst system therefor. 3,676,416, Cl. 260-94.300.

Malandro, George H.; and White, Peter, to Javora, Henry J. Multi digit verification apparatus and method. 3,676,849, Cl. 340-149.00r.

Malifaud, Pierre. Optical projector device. 3,676,667, Cl. 240-41.35r.

Mallander, Filip Birger Emanuel. Collapsible storage unit. 3,675,981, Cl. 312-257.000.

Mallatt, Russell C.: *See—*
Grutsch, James F.; and Mallatt, Russell C., 3,675,779.

Mallinckrodt Chemical Works, mesne: *See—*
Tejera, Luis H., 3,675,492.

Mallory, P. R., & Co., Inc.: *See—*
Wiser, Joseph E.; and Gerhardt, Peter H., 3,676,725.

Maltby, Frank Vincent, to Bata Shoe Company, Inc. Manufacture of footwear. 3,676,542, Cl. 264-244.000.

Mangold, Edward J., to Skagit Corporation. Self leveling spreader frame. 3,675,960, Cl. 294-81.0ef.

Manly, Ron. Automatic editing system and method. 3,676,856, Cl. 340-172.500.

Mannesmann Aktiengesellschaft: *See—*
Frohlich, Josef; and Leguyt, Jacob, 3,675,680.

Mantell, Gerald J.; and Rondestvedt, Christian S., Jr., to Du Pont de Nemours, E. I., and Company. Tertiary aldehyde compounds. 3,676,500, Cl. 260-602.

Manufacture 'Quenot Mabo': *See—*
Quenot, Andre, 3,675,334.

Manus, Eugene A.: *See—*
United States of America, National Aeronautics and Space Administration, 3,676,809.

Marathon Oil Company: *See—*
Merrill, La Vaun S., Jr.; and Schilson, Robert E., 3,676,517.

Marcote, Rolando V.: *See—*
Chemtob, Elie M.; White, William R.; and Marcote, Rolando V., 3,675,773.

Marcoux, Leo: *See—*
Kourtesis, John G.; and Marcoux, Leo, 3,676,211.

Margot, Alfred: *See—*
Traber, Walter; Margot, Alfred; and Gailay, Jean-Jacques, 3,676,561.

Marino, Michelangelo: *See—*
Garilli, Francesco; and Marino, Michelangelo, 3,675,489.

Mark, Alfred J., to Chrysler Corporation. Apparatus and method for preparing piped covering materials. 3,675,289, Cl. 29-91.000.

Markstone Manufacturing Company: *See—*
Lund, Alvin R.; and Kaufman, Jack, 3,675,807.

Marosy, Andre. Coupling. 3,675,499, Cl. 24-201.00a.

Marr, Fritz: *See—*
Golde, Hans; Herrmann, Friedrich; Kouth, Herbert; and Marr, Fritz, 3,675,371.

Marsan, Mario S.: *See—*
Baker, Joseph S.; Marsan, Mario S.; and Duncan, Robert C., 3,675,654.

Marsch, Karl. Machine and method for making pulley grooves or the like. 3,675,453, Cl. 72-58.000.

Marsh, Ronald W.: *See—*
Mundinger, William D.; and Marsh, Ronald W., 3,675,975.

Marshall, Robert A.; and Barach, Howard J. Filter device. 3,675,780, Cl. 210-446.000.

Marshall, Walter R., to Union Carbide Corporation. Mixing of fluid materials. 3,675,902, Cl. 259-7.000.

Martelee, Ghislain Antoine Jean-Marie, to Cockerill-Ougree-Prodicence et Esperance-Longdoz. Press assembly for compacting and binding wire coils. 3,675,568, Cl. 100-7.000.

Martin, Calvin C. Positionable clothesline support. 3,675,785, Cl. 211-119.100.

Martin, Donald L.; and Benz, Mark G., to General Electric Company. Superconductors containing flux traps. 3,676,577, Cl. 174-119.00r.

Martin, Eugene Earl: *See*—
Christie, Christopher E.; and Martin, Eugene Earl, 3,676,028.

Martin, John P.; Beninger, Darrell J.; and Lemon, John R., to Welwyn Canada Limited. Method for spiralling electrical resistors. 3,675,317, Cl. 29-620.000.

Martin, Wayne H.: *See*—
Kohan, Melvin I.; Martin, Wayne H.; and Rosenbaum, Chester K., 3,676,400.

Martin-Marietta Corporation: *See*—
Friedell, Morley V., 3,675,894.
McGrew, Jay L.; and Gille, John P., 3,675,809.

Marton, John P., to Welwyn Canada Limited. Process for the selective formation of coatings by electroless deposition. 3,676,213, Cl. 117-212.000.

Marze, Xavier, to Rhone-Poulenc S.A. Cation exchange membranes. 3,676,326, Cl. 204-296.

Marzocchi, Alfred; Benson, Gustav E.; and Leach, Robert E., to Owens-Corning Fiberglas Corporation. Tire constructions. 3,675,704, Cl. 152-361.000.

Maschinenfabrik Andritz Actiengesellschaft: *See*—
Reif, Kurt, 3,676,011.

Maserjian, Joseph; and Gatewood, John R., to United States of America, National Aeronautics and Space Administration. Thin-film temperature sensor and method of making same. 3,676,754, Cl. 317-230.000.

Mashimo, Teruo: *See*—
Shibayama, Daigoro; and Mashimo, Teruo, 3,676,074.

Mason, Ronald F., to Shell Oil Company. Alpha-olefin production. 3,676,523, Cl. 260-683.15d.

Mason, Warren Perry, to Bell Telephone Laboratories, Incorporated. Monolithic crystal filter with auxiliary filter shorting tabs. 3,676,805, Cl. 333-72.000.

Massachusetts Institute of Technology: *See*—
Kolm, Henry H., 3,676,337.
Pratt, George W., Jr., 3,676,795.

Massey, Eddie H., to Lilly, Eli, and Company. Cephalosporin salts. 3,676,434, Cl. 260-243.00c.

Massey-Ferguson Industries Limited: *See*—
Girodat, Joseph C. F., 3,675,660.

Massey-Ferguson Services NV: *See*—
Thomas, Alfred William, 3,675,497.

Masuda, Noboru; and Koba-ashi, Tunekazu, to Denki Onkyo Co., Ltd. Magnetic switching apparatus. 3,676,828, Cl. 338-32.

Matheson, Wilfrid G.: *See*—
Loughridge, Frederick A.; Matheson, Wilfrid G.; and Passmore, Edmund M., 3,676,730.

Mathews, Joseph W. Moving coil direct current reciprocating motor. 3,676,758, Cl. 318-128.000.

Matousek, Stephen, to Whitey Research Tool Co. Trunion mounting for encapsulated ball valve. 3,675,895, Cl. 251-315.000.

Matsuda, Mutsuhide: *See*—
Uchiyama, Takashi; Ito, Tadashi; and Matsuda, Mutsuhide, 3,675,547.

Matsui, Yutaka; Mise, Noritoshi; Goto, Jugo; and Yokoo, Makoto, to Takeda Chemical Industries, Ltd. Low-temperature curable blocked isocyanate compositions containing a stannoxane catalyst. 3,676,402, Cl. 260-75.0nc.

Matsumoto, Fumio; Wada, Toshiya; Yamamoto, Takaaki; Tanaka, Osamu; Takashima, Kunihide; and Takata, Toshihiko, to Nippon Steel Corporation. Process for producing single oriented silicon steel plates low in the iron loss. 3,676,227, Cl. 148-111.000.

Matsumoto, Teruo, to Epoch Company, Ltd. Educational device. 3,675,341, Cl. 35-9.00b.

Matsumoto, Zenji: *See*—
Shirai, Yoshihiro; Ichikawa, Hirohiko; Yoshida, Akira; Uchida, Naotake; Tsuji, Masaru; and Matsumoto, Zenji, 3,676,365.

Matsushita Denko Kabushiki Kaisha: *See*—
Yamada, Norio; Tanaka, Yoshimasa; Ono, Taisuke; and Ikejmima, Yoritaka, 3,675,324.

Matsushita Electric Industrial Co., Ltd.: *See*—
Kobayashi, Fukashi; Ono, Mitsuaki; and Kuroe, Akio, 3,676,612.
Sasabe, Kaoru, 3,676,862.
Taki, Hiromitsu; Hayakawa, Shigeru; and Nagase, Kaneomi, 3,676,351.

Matsushita Electric Industrial Company: *See*—
Uno, Yoshihiro, 3,676,586.

Mattel, Inc.: *See*—
de Gelder, Jacob; and Phillips, Gary E., 3,675,362.
Mills, Michael Colin, 3,675,363.
Ryan, John W.; Tomkinson, John G.; and Wieman, Paul R., 3,675,925.
Schlau, Floyd E.; Bosley, Denis V.; Crain, Philip W.; and Douglas, Raymond J., 3,675,361.
Schlossar, Edmund, 3,675,931.
Summerfield, William F., 3,675,930.

Matulis, Albert J., to United States of America, Army. Distortion-free mirror attached to a metallic holder. 3,676,274, Cl. 161-4.000.

Maure, Douglas Raymond; and Broome, Barry Glenn, to Optical Memory Systems, Inc. Optical memory apparatus. 3,676,864, Cl. 340-173.0lm.

Maurer, David Paul, to Union Carbide Corporation. Detachable container refrigeration system. 3,675,439, Cl. 62-223.000.

Maus, Fritz: *See*—
Browatzki, Kurt; Gref, Hans; Herzhoff, Peter; Maus, Fritz; Platz, Stephan; Schaum, Gustav; Schweicher, Wolfgang; and Wasser, Willi, 3,676,178.

Mauthe, Gerhard, to Aktiengesellschaft Brown, Boveri & Cie. Gas blast power circuit breaker for high operating currents. 3,676,624, Cl. 200-148.00b.

Mauvernay, Roland Yves; Busch, Norbert; Simond, Jacques; and Moleyre, Jacques, to Centre Europeen de Recherches Mauvernay C.E.R.M. 3-Alkoxy- or-3-aryloxy-2-(diaryl-hydroxy)-methyl-propylamines. 3,676,496, Cl. 260-570.00r.

Mayer, George L., Jr.; and Dobbins, David L., to Coded Signatures, Inc. Data encoding and decoding apparatus and method. 3,676,000, Cl. 355-52.000.

Mayer, Kurt, to Montanwerke Walter GmbH. Adjustable tool holder for releasable milling cutter bits for use in replaceable-bit milling cutter head-type milling machine. 3,675,290, Cl. 29-96.000.

Mayline Company, Inc.: *See*—
Kritske, Victor J., 3,675,594.

Mayo, Kenneth E.; and Parker, Eugene K., to Sanders Nuclear Corporation. Self-compensating thermal insulation garments. 3,675,244, Cl. 2-2.10r.

Mayr, Helmut; Pelte, Richard; Hubert, Theo; and Strasser, Helmut, to Agfa-Gevaert Aktiengesellschaft. On-off motor control push button switch for photographic apparatus. 3,676,759, Cl. 318-446.000.

Mazza, Joseph Peter. Removal of titanium from monazite ores. 3,676,081, Cl. 23-327.000.

Mc Gibbon, Graeme: *See*—
Sharples, Allan; Rostron, Arthur John; and Mc Gibbon, Graeme, 3,676,688.

Mc Leod, Melvin Elliott; Deutschman, John Edward; Percival, Herbert Warren; and Spoel, Han, to Alcan Research and Development Limited. Recovery of metal from dross. 3,676,105, Cl. 75-68.00r.

Mc Millin, John V.; and Miller, D. Larry, to Westinghouse Learning Corporation. Reflected light document reading head. 3,676,690, Cl. 250-219.00d.

McBride, Richard T., to Du Pont de Nemours, E. I., and Company. Laminar structures of polyimide and fluorocarbon polymers. 3,676,566, Cl. 174-36.000.

McClelland, Etheride R.: *See*—
Meissner, Konrad E.; and McClelland, Etheride R., 3,675,695.

McCombs, Frank P.: *See*—
Flautt, Martin C.; Moran, Leland G.; and McCombs, Frank P., 3,676,287.

McCullough, Stuart, to Textron Inc. Two position tool holder. 3,675,519, Cl. 82-36.00a.

McCurrich, Laurence Henry: *See*—
Browne, Roger Drury; McCurrich, Laurence Henry; Parkinson, John David; and Heffer, Edward Charles, 3,675,474.

McDaniel, George H., to Bendix Corporation, The. Rapid retract for thread cutting. 3,676,651, Cl. 235-151.110.

McDaniel, George H., to Bendix Corporation, The. Feedrate control system. 3,676,760, Cl. 318-571.000.

McDaniel, Raymond C.: *See*—
Libby, Charles C.; and McDaniel, Raymond C., 3,676,720.

McDonnell Douglas Corporation: *See*—
Dawson, James A., 3,675,949.

McGarrity, William F., to National Steel Corporation. Low carbon high yield strength alloy steel. 3,676,108, Cl. 75-123.00b.

McGlothlin, Bruce B.: *See*—
Goins, William C., Jr.; and McGlothlin, Bruce B., 3,675,717.

McGraw-Edison Company: *See*—
Happe, Raynold, 3,676,627.

McGrew, Jay L.; and Gille, John P., to Martin-Marietta Corporation. Capillary insulation. 3,675,809, Cl. 220-9.0lg.

McGroarty, Bryan M., 1/2% to Green, Wesley R. Method for water-proofing structures. 3,676,198, Cl. 117-105.500.

McGrogan, Ellwood Patrick, Jr., to RCA Corporation. Comparator circuit. 3,676,702, Cl. 307-235.000.

McGusty, Elizabeth R.; Sutton, Blaine M.; and Walz, Donald T., to Smith, Kline & French Laboratories, Inc. Anti-arthritic compositions comprising phosphine or phosphite gold halide complexes and methods of producing anti-arthritic activity. 3,676,554, Cl. 424-198.000.

McHugh, John; and Fowler, Gerald. Vehicle body heating and ventilating. 3,675,566, Cl. 98-2.070.

McInnis, George L. Flag storage and display device. 3,675,616, Cl. 116-173.000.

McKee, Horace L., to Mobil Oil Corporation. Process and system for control of fluids in water disposal surge tanks. 3,675,771, Cl. 210-83.000.

McKelvey, Ralph E., to Timken Company, The. Roller bearings. 3,675,978, Cl. 308-214.000.

McKendrick, Lorne J. Hoist and balancing apparatus. 3,675,899, Cl. 254-168.000.

McKinney, Paul W., to Fawcett Printing Corporation, The. Apparatus for producing trimmed printing face plates. 3,676,040, Cl. 425-470.000.

McKinnon, Benjamin I., to Equipment Sales Company, Inc. Hose holder and coupling inserter machine. 3,675,303, Cl. 29-237.000.

McLaughlin, Alexander; and Rose, James S., to Upjohn Company, The. Low friability polyisocyanurate foams. 3,676,380, Cl. 260-2.50aw.

McLeod, Garth M.; Copeland, Clinton R.; and Rieger, Gilbert N., to Westinghouse Electric Corporation. Method for providing mounting brackets on a cathode ray tube integral with the implosion protection system of the cathode ray tube. 3,675,287, Cl. 29-25.130.

McLeod, Richard K., to Monsanto Company. Process for alkylation of aromatic compounds. 3,676,515, Cl. 260-671.000.

McMahon, Donald H., to Sperry Rand Corporation. Cooling system for lasing media. 3,676,798, Cl. 331-94.500.

McNeil Corporation: *See*—
Boylan, Joseph S., 3,675,849.

McPherson, Taylor L. Throat swab holder. 3,675,652, Cl. 128-269.000.

McQuary, Kenneth L.; Karlin, George H.; and Lane, Bert, said McQuary assor to said Karlin and said Lane. Apparatus for assembly of valves and insertion into inflatable articles. 3,675,301, Cl. 29-208.00b.

Meade, Reginald E., to Pillsbury Company, The. Dust collecting process. 3,675,393, Cl. 55-96.000.

Mears, James W., to Grinnell Corporation. Adjustable drop nipple for pendent sprinkler. 3,675,952, Cl. 285-302.000.

Meckel, Benjamin B.; and Lebduska, Robert L. Large diameter ion beam apparatus with an apertured plate electrode to maintain uniform flux density across the beam. 3,676,672, Cl. 250-41.9ae.

Meditron, Inc.: *See*—
Fennell, John Richard; and Harvey, Robert J., 3,676,149.

Medlin, Roger E.: *See*—
Adams, Rodney V.; and Medlin, Roger E., 3,676,875.

Medvecky, Bartholomew P.; Oberai, Avtar S.; and Platt, Alan, to International Business Machines Corporation. Method for producing high performance semiconductor device. 3,676,231, Cl. 148-188.000.

Medvetskaya, Galina Arkadievna: *See*—
Strelets, Khaim Lipovich; Chesnokov, Alexandr Sergeevich; Devyatkin, Vladimir Nikolaevich; Tatakin, Alexandr Nikolaevich; Krasikov, Evsei Dmitrievich; Leonova, Ljudmila Sergeevna; Medvetskaya, Galina Arkadievna; and Nechaeva, Tatyana Georgievna, 3,676,323.

Meidert, Helmut: *See*—
Krekeler, Hans; Meidert, Helmut; Riemenschneider, Wilhelm; and Hornig, Lothar Heinz, 3,676,508.

Meier, Otto: *See*—
Scheidweiler, Andreas; and Meier, Otto, 3,676,680.

Meinhardt, James R., to Seng Company, The. Chair control assembly. 3,675,887, Cl. 248-378.000.

Meissner, Konrad E.; and McClelland, Etheride R., to Filper Corporation. Drupe pitter. 3,675,695, Cl. 146-28.00a.

Mello, Frank A. Automatic vehicle washing apparatus with brush for cleaning the vehicle sides. 3,675,262, Cl. 15-4.000.

Mellow, Dale F.: *See*—
Dehm, Henry C.; and Mellow, Dale F., 3,676,533.

Melnick, Igor: *See*—
Lazzari, Jean-Pierre; and Melnick, Igor, 3,676,869.

Melsek, Norbert J., to Signode Corporation. Palletized load. 3,675,765, Cl. 206-46.0fn.

Melvin, William J., to Collins Radio Company. Digitalized filter. 3,676,654, Cl. 235-152.000.

Menelly, Richard A., to Sylvania Electric Products, Inc. Arc Discharge lamp having a thin continuous film of indium oxide on the inner surface thereof. 3,676,729, Cl. 313-109.000.

Mercier, Jacques H.; Copine, Fernand; and Corbellini, Carlo, said Copine and said Corbellini assors. to Olaer Patent Company. Pressure vessel. 3,675,684, Cl. 138-30.000.

Mercier, Jacques H. Valve including resilient seat washer with abutting rigid annular washer. 3,675,896, Cl. 251-321.000.

Merck & Co., Inc.: *See*—
Hinkley, David F.; and Ellsworth, Robert L., 3,676,482.
Macartney, Carl H.; and Bawduniak, Joseph A., 3,675,469.
Pines, Seemon H.; and Sletzinger, Meyer, 3,676,453.
Sarett, Lewis H.; and Ruyle, William V., 3,676,451.
Shen, Tsung-Ying; and Boswell, Kay H., 3,676,422.
Sletzinger, Meyer; Karady, Sandor; Ly, Manuel G.; and Pines, Seemon H., 3,676,480.

Merfeld, Michael J.; and Truesdell, Merlyn R., to Century Engineering Corporation. High pressure washer with detergent on-off nozzle. 3,675,851, Cl. 239-318.000.

Merkenich, Karl: *See*—
Grimm, Dieter; Kandler, Joachim; Merkenich, Karl; and Pirig, Wolf-Dieter, 3,676,352.

Merkenschlager, Hans-Hermann, to Siemens Aktiengesellschaft. Process for the production of a circuit board. 3,675,318, Cl. 29-624.000.

Merrill, La Vaun S., Jr.; and Schilson, Robert E., to Marathon Oil Company. Process for the production of synthesis gas, cracked hydrocarbon and calcined coke. 3,676,517, Cl. 260-679.00r.

Merrin, Seymour, to Innotech Corporation. Insulated gate field effect device having glass gate insulator. 3,676,756, Cl. 317-235.000.

Mersfelder, Philip G. Compression device. 3,675,570, Cl. 100-90.000.

Metalem S.A.: *See*—
Feller, Gilbert, 3,675,295.

Metallic Building Company: *See*—
Chan, Charles S., 3,675,385.

Metreaud, Claude G., to International Business Machines Corporation. Semiconductor processing apparatus. 3,675,563, Cl. 95-89.00r.

Meyer, Byron W.; and Wright, William F., to Pillsbury Company, The. Extrusion control apparatus. 3,676,032, Cl. 425-140.000.

Meyer, Donald R.: *See*—
Arel, Robert W.; and Meyer, Donald R., 3,675,321.

Meyer, Harold E.: *See*—
White, Kenneth N.; and Meyer, Harold E., 3,676,272.

Meyer, James A.: *See*—
Rejsa, Jack J.; and Meyer, James A., 3,675,567.

Meyer, John Evert, to RCA Corporation. Logic circuits employing switches such as field-effect devices. 3,676,705, Cl. 307-251.000.

Meyer, Louis C. Fluid-powered applicator for medicaments. 3,675,651, Cl. 128-215.000.

Meyer, Ronald J.; Horsley, Orville E.; and Eichel, Herman J., to American Hoechst Corporation. Laxatives comprising substituted bis (2-hydroxy-4-methyl-5-methylthiophenyl)methanes. 3,676,559, Cl. 424-275.000.

Meyers, Walter A., Sr., to Sports Equipment, Inc. Basketball training device. 3,675,921, Cl. 273-1.50a.

Miale, Joseph N., to Mobil Oil Corporation. Manganese silicate-containing minerals in the form of nodules and their use in hydrocarbon conversion. 3,676,369, Cl. 252-454.000.

Micalief, Lewis A., to Leeds and Micallef. Safety closure assembly. 3,675,804, Cl. 215-9.000.

Miceli, Vincent J.: *See*—
Mackey, E. Scudder; and Miceli, Vincent J., 3,676,209.

Michaelis, Paul Charles, to Bell Telephone Laboratories, Incorporated. Micromanipulator for multilevel assembly. 3,675,298, Cl. 29-203.00v.

Michaelis, Werner. Photographic developing apparatus. 3,675,564, Cl. 95-90.000.

Michel Lumber Company: *See*—
Jones, Allen J., 3,675,600.

Michelsen, Arve: *See*—
Bailey, Robert A.; and Michelsen, Arve, 3,675,575.

Michelson, Gunnar P. Razor edge safety guard apparatus. 3,675,325, Cl. 30-90.000.

Middleton, Henry Edward: *See*—
Palfreyman, Jack; and Middleton, Henry Edward, 3,675,294.

Miller, Cole R.: *See*—
O'Brien, Dennis M.; and Miller, Cole R., 3,676,336.

Miller, D. Larry: *See*—
Mc Millin, John V.; and Miller, D. Larry, 3,676,690.

Miller, Howard B.; and Sieet, George E., to United States of America, National Aeronautics and Space Administration. Spherical measurement device. 3,675,332, Cl. 33-1.0aa.

Miller, Jack V. Self-erecting tent. 3,675,667, Cl. 135-1.00r.

Miller, Larry R., to Hughes Aircraft Company. Vector half-angle computer. 3,676,660, Cl. 235-186.000.

Miller, Lee A.; and Zellmer, Richard C. Advertising sign for revolving drum. 3,675,353, Cl. 40-51.000.

Miller, Martin P., to General Automotive Specialty Company, Inc. Switch having spider-shaped contact carrier. 3,676,617, Cl. 200-44.000.

Miller, Richard C.: *See*—
Roberts, Melvin L.; Johnson, Carl E.; and Miller, Richard C., 3,676,356.

Miller, Timothy A.; and Hanselman, Larry R., to Ralston Purina Company. Animal litter. 3,675,625, Cl. 119-1.000.

Millis, Hugh L., Jr.; and Hoskinson, Eugene A., to Intertek Controls, Inc. Electronic linear measuring device. 3,676,652, Cl. 235-151.320.

Mills, K. Louis, Jr.: *See*—
Vanderveen, John W.; Cheng, Paul J.; Mills, K. Louis, Jr.; Venable, Charles R., Jr.; and Johnson, Paul H., 3,676,070.

Mills, King L., to Phillips Petroleum Company. Composite carbon electrode structure having improved electrical conductivity. 3,676,324, Cl. 204-284.000.

Mills, Michael Colin, to Mattel, Inc. Foldable toys. 3,675,363, Cl. 46-15.000.

Min, Sherman L., to United States of America, Navy. Pressure actuated safety and arming device. 3,675,579, Cl. 102-70.200.

Mine Safety Appliances Company: *See*—
Wise, Layton A., 3,675,296.

Minnesota Mining and Manufacturing Company: *See*—
Jensen, Robert A.; and Johnson, Orville M., 3,676,266.
Johansson, Ronald C.; and Weeklund, Wayne Donald, 3,676,574.
Lindlof, James A., 3,676,387.
Truskolaski, Bernard S., 3,676,277.

Minolta Camera Kabushiki Kaisha: *See*—
Kuramoto, Yoshio; and Inagaki, Shotaro, 3,675,558.
Mori, Masao, 3,675,555.

Mintz, Milton S.: *See*—
Lacey, Robert E.; and Mintz, Milton S., 3,676,335.

Mise, Noritoshi: *See*—
Matsui, Yutaka; Mise, Noritoshi; Goto, Jugo; and Yokoo, Makoto, 3,676,402.

Misevich, Kenneth W., to Remington Arms Company, Inc. Sheet target with attachable stabilizing wings. 3,675,926, Cl. 273-105.400.

Mishler, Ralph Ephraim, to Globe-Union Inc. Production of resistive coatings. 3,676,212, Cl. 117-212.000.

Mitchell, Chauncey L., III, to Electronic Assistance Corporation. Method and apparatus for separating particulate materials. 3,675,859, Cl. 241-20.000.

Mitchell, Edward B., to TRW Inc., mesne. Pushbutton switch with liquid drainage facilitating cage body and diaphragm sealing and actuating means. 3,676,626, Cl. 200-159.00r.

Mito, Satoru; Shimotori, Kazumi; Kawai, Mituo; and Kawaguchi, Kanzi, to Tokyo Shibaura Electric Co., Ltd. Chromium base alloys having excellent corrosion resistance and workability. 3,676,110, Cl. 75-134.000.

Mitrofanoff, Nicholas S.: *See—*
Abernathy, Roger E.; and Mitrofanoff, Nicholas S., 3,676,852.

Mitsubishi Acetate Company Limited: *See—*
Tokitomo, Soichi; Honda, Masakazu; Nakayama, Fumio; and Ueno, Keisiro, 3,675,541.

Mitsubishi Jukogyo Kabushiki Kaisha: *See—*
Takezawa, Isoe; Muto, Masataro; and Hori, Koichi, 3,675,606.

Mitsubishi Petrochemical Co., Ltd.: *See—*
Tashiro, Kijuro; and Yokoyama, Masuzo, 3,676,418.

Mitsubishi Rayon Company Limited: *See—*
Tokitomo, Soichi; Honda, Masakazu; Nakayama, Fumio; and Ueno, Keisiro, 3,675,541.

Mitsui Toatsu Chemicals, Incorporated: *See—*
Miyake, Yasuhiko; Takayanagi, Eifu; Narita, Shigeo; Shin, Masaaki; Hayashi, Roshio; and Sakurai, Koichi, 3,676,053.

Mittan Company Limited: *See—*
Kobayashi, Tetsuo, 3,676,877.

Miyachi, Kiyoichi; Hashino, Shinsuke; and Hongu, Tomokazu, to Hiroshima Kasei, Ltd. Sandal. 3,675,346, Cl. 36-11.500.

Miyake, Akihisa: *See—*
Takahashi, Kuniyuki; Hata, Go; and Miyake, Akihisa, 3,676,470.

Miyake, Yasuhiko; Takayanagi, Eifu; Narita, Shigeo; Shin, Masaaki; Hayashi, Roshio; and Sakurai, Koichi, to Mitsui Toatsu Chemicals, Incorporated. Method of modifying fibrous materials. 3,676,053, Cl. 8-116.000.

Mizuki, Eiichi; Oishi, Yasushi; and Sawahara, Masao, to Fuji Photo Film Co., Ltd. Color photographic light-sensitive element containing magenta coupler and alkyl phosphate solvent. 3,676,137, Cl. 96-56.500.

Mizuno, Komei: *See—*
Yamamoto, Hiroichi; Suzuki Takashi; Higashide, Eiji; Fugono, Takeshi; and Mizuno, Komei, 3,676,300.

Mobil Oil Corporation: *See—*
Fisher, Robert E., 3,676,539.
Frangatos, Gerassimos, 3,676,347.
McKee, Horace L., 3,675,771.
Miale, Joseph N., 3,676,369.
Plank, Charles J.; and Rosinski, Edward J., 3,676,330.

Mobus, Gunter, to Vaillant, Joh., KG. Gas burner control apparatus for operating a piezoelectric ignition system in conjunction with the gas valves. 3,676,041, Cl. 431-47.000.

Moczar, Elemer: *See—*
Moczar, Madeleine Csanadi; Moczar, Elemer; and Payrau, Paul Bertrand, 3,676,298.

Moczar, Madeleine Csanadi; Moczar, Elemer; and Payrau, Paul Bertrand, to Etablissements Public: Agence Nationale de Valorisation de la Recherche (ANVAR). Process for the treatment of organs to be used as grafts, notably animal or human corneas. 3,676,298, Cl. 195-1.700.

Moden, James R., to AMH Corporation. Piped buttonhole construction. 3,675,279, Cl. 24-202.000.

Modern Engineering Company, Inc.: *See—*
Lamping, Robert F., 3,675,678.

Modern Industries, Incorporated: *See—*
Schneider, Franklin R.; and Lanphear, Jerry D., 3,676,694.

Modes, Edward E. Adjustable pressure responsive transducer. 3,676,620, Cl. 200-83.00a.

Moeller & Neumann GmbH: *See—*
Neumann, Klaus, 3,675,909.

Moffitt, Jerry T.: *See—*
Slagg, James E.; Nelson, Grant W.; Moffitt, Jerry T.; and Balint, Joseph A., 3,676,822.

Moleyre, Jacques: *See—*
Mauversay, Roland Yves; Busch, Norbert; Simond, Jacques; and Moleyre, Jacques, 3,676,496.

Molly, Hans. Crescent machine. 3,676,027, Cl. 418-71.000.

Molof, Alan H.: *See—*
Zuckerman, Mathew M.; and Molof, Alan H., 3,676,334.

Momm, Anneliese Geb. Koziolek: *See—*
Dobbelstein, Arnold; Hille, Hans-Dieter; and Momm, Anneliese Geb. Koziolek, 3,676,403.

Monogram Industries, Inc.: *See—*
Roberts, George C.; and Dotson, Donald A., 3,675,774.

Monsanto Company: *See—*
Burd, John W., 3,675,619.
Gruber, Bernard A., 3,676,293.
Hulstein, Calvin, 3,676,039.
Kim, Doug W., 3,676,244.
McLeod, Richard K., 3,676,515.

Monsanto Research Corporation: *See—*
Deibert, Max C., 3,676,222.

Montanwerke Walter GmbH: *See—*
Mayer, Kurt, 3,675,290.

Montecatini Edison S.p.A.: *See—*
Bodetti, Gianfranco, 3,676,060.
Garilli, Francesco; and Marino, Michelangelo, 3,675,489.
Severini, Febo; Valvassori, Alberto; and Tavazzani, Carlo, 3,676,528.

Moog Industries, Inc.: *See—*
Scheublein, William A., Jr.; and Fister, Louis P., 3,675,941.

Moor, Herman L., to Braner Engineering, Inc. Rod coil press. 3,675,569, Cl. 100-700.000.

Moore, Peter N.; and Pierce, Leo F. Splash guard for trucks. 3,675,943, Cl. 280-154.50r.

Moran, Leland G.: *See—*
Flautt, Martin C.; Moran, Leland G.; and McCombs, Frank P., 3,676,287.

Morane, Bruno; Paoletti, Charles; and Terrasse, Gilles, to L'Oreal. Apparatus for dispensing two fluids simultaneously. 3,675,821, Cl. 222-80.000.

Morane, Bruno P., to L'Oreal. Self cleaning valve. 3,675,825, Cl. 222-148.000.

Moreau, Andre Jules Pierre, to Societe: Etablissements Davey Bickford Smith & Cie and Societe Anonyme Francaise. Explosive device. 3,675,574, Cl. 102-24.000.

Moreau, Wayne M.; and Rottmann, Hans R., to International Business Machines Corporation. Optical mask with integral spacers and method of making. 3,676,002, Cl. 355-133.000.

Morehouse Industries, Inc., mesne: *See—*
Brown, Donald J., 3,675,674.

Moreland, Billy Ray: *See—*
Seale, Virgil L.; Moreland, Billy Ray; and De Shazo, James Derwin, 3,676,501.

Morgan Construction Company: *See—*
Sieurin, Donald, 3,675,456.

Morgan, Johnson T. Cover for waste container. 3,675,813, Cl. 220-36.000.

Morgan, Peter E. D., to Research Corporation. Pressure calcintering. 3,676,079, Cl. 23-345.000.

Mori, Masao, to Minolta Camera Kabushiki Kaisha. Film locking device in camera. 3,675,555, Cl. 95-31.0fm.

Mori, Yoshibumi, to Nippon Telegraph and Telephone Public Corporation. Satellite communication system. 3,676,778, Cl. 325-4.000.

Morin, Louis F., to Everflex Products, Inc. Coupler for reinforced hose. 3,675,951, Cl. 285-39.000.

Morinaga, Akira: *See—*
Akaiki, Seiji; and Morinaga, Akira, 3,676,024.

Morinaga, Kenzo: *See—*
Nakajima, Junichi; Araki, Kazumi; and Morinaga, Kenzo, 3,676,301.

Morita, Akiyoshi; and Itoh, Yukio, to Victor Company of Japan, Ltd. Jitter correction system. 3,676,583, Cl. 178-6.6tc.

Morrey, Walter T., to Bendix Corporation, The. Source independent power supply. 3,676,768, Cl. 323-22.00t.

Morris, Andrew W.; and Norman, Reginald J., to Australian Paper Manufacturers Limited. Corrugating paperboard. 3,676,247, Cl. 156-205.000.

Morris, Carrol V.: *See—*
Davidson, Kenneth H.; and Morris, Carrol V., 3,675,721.

Morris, Herbert C.; and Dorn, Peter, to Texaco Inc. Motor fuel composition. 3,676,089, Cl. 44-62.000.

Morris, Philip, Incorporated: *See—*
Braginetz, Paul A., 3,675,323.

Mortl, Gunther Lorenz, to Oesterreichisch-Amerikanische Magnesit A.G. Refractory, fired magnesia brick. 3,676,163, Cl. 106-58.000.

Morton-Norwich Products, Inc.: *See—*
Heskett, Don E.; Hoover, Frank Kryder; and Burkhalter, Robert, Jr., 3,675,777.

Moseley, Royston L.; and Knowles, Peter M., to Henry Beakbane (FORTOX) Limited. Corrugated covers. 3,676,286, Cl. 161-109.000.

Moser, Billy G.: *See—*
Paine, T. O., Administrator of the National; Aeronautics and Space Administration with respect; to an invention of; Moser, Billy G.; and Landel, Robert F., 3,675,712.

Mosier, Benjamin. Production of weighted microcapsular materials. 3,676,363, Cl. 252-316.000.

Moss, Charles W., to Tension Structures Inc. Prefabricated dome-type shelter. 3,675,380, Cl. 52-80.000.

Moss, Herbert Irwin; and Hockings, Eric Francis, to RCA Corporation. Magnetic head with modified grain boundaries. 3,676,610, Cl. 179-100.2.

Motorola, Inc.: *See—*
Buchanan, John K., 3,676,700.
Musa, Fuad H., 3,676,801.
Schafft, Hugo W., 3,676,722.
Schendel, Donald D., Jr., 3,676,712.

Mott, George R.; and Van Wagner, Edward M., to Xerox Corporation. Reflex xerographic imaging system. 3,676,118, Cl. 96-1.500.

Mottinger, Archie. Concrete breaker. 3,675,973, Cl. 299-88.000.

Mouquin, Paul-Louis, to Valjoux S.A. Time-piece with a calendar indicator and chronograph mechanism. 3,675,412, Cl. 58-58.000.

Mowrey, Rowland G., to Eastman Kodak Company. Photographic stabilizer compositions. 3,676,136, Cl. 96-56.000.

Moyer, James D., to North American Rockwell Corporation. Pattern mechanism for circular knitting machines. 3,675,445, Cl. 66-50.00b.

Moyroud, Louis M. Photographic type-composing. 3,675,560, Cl. 95-4.50r.

Mueller, Kurt Hugo, to Bell Telephone Laboratories, Incorporated. Initialization of adaptive control systems. 3,676,804, Cl. 333-18.000.

Mueller, Otto. Safety mechanism for pressure gauge. 3,675,487, Cl. 73-414.000.

Muhler, Joseph C., to Indiana University Foundation. Anticariogenic dental amalgam. 3,676,112, Cl. 75-173.00r.

Mulcahy, Harry W.; and Russell, Thomas B., to AMSTED Industries Incorporated. Dipper tooth assembly. 3,675,350, Cl. 37-142.00a.

Mulgueen, John J.; and Schoettly, Edward, to Vishay Intertechnology, Inc. Gear-driven trimming potentiometer. 3,676,824, Cl. 338-162.000.

Muller, Georges; and Bardoneschi, Roland, to Roussel-UCLAF. 1-Oxa-A-nor-steroids. 3,676,461, Cl. 260-343.300.

Muller, Hermann: *See—*
Wilsch, Herbert; and Muller, Hermann, 3,675,996.

Muller, Marcel: *See—*
Furst, Andor; Muller, Peter; Muller, Marcel; and Kagi, Dieter, 3,676,467.

Muller, Peter: *See—*
Furst, Andor; Muller, Peter; Muller, Marcel; and Kagi, Dieter, 3,676,467.

Muller, Roman, to Gebruder Buhler AG. Grain cleaning machine. 3,675,697, Cl. 146-253.000.

Munder, Johannes: *See—*
Scheler, Siegfried; and Munder, Johannes, 3,676,132.

Mundinger, William D.; and Marsh, Ronald W., to Pullman Incorporated. Pneumatic discharge arrangement for hoppers. 3,675,975, Cl. 302-52.000.

Munro, Bradley L.: *See—*
Haskell, Donald M.; and Munro, Bradley L., 3,676,516.

Munschauer, Frederick E., Jr.; and Trautman, George H., Jr., to Niagara Machine & Tool Works. Shiftable press brake die. 3,675,463, Cl. 72-448.000.

Murata, Eiji; and Ito, Kohuku, to Honeywell Inc. Diaphragm. 3,675,540, Cl. 92-98.000.

Muratani, Takuro; Ogawa, Akira; and Nosaka, Kunishi, to Kokusai Denshin Denwa Kabushiki Kaisha. Demodulation apparatus for a time-divisional multiplex phase-shift keyed signal of burst mode. 3,676,593, Cl. 178-66.00a.

Murphree, Francis J.; and Catano, Paul S., to United States of America, Navy. Submarine propeller cavitation noise simulator. 3,676,802, Cl. 332-9.00r.

Murray, Gregory J.; and Tarrant, Fred K., to Tarrant Manufacturing Company. Vacuum type debris collector with scraper blade. 3,675,266, Cl. 15-340.000.

Murray Machinery, Inc.: *See—*
Lemke, Donald L.; and Ostrander, Ronald D., 3,675,866.

Murray, Robert W.; and Story, Paul R., to Bell Telephone Laboratories, Incorporated. Antiozonant rubber compositions. 3,676,394, Cl. 260-45.90r.

Murthy, Yelahanka K. S.: *See—*
Thiemann, Josef; Murthy, Yelahanka K. S.; and Coronelli, Carolina, 3,676,490.

Musa, Fuad H., to Motorola, Inc. Stabilized complementary micropower square wave oscillator. 3,676,801, Cl. 331-116.00r.

Musliner, Walter J., to Eastman Kodak Company. Process for forming dye images. 3,676,135, Cl. 96-54.000.

Muto, Masataro: *See—*
Takezawa, Isoe; Muto, Masataro; and Hori, Koichi, 3,675,606.

Myer, Clifford E., to Xercon, Inc., mesne. Light-responsive switching circuit. 3,676,685, Cl. 250-206.000.

Myers, Lawrence A., to Chore-Time Equipment, Inc. Poultry waterer. 3,675,627, Cl. 119-72.000.

Myreen, Bertel, to Paraisten Kalkki Oy. Method and device for measuring the temperature of material in a rotatory furnace. 3,675,467, Cl. 73-351.000.

Nagao, Kameji: *See—*
Hara, Hikoharu; Oishi, Yasushi; and Nagao, Kameji, 3,676,141.

Nagase, Kaneomi: *See—*
Taki, Hiromitsu; Hayakawa, Shigeru; and Nagase, Kaneomi, 3,676,351.

Nagy, Ernest J.; and Shaver, William R., to Pullman Incorporated. Chain actuated railway hopper gate. 3,675,591, Cl. 105-253.000.

Naiman, Charles S.; and Pompian, Stuart D., to Sanders Associates, Inc. Laser radar system. 3,676,003, Cl. 356-5.000.

Nakajima, Hayato: *See—*
Takehisa, Masaaki; Senrui, Shiro; and Nakajima, Hayato, 3,676,419.

Nakajima, Junichi; Araki, Kazumi; and Morinaga, Kenzo, to Kyowa Hakko Kogyo Kabushiki Kaisha. Process for preparing L-histidine. 3,676,301, Cl. 195-29.000.

Nakajima, Rokuro: *See—*
Tabata, Hisanobu; Tabata, Norimasa; and Nakajima, Rokuro, 3,676,067.

Nakajima, Yasuo, to Nissan Motor Company Limited. Intake manifold vacuum control system. 3,675,632, Cl. 123-97.00b.

Nakajima, Yasuo; and Hayashi, Yoshimasa, to Nissan Motor Company, Limited. Air-pollution preventive system for motor vehicles. 3,675,633, Cl. 123-119.00a.

Nakamura, Matsuaki: *See—*
Akashi, Goro; Suzuki, Osamu; and Nakamura, Matsuaki, 3,676,217.

Nakamura, Totaro: *See—*
Kaneko, Ryuichi; Saito, Toshiya; Fujimura, Yasushi; Tanimura, Hiroshi; Nakamura, Totaro; and Ikeda, Yukisaburo, 3,676,585.

Nakanishi, Susumu: *See—*
O'Shea, Daniel P.; and Nakanishi, Susumu, 3,676,427.

Nakayama, Fumio: *See—*
Tokitomo, Soichi; Honda, Masakazu; Nakayama, Fumio; and Ueno, Keisiro, 3,675,541.

Nalco Chemical Company: *See—*
Elo, Arpad, Jr.; and Broersma, Frank R., 3,676,063.
Roberts, Melvin L.; Johnson, Carl E.; and Miller, Richard C., 3,676,356.
Seale, Virgil L.; Moreland, Billy Ray; and De Shazo, James Derwin, 3,676,501.

Napolitano, Michael: *See—*
Bilinski, Donald J.; Galowin, Lawrence S.; and Napolitano, Michael, 3,675,711.

Nappe, William D., to Crane Packing Company. Seal with installed spare parts. 3,675,933, Cl. 277-9.000.

Narda Microwave Corporation, The: *See—*
Hausner, Jerry, 3,676,751.

Narita, Shigeo: *See—*
Miyake, Yasuhiko; Takayanagi, Eifu; Narita, Shigeo; Shin, Masaaki; Hayashi, Roshio; and Sakurai, Koichi, 3,676,053.

Nash, Donald H.; Nenninger, Theodore P.; and Prescott, Robert E., to Bell Telephone Laboratories, Incorporated. Pushbutton telephone dial. 3,676,607, Cl. 179-90.00k.

Nass, Louis, to Societe Anonyme dite Ameco S.A. Gantry scraper conveyor. 3,675,756, Cl. 198-36.000.

National Biscuit Company: *See—*
Griner, Arthur J.; and Ryder, George, 3,675,792.

National Cash Register Company, The: *See—*
Lockwood, George C., 3,676,717.

National Research Development Corporation: *See—*
Bickerdike, Robert Lewis; and Hughes, Garyth, 3,676,160.
Hare, George Anthony; and Smith, Alan Ernest William, 3,676,115.
Kay, Leslie; Maginness, Maxwell Glynn; and Cook, Graham Bramwell, 3,675,472.
Lindsey, Alan Sidney; and Hunt, Sydney Edwin, 3,676,399.
Simpson, David Cumming, 3,675,962.

National Steel Corporation: *See—*
McGarrity, William F., 3,676,108.

Neal, John M. Automatic raker. 3,675,543, Cl. 94-39.000.

Nechaeva, Tatyana Georgievna: *See—*
Strelets, Khaim Lipovich; Chesnokov, Alexandr Sergeevich; Devyatkin, Vladimir Nikolaevich; Tatalkin, Alexandr Nikolaevich; Krasikov, Evsei Dmitrievich; Leoncva, Ljudmila Sergeevna; Medvetskaya, Galina Arkadievna; and Nechaeva, Tatyana Georgievna, 3,676,323.

Neilson, William J., to Smith International Incorporated. Bit lubrication system. 3,675,729, Cl. 175-228.000.

Nelson, Grant W.: *See—*
Slagg, James E.; Nelson, Grant W.; Moffitt, Jerry T.; and Balint, Joseph A., 3,676,822.

Nelson, John Richard: *See—*
Flanagan, James Loton; Kronmeyer, James Hughes; and Nelson, John Richard, 3,675,513.

Nelson, Leonard; and Wilson, Thomas, to Custom Tool & Machine Co., Inc. Side operated drawbolt for tool-carrying spindle. 3,676,120, Cl. 90-11.00a.

Nelson, Robert C.: *See—*
Clifford, Thomas J.; and Nelson, Robert C., 3,675,860.

Nenninger, Theodore P.: *See—*
Nash, Donald H.; Nenninger, Theodore P.; and Prescott, Robert E., 3,676,607.

Nesbitt, Ethan Allen: *See—*
Bacon, Donald Dingley; Nesbitt, Ethan Allen; Sherwood, Richard Curry; and Wernick, Jack Harry, 3,676,867.

Netzer, Theodor; and Block, Hans-Jurgen, to Nitrochemie GmbH. Caseless propellant charge containing nitrocellulose in a synthetic resin. 3,676,233, Cl. 149-19.000.

Neuhouser, Donald E., to General Electric Company. Mine power system ground continuity check circuit. 3,676,739, Cl. 317-18.00c.

Neumann, Klaus, to Moeller & Neumann GmbH. Billet feed system for rolling mills. 3,675,909, Cl. 266-13.000.

Neumann, Malcolm A.; and Hunsberger, Arnold, to Cubic Corporation. Multi-level automatic storage and recovery system for aircraft. 3,675,378, Cl. 52-65.000.

Neuss, Norbert, to Lilly, Eli, and Company. Desacetylaranotin. 3,676,438, Cl. 260-243.00r.

Neutron Products, Inc.: *See—*
Ransohoff, Jackson A.; and Sarkozi, Lewis P., 3,676,675.

Neville, Raymond R.: *See—*
Collins, Neil E.; Kerber, Elwyn W.; and Neville, Raymond R., 3,676,668.

Newberry, George M.; and Wowk, Nicholas F. Liquid dispensing apparatus. 3,675,820, Cl. 222-76.000.

Newman, Albert P., to Empire Products, Inc., mesne. Multiple conductor cable connector. 3,676,837, Cl. 339-103.00r.

Newton, Victor S., to United States of America, Navy. Frequency multiplexing AGC amplifier. 3,676,792, Cl. 330-52.000.

Neyens, Wayne E.: *See—*

Gottlieb, Alvin J.; Neyens, Wayne E.; Smith, Robert T.; and Garbark, Roman F., 3,675,927.

Niagara Machine & Tool Works: *See—*
Munschauer, Frederick E., Jr.; and Trautman, George H., Jr., 3,675,463.

Nieland, Donald B. Portable goalpost. 3,675,922, Cl. 273-55.00r.

Nield, Eric, to Imperial Chemical Industries Limited. Methyl methacrylate copolymers. 3,676,404, Cl. 260-78.0ua.

Nielsen, Paul L.: *See—*
Rheineck, Alfred E.; Nielsen, Paul L.; and Khoe, Teng H., 3,676,384.

Niemann, George W.; and Shannon, Charles N., to United States of America, Navy, Digital frequency generator for coded interrogation. 3,676,780, Cl. 325-155.000.

Nikex Nehezipari Kulkereskedelmi Vallalat: *See—*
Hajduk, Jeno; and Katai, Mihaly, 3,675,852.

Nikles, Erwin, to Ciba-Geigy AG. 2-Amino-4-tertiary butylamino-1,3,5-triazines. 3,676,441, Cl. 260-249.800.

Nikles, Erwin, to Ciba-Geigy AG. Aminophenylcarbamates. 3,676,486, Cl. 260-479.00c.

Nilges, William C., to Parker-Hannifin Corporation. Automatic drain valve. 3,675,673, Cl. 137-187.000.

Nippon Concrete Industries Company, Limited: *See—*
Nishi, Seiya; Oshio, Akira; and Eto, Kiyomitsu, 3,676,541.

Nippon Electric Company, Limited: *See—*
Kaneko, Haruo; and Yano, Kaoru, 3,676,600.

Nippon Hoso-Kyokai: *See—*
Kaneko, Ryuichi; Saito, Toshiya; Fujimura, Yasushi; Tanimura, Hiroshi; Nakamura, Totaro; and Ikeda, Yukisaburo, 3,676,585.

Nippon Kogaku K.K.: *See—*
Fujii, Tatsuo; and Watano, Yutaka, 3,676,823.
Ishizaka, Sunao, 3,675,550.

Nippon Kogaku K.K.; represented by Yutaka Sugi: *See—*
Yamamoto, Tadaaki; and Kasai, Toshiyuki, 3,675,986.

Nippon Steel Corporation: *See—*
Matsumoto, Fumio; Wada, Toshiya; Yamamoto, Takaaki; Tanaka, Osamu; Takashima, Kunihide; and Takata, Toshihiko, 3,676,227.

Nippon Telegraph and Telephone Public Corporation: *See—*
Mori, Yoshibumi, 3,676,778.

Nippondenso Kabushiki Kaisha: *See—*
Wakamatsu, Hisato; Kawai, Hisasi; Ito, Shin; and Kubo, Seitoku Kaisha, 3,675,511.

Nischk, Gunter: *See—*
Wolf, Gerhard D.; Blankenstein, Gunter; and Nischk, Gunter, 3,676,525.

Nishi, Seiya; Oshio, Akira; and Eto, Kiyomitsu, to Onoda Cement Company, Limited and Nippon Concrete Industries Company, Limited. Centrifugal casting method. 3,676,541, Cl. 264-234.000.

Nishibayashi, Yoshifumi: *See—*
Nishitani, Kazuo; Shiga, Yasuhiro; and Nishibayashi, Yoshifumi, 3,676,206.

Nishikawa, Yukiyasu; and Hidaka, Tsuneo, to Asahi Kogaku Kogyo Kabushiki Kaisha. Positioning apparatus for article with portion determining portion of predetermined configuration. 3,676,692, Cl. 250-231.00r.

Nishio, Fumihiki: *See—*
Amano, Hiroyuki; Nishio, Fumihiki; Tsuji, Nobuo; and Shirasu, Kazuo, 3,676,139.

Nishitani, Kazuo; Shiga, Yasuhiro; and Nishibayashi, Yoshifumi, to Tokyo Cloth Co., Ltd. Porous coated fibrous material. 3,676,206, Cl. 117-140.00a.

Nissan Motor Company Limited: *See—*
Akaiki, Seiji; and Morinaga, Akira, 3,676,024.
Maeda, Riichi, 3,675,416.
Nakajima, Yasuo, 3,675,632.
Nakajima, Yasuo; and Hayashi, Yoshimasa, 3,675,633.

Nitrochemie GmbH: *See—*
Netzer, Theodor; and Block, Hans-Jurgen, 3,676,233.

Nittan Company Limited: *See—*
Kobayashi, Akihiro, 3,676,681.
Takahashi, Naoki, 3,676,678.

Niu, Hsien Ying: *See—*
Urry, Wilbert H.; and Niu, Hsien Ying, 3,676,469.

Nix, Fred D., to Tennessee Valley Authority. Self-suspending ammonium polyphosphate suspension fertilizer. 3,676,101, Cl. 71-34.000.

Nix, Lawrence A., Jr.; and Balthis, David L., to Westinghouse Electric Corporation. Photochromic display device utilizing light valve activation. 3,676,591, Cl. 178-7.50d.

Noguchi, Hikoji. Plastic tray for eggs. 3,675,806, Cl. 217-265.000.

Noguchi, Masahiko: *See—*
Taga, Koji; and Noguchi, Masahiko, 3,676,061.
Taga, Koji; and Noguchi, Masahiko, 3,676,062.

Nolan, Frederick J.: *See—*
Lake, Donald; Perrin, Badger; and Nolan, Frederick J., 3,675,817.

Noma, Tetsuo: *See—*
Tatsutomi, Yasuo; and Noma, Tetsuo, 3,675,634.

Nomura, Yukihiko, to Alps Electric Co., Ltd. Control mechanism for adjustable electrical device including indicating means. 3,676,827, Cl. 338-183.000.

Norco, Inc.: *See—*
Lehman, Kenneth G., 3,675,531.

Nordeen, Erwin E., to Whirlpool Corporation. Vacuum cleaner. 3,675,268, Cl. 15-350.000.

Nordine, Richard, to Copystatics Manufacturing Corporation. Automatic shut-off circuit for copying machine. 3,676,691, Cl. 250-222.00r.

Nordson Corporation: *See—*
Rosen, Samuel R.; Rood, Alvin A.; and Scharf, Donald R., 3,675,732.
Rosen, Samuel R.; Rood, Alvin A.; and Scharf, Donald R., 3,676,642.

Norenburg, Johannes C.: *See—*
Crawford, Duffer B.; and Norenburg, Johannes C., 3,675,434.

Norman, Rayford M. Electrical capacitor assembly with replaceable units. 3,676,753, Cl. 317-230.000.

Norman, Reginald J.: *See—*
Morris, Andrew W.; and Norman, Reginald J., 3,676,247.

North American Rockwell Corporation: *See—*
Moyer, James D., 3,675,445.

North Dakota State University Memorial Foundation: *See—*
Rheineck, Alfred E.; Nielsen, Paul L.; and Khoe, Teng H., 3,676,384.

Northern Electric Company Limited: *See—*
Hopwood-Jones, Charles Douglas, 3,675,755.

Northrop Corporation: *See—*
Wells, Robert R., 3,675,311.

Nosaka, Kunishi: *See—*
Muratani, Takuro; Ogawa, Akira; and Nosaka, Kunishi, 3,676,593.

Nowak, Dieter: *See—*
Roepenack, Horst; Nowak, Dieter; and Ploger, Fritz, 3,676,030.

Nukem Nuklear-Chemie und- Metallurgie Gesellschaft m.b.H.: *See—*
Ploger, Fritz; and Vietzke, Horst, 3,676,075.

NUKEM, Nuklear-Chemie und-Metallurgie, G.m.b.H.: *See—*
Roepenack, Horst; Nowak, Dieter; and Ploger, Fritz, 3,676,030.

Nuscher, Edwin H.; and Slater, Jack D., to Kaiser Aluminum & Chemical Corporation. Explosive composition containing ammonium nitrate and an organic sensitizer dissolved in dimethylformamide. 3,676,235, Cl. 149-39.000.

Nuse, Richard W. Device for attaching a fish hook to a fishing line. 3,675,276, Cl. 24-130.000.

Nussbaum, Claire E.: *See—*
Aikinson, James D.; Lepley, James W.; Nussbaum, Claire E.; and Stolzfus, John E., 3,675,796.

Nustad, Per Eirik, to A/S Selvaagbygg. Railing for terraces or balconies. 3,675,368, Cl. 47-34.000.

Nutting Truck and Caster Company: *See—*
Zetterlund, Stanley L.; and Skogen, Robert O., 3,675,587.

N.V. Auco: *See—*
Laupman, Robert Ronald, 3,676,706.

N.V. Hollandse Signaalapparaten: *See—*
Huizen, Corstiaan Le Comte, 3,676,784.

N.V. Machinefabrik L te Strake: *See—*
Vermeulen, Geert Jan; and Barten, Antonius Martinus, 3,675,687.

N.V. Nederlandsche Steenkolenmijnen 'Willem-Sophia': *See—*
Widdershoven, Louis Hubertus, 3,675,509.

Nystrom, Horace A., to Schlumberger Technology Corporation. Apparatus for facilitating the descent of well tools through deviated well bores. 3,675,478, Cl. 73-152.000.

Oakes, Grant A. Method of rebuilding an oxygen lance. 3,676,634, Cl. 219-76.000.

Oberai, Avtar S.: *See—*
Medvecky, Bartholomew P.; Oberai, Avtar S.; and Platt, Alan, 3,676,231.

Obermaier, Frank E., to Eaton Corporation. Three position butterfly valve. 3,675,681, Cl. 137-625.280.

Obermark, John A., to Warner Electric Brake & Clutch Company. Two speed magnetic clutch drive. 3,675,747, Cl. 192-48.200.

Oberste-Berghaus, Gerhard, to Pintsche Bamag Aktiengesellschaft. Manufacturing highly concentrated nitric acid. 3,676,065, Cl. 23-160.000.

Obidniak, Louis. Water conditioner. 3,675,775, Cl. 210-138.000.

Oblak, John M.: *See—*
Owczarski, William A.; Oblak, John M.; and Paulonis, Daniel F., 3,676,225.

O'Brien, Dennis M.; and Miller, Cole R., to Ecodyne Corporation. Method and apparatus for water softening. 3,676,336, Cl. 210-25.000.

Occidental Petroleum Corporation: *See—*
Chemtob, Elie M.; White, William R.; and Marcote, Rolando V., 3,675,773.

Ocone, Luke Ralph, to Pennwalt Corporation. Wheel assembly with tire cooling means. 3,675,699, Cl. 152-153.000.

O'Connell, Wayne T.: *See—*
Scannell, Paul R.; La Force, Phil D.; and O'Connell, Wayne T., 3,675,425.

O'Connor, Maurice J.; and Davidson, Donald J., to Sperry Rand Corporation. Power transmission. 3,675,676, Cl. 137-501.000.

Oddsen, Gustav A.: *See—*
Oddsen, Trygve R.; Oddsen, Gustav A.; and Edelson, Leo, 3,675,597.

Oddsen, Trygve R.; Oddsen, Gustav A.; and Edelson, Leo. Table top support. 3,675,597, Cl. 108-136.000.

Oertel, Gunter: *See—*
Golitz, Hans Dietrich; Degener, Eberhart; Oertel, Gunter; Schmelzer, Hans-Georg; and Simmler, Walter, 3,676,478.

Oesterreichisch-Amerikanische Magnesit A.G.: *See—*

Mortl, Gunther Lorenz, 3,676,163.

Officine Meccaniche Santa Lucia A.S.A.: *See—*
Piattelli, Giuseppe, 3,675,868.

Ogawa, Akira: *See—*
Muratani, Takuro; Ogawa, Akira; and Nosaka, Kunishi, 3,676,593.

Ogawa, Osamu, to Fuji Heavy Industries, Ltd. Liquid transporting tank for tank cars. 3,675,670, Cl. 137-1.000.

Ohio State University, The: *See—*
Libby, Charles C.; and McDaniel, Raymond C., 3,676,720.

Ohkubo Kinji; Hayashi, Katsumi; and Sano, Kazuya, to Fuji Photo Film Co., Ltd. Photographic negative material for color diffusion transfer process. 3,676,124, Cl. 96-29.00d.

Ohno, Richard J., to Sargent & Company. Fish mouth implements. 3,675,359, Cl. 43-53.500.

Ohno, Toshihiko, to Rion Kabushiki Kaisha. Viscometer. 3,675,470, Cl. 73-59.000.

Oishi, Yasushi: *See—*
Hara, Hikoharu; Oishi, Yasushi; and Nagao, Kameji, 3,676,141.
Mizuki, Eiichi; Oishi, Yasushi; and Sawahara, Masao, 3,676,137.

Olin Corporation: *See—*
Bakoledis, Andrew G., 3,675,838.
Pryor, Michael J.; Shapiro, Stanley; Tyler, Derek E.; and Shabarack, John, 3,676,088.
Pryor, Michael J.; and Popplewell, James M., 3,676,292.
Shum, John, Jr., 3,675,417.
Speed, Sidney E., 3,676,071.
Turley, Richard J., 3,676,532.
Wieser, Peter F.; and Dore, James E., 3,676,111.

Olin Mathieson Chemical Corporation: *See—*
Dolomont, Allan A., 3,676,309.
Pryor, Michael J.; and Anthony, William H., 3,676,113.

Oliver, Kenneth L., to Sperry Rand Corporation. Control stick transducer. 3,676,818, Cl. 338-2.000.

Olivetti, Ing. C., & C., S.p.A.: *See—*
Perucca, Vincenzo, 3,675,753.

Olson, David A., to Stackpole Carbon Company. Screw actuated linear motion potentiometer. 3,676,825, Cl. 338-181.000.

Olson, Gene E.: *See—*
Knudsen, Ra-mond G.; Price, James W.; and Olson, Gene E., 3,675,516.

Olson, James R.: *See—*
Wright, John F.; and Olson, James R., 3,676,350.

Olson, Vernon. Quick disconnect clutch. 3,675,749, Cl. 192-56.00r.

Olson, Wallace A. Apparatus for assisting in the curing of concrete and heating. 3,676,641, Cl. 219-200.000.

O'Mant, Derrick Michael: *See—*
Foden, Frederick Roger; and O'Mant, Derrick Michael, 3,676,464.

Omega Louis Brandt & Frere S.A.: *See—*
Leu, Francois J.; Tosin, Peter M.; and Werner, Ernst, 3,676,696.

Ono, Mitsuaki: *See—*
Kobayashi, Fukashi; Ono, Mitsuaki; and Kuroe, Akio, 3,676,612.

Ono, Taisuke: *See—*
Yamada, Norio; Tanaka, Yoshimasa; Ono, Taisuke; and Ikejmima, Yoritaka, 3,675,324.

Onoda Cement Company, Limited: *See—*
Nishi, Seiya; Oshio, Akira; and Eto, Kiyomitsu, 3,676,541.

Onopchenko, Anatoli; Schulz, Johann G. D.; and Williamson, Roger C., to Gulf Research & Development Company. Process for preparing phenyl sulfone carboxylic acids. 3,676,488, Cl. 260-524.00r.

Oosterveld, Marinus Willem Cornelis, to LIPS N.V. Nozzle for ship's propeller with water ejection along the trailing edge of the nozzle. 3,675,424, Cl. 60-221.000.

Opderbeck, Fritz; Ploetz, Theodor; Thamm, Rudolf; and Westerhuis, Popko J., to Feldmuehle Aktiengesellschaft. Method and apparatus for feeding fibers to headbox in paper-making using an electrical field. 3,676,294, Cl. 162-192.000.

Oplinger, Donald W.: *See—*
Akers, Richard L.; and Oplinger, Donald W., 3,675,863.

Oppenheimer, Henry N.: *See—*
Goldman, David A.; and Oppenheimer, Henry N., 3,676,850.

Optical Memory Systems, Inc.: *See—*
Maure, Douglas Raymond; and Broome, Barry Glenn, 3,676,864.

Orchard, Henry J.; and Sheahan, Desmond F., to GTE Automatic Electric Laboratories, Incorporated. Polylithic crystal bandpass filter having attenuation pole frequencies in the lower stopband. 3,676,806, Cl. 333-72.000.

Ordena Trudovogo Krasnogo Znameni Ukrainsky Nauchno-Issledovatelsky Konstruktorsky Teknnologichesky Institut Sinteticheskikh Sverkhtverdykh materialov i Instrumenta Gosplana Ukrainskoi SSR: *See—*
Shulzhenko, Alexandr Alexandrovich; and Getman, Anatoly Fedorovich, 3,676,068.

Orenstein and Koppel Limited: *See—*
Luck, Dieter G., 3,675,349.

Orlovsky, Vasily Ivanovich: *See—*
Zhukovsky, Alexandr Ivanovich; Dobroskokov, Anatoly Lukich; and Orlovsky, Vasily Ivanovich, 3,675,772.

Ormand, Frederick T.; and Auger, Huey V., to Airco, Inc. Hyperbaric breathing mixture. 3,676,563, Cl. 424-366.000.

Orzechowski, John F.; and Haley, Thomas W., to Raybestos-Manhattan, Inc. Apparatus for producing yarn. 3,676,038, Cl. 425-464.000.

Osborne, Keith, to Southern California Gas Co. Heater ignition system. 3,676,042, Cl. 431-66.000.

Ose, Earl E., to Lilly, Eli and Company. Method of vaccinating swine against jowl abscess disease. 3,676,548, Cl. 424-92.000.

O'Shea, Daniel P.; and Nakanishi, Susumu, to Pfizer Inc. Process for the manufacture of the disodium salt of alpha-carboxybenzylpenicillin. 3,676,427, Cl. 260-239.100.

Oshio, Akira: *See—*
Nishi, Seiya; Oshio, Akira; and Eto, Kiyomitsu, 3,676,541.

Oshkosh Truck Corporation: *See—*
Blank, Wallace J., 3,675,508.

Osmolovsky, Jury Anatolievich; and Kizilyaev, Anatoly Serafimovich. Device for surface hardening of partis. 3,675,452, Cl. 72-53.000.

Osmundson, Bradley M. Boat hoist. 3,675,258, Cl. 9-34.000.

Oster, John, Manufacturing Co.: *See—*
Arel, Robert W.; and Meyer, Donald R., 3,675,321.

Ostrander, Ronald D.: *See—*
Lemke, Donald L.; and Ostrander, Ronald D., 3,675,866.

Otis Engineering Corporation: *See—*
Sizer, Phillip S., 3,675,720.

Otto, C., Dr., & Comp. G.m.b.H.: *See—*
Pries, Erich E. W., 3,675,797.

Owczarski, William A.; Oblak, John M.; and Paulonis, Daniel F., to United Aircraft Corporation. Thermomechanical processing of intermediate service temperature nickel-base superalloys. 3,676,225, Cl. 148-12.700.

Owens-Corning Fiberglas Corporation: *See—*
Flautt, Martin C.; Moran, Leland G.; and McCombs, Frank P., 3,676,287.
Marzocchi, Alfred; Benson, Gustav E.; and Leach, Robert E., 3,675,704.
Russell, Robert G., 3,676,094.
Schroeder, Charles F., 3,675,702.
Stalego, Joseph P., 3,676,095.

Owens-Illinois, Inc.: *See—*
Shick, Philip E., 3,676,064.

Oxford Industries, Inc.: *See—*
Frost, Wade W., 3,675,604.

Pacini, Bruno Marcio; Price, Desmond Alfred; and Parikh, Anil Chandrakant, to Imperial Chemical Industries Limited. Polyamide filaments. 3,675,408, Cl. 57-140.0by.

Packaging Associates, Inc.: *See—*
Polansky, Sidney I., 3,675,843.

Page, Geoffrey A.: *See—*
Krohn, Ivar T.; Page, Geoffrey A.; and Reinis, Gedeminas J., 3,676,116.

Page, George A.; Rathbun, Robert R.; and Kramer, Bruce E., to Aeronca, Inc. Method and apparatus for welding honeycomb core panel and the like. 3,676,635, Cl. 219-92.000.

Pagel, Armin B., to Eastman Kodak Company. Photographic apparatus. 3,675,565, Cl. 95-11.00l.

Paine, T. O., Administrator of the National; Aeronautics and Space Administration with respect; to an invention of; Moser, Billy G.; and Landel, Robert F. Method for controlling vapor content of a gas. 3,675,712, Cl. 165-3.000.

Palfreyman, Jack; and Middleton, Henry Edward, to United Kingdom of Great Britain and Northern Ireland, Secretary of State for Defence in Her Britannic Majesty's Government of the. Method of making a bladed rotor. 3,675,294, Cl. 29-156.80r.

Palm, William E., Jr., to Compo Industries, Inc. Shoe stiffener means and method. 3,676,250, Cl. 156-249.000.

Pannier, Karl A., Jr.: *See—*
Reynolds, Gordon S.; Pannier, Karl A., Jr.; and Sorenson, James L., 3,675,891.

Paoletti, Charles: *See—*
Morane, Bruno; Paoletti, Charles; and Terrasse, Gilles, 3,675,821.

Paoletti, John P. Wallboard construction. 3,675,383, Cl. 52-222.000.

Papke, Friedrich, to Voigtlander Aktiengesellschaft. Camera with adjustment-indicating location. 3,675,552, Cl. 95-11.00v.

Paraisten Kalkki Oy: *See—*
Myreen, Bertel, 3,675,467.

Parikh, Anil Chandrakant: *See—*
Pacini, Bruno Marcio; Price, Desmond Alfred; and Parikh, Anil Chandrakant, 3,675,408.

Parikh, Jekishan R., to Upjohn Company, The Process for the 5α,6α-epoxidation of Δ^4-double bonds. 3,676,433, Cl. 260-239.550.

Parisot, Jean: *See—*
Vidal, Jean; Parisot, Jean; and Lemoine, Jacques, 3,675,426.

Parker, Arden A.: *See—*
Carlsen, Donald W.; Kotla, John J.; and Parker, Arden A., 3,676,646.

Parker, Eugene K.: *See—*
Mayo, Kenneth E.; and Parker, Eugene K., 3,675,244.

Parker, Fred W.: *See—*
Anderson, Terry P.; and Parker, Fred W., 3,676,377.

Parker-Hannifin Corporation: *See—*
Lapera, Dominic J., 3,675,853.
Nilges, William C., 3,675,673.
Zajac, Theodore S.; and George, Hal E., 3,675,539.

Parkinson, John David: *See—*
Browne, Roger Drury; McCurrich, Laurence Henry; Parkinson, John David; and Heffer, Edward Charles, 3,675,474.

Parlato, Philip Joseph, to Alarm Products International, Inc. Magnetic switch. 3,676,811, Cl. 335-205.000.

Parriah, Donald Bob; and Pruitt, Ronnie Mac, to Dow Chemical Company, The. Polyurethanes. 3,676,379, Cl. 260-2.5aq.

Parr, Harry G.; and Grancheili, Felix E., to Little, Arthur D., Inc. 7,8,9,10-Tetrahydro (and 7,8,9,10,11,12-hexahydro) 6H-dibenzo[b,d]pyrans. 3,676,462, Cl. 260-345.300.

Parsons, Donald S.: *See*—
Cheney, Richard F.; and Parsons, Donald S., 3,676,083.

Partin, Melvin E., to Scan-Data Corporation. Character recognition system with simultaneous quantization at a plurality of levels. 3,676,847, Cl. 340-146.3ac.

Passmore, Edmund M.: *See*—
Loughridge, Frederick A.; Matheson, Wilfrid G.; and Passmore, Edmund M., 3,676,730.

Patitsas, George P.: *See*—
Bauer, Richard G.; and Patitsas, George P., 3,676,410.

Patterson, Charles B., to Purex Corporation, Ltd. Method for soap bars having marble-like decoration. 3,676,538, Cl. 264-75.000.

Pauliukonis, Richard S. Pneumatic/hydraulic pressure actuated positive displacement pump. 3,676,022, Cl. 417-392.000.

Paulonis, Daniel F.: *See*—
Owczarski, William A.; Oblak, John M.; and Paulonis, Daniel F., 3,676,225.

Paviak, Stanley C., to Gulf Research & Development Company. Detergent compositions. 3,676,373, Cl. 252-531.000.

Payrau, Paul Bertrand: *See*—
Moczar, Madeleine Csanadi; Moczar, Elemer; and Payrau, Paul Bertrand, 3,676,298.

Pearce, Christopher A.: *See*—
Fulton, Michael; Jones, John Darrell; and Pearce, Christopher A., 3,676,420.

Pearce, Geoffrey Downing: *See*—
Phillips, Cyril Howard; Brunton, James Charles; and Pearce, Geoffrey Downing, 3,676,185.

Pearson, Eugene S.: *See*—
Judge, Robert L.; and Pearson, Eugene S., 3,676,832.

Pecci, Angelo A. Electromagnetic motor with plural reciprocating members. 3,676,719, Cl. 310-24.000.

Peche, Gerhard: *See*—
Bahr, Alex; and Peche, Gerhard, 3,676,743.

Peck, Arland A.: *See*—
Appleby, Paul E.; Folden, Denver C.; and Peck, Arland A., 3,676,261.

Peck, Richard O., to AMSTED Industries Incorporated. Top block lifting with back block loading control. 3,675,889, Cl. 249-82.000.

Pederson, Arthur M., to Battelle Development Corporation, mesne. Apparatus for temperature measurement. 3,675,484, Cl. 73-362.0ar.

Peil, Archie W.: *See*—
Slator, Damon T.; and Peil, Archie W., 3,675,719.

Pelka, Walter: *See*—
Frenyo, Pal; Hafer, Karl-Heinz; Karkutt, Reimund; and Pelka, Walter, 3,675,971.

Pelte, Richard: *See*—
Mayr, Helmut; Pelte, Richard; Hubert, Theo; and Strasser, Helmut, 3,676,759.

Pemberton, Troy J.: *See*—
Lane, Donald W.; and Pemberton, Troy J., 3,676,782.

Penn, Hyman B.: *See*—
Kesilman, Sol; Kravitz, Milton; and Penn, Hyman B., 3,675,598.

Pennington, Edward N., to Phillips Petroleum Company. Process control. 3,676,066, Cl. 23-198.000.

Pennwalt Corporation: *See*—
Ocone, Luke Ralph, 3,675,699.

Pennwalt Corporation, mesne: *See*—
Blake, Stephen, 3,676,498.

Pennypacker, Frank Chester, to Lindsay Specialty Products Limited. Signal splitter. 3,676,744, Cl. 317-99.000.

Percival, Herbert Warren: *See*—
Mc Leod, Melvin Elliott; Deutschman, John Edward; Percival, Herbert Warren; and Spoel, Han, 3,676,105.

Perez, Arthur, to Clark Equipment Company. Two stage refrigeration plant having a plurality of first stage refrigeration systems. 3,675,441, Cl. 62-278.000.

Perri, Joseph, to Susquehanna Corporation, The. Apparatus for lining a hot top casing with insulating panels and ring. 3,675,304, Cl. 29-238.

Perrin, Badger: *See*—
Lake, Donald; Perrin, Badger; and Nolan, Frederick J., 3,675,817.

Perrino, Albert C.; and Israel, Michael G., to I.C.I. Organics Inc. Polyamide obtained by reaction of a B,B-bis(alkylamino) diethyl sulfone and a dicarboxylic acid chloride. 3,676,406, Cl. 260-78.00r.

Perry, Roger L., to Gillette Company, The. Razor blade assembly. 3,675,322, Cl. 30-32.000.

Perucca, Vincenzo, to Olivetti, Ing. C., & C., S.p.A. High-speed printer. 3,675,753, Cl. 197-18.000.

Peters, James G. Carrying device. 3,675,834, Cl. 224-45.00t.

Peters, Virgil N. Method of making nylon monofilament sinking fishing leader. 3,676,237, Cl. 154-2.000.

Peterson, Earl A.: *See*—
Barron, Charles D.; Peterson, Earl A.; Stark, Gary K.; and Wilms, Carl A., 3,675,900.

Peterson, Gerald Henry, to Bell Telephone Laboratories, Incorporated. Coin telephone non-coin service. 3,676,597, Cl. 179-6.30r.

Peterson, John M.: *See*—
Girard, Peter F.; and Peterson, John M., 3,675,582.

Petigara, Ramesh: *See*—
Yale, Harry Louis; and Petigara, Ramesh, 3,676,445.

Pfefferle, William C.: *See*—
Dalson, Milton H.; Gallagher, James P.; and Pfefferle, William C., 3,676,328.
Dalson, Milton H.; and Pfefferle, William C., 3,676,329.

Pfeiffer, Dieter. Driving, steering and braking system for boats. 3,675,612, Cl. 115-12.00r.

Pfizer Inc.: *See*—
Goldman, Irving M.; and Larson, Jerry K., 3,676,428.
Kadin, Saul B., 3,676,463.
O'Shea, Daniel P.; and Nakanishi, Susumu, 3,676,427.

Pflanz, Herbert M., to Allis-Chalmers Manufacturing Company. High voltage electrical circuit breaker with preinsertion resistor during closing. 3,676,621, Cl. 200-144.0ap.

Pharmacia AB: *See*—
Ingelman, Bjorn G.; and Ceska, Miroslav, 3,676,303.

Pharriss, Bruce B.; and Anliker, Max, to Alza Corporation. Intrauterine contraceptive device. 3,675,647, Cl. 128-130.000.

Pharriss, Bruce B.; and Anliker, Max, to Alza Corporation. Intrauterine contraceptive device. 3,675,648, Cl. 128-130.000.

Phelps, Harold E., to Phelps, Harold, Inc. Carburetor. 3,675,907, Cl. 261-39.000.

Phelps, Harold, Inc.: *See*—
Phelps, Harold E., 3,675,907.

Phillips, Cyril Howard; Brunton, James Charles; and Pearce, Geoffrey Downing, to British Cellophone Limited. Heat-sealable moistureproof wrapping material. 3,676,185, Cl. 117-68.500.

Phillips, Gary E.: *See*—
de Gelder, Jacob; and Phillips, Gary E., 3,675,362.

Phillips, James W., to Dwyer Instruments, Inc. Molded plastic flowmeter. 3,675,481, Cl. 73-209.000.

Phillips, Nathan D.: *See*—
Dolansky, Ladislav; and Phillips, Nathan D., 3,676,595.

Phillips Petroleum Company: *See*—
Arens, James L.; and Staten, Hi W., 3,676,653.
Burk, Marvin C., 3,676,649.
Dollinger, Robert E., 3,676,168.
Doss, Richard C.; and Jones, Faber B., 3,676,201.
Douglas, Gary D.; and Eaves, Billy J., 3,675,578.
Fahey, Darryl R., 3,676,421.
Haskell, Donald M.; and Munro, Bradley L., 3,676,516.
Heckelsberg, Louis F., 3,676,520.
Hobbs, James W.; and Long, George W., 3,676,304.
Horvath, Bertalan, 3,676,417.
Hsieh, Henry L.; and Buck, Ollie G., 3,676,407.
Johnson, Marvin M.; and Tabler, Donald C., 3,676,332.
Keene, William A., 3,675,432.
Lane, Donald W.; and Pemberton, Troy J., 3,676,782.
Louthan, Rector P., 3,676,166.
Mills, King L., 3,676,324.
Pennington, Edward N., 3,676,066.
Pitchford, Armin C., 3,676,331.
Rion, Pat F., 3,675,901.
Scruggs, Jack G.; and Brady, Donnie G., 3,676,484.
Tabler, Donald C., 3,676,513.
Vanderveen, John W.; Cheng, Paul J.; Mills, K. Louis, Jr.; Venable, Charles R., Jr.; and Johnson, Paul H., 3,676,070.

Phua, Mee See: *See*—
Plakas, Chris J.; and Phua, Mee See, 3,676,584.

Physitech, Inc.: *See*—
Starer, Robert L., 3,676,736.

Piacesi, Dante, Jr.: *See*—
Sternberg, Hyman M.; Piacesi, Dante, Jr.; and Katz, Howard, 3,675,577.

Piattelli, Giuseppe, to Officine Meccaniche Santa Lucia A.S.A. Machine for beaming knitted fabrics of common and anti-ladder type or the like on to dyeing beams or cardboard rollers. 3,675,868, Cl. 242-67.100.

Pichal, Henri T., to Honeywell Information Systems, Inc. High gain, ultra linear detector for frequency modulation. 3,676,785, Cl. 329-103.000.

Pied, Jean-Philippe, to Societe Ethylene Plastique. Stabilisers for polysulphides. 3,676,395, Cl. 260-45.90r.

Pierce, Leo F.: *See*—
Moore, Peter N.; and Pierce, Leo F., 3,675,943.

Pierce, Ruth B. Fog generator for insecticides and the like. 3,675,360, Cl. 43-129.000.

Pietsch, Roy; and Lewis, Bernard L., to Radiation Incorporated. Liquid crystal optical cell with selected energy scattering. 3,675,989, Cl. 350-160.00r.

Piirma, Aleksander, to Goodyear Tire & Rubber Company, The. Polyesters stabilized by phosphorus compounds. 3,676,393, Cl. 260-45.70p.

Pillsbury Company, The: *See*—
Meade, Reginald E., 3,675,393.
Meyer, Byron W.; and Wright, William F., 3,676,032.
Rejsa, Jack J.; and Meyer, James A., 3,675,567.

Pim, Kendall A.: *See*—
Berlincourt, Don A.; and Pim, Kendall A., 3,676,724.

Pines, Seemon H.: *See*—
Sletzinger, Meyer; Karady, Sandor; Ly, Manuel G.; and Pines, Seemon H., 3,676,480.

Pines, Seemon H.; and Sletzinger, Meyer, to Merck & Co., Inc. Oxazole and oxazol-5-one derivatives. 3,676,453, Cl. 260-307.00r.

Pingry, Carl O., III: *See*—
Hollaway, John T.; and Pingry, Carl O., III, 3,676,859.

Pintsche Bamag Aktiengesellschaft: *See*—
Oberste-Berghaus, Gerhard, 3,676,065.

Pirig, Wolf-Dieter: *See*—
Grimm, Dieter; Kandler, Joachim; Merkenich, Karl; and Pirig, Wolf-Dieter, 3,676,352.

Pirrello, Angelo, to Clinton Industries, Inc. Automatic emblem sewing apparatus. 3,675,602, Cl. 112-121.290.

Pitchford, Armin C., to Phillips Petroleum Company. Upgrading of crude oils. 3,676,331, Cl. 208-112.000.

Pitt, Colin G., to Lilly, Eli, and Company. Benz anthracene steroid analogue. 3,676,502, Cl. 260-613.00r.

Pivar, Stewart. Apparatus for molding hollow plastic articles. 3,676,037, Cl. 425-435.000.

Placek, Eugene W., to Van Dorn Company. Method and apparatus for infrared heating. 3,675,905, Cl. 263-2.00r.

Plakas, Chris J.; and Phua, Mee See. Echo coincidence ultrasonic scanning. 3,676,584, Cl. 178-6.800.

Plank, Charles J.; and Rosinski, Edward J., to Mobil Oil Corporation. Zeolite-containing catalyst, synthesis and use thereof. 3,676,330, Cl. 208-111.000.

Plasser, Franz; and Theurer, Josef. Mobile track tamping machine. 3,675,581, Cl. 104-12.000.

Platou, Jan Hendrik. Process for making floatable cords. 3,675,532, Cl. 87-1.000.

Platt, Alan: *See*—
Medvecky, Bartholomew P.; Oberai, Avtar S.; and Platt, Alan, 3,676,231.

Platz, Stephan: *See*—
Browatzki, Kurt; Gref, Hans; Herzhoff, Peter; Maus, Fritz; Platz, Stephan; Schaum, Gustav; Schweicher, Wolfgang; and Wasser, Willi, 3,676,178.

Ploetz, Theodor: *See*—
Opderbeck, Fritz; Ploetz, Theodor; Thamm, Rudolf; and Westerhuis, Popko J., 3,676,294.

Ploger, Fritz: *See*—
Roepenack, Horst; Nowak, Dieter; and Ploger, Fritz, 3,676,030.

Ploger, Fritz; and Vietzke, Horst, to Nukem Nuklear-Chemie und-Metallurgie Gesellschaft m.b.H. Apparatus for separating uranium from an aqueous solution. 3,676,075, Cl. 23-285.000.

Plumat, Emile; and Van Laethem, Robert, to Glaverbel S.A. Physically strengthening bodies made of at least partly vitreous material. 3,676,097, Cl. 65-33.000.

Plumly, George W. Method of manufacturing laminated planar structure. 3,676,241, Cl. 156-62.000.

Podschus, Ernst; Dorn, Ludwig; and Heinze, Gerhard, to Farbenfabriken Bayer Aktiengesellschaft. Process for the production of highly porous bead-form silica catalyst supports. 3,676,366, Cl. 252-448.000.

Polansky, Sidney I., to Packaging Associates, Inc. Collapsible tote bag. 3,675,843, Cl. 229-54.000.

Polaris Chemical Corporation: *See*—
Putnam, Robert C.; and Young, Jeffrey W., 3,676,389.

Polaroid Corporation: *See*—
Land, Edwin H.; and Erlichman, Irving, 3,675,551.
Stephens, Robert K., 3,676,123.

Pomathios, Jacques: *See*—
Leopold, Henri; and Pomathios, Jacques, 3,676,128.

Pomeranz, Jehoshua N.: *See*—
Donofrio, Nicholas M.; and Pomeranz, Jehoshua N., 3,676,704.

Pommerening, Uwe A.: *See*—
Gueldenpfennig, Klaus; Pommerening, Uwe A.; and Russell, Stanley L., 3,676,606.

Pompian, Stuart D.: *See*—
Naiman, Charles S.; and Pompian, Stuart D., 3,676,003.

Ponce, Lucien G. Adjustable stamping press stock guide. 3,675,462, Cl. 72-428.000.

Poot, Albert Lucien; Van Besauw, Jan Frans; and Depoorter, Henri, to Agfa-Gevaert. Diazotype recording process and material used therein. 3,676,133, Cl. 96-49.000.

Poot, Albert Lucien; and Depoorter, Henri, to Agfa-Gevaert. Formation of dyes suited for reproduction purposes. 3,676,138, Cl. 96-75.000.

Poot, Albert Lucien; and Depoorter, Henri, to Agfa-Gevaert. Diazo recording. 3,676,140, Cl. 96-91.000.

Popplewell, James M.: *See*—
Pryor, Michael J.; and Popplewell, James M., 3,676,292.

Portage Research & Development Corporation: *See*—
Krivis, Alan F., 3,676,072.

Porter Pain Co., mesne: *See*—
Davie, William R., 3,676,388.

Potter, Charles, to Amvit. Pipe stopper for bell and spigot type of tile. 3,675,685, Cl. 138-89.000.

Poumakis, Eleuthere. Random access magnetic storage system with movable transducer. 3,676,868, Cl. 340-174.10c.

Powell, Thurman O. Combination elevator and spider. 3,675,278, Cl. 24-249.0dp.

PPG Industries, Inc.: *See*—
Cathers, William P., 3,675,788.
Coleman, George E., 3,676,673.
D'Alelio, Gaetano F., 3,676,398.
Drummond, Warren W., 3,675,872.
Hahn, Ernest A., 3,676,192.

Pratt, George W., Jr., to Massachusetts Institute of Technology. Multiple-frequency laser apparatus and method. 3,676,795, Cl. 331-94.500.

Pratt, Leslie Raymond, to Churchill, Charles, Limited. Gear and profile rolling machines. 3,675,454, Cl. 72-108.000.

Pre-Heat Welding Company, Inc.: *See*—
Borkoski, Stanley B., 3,675,309.

Prentice, James S., to Esso Research and Engineering Company. Method of making a non-woven polymer laminate. 3,676,242, Cl. 156-62.400.

Prescott, Robert E.: *See*—
Nash, Donald H.; Nenninger, Theodore P.; and Prescott, Robert E., 3,676,607.

Price, Desmond Alfred: *See*—
Pacini, Bruno Marcio; Price, Desmond Alfred; and Parikh, Anil Chandrakant, 3,675,408.

Price, James W.: *See*—
Knudsen, Ra-mond G.; Price, James W.; and Olson, Gene E., 3,675,516.

Price-Pfister Brass Mfg. Co.: *See*—
Lyon, John K., 3,675,682.

Pries, Erich E. W., to Otto, C., Dr., & Comp. G.m.b.H. Charging car for coke ovens. 3,675,797, Cl. 214-35.00r.

Pringle, William L.: *See*—
Bateson, Norman E.; and Pringle, William L., 3,675,592.

Pringle, William L., to Pullman Incorporated. Highway trailer vehicle with offset truss structure. 3,675,964, Cl. 296-1.00a.

Probst, Richard O., to Ransburg Electro-Coating Corporation. Method of electrostatic spraying. 3,676,194, Cl. 117-93.40r.

Procedyne Corporation: *See*—
Staffin, Robert; Ricci, Roy J.; and Juels, Ronald J., 3,676,647.

Procter & Gamble Company, The: *See*—
Baker, Joseph S.; Marsan, Mario S.; and Duncan, Robert C., 3,675,654.
Crawford, Robert J., 3,676,505.
Crawford, Robert J., 3,676,506.
Edwards, James B.; and Haug, Warren R., 3,676,152.
Zaki, Wahib Nassif; and Biard, Daniel Guy Jean, 3,676,374.

Propper Manufacturing Co., Inc.: *See*—
Speelman, Irving A., 3,675,486.

Protzman, Thomas F.; and Magidson, William H., to Staley, A. E., Manufacturing Company. Color television tube fabrication. 3,676,127, Cl. 96-36.100.

Protzman, Thomas F., to Staley, A. E., Manufacturing Company. Predetermined chemical reactions in photographic imagewise configuration. 3,676,145, Cl. 96-115.000.

Protzman, Thomas F., to Staley, A. E., Manufacturing Company. Controlling predetermined chemical reactions in photographic imagewise configuration. 3,676,146, Cl. 96-115.000.

Prugger, Hans; and Torge, Reimund, to Carl Zeiss-Stiftung; d/b/a and Zeiss, Carl. Device for the spectrochemical determination of the concentration of an element in a sample. 3,676,004, Cl. 356-87.000.

Pruitt, Ronnie Mac: *See*—
Parrish, Donald Bob; and Pruitt, Ronnie Mac, 3,676,379.

Pryor, Michael J.; Shapiro, Stanley; Tyler, Derek E.; and Shabarack, John, to Olin Corporation. Composite article. 3,676,088, Cl. 29-199.000.

Pryor, Michael J.; and Anthony, William H., to Olin Mathieson Chemical Corporation. Aluminum-zinc-boron alloys. 3,676,113, Cl. 75-146.000.

Pryor, Michael J.; and Popplewell, James M., to Olin Corporation. Composites of glass-ceramic-to-metal seals and method of making same. 3,676,292, Cl. 161-196.000.

Pullman Incorporated: *See*—
Bateson, Norman E.; and Pringle, William L., 3,675,592.
Crawford, Duffer B.; and Norenburg, Johannes C., 3,675,434.
Mundinger, William D.; and Marsh, Ronald W., 3,675,975.
Nagy, Ernest J.; and Shaver, William R., 3,675,591.
Pringle, William L., 3,675,964.
Schuller, James J., 3,675,590.

Purdie, Angus John Challis: *See*—
Woodward, Anthony Ian; and Purdie, Angus John Challis, 3,676,175.
Woodward, Anthony Ian; Purdie, Angus John Challis; and Way, Anthony Paul, 3,676,189.

Purex Corporation, Ltd.: *See*—
Patterson, Charles B., 3,676,538.

Putnam, David T., to International Business Machines Corporation. Free particle impact machining process and apparatus employing the same. 3,675,373, Cl. 51-9.000.

Putnam, Robert C.; and Young, Jeffrey W., to Polaris Chemical Corporation. Flame proofing compositions. 3,676,389, Cl. 260-29.4va.

Pyronics Inc.: *See*—
Sellors, John, Jr.; and Shular, Howard E., 3,676,048.

Pytlewski, Louis L., to Research Corporation. Soil retardant coating and method for forming the same. 3,676,186, Cl. 117-69.000.

Quaker Oats Company, The: *See*—
Harwood, Charles C.; and Holtz, William E., Jr., 3,675,855.

Quanta Welding Company: *See*—
Anderson, David G., 3,676,636.
Anderson, David G., 3,676,637.

Quatinetz Max; Weeton, John W.; and Herbell, Thomas P., to United States of America, National Aeronautics and Space Administration. Refractory metal base alloy composites. 3,676,084, Cl. 29-182.500.
Quattlebaum, Walter J.: *See—*
Young, William O., Jr.; and Quattlebaum, Walter J., 3,675,836.
Young, William O., Jr.; and Quattlebaum, Walter J., 3,676,251.
Quenot, Andre, to Manufacture 'Quenot Mabo'. Tape measures. 3,675,334, Cl. 33-138.000.
Quigley, Norman R.; and Hansen, Marvin E. Directional grain chutes. 3,675,752, Cl. 192-5.000.
Quint, Stephen Mark; and Dalton, John Junior, to Johns-Manville Corporation. Coating for water containing hydraulic cement articles. 3,676,196, Cl. 117-96.000.
Rabinow, Jacob, 1/10 to Libman, Max L. Electrical lowering and lifting mechanism for phonograph tone arms. 3,675,932, Cl. 274-23.00a.
Radiation Incorporated: *See—*
Pietsch, Roy; and Lewis, Bernard L., 3,675,989.
Radiometer A/S: *See—*
Kisten, Jurgen Manfred, 3,676,319.
Rafuse, Mary J., to Sperry Rand Corporation. Liquid crystal compositions and devices. 3,675,987, Cl. 350-160.000.
Ragen, Robert A., to Singer Company, The mesne. Serial adder/subtracter utilizing counters. 3,676,658, Cl. 235-176.000.
Ragland, Frank Roweland, Jr., to RCA Corporation. Method for making a light intensity correction filter. 3,676,129, Cl. 96-38.300.
Raible, Karl J., to Aktiengesellschaft fur Brauerei-Industrie. Adsorbent for beverages. 3,676,367, Cl. 252-451.000.
Ralston Purina Company: *See—*
Miller, Timothy A.; and Hanselman, Larry R., 3,675,625.
Ramanathan, Visvanathan: *See—*
Kangle, Purushottam Janardan; Ramanathan, Visvanathan; and Argay, Rudolf, 3,676,051.
Ramey, Robert L.: *See—*
United States of America, National Aeronautics and Space Administration, 3,676,809.
Ramisch, Emil, to Siemens Aktiengesellschaft. Electric condenser with a flat tubular dielectric. 3,676,757, Cl. 317-242.000.
Randolph, August: *See—*
Schulz, Gunter; Himmelmann, Wolfgang; and Randolph, August, 3,676,144.
Randolph, Michael J.: *See—*
Chay, Dong M.; Cumbo, Charles Carmen; Randolph, Michael J.; and Yates, Paul C., 3,676,477.
Randolph, Michael J., to Du Pont de Nemours, E. I., and Company. Method for preparing trivalent and pentavalent antimony esters of polyhydroxy compounds. 3,676,476, Cl. 260-446.000.
Ransburg Electro-Coating Corporation: *See—*
Harrison, David; and Sainz, Raul T., 3,676,197.
Probst, Richard O., 3,676,194.
Spiller, Lester L.; and Buford, Claude W., 3,676,171.
Ransohoff, Jackson A.; and Sarkozi, Lewis P., to Neutron Products, Inc. Production irradiator. 3,676,675, Cl. 250-52.000.
Rao, Durvasula V.; Sayigh, Adnan A. R.; and Ulrich, Henri, to Upjohn Company, The. Novel aminophenyl alkoxy coumarins. 3,676,436, Cl. 260-343.20r.
Rathbun, Robert R.: *See—*
Page, George A.; Rathbun, Robert R.; and Kramer, Bruce E., 3,676,635.
Raybestos-Manhattan, Inc.: *See—*
Orzechowski, John F.; and Haley, Thomas W., 3,676,038.
Raymond, Joseph Edward: *See—*
De Ritter, Elmer; and Raymond, Joseph Edward, 3,676,556.
Raymond, Richard L., to Sun Research and Development Co. Microbial production of novel hydroxyphenyl ketobutyric acids. 3,676,299, Cl. 195-28.00r.
Raytheon Company: *See—*
Caccamesi, Vincent C.; and Der Marderosian, Aaron C., 3,675,468.
Razal Albert J.: *See—*
Schwaller, Lando J.; Razal Albert J.; and White, John G., 3,675,450.
RCA Corporation: *See—*
Ahrons, Richard Wilfred, 3,676,711.
Allington, Trevor Richard, 3,676,252.
Einthoven, Willem Gerard; Jetter, Evelyn Speter; and Wheatley, Carl Franklin, Jr., 3,676,229.
McGrogan, Ellwood Patrick, Jr., 3,676,702.
Meyer, John Evert, 3,676,705.
Moss, Herbert Irwin; and Hockings, Eric Francis, 3,676,610.
Ragland, Frank Roweland, Jr., 3,676,129.
Robbins, Murray, 3,676,082.
Weimer, Paul Kessler, 3,676,590.
Read, George: *See—*
Holmes, Frank; Arias, Henry, Jr.; and Read, George, 3,675,883.
Recchia, Frank P.; and Ulrich, Henri, to Upjohn Company, The. Process for preparing di(aminophenyl)-methanes. 3,676,497, Cl. 260-570.00d.
Redel, Joseph; and Boch, Jean Baptiste Christian, to A. E. C. Societe de Chimie Organique et Biologique. Process of preparing phytone. 3,676,499, Cl. 260-593.000.
Reeder, George H., Jr. Piano construction. 3,675,527, Cl. 84-180.000.
Reese, Murray C. Holder for refuse cans. 3,675,783, Cl. 211-71.000.
Reeves, John F.: *See—*
Lickliter, Robert Paul; and Reeves, John F., 3,675,382.
Lickliter, Robert Paul; Abbott, Earl; and Reeves, John F., 3,675,957.
Reflex Corporation of Canada Limited: *See—*
White, Jay E., Jr., 3,676,666.
Regan Forge and Engineering Company: *See—*
Watkins, Bruce J., 3,675,713.
Regis Manufacturing Company: *See—*
Hajduk, Frank R., 3,675,293.
Hajduk, Frank R., 3,675,955.
Rehrig, Houston. Bakery tray. 3,675,815, Cl. 220-97.00d.
Reichelt, Bernhard: *See—*
Zollner, Dieter; Koziol, Konrad; Reichelt, Bernhard; and Lippert, Wolfgang, 3,676,371.
Reid, Allen F.: *See—*
Halff, Albert H.; and Reid, Allen F., 3,675,829.
Reif, Kurt, to Maschinenfabrik Andritz Aktiengesellschaft. Liquid-sealed centrifugal pump. 3,676,011, Cl. 415-111.000.
Reighter, David H., to I-T-E Imperial Corporation. Adsorption-desorption method for purifying SF_6. 3,675,392, Cl. 55-25.000.
Reineck, Ronald W.: *See—*
Svoboda, Glenn R.; and Reineck, Ronald W., 3,676,376.
Reiner, Roy H.: *See—*
Lachman, Leon; Reiner, Roy H.; Shami, Elie; and Spector, Walter, 3,676,557.
Reinheimer, Horst Alfred: *See—*
Forst, Steve Michael; and Reinheimer, Horst Alfred, 3,676,741.
Reinis, Gedeminas J.: *See—*
Krohn, Ivar T.; Page, Geoffrey A.; and Reinis, Gedeminas J., 3,676,116.
Reinking, Klaus; Vogel, Helmut; Hechelhammer, Wilhelm; and Schneider, Kurt, to Farbenfabriken Bayer Aktiengesellschaft. Process for the production of polyamide mouldings. 3,676,544, Cl. 264-329.000.
Rejsa, Jack J.; and Meyer, James A., to Pillsbury Company, The. Meat injection apparatus. 3,675,567, Cl. 99-257.000.
Rembold, Heinz; and Losert, Ewald, to Ciba-Geigy AG. Process for the manufacture of prepregs. 3,676,200, Cl. 117-121.000.
Remington Arms Company, Inc.: *See—*
Misevich, Kenneth W., 3,675,926.
Rempala, Chester S., to Bell & Howell Company. Microfilm transport system and trailing leader. 3,675,877, Cl. 242-209.000.
Rennie, Compton Alexander; Lockett, George Edward; and Hosegood, Samuel Brittan, to United Kingdom Atomic Energy Authority. Pentagonal core blocks for gas cooled nuclear reactors. 3,676,297, Cl. 176-58.000.
Renskers, John O., to Coilcraft, Inc. Non-circular high Q coils. 3,676,813, Cl. 336-189.000.
Research Corporation: *See—*
Dolansky, Ladislav; and Phillips, Nathan D., 3,676,595.
Morgan, Peter E. D., 3,676,079.
Pytlewski, Louis L., 3,676,186.
Research Foundation of the Washington Hospital Center: *See—*
Viktora, Josef Karel; and Baukal, Albert Jozel, 3,675,488.
Retajczyk, Theodore Frank, Jr., to Bell Telephone Laboratories, Incorporated. Method of etching materials capable of being etched with hydrofluoric acid. 3,676,240, Cl. 156-17.000.
Reust, Paul H.; and Taube, Donald R., to Essex International Inc. Lead wire inserting mechanism for stator winding apparatus. 3,675,300, Cl. 29-205.00c.
Reynolds, Anthony Edward St. Aubyn: *See—*
Conrad, John Harold; Reynolds, Anthony Edward St. Aubyn; and Gadd, Edward George, 3,676,707.
Reynolds, Beverly L., to Cybersol, Inc., mesne. Therapeutic composition. 3,676,553, Cl. 424-128.000.
Reynolds, David W.: *See—*
Andreasen, Howard P.; Ankeny, Jay H.; Foddy, Harold W.; and Reynolds, David W., 3,676,020.
Reynolds, Gordon S.; Pannier, Karl A., Jr.; and Sorenson, James L., to Le Voy's, Inc. Continuous catheter flushing apparatus. 3,675,891, Cl. 251-117.000.
Reynolds, R. J., Tobacco Company: *See—*
Leffingwell, John C., 3,676,504.
Rheineck, Alfred E.; Nielsen, Paul L.; and Khoe, Teng H., to North Dakota State University Memorial Foundation. Copolymers of hydroxyalkyl methacrylates and an acrylate or methacrylate ester reacted with a partially epoxidized drying oil. 3,676,384, Cl. 260-23.0ep.
Rhone-Poulenc S.A.: *See—*
Marze, Xavier, 3,676,326.
Ricci, Roy J.: *See—*
Staffin, Robert; Ricci, Roy J.; and Juels, Ronald J., 3,676,647.
Rice, Edward J., to TRW Inc. Method for fabricating semiconductor junctions. 3,676,230, Cl. 148-187.000.
Rice, James S., to Industrial Nucleonics Corporation. Noninteracting control of moisture and fiber content of fibrous sheet during manufacture. 3,676,295, Cl. 162-198.000.
Rice, Monroe C. Wheeled carrier for chain saw. 3,675,689, Cl. 143-32.00n.
Rice, Rip G.: *See—*
Frank, Victor S.; Stahly, Eldon E.; and Rice, Rip G., 3,676,311.
Richens, Robert H.: *See—*
Hungerford, Philip C., Jr.; Gereby, John L.; and Richens, Robert H., 3,675,536.
Richter, Ronald W.: *See—*

Van Den Heuvel, Anthony P.; Richter, Ronald W.; and Joshi, Shrinivas G., 3,676,721.
Richterich, Roland, to Hoffmann-La Roche Inc. Device for automatically analyzing liquids. 3,676,080, Cl. 23-253.00r.
Ride, Jean-Louis; and Bellaton, Roland. Electrically operated fishing reel. 3,675,870, Cl. 242-84.10a.
Ridge Ply, Inc.: *See—*
Tisdale, Lucien E., 3,676,263.
Ridgewell, Brian John: *See—*
Duck, Edward William; Ridgewell, Brian John; and Locke, John Michael, 3,676,409.
Riedel, Wolfgang, to Bosch, Robert, Photokino GmbH. Film threading mechanism for cinematographic apparatus. 3,675,874, Cl. 242-192.000.
Rieger, Gilbert N.: *See—*
McLeod, Garth M.; Copeland, Clinton R.; and Rieger, Gilbert N., 3,675,287.
Riemenschneider, Wilhelm: *See—*
Krekeler, Hans; Meidert, Helmut; Riemenschneider, Wilhelm; and Hornig, Lothar Heinz, 3,676,508.
Riess, Werner; Schaefer, Helmut; and Bayer, Bernd, to Glanzstoff AG. Acid treatment of artificial leather for improved adherence with a latex adhesive. 3,676,180, Cl. 117-47.00a.
Rieth, Kurt A., to Textron Inc. End attachment for watch bands. 3,675,284, Cl. 24-265.00b.
Riggs, Robert S.: *See—*
Appleby, Paul E.; Riggs, Robert S.; and Woodhall, Edwin S., 3,676,260.
Rigolini, Venerio J., to Whitehouse Products, Inc. Double exposure prevention system and camera. 3,675,556, Cl. 95-31.0fl.
Riley Company, The: *See—*
Linder, Kenneth C., 3,676,878.
Riley, Robert L.: *See—*
Sachs, Samuel B.; and Riley, Robert L., 3,676,203.
Rion Kabushiki Kaisha: *See—*
Ohno, Toshihiko, 3,675,470.
Rion, Pat F., to Phillips Petroleum Company. Method and apparatus for mixing materials. 3,675,901, Cl. 259-4.
Ristow, Roderick E. High efficiency vapor condenser and method. 3,675,710, Cl. 165-1.
Ritter, Gerhard: *See—*
Ritter, Josef; Gott, Hans; Ritter, Klaus; and Ritter, Gerhard, 3,676,631.
Ritter, Gert: *See—*
Ritter, Klaus; Gott, Hans; Ritter, Josef; and Ritter, Gert, 3,676,632.
Ritter, Josef: *See—*
Ritter, Klaus; Gott, Hans; Ritter, Josef; and Ritter, Gert, 3,676,632.
Ritter, Josef; Gott, Hans; Ritter, Klaus; and Ritter, Gerhard, to EVG Entwicklungs-und Verwertungsgesellschaft m.b.H. Welding machine and method. 3,676,631, Cl. 219-56.000.
Ritter, Klaus: *See—*
Ritter, Josef; Gott, Hans; Ritter, Klaus; and Ritter, Gerhard, 3,676,631.
Ritter, Klaus; Gott, Hans; Ritter, Josef; and Ritter, Gert, to EVG Entwicklungs-und Verwertungsgesellschaft m.b.H. Process for manufacturing welded mesh. 3,676,632, Cl. 219-58.000.
Robbins, Murray, to RCA Corporation. Magnetic compositions. 3,676,082, Cl. 23-367.000.
Roberts & Porter, Inc.: *See—*
Hawks, Ronald W., 3,675,573.
Roberts, George C.; and Dotson, Donald A., to Monogram Industries, Inc. Marine recirculating and holding tank. 3,675,774, Cl. 210-167.000.
Roberts, Melvin L.; Johnson, Carl E.; and Miller, Richard C., to Nalco Chemical Company. Composition for the removal of hydrogen sulfide from gaseous streams. 3,676,356, Cl. 252-192.000.
Roberts, Theresa A.: *See—*
Brick, Edmund J., 3,675,528.
Robertson, H. H., Company: *See—*
Fork, Frank W., 3,676,568.
Robicon Corporation: *See—*
Blackmond, Ronald C., 3,676,766.
Robin, Michael; and Schulte, Sheldon R., to Ashland Oil & Refining Company. Phosphate esters of hindered thiobisphenols. 3,676,530, Cl. 260-949.000.
Robinet, Jean-Claude: *See—*
Vergne, Jean; Solaux, Leon; Robinet, Jean-Claude; and Lacroix, Philippe, 3,676,390.
Robins, A. H., Company, Incorporated: *See—*
Helsley, Grover Cleveland, 3,676,432.
Robins, Janis, to Ashland Oil Inc. Resin compositions. 3,676,392, Cl. 260-38.000.
Robinson, Peter: *See—*
Campbell, Alastair; and Robinson, Peter, 3,676,507.
Roche, William J., to Sylvania Electric Products, Inc. Resonator ballast for arc discharge lamps. 3,676,735, Cl. 315-207.000.
Roder, Manfred: *See—*
Vogerl, Manfred; Daxer, Hilmar; Roder, Manfred; and Dietz, Wolfgang, 3,675,709.
Roepenack, Horst; Nowak, Dieter; and Ploger, Fritz, to NUKEM, Nuklear-Chemie und-Metallurgie, G.m.b.H. Apparatus for lubrication of compression tools for powder metallurgical purposes. 3,676,030, Cl. 425-78.000.
Roggie, William Clark, to Baker-Roos, Inc. Guard rail assembly for a platform. 3,675,736, Cl. 182-113.000.
Rohr, Otto: *See—*
Hubele, Adolf; and Rohr, Otto, 3,676,457.
Rondestvedt, Christian S., Jr.: *See—*
Mantell, Gerald J.; and Rondestvedt, Christian S., Jr., 3,676,500.
Rood, Alvin A.: *See—*
Rosen, Samuel R.; Rood, Alvin A.; and Scharf, Donald R., 3,675,732.
Rosen, Samuel R.; Rood, Alvin A.; and Scharf, Donald R., 3,676,642.
Rose, Henry J.: *See—*
Turbak, Albin F.; and Rose, Henry J., 3,676,382.
Rose, James S.: *See—*
McLaughlin, Alexander; and Rose, James S., 3,676,380.
Rosebrook, Roy, Sr., to Anellux Systems Corporation, mesne. Booster servo controlled valve control mechanism. 3,675,890, Cl. 251-3.000.
Rosen, Samuel R.; Rood, Alvin A.; and Scharf, Donald R., to Nordson Corporation. Muffler for pneumatic motor. 3,675,732, Cl. 181-36.00a.
Rosen, Samuel R.; Rood, Alvin A.; and Scharf, Donald R., to Nordson Corporation. Modular apparatus for heating circulating coating material. 3,676,642, Cl. 219-301.000.
Rosenbaum, Chester K.: *See—*
Kohan, Melvin I.; Martin, Wayne H.; and Rosenbaum, Chester K., 3,676,400.
Rosenstein, Nathan, to Hartford Spinning (Canada) Ltd. Compact multi-filament textile tow and method of making the same. 3,675,409, Cl. 57-144.000.
Rosenthal, Robert W., to Gulf Research & Development Company. Process for adding methyl substituents to aromatic hydrocarbons. 3,676,514, Cl. 260-668.000.
Rosenthal, Sol Roy. Multiple puncture injector device. 3,675,766, Cl. 206-63.400.
Rosinski, Edward J.: *See—*
Plank, Charles J.; and Rosinski, Edward J., 3,676,330.
Ross, Thorvald S., Jr.: *See—*
Ross, Thorvald S., Jr.; and Consalvo, Dante V., 3,675,810.
Ross, Thorvald S., Jr.; and Consalvo, Dante V., said Consalvo, Dante V., assor to and said Ross, Thorvald S., Jr. Receptacle for waste material. 3,675,810, Cl. 220-17.000.
Rossi, Anthony J. Apparatus for extruding candy fillings having a high percentage of solids. 3,676,036, Cl. 425-209.000.
Rostron, Arthur John: *See—*
Sharples, Allan; Rostron, Arthur John; and Mc Gibbon, Graeme, 3,676,688.
Rottmann, Hans R.: *See—*
Moreau, Wayne M.; and Rottmann, Hans R., 3,676,002.
Roussel-UCLAF: *See—*
Muller, Georges; and Bardoneschi, Roland, 3,676,461.
Rowe, John Joseph, to Singer Company, The, mesne. Time domain waveform synthesizing method. 3,676,565, Cl. 35-10.400.
Rubinstein, Solomon, to General Cable Corporation. Electrical outlet box. 3,676,571, Cl. 174-65.000.
Ruffo, Angelo P., to Johnson & Johnson. Flame retardant air filter construction with thermoplastic scrim. 3,675,403, Cl. 55-524.000.
Runyan, Clarence R.: *See—*
Korodi, Miklos B.; and Runyan, Clarence R., 3,675,946.
Ruscher, Harold, Jr. Portable bathing shower. 3,675,251, Cl. 4-151.000.
Ruscitti, Tomasco, to Coster Tecnologie Speciali S.p.A. Aerosol valve. 3,675,832, Cl. 222-402.240.
Russell, Lewis K.; and Banks, James L., to Signetics Corporation. Means including a spark gap for protecting an integrated circuit from electrical discharge. 3,676,742, Cl. 317-33.00r.
Russell, Phillips G.; Guggenbickler, Leon E.; and Crawford, John H., to Brand S. Corporation. Sheet stacking apparatus. 3,675,791, Cl. 214-60.00k.
Russell, Robert G., to Owens-Corning Fiberglas Corporation. Method of coating glass fibers. 3,676,094, Cl. 65-3.000.
Russell, Stanley L.: *See—*
Gueldenpfennig, Klaus; Pommerening, Uwe A.; and Russell, Stanley L., 3,676,606.
Russell, Thomas B.: *See—*
Mulcahy, Harry W.; and Russell, Thomas B., 3,675,350.
Rust, Kurt: *See—*
Diedrich, Bernd; Keil, Karl Diether; and Rust, Kurt, 3,676,414.
Diedrich, Bernd; Keil, Karl Diether; and Rust, Kurt, 3,676,415.
Ruth, Richard L., to Honeywell Information Systems Inc. Multiple mask registers for servicing interrupts in a multiprocessor system. 3,676,861, Cl. 340-172.500.
Rutherford, Robert Mark: *See—*
Steed, Frank Streeton; and Lawson-Tancred, Henry, 3,675,799.
Ruyie, William V.: *See—*
Sarett, Lewis H.; and Ruyle, William V., 3,676,451.
Ryan, John W.; Tomkinson, John G.; and Wieman, Paul R., to Mattel, Inc. Color responsive toy. 3,675,925, Cl. 273-101.200.
Ryder, George: *See—*
Griner, Arthur J.; and Ryder, George, 3,675,792.
Rye, Grover W.: *See—*
Griffin, Theodore F.; and Rye, Grover W., 3,675,621.
S & C Electric Company: *See—*

Evans, David Maurice; and Theodore, Roy, 3,676,629.
S & S Corrugated Paper Machinery Co., Inc.: *See—*
Saunders, Lawrence J., 3,676,264.
Sabatie, Michele: *See—*
Dubernet, Robert; and Sabatie, Michele, 3,676,576.
Sabbofer, Franz; and Krassig, Johannes, to Chemiefaser Lemzing Aktiengesellschaft. Process for the production of fleeces. 3,676,243, Cl. 156-167.000.
Sachs, Samuel B.; and Riley, Robert L., to United States of America, Interior. Semipermeable membranes. 3,676,203, Cl. 117-123.00d.
Sadwith, Howard M., to Industrial Washing Machine Corporation. Case washing machine. 3,675,665, Cl. 134-46.000.
Saggers, David Thomas, to Fisons Limited. Certain benzimidazoles as rodenticides. 3,676,545, Cl. 424-273.000.
Sainz, Raul T.: *See—*
Harrison, David; and Sainz, Raul T., 3,676,197.
Saitman, William M.: *See—*
Throckmorton, Morford C.; and Saitman, William M., 3,676,411.
Saito, Toshiya: *See—*
Kaneko, Ryuichi; Saito, Toshiya; Fujimura, Yasushi; Tanimura, Hiroshi; Nakamura, Totaro; and Ikeda, Yukisaburo, 3,676,585.
Sakuma, Tadashi, to Kabushiki Kaisha Daini Seikosha. World timepiece. 3,675,411, Cl. 58-42.500.
Sakurai, Koichi: *See—*
Miyake, Yasuhiko; Takayanagi, Eifu; Narita, Shigeo; Shin, Masaaki; Hayashi, Roshio; and Sakurai, Koichi, 3,676,053.
Sakurai, Takeshi; and Tani, Zenpei, to Sharp Kabushiki Kaisha. Method of making a PN junction device. 3,676,228, Cl. 148-171.000.
Sales Promotion Products, Inc.: *See—*
Gilmoure, Harold J., 3,675,356.
Salvarezza, Robert M.: *See—*
Hagland, Bernard F.; and Salvarezza, Robert M., 3,675,257.
Samiran, David; Cooling, Robert O.; and Fitch, Melvin G. Dental hygiene device. 3,675,645, Cl. 128-62.00a.
Sanada, Noriaki; and Ito, Masaharu, to Canon Kabushiki Kaisha. Iris diaphragm for a camera. 3,675,562, Cl. 95-64.00r.
Sandel, Herbert N. Box for holding tape cartridges. 3,675,763, Cl. 206-45.140.
Sander, Hans Walter: *See—*
Sommer, Gunter; and Sander, Hans Walter, 3,675,465.
Sanders Associates, Inc.: *See—*
Naiman, Charles S.; and Pompian, Stuart D., 3,676,003.
Sanders Nuclear Corporation: *See—*
Mayo, Kenneth E.; and Parker, Eugene K., 3,675,244.
Sands, Seymour, to Du Pont de Nemours, E. I., and Company. Tufted carpet backsized with polymeric composition. 3,676,280, Cl. 161-67.000.
Sangamo Electric Company: *See—*
Findeisen, Heinz H.; Kallmeyer, James D.; Sokol David G.; Stein, James H.; Thomas, Thomas R.; and Bowers, Jack R., 3,676,854.
Sano, Kazuya: *See—*
Ohkubo Kinji; Hayashi, Katsumi; and Sano, Kazuya, 3,676,124.
Sanyo Electric Co., Ltd.: *See—*
Takemasa, Kazuo; and Komada, Hitoshi, 3,675,438.
Sarah, Thomas F., to Shakespeare of Arkansas, Inc. Selectively manual or automatic shift control for a two speed drive in a fishing reel. 3,675,502, Cl. 74-369.000.
Saralidze, Anton Lavrentievich; and Efremidi, Anatoly Lazarevich. High-voltage semiconductor rectifier unit. 3,676,762, Cl. 321-8.00r.
Sarett, Lewis H.; and Ruyle, William V., to Merck & Co., Inc. Thiazolylsalicylic acids. 3,676,451, Cl. 260-302.00r.
Sargent & Company: *See—*
Ohso, Richard J., 3,675,359.
Sarkozi, Lewis P.: *See—*
Ramsohoff, Jackson A.; and Sarkozi, Lewis P., 3,676,675.
Sasabe, Kaoru, to Matsushita Electric Industrial Co., Ltd. Signal conversion system with time base compression of the input data. 3,676,862, Cl. 340-172.500.
Sato, Reiji, to Amano Corporation. Program device for producing time signals and the like. 3,675,415, Cl. 58-150.000.
Saunders, Lawrence J., to S & S Corrugated Paper Machinery Co., Inc. Shortened apparatus for producing corrugated board. 3,676,264, Cl. 156-470.000.
Sawahara, Masao: *See—*
Mizuki, Eiichi; Oishi, Yasushi; and Sawahara, Masao, 3,676,137.
Sawyer, Harold T., 17 1/2% to Beehler, Vernon D. Sonic energy cleaning method. 3,676,218, Cl. 134-1.000.
Sayigh, Adnan A. R.: *See—*
Rao, Duvvasula V.; Sayigh, Adnan A. R.; and Ulrich, Henri, 3,676,436.
Sayles, Louis F. Collapsible signal assembly. 3,675,613, Cl. 116-63.00p.
Scala, Luciano C.; and Bartlett, Wilford O., to Westinghouse Electric Corporation. Non-aqueous electrophoretic compositions comprising liquid nitroalkanes as a solvent. 3,676,383, Cl. 260-22.00r.
Scan-Data Corporation: *See—*
Partin, Melvin E., 3,676,847.
Scanlan, Warren F., to Hazard Sensor Inc. Safety device for preventing electric shock. 3,676,738, Cl. 317-18.00r.
Scannell, Paul R.; La Force, Phil D.; and O'Connell, Wayne T., to United Aircraft Corporation. Variable thrust reaction motor with multiple injector orifices. 3,675,425, Cl. 60-258.000.
Scaramucci, Domer. Disc valve with molded-in-place liner and replaceable seat. 3,675,677, Cl. 137-375.000.
Scaramucci, Domer. Apparatus for molding a seat in a valve body. 3,675,888, Cl. 249-57.000.
Scarpellino, Richard: *See—*
Bentz, Alan P.; and Scarpellino, Richard, 3,676,156.
Schacht, Henry Neil. Method of cutting and packing poultry. 3,675,272, Cl. 17-52.000.
Schaefer, Helmut: *See—*
Riess, Werner; Schaefer, Helmut; and Bayer, Bernd, 3,676,180.
Schaetti, Josef. Method of and apparatus for coating fabrics. 3,676,269, Cl. 156-548.000.
Schafft, Hugo W., to Motorola, Inc. Structure for bimorph or monomorph benders. 3,676,722, Cl. 310-8.600.
Scharf, Donald R.: *See—*
Rosen, Samuel R.; Rood, Alvin A.; and Scharf, Donald R., 3,675,732.
Rosen, Samuel R.; Rood, Alvin A.; and Scharf, Donald R., 3,676,642.
Scharschmidt, Rudolph K., to General Foods Corporation. Toaster Product and process. 3,676,151, Cl. 99-86.000.
Schaum, Gustav: *See—*
Browatzki, Kurt; Gref, Hans; Herzhoff, Peter; Maus, Fritz; Platz, Stephan; Schaum, Gustav; Schweicher, Wolfgang; and Wasser, Willi, 3,676,178.
Scheerer, Ernest O. Rural mail boxes. 3,675,845, Cl. 232-35.000.
Scheidmantel, David A.: *See—*
Trunzo, Floyd F.; and Scheidmantel, David A., 3,676,814.
Scheidweiler, Andreas; and Meier, Otto, to Cerberus AG. Ionization fire alarm with insulation monitoring system. 3,676,680, Cl. 250-83.56ft.
Scheler, Siegfried; and Munder, Johannes, to Kalle Aktiengesellschaft. Thermographic reproduction material and process. 3,676,132, Cl. 96-49.000.
Schendel, Donald D., Jr., to Motorola, Inc. Monolithic non-saturating storage circuit. 3,676,712, Cl. 307-291.000.
Schere, Jonathan L.: *See—*
Wohl, Charles J.; Schere, Jonathan L.; and Costello, Thomas V., 3,676,839.
Scherzer, Julius; and Albers, Edwin W., to Grace, W. R., & Co. Rare earth-hydrogen exchanged zeolites. 3,676,368, Cl. 252-455.00z.
Scheublein, William A., Jr.; and Fister, Louis P., to Moog Industries, Inc. Vehicle stability control device. 3,675,941, Cl. 280-124.00r.
Schild, A., S.A.: *See—*
Fluck, Josef, 3,675,413.
Schilson, Robert E.: *See—*
Merrill, La Vaun S., Jr.; and Schilson, Robert E., 3,676,517.
Schlau, Floyd E.; Bosley, Denis V.; Crain, Philip W.; and Douglas, Raymond J., to Mattel, Inc. Toy sound producing flight system. 3,675,361, Cl. 46-1.00h.
Schlievert, Lester R. Seed suspensing apparatus. 3,675,601, Cl. 111-51.000.
Schloemann Aktiengesellschaft: *See—*
Groos, Horst Hans, 3,675,457.
Veltjens, Dieter, 3,675,458.
Schlomer, Edmund, to Mattel Inc. Sound reproducing apparatus. 3,675,931, Cl. 274-11.00r.
Schlumberger Technology Corporation: *See—*
Beene, Calvin D., 3,675,950.
Lee, Jimmy G., 3,676,842.
Nystrom, Horace A., 3,675,478.
Schmelzer, Hans-Georg: *See—*
Golitz, Hans Dietrich; Degener, Eberhart; Oertel, Gunter; Schmelzer, Hans-Georg; and Simmler, Walter, 3,676,478.
Schmermund, Alfred. Control arrangements for an automatic machine tool. 3,675,537, Cl. 90-13.900.
Schmidt, Herman, to General Electric Company. Electronic digital slide rule. 3,676,656, Cl. 235-156.000.
Schmidt, Paul Gordon, to Du Pont de Nemours, E. I., and Company. Corrugated liner for recording tape cassettes. 3,675,875, Cl. 242-199.000.
Schmolka, Irving R.: *See—*
Kaneko, Thomas M.; Schmolka, Irving R.; and Compton, John W., 3,676,354.
Schneider, Arthur F. Self propelled land clearing and plowing apparatus. 3,675,724, Cl. 172-116.000.
Schneider, Franklin R.; and Lanphear, Jerry D., to Modern Industries, Incorporated. Power output accessory unit. 3,676,694, Cl. 307-10.00r.
Schneider, Kurt: *See—*
Reinking, Klaus; Vogel, Helmut; Hechelhammer, Wilhelm; and Schneider, Kurt, 3,676,544.
Schneider-Arnoldi, Alfred; Kampmann, Friedrich-Wilhelm; Thiel, Hans-Dieter; Kandler, Joachim; and Gleisberg, Dietrich, to Knapsack Aktiengesellschaft. Sand-lime bricks and process for making them. 3,676,165, Cl. 106-117.000.
Schoeps, Knut Christian; and Astrom, Klas Johan, to Atlas Copco Aktiebolag. Rotary impact motor. 3,675,726, Cl. 173-93.000.
Schoettly, Edward: *See—*
Mulgueen, John J.; and Schoettly, Edward, 3,676,824.
Schonhorn, Harold: *See—*
Hara, Katsuyuki; and Schonhorn, Harold, 3,676,289.
Schorr, Manfred; Durckheimer, Walter; Behrendt, Lothar; and Duwel, Dieter, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Phenylene-bis-dithiocarbamic acid esters. 3,676,446, Cl. 260-294.80e.

Schrader, Gerhard; Lorenz, Walter; Unterstenhofer, Gunter; and Hammann, Ingeborg, to Farbenfabriken Bayer Aktiengesellschaft. Insecticidal and acaricidal amido-thiolphosphoric acid esters. 3,676,555, Cl. 424-220.000.
Schranz, Karl-Wilhelm: *See—*
Himmelmann, Wolfgang; Schranz, Karl-Wilhelm; Sobel, Johannes; and Van Veelen, George Frans, 3,676,143.
Schreurs, Willy P.; and Kimball, Lawrence W., to Sylvania Electric Products, Inc. Method of making fluorescent lamps. 3,676,176, Cl. 117-33.50l.
Schreurs, Willy P., to Sylvania Electric Products, Inc. Polyspectral fluorescent lamp. 3,676,728, Cl. 313-109.000.
Schrewelius, Nils Gustav, to Aktiebolaget Kanthal. Furnace for the production of glass fibers. 3,676,093, Cl. 65-1.000.
Schroeder, Charles F., to Owens-Corning Fiberglas Corporation. Pneumatic tire carcass construction. 3,675,702, Cl. 152-354.000.
Schroeder, Kenneth H.; and Kelly, George J., Jr., to Allied Chemical Corporation. Chemical strippers and method of using. 3,676,219, Cl. 134-3.000.
Schuh, Eduard, to Kienzle Apparate GmbH. Sequential key locking and releasing arrangement. 3,675,504, Cl. 74-483.0pb.
Schulenberg, John W.: *See—*
Archer, Sydney; and Schulenberg, John W., 3,676,444.
Schuller, James J., to Pullman Incorporated. Door operating mechanism. 3,675,590, Cl. 105-240.000.
Schuller, Werner Hogo Wilhelm: *See—*
Schuller, Wolfgang; and Hohlfeld, Harald, 3,676,096.
Schuller, Wolfgang; and Hohlfeld, Harald, to Schuller, Werner Hogo Wilhelm. Process and apparatus for making glass fiber structures including coating before and after attenuation. 3,676,096, Cl. 65-3.000.
Schulte, Sheldon R.: *See—*
Robin, Michael; and Schulte, Sheldon R., 3,676,530.
Schultz, Henry F. Disc implement. 3,675,725, Cl. 172-245.000.
Schultz, Herman S.; Katzenstein, William; and Williams, Earl P., to GAF Corporation. Methyl vinyl ether copolymers. 3,676,408, Cl. 260-80.30e.
Schulz, Gunter; Himmelmann, Wolfgang; and Randolph, August, to Agfa-Gevaert Aktiengesellschaft. Epoxide hardener in silver halide emulsion layer and formaldehyde and/or glyoxal hardener in adjacent protective layer. 3,676,144, Cl. 96-111.000.
Schulz, Johann G. D.: *See—*
Onopchenko, Anatoli; Schulz, Johann G. D.; and Williamson, Roger C., 3,676,488.
Schwaller, Lando J.; Razzl Albert J.; and White, John G., to Akzona Incorporated. Hide pasting machine. 3,675,450, Cl. 05/03/72.
Schwaneke, Alfred E.; Falke, Wilbert L.; and Crosser, Orrin K., to United States of America, Interior. Soldering method. 3,675,310, Cl. 29-492.000.
Schwartz, Frederich William, Jr., to Jamesbury Corporation. Pressure relief valve construction for railway tank cars and the like. 3,675,679, Cl. 137-587.000.
Schwarz, Gerhard, to Compur-Werk Gesellschaft mit beschrankter Haftung & Co. Photographic camera with focal plane shutter and interchangeable objective shutter. 3,675,561, Cl. 95-53.00e.
Schwarz, Karlhans, to Bodenseewerk Geratetechnik GmbH. Directional and pitch trim indicator for automatic pilots. 3,676,843, Cl. 340-27.00r.
Schweicher, Wolfgang: *See—*
Browatzki, Kurt; Gref, Hans; Herzhoff, Peter; Maus, Fritz; Platz, Stephan; Schaum, Gustav; Schweicher, Wolfgang; and Wasser, Willi, 3,676,178.
Schweitzer, E. O., Manufacturing Co., Inc.: *See—*
Schweitzer, Edmund O., Jr., 3,676,740.
Schweitzer, Edmund O., Jr., to Schweitzer, E. O., Manufacturing Co., Inc. Automatically resettable fault indicator. 3,676,740, Cl. 317-22.000.
Schwoyer, William L., to Commercial Solvents Corporation. Explosive slurry having constant detonation velocity over a wide temperature range. 3,676,234, Cl. 149-38.000.
Sci-Med, Inc., mesne: *See—*
Blomquist, Arnold W., 3,675,490.
SCM Corporation: *See—*
De Weese, Duane G.; and Hanck, Ronald C., 3,676,148.
Eppler, Richard Andrew, 3,676,204.
Gary, Wilbur, 3,676,487.
Scott Paper Company: *See—*
Adams, Whitney B., 3,676,173.
Scruggs, Jack G.; and Brady, Donnie G., to Phillips Petroleum Company. Synthesis of hydroxyalkyl esters of carboxylic acids. 3,676,484, Cl. 260-475.00p.
Seale, Virgil L.; Moreland, Billy Ray; and De Shazo, James Derwin, to Nalco Chemical Company. Products of reaction of polyoxyalkylene alcohols and di-glycidyl ethers of bis-phenol compounds. 3,676,501, Cl. 260-613.00b.
Sealectro Corporation: *See—*
Stand, Mille, 3,676,638.
Seaview Enterprises, Inc.: *See—*
Allen, William J.; and Barber, Michael D., 3,675,923.
Seeger, Donald E.: *See—*
Beare, Gene K.; Kopelman, Bernard; and Seeger, Donald E., 3,676,663.
Seekircher, Richard: *See—*
Ellis, Alan F.; Kresge, Alfred N.; and Seekircher, Richard, 3,676,489.
Segerdahl, Roy R.; and Jonke, Joseph L., to Bunker-Ramo Corporation, The. Fluid-pressure transducer. 3,676,821, Cl. 338-41.
Seibold, Rudolf, to L. & C. Steinmuller G.m.b.H. Wall elements for steam generators. 3,675,628, Cl. 122-6.00r.
Sekmakas, Kazys, to DeSoto, Inc. Aminoplast resins particularly adapted for electrocoating and process for producing the same. 3,676,312, Cl. 204-181.000.
Self, Douglas R. Fluid pump. 3,676,019, Cl. 417-121.000.
Sellors, John, Jr.; and Shular, Howard E., to Pyronics Inc. Excess air burner. 3,676,048, Cl. 431-353.000.
Selman, Gordon Leslie, to Johnson, Matthey & Co., Limited. Improvement in the process relating to alloys containing platinum group metals. 3,676,114, Cl. 75-172.000.
Sels, Victor Richard, to De La Rue Instruments Limited. Article banding machines. 3,675,386, Cl. 53-63.000.
Seltzer, Clyde W.: *See—*
Summers, Stanely E.; and Seltzer, Clyde W., 3,675,282.
Seng Company, The: *See—*
Meinhardt, James R., 3,675,887.
Senrui, Shiro: *See—*
Takehisa, Masaaki; Senrui, Shiro; and Nakajima, Hayato, 3,676,419.
Senyard, Corley P.: *See—*
Winkler, John C.; and Senyard, Corley P., 3,676,412.
Severini, Febo; Valvassori, Alberto; and Tavazzani, Carlo, to Montecatini Edison S.p.A. Preparation of polymeric compositions of high anti-impact resistance. 3,676,528, Cl. 260-878.00r.
Shabarack, John: *See—*
Pryor, Michael J.; Shapiro, Stanley; Tyler, Derek E.; and Shabarack, John, 3,676,088.
Shaffer, Howard A.: *See—*
Weaver, Galen K.; Shaffer, Howard A.; and Coughlin, Stephen A., 3,676,575.
Shaffer, William E., to Stromberg-Carlson Corporation. Pulsing circuit including a switching and current regulator circuit. 3,676,601, Cl. 179-16.00e.
Shakespeare of Arkansas, Inc.: *See—*
Sarah, Thomas F., 3,675,502.
Shami, Elie: *See—*
Lachman, Leon; Reiner, Roy H.; Shami, Elie; and Spector, Walter, 3,676,557.
Shamoo, Adil E. Liquid scintillators. 3,676,360, Cl. 252-301.20r.
Shane, Victor. Snap open bottle cap. 3,675,805, Cl. 215-42.000.
Shank, Charles Vernon: *See—*
Kogelnik, Herwig Werner; and Shank, Charles Vernon, 3,675,990.
Shannon, Charles N.: *See—*
Niemann, George W.; and Shannon, Charles N., 3,676,780.
Shanok, Jesse P.: *See—*
Shanok, Victor; and Shanok, Jesse P., 3,675,355.
Shanok, Victor; and Shanok, Jesse P., to Glass Laboratories Company. Molding strip. 3,675,355, Cl. 40-125.00r.
Shapiro, Stanley: *See—*
Pryor, Michael J.; Shapiro, Stanley; Tyler, Derek E.; and Shabarack, John, 3,676,088.
Sharaf, Harold M.; and Eby, Richard L., to Anderson Power Products, Inc. Pulse sampling battery fuel gauging and resistance metering method and means. 3,676,770, Cl. 324-29.500.
Shariff, Sadig A.: *See—*
Wilson, John R.; and Shariff, Sadig A., 3,676,749.
Sharman, Samuel H., to Chevron Research Company. Hydrogenated olefin sulfonate-fatty acid amide detergent compositions. 3,676,372, Cl. 252-525.000.
Sharp Kabushiki Kaisha: *See—*
Sakurai, Takeshi; and Tani, Zenpei, 3,676,228.
Sharples, Allan; Rostron, Arthur John; and Mc Gibbon, Graeme, to Ilford Limited. Photosensitive devices incorporating polymeric elements which give high absolute photo-currents. 3,676,688, Cl. 250-211.00r.
Shattuck, Meredith David; and Weiche, William J., to International Business Machines Corporation. Process for making electrophotographic plates. 3,676,210, Cl. 117-201.000.
Shaver, William R.: *See—*
Nagy, Ernest J.; and Shaver, William R., 3,675,591.
Shaw, Richard G.: *See—*
West, Robert N.; Brook, Richard A.; Shaw, Richard G.; Lobb, Daniel R.; and Allnutt, Anthony J., 3,676,008.
Shea, Edward M.: *See—*
Cooper, William W., IV; and Shea, Edward M., 3,676,193.
Sheahan, Desmond F.: *See—*
Orchard, Henry J.; and Sheahan, Desmond F., 3,676,806.
Sheldon, Edward Emanuel. Devices of fiberoptic and vacuum tube construction. 3,676,671, Cl. 250-71.00r.
Sheldon, Richard, to Litvak Meat Company Inc. Method for preparing beef feet products. 3,676,153, Cl. 99-107.000.
Shell Oil Company: *See—*
Babcock, Lyndon R., Jr.; and Walker, Dale A., 3,676,527.
Farmer, Robert F., III; and Lawson, Jimmie B., 3,675,716.
Fraser, John P.; and Hartman, David E., 3,676,091.
Mason, Ronald F., 3,676,523.
Shelley, Shelley W., to Shelley Systems, Inc. System for producing modular building blocks. 3,676,536, Cl. 264-33.000.
Shelley Systems, Inc.: *See—*

Shelley, Shelley W., 3,676,536.
Shen, Tsung-Ying; and Boswell, Kay H., to Merck & Co., Inc. 5'Adamantoyl-2'-deoxy-5-methylaminouridine. 3,676,422, Cl. 260-211.50r.
Sherrill, Henry H., Jr., to Western Electric Company, Incorporated. Article mounting apparatus. 3,675,299, Cl. 29-203.
Sherwood, Richard Curry: *See—*
Bacon, Donald Dingley; Nesbitt, Ethan Allen; Sherwood, Richard Curry; and Wernick, Jack Harry, 3,676,867.
Shibayama, Daigoro; and Mashimo, Teruo, to Yamato Setubi Koji Kabushiki Kaisha. Apparatus for treating organic waste. 3,676,074, Cl. 23-259.100.
Shick, Philip E., to Owens-Illinois, Inc. Methods for the treatment of spent sulfite pulping liquors and the recovery of chemical pulping values therefrom. 3,676,064, Cl. 23-129.000.
Shiga, Yasuhiro: *See—*
Nishitani, Kazuo; Shiga, Yasuhiro; and Nishibayashi, Yoshifumi, 3,676,206.
Shimadzu Seisakusho, Ltd.: *See—*
Shimoi, Saburo, 3,676,018.
Shimizu, Tetsuji; and Iwakura, Makoto, to Kabushiki Kaisha Tokai Rika Denki Seisakusho. Electric circuit for rapidly igniting a discharge tube. 3,676,734, Cl. 315-200.000.
Shimoi, Saburo, to Shimadzu Seisakusho, Ltd. Pumping apparatus. 3,676,018, Cl. 417-72.000.
Shimotori, Kazumi: *See—*
Mito, Satoru; Shimotori, Kazumi; Kawai, Mituo; and Kawaguchi, Kanzi, 3,676,110.
Shin, Masaaki: *See—*
Miyake, Yasuhiko; Takayanagi, Eifu; Narita, Shigeo; Shin, Masaaki; Hayashi, Roshio; and Sakurai, Koichi, 3,676,053.
Shirai, Yoshihiro; Ichikawa, Hirohiko; Yoshida, Akira; Uchida, Naotake; Tsuji, Masaru; and Matsumoto, Zenji, to Takeda Chemical Industries, Ltd. Method for manufacturing activated carbon and apparatus therefor. 3,676,365, Cl. 252-422.000.
Shirasu, Kazuo: *See—*
Amano, Hiroyuki; Nishio, Fumihiki; Tauji, Nobuo; and Shirasu, Kazuo, 3,676,139.
Shirokov, Grigory Ivanovich: *See—*
Silvestrov, Sergei Nikolaevich; Sinichkin, Moisei Mikhailovich; Shirokov, Grigory Ivanovich; Soloviev, Jury Filippovich; Silvestrov, Nikolai Demyanovich; and Amusin, Boris Zinovievich, 3,675,433.
Shively, Edgar E. Drive-in window unit. 3,675,599, Cl. 109-11.000.
Shore, Thomas H. Sound dispenser. 3,676,594, Cl. 179-1.0vl.
Showa Highpolymer Co., Ltd.: *See—*
Takiyama, Eiichiro; and Hokamura, Sadakazu, 3,676,524.
Shukshin, Nikolai Pavolich: *See—*
Andrusenko, Petr Ivanovich; Dolganov, Kint Evgenievich; Kovalev, Alexandr Ivanovich; Berezovsky, Pavel Iosipovich; Dmitrenko, Vladimir Ilich; Shukshin, Nikolai Pavolich; Gutarevich, Jury Feodosievich; Kislov, Vladimir Grigorievich; Chevtaev, Andrei Vasilievich; Koshman, Eduard Ivanovich; and Filippov, Vladimir Vasilievich, 3,676,023.
Shular, Howard E.: *See—*
Sellors, John, Jr.; and Shular, Howard E., 3,676,048.
Shultz, John E.; and Herderhorst, Wilfred W., to Tokheim Corporation. Electrical in-tank fuel pump. 3,676,025, Cl. 417-423.000.
Shulzhenko, Alexandr Alexandrovich; and Getman, Anatoly Fedorovich, to Ordena Trudovogo Krasnogo Znameni Ukrainsky Nauchno-Issledovatelsky Konstruktorsky Teknnologichesky Institut Sinteticheskikh Sverkhtverdykh materialov i Instrumenta Gosplana Ukrainskoi SSR. Method for synthesizing diamond. 3,676,068, Cl. 23-209.100.
Shum, John, Jr., to Olin Corporation. Engine starting system with combination air relay and check valve. 3,675,417, Cl. 60-39.140.
Shumard, Raymond F.: *See—*
Galloway, Reginald B.; and Shumard, Raymond F., 3,676,547.
Shute, Adrian L. Spring-loaded folding arm. 3,675,885, Cl. 248-351.000.
Sibley, Richard D.: *See—*
Domyan, Frank F.; Lantz, Joseph C.; and Sibley, Richard D., 3,675,650.
Siddons, Phillip Thomas, to Glaxo Laboratories Limited. Recovery of pure cephalexin. 3,676,437, Cl. 260-243.00c.
Sieet, George E.: *See—*
Miller, Howard B.; and Sieet, George E., 3,675,332.
Sieg, Robert P., to Chevron Research Company. Disproportionation and isomerization for isopentane production. 3,676,522, Cl. 260-683.650.
Siemag Siegener Maschinenbau, G.m.b.H.: *See—*
Bretschneider, Erich, 3,675,455.
Siemens Aktiengesellschaft: *See—*
Albus, Peter, 3,676,126.
Bahr, Alex; and Peche, Gerhard, 3,676,743.
Bauer, Franz; Bessemer, Karl Friedrich; and Kinner, Gotthard, 3,676,776.
Hisi, Paul, 3,675,636.
Hofmann, Horst; and Katz, Helmut, 3,676,731.
Keller, Werner, 3,676,819.
Merkenschlager, Hans-Hermann, 3,675,318.
Ramisch, Emil, 3,676,757.
Tappeiner, Hermann, 3,676,763.
Sieurin, Donald, to Morgan Construction Company. Roll changing apparatus. 3,675,456, Cl. 72-239.000.
Sigl, Jon D. Ski with inclined boot platform. 3,675,938, Cl. 280-11.35c.
Signal-Stat Corporation, mesne: *See—*
Kaldor, Robert M.; Borruso, Joseph V.; and Goldbaum, Elliott, 3,676,834.
Signetics Corporation: *See—*
Russell, Lewis K.; and Banks, James L., 3,676,742.
Signode Corporation: *See—*
Lems, Peter, 3,675,388.
Melsek, Norbert J., 3,675,765.
Siksai, Anthony. Turn signal indicating system. 3,676,845, Cl. 340-87.000.
Silby, Harry, to Wire Sales Company. Treatment of waste sulfite liquor to avoid pollution, and method of making. 3,676,164, Cl. 106-77.
Silma: *See—*
Alfano, Marco, 3,675,873.
Silva, Ruben. Magnetic toy, 3,675,365, Cl. 46-239.000.
Silverman, Herbert P.; and Giarrusso, Gino A., to TRW Inc. Method for preparing sensors for detecting reducing vapors. 3,676,188, Cl. 08/24/70.
Silverstein, Joseph J., to Engine Power Corporation. Sealant for pneumatic tires. 3,676,381, Cl. 260-17.40r.
Silvestrov, Nikolai Demyanovich: *See—*
Silvestrov, Sergei Nikolaevich; Sinichkin, Moisei Mikhailovich; Shirokov, Grigory Ivanovich; Soloviev, Jury Filippovich; Silvestrov, Nikolai Demyanovich; and Amusin, Boris Zinovievich, 3,675,433.
Silvestrov, Sergei Nikolaevich; Sinichkin, Moisei Mikhailovich; Shirokov, Grigory Ivanovich; Soloviev, Jury Filippovich; Silvestrov, Nikolai Demyanovich; and Amusin, Boris Zinovievich. Device for constructing mines. 3,675,433, Cl. 61-84.000.
Simmler, Walter: *See—*
Golitz, Hans Dietrich; Degener, Eberhart; Oertel, Gunter; Schmelzer, Hans-Georg; and Simmler, Walter, 3,676,478.
Simmons, William J., to Communications Satellite Corporation. Electronically tunable matching circuit for circulators. 3,676,803, Cl. 333-1.100.
Simond, Jacques: *See—*
Mauvernay, Roland Yves; Busch, Norbert; Simond, Jacques; and Moleyre, Jacques, 3,676,496.
Simpson, David Cumming, to National Research Development Corporation. Gripping. 3,675,962, Cl. 294-99.00r.
Singer Company, The: *See—*
Hunts, Barney D.; and Lyon, William O., 3,675,624.
Singer Company, The, mesne: *See—*
Bilinski, Donald J.; Galowin, Lawrence S.; and Napolitano, Michael, 3,675,711.
Ragen, Robert A., 3,676,658.
Rowe, John Joseph, 3,676,565.
Singh, Shobha; and Van Uitert, Legrand Gerard, to Bell Telephone Laboratories, incorporated. Nonlinear optical devices utilizing substantially hexagonal silicon carbide devices. 3,676,695, Cl. 307-88.300.
Singh, Sujan: *See—*
Arthur, Jett C., Jr.; and Singh, Sujan, 3,676,056.
Sinichkin, Moisei Mikhailovich: *See—*
Silvestrov, Sergei Nikolaevich; Sinichkin, Moisei Mikhailovich; Shirokov, Grigory Ivanovich; Soloviev, Jury Filippovich; Silvestrov, Nikolai Demyanovich; and Amusin, Boris Zinovievich, 3,675,433.
Sinnett, Homer Dayle: *See—*
Anderson, John E.; and Sinnett, Homer Dayle, 3,675,545.
Sittner, Weldon Rex, to Electro Medical Systems, Inc. Method and apparatus for high frequency electric surgery. 3,675,655, Cl. 128-303.140.
Sizer, Phillip S., to Otis Engineering Corporation. Well flow control system and method. 3,675,720, Cl. 166-314.000.
Sjonvall, Ragnar Edward: *See—*
Glasser, George; Sjonvall, Ragnar Edward; and Kaplow, Milton, 3,676,154.
Skagit Corporation: *See—*
Mangold, Edward J., 3,675,960.
SKF Industrial Trading and Development Company, N.V.: *See—*
Arsenius, Torsten Henry; and Hallstedt, Carl Goran Albin, 3,675,977.
Hallerback, Stig Lennart, 3,675,979.
Skinner, Wilfred A.; Johansson, John G.; and Johnson, Howard L., to Stanford Research Institute. 3,4,5-Trimethoxybenzamides of phenyl- and pyridylakylamines. 3,676,447, Cl. 260-295.0am.
Skogen, Robert O.: *See—*
Zetterlund, Stanley L.; and Skogen, Robert O., 3,675,587.
Slagg, James E.; Nelson, Grant W.; Moffitt, Jerry T.; and Balint, Joseph A., to Allen-Bradley Company. Modular potentiometer. 3,676,822, Cl. 338-132.000.
Slater, Jack D.: *See—*
Nuscher, Edwin H.; and Slater, Jack D., 3,676,235.
Slater, William M.: *See—*
Stinton, Frederick M.; and Slater, William M., 3,676,031.
Slator, Damon T.; and Peil, Archie W., to Bowen Tools, Inc. Tubing hanger assembly and method of using same. 3,675,719, Cl. 166-297.000.
Sletzinger, Meyer: *See—*
Pines, Seemon H.; and Sletzinger, Meyer, 3,676,453.
Sletzinger, Meyer; Karady, Sandor; Ly, Manuel G.; and Pines, Seemon H., to Merck & Co., Inc. α-Acylhydrazino-π-phenyl-propionitriles. 3,676,480, Cl. 260-465.00d.

Sloane, Seymour D. Decorative tree covering for ornamenting an artificial tree. 3,676,275, Cl. 161-14.000.
Smierciak, Walter: *See—*
Kartasuk, Raymond H.; and Smierciak, Walter, 3,675,916.
Smith, Alan Ernest William: *See—*
Hare, George Anthony; and Smith, Alan Ernest William, 3,676,115.
Smith, Arthur A. Free flow water system for asphalt rollers. 3,675,546, Cl. 94-50.00r.
Smith, Dean A.: *See—*
Stewert, John F.; and Smith, Dean A., 3,675,347.
Smith, Frank; and Entwisle, John Hubert, to Imperial Chemical Industries Limited. Anode assembly for electrolytic cells. 3,676,325, Cl. 204-288.000.
Smith, George Elwood, to Bell Telephone Laboratories, Incorporated. Interconnection of electrical devices. 3,675,319, Cl. 29-625.000.
Smith International Incorporated: *See—*
Neilson, William J., 3,675,729.
Smith, James A., to Fibreboard Corporation, mesne. Tool for drawing the ends of opposed members together. 3,675,897, Cl. 254-78.000.
Smith, John H. Gravity overflow tube for automatic clothes washer. 3,675,448, Cl. 68-208.000.
Smith, John Paul: *See—*
Goldthorp, David Clayton; Limiero, Albert David; and Smith, John Paul, 3,676,608.
Smith Kline & French Laboratories: *See—*
Kaiser, Carl; and Zirkle, Charles L., 3,676,435.
Smith, Kline & French Laboratories, Inc.: *See—*
McGusty, Elizabeth R.; Sutton, Blaine M.; and Walz, Donald T., 3,676,554.
Smith, Leslie Harold, to Imperial Chemical Industries Limited. Alkanolamine derivatives. 3,676,493, Cl. 260-559.00a.
Smith, Richard D. Projection game apparatus including paper clip projector and closely spaced target posts. 3,675,924, Cl. 273-101.000.
Smith, Richard Daniel. Preserving cellulosic materials through treatment with alkylene oxides. 3,676,055, Cl. 8-120.000.
Smith, Richard Daniel. Treatment of cellulosic materials. 3,676,182, Cl. 117-60.000.
Smith, Robert T.: *See—*
Gottlieb, Alvin J.; Neyens, Wayne E.; Smith, Robert T.; and Garbark, Roman F., 3,675,927.
Smith, Ronald M.: *See—*
Collier, William W.; and Smith, Ronald M., 3,676,860.
Snam Progetti S.p.A.: *See—*
Arrighetti, Sergio; Vajna, Eugenio; and Cesca, Sebastiano, 3,676,510.
Arrighetti, Sergio; Vajna, Eugenio; and Cesca, Sebastiano, 3,676,511.
Arrighetti, Sergio; Vajna, Eugenio; and Cesca, Sebastiano, 3,676,512.
Ciuti, Brunello; and Del Ross, Sergio, 3,676,357.
Snap-On Tools Corporation: *See—*
Knudsen, Ra-mond G.; Price, James W.; and Olson, Gene E., 3,675,516.
Snap-On-Tools Corporation: *See—*
Larson, Kenneth R., 3,675,464.
Snee, Charles Thomas, to Lubrizol Corporation, The. Phosphating solution with scale suppressing characteristics. 3,676,224, Cl. 148-6.15z.
Snell, Brian Kenneth; and Bishop, Nigel Douglas, to Imperial Chemical Industries Limited. Certain 2-formamido-4-hydroxypyrimidines. 3,676,443, Cl. 260-256.40c.
Snorkel Fire Equipment Company: *See—*
Davidson, Kenneth H.; and Morris, Carrol V., 3,675,721.
Snow, Robert C.: *See—*
Bourke, Edgar R., II; and Snow, Robert C., 3,675,816.
Sobel, Johannes: *See—*
Himmelmann, Wolfgang; Schranz, Karl-Wilhelm; Sobel, Johannes; and Van Veelen, George Frans, 3,676,143.
Sobey, Albert J.; and Donlon, Richard H., to Transportation Technology, Inc. Speed and slip controlled traction drive. 3,675,583, Cl. 104-23.0fs.
Societe Anonyme dite Ameco S.A.: *See—*
Nass, Louis, 3,675,756.
Societe anonyme dite: L'Oreal: *See—*
Ghilardi, Guiliana; Kalopissis, Gregoire; De Beaulieu, Henry Philippe; and Abegg, Jean-Louis, 3,676,546.
Societe Anonyme Francaise: *See—*
Moreau, Andre Jules Pierre, 3,675,574.
Societe Anonyme, Societe Minere et Metallurgique de Penanoya: *See—*
Bailly, Roger Gaston, 3,675,827.
Societe Ethylene Plastique: *See—*
Pied, Jean-Philippe, 3,676,395.
Societe Lannionnaise d'Electronique: *See—*
Tallegas, Francois, 3,676,855.
Societe Nationale des Petroles d'Aquitaine: *See—*
Bonzom, Albert; and Tramier, Bernard, 3,676,442.
Societe Nationale Industrielle Aerospatiale: *See—*
Dubernet, Robert; and Sabatie, Michele, 3,676,576.
Societe: Etablissements Davey Bickford Smith & Cie: *See—*
Moreau, Andre Jules Pierre, 3,675,574.
Soehngen, John W., to Celanese Corporation. Method of producing spray spun nonwoven sheets. 3,676,239, Cl. 156-16.00f.
Sokol David G.: *See—*
Findeisen, Heinz H.; Kallmeyer, James D.; Sokol David G.; Stein, James H.; Thomas, Thomas R.; and Bowers, Jack R., 3,676,854.
Solartron Electronic Group Limited, The: *See—*
Conrad, John Harold; Reynolds, Anthony Edward St. Aubyn; and Gadd, Edward George, 3,676,707.
Solaux, Leon: *See—*
Vergne, Jean; Solaux, Leon; Robinet, Jean-Claude; and Lacroix, Philippe, 3,676,390.
Solomito, Joseph T. Stone slotting machine. 3,675,972, Cl. 299-41.000.
Solomon, Nathan L. Magnetic tape spool and cartridge. 3,675,867, Cl. 242-55.19a.
Soloviev, Jury Filippovich: *See—*
Silvestrov, Sergei Nikolaevich; Sinichkin, Moisei Mikhailovich; Shirokov, Grigory Ivanovich; Soloviev, Jury Filippovich; Silvestrov, Nikolai Demyanovich; and Amusin, Boris Zinovievich, 3,675,433.
Solvay & Cie: *See—*
Boel, Michel; and Dechenne, Roger, 3,676,413.
Soma, Shinichi, to Kabushiki Kaisha Rinnai Seisakusho. Gas control valve means having a piezo-electric firing unit. 3,676,047, Cl. 431-255.000.
Somer, Toivo A., to Bendix Corporation. Low energy particle counter with two-dimensional position sensing. 3,676,676, Cl. 2650-83.00r.
Sommer, Gunter; and Sander, Hans Walter. Apparatus and method for differential thermal analysis. 3,675,465, Cl. 73-15.00b.
Sommerfeld, Eugene G. Polymeric dispersion of a diene-acrylonitrite graft copolymer with a different graft copolymer. 3,676,526, Cl. 260-876.00r.
Song, John, to American Cyanamid Company. 1,3,4-Thiadiazole-bridged thiomethylenephenol antioxidants. 3,676,449, Cl. 260-302.0ad.
Sonoyama, Heikitsu: *See—*
Wada, Hiroyuki; and Sonoyama, Heikitsu, 3,676,491.
Sony Corporation: *See—*
Machida, Tetsuo, 3,676,810.
Soref, Richard A., to Sperry Rand Corporation. Liquid crystal electro-optical measurement and display devices. 3,675,988, Cl. 350-160.000.
Sorenson, James L.: *See—*
Reynolds, Gordon S.; Pannier, Karl A., Jr.; and Sorenson, James L., 3,675,891.
Sorrell, Stanley Edward, to Sterling Coated Materials Limited. Envelope with sealing means. 3,675,844, Cl. 229-80.000.
Southern California Gas Co.: *See—*
Osborne, Keith, 3,676,042.
Southern Research Institute: *See—*
Lacey, Robert E.; and Mintz, Milton S., 3,676,335.
Spanke, Edwin A.: *See—*
Carrier, Louis F.; and Spanke, Edwin A., 3,675,976.
Spearin, Walter E.; and Vanderhei, Harold S., to Combined Paper Mills, Inc. Method for controlling varying liquid penetration of a continuous paper web. 3,676,184, Cl. 117-68.000.
Spector, Herman. Coating and forming. 3,676,174, Cl. 117-26.000.
Spector, Walter: *See—*
Lachman, Leon; Reiner, Roy H.; Shami, Elie; and Spector, Walter, 3,676,557.
Speed, Sidney E., to Olin Corporation. Process for controlled production of hydrogen gas by the catalyzed and controlled decomposition of zirconium hydride and titanium hydride. 3,676,071, Cl. 23-212.00r.
Speelman, Irving A., to Propper Manufacturing Co., Inc. Instrument with replaceable tube. 3,675,486, Cl. 73-401.000.
Speller Frank N., Jr., to Clark, Forrester A. Processes for secondarily recovering oil. 3,675,715, Cl. 166-256.000.
Sperry Rand Corporation: *See—*
Best, Albert M.; and Anderson, Keith B., 3,675,802.
Davenport, Arthur B., 3,676,697.
McMahon, Donald H., 3,676,798.
O'Connor, Maurice J.; and Davidson, Donald J., 3,675,676.
Oliver, Kenneth L., 3,676,818.
Rafuse, Mary J., 3,675,987.
Soref, Richard A., 3,675,988.
Strenglein, Harry F., 3,676,865.
Weinstein, Warren D., 3,675,475.
Wesner, Charles R., 3,676,648.
Spiller, Lester L.; and Buford, Claude W., to Ransburg Electro-Coating Corporation. Polyvinyl chloride powder coatings. 3,676,171, Cl. 117-17.000.
Spivack, John D.; and Dexter, Martin, to Ciba-Geigy Corporation. Bis-(hindered phenol)-alkane phosphonates. 3,676,531, Cl. 260-953.000.
Spoel, Han: *See—*
Mc Leod, Melvin Elliott; Deutschman, John Edward; Percival, Herbert Warren; and Spoel, Han, 3,676,105.
Sports Equipment, Inc.: *See—*
Meyers, Walter A., Sr., 3,675,921.
Sprague Electric Company: *See—*
Burger, Francis J. P. J.; and Wu, Jie Chu, 3,676,752.
Sprayon Research Corporation: *See—*
Kempthorne, Richard Lewis, 3,676,170.
Sprowl, James A. Voltage-time-voltage computation circuit using R-C exponential decay circuits to perform multiplication, division, root-finding and logarithmic conversion. 3,676,661, Cl. 235-193.000.

Spurlin, Harold M., to Hercules Incorporated. Azidoformate-isocyanate compounds. 3,676,466, Cl. 260-349.000.
Square D Company: *See—*
Wrabetz, Voyta E., 3,676,812.
Squibb, E. R., & Sons, Inc.: *See—*
Levine, Seymour D., 3,676,452.
Yale, Harry Louis; and Petigara, Ramesh, 3,676,445.
Stackpole Carbon Company: *See—*
Olson, David A., 3,676,825.
Staffin, Robert; Ricci, Roy J.; and Juels, Ronald J., to Procedyne Corporation. Particle analyzing apparatus and method. 3,676,647, Cl. 235-92.0pc.
Stahly, Eldon E.: *See—*
Frank, Victor S.; Stahly, Eldon E.; and Rice, Rip G., 3,676,311.
Stalego, Joseph P., to Owens-Corning Fiberglas Corporation. Process for producing air blown glass fiber strand mat. 3,676,095, Cl. 65-3.000.
Staley, A. E., Manufacturing Company: *See—*
Jones, Rexford W.; and Thompson, William B., 3,676,121.
Protzman, Thomas F.; and Magidson, William H., 3,676,127.
Protzman, Thomas F., 3,676,145.
Protzman, Thomas F., 3,676,146.
Stand, Mills, to Sealectro Corporation. Plasma spray device and method. 3,676,638, Cl. 219-121.00p.
Standard Oil Company: *See—*
Grutsch, James F.; and Mallatt, Russell C., 3,675,779.
Stanford Research Institute: *See—*
Skinner, Wilfred A.; Johansson, John G.; and Johnson, Howard L., 3,676,447.
Stangarone, Gene; Cassara, Frank A.; and Dupont, Eugene F., to Automatic Flag Poles, Inc. Automatic flagpole. 3,675,615, Cl. 116-173.000.
Star-Kist Foods, Inc.: *See—*
Vidjak, Frank V., 3,675,273.
Starer, Robert L., to Physitech, Inc. Aircraft flasher unit. 3,676,736, Cl. 315-241.00r.
Stark, Gary K.: *See—*
Barron, Charles D.; Peterson, Earl A.; Stark, Gary K.; and Wilms, Carl A., 3,675,900.
Starliper, Aaron G.: *See—*
Barnard, Paul G.; Starliper, Aaron G.; and Stephenson, James B., 3,676,107.
State of Nebraska: *See—*
Anderson, John E.; and Sinnett, Homer Dayle, 3,675,545.
Staten, Hi W.: *See—*
Arens, James L.; and Staten, Hi W., 3,676,653.
Statham Instruments, Inc.: *See—*
Funfstuck, Horst; and Elazar, Shmuel, 3,675,643.
Stearns, Richard S.; Duling, Irl N.; and Gates, David S., to Sun Oil Company. Synthetic lubricants from low molecular weight olefins. 3,676,521, Cl. 260-683.100.
Steed, Frank Streeton; deceased (by Rutherford, Robert Mark; and Steed, Mary Phyllis; executors); and Lawson-Tancred, Henry, to Thompson, Anthony Sigston. Parking apparatus with powered pallets in each parking stall. 3,675,799, Cl. 214-16.1cb.
Steed, Mary Phyllis: *See—*
Steed, Frank Streeton; and Lawson-Tancred, Henry, 3,675,799.
Steiman, Wolf, to Valve Corporation of America. Tilt action mixing dispenser valve. 3,675,823, Cl. 222-145.000.
Stein Industrie: *See—*
Vidal, Jean; and Lemoine, Jacques, 3,675,423.
Vidal, Jean; Parisot, Jean; and Lemoine, Jacques, 3,675,426.
Stein, James H.: *See—*
Findeisen, Heinz H.; Kallmeyer, James D.; Sokol David G.; Stein, James H.; Thomas, Thomas R.; and Bowers, Jack R., 3,676,854.
Steiner, Josef; and Widmer, Adolf, to Sulzer Brothers Limited. Apparatus for mounting a harness in a weaving machine. 3,675,686, Cl. 139-1.000.
Stephanoff, Nicholas N., to Hewlett-Packard Company. Angular impact fluid energy mill. 3,675,858, Cl. 241-5.000.
Stephens, Erwin E. Earpiece for hearing aid having sound inlet for high frequencies. 3,676,611, Cl. 179-107.00e.
Stephens, Robert K., to Polaroid Corporation. Novel photographic products and processes. 3,676,123, Cl. 96-29.000.
Stephens, Ruth E., to Ethyl Corporation. Neodymium oxide-barium oxide catalyst composition. 3,676,370, Cl. 252-455.00r.
Stephenson, James B.: *See—*
Barnard, Paul G.; Starliper, Aaron G.; and Stephenson, James B., 3,676,107.
Stephenson, Robert L., to Allied Chemical Corporation. Seat belt buckle assembly. 3,675,281, Cl. 24-230.000.
Sterling Coated Materials Limited: *See—*
Sorrell, Stanley Edward, 3,675,844.
Sterling Drug Inc.: *See—*
Archer, Sydney; and Schulenberg, John W., 3,676,444.
Clinton, Raymond O., 3,676,426.
Sternberg, Hyman M.; Piacesi, Dante, Jr.; and Katz, Howard, to United States of America, Navy. Rod warhead. 3,675,577, Cl. 102-67.000.
Sterrett, Eugene L. Gas separating device. 3,675,394, Cl. 55-518.000.
Stevens, Robert Walter: *See—*
Coyle, Jan Robert; and Stevens, Robert Walter, 3,676,609.
Stevens, William D., to Foster Wheeler Corporation. Minimization of nitrogen oxides in combustion products. 3,675,629, Cl. 122-235.00r.
Stewart, John S., to Hawley Products Company. Padded panel for automobile door. 3,676,278, Cl. 161-43.000.
Stewert, John F.; and Smith, Dean A., to Westinghouse Air Brake Company. Ejector and floor actuating means for scraper. 3,675,347, Cl. 37-129.000.
Stieglitz, Henry Gilbert: *See—*
Hake, Walter Thomas; and Stieglitz, Henry Gilbert, 3,676,271.
Stiff, Bernard G. E.; and Finelli, Thomas M., to Avco Corporation. Bearing. 3,675,980, Cl. 308-238.000.
Stijger, Adrianus G., to Interlas N.V. Hoisting grab. 3,675,963, Cl. 294-104.000.
Stinton, Frederick M.; and Slater, William M., to Conenco International Limited. Post-tensioning system. 3,676,031, Cl. 425-111.000.
Stokes, Joseph F.; and Van Vessem, George E., to American Chain & Cable Company, Inc. Potentiometric resistance measuring system. 3,676,774, Cl. 324-57.000.
Stolarski, Boniface: *See—*
Le Brasse, Gordon J.; and Stolarski, Boniface, 3,676,103.
Stolpa, Gerhard, to Henkel & Cie, GmbH. Preparation of factice-like products. 3,676,468, Cl. 260-403.000.
Stolzfus, John E.: *See—*
Alkinson, James D.; Lepley, James W.; Nussbaum, Claire E.; and Stolzfus, John E., 3,675,796.
Stopera, Walter. Vehicle speed controlled throttle governor. 3,675,731, Cl. 180-109.000.
Storandt, Duane L. Dentifrice applicator. 3,675,264, Cl. 15-104.940.
Stork Amsterdam N.V.: *See—*
Vertegaal, Jacobus G., 3,675,571.
Story, Albert G., to Colorado State University Research Foundation. Method and apparatus for separating potatoes from stones and soil clods. 3,675,769, Cl. 209-73.000.
Story, Paul R.: *See—*
Murray, Robert W.; and Story, Paul R., 3,676,394.
Story, Richard-Neil; and Bundegaard, Howard, to American Cyanamid Company. Wet-spinning shaped fibers. 3,676,540, Cl. 264-177.00f.
Storyk, John M. Suspension system. 3,675,884, Cl. 248-317.000.
Strasser, Helmut: *See—*
'Mayr, Helmut; Pelte, Richard; Hubert, Theo; and Strasser, Helmut, 3,676,759.
Stratton, Cleo C. Engine. 3,675,630, Cl. 123-70.00r.
Strauss, Rudolf Siegfried; and Teitz, Peter David, to Fry's Metals Limited. Soldering fluxes. 3,675,307, Cl. 29-495.000.
Strelets, Khaim Lipovich; Chesnokov, Alexandr Sergeevich; Devyatkin, Vladimir Nikolaevich; Tatakin, Alexandr Nikolaevich; Krasikov, Evsei Dmitrievich; Leonova, Ljudmila Sergeevna; Medvetskaya, Galina Arkadievna; and Nechaeva, Tatyana Georgievna. Fused salt electrolyzer for magnesium production. 3,676,323, Cl. 204-244.000.
Strenglein, Harry F., to Sperry Rand Corporation. High frequency signal memory and regenerator. 3,676,865, Cl. 340-173.0rc.
Strobl, Frederick P., Jr.: *See—*
Ettlinger, Ralph, Jr.; and Strobl, Frederick P., Jr., 3,675,770.
Strom, Thomas N.: *See—*
Ludwig, Lawrence P.; and Strom, Thomas N., 3,675,935.
Stromberg Datagraphix, Inc.: *See—*
Harkins, Patrick A., Jr., 3,676,317.
Stromberg-Carlson Corporation: *See—*
Budrys, Ignas; and Lee, Ernest O., Jr., 3,676,603.
Goetchius, Norman E.; and Zaky, Amin Y., 3,676,602.
Gueldenpfennig, Klaus; Pommerening, Uwe A.; and Russell, Stanley L., 3,676,605.
Jorgensen, Adam A.; Bentley, William; and Urycki, Edward, 3,676,747.
Shaffer, William E., 3,676,601.
Strother, Seldon D. Shelf container for film strip. 3,675,982, Cl. 312-278.000.
Struthers Scientific and International Corporation: *See—*
Ganiaris, Neophytos, 3,675,436.
Sturdy, Clifford, to Davy and United Engineering Company Limited. Ingot manipulator for a rolling mill. 3,675,789, Cl. 214-1.0qg.
Sullifoam, Inc.: *See—*
Sullivan, Matthew A., 3,675,595.
Sullivan, Matthew A., to Sullifoam, Inc. Pallet. 3,675,595, Cl. 108-51.000.
Sulzer Brothers Limited: *See—*
Steiner, Josef; and Widmer, Adolf, 3,675,686.
Sumitomo Chemical Company, Ltd.: *See—*
Hirohashi, Toshiyuki; Izumi, Takahiro; and Yamamoto, Hisao, 3,676,460.
Summerfield, William F., to Mattel, Inc. Strip record for a phonograph. 3,675,930, Cl. 274-11.00r.
Summers, Stanely E.; and Seltzer, Clyde W., to Ametek, Inc. Mechanical fuse. 3,675,282, Cl. 24-230.0sl.
Sun Oil Company: *See—*
Stearns, Richard S.; Duling, Irl N.; and Gates, David S., 3,676,521.
Sun Research and Development Co.: *See—*
Raymond, Richard L., 3,676,299.
Sunbeam Corporation: *See—*
Bluestein, Bernard B., 3,675,449.
Super Caster Corporation: *See—*
Closa, Jose, 3,675,269.
Susquehanna Corporation, The: *See—*
Perri, Joseph, 3,675,304.

Suter, Charles A., to Goodyear Tire & Rubber Company, The. Inflatable-deflatable flexible structural component. 3,675,377, Cl. 52-2.000.
Sutton, Blaine M.: *See—*
McGusty, Elizabeth R.; Sutton, Blaine M.; and Walz, Donald T., 3,676,554.
Suzuki, Osamu: *See—*
Akashi, Goro; Suzuki, Osamu; and Nakamura, Matsuaki, 3,676,217.
Suzuki Takashi: *See—*
Yamamoto, Hiroichi; Suzuki Takashi; Higashide, Eiji; Fugono, Takeshi; and Mizuno, Komei, 3,676,300.
Svenska Cellulosa Aktiebolaget: *See—*
Andersson, Per-Erik; and Bergholm, Carl Arne, 3,675,707.
Svoboda, Glenn R.; and Reineck, Ronald W., to Freeman Chemical Corporation. Low flame spread polyurethane foam containing bromine-containing polyester resin. 3,676,376, Cl. 260-2.5av.
Swanson, Rollin J. Atmospheric water collector. 3,675,442, Cl. 62-285.000.
Swartz, William M. Method for applying letters to plaques and the like. 3,676,248, Cl. 156-235.000.
Sweeney, William M.; and Alexander, David Lee, to Texaco Inc. Process for transportation of waxy crude oils. 3,675,671, Cl. 137-13.000.
Swet, Charles J., to United States of America, Navy. Optical scanning spacecraft system. 3,676,581, Cl. 178-5.40r.
Swiatosz, Edmund; and Chambers, Walter S., to United States of America, Navy. Fire fighting and control similator. 3,675,343, Cl. 35-10.000.
Sylvania Electric Products, Inc.: *See—*
Anderson, John Wallace; and Loughridge, Frederick Ardel, 3,676,043.
Beare, Gene K.; Kopelman, Bernard; and Seeger, Donald E., 3,676,663.
Cheney, Richard F.; and Parsons, Donald S., 3,676,083.
Dale, Ernest A.; and Thomas, Martha J. B., 3,676,358.
Hammond, Michael J.; and Haynes, James W., 3,676,177.
Loughridge, Frederick A.; Matheson, Wilfrid G.; and Passmore, Edmund M., 3,676,730.
Menelly, Richard A., 3,676,729.
Roche, William J., 3,676,735.
Schreurs, Willy P.; and Kimball, Lawrence W., 3,676,176.
Schreurs, Willy P., 3,676,728.
Thompson, David F., 3,676,569.
Symm, Richard H., to Dow Chemical Company, The. Process for flameproofing cellulosic textile fabrics and product obtained thereby. 3,676,054, Cl. 8-116.200.
Syverson, Charles D., to Kohler Co. Brushless alternating current generator. 3,676,764, Cl. 322-51.000.
Tabata, Hisanobu; Tabata, Norimasa; and Nakajima, Rokuro. Production of fresh water, brine and magnesium hydroxide. 3,676,067, Cl. 23-204.00r.
Tabata, Norimasa: *See—*
Tabata, Hisanobu; Tabata, Norimasa; and Nakajima, Rokuro, 3,676,067.
Tabler, Donald C.: *See—*
Johnson, Marvin M.; and Tabler, Donald C., 3,676,332.
Tabler, Donald C., to Phillips Petroleum Company. Hydrocarbon dehydrogenation employing metal antimonide catalysts. 3,676,513, Cl. 260-668.00d.
Taga, Koji; and Noguchi, Masahiko, to Konoshima Chemical Co., Ltd. Manufacturing method for high purity synthetic cryolite from crude wet process phosphoric acid. 3,676,061, Cl. 23-88.000.
Taga, Koji; and Noguchi, Masahiko, to Konoshima Chemical Co., Ltd. Manufacturing method for pure synthetic cryolite. 3,676,062, Cl. 23-88.000.
Taguchi, Naoyoshi. Gas detecting element and method of manufacturing same. 3,676,820, Cl. 338-34.000.
Takahashi, Kuniyuki; Hata, Go; and Miyake, Akihisa, to Toray Industries, Inc. 1,6-Octadiene derivatives and the preparation thereof. 3,676,470, Cl. 260-410.000.
Takahashi, Naoki, to Nittan Company Limited. Single chamber ionization smoke detector. 3,676,678, Cl. 250-83.6ft.
Takashima, Kunihide: *See—*
Matsumoto, Fumio; Wada, Toshiya; Yamamoto, Takaaki; Tanaka, Osamu; Takashima, Kunihide; and Takata, Toshihiko, 3,676,227.
Takata, Toshihiko: *See—*
Matsumoto, Fumio; Wada, Toshiya; Yamamoto, Takaaki; Tanaka, Osamu; Takashima, Kunihide; and Takata, Toshihiko, 3,676,227.
Takayanagi, Eifu: *See—*
Miyake, Yasuhiko; Takayanagi, Eifu; Narita, Shigeo; Shin, Masaaki; Hayashi, Roshio; and Sakurai, Koichi, 3,676,053.
Takeda Chemical Industries, Ltd.: *See—*
Matui, Yutaka; Mise, Noritoshi; Goto, Jugo; and Yokoo, Makoto, 3,676,402.
Shirai, Yoshihiro; Ichikawa, Hirohiko; Yoshida, Akira; Uchida, Naotake; Tsuji, Masaru; and Matsumoto, Zenji, 3,676,365.
Yamamoto, Hiroichi; Suzuki Takashi; Higashide, Eiji; Fugono, Takeshi; and Mizuno, Komei, 3,676,300.
Takehisa, Masaaki; Senrui, Shiro; and Nakajima, Hayato, to Japan Atomic Energy Research Institute. Process for producing fine polyethylene powder. 3,676,419, Cl. 260-94.90f.
Takekawa, Toshio, to Tokekawa Tekko Kabushiki Kaisha. Hydraulic transmission mechanism for heavy rolling stocks and the like. 3,675,507, Cl. 74-687.000.
Takemasa, Kazuo; and Komada, Hitoshi, to Sanyo Electric Co., Ltd. Refrigerator with fluid amplifier means. 3,675,438, Cl. 62-156.000.
Takezawa, Isoe; Muto, Masataro; and Hori, Koichi, to Mitsubishi Jukogyo Kabushiki Kaisha. Method of constructing marine float structures. 3,675,606, Cl. 114-65.00r.
Taki, Hiromitsu; Hayakawa, Shigeru; and Nagase, Kaneomi, to Matsushita Electric Industrial Co., Ltd. Ceramic dielectric comprising calcium titanosilicate. 3,676,351, Cl. 252-63.500.
Takiyama, Eiichiro; and Hokamura, Sadakazu, to Showa Highpolymer Co., Ltd. Vinyl ester resins prepared with an addition compound of a secondary amine-acid salt catalyst. 3,676,524, Cl. 260-837.00r.
Tallarico, Robert A.; and Goff, Don L. Suspendible sleeping cocoon. 3,675,256, Cl. 5-120.000.
Tallegas, Francois, to C.I.T.-Compagnie Industrielle des Telecommunications and Societe Lannionnaise d'Electronique. Connecting network arrangement for time switching. 3,676,855, Cl. 340-172.500.
Tanabe Kakoki Co., Ltd.: *See—*
Fujiwara, Yoshiyuki, 3,676,564.
Tanaka, Osamu: *See—*
Matsumoto, Fumio; Wada, Toshiya; Yamamoto, Takaaki; Tanaka, Osamu; Takashima, Kunihide; and Takata, Toshihiko, 3,676,227.
Tanaka, Yoshimasa: *See—*
Yamada, Norio; Tanaka, Yoshimasa; Ono, Taisuke; and Ikejmima, Yoritaka, 3,675,324.
Tani, Zenpei: *See—*
Sakurai, Takeshi; and Tani, Zenpei, 3,676,228.
Tanimura, Hiroshi: *See—*
Kaneko, Ryuichi; Saito, Toshiya; Fujimura, Yasushi; Tanimura, Hiroshi; Nakamura, Totaro; and Ikeda, Yukisaburo, 3,676,585.
Taormina, Anthony J.: *See—*
Hartz, Marvin E.; Taormina, Anthony J.; and Grebik, Stephen J., 3,676,838.
Tappeiner, Hermann, to Siemens Aktiengesellschaft. Self-commutating direct-to-alternating current inverter. 3,676,763, Cl. 321-45.00c.
Tarrant, Fred K.: *See—*
Murray, Gregory J.; and Tarrant, Fred K., 3,675,266.
Tarrant Manufacturing Company: *See—*
Murray, Gregory J.; and Tarrant, Fred K., 3,675,266.
Tashiro, Kijuro; and Yokoyama, Masuzo, to Mitsubishi Petrochemical Co., Ltd. Catalytic production of olefin polymers. 3,676,418, Cl. 260-88.200.
Tatakin, Alexandr Nikolaevich: *See—*
Strelets, Khaim Lipovich; Chesnokov, Alexandr Sergeevich; Devyatkin, Vladimir Nikolaevich; Tatakin, Alexandr Nikolaevich; Krasikov, Evsei Dmitrievich; Leonova, Ljudmila Sergeevna; Medvetskaya, Galina Arkadievna; and Nechaeva, Tatyana Georgievna, 3,676,323.
Tatsutomi, Yasuo; and Noma, Tetsuo, to Toyo Kogyo Co., Ltd. Device for containing and subsequently consuming the fuel vapors escaping to the atmosphere for an internal combustion engine. 3,675,634, Cl. 123-136.000.
Taube, Donald R.: *See—*
Reust, Paul H.; and Taube, Donald R., 3,675,300.
Tavazzani, Carlo: *See—*
Severini, Febo; Valvassori, Alberto; and Tavazzani, Carlo, 3,676,528.
Taylor, Glenn N., to Kendall Company, The. Catheter with valved fluid reservoir. 3,675,658, Cl. 128-349.0bv.
Taylor, Jerry H.: *See—*
Gosnell, Earl J.; and Taylor, Jerry H., 3,675,572.
Taylor, Lewis A., to Enterprise Machine and Development Corporation. Yarn handling apparatus. 3,675,623, Cl. 118-423.000.
Taylor, Monroe F., to Grace, W. R., & Co. Sleeve wrapped package with a base. 3,675,767, Cl. 206-65.00s.
TeBe Elprodukter AB: *See—*
Bengtsson, Bigge, 3,675,250.
Tee-Pak, Inc.: *See—*
Turbak, Albin F.; and Rose, Henry J., 3,676,382.
Teitz, Peter David: *See—*
Strauss, Rudolf Siegfried; and Teitz, Peter David, 3,675,307.
Tejera, Luis H., to Mallinckrodt Chemical Works, mesne. Measuring syringe. 3,675,492, Cl. 73-425.600.
Tektronix, Inc.: *See—*
Boer, Machiel, 3,676,807.
Charters, Thomas H., 3,676,777.
Teledyne, Inc.: *See—*
Kennedy, George C., 3,676,069.
Teledyne Ryan Aeronautical Company: *See—*
Girard, Peter F.; and Peterson, John M., 3,675,582.
Telephonic Equipment Corporation: *See—*
Johnson, James W., 3,676,605.
Tennessee Valley Authority: *See—*
Nix, Fred D., 3,676,101.
Tension Structures Inc.: *See—*
Moss, Charles W., 3,675,380.
Terrasse, Gilles: *See—*
Morane, Bruno; Paoletti, Charles; and Terrasse, Gilles, 3,675,821.
Terry, Alton L.: *See—*
Lentz, Tommy L.; and Terry, Alton L., 3,675,369.
Terry, David W., to International Business Machines Corporation. System for controlling format. 3,676,853, Cl. 340-172.500.

Texaco Inc.: *See—*
Morris, Herbert C.; and Dorn, Peter, 3,676,089.
Sweeney, William M.; and Alexander, David Lee, 3,675,671.
Texas Instruments, Incorporated: *See—*
Kourtesis, John G.; and Marcoux, Leo, 3,676,211.
Textron Inc.: *See—*
McCullough, Stuart, 3,675,519.
Rieth, Kurt A., 3,675,284.
Vanneet, James L., 3,675,292.
Thamm, Rudolf: *See—*
Opderbeck, Fritz; Ploetz, Theodor; Thamm, Rudolf; and Westerhuis, Popko J., 3,676,294.
Theodore, Roy: *See—*
Evans, David Maurice; and Theodore, Roy, 3,676,629.
Therm-O-Disc, Incorporated: *See—*
Bletz, Howard W., 3,676,817.
Theurer, Josef: *See—*
Plasser, Franz; and Theurer, Josef, 3,675,581.
Thiel, Hans-Dieter: *See—*
Schneider-Arnoldi, Alfred; Kampmann, Friedrich-Wilhelm; Thiel, Hans-Dieter; Kandler, Joachim; and Gleisberg, Dietrich, 3,676,165.
Thiemann, Josef; Murthy, Yelahanka K. S.; and Coronelli, Carolina, to Lepetit S.p.A. Antibiotic. 3,676,490, Cl. 260-534.000.
Thomas, Alfred William, to Massey-Ferguson Services NV. Sliding shaft power take off speed change. 3,675,497, Cl. 74-15.400.
Thomas, Dalton A. Connector between transmission actuating shaft and arm therefor. 3,675,956, Cl. 287-53.00r.
Thomas, Martha J. B.: *See—*
Dale, Ernest A.; and Thomas, Martha J. B., 3,676,358.
Thomas, Merritt H. Nail inserting device. 3,675,839, Cl. 227-140.000.
Thomas, Thomas R.: *See—*
Findeisen, Heinz H.; Kallmeyer, James D.; Sokol David G.; Stein, James H.; Thomas, Thomas R.; and Bowers, Jack R., 3,676,854.
Thompson, Anthony Sigston: *See—*
Steed, Frank Streeton; and Lawson-Tancred, Henry, 3,675,799.
Thompson, David F., to Sylvania Electric Products Inc. Integrated circuit package. 3,676,569, Cl. 174-52.00s.
Thompson, George L. Retrievable density control valve. 3,675,714, Cl. 166-224.000.
Thompson, James C.: *See—*
Bailey, Loren C., 3,675,735.
Thompson, John T.: *See—*
Gillemot, George W.; and Thompson, John T., 3,676,836.
Thompson, Tom H. Disc brake caliper assembly. 3,675,742, Cl. 188-72.500.
Thompson, Tom H. Hydraulic disc brake construction. 3,675,743, Cl. 188-72.500.
Thompson, William B.: *See—*
Jones, Rexford W.; and Thompson, William B., 3,676,121.
Thomson-CSF: *See—*
Guenard, Pierre, 3,676,791.
Thorn Electrical Components Limited: *See—*
Williams, David Christopher Robert, 3,675,344.
Throckmorton, Morford C.; and Saitman, William M., to Goodyear Tire & Rubber Company, The. Diolefins ternary catalyst systems for the polymerization of conjugated. 3,676,411, Cl. 260-82.100.
Thuillier, Yvonne, to Laboratories Albert Rolland. Process for obtaining extracts from animal tissues. 3,676,551, Cl. 424-103.000.
Tights, Inc.: *See—*
Ferrell, John O., 3,675,247.
Timken Company, The: *See—*
McKelvey, Ralph E., 3,675,978.
Tisdale, Lucien E., to Ridge Ply, Inc. Machine for making stress laminated panel. 3,676,263, Cl. 156-462.000.
Tizard, Kenneth Wilfrid: *See—*
Basham, Edgar William James; and Tizard, Kenneth Wilfrid, 3,675,649.
Tokekawa Tekko Kabushiki Kaisha: *See—*
Takekawa, Toshio, 3,675,507.
Tokheim Corporation: *See—*
Shultz, John E.; and Herderhorst, Wilfred W., 3,676,025.
Tokitomo, Soichi; Honda, Masakazu; Nakayama, Fumio; and Ueno, Keisiro, to Mitsubishi Rayon Company Limited and Mitsubishi Acetate Company Limited. Process of making a tobacco smoke filter from a split film of cellulose acetate. 3,675,541, Cl. 93-1.00c.
Tokyo Cloth Co., Ltd.: *See—*
Nishitani, Kazuo; Shiga, Yasuhiro; and Nishibayashi, Yoshifumi, 3,676,206.
Tokyo Shibaura Electric Co., Ltd.: *See—*
Mito, Satoru; Shimotori, Kazumi; Kawai, Mituo; and Kawaguchi, Kanzi, 3,676,110.
Yasuda, Atsuhiro; and Kobayashi, Koichi, 3,675,496.
Tomiyama, Eijiro, to Tomy Kogyo Co., Ltd. Remotely controllable toy transporter for vehicles. 3,675,366, Cl. 46-244.00a.
Tomkinson, John G.: *See—*
Ryan, John W.; Tomkinson, John G.; and Wieman, Paul R., 3,675,925.
Tomy Kogyo Co., Ltd.: *See—*
Tomiyama, Eijiro, 3,675,366.
Tonne, Franz; Brand, Werner; and Wolowitz, Benno, to Waggonfabrik Verdingen A.G. Stairway for rail-mounted conveyances. 3,675,593, Cl. 105-447.000.
Toray Industries, Inc.: *See—*
Takahashi, Kuniyuki; Hata, Go; and Miyake, Akihisa, 3,676,470.
Torge, Reimund: *See—*
Prugger, Hans; and Torge, Reimund, 3,676,004.
Torigoe, Yasuhiro. Method of manufacturing bags. 3,675,542, Cl. 93-35.00r.
Torii, Michihiro: *See—*
Kobayashi, Seihin; and Torii, Michihiro, 3,676,748.
Torin Corporation: *See—*
Cavagnero, Erman V.; and Loftus, Joseph F., 3,675,460.
Tosin, Peter M.: *See—*
Leu, Francois J.; Tosin, Peter M.; and Werner, Ernst, 3,676,696.
Towell, Le Roy Dean, to Computer Industries, Inc. Wire cutting apparatus for reflow wiring machines. 3,675,840, Cl. 228-4.000.
Toyo Kogyo Co., Ltd.: *See—*
Tatsutomi, Yasuo; and Noma, Tetsuo, 3,675,634.
Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
Wakamatsu, Hisato; Kawai, Hisai; Ito, Shin; and Kubo, Seitoku Kaisha, 3,675,511.
Traber, Walter; Margot, Alfred; and Gailay, Jean-Jacques, to Geigy Chemical Corporation. Anthelmintic compositions containing new carbamates and thiocarbamates and method of use. 3,676,561, Cl. 424-300.000.
Tramier, Bernard: *See—*
Bonzom, Albert; and Tramier, Bernard, 3,676,442.
Trans-Sonics, Inc.: *See—*
Westcott, Vernon C., 3,676,765.
Transportation Technology, Inc.: *See—*
Sobey, Albert J.; and Donlon, Richard H., 3,675,583.
Trautman, George H., Jr.: *See—*
Munschauer, Frederick E., Jr.; and Trautman, George H., Jr., 3,675,463.
Traweek, John C. Electronic assembly utilizing thermal panel for heat sink. 3,676,745, Cl. 317-100.000.
Trieschmann, Hans-Georg: *See—*
Heil, Eduard; Trieschmann, Hans-Georg; Willersinn, Herbert; Bolte, Herbert; and Bronstert, Klaus, 3,676,378.
Trimble, Cebern B. Heat exchange container. 3,675,637, Cl. 126-263.000.
Trip-Lite Limited: *See—*
Cooke, Albert Edward, 3,675,446.
Tronser, Alfred. Process of manufacturing a trimmer capacitor. 3,675,288, Cl. 29-15.410.
True Temper Corporation: *See—*
Jackson, Carl Thomas, 3,676,258.
Truesdell, Merlyn R.: *See—*
Merfeld, Michael J.; and Truesdell, Merlyn R., 3,675,851.
Trunzo, Floyd F.; and Scheidmantel, David A., to Westinghouse Electric Corporation. High temperature adhesive overcoat for magnet wire. 3,676,814, Cl. 336-205.000.
Truskolaski, Bernard S., to Minnesota Mining and Manufacturing Company. Decorative bow and method of making same. 3,676,277, Cl. 161-9.000.
TRW Inc.: *See—*
Blazek, William S., 3,675,708.
Drutchas, Gilbert H.; and Clark, Hubert M., 3,675,422.
Lake, Donald; Perrin, Badger; and Nolan, Frederick J., 3,675,817.
Rice, Edward J., 3,676,230.
Silverman, Herbert P.; and Giarrusso, Gino A., 3,676,188.
TRW Inc., mesne: *See—*
Duffy, William B., 3,675,958.
Mitchell, Edward B., 3,676,626.
Tsai, James H.; and Anderson, Glenn H., to Dow Chemical Company, The. Multinuclear π-complexes having at least two metal-cobalt bonds. 3,676,474, Cl. 260-429.
Tscharner, Christopher Johannes, to Geigy Chemical Corporation. Substituted bis-triazinylamino stilbene compounds and compositions thereof. 3,676,339, Cl. 252-8.750.
Tsuji, Masaru: *See—*
Shirai, Yoshihiro; Ichikawa, Hirohiko; Yoshida, Akira; Uchida, Naotake; Tsuji, Masaru; and Matsumoto, Zenji, 3,676,365.
Tsuji, Nobuo: *See—*
Amano, Hiroyuki; Nishio, Fumihiki; Tsuji, Nobuo; and Shirasu, Kazuo, 3,676,139.
Tsukuma, Shin; and Higuchi, Akio. Device for controlling yarn winding pressure on a package. 3,675,862, Cl. 242-18.00r.
Tuley, Donald L.: *See—*
Fellwock, Charles G.; and Tuley, Donald L., 3,675,271.
Tupper, Willis E.; and Hanson, John R., to Dexter Automatic Products Co., Inc. Primer pump. 3,676,026, Cl. 417-560.000.
Turbak, Albin F.; and Rose, Henry J., to Tee-Pak, Inc. Adhesive for regenerated cellulose. 3,676,382, Cl. 260-18.0tn.
Turley, Richard J., to Olin Corporation. Alpha-(dialkoxyphosphinyl)aryl methyl dialkylphosphates. 3,676,532, Cl. 260-970.000.
Turner, Ian, to International Computers Limited. Fluid supported pad with means to produce contact between head and record medium. 3,676,874, Cl. 340-174.10e.
Turner, Paul Anthony: *See—*
English, Alan Taylour; and Turner, Paul Anthony, 3,676,214.
Tyler, Derek E.: *See—*
Pryor, Michael J.; Shapiro, Stanley; Tyler, Derek E.; and Shabarack, John, 3,676,088.
Uchida, Kozo, to Iwasaki Tsushinki Kabushiki Kaisha; a/k/a and Iwatsu Electric Co., Ltd. Pulse generator for fast rise-time pulses. 3,676,708, Cl. 307-263.000.
Uchida, Naotake: *See—*

Shirai, Yoshihiro; Ichikawa, Hirohiko; Yoshida, Akira; Uchida, Naotake; Tsuji, Masaru; and Matsumoto, Zenji, 3,676,365.
Uchiyama, Takashi; Ito, Tadashi; and Matsuda, Mutsuhide, to Canon Kabushiki Kaisha. Photographing system for use with a flash device. 3,675,547, Cl. 95-10.0ct.
Udylite Corporation: *See—*
Brown, Henry, 3,676,308.
Ueno, Keisiro: *See—*
Tokitomo, Soichi; Honda, Masakazu; Nakayama, Fumio; and Ueno, Keisiro, 3,675,541.
Ugine Kuhlmann: *See—*
Isard, Arsene; and Weiss, Francis, 3,676,465.
Vuillemenot, Jacques, 3,676,355.
Uhlig, Fritz; and Braun, Jurgen, to Kalle Aktiengesellschaft. Copying material and process for the preparation of auxiliary copies for multicolor printing. 3,676,134, Cl. 96-49.000.
Uline, Lawrence James, to Union Carbide Corporation. Machine for filling preformed pouches. 3,675,389, Cl. 53-183.000.
Ulrich, Henri: *See—*
Rao, Durvasula V.; Sayigh, Adnan A. R.; and Ulrich, Henri, 3,676,436.
Recchia, Frank P.; and Ulrich, Henri, 3,676,497.
Unick, Alvin J.; and Gault, Kenneth W., to Ethyl Corporation. Lubricant compositions. 3,676,348, Cl. 252-54.000.
Unidynamics/Phoenix, Inc.: *See—*
Huber, John F., 3,675,942.
Union Camp Corporation: *See—*
Abrams, Andrew M., 3,675,345.
Union Carbide Corporation: *See—*
Atwood, Lamar T.; and Gidge, Lester, 3,675,285.
Jackson, George E., 3,675,447.
Marshall, Walter R., 3,675,902.
Maurer, David Paul, 3,675,439.
Uline, Lawrence James, 3,675,389.
Uniroyal Englebert France S.A.: *See—*
Leblond, Jean, 3,676,262.
United Aircraft Corporation: *See—*
Evans, Dennis J.; and Elam, Richard C., 3,676,085.
Grosh, James L., 3,676,246.
Kovacs, Mark A., 3,676,797.
Lenkeit, Carl Heinz; and Conklin, Cornelius Stephen, Jr., 3,675,418.
Owczarski, William A.; Oblak, John M.; and Paulonis, Daniel F., 3,676,225.
Scannell, Paul R.; La Force, Phil D.; and O'Connell, Wayne T., 3,675,425.
United Control Corporation: *See—*
Asmussen, Daniel R., 3,676,659.
United Gas Industries Limited: *See—*
Dransfield, Desmond; Bass, Patrick; White, Roy Ernest; and Bracken, Leslie Thomas, 3,676,876.
United Kingdom Atomic Energy Authority: *See—*
Linning, David Lees; and Cowking, Charles Brian, 3,676,296.
Rennie, Compton Alexander; Lockett, George Edward; and Hosegood, Samuel Brittan, 3,676,297.
United Kingdom of Great Britain and Northern Ireland, Secretary of State for Defence in Her Britannic Majesty's Government of the: *See—*
Palfreyman, Jack; and Middleton, Henry Edward, 3,675,294.
United States of America
Agriculture: *See—*
Arthur, Jett C., Jr.; and Singh, Sujan, 3,676,056.
Harper, Robert J., Jr.; Bruno, Joseph S.; and Gautreaux, Gloria A., 3,676,052.
Lofton, John T.; Harper, Robert J., Jr.; and Blanchard, Eugene J., 3,676,207.
Army: *See—*
Huget, Eugene F.; Brauer, Gerhard M.; Kumpula, John W.; and Civjan, Simon, 3,675,327.
Matulis, Albert J., 3,676,274.
Army, mesne: *See—*
Dawson, Ralph E.; and Mahaffey, Donald M., 3,676,425.
Atomic Energy Commission: *See—*
Condas, George A.; and Brown, Don W., 3,676,677.
Irvine, Alvin R., 3,675,746.
Interior: *See—*
Barnard, Paul G.; Starliper, Aaron G.; and Stephenson, James B., 3,676,107.
Lacey, Robert E.; and Mintz, Milton S., 3,676,335.
Sachs, Samuel B.; and Riley, Robert L., 3,676,203.
Schwaneke, Alfred E.; Falke, Wilbert L.; and Crosser, Orrin K., 3,675,310.
National Aeronautics and Space Administration: *See—*
Arias, Alan, 3,675,910.
Belew, Robert R., 3,675,376.
Lee, Robert D., 3,676,772.
Ludwig, Lawrence P.; and Strom, Thomas N., 3,675,935.
Maserjian, Joseph; and Gatewood, John R., 3,676,754.
Miller, Howard B.; and Sieet, George E., 3,675,332.
Quatinetz Max; Weeton, John W.; and Herbell, Thomas P., 3,676,084.
Zaviantseff, Vladimir T., 3,676,674.
National Aeronautics and Space Administration; Administrator, with respect to an invention of:
Clauss, Robert; and Quinn, Rex B., 3,676,787.
Moser, Billy G.; and Landel, Robert F., 3,675,712.
Ramey, Robert L.; Landes, Hugh S.; and Manus, Eugene A. Thin film microwave iris. 3,676,809, Cl. 333-98.00r.
Navy: *See—*
Adair, Robert S., 3,675,549.
Bailey, Robert A.; and Michelsen, Arve, 3,675,575.
Brown, Bruce J., 3,676,793.
Garrett, William D.; and Barger, William R., Jr., 3,676,359.
Hanrahan, Donald J., 3,676,716.
Min, Sherman L., 3,675,579.
Murphree, Francis J.; and Catano, Paul S., 3,676,802.
Newton, Victor S., 3,676,792.
Niemann, George W.; and Shannon, Charles N., 3,676,780.
Sternberg, Hyman M.; Piacesi, Dante, Jr.; and Katz, Howard, 3,675,577.
Swet, Charles J., 3,676,581.
Swiatosz, Edmund; and Chambers, Walter S., 3,675,343.
Warren, Samuel C., 3,676,699.
Wolff, Hanns H., 3,675,342.
United States Surgical Corporation: *See—*
Bryan, Graham W.; and Green, David T., 3,675,688.
Uno, Yoshihiro, to Matsushita Electric Industrial Company. Thin-window image pick-up and recording tube. 3,676,586, Cl. 178-7.200.
Unterstenhofer, Gunter: *See—*
Schrader, Gerhard; Lorenz, Walter; Unterstenhofer, Gunter; and Hammann, Ingeborg, 3,676,555.
Upadhyay, Pravin M., to Bell and Howell Company. Chain driven indexing Geneva mechanism. 3,675,503, Cl. 74-436.000.
Upjohn Company, The: *See—*
Doering, William Von E.; Farrissey, William J., Jr.; and Frulla, Floro F., 3,676,503.
Hester, Jackson B., Jr., 3,676,558.
McLaughlin, Alexander; and Rose, James S., 3,676,380.
Parikh, Jekishan R., 3,676,433.
Rao, Durvasula V.; Sayigh, Adnan A. R.; and Ulrich, Henri, 3,676,436.
Recchia, Frank P.; and Ulrich, Henri, 3,676,497.
Visser, Jeronimo, 3,676,302.
Urban, Era E. Seed planter with replaceable rotary trap chamber. 3,675,818, Cl. 221-224.000.
Urry, Wilbert H.; and Niu, Hsien Ying, to Wyandotte Chemicals Corporation. Process for the preparation of halogenated esters. 3,676,469, Cl. 260-408.000.
Urycki, Edward: *See—*
Jorgensen, Adam A.; Bentley, William; and Urycki, Edward, 3,676,747.
U.S. Industries, Inc.: *See—*
Carrier, Louis F.; and Spanke, Edwin A., 3,675,976.
U.S. Philips Corporation: *See—*
De Boer, Eeltje, 3,676,657.
Ducamus, Jean Matital; and Fernandez, Claude-Jane, 3,676,709.
Eulenberg, Hannspeter; and Van Veldhoven, Gerardus Antonius Wilhelmus, 3,676,733.
Glaise, Rene, 3,676,755.
Heetman, Alphonsus, 3,676,599.
Kasperkovitz, Wolfdietrich Georg, 3,676,701.
Van Der Woerd, Albertus Cornelis, 3,675,529.
Velzel, Christiaan Hendrik Frans, 3,676,006.
Wensink, Bernardus Leonardus; and Cense, Adriaan, 3,676,714.
Willems, Leonardus Franciskus, 3,676,596.
Vaccaro, Angelo; and Dixon, Harold F. E., to Columbia Controls Research Corporation. Coded document and system for automatically reading same. 3,676,644, Cl. 235-61.11d.
Vaillant, Joh., KG: *See—*
Mobus, Gunter, 3,676,041.
Vajna, Eugenio: *See—*
Arrighetti, Sergio; Vajna, Eugenio; and Cesca, Sebastiano, 3,676,510.
Arrighetti, Sergio; Vajna, Eugenio; and Cesca, Sebastiano, 3,676,511.
Arrighetti, Sergio; Vajna, Eugenio; and Cesca, Sebastiano, 3,676,512.
Valjoux S.A.: *See—*
Mouquin, Paul-Louis, 3,675,412.
Valvassori, Alberto: *See—*
Severini, Febo; Valvassori, Alberto; and Tavazzani, Carlo, 3,676,528.
Valve Corporation of America: *See—*
Steiman, Wolf, 3,675,823.
Van Besauw, Jan Frans: *See—*
Poot, Albert Lucien; Van Besauw, Jan Frans; and Depoorter, Henri, 3,676,133.
Van Dale Corporation: *See—*
Buschbom, Floyd E.; Hansen, Glen D.; and Johnson, Roger L., 3,675,758.
Van Den Heuvel, Anthony P.; Richter, Ronald W.; and Joshi, Shrinivas G., to IIT Research Institute. Composite surface-wave transducer. 3,676,721, Cl. 310-8.300.
Van Der Ryn, Sim: *See—*
Hirshen, Sanford; and Van Der Ryn, Sim, 3,676,276.
Van Der Woerd, Albertus Cornelis, to U.S. Philips Corporation. Electromechanical transducer for tuning individual strings of a musical instrument. 3,675,529, Cl. 84-455.000.
Van Dorn Company: *See—*
Placek, Eugene W., 3,675,905.
Van Laethem, Robert: *See—*

Plumat, Emile; and Van Laethem, Robert, 3,676,097.
Van Uitert, Legrand Gerard: *See—*
Singh, Shobha; and Van Uitert, Legrand Gerard, 3,676,695.
Van Veelen, George Frans: *See—*
Himmelmann, Wolfgang; Schranz, Karl-Wilhelm; Sobel, Johannes; and Van Veelen, George Frans, 3,676,143.
Van Veldhoven, Gerardus Antonius Wilhelmus: *See—*
Eulenberg, Hannspeter; and Van Veldhoven, Gerardus Antonius Wilhelmus, 3,676,733.
Van Vessem, George E.: *See—*
Stokes, Joseph F.; and Van Vessem, George E., 3,676,774.
Van Wagner, Edward M.: *See—*
Mott, George R.; and Van Wagner, Edward M., 3,676,118.
Vanderhei, Harold S.: *See—*
Spearin, Walter E.; and Vanderhei, Harold S., 3,676,184.
Vanderveen, John W.; Cheng, Paul J.; Mills, K. Louis, Jr.; Venable, Charles R., Jr.; and Johnson, Paul H., to Phillips Petroleum Company. Manufacture of carbon black. 3,676,070, Cl. 23-209.400.
Vandervelden, Cornelius Keith, to Litton Medical Products, Inc. Dental X-ray head. 3,676,683, Cl. 250-90.000.
Vannest, James L., to Textron Inc. Method for making a roller bearing retainer. 3,675,292, Cl. 29-148.40c.
Varner, Lawrence P.: *See—*
Hicks, David G.; and Varner, Lawrence P., 3,675,493.
Vazirani, Hargovind Nihchaldas, to Bell Telephone Laboratories, Incorporated. Process for the surface treatment of titanium and its alloys. 3,676,223, Cl. 148-6.15r.
VCA Corporation: *See—*
Beres, Steven W., 3,675,831.
Veeder Industries Inc.: *See—*
Devanney, Raymond H., 3,675,848.
Veltjens, Dieter, to Schloemann Aktiengesellschaft. Hydraulic section-stretching machine. 3,675,458, Cl. 72-294.000.
Velsel, Christiaan Hendrik Frans, to U.S. Philips Corporation. Method of measuring the roughness of a surface. 3,676,006, Cl. 356-109.000.
Venable, Charles R., Jr.: *See—*
Vanderveen, John W.; Cheng, Paul J.; Mills, K. Louis, Jr.; Venable, Charles R., Jr.; and Johnson, Paul H., 3,676,070.
Vendo Company, The: *See—*
Hanson, Theodore L., 3,675,819.
Verdier, Henri, to Compagnie Generale des Etablissements Michelin raison sociale Michelin & Cie. Snow tire. 3,675,700, Cl. 152-209.000.
Vergne, Jean; Solaux, Leon; Robinet, Jean-Claude; and Lacroix, Philippe, to Charbonnages de France. Compositions of polymers of bicyclo (2.2.1) heptene-2 and derivatives. 3,676,390, Cl. 260-31.8hr.
Vermeulen, Geert Jan; and Barten, Antonius Martinus, to N.V. Machinefabrik L te Strake. Mechanism for preparing and presenting single thread lengths to a weft device of a weaving loom. 3,675,687, Cl. 139-127.00p.
Veraitron Corporation: *See—*
Berlincourt, Don A.; and Pim, Kendall A., 3,676,724.
Vertegaal, Jacobus G., to Stork Amsterdam N.V. Screen printing machine for printing in multicolour a horizontally advanced web. 3,675,571, Cl. 101-115.000.
Victor Company of Japan, Ltd.: *See—*
Morita, Akiyoshi; and Itoh, Yukio, 3,676,583.
Victor, Michel N. Quick release nut. 3,675,530, Cl. 85-33.000.
Vida, Julius A., to Kendall Company, The. Acyloxymethyl derivatives of diphenylhydantoin. 3,676,454, Cl. 260-309.500.
Vidal, Jean; and Lemoine, Jacques, to Stein Industrie. Method and means cutting out low temperature corrosion by sulphur containing fuel in the terminal parts of a steam generator in the absence of air-heating means. 3,675,423, Cl. 60-107.000.
Vidal, Jean; Parisot, Jean; and Lemoine, Jacques, to Stein Industrie. Method and means for operating a steam gas plant including a gas turbine, a steam turbine with its steam generator at the downstream end. 3,675,426, Cl. 60-39.18b.
Video Information Systems, Inc.: *See—*
Beck, Joseph H., 3,676,580.
Vidjak, Frank V., to Star-Kist Foods, Inc. Fish butchering apparatus. 3,675,273, Cl. 17-61.000.
Vietzke, Horst: *See—*
Ploger, Fritz; and Vietzke, Horst, 3,676,075.
Vigus, Cebron T., to Combustion Engineering, Inc. Hydraulic positioning saddle. 3,675,915, Cl. 269-58.000.
Vik, Albam M., to Dempco, Inc. Snowmobile ski and blade construction. 3,675,939, Cl. 280-28.000.
Viktora, Josef Karel; and Baukal, Albert Jozel, to Research Foundation of the Washington Hospital Center. Apparatus for transport and storage of liquid specimens for radio-immunoassay for insulin. 3,675,488, Cl. 73-421.00r.
Villemaud, Jean Etienne. Conveyors intended to carry directly objects or objects mounted on supports. 3,675,754, Cl. 198-20.000.
Vin Dick, James. Christmas tree lights. 3,676,662, Cl. 240-10.00t.
Vinogradov, Evgeny Alexandrovich; and Irisova, Nataliya Alexandrovna. Resonator for electromagnetic waves of the millimetric and submillimetric band. 3,676,808, Cl. 333-83.000.
VioBin Corporation, mesne: *See—*
Levin, Ezra, 3,676,552.
Vishay Intertechnology, Inc.: *See—*
Mulgueen, John J.; and Schoettly, Edward, 3,676,824.
Visser, Jeronimo, to Upjohn Company, The. Lincomycin production. 3,676,302, Cl. 195-80.00r.
Vocke, Elmer E.; and Baltz, Albert L., to Eagle Range & Manufacturing Company. Removable warming tray assembly. 3,676,643, Cl. 219-432.000.
Voeke, Elmer E.: *See—*
Baltz, Albert L.; and Voeke, Elmer E., 3,675,638.
Voet, Andries, to Huber, J. M., Corporation. Bonding metals to elastomer systems. 3,676,255, Cl. 156-306.000.
Vogel, Helmut: *See—*
Reinking, Klaus; Vogel, Helmut; Hechelhammer, Wilhelm; and Schneider, Kurt, 3,676,544.
Vogerl, Manfred; Daxer, Hilmar; Roder, Manfred; and Dietz, Wolfgang, to Consortium fur Elektrochemische Industrie GmbH. Apparatus for manufacturing semiconductor substances from germanium-silicon or molybdenum-silicon. 3,675,709, Cl. 164-335.000.
Voight, Frederick W., Jr.: *See—*
Lewis, Alan E.; and Voight, Frederick W., Jr., 3,676,485.
Voigtlander Aktiengesellschaft: *See—*
Papke, Friedrich, 3,675,552.
Volkswagenwerk Aktiengesellschaft: *See—*
Henning, Bodo, 3,675,505.
Volmer, Edmund, to Continental Gummi-Werke Aktiengesellschaft. Printing cloth. 3,676,282, Cl. 161-87.000.
von Beckh, Harald J. Life-supporting pressurizable vehicles. 3,675,878, Cl. 294-1.0as.
Vornberger, Karl F.: *See—*
Kamborian, Jacob S.; Harriman, Allen C.; and Vornberger, Karl F., 3,675,260.
Vuillemenot, Jacques, to Ugine Kuhlmann. Stabilization of 1,1,1, trichloroethane with oxazole. 3,676,355, Cl. 252-153.000.
Vulcan Materials Company: *See—*
Christena, Ray C.; and Johnston, Earnest L., 3,676,291.
Christena, Ray C.; and Johnston, Earnest L., 3,676,424.
Vulmiere, Huguette Nelly: *See—*
Vulmiere, Jacques Claude; and Vulmiere, Huguette Nelly, 3,675,984.
Vulmiere, Jacques Claude; and Vulmiere, Huguette Nelly, to Etablissement Public: Agence Nationale de Valorisation de la Recherche (Anvar). Contact endoscope with stray light trap. 3,675,984, Cl. 350-96.00r.
Wada, Hiroyuki; and Sonoyama, Heikitsu, to Daikin Kogyo Co., Ltd. Process for preparing trifluoroacetic anhydride. 3,676,491, Cl. 260-546.000.
Wada, Toshiya: *See—*
Matsumoto, Fumio; Wada, Toshiya; Yamamoto, Takaaki; Tanaka, Osamu; Takashima, Kunihide; and Takata, Toshihiko, 3,676,227.
Waggonfabrik Verdingen A.G.: *See—*
Tonne, Franz; Brand, Werner; and Wolowitz, Benno, 3,675,593.
Wakamatsu, Hisato; Kawai, Hisasi; Ito, Shin; and Kubo, Seitoku Kaisha, to Toyota Jidosha Kogyo Kabushiki Kaisha and Nipponden-so Kabushiki Kaisha. Automatic transmission system. 3,675,511, Cl. 74-866.000.
Wakefield, Lynn B., to Firestone Tire & Rubber Company. Stabilization of butadiene-styrene rubbers. 3,676,396, Cl. 260-45.90r.
Walker, Dale A.: *See—*
Babcock, Lyndon R., Jr.; and Walker, Dale A., 3,676,527.
Walker, Raymond W., to Deep Oil Technology, Inc. Composite power applying means. 3,675,514, Cl. 81-57.110.
Walus, Aloysius N., to Du Pont de Nemours, E. I., and Company. Coating compositions of acrylic-epoxy ester graft copolymers utilizing aziridinyl alkyl acrylate or methacrylate in the copolymer. 3,676,385, Cl. 260-32.80r.
Walz, Donald T.: *See—*
McGusty, Elizabeth R.; Sutton, Blaine M.; and Walz, Donald T., 3,676,554.
Ward, John T.; and Keller, Allen B. Fluid level alarm device for tanks and the like to minimize spills of oil and other environmental pollutents. 3,675,614, Cl. 116-118.000.
Ward, William J., III, to General Electric Company. Facilitated transport liquid membrane. 3,676,220, Cl. 136-86.000.
Warner Electric Brake & Clutch Company: *See—*
Brendemuehl, Roger C., 3,676,009.
Obermark, John A., 3,675,747.
Warner, Milton Young, to Whirlpool Corporation. Radial unloader valve for thru-slot rotary compressor. 3,676,021, Cl. 417-299.000.
Warren, Samuel C., to United States of America, Navy. Asynchronous pulse width filter. 3,676,699, Cl. 307-234.000.
Warsager, Rubin. Pivotable mandrel. 3,675,913, Cl. 269-51.000.
Wasser, Willi: *See—*
Browatzki, Kurt; Gref, Hans; Herzhoff, Peter; Maus, Fritz; Platz, Stephan; Schaum, Gustav; Schweicher, Wolfgang; and Wasser, Willi, 3,676,178.
Watanabe, Takashi, to Kabushiki Kaisha Kawai Gakki Susakusho. Electric contact member. 3,675,320, Cl. 29-630.00d.
Watano, Yutaka: *See—*
Fujii, Tatsuo; and Watano, Yutaka, 3,676,823.
Waters, John R., to Johnston Laboratories, Inc. Apparatus for detecting biological activity. 3,676,679, Cl. 250-83.6ft.
Watkins, Bruce J., to Regan Forge and Engineering Company. Method and apparatus for separating subsea well conduit couplings from a remote floating vessel. 3,675,713, Cl. 166-.600.

Watrous, Donald L.; and Cote, Paul T., to General Electric Company. Sequencing static electronic flashing circuits for photoflash lamp array. 3,676,045, Cl. 431-95.000.
Watson, Gary Q. Protection of anchor rods against corrosion. 3,675,381, Cl. 52-166.000.
Watterlohn, Roy H.: *See—*
Badalich, Frank C.; and Watterlohn, Roy H., 3,675,994.
Watts, George T.; and Yeager, Robert W., to Goodyear Tire & Rubber Company, The. Bias-belted pneumatic tire. 3,675,703, Cl. 152-361.000.
Watts, James P. Method and apparatus for waste disposal. 3,675,428, Cl. 61-35.000.
Way, Anthony Paul: *See—*
Woodward, Anthony Ian; Purdie, Angus John Challis; and Way, Anthony Paul, 3,676,189.
Weaver, Galen K.; Shaffer, Howard A.; and Coughlin, Stephen A., to Babcock & Wilcox Company, The. Brazeable terminal body. 3,676,575, Cl. 174-94.00r.
Weaver, William R. Smoking pipe. 3,675,661, Cl. 131-212.000.
Webb, Albert E., to General Aniline & Film Corporation. Slide viewer. 3,675,354, Cl. 40-63.00a.
Webb, James E. Anchor carrier and guide. 3,675,608, Cl. 114-210.000.
Weber, Heinz, to Institut fur angewandte Physik der Universitat Bern. Process and device for the generation of a single-frequency light ray. 3,676,796, Cl. 331-94.500.
Wedge, Incorporated: *See—*
Wedge, William W., 3,675,675.
Wedge, William W., to Wedge, Incorporated. Ball valve with arm operator. 3,675,675, Cl. 137-368.000.
Weed, John Howard. Adjustable filter assembly. 3,675,402, Cl. 55-496.000.
Weeklund, Wayne Donald: *See—*
Johansson, Ronald C.; and Weeklund, Wayne Donald, 3,676,574.
Weeton, John W.: *See—*
Quatinetz Max; Weeton, John W.; and Herbell, Thomas P., 3,676,084.
Weiche, William J.: *See—*
Shattuck, Meredith David; and Weiche, William J., 3,676,210.
Weichel, Ernst. Process for breaking up a mass of produce. 3,675,696, Cl. 146-225.000.
Weimer, Paul Kessler, to RCA Corporation. Decoders and coupling circuits for solid state video pickup. 3,676,590, Cl. 178-7.100.
Weinstein, Warren D., to Sperry Rand Corporation. Material testing device for the continuous measurement of stress relaxation. 3,675,475, Cl. 73-89.000.
Weischedel, Herbert Rudolf; and Westerman, George Raymond, to Bell Telephone Laboratories, Incorporated. Synchronized self-oscillating switching regulator. 3,676,800, Cl. 331-111.000.
Weiss, Francis: *See—*
Isard, Arsene; and Weiss, Francis, 3,676,465.
Weissenburger, Helmut Wilhelm Otto, to Koninklijke Nederlandsche Gist-en Spiritusfabriek N.V. Imino compounds of penicillins and silyl esters thereof. 3,676,429, Cl. 260-239.100.
Weissman, Bernard. Dental anchor. 3,675,328, Cl. 32-15.000.
Weissman, Bernard. Dental anchoring pin and head therefor. 3,675,329, Cl. 32-15.000.
Weld-Motion, Inc.: *See—*
Gerould, David S., 3,675,837.
Wells, Robert R., to Northrop Corporation. Thin-film diffusion brazing of nickel and nickel base alloys. 3,675,311, Cl. 29-498.000.
Welty, Albert B., Jr. Sulfate control in ammonia flue gas desulfurization. 3,676,059, Cl. 23-2.000.
Welwyn Canada Limited: *See—*
Martin, John P.; Beninger, Darrell J.; and Lemon, John R., 3,675,317.
Marton, John P., 3,676,213.
Wendricks, Roland Norbert, to American Can Company. Extruder mixing screw. 3,676,034, Cl. 425-208.000.
Wensink, Bernardus Leonardus; and Cense, Adriaan, to U.S. Philips Corporation. Semiconductor device. 3,676,714, Cl. 307-303.000.
Werner, Alfred John, to Du Pont de Nemours, E. I., and Company. Rutile titanium dioxide pigment for paper laminates. 3,676,167, Cl. 106-300.000.
Werner, Ernst: *See—*
Leu, Francois J.; Tosin, Peter M.; and Werner, Ernst, 3,676,696.
Wernick, Jack Harry: *See—*
Bacon, Donald Dingley; Nesbitt, Ethan Allen; Sherwood, Richard Curry; and Wernick, Jack Harry, 3,676,867.
Wesner, Charles R., to Sperry Rand Corporation. Turn heel limiting circuit. 3,676,648, Cl. 235-150.200.
West, Robert N.; Brook, Richard A.; Shaw, Richard G.; Lobb, Daniel R.; and Allautt, Anthony J., to British Scientific Instrument Research Association. Method and electro-optical system for inspecting bodies such as tiles. 3,676,008, Cl. 356-196.000.
Westcott, Vernon C., to Trans-Sonics, Inc. Tachometer generator. 3,676,765, Cl. 322-58.000.
Westergren, George A., to Whirlpool Corporation. Vacuum cleaner. 3,675,399, Cl. 55-357.000.
Westerhuis, Popko J.: *See—*
Opderbeck, Fritz; Ploetz, Theodor; Thamm, Rudolf; and Westerhuis, Popko J., 3,676,294.
Westerman, George Raymond: *See—*
Weischedel, Herbert Rudolf; and Westerman, George Raymond, 3,676,800.
Western Electric Company, Incorporated: *See—*
Sherrill, Henry H., Jr., 3,675,299.
Westinghouse Air Brake Company: *See—*
Stewert, John F.; and Smith, Dean A., 3,675,347.
Westinghouse Electric Corporation: *See—*
Adams, Rodney V.; and Medlin, Roger E., 3,676,875.
Driver, Michael C.; and Geisler, Martin J., 3,675,313.
Hetrick, Richard R., 3,676,290.
Hollister, Robert H.; Wilburn, Garlington C.; and Green, Kurt G., 3,676,623.
Lanoue, Thomas J.; and De Neef, John G., 3,676,579.
McLeod, Garth M.; Copeland, Clinton R.; and Rieger, Gilbert N., 3,675,287.
Nix, Lawrence A., Jr.; and Balthis, David L., 3,676,591.
Scala, Luciano C.; and Bartlett, Wilford O., 3,676,383.
Trunzo, Floyd F.; and Scheidmantel, David A., 3,676,814.
Wilson, John R.; and Shariff, Sadig A., 3,676,749.
Westinghouse Learning Corporation: *See—*
Mc Millin, John V.; and Miller, D. Larry, 3,676,690.
Westland Aircraft Limited: *See—*
Basham, Edgar William James; and Tizard, Kenneth Wilfrid, 3,675,649.
Furlong, Owen Desmond Arthur Charles; and Bottrell, Neil L., 3,676,238.
Wetzel, Clifford C. Sod gathering apparatus. 3,675,793, Cl. 214-6.00b.
Weyant, Romer G.; and Kaar, Kenneth B. Vehicle carrier. 3,675,800, Cl. 214-85.100.
Weyerhaeuser Company: *See—*
Dedrick, Dallas S., 3,675,336.
Wheatley, Carl Franklin, Jr.: *See—*
Einthoven, Willem Gerard; Jetter, Evelyn Speter; and Wheatley, Carl Franklin, Jr., 3,676,229.
Wheeler, Charles B. Horizontal load positioner. 3,675,961, Cl. 294-67.00r.
Whipple, Edward R., to General Electric Company. High speed shaft disconnect utilizing a fusible element. 3,675,444, Cl. 64-28.00r.
Whirlpool Corporation: *See—*
Fellwock, Charles G.; and Tuley, Donald L., 3,675,271.
Linstromberg, William J., 3,675,437.
Nordeen, Erwin E., 3,675,268.
Warner, Milton Young, 3,676,021.
Westergren, George A., 3,675,399.
White, Jay E., Jr., to Reflex Corporation of Canada Limited. Mounting of sealed beam headlamps. 3,676,666, Cl. 240-41.500.
White, John G.: *See—*
Schwaller, Lando J.; Razal Albert J.; and White, John G., 3,675,450.
White, Kenneth N.; and Meyer, Harold E. Hand tool for applying edge banding to laminated plastic boards. 3,676,272, Cl. 156-574.000.
White, Peter: *See—*
Malandro, George H.; and White, Peter, 3,676,849.
White, Roy Ernest: *See—*
Dransfield, Desmond; Bass, Patrick; White, Roy Ernest; and Bracken, Leslie Thomas, 3,676,876.
White, William R.: *See—*
Chemtob, Elie M.; White, William R.; and Marcote, Rolando V., 3,675,773.
Whitehouse Products, Inc.: *See—*
Rigolini, Venerio J., 3,675,556.
Whitey Research Tool Co.: *See—*
Matousek, Stephen, 3,675,895.
Whiteyer, James Glenn, to Bell Telephone Laboratories, Incorporated. Multiple trunk signal arrangement. 3,676,604, Cl. 179-18.0ab.
Whitney, Charles D., to Colorado Business Development Corporation, mesne. Reloadable two-piece shotgun cartridge. 3,675,576, Cl. 102-44.000.
Whittaker Corporation, mesne: *See—*
Aisenberg, Sol; and Dodge, James B., 3,675,451.
Wiart, Albert; and Cynober, Simon, to Jeumont-Schmeider. Handling conveyors having self-propelled trolleys. 3,675,585, Cl. 104-148.0lm.
Wicker, Ralph C., to American Bank Note Company, mesne. Printing method and article for hiding halftone images. 3,675,948, Cl. 283-6.000.
Widdershoven, Louis Hubertus, to N.V. Nederlandsche Steenkolenmijnen 'Willem-Sophia'. Steplessly variable speed changer. 3,675,509, Cl. 74-793.000.
Wideman, Gilder L., 17.5% to Green, Don, 17/5% to Gordon, Bruce L. and 10% to Gravlee, L. Clark. Perineal beating device. 3,675,659, Cl. 128-395.000.
Widmer, Adolf: *See—*
Steiner, Josef; and Widmer, Adolf, 3,675,686.
Wiedmann, Siegfried K., to International Business Machines Corporation. Saturation control scheme for TTL Circuit. 3,676,713, Cl. 307-300.000.
Wiedmer, Fritz S., to International Business Machines Corporation. Pushbutton keyboard switch array and associated printed circuit logic cards. 3,676,615, Cl. 200-1.00r.
Wiedmer, Fritz S., to International Business Machines Corporation. EDS serial switch array. 3,676,616, Cl. 200-5.00r.
Wieman, Paul R.: *See—*

Ryan, John W.; Tomkinson, John G.; and Wieman, Paul R., 3,675,925.

Wiener Schwachstromwerke Gesellschaft m.b.H.: *See—*
Kapun, Walter, 3,675,911.

Wiesenhofer, Frank H.: *See—*
Blatt, Leland Francis; and Wiesenhofer, Frank H., 3,675,734.

Wieser, Peter F.; and Dore, James E., to Olin Corporation. Method of grain refining aluminum base alloys. 3,676,111, Cl. 75-142.000.

Wiggins Teape Research & Development Limited: *See—*
Woodward, Anthony Ian; and Purdie, Angus John Challis, 3,676,175.
Woodward, Anthony Ian; Purdie, Angus John Challis; and Way, Anthony Paul, 3,676,189.

Wilburn, Garlington C.: *See—*
Hollister, Robert H.; Wilburn, Garlington C.; and Green, Kurt G., 3,676,623.

Wilder, Harvey H., to Carborundum Company, The. Direct pressure treating device. 3,675,374, Cl. 51-12.000.

Willems, Jozef Frans; Heugebaert, Frans Clement; and Brinckman, Eric Maria, to Agfa-Gevaert. Chemical development of light-sensitive lead compositions. 3,676,131, Cl. 96-48.000.

Willems, Leonardus Franciskus, to U.S. Philips Corporation. Periodicity analyser for a quasi-periodic signal including a detection circuit. 3,676,596, Cl. 179-1.0sa.

Willersinn, Herbert: *See—*
Heil, Eduard; Trieschmann, Hans-Georg; Willersinn, Herbert; Bolte, Herbert; and Bronstert, Klaus, 3,676,378.

Williams, David Christopher Robert, to Thorn Electrical Components Limited. Controlled degradation of a visual scene. 3,675,344, Cl. 35-12.00n.

Williams, Earl P.: *See—*
Schultz, Herman S.; Katzenstein, William; and Williams, Earl P., 3,676,408.

Williams, Theodore S.: *See—*
Dorn, Rolf K.; and Williams, Theodore S., 3,676,519.

Williamson, Roger C.: *See—*
Onopchenko, Anatoli; Schulz, Johann G. D.; and Williamson, Roger C., 3,676,488.

Willman, Bertram T., to Esso Production Research Company. Arctic ice platform. 3,675,429, Cl. 61-46.000.

Wilms, Carl A.: *See—*
Barron, Charles D.; Peterson, Earl A.; Stark, Gary K.; and Wilms, Carl A., 3,675,900.

Wilsch, Herbert: *See—*
Winkler, Alfred; Wilsch, Herbert; and Winkler, Friedrich, 3,675,992.

Wilsch, Herbert; and Muller, Hermann, to Agfa-Gevaert Aktiengesellschaft. Film transporting mechanism for cinematographic apparatus. 3,675,996, Cl. 352-194.000.

Wilson, Edward S. Ski and pole grips. 3,675,835, Cl. 224-45.00s.

Wilson, Gardner P., to Gould, Inc., mesne. Linear three-dimensional gaging and form measuring machine. 3,675,333, Cl. 33-23.00c.

Wilson, John R.; and Shariff, Sadig A., to Westinghouse Electric Corporation. Switch-operating mechanism with particular application thereof to potential-transformer disconnecting assembly. 3,676,749, Cl. 317-103.000.

Wilson, Ray. Overhead cab crane control structure. 3,675,786, Cl. 212-127.000.

Wilson, Thomas: *See—*
Nelson, Leonard; and Wilson, Thomas, 3,676,120.

Wilton Corporation: *See—*
Kartasuk, Raymond H.; and Smierciak, Walter, 3,675,916.

Wilton, Henry T., to American Optical Corporation. Dual magnification projection lens. 3,675,998, Cl. 353-101.000.

Winkler, Alfred; Wilsch, Herbert; and Winkler, Friedrich, to Agfa-Gevaert Aktiengesellschaft. Projector for use with cassettes for motion picture film. 3,675,992, Cl. 352-72.000.

Winkler, Friedrich: *See—*
Winkler, Alfred; Wilsch, Herbert; and Winkler, Friedrich, 3,675,992.

Winkler, John C.; and Senyard, Corley P., to Esso Research and Engineering Company. Method for preparing resin feed. 3,676,412, Cl. 260-82.000.

Winkler, Laszlo: *See—*
Domokos, Jozsef; Benedek, Gyorgy; Kiss, Bela; Winkler, Laszlo; and Beller, Zoltan, 3,673,316.
Domokos, Jozsef; Benedek, Gyorgy; Kiss, Bela; Winkler, Laszlo; and Beller, Zoltan, 3,676,316.

Winkless, Robert A., to Continental Can Company, Inc. Pigmented outside side striper. 3,675,617, Cl. 118-2.000.

Winslade, Harry Herbert, to Inter-Locked Fasteners Limited. Fasteners. 3,675,280, Cl. 24-221.00k.

Winstead, Thomas W., to Great Lakes Carbon Corporation. Continuous method of extruding and theroforming skin-covered foamed thermoplastic articles. 3,676,537, Cl. 264-48.000.

Wintersdorff, Peter, to Kelco Company. Method of preparing freeze-thaw stable spoonable salad dressing. 3,676,157, Cl. 99-144.000.

Wire Sales Company: *See—*
Silby, Harry, 3,676,164.

Wirth, Joseph G., to General Electric Company. 2,2'-Bis(3-pyridinols). 3,676,448, Cl. 260-296.00d.

Wirz, Arno, to Heidelberger Druckmaschinen Aktiengesellschaft. Suction head in sheet-feed systems. 3,675,917, Cl. 271-26.000.

Wise, Layton A., to Mine Safety Appliances Company. Holder for oxygen producing canister. 3,675,296, Cl. 29-200.00p.

Wiser, Joseph E.; and Gerhardt, Peter H., to Mallory, P. R., & Co., Inc. Means connecting a synchronous motor to a gear train housing. 3,676,725, Cl. 310-89.000.

Wishnie, Frederick T., to Eutectic Welding Alloys Corporation. Process for electrochemical machining employing a die of a special alloy. 3,676,310, Cl. 204-143.00m.

Wixon, Harold Eugene: *See—*
Gerecht, John Fred; and Wixon, Harold Eugene, 3,676,341.

Wohl, Charles J.; Schere, Jonathan L.; and Costello, Thomas V., to Edco Corporation. Switching apparatus for a phased transducer array. 3,676,839, Cl. 340-6.00r.

Wohl, Robert J.: *See—*
Kozol, Eugene T.; and Wohl, Robert J., 3,676,588.

Wolf, Gerhard D.; Blankenstein, Gunter; and Nischk, Gunter, to Farbenfabriken Bayer Aktiengesellschaft. High molecular weight aromatic polyamides having an affinity for basic dyes. 3,676,525, Cl. 260-857.000.

Wolfe, Merritt W.: *See—*
Enabnit, Robert S.; and Wolfe, Merritt W., 3,675,375.

Wolff, Hanns H., to United States of America, Navy. Fire fighting trainer. 3,675,342, Cl. 35-10.000.

Wolowitz, Benno: *See—*
Tonne, Franz; Brand, Werner; and Wolowitz, Benno, 3,675,593.

Wong, Philip: *See—*
Fischer, Leonard G.; and Wong, Philip, 3,676,158.

Woodhall, Edwin S.: *See—*
Appleby, Paul E.; Riggs, Robert S.; and Woodhall, Edwin S., 3,676,260.

Woodrow, Taylor, Construction Limited: *See—*
Browne, Roger Drury; McCurrich, Laurence Henry; Parkinson, John David; and Heffer, Edward Charles, 3,675,474.

Woodward, Anthony Ian; and Purdie, Angus John Challis, to Wiggins Teape Research & Development Limited. Paper coated with pigmented resin and optical brightening agent. 3,676,175, Cl. 117-33.50t.

Woodward, Anthony Ian; Purdie, Angus John Challis; and Way, Anthony Paul, to Wiggins Teape Research & Development Limited. Method of coating a polyolefin or polyolefin-coated paper sheet material. 3,676,189, Cl. 117-76.00p.

Worcester, Joseph A., to General Electric Company. Audio frequency indicator for scan tuned radio receiver. 3,676,781, Cl. 325-455.000.

Wowk, Nicholas F.: *See—*
Newberry, George M.; and Wowk, Nicholas F., 3,675,820.

Wrabetz, Voyta E., to Square D Company. Plunger operated reed relay switch. 3,676,812, Cl. 335-205.000.

Wright, John, to Koppers Company, Inc. Flexible centrifugal clutch coupling. 3,675,750, Cl. 192-105.0ba.

Wright, John F.; and Olson, James R., to Eastman Kodak Company. Glow discharge polymerization coating of toners for electrophotography. 3,676,350, Cl. 252-62.100.

Wright, William F.: *See—*
Meyer, Byron W.; and Wright, William F., 3,676,032.

Wszolek, Walter R.: *See—*
Kehr, Clifton L.; and Wszolek, Walter R., 3,676,195.
Kehr, Clifton L.; and Wszolek, Walter R., 3,676,283.

Wu, Dao-Tsing: *See—*
Dyk, John W.; and Wu, Dao-Tsing, 3,676,172.

Wu, Jie Chu: *See—*
Burger, Francis J. P. J.; and Wu, Jie Chu, 3,676,752.

Wyandotte Chemicals Corporation: *See—*
Urry, Wilbert H.; and Niu, Hsien Ying, 3,676,469.

Xercon, Inc., mesne: *See—*
Myer, Clifford E., 3,676,685.

Xerox Corporation: *See—*
Ciccarelli, Roger N., 3,676,313.
Gundlach, Robert W., 3,676,215.
Krohn, Ivar T.; Page, Geoffrey A.; and Reinis, Gedeminas J., 3,676,116.
Mott, George R.; and Van Wagner, Edward M., 3,676,118.

Yabuta, Yukio, to Fuji Photo Film Co., Ltd. Electromagnetic eddy current induction type conveying method. 3,675,757, Cl. 198-41.000.

Yaklich, John A. Furrow extending attachments for tractors. 3,675,723, Cl. 172-100.000.

Yale, Harry Louis; and Petigara, Ramesh, to Squibb, E. R., & Sons, Inc. 1,2-Dihydroquinobenzoxa(or thia)zepine derivatives. 3,676,445, Cl. 260-288.00r.

Yamada, Norio; Tanaka, Yoshimasa; Ono, Taisuke; and Ikejmima, Yoritaka, to Matsushita Denko Kabushiki Kaisha. Electric dry shaver. 3,675,324, Cl. 30-43.600.

Yamamoto, Hiroichi; Suzuki Takashi; Higashide, Eiji; Fugono, Takeshi; and Mizuno, Komei, to Takeda Chemical Industries, Ltd. Method for producing monoacyl derivatives of antibiotic T-2636C. 3,676,300, Cl. 195-29.000.

Yamamoto, Hisao: *See—*
Hirohashi, Toshiyuki; Izumi, Takahiro; and Yamamoto, Hisao, 3,676,460.

Yamamoto, Tadaaki; and Kasai, Toshiyuki, to Nippon Kogaku K.K.; represented by Yutaka Sugi. Reflecting optical system capable of compensating for the variation in polarization mode. 3,675,986, Cl. 350-157.

Yamamoto, Takaaki: *See—*

Matsumoto, Fumio; Wada, Toshiya; Yamamoto, Takaaki; Tanaka, Osamu; Takashima, Kunihide; and Takata, Toshihiko, 3,676,227.

Yamashita, Chikao, to Brother Kogyo Kabushiki Kaisha. Sewing machine convertible lock stitch to chain stitch. 3,675,603, Cl. 112-168.000.

Yamato Setubi Koji Kabushiki Kaisha: *See—*
Shibayama, Daigoro; and Mashimo, Teruo, 3,676,074.

Yano, Kaoru: *See—*
Kaneko, Haruo; and Yano, Kaoru, 3,676,600.

Yasuda, Atsuhiro; and Kobayashi, Koichi, to Tokyo Shibaura Electric Co., Ltd. Channel selecting device. 3,675,496, Cl. 74-10.600.

Yates, Paul C.: *See—*
Chay, Dong M.; Cumbo, Charles Carmen; Randolph, Michael J.; and Yates, Paul C., 3,676,477.

Yates, Paul C., to Du Pont de Nemours, E. I., and Company. Refractories bonded with aluminides, nickelides, or titanides. 3,676,161, Cl. 106-55.000.

Yates, Paul C., to Du Pont de Nemours, E. I., and Company. Method for making metal oxide sols in polar organic solvents. 3,676,362, Cl. 252-309.000.

Yeager, Robert W.: *See—*
Watts, George T.; and Yeager, Robert W., 3,675,703.

Yew, Nelson C.: *See—*
Dao, James; and Yew, Nelson C., 3,676,670.

Yokoo, Makoto: *See—*
Matsui, Yutaka; Mise, Noritoshi; Goto, Jugo; and Yokoo, Makoto, 3,676,402.

Yokoyama, Masuzo: *See—*
Tashiro, Kijuro; and Yokoyama, Masuzo, 3,676,418.

Yokozato, Junichi; and Kurihara, Shigeru, to Zenza Bronica Kogyo Kabushiki Kaisha. Mirror moving mechanism for single-lens reflex cameras. 3,675,557, Cl. 95-42.000.

Yoshida, Akira: *See—*
Shirai, Yoshihiro; Ichikawa, Hirohiko; Yoshida, Akira; Uchida, Naotake; Tsuji, Masaru; and Matsumoto, Zenji, 3,676,365.

Young, Jeffrey W.: *See—*
Putnam, Robert C.; and Young, Jeffrey W., 3,676,389.

Young, William E.: *See—*
Brick, Edmund J., 3,675,528.

Young, William O., Jr.; and Quattlebaum, Walter J., to Deering Milliken Research Corporation. Pull tab machine. 3,675,836, Cl. 226-113.000.

Young, William O., Jr.; and Quattlebaum, Walter J., to Deering Milliken Research Corporation. Punching openings in a web and heat sealing tabs thereto. 3,676,251, Cl. 156-252.000.

Zajac, Theodore S.; and George, Hal E., to Parker-Hannifin Corporation. Hydraulic motor. 3,675,539, Cl. 91-477.000.

Zaki, Wahib Nassif; and Biard, Daniel Guy Jean, to Procter & Gamble Company, The. Enzyme-containing liquid detergent compositions. 3,676,374, Cl. 252-551.000.

Zaky, Amin Y.: *See—*
Goetchius, Norman E.; and Zaky, Amin Y., 3,676,602.

Zapfe, Paul C., to Fort Howard Paper Company. Ink bleed tester. 3,675,476, Cl. 73-150.000.

Zaviantseff, Vladimir T., to United States of America, National Aeronautics and Space Administration. Apparatus for ionization analysis. 3,676,674, Cl. 250-71.50r.

Zebe, Charles, to Bell Telephone Laboratories, Incorporated. Method for extracting wires from a cable bundle. 3,675,315, Cl. 29-427.000.

Zeiss, Carl: *See—*
Prugger, Hans; and Torge, Reimund, 3,676,004.

Zellmer, Richard C.: *See—*
Miller, Lee A.; and Zellmer, Richard C., 3,675,353.

Zenith Radio Corporation: *See—*
Foster, Leigh Curtis, 3,676,592.
Green, Mino, 3,676,788.

Zenza Bronica Kogyo Kabushiki Kaisha: *See—*
Yokozato, Junichi; and Kurihara, Shigeru, 3,675,557.

Zergenyi, Janos; and Habicht, Ernst, to Geigy Chemical Corporation. Producing diuretic and saluretic effects with benzafuran carboxylic acid derivatives. 3,676,560, Cl. 424-285.000.

Zetterlund, Stanley L.; and Skogen, Robert O., to Nutting Truck and Caster Company. Tow line truck and bumper system. 3,675,587, Cl. 104-172.0bt.

Zhukovsky, Alexandr Ivanovich; Dobroskokov, Anatoly Lukich; and Orlovsky, Vasily Ivanovich. Fuel-feed system of an aircraft engine. 3,675,772, Cl. 210-90.000.

Ziegler, Helmut, to ITT Industries, Inc. Method for assembling hydraulic accumulators. 3,675,308, Cl. 29-422.000.

Ziegler, William E., to Hoover Ball and Bearing Company. Article trimmer. 3,675,521, Cl. 82-101.000.

Zilliken, Frederick William; and Egge, Heinz, to American Home Products Corporation. Certain linoleic and linolenic acid ester fractions of vegetable oils and derivatives thereof. 3,676,472, Cl. 260-410.90r.

Zinn, Frank R., to Bingham & Taylor. Apparatus for use in testing for the presence of a given voltage with respect to ground on a pipeline. 3,676,567, Cl. 174-37.000.

Zirkle, Charles L.: *See—*
Kaiser, Carl; and Zirkle, Charles L., 3,676,435.

Zochil, Francesco. Quick coupler assembly. 3,675,544, Cl. 94-45.00a.

Zollner, Dieter; Koziol, Konrad; Reichelt, Bernhard; and Lippert, Wolfgang, to Conradty, C. High output electrode with stabilized electric arc. 3,676,371, Cl. 252-507.000.

Zuckerman, Mathew M.; and Molof, Alan H., to Envirotech Corporation, mesne. Wastewater treatment sequence. 3,676,334, Cl. 210-9.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 11TH DAY OF JULY, 1972

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

AMP Inc.: *See*—
Gillissen, Hermanus P. J. Re. 27,429.
Gillissen, Hermanus P. J., to AMP Inc. Electrical connector assembly and mounting means therefor. Re. 27,429, 7–11–72, Cl. 339—198.
Hall, Elmer D., and J. E., Jr., to Weatherford Oil Tool Co., Inc. Well bore cleaner and cement disperser. Re. 27,425, 7–11–72, Cl. 166—173.
Hall, Jesse E., Jr.: *See*—
Hall, Elmer D., and J. E., Jr. Re. 27,425.
Hubbard, Otis E.: *See*—
Leslie, John H., and Hubbard. Re. 27,427.
Leslie, John H., and O. E. Hubbard, to Signode Corp. Feed chute booster for flexible strap. Re. 27,427, 7–11–72, Cl. 100—26.
Lincolin, James D., J. F. Wasmund, to Whittaker Corp. Low temperature curing nylon-epoxy-phenolic adhesive. Re. 27,426, 7–11–72, Cl. 260—831.
Monsanto Co.: *See*—
Torrenzano, Archie P., and Pincince. Re. 27,432.
Nielsen, Anker J., to M. B. Skinner Co. Bits for pipe punches. Re. 27,431, 7–11–72, Cl. 137—318.
Pincince, Richard T.: *See*—
Torrenzano, Archie P., and Pincince. Re. 27,432.
Signode Corp.: *See*—
Leslie, John H., and Hubbard. Re. 27,427.
Skinner, M. B., Co.: *See*—
Nielsen, Anker J., Jr. Re. 27,431.
Tohoku Oki Electric Co.: *See*—
Watase, Fumio. Re. 27,428.
Torrenzano, Archie P., and R. T. Pincince, to Monsanto Co. Solvent cleaning system. Re. 27,432, 7–11–72, Cl. 134—12.
Wasmund, John F.: *See*—
Lincoln, James D., and Wasmund. Re. 27,426.
Watase, Fumio, to Tohoku Oki Electric Co. Crystal-controlled grounded emitter oscillator. Re. 27,428, 7–11–72, Cl. 331—116.
Weatherford Oil Tool Co., Inc.: *See*—
Hall, Elmer D., and J. E., Jr. Re. 27,425.
Whittaker Corp.: *See*—
Lincoln, James D., and Wasmund. Re. 27,426.
Wimmer, Robert. Plumbing fixture and method of manufacturing the same. Re. 27,430, 7–11–72, Cl. 220—64.

LIST OF PLANT PATENTEES

Duffett, William E.: *See*—
Jessel, Walter H., Jr., and Duffett. 3,231.
Jessel, Walter H., Jr., and Duffett. 3,232.
Jessel, Walter H., Jr., and Duffett. 3,233.
Jackson & Perkins Co.: *See*—
Warriner, William A. 3,234.
Warriner, William A. 3,235.
Jessel, Walter H., Jr., and W. E. Duffett, to Yoder Brothers, Inc. Chrysanthemum plant. 3,231, 7–11–72, Cl. 78.
Jessel, Walter H., Jr., and W. E. Duffett, to Yoder Brothers, Inc. Chrysanthemum plant. 3,232, 7–11–72, Cl. 82.
Jessel, Walter H., Jr., and W. E. Duffett, to Yoder Brothers, Inc. Chrysanthemum plant. 3,233, 7–11–72, Cl. 82.
Warriner, William A., to Jackson & Perkins Co. Rose plant. 3,234, 7–11–72, Cl. 19.
Warriner, William A., to Jackson & Perkins Co. Rose plant. 3,235, 7–11–72, Cl. 23.
Yoder Brothers, Inc.: *See*—
Jessel, Walter H., Jr., and Duffett. 3,231.
Jessel, Walter H., Jr., and Duffett. 3,232.
Jessel, Walter H., Jr., and Duffett. 3,233.

LIST OF DESIGN PATENTEES

AMF Inc.: *See*—
Hill, Loran R. 224,254.
Novak, Stanley M., Jr. 224,255.
Adams, Wilbur H. Three dimensional puzzle. 224,251,7–11–72. Cl. D34—15.
Addy, James D.: *See*—
Esquina, Joseph R., and Addy. 224,269.
American Can Co.: *See*—
Kinkel, Christian F., and Pillnik. 224,209.
Apicella, Andrew. Bottle cap. 224,210, 7–11–72, Cl. D9—284.
Ashby, Bruce: *See*—
Lovejoy, Robert B., Ashby, Bosley, and Douglas. 224,253.
Award International, Inc.: *See*—
Tytel, Bernard. 224,241.
Baeza, Armando M.: *See*—
Bass, Sidney, Baeza, and Christopher. 224,240.
Bass, Sidney, Baeza, Christopher, and Kuchta. 224,249.
Baldwin, Gary L., to SBI Inc. Vending stand. 224,215. 7–11–72, Cl. D13—1.
Bandoski, Stanley J., Jr.: *See*—
Flynn, Daniel M., Bandoski, and Clow. 224,228.
Flynn, Daniel M., Bandoski, and Clow. 224,232.
Barczak, Edward: *See*—
Merendino, Salvatore, Barczak, and Lambach. 224,270.
Bass, Sidney, A. Baeza, and J. H. Christopher, to Mattel, Inc. Figure toy or the like. 224,240, 7–11–72, Cl. D34—4.
Bass, Sidney, A. M. Baeza, J. H. Christopher, and F. J. Kuchta, to Mattel, Inc. Freely rolling support for figure toy or the like. 224,249, 7–11–72, Cl. D34—15.
Baynes, William R.: *See*—
Hock, Donal D., Feigenbaum, Korte, and Baynes. 224,243.
Beaver, Ted L., to Continental Can Co., Inc. Bottle or similar article. 224,201, 7–11–72, Cl. D9—42.
Beck, William. Font of type. 224,274, 7–11–72, Cl. D64—12.
Bennett, William E. Passenger carrying tow kite. 224,248. 7–11–72, Cl. D34—15.
Boden, Joseph, to Boden Products, Inc. Bottle. 224,202. 7–11–72, Cl. D9—44.
Boden Products, Inc.: *See*—
Boden, Joseph. 224,202.
Bosley, Denis V.: *See*—
Lovejoy, Robert B., Ashby, Bosley, and Douglas. 224,253.
Boultbee, James A. Stroller. 224,220, 7–11–72, Cl. D14—14.
Brodsky, Louis, and B. Zeitzer, to E. R. Squibb & Sons, Inc. Medicament dispenser spoon. 224,260, 7–11–72, Cl. D52—1.
Bud Radio, Inc.: *See*—
Miller, Leon G. 224,229.
Burlington Industries, Inc.: *See*—
Logan, Ralph H. 224,194.
Christopher, Joyce H.: *See*—
Bass, Sidney, Baeza, and Christoper. 224,240.
Bass, Sidney, Baeza, Christopher, and Kuchta. 224,249.
Clark, Larry G. Toy jail playhouse. 224,252, 7–11–72, Cl. D34—15.
Clow, William R.: *See*—
Flynn, Daniel M., Bandoski, and Clow. 224,228.
Flynn, Daniel M., Bandoski, and Clow. 224,232.
Cole, Richard C. Power boat. 224,275, 7–11–72, Cl. D71—1.
Collins, Delmas E., to Jones-Zylon, Inc. Wash basin. 224,222, 7–11–72, Cl. D23—48.
Conner, James M., R. H. Davison, M. S. Dietz, and B. K. Johnson, to Polaroid Corp. Photographic camera or similar article. 224,272, 7–11–72, Cl. D61—1.
Conradi, Eugene P.: *See*—
De Puydt, Frank A., and Conradi. 224,221.
Continental Can Co., Inc.: *See*—
Beaver, Ted L. 224,201.
Crain, Philip W., F. E. Schlau, and P. Tam, to Mattel, Inc. Launcher for toy aircraft or the like. 224,250, 7–11–72, Cl. D34—15.
Cyr, Steve, and M. Whelan, to Standard Oil Co. (Indiana). Compartmented tray. 224,207, 7–11–72, Cl. D9—185.
Cyr, Steven J., and M. W. Whelan, to Standard Oil Co. (Indiana). Compartmented tray. 224,206, 7–11–72, Cl. D9—185.
Damon Corp.: *See*—
Munn, David E., and Maddestra. 224,223.
Davison, Richard H.: *See*—
Conner, James M., Davison, Dietz, and Johnson. 224,272.
De Puydt, Frank A., and E. P. Conradi, to Dico Co., Inc. Vehicle spoke wheel. 224,221, 7–11–72, Cl. D14—30.
Dico Co. Inc.: *See*—
De Puydt, Frank A., and Conradi. 224,221.
Dietz, R. E., Co.: *See*—
Nagel, Robert I. 224,258.
Doman, Donald W., to Kohler Co. Handle for plumbing fixture. 224,225, 7–11–72, Cl. D23—28.
Donoghue, Robert J. Bottle. 224,203, 7–11–72, Cl. D9—131.
Douglas, Raymond J.: *See*—
Lovejoy, Robert B., Ashby, Bosley, and Douglas. 224,253.
Empire Furniture Corp.: *See*—
Keller, Huey T. 224,199.

Esquina, Joseph R., and J. D. Addy. Combined seat and vibratable reed musical instrument. 224,269, 7–11–72, Cl. D56—1.
Ewers, Ronald L., to Game Time, Inc. Playground equipment support. 224,246, 7–11–72, Cl. D34—5.
Fedtro, Inc.: *See*—
Kahn, Robert D. 224,276.
Feigenbaum, Robert E.: *See*—
Hock, Donal D., Feigenbaum, Korte, and Baynes. 224,243.
Flynn, Daniel M., S. J. Bandoski, Jr., and W. R. Clow, to Hampden Engineering Co. Fractional horsepower DC controller. 224,228, 7–11–72, Cl. D26—13.
Flynn, Daniel M., S. J. Bandoski, Jr., and W. R. Clow, to Hampden Engineering Co. Fractional horsepower AC controller. 224,232, 7–11–72, Cl. D26—13.
Fujita, Ryuzo. Housing for an electronic communication apparatus. 224,233, 7–11–72, Cl. D26—14.
Gailstyn Co., The: *See*—
Ocuin, Morton. 224,256.
Game Time, Inc.: *See*—
Ewers, Ronald L. 224,246.
Wormser, Robert S. 224,213.
Wormser, Robert S. 224,214.
General Electric Co.: *See*—
Kainass, Andrew. 224,235.
General Mills Fun Group, Inc.: *See*—
Meth, Harry, and Lake. 224,239.
Gorelick, Marvin. Chair or the like. 224,189, 7–11–72, Cl. D6—20.
Graser, Earl J., to Olinkraft, Inc. Bottle carton. 224,204. 7–11–72, Cl. D9—176.
Graser, Earl J., to Olinkraft, Inc. Bottle carton. 224,205, 7–11–72, Cl. D9—176.
Grosfillex, Raymond, to Societe Grosfillex. Chair. 224,192, 7–11–72, Cl. D6—70.
Grosfillex, Raymond, to Societe Grosfillex. Chair. 224,193, 7–11–72, Cl. D6—70.
Hampden Engineering Co.: *See*—
Flynn, Daniel M., Bandoski, and Clow. 224,228.
Flynn, Daniel M., Bandoski, and Clow. 224,232.
Harman-Kardon, Inc.: *See*—
Yurdin, Carl. 224,262.
Yurdin, Carl. 224,263.
Hastings, Raymond I., to Professional Sports Marketing, Inc. Magazine rack. 224,198, 7–11–72, Cl. D6—184.
Hermanson, Terry, to Mr. Christmas Inc. Decorative reflector for a Christmas light. 224,237, 7–11–72, Cl. D29—1.
Hill, Loran R., to AMF Inc. Tricycle. 224,254, 7–11–72, Cl. D34—15.
Hock, Donal D., to Mattel, Inc. Swing seat or the like. 224,244, 7–11–72, Cl. D34—5.
Hock, Donal D., to Mattel, Inc. Combined playground climber and support for swings or the like. 224,245, 7–11–72, Cl. D34—5.
Hock, Donal D., R. E. Feigenbaum, E. N. Korte, and W. R. Baynes, to Mattel, Inc. Playground apparatus or the like. 224,243, 7–11–72, Cl. D34—5.
Intorcio, Vincent J. Mobile cocktail bar. 224,195, 7–11–72, Cl. D6—144.
Jackson, Verner L.: *See*—
Waddle, Thirl W., Wood, and Jackson. 224,242.
Jamison, Grant E., to Jamison, Inc. Combined playground tree house and slide. 224,247, 7–11–72, Cl. D34—5.
Jamison, Inc.: *See*—
Jamison, Grant E. 224,247.
Jones-Zylon, Inc.: *See*—
Collins, Delmas E. 224,222.
Kahn, Robert D., to Fedtro, Inc. Siren. 224,276, 7–11–72, Cl. D72—1.
Kainass, Andrew, to General Electric Co. Portable tape recorder. 224,235, 7–11–72, Cl. D26—14.
Kamata, Eitaro, to Shoei Kakoh Co., Ltd. Helmet. 224,182, 7–11–72, Cl. D2—232.
Kelbish, Edward D. Pre-assembled modular housing structure. 224,216, 7–11–72, Cl. D13—1.
Kelbish, Edward D. Pre-assembled modular housing structure. 224,217, 7–11–72, Cl. D13—1.
Kelbish, Edward D. Pre-assembled modular housing structure. 224,218, 7–11–72, Cl. D13—1.
Keller, Huey T., to Empire Furniture Corp. Headboard for a bedstead or similar article. 224,199, 7–11–72, Cl. D6—198.
Kelso, James W., to MSI Data Corp. Data input terminal. 224,230, 7–11–72, Cl. D26—5.
Kinkel, Christian F. and B. F. Pillnik, to American Can Co. Container end. 224,209, 7–11–72, Cl. D9—255.
Klepper, McClellan J. Head and handle for toothbrush or the like. 224,187, 7–11–72, Cl. D4—25.
Kohler Co.: *See*—
Doman, Donald W. 224,225.
Korte, Erwin N.: *See*—
Hock, Donal D., Feigenbaum, Korte, and Baynes. 224,243.
Kretz, Edward J., to Owens-Illinois, Inc. Combined jug and closure. 224,200, 7–11–72, Cl. D9—41.
Kuchar, Joseph, to Record Chemical Co., Inc. Display box. 224,208, 7–11–72, Cl. D9—242.
Kuchta, Frank J.: *See*—
Bass, Sidney, Baeaz, Christopher, and Kuchta. 224,249.
Lake, Susan: *See*—
Meth, Harry, and Lake. 224,239.
Lambach, Adolph D.: *See*—
Merendino, Salvatore, Barczak, and Lambach. 224,270.
Larson, Ellis D. Component for firill works, railings, columns and the like. 224,211, 7–11–72, Cl. D13—1.
Larson, Ellis D. Component for grill works, railings, columns and the like. 224,212, 7–11–72, Cl. D13—1.
Leaver, Gardner, to Steelcase Inc. Chair. 224,188, 7–11–72, Cl. D6—20.
Lee, Robert M. Bracelet. 224,257, 7–11–72, Cl. D45—7.
Logan, Ralph H., to Burlington Industries, Inc. Separable lap tray table unit. 224,194, 7–11–72, Cl. D6—138.
Lovejoy, Robert B., B. Ashby, D. V. Bosley, and R. J. Douglas, to Mattel, Inc. Tow tower for simulated flight control. 224,253, 7–11–72, Cl. D34—15.
MSI Data Corp.: *See*—
Kelso, James W. 224,230.
Maddestra, Robert: *See*—
Munn, David E., and Maddestra. 224,223.
Maeda, Hisashi: *See*—
Yamamoto, Mititaka, Yaida, and Maeda. 224,273.
Manderfield, Ellen B., to Oneida Ltd. Spoon or similar article. 224,261, 7–11–72, Cl. D54—12.
Manderfield, Ellen B., to Oneida Ltd. Spoon or similar article. 224,264, 7–11–72, Cl. D54—12.
Manderfield, Ellen B., to Oneida Ltd. Spoon or similar article. 224,265, 7–11–72, Cl. D54—12.
Manderfield, Ellen B., to Oneida Ltd. Spoon or similar article. 224,267, 7–11–72, Cl. D54—12.
Mango, Joseph R., to Sunbeam Corp. Heater. 224,224, 7–11–72, Cl. D23—122.
Mango, Joseph R., to Sunbeam Corp. Heater. 224,226, 7–11–72, Cl. D23—122.
Mango, Joseph R., to Sunbeam Corp. Heater. 224,227, 7–11–72, Cl. D23—122.
Mattell, Inc.: *See*—
Bass, Sidney, Baeza, and Christopher. 224,240.
Bass, Sidney, Baeza, Christopher, and Kuchta. 224,249.
Crain, Philip W., Schlau, and Tam. 224,250.
Hock, Donal D., Feigenbaum, Korte, and Baynes. 224,243.
Hock, Donal D. 224,244.
Hock, Donal D. 224,245.
Lovejoy, Robert B., Ashby, Bosley, and Douglas. 224,253.
Merendino, Salvatore, Barczak, and Lambach. 224,270.
Merendino, Salvatore, E. Barczak, and A. D. Lambach, to Mattel, Inc. Cabinet for keyboard instrument or the like. 224,270, 7–11–72, Cl. D56—2.
Metaframe Corp.: *See*—
Willinger, Allan H. 224,238.
Meth, Harry and S. Lake, to General Mills Fun Group, Inc. Three-dimensional turtle figure. 224,239, 7–11–72, Cl. D34—2.
Milani, Francesco, to Gretag Aktiengesellschaft. Photographic film notcher. 224,271, 7–11–72, Cl. D61—1.
Miller, Leon G., to Bud Radio, Inc. Housing for electronic equipment. 224,229, 7–11–72, Cl. D26—5.
Morris, Astrid: *See*—
Straub, Dorothy A., and Morris. 224,183.
Straub, Dorothy A., and Morris. 224,184.
Mr. Christmas Inc.: *See*—
Hermanson, Terry. 224,237.
Munn, David E., and R. Maddestra, to Damon Corp. Electrical measurement demonstrator or similar article. 224,223, 7–11–72, Cl. D25—1.
Nagel, Robert I., to R. E. Dietz Co. Warning lens. 224,258, 7–11–72, Cl. D48—32.
Notarianni, Dominic F. Novelty tree. 224,236, 7–11–72, Cl. D29—1.
Novak, Stanley M., Jr., to AMF Inc. Child's coaster vehicle. 224,255, 7–11–72, Cl. D34—15.
Nubla, Jesse L. Smoking appliance. 224,279, 7–11–72, Cl. D85—8.
Ocuin, Morton, to The Gailstyn Co. Chafing dish for fondue or the like. 224,256, 7–11–72, Cl. D44—15.
Olinkraft, Inc.: *See*—
Graser, Earl J. 224,204.
Graser, Earl J. 224,205.
Omron Tateisi Electronics Co.: *See*—
Yamamoto, Mititaka, Yaida, and Maeda. 224,273.
Oneida Ltd.: *See*—
Manderfield, Ellen B. 224,261.
Manderfield, Ellen B. 224,264.
Manderfield, Ellen B. 224,265.
Manderfield, Ellen B. 224,267.
Perry, Frank R. 224,266.
Owens-Illinois, Inc.: *See*—
Kretz, Edward J. 224,200.
Schmersal, Larry J., and Wojcik. 224,231.
Patton, J. Lloyd: *See*—
Waddle, Thirl W., Wood, and Jackson. 224,242.
Perry, Frank R., to Oneida Ltd. Spoon or similar article. 224,266, 7–11–72, Cl. D54—12.
Peters, Howard, to U.S. Industries, Inc. Sewing machine cabinet. 224,197, 7–11–72, Cl. D6—181.
Pillnik, Burton F.: *See*—
Kinkel, Christian F., and Pillnik. 224,209.
Polaroid Corp.: *See*—
Conner, James M., Davison, Dietz, and Johnson. 224,272.
Price, Russell L. Snowmobile accessory carrier. 224,280, 7–11–72, Cl. D87—1.
Professional Sports Marketing, Inc.: *See*—
Hastings, Raymond I. 224,198.
Raimondi, Cesare A. Slide rule calculator. 224,259, 7–11–72, Cl. D52—6.
Reaves, Ransom. Bookcase. 224,196, 7–11–72, Cl. D6—148.
Record Chemical Co., Inc.: *See*—
Kucher, Joseph. 224,208.
Research Marketing, Inc.: *See*—
Ritter, Jack V. 224,219.
Rhodes, John G. L., to Telephone Manufacturing Co., Ltd. Telephone instrument base. 224,234, 7–11–72, Cl. D26—14.
Ritter, Jack V., to Research Marketing, Inc. Liner for a pick-up truck. 224,219, 7–11–72, Cl. D14—6.
SBI Inc.: *See*—
Baldwin, Gary L. 224,215.
Schenker, Eugenia. Lady's slipper or similar article. 224,185, 7–11–72, Cl. D2—283.
Schlau, Floyd E.: *See*—
Crain, Philip W., Schlau, and Tam. 224,250.

Schmersal, Larry J., and G. E. Wojcik, to Owens-Illinois, Inc. Combined light emitting gas discharge matrix display panel and connecting cables. 224,231, 7–11–72, Cl. D26—5.
Shoei Kakoh Co., Ltd.: *See*—
Kamata, Eitaro. 224,182.
Societe Grosfillex: *See*—
Grosfillex, Raymond. 224,192.
Grosfillex, Raymond. 224,193.
Squibb, E. R., & Sons, Inc.: *See*—
Brodsky, Louis, Zeitzer. 224,260.
Steelcase Inc.: *See*—
Leaver, Gardner. 224,188.
Standard Oil Co. (Indiana): *See*—
Cyr, Steven J., and Whelan. 224,206.
Cyr, Steve, and Whelan. 224,207.
Strässle, Alex. Chair with fluted seat and back rest surfaces. 224,190, 7–11–72, Cl. D6—65.
Strässle, Alex. Chair or similar article. 224,191, 7–11–72, Cl. D6—66.
Straub, Dorothy A., and A. Morris. Boot. 224,183, 7–11–72, Cl. D2—273.
Straub, Dorothy A., and A. Morris. Boot. 224,184, 7–11–72, Cl. D2—273.
Sunbeam Corp.: *See*—
Mango, Joseph R. 224,224.
Mango, Joseph R. 224,226.
Mango, Joseph R. 224,227.
Switzer, William D., Jr. Harmonica. 224,268, 7–11–72, Cl. D56—1.
Telephone Manufacturing Co. Ltd.: *See*—
Rhodes, John G. L. 224,234.
Transidyne General Corp.: *See*—
Vanden Broek, Jan A. 224,278.
Tytel, Bernard, to Award International, Inc. Inflatable wading pool. 224,241, 7–11–72, Cl. D34—5.
U.S. Industries, Inc.: *See*—
Peters, Howard. 224,197.
Vanden Broek, Jan A., to Transidyne General Corp. Electronic assembly for biological studies. 224,278, 7–11–72, Cl. D83—1.
Venaleck, Howard J. Face mask. 224,277, 7–11–72, Cl. D83—1.
Waddle Thirl W., J. D. Wood, V. L. Jackson; said Wood and said Jackson assors. to J. Lloyd Patton. Pitching game target. 224,242, 7–11–72, Cl. D34—5.
Whelan, Mark W.: *See*—
Cyr, Steven J., and Whelan. 224,206.
Cyr, Steve, and Whelan. 224,207.
Willinger, Allan H., to Metaframe Corp. Aquarium aerator. 224,238, 7–11–72, Cl. D30—12.
Wojcik, Gerald E.: *See*—
Schmersal, Larry J. Wojcik. 224,231.
Wood, Jackie D.: *See*—
Waddle, Thirl W., Wood, and Jackson. 224,242.
Wormser, Robert S., to Game Time, Inc. Shelter. 224,213, 7–11–72, Cl. D13—1.
Wormser, Robert S., to Game Time, Inc. Camping shelter. 224,214, 7–11–72, Cl. D13—1.
Yaida, Koichi: *See*—
Yamamoto, Mititaka, Yaida, and Maeda. 224,273.
Yamamoto, Mititaka, K. Yaida, and H. Maeda, to Omron Tateisi Electronics Co. Calculating machine. 224,273, 7–11–72, Cl. D64—11.
Yurdin, Carl, to Harman-Kardon, Inc. Phonograph. 224,262, 7–11–72, Cl. D56—4.
Yurdin, Carl, to Harman-Kardon, Inc. Combined radio-phonograph and tape player or similar article. 224,263, 7–11–72, Cl. D56—4.
Zakarin, Melvin V. Sash. 224,186, 7–11–72, Cl. D2—385.
Zeitzer, Bruce: *See*—
Brodsky, Louis, and Zeitzer. 224,260.

CLASSIFICATION OF PATENTS

ISSUED JULY 11, 1972

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2
2.1R 3,675,244
67 3,675,245
115 3,675,246
224R 3,675,247

CLASS 4
1 3,675,248
57P 3,675,249
111 3,675,250
151 3,675,251
172.17 3,675,252
172.19 3,675,253
231 3,675,254

CLASS 5
82 3,675,255
120 3,675,256

CLASS 8
10 3,676,049
41B 3,676,050
65 3,676,051
115.6 3,676,052
116 3,676,053
116.2 3,676,054
120 3,676,055
3,676,056
128 3,676,057

CLASS 9
14 3,675,257
34 3,675,258
310G 3,675,259

CLASS 12
12 3,675,260

CLASS 13
3,676,564

CLASS 15
1.7 3,675,261
4 3,675,262
76 3,675,263
104.94 3,675,264
193 3,675,265
340 3,675,266
3,675,267
350 3,675,268

CLASS 16
18A 3,675,269
53 3,675,270
170 3,675,271

CLASS 17
52 3,675,272
61 3,675,273

CLASS 21
54R 3,676,058

CLASS 23
2 3,676,059
88 3,676,061
3,676,062
113 3,676,063
129 3,676,064
160 3,676,065
198 3,676,066
204R 3,676,067
209.1 3,676,068
3,676,069
209.4 3,676,070
212R 3,676,071
232R 3,676,072
3,676,073
253R 3,676,080
259.1 3,676,074
277R 3,676,060
285 3,676,075
292 3,676,076
296 3,676,077
299 3,676,078
327 3,676,081
345 3,676,079
367 3,676,082

CLASS 24
49S 3,675,277
67R 3,675,274
73SA 3,675,283
81HS 3,675,275
130 3,675,276
201A 3,675,499
202 3,675,279
221K 3,675,280
230SL 3,675,282
230 3,675,281
249DP 3,675,278
265B 3,675,284

CLASS 28
1CL 3,675,285
1.7 3,675,286

CLASS 29
25.13 3,675,287
25.41 3,675,288
91 3,675,289
96 3,675,290
97 3,675,291
148.4C 3,675,292
150 3,675,293
156.8R 3,675,294
177 3,675,295
182 3,676,083
182.5 3,676,084
194 3,676,085
195G 3,676,087
195 3,676,086
199 3,676,088
200P 3,675,296
200R 3,675,297
203B 3,675,299
203V 3,675,298
205C 3,675,300
208B 3,675,301
211 3,675,302
237 3,675,303
238 3,675,304
401 3,675,309
422 3,675,308
427 3,675,315
439 3,675,305
487 3,675,306
492 3,675,310
495 3,675,307
498 3,675,311
526 3,675,312
571 3,675,313
576 3,675,316
578 3,675,314
620 3,675,317
624 3,675,318
625 3,675,319
630D 3,675,320

CLASS 30
4R 3,675,321
32 3,675,322
3,675,323
43.6 3,675,324
90 3,675,325

CLASS 32
5 3,675,326
6 3,675,327
15 3,675,328
3,675,329
59 3,675,330

CLASS 33
1SA 3,675,332
1M 3,675,331
23C 3,675,333
138 3,675,334
168R 3,675,335

CLASS 34
9.5 3,675,336
41 3,675,337
239 3,675,338

CLASS 35
6 3,675,339
9B 3,675,341
9D 3,675,340
10 3,675,342
3,675,343
10.4 3,676,565
12N 3,675,344
69 3,675,345

CLASS 36
11.5 3,675,346

CLASS 37
69 3,675,348
117.5 3,675,349
129 3,675,347
142A 3,675,350

CLASS 38
77.83 3,675,351

CLASS 40
31 3,675,352
51 3,675,353
63A 3,675,354
125R 3,675,355
145 3,675,356
300 3,675,357

CLASS 43
42.09 3,675,358
53.5 3,675,359
129 3,675,360

CLASS 44
62 3,676,089
72 3,676,090

CLASS 46
1H 3,675,361
13 3,675,362
15 3,675,363
58 3,675,364
239 3,675,365
244A 3,675,366

CLASS 47
1.3 3,675,367
34 3,675,368

CLASS 48
190 3,676,091

CLASS 49
20 3,675,369
253 3,675,370
352 3,675,371

CLASS 51
5 3,675,372
9 3,675,373
12 3,675,374
281R 3,675,375
295 3,676,092

CLASS 52
1 3,675,376
2 3,675,377
65 3,675,378
79 3,675,379
80 3,675,380
166 3,675,381
214 3,675,382
222 3,675,383
250 3,675,384
741 3,675,385

CLASS 53
63 3,675,386
157 3,675,387
183 3,675,389
187 3,675,388
282 3,675,390

CLASS 55
16 3,675,391
25 3,675,392
96 3,675,393
164 3,675,395
225 3,675,396
227 3,675,397
316 3,675,398
357 3,675,399
385 3,675,400
394 3,675,401
496 3,675,402
518 3,675,394
524 3,675,403

CLASS 56
209 3,675,404
328R 3,675,405
330 3,675,406

CLASS 57
22 3,675,407
140BY 3,675,408
144 3,675,409

CLASS 58
35R 3,675,410
42.5 3,675,411
58 3,675,412
74 3,675,413
88W 3,675,414
150 3,675,415

CLASS 60
36 3,675,416
39.14 3,675,417
39.18B 3,675,426
39.31 3,675,418
39.36 3,675,419
51 3,675,420
53R 3,675,421
54.5P 3,675,422
107 3,675,423
221 3,675,424
258 3,675,425

CLASS 61
.5 3,675,427
35 3,675,428
46 3,675,429
3,675,430
3,675,431
72.1 3,675,432
84 3,675,433

CLASS 62
23 3,675,434
26 3,675,435
58 3,675,436
137 3,675,437
156 3,675,438
223 3,675,439
256 3,675,440
278 3,675,441
285 3,675,442
343 3,675,443

CLASS 64
28R 3,675,444

CLASS 65
1 3,676,093
3 3,676,094
3,676,095
3,676,096
33 3,676,097
106 3,676,098
162 3,676,099

CLASS 66
50B 3,675,445
132T 3,675,446
192 3,675,447

CLASS 68
208 3,675,448
222 3,675,449

CLASS 69
1 3,675,450

CLASS 71
34 3,676,101
37 3,676,100
127 3,676,102

CLASS 72
20 3,675,451
53 3,675,452
58 3,675,453
108 3,675,454
238 3,675,455
239 3,675,456
265 3,675,457
294 3,675,458
352 3,675,459
399 3,675,460
406 3,675,461
428 3,675,462
448 3,675,463

CLASS 73
1C 3,675,464
15B 3,675,465
23.1 3,675,466
40.7 3,675,468
3,675,469
59 3,675,470
67 3,675,471
67.5R 3,675,472
70.1 3,675,473
88E 3,675,474
89 3,675,475
144 3,675,482
150 3,675,476
3,675,477
152 3,675,478
161 3,675,479
199 3,675,480
209 3,675,481
327 3,675,483
351 3,675,467
358 3,675,501
362AR 3,675,484
382 3,675,485
401 3,675,486
414 3,675,487
421R 3,675,488
421.5R 3,675,489
425 3,675,490
425.4R 3,675,491
425.6 3,675,492
432R 3,675,493
3,675,494
466 3,675,495

CLASS 74
10.6 3,675,496
15.4 3,675,497
55 3,675,498
230.17E 3,675,500
369 3,675,502
436 3,675,503
483PB 3,675,504
552 3,675,505
572 3,675,506
687 3,675,507
745 3,675,508
793 3,675,509
801 3,675,510
866 3,675,511
869 3,675,512

CLASS 75
.5BA 3,676,103
3 3,676,104
68R 3,676,105
101R 3,676,106
109 3,676,107
123B 3,676,108
124 3,676,109
134 3,676,110
142 3,676,111
146 3,676,113
172 3,676,114
173R 3,676,112
178AM 3,676,115

CLASS 81
57.11 3,675,514
121 3,675,515
3,675,516

CLASS 82
1B 3,675,518
2B 3,675,517
36A 3,675,519
101 3,675,521

CLASS 83
2 3,675,520
14 3,675,522
167 3,675,523
459 3,675,524
629 3,675,525
676 3,675,526

CLASS 84
180 3,675,527
418 3,675,528
455 3,675,529

CLASS 85
33 3,675,530
70 3,675,531

CLASS 87
1 3,675,532

CLASS 89
1B 3,675,533
185 3,675,534

CLASS 90
11A 3,676,120
11R 3,675,535
13.05 3,675,536
13.9 3,675,537

CLASS 91
1 3,675,538
477 3,675,539

CLASS 92
98 3,675,540

CLASS 93
1C 3,675,541
35R 3,675,542

CLASS 94
39 3,675,543
45A 3,675,544
46 3,675,545
50R 3,675,546

CLASS 95
1.1 3,675,549
4.5R 3,675,560
10CT 3,675,547
3,675,548
10C 3,675,550
11L 3,675,565
11R 3,675,551
11V 3,675,552
18P 3,675,553
3,675,554
31FL 3,675,556
31FM 3,675,555
42 3,675,557
3,675,558
44C 3,675,559
53E 3,675,561
64R 3,675,562
89R 3,675,563
90 3,675,564

CLASS 96
1R 3,676,117
1.3 3,676,116
1.5 3,676,118
1.7 3,676,119
13 3,676,121
23 3,676,122
29D 3,676,124
29 3,676,123
33 3,676,125
36.1 3,676,127
36.2 3,676,126
36.4 3,676,128
38.3 3,676,129
40 3,676,130
48 3,676,131
49 3,676,132
3,676,133
3,676,134
54 3,676,135
56 3,676,136
56.5 3,676,137
75 3,676,138
82 3,676,139
91 3,676,140
100 3,676,141
3,676,142
111 3,676,143
3,676,144
115 3,676,145
3,676,146
130 3,676,147

CLASS 98
2.07 3,675,566

CLASS 99
1 3,676,148
86 3,676,151
90R 3,676,150
94 3,676,152
107 3,676,153
124 3,676,154
139 3,676,155
140R 3,676,149
3,676,156
144 3,676,157
166 3,676,158
174 3,676,159
257 3,675,567

CLASS 100
7 3,675,568
3,675,569
26 Re.27,427
90 3,675,570

CLASS 101
115 3,675,571
401.1 3,675,572
415.1 3,675,573

CLASS 102
24HC 3,675,575

24 3,675,574
44 3,675,576
67 3,675,577
70.2 3,675,578
3,675,579

CLASS 104

9 3,675,580
12 3,675,581
23FS 3,675,583
23R 3,675,582
28 3,675,584
148LM 3,675,585
149 3,675,586
172BT 3,675,587
173 3,675,588
247 3,675,589

CLASS 105

240 3,675,590
253 3,675,591
368R 3,675,592
447 3,675,593

CLASS 106

38.9 3,676,160
55 3,676,161
58 3,676,162
3,676,163
77 3,676,164
117 3,676,165
241 3,676,166
300 3,676,167
307 3,676,168

CLASS 108

2 3,675,594
51 3,675,595
3,675,596
136 3,675,597
144 3,675,598

CLASS 109

11 3,675,599

CLASS 110

8R 3,675,600

CLASS 111

51 3,675,601

CLASS 112

121.29 3,675,602
168 3,675,603
262 3,675,604

CLASS 114

16R 3,675,607
61 3,675,605
65R 3,675,606
210 3,675,608
230 3,675,609
3,675,610

CLASS 115

12R 3,675,611
3,675,612

CLASS 116

63P 3,675,613
118 3,675,614
121 3,675,620
173 3,675,615
3,675,616

CLASS 117

3 3,676,169
16 3,676,170
17 3,676,171
21 3,676,172
3,676,173
26 3,676,174
33.5CM 3,676,177
33.5L 3,676,176
33.5T 3,676,175
34 3,676,178
46CG 3,676,179
47A 3,676,180
3,676,181
60 3,676,182
64R 3,676,183
68 3,676,184
68.5 3,676,185
69 3,676,186
70A 3,676,187
71R 3,676,188
76P 3,676,189
76 3,676,190
77 3,676,191
93.31 3,676,192
3,676,195
93.4R 3,676,194
94 3,676,193
96 3,676,196
105.5 3,676,197
3,676,198
109 3,676,199
121 3,676,200
122H 3,676,201
122P 3,676,202
123D 3,676,203
125 3,676,204
139.5C 3,676,205
140A 3,676,206
143A 3,676,207
161UC 3,676,209
161ZB 3,676,208
201 3,676,210
212 3,676,211
3,676,212
3,676,213
217 3,676,214
230 3,676,215
237 3,676,216
239 3,676,217

CLASS 118

2 3,675,617
31.5 3,675,618
48 3,675,619
122 3,675,621
421 3,675,622
423 3,675,623
503 3,675,624

CLASS 119

1 3,675,625
4 3,675,626
72 3,675,627

CLASS 122

6R 3,675,628
235R 3,675,629

CLASS 123

70R 3,675,630
90.52 3,675,631
97B 3,675,632
119A 3,675,633
136 3,675,634
148E 3,675,635
3,675,636

CLASS 126

263 3,675,637
339 3,675,638

CLASS 128

1 3,675,639
3,675,642
2.05R 3,675,640
2.06F 3,675,643
6 3,675,641
58 3,675,644
62A 3,675,645
75 3,675,646
130 3,675,647
3,675,648
142R 3,675,649
142.7 3,675,650
215 3,675,651
269 3,675,652
278 3,675,653
287 3,675,654
303.14 3,675,655
325 3,675,656
327 3,675,657
349BV 3,675,658
395 3,675,659

CLASS 130

27JT 3,675,660

CLASS 131

212R 3,675,661
235R 3,675,662

CLASS 132

40 3,675,663

CLASS 133

6 3,675,664

CLASS 134

1 3,676,218
3 3,676,219
12 Re.27,432
46 3,675,665
105 3,675,666

CLASS 135

1R 3,675,667

CLASS 136

86 3,676,220
111 3,676,221
121 3,676,222

CLASS 137

1 3,675,668
3,675,669
3,675,670
13 3,675,671
81.5 3,675,672
187 3,675,673
244 3,675,674
318 Re.27,431
368 3,675,675
375 3,675,677
501 3,675,676
505.22 3,675,678
587 3,675,679
615 3,675,680
625.17 3,675,682
625.3 3,675,681
637.4 3,675,683

CLASS 138

30 3,675,684
89 3,675,685

CLASS 139

1 3,675,686
127P 3,675,687

CLASS 140

93D 3,675,688

CLASS 143

32N 3,675,689
46F 3,675,690

CLASS 144

3D 3,675,691
241 3,675,693
317 3,675,692

CLASS 145

50A 3,675,694

CLASS 146

28A 3,675,695
225 3,675,696
253 3,675,697

CLASS 148

6.15R 3,676,223
6.15Z 3,676,224
12.7 3,676,225
32 3,676,226
111 3,676,227
171 3,676,228
186 3,676,229
187 3,676,230
188 3,676,231

CLASS 149

6 3,676,232
19 3,676,233
38 3,676,234
39 3,676,235
41 3,676,236

CLASS 150

1.5R 3,675,698

CLASS 152

153 3,675,699
209 3,675,700
225 3,675,701
354 3,675,702
361 3,675,703
3,675,704

CLASS 156

2 3,676,237
3 3,676,238
16F 3,676,239
17 3,676,240
62 3,676,241
62.4 3,676,242
167 3,676,243
181 3,676,244
3,676,245
3,676,246
188 3,676,247
205 3,676,248
235 3,676,249
244 3,676,250
249 3,676,251
252 3,676,252
277 3,676,253
279 3,676,254
286 3,676,255
306 3,676,256
3,676,257
351 3,676,258
392 3,676,259
395 3,676,260
396 3,676,261
401 3,676,262
417 3,676,263
462 3,676,264
470 3,676,265
500 3,676,266
521 3,676,267
523 3,676,268
548 3,676,269
3,676,270
553 3,676,271
567 3,676,272
574

CLASS 157

1.1 3,675,705
13 3,675,706

CLASS 159

20 3,675,707

CLASS 161

3 3,676,273
4 3,676,274
9 3,676,277
14 3,676,275
17 3,676,276
43 3,676,278
44 3,676,279
67 3,676,280
85 3,676,281
87 3,676,282
88 3,676,283
93 3,676,284
3,676,285
109 3,676,286
140 3,676,287
158 3,676,288
189 3,676,289
3,676,290
195 3,676,291
196 3,676,292
206 3,676,293

CLASS 162

192 3,676,294
198 3,676,295

CLASS 164

35 3,675,708
335 3,675,709

CLASS 165

1 3,675,710
3 3,675,712
32 3,675,711

CLASS 166

.6 3,675,713
173 Re.27,425
224 3,675,714
256 3,675,715
275 3,675,716
278 3,675,717
297 3,675,718
3,675,719
314 3,675,720

CLASS 169

24 3,675,721
30 3,675,722

CLASS 172

100 3,675,723
116 3,675,724
245 3,675,725

CLASS 173

93 3,675,726

CLASS 174

36 3,676,566
37 3,676,567
49 3,676,568
52S 3,676,569
61 3,676,570
65 3,676,571
69 3,676,572
75C 3,676,573
87 3,676,574
94R 3,676,575
113R 3,676,576
119R 3,676,577
128 3,676,578
138R 3,676,579

CLASS 175

26 3,675,727
57 3,675,728
228 3,675,729

CLASS 176

35 3,676,296
58 3,676,297

CLASS 178

5.1 3,676,580
5.4R 3,676,581
5.8AF 3,676,582
6.6TC 3,676,583
6.8 3,676,584
3,676,585
3,676,589
7.1 3,676,590
7.2 3,676,586
3,676,587
7.5D 3,676,588
3,676,591
7.6 3,676,592
66A 3,676,593

CLASS 179

1SA 3,676,596
1VL 3,676,594
1VS 3,676,595
6.3R 3,676,597
15BS 3,676,599
15FD 3,676,598
15.55T 3,676,600
16E 3,676,601
17A 3,676,602
18AB 3,676,604
18BE 3,676,605
18BF 3,676,603
18BO 3,676,606
81R 3,676,608
84VF 3,675,513
90K 3,676,607
100.1R 3,676,609
100.2ZC 3,676,610
100.2E 3,676,612
107E 3,676,611
170T 3,676,613

CLASS 180

55 3,675,730
109 3,675,731

CLASS 181

36A 3,675,732
37 3,675,733
56 3,675,734

CLASS 182

113 3,675,736
129 3,675,735

CLASS 184

17 3,675,737
18 3,675,738

CLASS 187

1 3,675,739

CLASS 188

1C 3,675,746
26 3,675,740
3,675,741
72.5 3,675,742
3,675,743
73.6 3,675,744
134 3,675,745

CLASS 191

12.2 3,676,614

CLASS 192

48.2 3,675,747
51 3,675,748
56R 3,675,749
105BA 3,675,750
150 3,675,751

CLASS 193

5 3,675,752

CLASS 195

1.7 3,676,298
28R 3,676,299
29 3,676,300
3,676,301
80R 3,676,302
103.5R 3,676,303

CLASS 197

18 3,675,753

CLASS 198

20 3,675,754
33R 3,675,755
36 3,675,756
41 3,675,757
110 3,675,758
131 3,675,759
183 3,675,760
184 3,675,761
233 3,675,762

CLASS 200

1R 3,676,615
5R 3,676,616
44 3,676,617
77 3,676,618
81H 3,676,619
83S 3,676,620
144AP 3,676,621
3,676,622
146R 3,676,623
148B 3,676,624
153LA 3,676,625
159A 3,676,627
159R 3,676,626
166BC 3,676,628
166E 3,676,629
168K 3,676,630

CLASS 202

160 3,676,304
263 3,676,305

CLASS 203

8 3,676,306
20 3,676,307

CLASS 204

16 3,676,308
27 3,676,309
95 3,676,315
143M 3,676,310
159.14 3,676,311
181 3,676,312
3,676,313
3,676,314
3,676,316
192 3,676,317
3,676,320
193 3,676,318
195F 3,676,319
195R 3,676,321
206 3,676,322
244 3,676,323
284 3,676,324
288 3,676,325
296 3,676,326

CLASS 206

45.14 3,675,763
45.34 3,675,764
46FN 3,675,765
63.4 3,675,766
65S 3,675,767

CLASS 208

47 3,676,327
65 3,676,328
3,676,329
111 3,676,330
112 3,676,331
143 3,676,332
209 3,676,333

CLASS 209

4 3,675,768
73 3,675,769
97 3,675,770
166 3,675,773

CLASS 210

9 3,676,334
23 3,676,335
25 3,676,336
42 3,676,337
83 3,675,771
90 3,675,772
138 3,675,775
167 3,675,774
232 3,675,776
3,675,777
237 3,675,778
242 3,675,779
446 3,675,780

CLASS 211

11 3,675,781
22 3,675,784
50 3,675,782
71 3,675,783
119.1 3,675,785

CLASS 212

127 3,675,786

CLASS 213

153 3,675,787

CLASS 214

1QG 3,675,789
1Q 3,675,788
6BA 3,675,792
6DK 3,675,791
6B 3,675,793
6P 3,675,790
13 3,675,794
16.1CB 3,675,799
16.1CC 3,675,795
17C 3,675,796
35R 3,675,797
84 3,675,798
85.1 3,675,800
310 3,675,801
520 3,675,802
730 3,675,803

CLASS 215

9 3,675,804
42 3,675,805

CLASS 217

26.5 3,675,806

CLASS 219

56 3,676,631
58 3,676,632
69C 3,676,633
76 3,676,634
92 3,676,635
117R 3,676,636
3,676,637
121P 3,676,638
121R 3,676,639
130 3,676,640
200 3,676,641
301 3,676,642
432 3,676,643

CLASS 220

3.94 3,675,807
7 3,675,808
9LG 3,675,809
17 3,675,810
20 3,675,811
31S 3,675,812
36 3,675,813
64 Re.27,430
85R 3,675,814
97D 3,675,815

CLASS 221

13 3,675,816
95 3,675,817
224 3,675,818

CLASS 222

51 3,675,819
76 3,675,820
80 3,675,821
103 3,675,822
145 3,675,823
3,675,824
148 3,675,825
183 3,675,826
194 3,675,827
204 3,675,829
362 3,675,828
385 3,675,830
402.11 3,675,831
402.24 3,675,832

CLASS 224

29R 3,675,833
45S 3,675,835
45T 3,675,834

CLASS 226

113 3,675,836
187 3,675,837

CLASS 227

8 3,675,838
140 3,675,839

CLASS 228

4 3,675,840
25 3,675,841
83.6 3,676,682
90 3,676,683
199 3,676,684
206 3,676,685
3,676,686
209 3,676,687
211R 3,676,688
219D 3,676,690
219 3,676,689
222R 3,676,691
231R 3,676,692

CLASS 251

3 3,675,890
117 3,675,891
121 3,675,892
152 3,675,893
163 3,675,894
315 3,675,895
321 3,675,896

CLASS 252

8.75 3,676,338
3,676,339
3,676,340
8.8 3,676,341
18 3,676,342
25 3,676,343
47.5 3,676,346
49.3 3,676,344
3,676,345
51.5R 3,676,347
54 3,676,348
54.6 3,676,349
62.1 3,676,350
63.5 3,676,351
99 3,676,352
136 3,676,353
147 3,676,354
153 3,676,355
192 3,676,356
259.5 3,676,357
301.2R 3,676,360
301.3R 3,676,359
301.4F 3,676,361
301.4P 3,676,358
309 3,676,362
316 3,676,363
413 3,676,364
422 3,676,365
448 3,676,366
451 3,676,367
454 3,676,369
455R 3,676,370
455Z 3,676,368
507 3,676,371
525 3,676,372
531 3,676,373
551 3,676,374

CLASS 254

78 3,675,897
134.3FT 3,675,898
168 3,675,899
172 3,675,900

CLASS 259

4 3,675,901
7 3,675,902
8 3,675,903
108 3,675,904

CLASS 260

2A 3,676,375
2.5AQ 3,676,379
2.5AV 3,676,376
2.5AW 3,676,380
2.5E 3,676,378
15 3,676,377
17.4R 3,676,381
18TN 3,676,382
22R 3,676,383
23EP 3,676,384
27 3,676,386
28 3,676,388
28.5B 3,676,387
29.4UA 3,676,389
31.8HR 3,676,390
32.8R 3,676,385
33.6UA 3,676,391
38 3,676,392
45.7P 3,676,393
45.9R 3,676,394
3,676,395
3,676,396
47CP 3,676,399
47EP 3,676,397
3,676,398
63CQ 3,676,401
75NC 3,676,402
75N 3,676,403
77.5CR 3,676,405
77.3R 3,676,407
78UA 3,676,404
78B 3,676,406
80.3E 3,676,408
80.78 3,676,409
80.81 3,676,410
82 3,676,412
82.1 3,676,411
87.5 3,676,413
88.2 3,676,414
3,676,415
3,676,418
94.3 3,676,416
94.9D 3,676,417
94.9F 3,676,419
185 3,676,420
205 3,676,421
211.5R 3,676,422
212 3,676,423
239DD 3,676,428
239HM 3,676,425
239E 3,676,424
239.1 3,676,427
3,676,429
239.3A 3,676,430
3,676,431
239.3T 3,676,432
239.55R 3,676,426
3,676,433
240TC 3,676,435
243C 3,676,434
3,676,437
243R 3,676,438
244R 3,676,439
248NS 3,676,440
249.8 3,676,441
250R 3,676,442
256.4C 3,676,443
287R 3,676,444
288R 3,676,445
294.8E 3,676,446
295AM 3,676,447
296D 3,676,448
302SD 3,676,449
302R 3,676,451
302S 3,676,450
307D 3,676,452
307R 3,676,453
309.5 3,676,454
3,676,455
3,676,456
326.14T 3,676,458
327C 3,676,459
333 3,676,460
343.2R 3,676,436
343.3 3,676,461
3,676,463
343.6 3,676,464
345.3 3,676,462
346.2M 3,676,465
349 3,676,466
397.3 3,676,467
403 3,676,468
408 3,676,469
410 3,676,470
410.5 3,676,471
410.9R 3,676,472
413 3,676,473
429R 3,676,474
439R 3,676,475
446 3,676,476
3,676,477
448.2N 3,676,478
455A 3,676,479
465D 3,676,480
465.9 3,676,481
471A 3,676,482
471 3,676,457
475N 3,676,483
475P 3,676,484
3,676,485
479C 3,676,486
489 3,676,487
524R 3,676,488
533R 3,676,489
534 3,676,490
546 3,676,491
559A 3,676,492
3,676,493
559T 3,676,494
563R 3,676,495
570D 3,676,497
570R 3,676,496
586R 3,676,498
593R 3,676,499
602 3,676,500
613B 3,676,501
613R 3,676,502
621H 3,676,503
631.5 3,676,504
3,676,505
652.5R 3,676,507
664 3,676,508
666PY 3,676,509
3,676,510
3,676,511
3,676,512
668D 3,676,513
668 3,676,514
671C 3,676,515
677A 3,676,516
679R 3,676,517
680R 3,676,518
683D 3,676,520
683 3,676,519
683.1 3,676,521
683.15D 3,676,523
683.65 3,676,522
831 Re.27,426
887 3,676,524
857TW 3,676,525
857L 3,676,400
876R 3,676,526
3,676,527
878R 3,676,528
879 3,676,529
949 3,676,530
953 3,676,531
970 3,676,532

CLASS 261

23A 3,675,906
39 3,675,907

CLASS 263

2R 3,675,905

CLASS 264

3C 3,676,533
9 3,676,534
29 3,676,535
33 3,676,536
48 3,676,537
75 3,676,538
175 3,676,539
177F 3,676,540
234 3,676,541
244 3,676,542
296 3,676,543
329 3,676,544

CLASS 266

6S 3,675,908
13 3,675,909
24 3,675,910
38 3,675,911

CLASS 267

166 3,675,912

CLASS 269

51 3,675,913
55 3,675,914
58 3,675,915
69 3,675,916

CLASS 271

26 3,675,917
44 3,675,918
3,675,919

CLASS 273

1R 3,675,920
1.5A 3,675,921
55R 3,675,922
80.2 3,675,923
101 3,675,924
101.2 3,675,925
105.4 3,675,926
119A 3,675,927
128R 3,675,928
183A 3,675,929

CLASS 274

11R 3,675,930
3,675,931
23A 3,675,932

CLASS 277

9 3,675,933
12 3,675,934
27 3,675,935
94 3,675,936

CLASS 280

11.35C 3,675,938
11.35T 3,675,937
28 3,675,939
47.26 3,675,940
124R 3,675,941
150AB 3,675,942
154.5R 3,675,943
278 3,675,944
411C 3,675,945
440 3,675,946
500 3,675,947
3,675,948

CLASS 285

39 3,675,951
45 3,675,950
302 3,675,952
354 3,675,949
3,675,953
20.92W 3,675,954
20.927 3,675,955
53R 3,675,956
189.36A 3,675,957
189.36D 3,675,958

CLASS 292

70 3,675,959

CLASS 294

67R 3,675,961
81SF 3,675,960
99R 3,675,962
104 3,675,963

CLASS 296

1A 3,675,964
23 3,675,965
28C 3,675,966
137B 3,675,967

CLASS 297

162 3,675,968
194 3,675,969
452 3,675,970

CLASS 299

34 3,675,971
41 3,675,972
88 3,675,973

CLASS 301

13SM 3,675,974

CLASS 302

52 3,675,975

CLASS 307

10R 3,676,694
88.3 3,676,695
119 3,676,696
205 3,676,700
221R 3,676,701
228 3,676,697
3,676,698
234 3,676,699
235 3,676,702
3,676,703
3,676,704
251 3,676,705
252B 3,676,706
260 3,676,707
263 3,676,708
279 3,676,709
289 3,676,710
291 3,676,712
293 3,676,711
300 3,676,713
303 3,676,714
304 3,676,715
3,676,717
306 3,676,718
308 3,676,716

CLASS 308

3 3,675,976
9 3,675,977
214 3,675,978
230 3,675,979
238 3,675,980

CLASS 310

8.1 3,676,720
8.2 3,676,724
8.3 3,676,721
8.6 3,676,722
24 3,676,719
68B 3,676,723
89 3,676,725

CLASS 312

257 3,675,981
278 3,675,982

CLASS 313

65R 3,676,726
66 3,676,727
109 3,676,728
3,676,729
318 3,676,730
346DC 3,676,731

CLASS 315

10 3,676,732
27GD 3,676,733
200 3,676,734
207 3,676,735
241R 3,676,736

CLASS 317

18C 3,676,739
18D 3,676,737
18R 3,676,738
22 3,676,740
33R 3,676,742
61 3,676,743
99 3,676,744
100 3,676,745
101CC 3,676,746
101CM 3,676,748
101 3,676,747
103 3,676,749
112 3,676,750
137 3,676,751
230 3,676,752
3,676,753
234R 3,676,754
235R 3,676,755
235 3,676,756
242 3,676,757

CLASS 318

128 3,676,758
446 3,676,759
571 3,676,760
574 3,676,761

CLASS 321

8R 3,676,762
45C 3,676,763

CLASS 322

51 3,676,764
58 3,676,765

CLASS 323

6 3,676,766
22T 3,676,768

CLASS 324

29.5 3,676,770
32 3,676,769
33 3,676,771
41 3,676,772
3,676,773
57 3,676,774
64 3,676,775
72.5 3,676,776
73R 3,676,777
158D 3,676,767

CLASS 325

4 3,676,778
115 3,676,779
155 3,676,780
455 3,676,781

CLASS 328

1 3,676,782
117 3,676,783
181 3,676,784

CLASS 329

103 3,676,785
122 3,676,786

CLASS 330

4 3,676,787
5.5 3,676,788
29 3,676,789
30D 3,676,790
43 3,676,791
52 3,676,792

CLASS 331

1A 3,676,793
11 3,676,794
94.5 3,676,795
3,676,796
3,676,797
3,676,798
3,676,799
111 3,676,800
116R Re.27,428
3,676,801

CLASS 332

9R 3,676,802

CLASS 333

1.1 3,676,803
18 3,676,804
72 3,676,805
3,676,806
81A 3,676,807
83 3,676,808
98R 3,676,809

CLASS 335

159 3,676,810
205 3,676,811
3,676,812

CLASS 336

189 3,676,813
205 3,676,814

CLASS 337

134 3,676,816
140 3,676,815
347 3,676,817

CLASS 338

2 3,676,818
32H 3,676,828
32R 3,676,819
34 3,676,820
41 3,676,821
132 3,676,822
139 3,676,823
162 3,676,824
181 3,676,825
183 3,676,826
3,676,827

CLASS 339

21R 3,676,830
33 3,676,829
49R 3,676,833
59L 3,676,834
73 3,676,835
74R 3,676,831
75M 3,676,832

CLASSIFICATION OF PATENTS

97R	3,676,836		3,676,859		3,675,986	87	3,676,004	372	3,676,024	275	3,676,559
103R	3,676,837		3,676,860	160R	3,675,989	97	3,676,005	392	3,676,022	285	3,676,560
198	Re.27,429		3,676,861	160	3,675,987	109	3,676,006	423	3,676,025	300	3,676,561
217R	3,676,838		3,676,862		3,675,988	184	3,676,007	560	3,676,026	320	3,676,562
CLASS 340		173CA	3,676,863	311	3,675,990	196	3,676,008	CLASS 418		366	3,676,563
6R	3,676,839	173LM	3,676,864	CLASS 351		199	3,676,009	71	3,676,027	CLASS 425	
12	3,676,840	173LT	3,676,866	41	3,675,991	CLASS 401		CLASS 424		38	3,676,028
15.5CC	3,676,841	173RC	3,676,865	CLASS 352		188	3,676,010	44	3,676,549	67	3,676,029
15.5B	3,676,842	174QA	3,676,869	72	3,675,992	CLASS 415		71	3,676,546	78	3,676,030
27R	3,676,843	174TF	3,676,870	92	3,675,993	111	3,676,011		3,676,550	111	3,676,031
71	3,676,844		3,676,871	163	3,675,994	119	3,676,012	88	3,676,547	140	3,676,032
87	3,676,845		3,676,872	173	3,675,995	128	3,676,013	92	3,676,548	174	3,676,033
146.1BA	3,676,846		3,676,873	194	3,675,996	200	3,676,014	103	3,676,551	203	3,676,035
146.3AC	3,676,847	174YC	3,676,867	CLASS 353		202	3,676,015	110	3,676,552	208	3,676,034
	3,676,848	174.1C	3,676,868	28	3,675,997	CLASS 416		128	3,676,553	209	3,676,036
149R	3,676,849	174.1E	3,676,874	101	3,675,998	157	3,676,016	198	3,676,554	435	3,676,037
154	3,676,850	183	3,676,875	CLASS 355		CLASS 417		220	3,676,555	464	3,676,038
172.5	3,676,851	188	3,676,876	8	3,675,999	34	3,676,017	260	3,676,557	466	3,676,039
	3,676,852	227R	3,676,877	52	3,676,000	72	3,676,018	266	3,676,556	470	3,676,040
	3,676,853	408	3,676,878	132	3,676,001	121	3,676,019	273	3,676,545	CLASS 431	
	3,676,854	CLASS 350		133	3,676,002	222	3,676,020	274	3,676,558	47	3,676,041
	3,676,855	3.5	3,675,983	CLASS 356		253	3,676,023			66	3,676,042
	3,676,856	96R	3,675,984	5	3,676,003	299	3,676,021			93	3,676,043
	3,676,857	157	3,675,985							95	3,676,044
	3,676,858										3,676,045
											3,676,046
										255	3,676,047
										353	3,676,048

CLASSIFICATION OF DESIGNS

D 2—	232	224,182		198	224,199			224,216	14	224,233		224,249	D56—	1	224,267
	273	224,183	D 9—	41	224,200			224,217		224,234		224,250			224,268
		224,184		42	224,201			224,218		224,235		224,251		2	224,269
	283	224,185		44	224,202	D14—	6	224,219	D29—	1 224,236		224,252		4	224,270
	385	224,186		131	224,203		14	224,220		224,237		224,253	D61—	1	224,262
D 4—	25	224,187		176	224,204		30	224,221	D30—	12 224,238		224,254			224,263
D 6—	20	224,188		185	224,206	D23—	28	224,225	D34—	2 224,239		224,255		1	224,271
		224,189			224,207		48	224,222		4 224,240	D44—	224,256			224,272
	65	224,190		242	224,208		122	224,224		5 224,241	D45—	7 224,257	D64—	11	224,273
	66	224,191		255	224,209			224,226		224,242	D48—	32 224,258		12	224,274
	70	224,192		284	224,210			224,227		224,243	D52—	1 224,260	D71—	1	224,275
		224,193	D09—	176	224,205	D25—	1	224,223		224,244		6 224,259	D72—		224,276
	138	224,194	D13—	1	224,211	D26—	5	224,229		224,245	D54—	12 224,261	D83—		224,277
	144	224,195			224,212			224,230		224,246		224,264			224,278
	148	224,196			224,213			224,231		224,247		224,265	D85—	8	224,279
	181	224,197			224,214		13	224,228		15 224,248		224,266	D87—	1	224,280
	184	224,198			224,215			224,232							

CLASSIFICATION OF PLANTS

P. —	19	3,234	P. —	23	3,235	P. — 78	3,231	P. — 82	3,232	P. —	3,233

GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

(U.S. States, Territories and Armed Forces, the Commonwealth of Puerto Rico, and the Canal Zone)

Alabama	1	Kentucky	21	Oregon	41
Alaska	2	Louisiana	22	Pennsylvania	42
American Samoa	3	Maine	23	Puerto Rico	43
Arizona	4	Maryland	24	Rhode Island	44
Arkansas	5	Massachusetts	25	South Carolina	45
California	6	Michigan	26	South Dakota	46
Canal Zone	7	Minnesota	27	Tennessee	47
Colorado	8	Mississippi	28	Texas	48
Connecticut	9	Missouri	29	Utah	49
Delaware	10	Montana	30	Vermont	50
District of Columbia	11	Nebraska	31	Virginia	51
Florida	12	Nevada	32	Virgin Islands	52
Georgia	13	New Hampshire	33	Washington	53
Guam	14	New Jersey	34	West Virginia	54
Hawaii	15	New Mexico	35	Wisconsin	55
Idaho	16	New York	36	Wyoming	56
Illinois	17	North Carolina	37	U.S. Air Force	57
Indiana	18	North Dakota	38	U.S. Army	58
Iowa	19	Ohio	39	U.S. Navy	59
Kansas	20	Oklahoma	40		

(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

1 :	3,675,369	3,675,501	3,676,077	3,676,856	3,676,427	3,675,782
	3,675,376	3,675,514	3,676,090	3,676,864	3,676,428	3,675,828
	3,675,493	3,675,519	3,676,157	3,676,868	3,676,436	3,675,989
	3,675,526	3,675,522	3,676,179	7 : Re.27,427	3,676,463	3,676,007
	3,675,586	3,675,538	3,676,188	8 : 3,675,256	3,676,497	3,676,058
	3,675,659	3,675,543	3,676,208	3,675,640	3,676,532	3,676,164
	3,675,813	3,675,546	3,676,210	3,675,651	3,676,570	3,676,170
	3,675,956	3,675,553	3,676,216	3,675,723	3,676,573	3,676,197
	3,676,017	3,675,570	3,676,218	3,675,769	3,676,630	3,676,257
	3,676,019	3,675,576	3,676,221	3,675,809	3,676,655	3,676,487
	3,676,101	3,675,582	3,676,230	3,675,834	3,676,663	3,676,691
	3,676,335	3,675,624	3,676,232	3,675,894	3,676,756	3,676,785
	3,676,758	3,675,630	3,676,246	3,675,898	3,676,774	3,676,802
4 :	3,675,252	3,675,643	3,676,276	3,676,106	3,676,797	3,676,865
	3,675,428	3,675,647	3,676,281	3,676,153	3,676,829	13 : 3,675,303
	3,675,524	3,675,648	3,676,315	3,676,517	10 : 3,675,245	3,675,604
	3,675,830	3,675,650	3,676,317	3,676,848	3,675,286	3,675,722
	3,675,885	3,675,652	3,676,372	9 : 3,675,265	3,675,530	3,675,923
	3,675,942	3,675,667	3,676,447	3,675,292	3,675,580	3,676,235
	3,676,700	3,675,674	3,676,522	3,675,359	3,675,623	17 : 3,675,254
	3,676,712	3,675,682	3,676,523	3,675,383	3,675,863	3,675,302
	3,676,801	3,675,690	3,676,538	3,675,391	3,675,875	3,675,337
	3,676,818	3,675,694	3,676,587	3,675,409	3,676,050	3,675,347
	3,676,858	3,675,695	3,676,592	3,675,410	3,676,086	3,675,350
	3,676,861	3,675,710	3,676,605	3,675,418	3,676,161	3,675,354
	3,676,873	3,675,713	3,676,609	3,675,460	3,676,167	3,675,387
6 :	Re.27,426	3,675,714	3,676,611	3,675,531	3,676,172	3,675,388
	3,675,257	3,675,729	3,676,615	3,675,655	3,676,173	3,675,421
	3,675,261	3,675,751	3,676,616	3,675,675	3,676,181	3,675,449
	3,675,262	3,675,763	3,676,652	3,675,688	3,676,219	3,675,464
	3,675,273	3,675,768	3,676,654	3,675,817	3,676,280	3,675,494
	3,675,275	3,675,773	3,676,658	3,675,823	3,676,299	3,675,495
	3,675,282	3,675,774	3,676,660	3,675,831	3,676,343	3,675,518
	3,675,301	3,675,785	3,676,665	3,675,838	3,676,362	3,675,559
	3,675,306	3,675,798	3,676,666	3,675,848	3,676,400	3,675,569
	3,675,311	3,675,801	3,676,670	3,675,912	3,676,466	3,675,573
	3,675,325	3,675,805	3,676,672	3,675,920	3,676,475	3,675,590
	3,675,333	3,675,815	3,676,674	3,675,926	3,676,476	3,675,615
	3,675,351	3,675,833	3,676,677	3,675,993	3,676,477	3,675,617
	3,675,357	3,675,882	3,676,726	3,676,038	3,676,481	3,675,638
	3,675,358	3,675,883	3,676,742	3,676,039	3,676,495	3,675,658
	3,675,360	3,675,890	3,676,754	3,676,071	3,676,562	3,675,664
	3,675,361	3,675,895	3,676,761	3,676,085	3,676,753	3,675,668
	3,675,362	3,675,900	3,676,772	3,676,088	11 : 3,675,712	3,675,679
	3,675,365	3,675,925	3,676,803	3,676,113	3,676,359	3,675,681
	3,675,378	3,675,930	3,676,806	3,676,120	3,676,787	3,675,737
	3,675,394	3,675,965	3,676,833	3,676,156	3,676,809	3,675,739
	3,675,401	3,675,969	3,676,836	3,676,225	12 : 3,675,342	3,675,759
	3,675,425	3,676,010	3,676,846	3,676,292	3,675,343	3,675,765
	3,675,435	3,676,069	3,676,849	3,676,309	3,675,419	3,675,766
	3,675,471	3,676,073	3,676,851	3,676,380	3,675,560	3,675,770

3,675,777
3,675,787
3,675,807
3,675,812
3,675,822
3,675,824
3,675,855
3,675,869
3,675,877
3,675,886
3,675,887
3,675,889
3,675,916
3,675,927
3,675,936
3,673,945
3,675,959
3,675,966
3,675,976
3,675,994
3,675,995
3,676,001
3,676,034
3,676,055
3,676,063
3,676,155
3,676,182
3,676,248
3,676,252
3,676,272
3,676,278
3,676,279
3,676,312
3,676,344
3,676,345
3,676,356
3,676,382
3,676,384
3,676,391
3,676,469
3,676,492
3,676,527
3,676,534
3,676,543
3,676,552
3,676,572
3,676,584
3,676,619
3,676,620
3,676,628
3,676,629
3,676,640
3,676,643
3,676,661
3,676,673
3,676,721
3,676,722
3,676,740
3,676,745
3,676,749
3,676,813
3,676,835
3,676,878
18 : 3,675,271
3,675,300
3,675,437
3,675,448
3,675,481
3,675,591
3,675,592
3,675,599
3,675,627
3,675,662
3,675,727
3,675,736
3,675,779
3,675,826
3,675,938
3,675,972
3,675,975
3,676,021
3,676,112
3,676,171
3,676,194
3,676,398
3,676,434
3,676,438
3,676,458
3,676,547
3,676,548
3,676,579
3,676,699
3,676,725
3,676,739
3,676,767
19 : 3,675,258
3,675,851
3,675,922
3,676,020
3,676,205
3,676,423
3,676,690
20 : 3,675,267
3,676,291
3,676,424
3,676,479

21 : 3,676,549
3,675,417
3,676,040
3,676,307
22 : 3,675,515
3,676,000
3,676,052
3,676,056
3,676,207
3,676,263
3,676,306
3,676,348
3,676,412
24 : 3,675,309
3,675,327
3,675,340
3,675,352
3,675,374
3,675,480
3,675,488
3,675,575
3,675,577
3,675,579
3,675,614
3,675,669
3,675,672
3,675,738
3,675,750
3,675,921
3,675,932
3,676,148
3,676,195
3,676,204
3,676,283
3,676,311
3,676,368
3,676,440
3,676,537
3,676,565
3,676,581
3,676,591
3,676,645
3,676,675
3,676,792
25 : Re.27,431
Re.27,432
3,675,260
3,675,314
3,675,322
3,675,348
3,675,451
3,675,456
3,675,468
3,675,477
3,675,523
3,675,551
3,675,584
3,675,588
3,675,616
3,675,645
3,675,780
3,675,810
3,675,816
3,675,842
3,675,854
3,675,880
3,675,928
3,675,951
3,675,980
3,675,987
3,675,988
3,676,003
3,676,015
3,676,033
3,676,043
3,676,123
3,676,149
3,676,176
3,676,193
3,676,222
3,676,250
3,676,253
3,676,288
3,676,293
3,676,337
3,676,358
3,676,386
3,676,454
3,676,462
3,676,503
3,676,595
3,676,598
3,676,621
3,676,622
3,676,626
3,676,679
3,676,728
3,676,729
3,676,730
3,676,735
3,676,765
3,676,768
3,676,770
3,676,795
3,676,798
3,676,854

26 : 3,675,248
3,675,281
3,675,291
3,675,293
3,675,330
3,675,367
3,675,372
3,675,380
3,675,406
3,675,422
3,675,440
3,675,441
3,675,487
3,675,499
3,675,500
3,675,510
3,675,521
3,675,527
3,675,535
3,675,583
3,675,589
3,675,673
3,675,676
3,675,705
3,675,730
3,675,733
3,675,734
3,675,742
3,675,743
3,675,793
3,675,861
3,675,876
3,675,899
3,675,907
3,675,919
3,675,955
3,675,964
3,676,025
3,676,026
3,676,103
3,676,108
3,676,151
3,676,302
3,676,308
3,676,353
3,676,354
3,676,370
3,676,377
3,676,385
3,676,405
3,676,433
3,676,558
3,676,594
3,676,625
3,676,636
3,676,637
3,676,650
3,676,651
3,676,656
3,676,687
3,676,760
3,676,815
3,676,838
3,676,844
3,676,845
3,676,866
27 : 3,675,268
3,675,272
3,675,393
3,675,399
3,675,490
3,675,567
3,675,725
3,675,758
3,675,764
3,675,939
3,675,967
3,676,013
3,676,032
3,676,266
3,676,277
3,676,321
3,676,387
3,676,392
3,676,574
3,676,710
3,676,764
3,676,852
28 : 3,676,840
29 : 3,675,264
3,675,310
3,675,613
3,675,619
3,675,625
3,675,644
3,675,678
3,675,721
3,675,819
3,675,904
3,675,941
3,675,949
3,675,961
3,676,107
3,676,198
3,676,627
3,676,683

31 : 3,675,545
3,675,800
3,676,686
33 : 3,675,244
3,675,285
3,676,029
34 : 3,675,274
3,675,298
3,675,299
3,675,305
3,675,315
3,675,316
3,675,319
3,675,363
3,675,396
3,675,503
3,675,513
3,675,528
3,675,602
3,675,626
3,675,629
3,675,665
3,675,711
3,675,792
3,675,795
3,675,845
3,675,859
3,675,867
3,675,902
3,675,913
3,675,929
3,675,958
3,675,983
3,675,985
3,675,990
3,676,035
3,676,036
3,676,042
3,676,059
3,676,082
3,676,087
3,676,102
3,676,130
3,676,169
3,676,196
3,676,199
3,676,202
3,676,214
3,676,223
3,676,226
3,676,229
3,676,239
3,676,240
3,676,249
3,676,254
3,676,271
3,676,289
3,676,327
3,676,328
3,676,329
3,676,330
3,676,336
3,676,341
3,676,342
3,676,346
3,676,347
3,676,369
3,676,375
3,676,389
3,676,394
3,676,422
3,676,435
3,676,439
3,676,445
3,676,449
3,676,451
3,676,452
3,676,453
3,676,480
3,676,482
3,676,483
3,676,519
3,676,530
3,676,556
3,676,563
3,676,571
3,676,589
3,676,590
3,676,597
3,676,607
3,676,613
3,676,633
3,676,646
3,676,684
3,676,695
3,676,702
3,676,705
3,676,711
3,676,715
3,676,718
3,676,719
3,676,727
3,676,773
3,676,786
3,676,790
3,676,799

35 : 3,675,276
3,676,782
36 : 3,675,249
3,675,251
3,675,259
3,675,266
3,675,287
3,675,328
3,675,329
3,675,339
3,675,345
3,675,355
3,675,364
3,675,382
3,675,390
3,675,398
3,675,434
3,675,436
3,675,439
3,675,463
3,675,473
3,675,475
3,675,479
3,675,486
3,675,492
3,675,556
3,675,563
3,675,572
3,675,597
3,675,620
3,675,639
3,675,641
3,675,646
3,675,663
3,675,671
3,675,740
3,675,741
3,675,776
3,675,778
3,675,781
3,675,804
3,675,820
3,675,839
3,675,843
3,675,860
3,675,871
3,675,879
3,675,884
3,675,906
3,675,946
3,675,948
3,675,957
3,675,998
3,676,002
3,676,014
3,676,037
3,676,076
3,676,079
3,676,081
3,676,089
3,676,092
3,676,116
3,676,118
3,676,135
3,676,136
3,676,150
3,676,154
3,676,158
3,676,174
3,676,183
3,676,187
3,676,191
3,676,209
3,676,215
3,676,220
3,676,231
3,676,264
3,676,275
3,676,285
3,676,290
3,676,310
3,676,313
3,676,314
3,676,334
3,676,350
3,676,360
3,676,381
3,676,426
3,676,444
3,676,448
3,676,456
3,676,531
3,676,535
3,676,539
3,676,557
3,676,566
3,676,577

3,676,800
3,676,804
3,676,805
3,676,824
3,676,830
3,676,839
3,676,867
3,676,870
3,676,871
3,675,276
3,676,782
3,675,249
3,675,251
3,675,259
3,675,266
3,675,287
3,675,328
3,675,329
3,675,339
3,675,345
3,675,355
3,675,364
3,675,382
3,675,390
3,675,398
3,675,434
3,675,436
3,675,439
3,675,463
3,675,473
3,675,475
3,675,479
3,675,486
3,675,492
3,675,556
3,675,563
3,675,572
3,675,597
3,675,620
3,675,639
3,675,641
3,675,646
3,675,663
3,675,671
3,675,740
3,675,741
3,675,776
3,675,778
3,675,781
3,675,804
3,675,820
3,675,839
3,675,843
3,675,860
3,675,871
3,675,879
3,675,884
3,675,906
3,675,946
3,675,948
3,675,957
3,675,998
3,676,002
3,676,014
3,676,037
3,676,076
3,676,079
3,676,081
3,676,089
3,676,092
3,676,116
3,676,118
3,676,135
3,676,136
3,676,150
3,676,154
3,676,158
3,676,174
3,676,183
3,676,187
3,676,191
3,676,209
3,676,215
3,676,220
3,676,231
3,676,264
3,676,275
3,676,285
3,676,290
3,676,310
3,676,313
3,676,314
3,676,334
3,676,350
3,676,360
3,676,381
3,676,426
3,676,444
3,676,448
3,676,456
3,676,531
3,676,535
3,676,539
3,676,557
3,676,566
3,676,577

3,676,580
3,676,588
3,676,601
3,676,602
3,676,603
3,676,606
3,676,617
3,676,623
3,676,638
3,676,644
3,676,647
3,676,664
3,676,671
3,676,676
3,676,703
3,676,704
3,676,713
3,676,747
3,676,751
3,676,775
3,676,779
3,676,781
3,676,794
3,676,811
3,676,816
3,676,821
3,676,832
3,676,834
3,676,850
3,676,860
3,676,863
37 : 3,675,247
3,675,373
3,675,761
3,676,502
3,676,689
3,676,875
39 : 3,675,312
3,675,356
3,675,375
3,675,377
3,675,389
3,675,397
3,675,407
3,675,462
3,675,482
3,675,502
3,675,520
3,675,536
3,675,539
3,675,601
3,675,618
3,675,621
3,675,622
3,675,637
3,675,654
3,675,685
3,675,702
3,675,703
3,675,708
3,675,731
3,675,732
3,675,762
3,675,784
3,675,786
3,675,790
3,675,796
3,675,818
3,675,849
3,675,853
3,675,903
3,675,905
3,675,908
3,675,910
3,675,934
3,675,935
3,675,940
3,675,974
3,675,978
3,675,982
3,676,012
3,676,022
3,676,028
3,676,044
3,676,045
3,676,046
3,676,048
3,676,064
3,676,072
3,676,084
3,676,094
3,676,095
3,676,098
3,676,099
3,676,109
3,676,111
3,676,121
3,676,127
3,676,145
3,676,146
3,676,152
3,676,168
3,676,224
3,676,259
3,676,260
3,676,261

3,676,580
3,676,588
3,676,601
3,676,602
3,676,603
3,676,606
3,676,617
3,676,623
3,676,638
3,676,644
3,676,647
3,676,664
3,676,671
3,676,676
3,676,703
3,676,704
3,676,713
3,676,747
3,676,751
3,676,775
3,676,779
3,676,781
3,676,794
3,676,811
3,676,816
3,676,821
3,676,832
3,676,834
3,676,850
3,676,860
3,676,863
37 : 3,675,247
3,675,373
3,675,761
3,676,502
3,676,689
3,676,875
39 : 3,675,312
3,675,356
3,675,375
3,675,377
3,675,389
3,675,397
3,675,407
3,675,462
3,675,482
3,675,502
3,675,520
3,675,536
3,675,539
3,675,601
3,675,618
3,675,621
3,675,622
3,675,637
3,675,654
3,675,685
3,675,702
3,675,703
3,675,708
3,675,731
3,675,732
3,675,762
3,675,784
3,675,786
3,675,790
3,675,796
3,675,818
3,675,849
3,675,853
3,675,903
3,675,905
3,675,908
3,675,910
3,675,934
3,675,935
3,675,940
3,675,974
3,675,978
3,675,982
3,676,012
3,676,022
3,676,028
3,676,044
3,676,045
3,676,046
3,676,048
3,676,064
3,676,072
3,676,084
3,676,094
3,676,095
3,676,098
3,676,099
3,676,109
3,676,111
3,676,121
3,676,127
3,676,145
3,676,146
3,676,152
3,676,168
3,676,224
3,676,259
3,676,260
3,676,261

3,676,287
3,676,295
3,676,349
3,676,361
3,676,393
3,676,396
3,676,410
3,676,411
3,676,504
3,676,505
3,676,506
3,676,518
3,676,529
3,676,540
3,676,559
3,676,575
3,676,604
3,676,634
3,676,635
3,676,642
3,676,668
3,676,717
3,676,720
3,676,724
3,676,817
3,676,837
40 : 3,675,277
3,675,420
3,675,432
3,675,578
3,675,677
3,675,888
3,675,943
3,676,066
3,676,070
3,676,166
3,676,201
3,676,304
3,676,324
3,676,331
3,676,332
3,676,407
3,676,421

41 : 3,675,253
3,675,405
3,675,600
3,675,735
3,675,791
3,675,803
3,675,846
3,675,881
3,675,897
3,676,685
3,676,698
3,676,723
3,676,777
3,676,807
42 : 3,675,296
3,675,304
3,675,313
3,675,384
3,675,392
3,675,444
3,675,445
3,675,469
3,675,587
3,675,595
3,675,598
3,675,611
3,675,653
3,675,698
3,675,699
3,675,788
3,675,802
3,675,811
3,675,850
3,675,858
3,675,872
3,675,878

3,675,914
3,675,918
3,675,933
3,676,005
3,676,078
3,676,083
3,676,129
3,676,177
3,676,184
3,676,186
3,676,192
3,676,234
3,676,258
3,676,267
3,676,273
3,676,274
3,676,284
3,676,318
3,676,333
3,676,373
3,676,383
3,676,388
3,676,408
3,676,473
3,676,488
3,676,489
3,676,500
3,676,514
3,676,521
3,676,526
3,676,554
3,676,568
3,676,569
3,676,608
3,676,610
3,676,614
3,676,736
3,676,737
3,676,738
3,676,741

3,676,766
3,676,814
3,676,825
3,676,847
43 : 3,675,970
3,676,536
44 : 3,675,279
3,675,284
3,675,704
3,675,952
3,676,211
3,676,339
3,676,406
45 : 3,675,605
3,675,767
3,675,836
3,675,864
3,675,865
3,676,251
46 : 3,675,297
3,676,641
47 : 3,675,370
3,675,395
3,675,746
3,675,915
3,676,401
3,676,425
3,676,485
48 : Re.27,425
3,675,278
3,675,381
3,675,385
3,675,427
3,675,430
3,675,478
3,675,549
3,675,608
3,675,661
3,675,689
3,675,715
3,675,716
3,675,717

3,675,718
3,675,719
3,675,720
3,675,728
3,675,771
3,675,783
3,675,829
3,675,840
3,675,901
3,675,947
3,675,950
3,676,054
3,676,091
3,676,241
3,676,242
3,676,255
3,676,256
3,676,363
3,676,364
3,676,379
3,676,397
3,676,501
3,676,509
3,676,515
3,676,553
3,676,780
3,676,842
3,676,853
3,676,859
49 : 3,675,891
3,676,533
51 : 3,675,323
3,675,332
3,675,335
3,675,379
3,675,402
3,675,442
3,675,483
3,675,525
3,675,706
3,675,724
3,675,924

53 : 3,675,336
3,675,338
3,675,484
3,675,498
3,675,631
3,675,693
3,675,701
3,675,808
3,675,857
3,675,960
3,675,973
3,676,016
3,676,659
3,676,694
54 : 3,675,447
55 : 3,675,321
3,675,353
3,675,450
3,675,476
3,675,508
3,675,516
3,675,565
3,675,594
3,675,747
3,675,748
3,675,749
3,675,814
3,675,835
3,675,837
3,675,866
3,675,892
3,676,009
3,676,212
3,676,237
3,676,376
3,676,662
3,676,812
3,676,822

Design Patents

6 : 224,230
224,240
224,247
224,248
224,249
224,250
224,253
224,259
224,268
224,269
224,270
9 : 224,183
224,184
224,198
224,203

12 : 224,275
17 : 224,201
224,202
224,209
224,224
224,226
224,227
224,243
224,244
224,245
224,254
224,255
224,258
18 : 224,252
19 : 224,221

22 : 224,204
224,205
25 : 224,223
224,228
224,232
224,272
26 : 224,213
224,214
224,246
27 : 224,280
29 : 224,187
34 : 224,186
224,260
224,274
36 : 224,185

224,188
224,189
224,210
224,216
224,217
224,218
224,235
224,236
224,237
224,238
224,241
224,251
224,256
224,257

224,261
224,262
224,263
224,264
224,265
224,266
224,267
224,276
224,277
224,278
37 : 224,194
224,199
39 : 224,195
224,200

224,222
224,229
224,231
224,239
40 : 224,215
47 : 224,196
224,197
48 : 224,242
49 : 224,211
224,212
53 : 224,219
55 : 224,206
224,207
224,225

Plant Patents

6 : 3,234
3,235
39 : 3,231
3,232
3,233

U.S. GOVERNMENT PRINTING OFFICE: 0—1972

OFFICIAL GAZETTE of the UNITED STATES PATENT OFFICE
July 18, 1972 Volume 900 Number 3

CONTENTS

	Page
Patent Notices	
Certificates of Corrections for the Week of July 18, 1972	814
Dedications	814
Disclaimers	814
Condition of Patent Applications	815
Defensive Publications	816
Reissue Patents Granted	821
Plant Patents Granted	824
Patents Granted	
General and Mechanical	825
Chemical	1030
Electrical	1114
Design Patents Granted	1204
Index of Patentees	PI 1
Indices of Applicants of Defensive Publications and Reissues, Plants, and Designs	PI 49
Classification of	
Patents (Including Reissues)	PI 53
Designs, Plants, and Defensive Publications	PI 56
Geographical Index of Residence of Inventors	
Patents (Including Reissues)	PI 57
Designs, Plants, and Applicants of Defensive Publications	PI 59

The following are mailed under direction of the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402, to whom all subscriptions should be made payable and all communications addressed:

THE OFFICIAL GAZETTE (PATENTS SECTION), issued weekly, subscription $89.00 per annum, foreign mailing $22.25 additional; single copies $2.00 each.

THE OFFICIAL GAZETTE (TRADEMARK SECTION), issued weekly, subscription $17.00 per annum, foreign mailing $4.25 additional; single copies 40 cents each.

CIRCULARS OF GENERAL INFORMATION concerning PATENTS or TRADEMARKS, price 15 cents each.

PRINTED COPIES OF PATENTS are furnished by the Patent Office at 50 cents each; PLANT PATENTS in color, $1.00 each; copies of TRADEMARKS and DESIGN PATENTS at 20 cents each. Address orders to the Commissioner of Patents, Washington, D.C., 20231.

Printing authorized by Section 11(a)3 of Title 35, U.S. Code P.O.

PATENT OFFICE NOTICES

Certificates of Correction for the Week of July 18, 1972

Re. 27,308	3,619,283	3,635,534	3,645,378
3,438,868	3,619,506	3,635,640	3,645,719
3,513,162	3,619,618	3,635,651	3,645,795
3,514,446	3,619,736	3,635,692	3,645,895
3,523,943	3,620,055	3,635,998	3,645,925
3,525,739	3,620,980	3,636,014	3,645,931
3,525,740	3,621,226	3,636,326	3,645,996
3,538,131	3,621,243	3,636,350	3,646,120
3,544,549	3,621,365	3,636,408	3,646,328
3,554,921	3,621,765	3,636,540	3,646,337
3,558,535	3,622,317	3,637,571	3,646,360
3,583,974	3,622,530	3,637,601	3,646,390
3,585,678	3,622,903	3,637,842	3,646,555
3,587,606	3,623,636	3,638,753	3,647,160
3,587,925	3,623,721	3,639,048	3,647,476
3,588,363	3,623,929	3,639,141	3,647,505
3,590,036	3,624,188	3,639,199	3,647,683
3,590,193	3,624,419	3,639,245	3,647,967
3,592,026	3,624,490	3,639,347	3,649,427
3,592,281	3,624,547	3,639,398	3,649,457
3,592,930	3,624,557	3,639,428	3,649,477
3,595,619	3,624,776	3,639,540	3,649,492
3,597,468	3,624,783	3,640,330	3,649,715
3,598,782	3,625,867	3,640,609	3,649,731
3,598,808	3,625,912	3,641,055	3,650,115
3,600,071	3,626,028	3,641,068	3,650,413
3,600,350	3,626,046	3,641,072	3,650,454
3,600,373	3,626,166	3,641,116	3,650,457
3,600,415	3,627,196	3,641,134	3,650,460
3,603,104	3,627,629	3,641,202	3,650,479
3,603,827	3,627,720	3,641,419	3,650,555
3,605,220	3,628,435	3,641,793	3,650,646
3,607,298	3,628,899	3,641,835	3,650,696
3,607,382	3,629,104	3,641,919	3,650,703
3,607,534	3,629,185	3,642,448	3,650,911
3,607,877	3,629,299	3,642,463	3,651,061
3,608,254	3,629,455	3,642,577	3,651,221
3,608,676	3,629,562	3,642,674	3,651,400
3,608,680	3,629,851	3,642,689	3,651,468
3,609,292	3,630,205	3,642,749	3,651,499
3,610,519	3,630,513	3,642,783	3,651,866
3,610,737	3,631,253	3,642,803	3,652,071
3,610,848	3,631,386	3,642,997	3,652,092
3,611,838	3,631,410	3,643,150	3,652,507
3,614,371	3,631,641	3,643,602	3,652,668
3,614,580	3,631,759	3,643,662	3,652,740
3,615,229	3,631,833	3,643,789	3,653,183
3,615,297	3,632,606	3,644,103	3,653,331
3,615,415	3,632,755	3,644,130	3,653,474
3,615,700	3,632,843	3,644,218	3,653,623
3,616,232	3,632,985	3,644,254	3,653,635
3,616,306	3,632,995	3,644,292	3,653,765
3,616,364	3,633,536	3,644,322	3,653,881
3,617,117	3,634,122	3,644,365	3,653,921
3,617,256	3,634,353	3,644,427	3,654,065
3,617,496	3,634,408	3,644,470	3,654,310
3,618,050	3,634,409	3,644,495	3,654,311
3,618,185	3,634,469	3,644,505	3,654,547
3,618,291	3,634,870	3,644,612	3,655,088
3,619,115	3,635,022	3,645,044	3,655,612
3,619,242	3,635,363	3,645,136	3,655,867

Dedications

3,268,666.—*Martin A. Odom*, Oakland, Calif. CALL DIVERTER TRANSLATORS. Patent dated Aug. 23, 1966. Dedication filed Jan. 3, 1972, by the assignee, *Ford Industries, Inc.*

Hereby dedicates to the Public the entire remaining term of said patent.

3,325,563.—*Bert S. Taylor, New York, N.Y.*, and *Martin R. Lutz*, Arlesheim, Basel-Land, Switzerland. BIS(BROMOHALOPROPYL)BROMOHALOPROPYL PHOSPHONATES AND THE CORRESPONDING POLYPHOSPHONATES. Patent dated June 13, 1967. Dedication filed Jan. 14, 1972, by the assignee, *FMC Corporation.*

Hereby dedicates to the Public the remaining term of said patent.

3,409,741.—*Martin A. Odom*, Oakland, Calif. TELEPHONE CALL DIVERTER CONTROL CIRCUIT. Patent dated Nov. 5, 1968. Dedication filed, Jan. 3, 1972, by the assignee, *Ford Industries, Inc.*

Hereby dedicates to the Public the entire remaining term of said patent.

3,576,911.—*Frank S. Maxey*, Akron, Ohio. SHOE SOLE COMPOUND. Patent dated Apr. 27, 1971. Dedication filed Dec. 20, 1971, by the assignee, *The Goodyear Tire & Rubber Company.*

Hereby dedicates to the People of the United States the entire term of said patent.

3,590,806.—*Joseph K. Locke*, De Kalb, Ill. PORTABLE L.P. GAS SPACE HEATER. Patent dated July 6, 1971. Dedication filed Feb. 4, 1972, by the assignee, *Bernzomatic Corporation.*

Hereby dedicates to the Public the entire term of said patent.

3,590,860.—*Irving H. Stenner*, Brockport, N.Y. PRESSURE REGULATOR VALVE FOR L.P. CARTRIDGES. Patent dated July 6, 1971. Dedication filed Feb. 4, 1972, by the assignee, *Bernzomatic Corporation.*

Hereby dedicates to the Public the entire term of said patent.

Disclaimers

3,515,803.—*Malcolm M. Lorang*, Garden Grove, Calif. CONTRAST RANGE CONTROL. Patent dated June 2, 1970. Disclaimer filed Dec. 13, 1971, by the assignee, *The Magnavox Company.*

Hereby enters this disclaimer to all claims of said patent.

3,576,626.—*Terry W. Milligan*, Belmont, and *Richard W. Young*, Wellesley Hills, Mass. PHOTOGRAPHIC COLOR DIFFUSION TRANSFER PROCESSES AND FILM UNIT FOR USE THEREIN. Patent dated Apr. 27, 1971. Disclaimer filed Mar. 29, 1972, by the assignee, *Polaroid Corporation.*

Hereby enters this disclaimer to the portion of the term of the patent subsequent to Oct. 21, 1986.

3,629,853.—*John D. Newton*, Kingston, N.Y. DATA PROCESSING ELEMENT. Patent dated Dec. 21, 1971. Disclaimer filed Mar. 24, 1972, by the assignee, *International Business Machines Corporation.*

Hereby enters this disclaimer to claims 17, 21, 22, 25, 26, 28 and claim 1 of said patent.

3,630,962. *Christian H. Stapfer*, Newtown, Pa. AZINES AND HYDRAZONES AS PAINT DRIER ACCELERATORS. Patent dated Dec. 28, 1971. Disclaimer filed Feb. 7, 1972, by the assignee, *Cincinnati Milacron Chemicals, Inc.*

Hereby enters this disclaimer to claims 1, 2, 4 and 10 of said patent.

PATENT EXAMINING CORPS

R. A. WAHL, Assistant Commissioner
F. H. BRONAUGH, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF JUNE 27, 1972

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	5-18-71
GENERAL ORGANIC CHEMISTRY, GROUP 120—I. MARCUS, Director. Heterocylic; Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	1-21-71
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—L. J. BERCOVITZ, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	4-16-71
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. P. KENT, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	4-05-71
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—W. B. KNIGHT, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	3-01-71
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS AND RELATED ELEMENTS, GROUP 210—N. ANSHER, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Miscellaneous.	11-02-71
SECURITY, GROUP 220—R. L. CAMPBELL, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	3-03-71
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	7-21-71
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—W. L. CARLSON, Director. Semi-Conductor and Spsce Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	6-23-71
PHYSICS, GROUP 280—R. L. EVANS, Director. Photography; Sound and Lighting; Indicators and Optics; Measuring and Testing; Geometrical Instruments.	5-05-71
DESIGNS, GROUP 290—R. L. CAMPBELL, Director. Industrial Arts: Household, Personal and Fine Arts.	2-05-71
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—A. BERLIN, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vechicles and Appurtenances; Railways and Railway Equipment; Brakes; Rigid Flexible and Special Receptacles and Packages.	6-07-71
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders Woodworking; Tools; Cutlery; Jacks.	6-01-71
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—A. RUEGG, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgary; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	4-12-71
HEAT, POWER AND FLUID ENGINEERING, GROUP 340—M. M. NEWMAN, Director. Power Plants; Combustion Engines; Fluid Motors; Pumps; Turbines; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Vaporizing; Temperature and Humidity Regulation; Machine Elements; Power Transmission; Fluid Handling; Lubrication; Joint Packing.	6-10-71
CONSTRUCTIONS, SUPPORTS, TEXTILES, CLEANING, GROUP 350—T. J. HICKEY, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Receptacles; Supports; Cabinet Structures; Centrifugal Separations; Cleaning; Coating; Pressing; Agitating; Foods; Textiles; Apparel and Shoes; Sewing Machines; Winding and Reeling.	4-20-71

Expiration of patents: The patents within the range of numbers indicated below expire during July 1972, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,712,131 to 2,714,206, inclusive
Plant Patents..... Numbers 1,404 to 1,407, inclusive

DEFENSIVE PUBLICATIONS

PUBLISHED JULY 18, 1972

Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O.G. 687. The abstracts of Defensive Publication applications are identified by distinctly numbered series and are arranged chronologically. The heading of each abstract indicates the number of pages of specification, including claims and sheets of drawings contained in the application as originally filed. The files of these applications are available to the public for inspection and reproduction may be purchased for 30 cents a sheet.

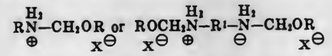
Defensive Publication applications have not been examined as to the merits of alleged invention. The Patent Office makes no assertion as to the novelty of the disclosed subject matter.

T900,001
AMINOMETHYLATING AGENTS AND PROCESSES FOR PREPARING AND USING SAME

Delbert D. Reynolds, Pittsford, and Bernard C. Cossar, Rochester, N.Y. (both of 1669 Lake Ave., Rochester, N.Y. 14615)

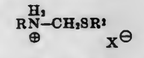
Filed Dec. 21, 1970, Ser. No. 100,298
Int. Cl. C07d *87/00*
U.S. Cl. 260—244 R
No Drawing. 51 Pages Specification

Aminomethylating agents are prepared by the reaction of an N,N',N''-substituted hexahydrotriazine, or a derivative thereof, with hydrogen chloride. The reaction medium is either an inert solvent or an alcohol. When an alcohol is used, the product is an alkoxymethylamine of the structure

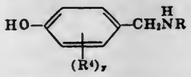


wherein R is alkyl or aralkyl, R^1 is alkylene or arylenebisalkylene and X is an anion. When the reaction is conducted in an inert medium, the product is either a chloromethylamine of the formula $RNHCH_2X$ wherein R and X are the same as previously defined, or the trihydrochloride salt of the N,N',N''-substituted hexahydrotriazine, or a mixture of the two.

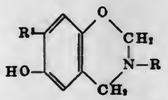
Examples of the reaction of the aminomethylating agents with a compound containing an active hydrogen atom to yield Mannich bases containing secondary amine functions are: the aminomethylation of mercaptans to yield compounds of the formula



wherein R and X are defined above and R^3 is an organo group; the aminomethylation of a phenolic compound to yield p-substituted products of the formula



wherein R is the same as previously described, R^4 is an alkyl aryl, aralkyl, halogen, dialkylamino, or ester group and y is 0, 1, 2 or 3; the aminomethylation of hydrogen sulfide under acidic conditions to yield products having the general structure $RNHCH_2SCH_2NHR \cdot 2HX$ wherein R and X are the same as previously described, and the aminomethylation of hydroquinone or 2-substituted hydroquinones to yield monobenzoxazine derivatives of the formula

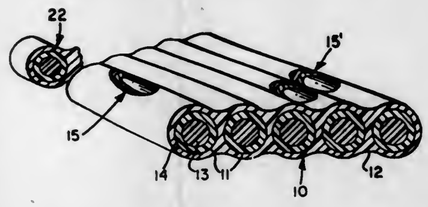


wherein R is as previously described and R^5 is an alkyl or aralkyl group. The cleavage of an aminomethylated thioacid containing a secondary amine group to give a bis(secondary aminomethyl)sulfide hydrochloride is also disclosed.

T900,002
OPTICAL FIBER RIBBON AND METHOD OF MANUFACTURE

Jack Barnett Wielar II, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 8, 1971, Ser. No. 113,563
Int. Cl. G02b *5/16*
U.S. Cl. 350—96 B
1 Sheet Drawing. 10 Pages Specification



Optical fiber ribbons of unitary and substantially planar construction are provided wherein a plurality of polymeric optical filaments are aligned and adhesively secured in side-to-side relationship to provide a non-woven ribbon which may be frustrated at any desired or selected location along its length to provide light emission thereat of any light adapted to be transmitted by said optical filaments of said ribbon.

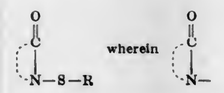
An especially useful construction employing the optical ribbon comprises several layers of the non-woven fiber ribbon secured together by any suitable means such as adhesives to provide a unitary image guide structure. The layers of the image guide need not be secured together along the entire length thereof, but can be secured together at only the respective ends of the image guide. In all instances, however, each optical ribbon layer of the image guide must be similarly aligned at each end of the image guide in order to properly transmit an image from one end of the image guide to the other.

T900,003
METHOD OF IMPROVING RUBBER TO BRASS ADHESION

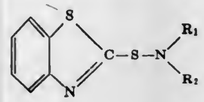
Robert L. Arnold, Medina, and John P. Vander Kool, Akron, Ohio, assignors to Monsanto Company, St. Louis, Mo.

Filed Mar. 5, 1971, Ser. No. 121,563
Int. Cl. B32b *15/06*; C08c *9/04, 11/62*
U.S. Cl. 156—306
No Drawing. 15 Pages Specification

The adhesion of rubber to brass is improved by a method which comprises the addition to the rubber of sulpenamide-type prevulcanization inhibitors of the formula



is a radical derived by removal of hydrogen from an imide of a dicarboxylic acid, from a monocarbonyl cyclic urea, and from an imide in which the nitrogen is linked to carbonyl by alkylene and R is alkyl, aryl, or cycloalkyl. The method is applicable to sulfur-vulcanizable rubber stock comprising natural rubber, synthetic cis 1,4-polyisoprene rubber, or rubber blends of about 50% natural rubber or about 50% synthetic cis 1,4-polyisoprene rubber, sulfur as vulcanizing agent and a vulcanization accelerator selected from the group consisting of 2-mercaptobenzothiazole, 2,2'-benzothiazolyldisulfide and 2-benzothiazolesulfenamide of the formula

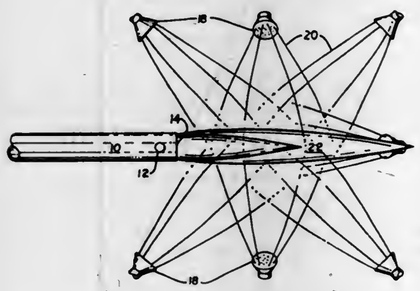


wherein R_1 is hydrogen or alkyl of 1–8 carbon atoms, R_2 is alkyl of 1–8 carbon atoms or cycloalkyl of 5–8 carbon atoms or R_1 and R_2 with the nitrogen atom form a heterocycle of 4–8 carbon atoms, wherein the sulfur/accelerator ratio is less than 4 and comprises adding an adhesion enhancing amount of the sulfenamide-type prevulcanization inhibitor to the stock, contacting the stock to brass and vulcanizing the composite.

T900,004
SMOKE SUPPRESSOR

William H. Lauderback, 112 W. Edgefield, Longview, Tex. 75601

Filed Mar. 22, 1971, Ser. No. 126,783
Int. Cl. F27b *9/00*
U.S. Cl. 23—2 C
1 Sheet Drawing. 9 Pages Specification



Method and apparatus for eliminating visible by-products occurring during open-air burning of combustible materials such as gaseous hydrocarbons in a flare wherein the flame is contacted with a water spray in the form of a fog or fine droplets which envelopes the flame. The amount of water used depends upon factors such as the size of the flare, the amount of material burned, the composition of the material burned and the configuration of the spray heads. The minimum water requirement is that necessary to produce a completely enveloping fog or mist and the maximum is less than that much would extinguish the flame.

T900,005
METHOD OF TESTING TITANIUM ALLOYS

Donald J. Baron, Tolland, and William A. Snell, Hebron, Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed Apr. 7, 1971, Ser. No. 132,208
Int. Cl. C23b *9/00*; G01n *27/00, 31/00*
U.S. Cl. 204—1 T
No Drawing. 14 Pages Specification

A non-destructive test for areas of abnormal grain structure or chemical composition in titanium alloy billet slices or machined parts. The part is cleaned, washed, etched and then anodized at about 30 volts to oxidize the surface and coat on a deep blue layer. The anodized part is dipped in an acid solution to partially strip the coating and reveal segregation of abnormal grain structure or chemical composition. These abnormalities show in a contrasting blue or white color on the part which has become light gray to blue from the stripping. Aluminum-stabilized alpha segregation appears as a deep blue irregular line with or without branches on a lighter blue to gray background. Interstitial element-stabilized alpha (oxygen and nitrogen contamination due to process failures) also appears blue. Vanadium-stabilized beta segregation appears as a gray or white line with or without branches and is frequently associated with aluminum-stabilized alpha and can appear as adjacent parallel lines. Chemically pure titanium also appears light gray or white. Differentiation between the interstitial element-stabilized alpha an the aluminum-stabilized alpha and between the pure titanium and the vanadium-stabilized beta segregation can be accomplished by metallographic techniques employing surface replication methods.

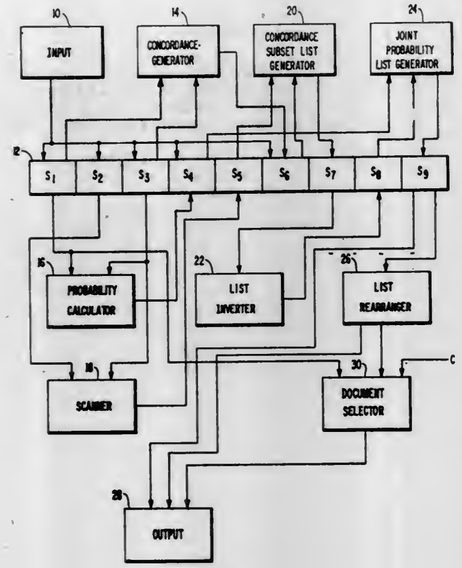
T900,006
INFORMATION STORAGE AND RETRIEVAL SYSTEM AND METHOD

Matthews P. Perriens, Rockville, Md., and John H. Williams, Jr., Annandale, Va., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of application Ser. No. 736,837, June 13, 1968. This application Apr. 19, 1971, Ser. No. 135,467
Int. Cl. G06f *1/00, 7/00, 15/00*
U.S. Cl. 340—172.5
3 Sheets Drawing. 21 Pages Specification

An information storage and retrieval system and method capable of handling queries in sentence form and presenting responses either as identification numbers of potentially pertinent documents or as documents in full text form. Stored documents containing so-called search symbols are known to the system. A probability calculator determines the likelihood of the occurrence of a search symbol at least once in a given stored document in the system's data base. The system and method causes the query text to be scanned so as to determine which search symbols are contained therein. The term overlap is used to designate a search symbol in the query and also in a given stored document. The particular document in the system's data base having the smallest joint probability of occurrence of overlap search symbols is designated as having the highest relevance potential within the data base to a given query. The stored document having the next larger joint probability of occurrence of overlap search symbols, has the next highest relevance potential. In this manner, any select number of relevant stored

documents may be outputted by the system and method, in the order of relevance, as either identification numbers of potentially pertinent documents or as the documents per se in full text form.



T900,007

ACID MODIFIED POLYESTER FIBERS DYED WITH BASIC DYESTUFFS

Richard D. Neal, 504-D Manor Drive, Kingsport, Tenn. 37660

Filed May 12, 1971, Ser. No. 142,817
Int. Cl. D06p *5/00*
U.S. Cl. 8—168
No Drawing. 16 Pages Specification

Disclosed are polyester textile fibers having dispersed therein a specific type of precipitated barium sulfate, the barium sulfate having an average particle size of about 0.8 micron. The fibers disclosed are characterized by improved dyeability with disperse dyes and soil-hiding properties. Also disclosed are yarns and fabrics containing the novel fibers of this invention in blends or as plied yarns. The particular polyester fibers utilized in the blends and plied yarns are: poly(1,4-cyclohexylene dimethylene terephthalate) containing 5% poly(oxyethylene glycol) of about 1500 molecular weight; poly(1,4-cyclohexylene dimethylene terephthalate) containing 5% poly(oxyethylene glycol) of about 1500 molecular weight and about 2.8% precipitated barium sulfate; poly(1,4-cyclohexylene dimethylene terephthalate); poly(1,4-cyclohexylene dimethylene terephthalate) containing precipitated barium sulfate; poly(ethylene terephthalate) modified with 5(4-sodiosulfophenoxy)isophthalic acid incorporated in the polymer chain in an amount sufficient to impart basic dyeability thereto; poly(ethylene terephthalate) modified with 5(4-sodiosulfophenoxy) isophthalic acid incorporated in the polymer chain in an amount sufficient to impart basic dyeability thereto and containing precipitated barium sulfate; poly(ethylene terephthalate) heat set at 180° C.; and poly(ethylene terephthalate) heat set at 180° C. and containing precipitated barium sulfate. The novel yarns and fabrics disclosed in this specification are characterized by novel color effects which can be obtained in a single dye bath. Likewise, soil-hiding and apparent cleanability properties of the fabrics are enhanced as well as the desirable color combination obtained.

T900,008

PROCESS FOR TREATING SHEET MATERIALS WITH ANIONIC AQUEOUS POLYURETHANE DISPERSIONS

Gerhard Ballé, Cologne, Wolfgang Keberle and Karlheinz Kowalewski, Leverkusen, and Bruno Zorn, Cologne, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Aug. 11, 1971, Ser. No. 170,961
Claims priority, application Germany, Aug. 21, 1970, P 20 41 550.3
Int. Cl. C08d *9/10*; C08g *37/32*
U.S. Cl. 260—29.4 VA
No Drawing. 15 Pages Specification

Heat cured coatings are provided for leather and microporous polyurethane or polyvinyl material. The coatings are prepared from aqueous mixtures of tri- to hexamethylol melamine with (1) dispersions of anionic polyurethanes, with (2) mixtures of dispersions of anionic polyurethanes with vinyl latexes, or with (3) dispersions of graft copolymers of ethylenic monomers with the anionic polyurethanes. The anionic polyurethanes are preferably emulsifier-free aqueous dispersions of polyurethanes having 0.1 to 3% by weight of sulfonate and/or carboxylate groups introduced by combining an alkali salt of taurine, methyltaurine, 6-aminocaproic acid, glycine, sulfanilic acid, diaminobenzoic acid, ornithine or lysine, or addition products of sultones with diamines, with isocyanate group-containing prepolymers prior to or simultaneously with dispersion in water. The graft copolymers are prepared by introducing monomers into the anionic polyurethane dispersion under free-radical polymerization conditions. Monomers include the free acids, esters and amides of such unsaturated acids as acrylates and maleates, their methylol amides, and the nitrile monomers, vinyl esters, ethers, ketones, and amides, hydrocarbons as styrenes, mono and diolefins, etc. Anionic or nonionic emulsifiers other than the anionic polyurethane may optionally be used. Acid catalyst and modifiers such as pigments, dyes and stabilizers, etc. may be included.

T900,009

ULTRAVIOLET ABSORPTIVE MASKS

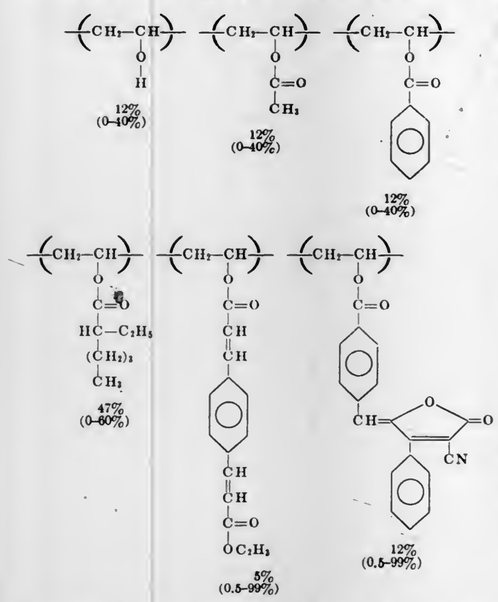
Kenneth R. Dunham and Marshall E. Yost, both of Kodak Park Works, Rochester, N.Y. 14650

Filed Aug. 23, 1971, Ser. No. 174,223
Int. Cl. G03c *1/68*
U.S. Cl. 96—115
No Drawing. 14 Pages Specification

Ultraviolet absorptive masks are prepared from light-sensitive elements comprising a support which is transparent to ultraviolet radiation bearing a layer of a light-sensitive polymer which is highly absorptive of ultraviolet radiation. The masks are prepared by imagewise exposing the element to actinic radiation to insolubilize polymer in the exposed areas and developing an ultraviolet absorptive image by removing polymer from the unexposed areas. These masks are employed in the preparation of photoresist images in the same manner as silver halide masks are employed in this art.

Useful polymers include those which have appended to the polymer backbone a moiety derived from a p-(2,5-dihydro - 3 - cyano-2-oxo-4-phenyl - 5 - furylidenemethyl)

benzoic acid or benzoyl chloride and a moiety derived from either a p-(2-ethoxycarbonylvinyl)cinnamic acid or cinnamoyl chloride or a p-(2-ethylhexyloxycarbonylvinyl) cinnamic acid or cinnamoyl chloride. Particularly preferred are polymers having the structural formula



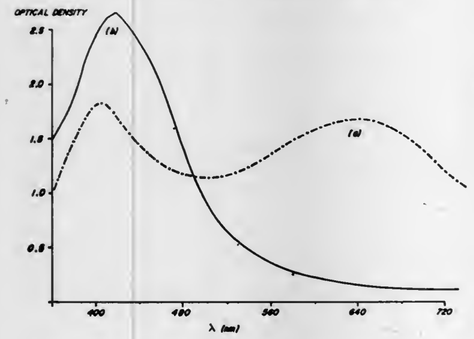
In this structure the preferred mole ratio of the various repeating units is shown directly below the corresponding units and the preferred range for the repeating units is shown therebelow in parentheses.

T900,010

BLUE COLLOIDAL SILVER IMAGING SYSTEM

David Clayton Shuman, Kodak Park, Rochester, N.Y. 14650

Filed Sept. 10, 1971, Ser. No. 179,388
Int. Cl. G03c *1/16, 5/24, 5/26*
U.S. Cl. 96—50
1 Sheet Drawing. 12 Pages Specification



Blue colloidal silver having an average diameter range from about 50 A. to about 300 A. is prepared by physical development of silver nuclei having an average diameter of about 10 A. to about 200 A. coated on a support. An image may be obtained in the blue silver by contacting it with halide ions which causes the blue silver to recrystallize to a yellow form. Contacting a slightly moistened finger against blue silver with light pressure results in a fingerprint of excellent quality in the form of yellow silver. Halide ions may be transferred from an exposed and developed silver halide layer with recrystallization of the blue silver occurring in the area that corresponds to the exposed and developed silver halide. The resulting image can be stabilized by contacting with a phenyl mercapto tetrazole solution.

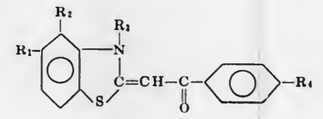
T900,011

SENSITIZERS FOR LIGHT SENSITIVE POLYMER COMPOSITIONS

Melvin S. Bloom and Alfredo R. Guevara, both of Kodak Park Works, Rochester, N.Y. 14650

Filed Sept. 13, 1971, Ser. No. 180,196
Int. Cl. G03c *1/68*
U.S. Cl. 96—115
No Drawing. 10 Pages Specification

Light sensitive polymer compositions containing photocrosslinkable polymers, such as polymers containing the diphenylcyclopropene carboxylate moiety, can be sensitized with sensitizers having the following structural formula



wherein

R_1 is halo, particularly chloro,

R_2 is hydrogen or, taken together with R_1 represents the atoms necessary to complete a fused benzene ring,

R_3 is lower alkyl having 1 to 4 carbon atoms, particularly ethyl,

R_4 is an electronegative substituent, particularly cyano or trifluoromethyl.

Representative sensitizers include 2-(p-cyanobenzoylmethylene)-3-ethylnaphtho[1,2-d]thiazoline, 3-ethyl-2-[p-(trifluoromethyl)benzoylmethylene]-naphtho[1,2 - d]thiazoline and 5-chloro-2-(p-cyanobenzoylmethylene)-3-ethylbenzothiazole.

T900,012

PHOTOGRAPHIC DIFFUSION TRANSFER ELEMENTS, FILM UNITS, AND METHODS FOR PROCESSING SAME

John V. Williams, Pittsford. N.Y. (Rochester, N.Y. 14650)

Filed Oct. 4, 1971, Ser. No. 186,395
Int. Cl. G03c *1/40*
U.S. Cl. 96—77
No Drawing. 15 Pages Specification

Photosensitive elements are described comprising:

(a) a nuclei layer containing physical development nuclei and a nondiffusible coupler capable of reacting with oxidized aromatic primary amino color developing agent to produce a diffusible dye, the nuclei layer being free of any silver salt; and

(b) a photosensitive silver halide emulsion layer containing a development inhibitor-releasing compound capable of reacting with oxidized color developing agent to release a diffusible development inhibitor.

The photosensitive element is processed with an alkaline processing composition in the presence of a color developing agent and a silver halide solvent. Upon development, the color developing agent becomes oxidized and reacts with the development inhibitor-releasing compound, preferably a coupler to release a diffusible development inhibitor imagewise. The remaining silver halide in the emulsion layer corresponding to unexposed and thus undeveloped areas forms a soluble silver ion complex with the silver halide solvent present. The complex migrates to the nuclei layer where it is then physically developed causing the developing agent to become oxidized. The oxidized developing agent then reacts with the nondiffusible coupler to form an imagewise distribution of diffusible dye which transfers to a dye image-receiving layer to provide a positive dye image.

T900,013

PROCESS FOR REMOVING METALLIC COLOR PRODUCING CONTAMINANTS FROM SOLUTIONS OF BIS(BETA-HYDROXYETHYL) TEREPHTHALATE IN ETHYLENE GLYCOL

Thomas G. Davis, 1542 Waverly Road 37664; David L. Nealy, 908 Afton St. 37660; and Jefferson W. Reynolds, 2121 E. Sevier St. 37664, all of Kingsport, Tenn.

Filed Nov. 2, 1971, Ser. No. 194,914
Int. Cl. C07c *69/82*
U.S. Cl. 260—475 PR
No Drawing. 8 Pages Specification

Metallic color producing contaminants present in bis-(beta-hydroxyethyl) terephthalate in solution in ethylene glycol may be removed from the monomer by contacting the solution at temperatures above about 140° C. with adsorbents typified by silica alumina, activated alumina, aluminum silicate [$Al_2(SiO_3)_3$] alumina (Al_2O_3) or activated carbon, and thereafter filtering the solution to remove the adsorbing agent or agents and the adsorbed metal contaminants.

REISSUES

JULY 18, 1972

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

27,433

METAL SALT DRIER COMPOSITIONS

Alfred Fischer, New York, N.Y., assignor to Tenneco Chemicals, Inc., New York, N.Y.

No Drawing. Original No. 3,124,475, dated Mar. 10, 1964, Ser. No. 60,314, Oct. 4, 1960. Application for reissue Mar. 18, 1970, Ser. No. 20,825
Int. Cl. C09f *9/00*
U.S. Cl. 106—310 **3 Claims**

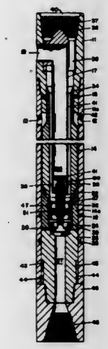
Basic lead salts of certain branched chain saturated carboxylic acids having no substituents on the 2-carbon are used in drier compositions.

27,434

LIQUID PERCUSSION MOTOR

Renic P. Vincent and Lawrence B. Wilder, Tulsa, Okla., assignors to Pan American Petroleum Corporation, Tulsa, Okla.

Original No. 3,327,790, dated June 27, 1967, Ser. No. 596,374, Oct. 24, 1966. Application for reissue Sept. 13, 1968, Ser. No. 767,534
Int. Cl. B25d *17/06*
U.S. Cl. 173—73 **30 Claims**



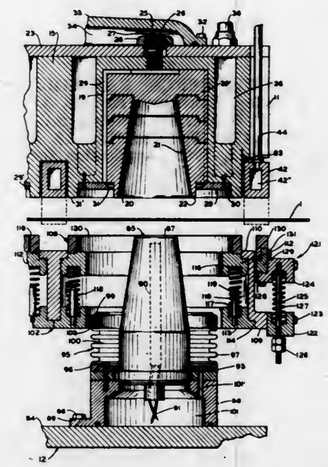
A fluid actuated tool for applying repeated precussive blows to a drill bit in the drilling of oil and gas wells is disclosed. In particular, the invention concerns percussion motor for incorporation in drill strings, causing drill bits to vibrate or oscillate axially at the same time they are being rotated for the drilling of such wells. The disclosure includes a percussion motor containing two moving parts, a stepped piston-type hammer and a central cylindrical valve assembly. The stepped piston-type hammer is arranged in a mating step-type housing. An anvil is slideably mounted within the housing below the hammer and arranged for only limited axial movement, and arranged to be struck by the hammer. The central valve assembly cooperates with parts of the hammer and flowing fluid and thus oscillates between an upper seat in the lower part of the hammer and a lower seat in the top of the anvil. This valve oscillation in turn applies a resultant force alternatively to the top and bottom of the slideably mounted hammer, causing it to oscillate axially. In a preferred embodiment, means are provided to dampen the upper end of the valve motion. Various embodiments of the invention are described.

27,435

MOLDING MACHINES

Richard K. Shelby, Chicago, Ill., assignor to Monsanto Company, St. Louis, Mo.

Original No. 3,341,895, dated Sept. 19, 1967, Ser. No. 534,442, Mar. 15, 1966, which is a continuation-in-part of Ser. No. 333,440, Dec. 26, 1963. Application for reissue Nov. 4, 1970, Ser. No. 87,022
Int. Cl. B29c *17/04*
U.S. Cl. 425—167 **17 Claims**



A molding machine having cooperating shiftable lower and upper die frames, the upper having cavities and lower having plug assists for urging a thermoplastic web into the cavities by the plug assists responsive to shifting of the frames. A water cooled stripping plate is shiftable on the underside of the upper frame and strips the web from the upper frame. A web clamping frame is shiftable with respect to the lower frame and has an individual clamping ring around each plug assist and a peripheral clamping rim for engaging the web. A pressure applicator is also disposed around each plug assist enabling positive pressure injection around the plug assist. A vacuum is created around the inside of each of the cavities. A vacuum is created between the upper die frame assembly and the web when the clamping frame is shifted upwardly.

27,436

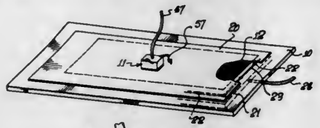
MAGNETIC POSITIONING DEVICE

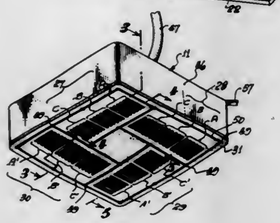
Bruce A. Sawyer, 20120 Allentown Drive, Woodland Hills, Calif. 91364

Original No. 3,376,578, dated Apr. 2, 1968, Ser. No. 554,181, May 31, 1966. Application for reissue Mar. 27, 1970, Ser. No. 24,060
Int. Cl. G01d *9/40*
U.S. Cl. 346—29 **59 Claims**

A two-axis magnetic system for driving chart plotters and other devices. A marker carrying head floated on an air bearing over a platen with no mechanical inter-

connections. A plurality of electromagnets in the head and means for selectively energizing the electromagnets





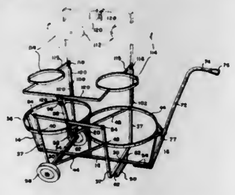
to move the head across the magnetic platen, and along both axes simultaneouly if desired.

27,437

DOUBLE REFUSE CAN HOLDER

Charles R. Bailey, Charleston Heights, S.C., assignor to F. F. Murphy, Cainhoy, S.C.

Original No. 3,479,047, dated Nov. 18, 1969, Ser. No. 734,058, June 3, 1968. Application for reissue Aug. 10, 1970, Ser. No. 62,732
Int. Cl. B62b *1/18, 1/26*
U.S. Cl. 280—47.19 11 Claims



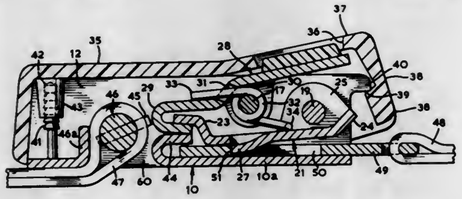
A portable multiple refuse can holder of a generally wheelbarrow-like construction and having transversely hinged refuse can cover securing means latchable to prevent access by animals and accidental spillage of the contents of the refuse cans while transporting the cans by means of the holder.

27,438

BUCKLE FOR A SAFETY BELT

Frederick H. Humphrey, Markham, Ontario, Canada, assignor to Dual Specialties Limited, Windsor, Ontario, Canada

Original No. 3,270,388, dated Sept. 6, 1966, Ser. No. 465,976, June 22, 1965. Application for reissue Mar. 20, 1968, Ser. No. 719,793
Int. Cl. A44b *11/26*
U.S. Cl. 24—230 A 24 Claims



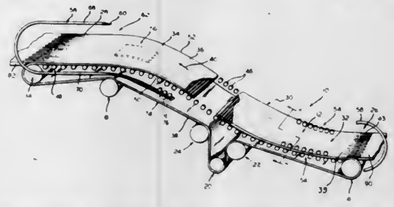
A buckle for a belt, including a first pivotally mounted lever member adapted to engage a tongue of a belt, biasing means for urging the first lever member in the direction of engagement of the tongue, a second pivotally mounted lever member coupled to the first lever member, and a cap member positioned over the first and second lever members and having an opening therein through which the second lever member is accessible so that the second lever member may be selectively pivoted to disengage the first lever member from the tongue.

27,439

INCLINED MOVING WALKWAY ARRANGEMENT

Randolph H. Jackson, Evanston, Ill., Byron J. Eddy, North Olmsted, Kenneth D. Mitchell, Copley, Ernest D. Johnson, Tallmadge, and Charles G. Hall, Akron, Ohio, and James E. Hicks, Lake Geneva, Wis., assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Original No. 3,414,108, dated Dec. 3, 1968, Ser. No. 626,003, Mar. 27, 1967. Application for reissue Sept. 25, 1970, Ser. No. 26,979
Int. Cl. B66b *9/12*
U.S. Cl. 198—16 21 Claims



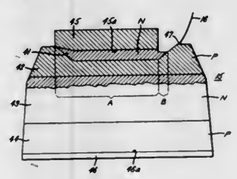
This invention relates to an inclined moving walkway arrangement of the moving sidewalk type in which the walkway is defined by an endless conveyor belt member that is built for lateral stiffness but adequate longitudinal flexibility for belt training purposes, with the belt being trained between end pulleys on wheel-like rollers that support the side edges of the belt, with no solid support through the center of the belt, such as a slider plate, being employed for most of the length of the conveyor. The moving walkway arrangement for the first time provides both a level entry and a level exit that is defined by the belt training arrangement, and a moving hand rail is provided which is driven by having its lower run releasably clamped to the lower run of the belt instead of having the hand rail driven through take off mechanisms from the conveyor driving end pulley.

27,440

SEMICONDUCTOR RECTIFIER WITH IMPROVED TURN-ON AND TURN-OFF CHARACTERISTICS

Angelo L. De Cecco, Newtown Square, Dante E. Piccone, Philadelphia, and Istvan Somos, Lansdowne, Pa., assignors to General Electric Company

Original No. 3,408,545, dated Oct. 29, 1968, Ser. No. 514,734, Oct. 22, 1965, which is a continuation-in-part of Ser. No. 385,323, July 27, 1964. Application for reissue Oct. 27, 1970, Ser. No. 84,550
Int. Cl. H01l *9/12*
U.S. Cl. 317—235 26 Claims



The switching capabilities of a 4-layer broad area PNPN semiconductor device are dramatically improved

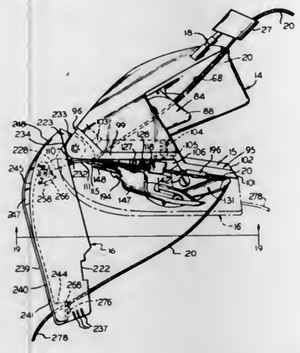
by providing an electrode-less auxiliary region in one of the end layers in the vicinity of the small area where conduction begins, and by constructing and arranging the auxiliary region so that load current initially traversing it acts as a high-current peremptory trigger signal for the laterally-adjacent main region of broader area.

27,441

TYING IMPLEMENT AND METHOD

Stephen A. Crosby, 815 Shore Drive, P.O. Box 736, Twin Lakes, Wis. 53181

Original No. 3,415,557, dated Dec. 10, 1968, Ser. No. 555,590, June 6, 1966. Application for reissue Dec. 10, 1970, Ser. No. 97,056
Int. Cl. D04g *5/00*
U.S. Cl. 289—1.5 47 Claims



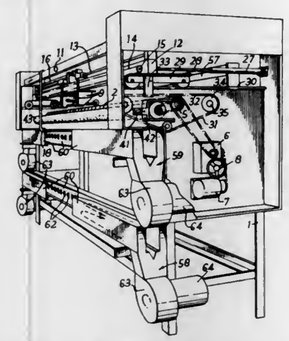
A hand held and manipulated cord or twine tying implement containing a tying bill and guides immovably held on the interior of the implement and through which the cord or twine is fed, the parts of the implement on its interior being capable of directing the twine to tie a weaver's knot as the implement is moved longitudinally along the tensioned twine or cord, such as when the cord extends about a package.

27,442

LAUNDRY FEEDING MACHINE

Henry John Weir, Sedbury, England, assignor to McGraw-Edison Company, Elgin, Ill.

Original No. 3,421,756, dated Jan. 14, 1969, Ser. No. 550,439, May 16, 1966. Application for reissue May 28, 1970, Ser. No. 41.655
Int. Cl. D06f *67/04*
U.S. Cl. 38—143 25 Claims



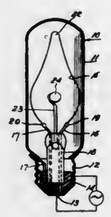
A laundry flatwork feeding machine comprising a conveyor having an upper run which moves in a forward direction, a pair of clamps adapted to grip the two corners for moving the clamps apart transversely and holding them apart under tension in the leading edge whereby the flatwork article is stretched laterally, means coupled with the conveyor for advancing the clamps thereon held apart over the upper run of the conveyor at the same speed and means for opening the clamps to drop the leading edge on the conveyor whereby rucking of said leading edge is prevented.

27,443

ELECTRIC LIGHT BULB WITH OSCILLATING FILAMENT

Robert J. Kyp, 526 Geneva Road, Glen Ellyn, Ill. 60137

Original No. 3,237,053, dated Feb. 22, 1966, Ser. No. 346,481, Feb. 21, 1964. Application for reissue Jan. 29, 1971, Ser. No. 111,161
Int. Cl. H05b *41/16, 41/24*
U.S. Cl. 315—267 3 Claims



2. An electric light bulb having a filament as the only movable part, said filament adapted to be illuminated when said bulb is attached to a source of A.C. electrical current, said bulb having a stem mounted therein, a support pin mounted on said stem and a magnet attached to said support pin adjacent said filament to provide direct movement of the illuminated filament and with return movement set up by the A.C. electrical current to maintain continuing vibration of the illuminated filament simulating a flickering flame of a candle, said filament consisting essentially of a single loop with all portions thereof spaced from said magnet and said pin, at least a substantial portion of said filament lying generally in a plane, said magnet having a major axis disposed generally normal to said plane, and said plane intersecting said magnet.

27,444

PROCESS FOR THE PRODUCTION OF POROUS PLASTICS AND PRODUCTS

Guenther Will, Zimmerstrasse 11, Darmstadt, Germany

No Drawing. Original No. 3,256,219, dated June 14, 1966, Ser. No. 301,920, Aug. 13, 1963, which is a continuation-in-part of Ser. No. 45,786, July 28, 1960. Application for reissue Sept. 11, 1970, Ser. No. 71,347
Claims priority, application Germany, July 28, 1959, W 26,093
Int. Cl. C08f *45/24, 47/08*
U.S. Cl. 260—2.5 R 46 Claims

Production of useful shaped articles, formed of porous plastic, by emulsifying droplets of an aqueous medium in an organic liquid containing polymerizable organic compounds(s) and emulsifying agent(s) and, without breaking the dispersed nature of the emulsion, polymerizing it until the organic liquid has been converted to solid form.

PLANT PATENTS

GRANTED JULY 18, 1972

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

3,236
CHRYSANTHEMUM PLANT
Walter H. Jessel, Jr., Doylestown, and William E. Duffett, Akron, Ohio, assignors to Yoder Brothers, Inc., Barberton, Ohio
Filed Nov. 30, 1970, Ser. No. 93,922
Int. Cl. A01h 5/00
U.S. Cl. Plt.—79 1 Claim

1. A new and distinct cultivar of chrysanthemum characterized generally by its unique bronze color and its capability of being grown either as a standard cut flower or as a pot mum, and characterized particularly as to uniqueness when grown as a standard and when compared with the cultivar Detroit News by its longer peirod of value, approximately ¼" larger flowers, broader, flatter and less tightly incurved petals, more orange bronze color, longer keeping quality, approximately 7" shorter growth habit, greater color retention under high temperature, high light conditions, fading to a darker, smoother, more attractive golden bronze color than the faded color of Detroit News under identical conditions, somewhat lighter colored and less brittle foliage, and its more prominent stipules; and which is further characterized as to uniqueness when grown as a pot mum and when compared with the pot mum Orange Bowl by its one week earlier response, more intense orange bronze flower color, more incurved flower, approximately ¼" larger flower in the opening stage of development but smaller when fully expanded, larger and more deeply indented foliage with less serration of the leaf margin, more prominent stipules, shorter bench life, and its more efficient timing thereby providing a saving in crop time and bench space.

3,237
GLADIOLUS
Cecil C. Marshall, Hamilton, Ontario, Canada, assignor to Selected Glads, Inc., New Albany, Ind.
Filed Dec. 28, 1970, Ser. No. 102,275
Int. Cl. A01h 5/00
U.S. Cl. Plt.—85 1 Claim

1. A new and distinct variety of gladiolus plant, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of its clear pastel lavender coloring and the production of sound corms year after year.

3,238
GLADIOLUS
Donald J. Walker and Audrey I. Walker, New Hope, Pa., assignors to Selected Glads, Inc., New Albany, Ind.
Filed Dec. 29, 1970, Ser. No. 102,568
Int. Cl. A01h 5/00
U.S. Cl. Plt.—85 1 Claim

1. A new and distinct variety of gladiolus plant, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of the pure glistening white color of its flower with no visible foreign color whatsoever, even in its stamens, and the ability to open after shipping dry.

3,239
BLUEGRASS PLANT
Gerard William Pepin, North Brunswick, and Cyril Reed Funk, Jr., Milltown, N.J., assignors to E. F. Burlingham and Sons, Forest Grove, Oreg.
Filed Jan. 7, 1971, Ser. No. 104,819
Int. Cl. A01h 5/00
U.S. Cl. Plt.—88 1 Claim

A Kentucky bluegrass plant which exhibits a very attractive, rich dark green color, rather prostrate leaf blades and rather large florets and spikelets. The plant produces a high quality turf with a good resistance to leaf spot and rust.

3,240
AZALEA PLANT
Spencer R. Smith, Rockwood, Mich., assignor to Post Gardens, Inc., Rockwood, Mich.
Filed Jan. 28, 1971, Ser. No. 110,675
Int. Cl. A01h 5/00
U.S. Cl. Plt.—57 1 Claim

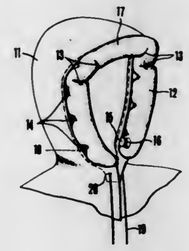
1. A new and distinct variety of azalea plant, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of a vigorous and upright plant habit, heavy and strong stems, attractive hard and glossy foliage, exceptionally large and long flower buds, a very large open bloom size, an extremely double-ruffled bloom form, and a distinctive and attractive, bright, vibrant, deep-red flower color.

PATENTS

GRANTED JULY 18, 1972

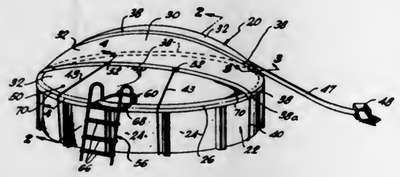
GENERAL AND MECHANICAL

3,676,879
HOOD
Katsumasa Irie, No. 68, Kita Ono-cho, Koyama, Kita-ku, Kyoto, Japan
Filed Aug. 10, 1970, Ser. No. 62,497
Claims priority, application Japan, Aug. 11, 1969, 44/78038
Int. Cl. A42b 1/04
U.S. Cl. 2—202 11 Claims



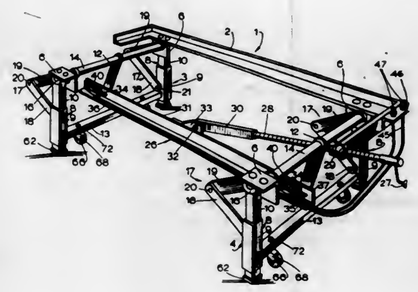
An air tight hood fabricated of flexible materials for use in conjunction with wearing apparal, the marginal exterior of which surrounds the face jn a muff-like formation which is capable of maintaining a fixed shape by inflating with air, and preferably having a pronounced, hollow visor portion also fixed in position by inflation.

3,676,880
INFLATABLE ENCLOSURE FOR SWIMMING POOLS AND THE LIKE
John P. Kwake, Los Angeles, Calif., assignor to The Kydar Company, Los Angeles, Calif.
Filed Jan. 28, 1971, Ser. No. 110,573
Int. Cl. E04h 3/18, 3/16
U.S. Cl. 4—172.12 19 Claims



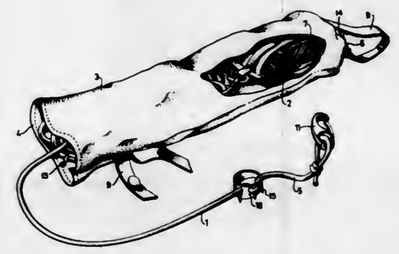
A vinyl, or other plastic, enclosure for swimming pools (both in-ground and above-ground), storage tanks, or other liquid carrying containers which can be inflated by blower means, to a domed position. When inflated, a simplified non-zipper entry into the enclosed space is provided. The enclosure can also be used as a slightly domed or crowned cover to shed rain and dirt.

3,676,881
BED LOCKING DEVICE
Richard H. Duprey, Dayville, Conn., assignor to Interroyal Corporation, New York, N.Y.
Filed May 19, 1970, Ser. No. 38,783
Int. Cl. A61g 7/00; A47c 19/00
U.S. Cl. 5—63 3 Claims



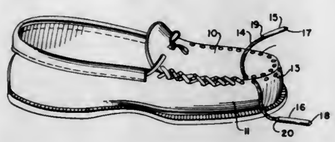
An improved adjustable hospital bed providing Trendelenburg or Fowler selection includes a bed stabilizing device for roller or caster equipped beds having extensible telescoping leg members which may be extended sufficiently to raise the usual casters from the floor resulting in a solid four-point contact instead of the usual caster-roller contact. The extension is provided by the same means used for raising or lowering the bed.

3,676,882
LIFE SAVING IMPLEMENTS
Lars-Hakan Lindqvist, Solstigen 1, Saltsjobaden, Sweden
Filed June 16, 1970, Ser. No. 46,669
Claims priority, application Sweden, June 18, 1969, 8726/69
Int. Cl. B63g 9/26
U.S. Cl. 9—14 15 Claims



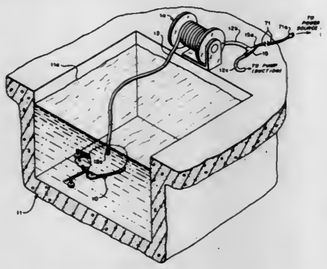
Implement for life saving purposes including a line securely fixed to the bottom of a narrow elongated bag open at one end and containing a weight and being intended to enclose the line and to accompany the line when it is thrown and being adapted to run from the bag, the free end of the line being held, for example, by the thrower.

3,676,883
METHOD OF HAND SEWING MOCCASINS
Ralph W. Peacock, RD2 Bartlett Road, Norwich, N.Y.
Continuation-in-part of Ser. No. 753,611, Aug. 19, 1968, abandoned. This application Nov. 13, 1970, Ser. No. 89,274
Int. Cl. A43d 9/00
U.S. Cl. 12—142 MC 8 Claims



A method of hand sewing moccasins using an elongated length of flexible sewing thread having relatively rigid disposable integral needle means formed at opposite ends thereof and wherein the needle means are cut off and discarded when the sewing is completed.

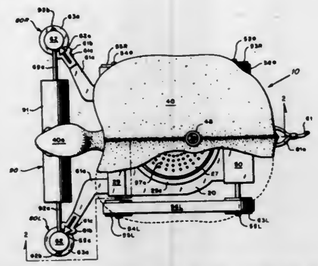
3,676,884
RANDOM MOTION SUCTION CLEANER
Stanley S. Wulc, 1027 Washington Lane, Rydal, Pa.
Filed April 14, 1970, Ser. No. 28,453
Int. Cl. E04h 3/20; A47l 5/00
U.S. Cl. 15—1.7 16 Claims



A self-propelled device adapted to move along the bottom of swimming pools or other water tanks in a random pattern to clean the surface thereof. The cleaner has low-voltage motors for driving, sensing means to sense contact with walls, and electronic logic means to direct the motion of the cleaner according to certain requirements. The Cleaner has a suction inlet, a strainer, and is connected by means of a hose to a relatively high-voltage pump above the water level. The logic means provides for lock-out of spurious signals, pause times, and turning by selected drive wheel reversals. Various modifications and board applications of certain of the principles are possible.

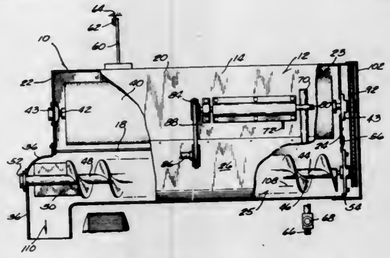
3,676,885
RANDOM MOTION VEHICLE
Stanley S. Wulc, 1027 Washington Lane, Rydal, Pa.
Continuation-in-part of Ser. No. 28,453, April 14, 1970. This application March 15, 1971, Ser. No. 124,318
Int. Cl. E04h 3/20; A47l 5/00
U.S. Cl. 15—1.7 9 Claims

An improved random motion suction cleaner vehicle adapted to translate along and clean the interior bottom surface of a pool or tank in a randomly oriented pattern. The improved cleaner has suction inlet mechanisms, and driving as well as sensing means cooperating with programmed logic means to direct the motion of the vehicle in accordance with pre-programmed instructions. The cleaner includes removable liquid intake containers to allow ease in cleaning the vehicle when such is necessary. For ease of handling, the improved vehicle incorporates a weight mechanism which is removeably secured to the suction cleaner base cover. A further improvement to the improved vehicle includes the addition of a multi-



directional switch mechanism to sense obstacles in the path of vehicle translation. Added program logic considerations lock the drive control of one set of wheels while allowing another set to continuously operate after an obstacle is impacted thereby leading to a rotation of the vehicle away from the constraining force.

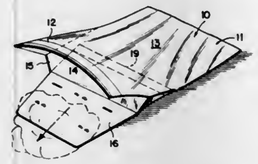
3,676,886
LAWN SWEEPER
Francesco Aiuppa, W207 S8286 Hillendale Drive, Muskego, Wis.
Filed Aug. 5, 1970, Ser. No. 61,075
Int. Cl. E01h 1/04
U.S. Cl. 15—83 5 Claims



A lawn-sweeping attachment adapted to be supported between the front and rear wheels of a small garden or lawn tractor and under the tractor body, includes a housing which rotatably supports a brush which picks up and discharges grass clippings and debris through a rearwardly located slot into an auger housing portion which contains a counter-rotating auger. The auger conveys the leaves and debris into a rearwardly and transversely extending discharge duct or chute located laterally, outwardly of the rear tractor wheel. An impeller at the end of the auger flight and within the discharge duct impells the debris outwardly of the duct into either a grass clipping debris collection bag or toward a blower assembly for remote discharge into a trailer.

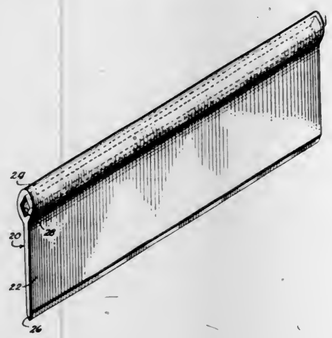
3,676,887
DISPOSABLE LITTER PACKAGE HAVING A SCRAPING BLADE
Stanley R. Klein, 175 W. Ninety-third Street, New York, N.Y.
Filed April 19, 1971, Ser. No. 135,041
Int. Cl. A47l 13/52
U.S. Cl. 15—104.8 6 Claims

A flexible bag body portion has a substantially rigid blade element permanently attached to one side wall thereof adjacent the open mouth of the bag body portion. A flexible closure flap is carried by the opposite side wall of the bag body portion and has an adhesive sealing area to coact with a like



area on the side wall of the body portion carrying the blade element. The bag is sealed with the litter and the blade element therein prior to disposal.

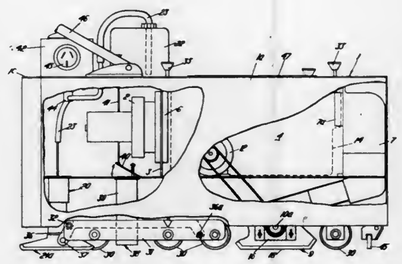
3,676,888
ADJUSTABLE SQUEEGEE FOR APPLYING SYNTHETIC FILLERS
George J. Akers, Louisville, Ky., assignor to Vermont American Corporation, Louisville, Ky.
Filed Oct. 24, 1969, Ser. No. 869,201
Int. Cl. B05c 1/16
U.S. Cl. 15—245 6 Claims



An adjustable squeegee for applying a synthetic filling material, commonly termed "body putty" or "body plastic," to the damaged surfaces of automobile bodies or the like. The squeegee comprises a pliable lower blade portion, and a ductile upper stiffener portion, which can be manually bent into a particular form or shape which it is desired to have the filling material take in the squeegeeing operation. The squeegee will remain in this form until it is manually rebent into a normal form or into a different form for the performance of another squeegeeing operation. The main body of the squeegee is composed of a material to which the filling material will not adhere.

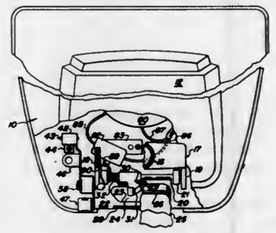
3,676,889
CLEANING APPARATUS FOR FLOOR COVERINGS
William Joel Reginald Edlin, P. O. Box 1321, Palmerston North, New Zealand
Filed March 2, 1970, Ser. No. 15,796
Claims priority, application Australia, Aug. 4, 1969, 59033; New Zealand, March 6, 1969, 155661
Int. Cl. A47l 11/34
U.S. Cl. 15—320 6 Claims

A cleaning apparatus for floor coverings such as carpets in which a suction creating means such as a fan or fans is supported by a casing and adapted to draw air through an intake orifice. A brush is provided in or within the vicinity of the orifice and is capable of contacting and brushing a floor covering. There is also a chamber adapted to receive cleaning fluid and a large volume of air under pressure, with the cleaning fluid and air forming foam within the chamber. The foam produced in the chamber is delivered through an outlet to the floor covering for cleaning purposes. The arrangement is such



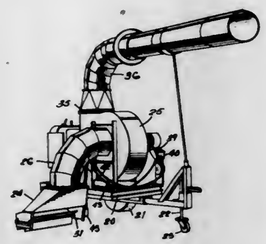
that when the apparatus is moved over the floor covering, the brush can be operated to remove unwanted matter from the floor covering, both cleaning fluid and air can be delivered to the chamber and a comparatively dry foam produced, with the foamed cleaning fluid delivered to and deposited on the floor covering, and the brush moved over the covering to brush the covering and simultaneously the suction means remove loosened dirt from the covering.

3,676,890
SUCTION CLEANER
Robert F. Dyer, North Canton, Ohio, assignor to The Hoover Company, North Canton, Ohio
Filed March 2, 1970, Ser. No. 15,376
Int. Cl. A47l 9/00
U.S. Cl. 15—339 9 Claims



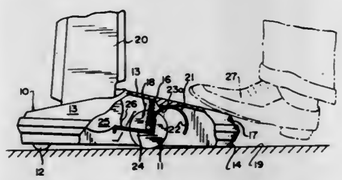
An upright type suction cleaner is provided with a switch actuator movable with the cleaner handle from and to its storage position to operate a switch for on-the-floor cleaning. When cleaning tools are attached to the cleaner for off-the-floor cleaning the switch actuator is movable relative to the handle to effect operation of the switch without movement of the handle. In addition, when the cleaner is upended to effect repairs a gravity-actuated member is actuated to prevent operation of the handle control so that it is impossible to move the handle from its storage position and effect operation of the switch.

3,676,891
VACUUM MACHINE FOR STREET CLEANING
Gregory J. Murray, and Fred K. Tarrant, Jr., both of Saratoga Springs, N.Y., assignors to Tarrant Manufacturing Company, Saratoga Springs, N.Y.
Continuation of Ser. No. 732,948, May 29, 1968, abandoned. This application April 27, 1970, Ser. No. 48,788
Int. Cl. A47l 5/14, 9/04
U.S. Cl. 15—346 6 Claims



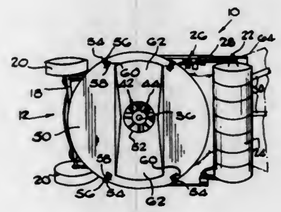
Rotary flinger blades are mounted on a street vacuum cleaner to direct a blast of air beneath matted leaves or other debris on a pavement and to blow the leaves into the inlet of a suction air stream. The blades are mounted to rotate in close proximity to or slightly above or in light contact with the surface of the pavement to be cleaned and are adjustable for height.

3,676,892
VACUUM CLEANER NOZZLE LIFTING DEVICE
Erwin E. Nordeen, St. Paul, Minn., assignor to Whirlpool Corporation
Filed May 19, 1970, Ser. No. 38,804
Int. Cl. A47l 5/34
U.S. Cl. 15—359 5 Claims



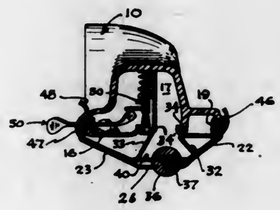
A vacuum cleaner having an elongated floor portion propellable over a floor during cleaning and supported on the floor by a plurality of spaced front and rear wheels, a nozzle unit forming the floor portion of the cleaner having a front suction opening end carrying a floor contacting brush and rockable or pivotable in a vertical direction with respect to the wheels, a first spring means constantly urging the carriage downwardly at the front end to hold the brush in cleaning position with respect to the floor regardless of the nature of the floor or its covering, a propelling handle rockably attached to the cleaner and movable between an operating position and a storage position, second spring means stronger than the first and operably positioned between the front wheels and the front and operably positioned between the front wheels and the front suction end of the nozzle unit and means operated by the handle in moving the handle to the storage position for distorting the second spring means thereby to apply an overcoming spring force to retain the nozzle unit front end away from the floor against the urging of the first spring means. The cleaner can then be operated in the customary off-the-floor cleaning of furniture, draperies and the like by the use of auxiliary equipment without permitting the brush to contact the floor.

3,676,893
ROTARY MOWER
Eric Patrick Greenwood Smythe, Port Elizabeth, Republic of South Africa, assignor to Republic Mower Company (Proprietary) Limited, Sidwell, Port Elizabeth, Cape Province, Republic of South Africa
Filed June 29, 1970, Ser. No. 50,760
Claims priority, application South Africa, July 15, 1969, 69/5015
Int. Cl. A47l 9/00
U.S. Cl. 15—328 1 Claim



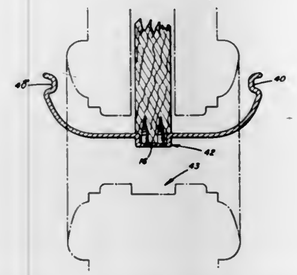
A rotary lawn mower having rotary cutter means and having a suction cover removably fitted to the mower to provide a suction inlet leading to the rotary cutter means. The suction cover is adapted to be removed to expose the rotary cutter means for mowing. The rotary cutter means may be adapted to provide suction, or the rotary cutter means may be replaced by a suction impeller, so that the mower can be used as a suction cleaner device when the suction cover is fitted thereto.

3,676,894
SHAG RUG CLEANING NOZZLE APPARATUS
Willis E. Berry, Bloomington, Ill., assignor to National Union Electric Corporation, Stamford, Conn.
Filed March 5, 1971, Ser. No. 121,492
Int. Cl. A47l 9/02
U.S. Cl. 15—362 5 Claims



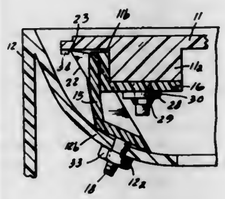
Vacuum cleaning nozzle apparatus for cleaning a shag-type rug comprising an assembly of two oppositely disposed spaced air guide members extending downwardly and inwardly from the outer longitudinal edges of a vacuum cleaner nozzle and having an air guide flange extending upwardly from the lower edge of each air guide member and terminating adjacent the air inlet opening of the nozzle to guide air downwardly into contact with the rug and then upwardly into the air intake opening of the nozzle and having a roller member extending substantially the length of the air guide members disposed between the air guide flanges which at least partially rollably supports the nozzle.

3,676,895
HARDWARE FOR SLIDING DOOR
James M. Stewart, West Palm Beach, Fla., assignor to Stewart Research, Inc., West Palm Beach, Fla.
Filed Aug. 24, 1970, Ser. No. 66,371
Int. Cl. A47b 95/02
U.S. Cl. 16—110 5 Claims



Door handles especially adapted for use on sliding "pocket" type doors permitting single hand opening and closing. Means is also provided adapting the handles for replacement of existing door operating means without carpentry work involving repair or remodeling of the previous carpentry.

3,676,896
HINGE AND DOOR DETENT
Le Roy R. Maleck, Galesburg, Ill., assignor to Admiral Corporation, Chicago, Ill.
Filed Feb. 5, 1970, Ser. No. 8,922
Int. Cl. E05f 1/12; E05d 7/00
U.S. Cl. 16—150 7 Claims

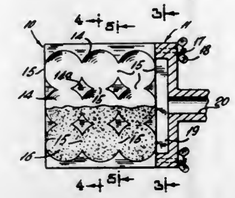


A hinge for swingably mounting a door or similar member in a frame characterized by a pair of flexible hinged portions integrally interconnected by a portion of reduced thickness. The flexible hinged portions extend from a base which has side members terminating in action surfaces slidably engaging the door structure to provide a pivot point for the door. The coaction between the action surface, the door and the flexible hinged portions cause an elastic deformation of the flexible member which acts as an over-center spring for the movement of the door. The base member has means for being attached to a door frame.

3,676,897
MECHANISM FOR FORMING A SUBSTANTIALLY SPHERICAL COMESTIBLE PRODUCT
Archangel J. Bianco, Box 93, Brookside, N.J.
Filed June 11, 1970, Ser. No. 57,021
Int. Cl. A22c 7/00
U.S. Cl. 17—32 4 Claims

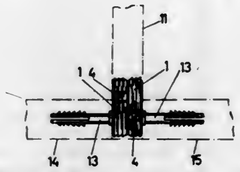
A comestible product which is formed rapidly in a mold in the shape of a meatball. The mold cavities are contiguous and the meatballs produced thereby are directly connected to each other without a separate connecting member. The comestible product can be cooked in the mold also by applying heat directly to the mold.

In order to make meatballs on a commercial as distinguished from a domestic scale, the processor takes ground



meat and rolls and pats it into a ball. The meatball is then cooked in a pan. The disadvantages of making meatballs in this fashion are that (1) the meatballs are not the same size, (2) the amount of meat varies from one meatball to the next, (3) the density of the meatballs varies, and (4) the juices are lost when the meatball is cooked and (5) the amount of time lost in making meatballs by hand is excessive.

3,676,898
CONNECTOR FOR PLATES
Erich Rock, Hochst, Austria, assignor to Julius Blum Gesellschaft m.b.H., Hochst, Austria
Filed Sept. 11, 1970, Ser. No. 71,435
Claims priority, application Austria, April 6, 1970, A 3084/70
Int. Cl. A44b 21/00; F04b 1/00; B25g 3/38
U.S. Cl. 24—73 PP 3 Claims

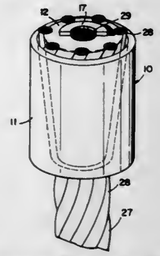


A connector is provided which is made of two coaxial parts having interengaging projections and recesses. The recesses are bounded by walls having saw tooth shaped grooves engaging like grooves on the projections. The parts also have saw tooth shaped peripheral grooves.

3,676,899
CABLE SHACKLE
Delbert D. Ehlert, Lake Olympia Road, Grass Valley, Nevada County, Calif.
Filed March 5, 1971, Ser. No. 121,491
Int. Cl. F16g 11/04
U.S. Cl. 24—122.6 7 Claims

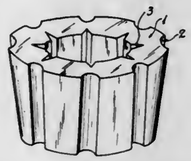
A clamp for a convolute wire cable or the like including a socket member having a conically tapered recess extending therethrough and a unitary inner core portion of substantially conico-frustrum configuration seated in the recess with the convolute strands of the cable being secured within helical grooves formed on the outer periphery of the core portion. The core portion includes an elongated conically tapered smooth bore extending along its longitudinal center axis and has one side thereof enlarged with respect to the other. An inner wedge is disposed in the enlarged side of the bore and

mates with the other side forming a cylindrical central bore for receiving the center strand of the cable therein. In this manner, the inner wedge may be hammered down into the en-



larged side of the bore to firmly grip the center strand of the cable while the socket member is forced onto the core portion to firmly grip the convolute strands of the cable within the socket member.

3,676,900
SYSTEM OF FIXING BRAIDED CABLES AND RODS SUBJECTED TO STRESS
Ricardo De Valenzuela, Villaverde 45, Barredo Madrid, Spain
Filed March 5, 1970, Ser. No. 16,699
Claims priority, application Spain, April 19, 1969, 366249
Int. Cl. F16g *11/02*
U.S. Cl. 24—126 L **2 Claims**



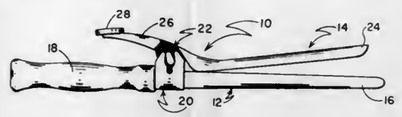
The present invention relates to improvements in the system of fixing braided cables and rods subjected to stress, which essentially consist in a truncated-conic crown of adequate thickness whose contour includes regularly spaced and sensibly semicircular recesses each of which is aimed to have housed therein the corresponding braided cable. Radially disposed and in front of the said recesses the same crown, but by its inner contour, includes triangular grooves weakening by that part the cross section of the crown in order to allow a deformation thereof permitting it to have a close adaptation to the necessary form and to obtain a retention pressure being practically uniform for all the cables.

3,676,901
ADJUSTABLE, QUICKLY RELEASABLE WEBBING CONNECTOR
Renzo J. Monti, Blackstone, Mass., assignor to The United States of America as represented by the Secretary of the Army
Filed Dec. 14, 1970, Ser. No. 97,646
Int. Cl. A44b *11/12, 11/00*; B68b *5/00*
U.S. Cl. 24—191 **2 Claims**



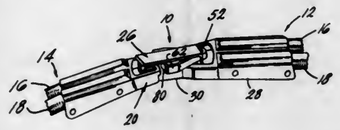
An adjustable, quickly releasable webbing connector having non-slip characteristics which make it particularly useful with webbing made of relatively slippery fibrous materials.

3,676,902
SPRING LOADED HINGE
Harold E. Pearson, West Hollywood, Fla., assignor to The Gillette Company, Boston, Mass.
Filed Feb. 9, 1970, Ser. No. 9,652
Int. Cl. A44b *21/00*
U.S. Cl. 24—2.52 HC **18 Claims**



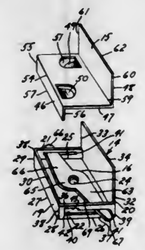
A pair of members hingedly connected together for relative rotation about an axis, one of the members including a stud extending outwardly therefrom generally coaxially with the axis, the other member defining a socket for receiving the stud, and the stud and socket being so sized and shaped that relative rotation of the two in one direction produces forces tending to cause relative rotation in the opposite direction.

3,676,903
SAFETY CLASP CONSTRUCTION
Leonard Klan, 1032 Sweet Street, N.E., Grand Rapids, Mich.
Filed May 6, 1970, Ser. No. 35,148
Int. Cl. A44c *5/18*
U.S. Cl. 24—265 **15 Claims**



A safety clasp which ensures continued engagement of a bail end of a strap with the notched end of the strap, the clasp featuring a locking member attached to a cover which closes over the bail end when the latter is in the notch. The locking member is a spring rod doubled about itself so as to permit the bail end to compress it by camming when the locking member is passed through the bail. The doubling of the rod forms a bail-abutting surface that blocks the bail end from accidental movement along the cover towards the free end thereof. The spring rod is designed to allow deliberate compressing while simultaneously sliding the bail end thereover.

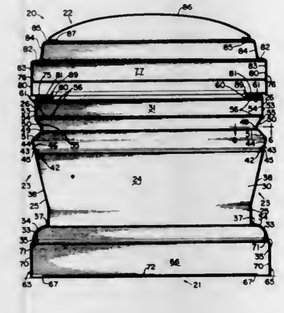
3,676,904
JEWELRY BRACELET CATCH
Boris Shteinshleifer, 40 Elizabeth Street, New York, N.Y.
Filed May 19, 1971, Ser. No. 144,738
Int. Cl. A44c *5/18*
U.S. Cl. 24—265 WS **3 Claims**



A jewelry bracelet catch of a type including first and second mutually engageable members, one of said members defining

a recess into which at least a portion of the other may be positioned for non-rotational engagement, said first member defining the recess and having a pivotally mounted latch member, the second member having a planar surface, which in engaged condition is parallel to the plane of said latch member, and having depending from the plane thereof at least one angularly configured tab selectively engageable with said latch member. In one embodiment of the invention, the safety means is pivotally mounted on one of said members to prevent accidental movement of said pivotally mounted latch member.

3,676,905
CASKET CONSTRUCTION AND METHOD OF MAKING SAME
Grant V. Mack, Valley Station, Ky., assignor to Reynolds Metals Company, Richmond, Va.
Continuation of Ser. No. 637,754, May 11, 1967, abandoned. This application March 31, 1970, Ser. No. 22,121
Int. Cl. A61g *17/00*
U.S. Cl. 27—6 **9 Claims**



This invention relates to an improved metal casket construction and an improved method of making such casket construction wherein a plurality of elongated extruded metal members are provided in standard lengths and suitably cut, formed, and fastened together to provide a high strength fluid tight casket. The side walls of the casket are formed by arranging the extruded metal members horizontally one above the other. The contiguous horizontal edges of adjacent metal members have flanges extending inwardly toward the center of the casket, and these flanges are fastened to one another in a fluid tight manner.

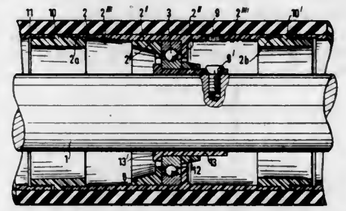
3,676,906
PROCESS FOR MAKING A PATTERNED FABRIC BY USING DIFFERENTIAL SHRINKAGE YARNS
Philip William Eggleston, Harrogate, England, assignor to Imperial Chemical Industries, Limited, London, England
Division of Ser. No. 757,479, Sept. 4, 1968, Pat. No. 3,587,220. This application June 16, 1970, Ser. No. 57,845
Claims priority, application Great Britain, Sept. 13, 1967, 41,795/67; July 12, 1968, 33,366/68
Int. Cl. D02g *1/18*
U.S. Cl. 28—72 FT **3 Claims**

This invention relates to a process of making woven or knitted fabrics which in their construction include yarns that contain or consist of melt colored polyester staple fibers and at least some of the yarn contains or consist of polyester staple fibers of at least 25 percent shrinkage.

3,676,907
NATURALLY FRAGMENTING PROJECTILES OF AISI 06 STEEL
Sigfred F. Magis, Dahlgren, Va., assignor to The United States of America as represented by the Secretary of the Navy
Filed Feb. 18, 1966, Ser. No. 530,251
Int. Cl. B21k *21/06*
U.S. Cl. 29—1.21 **1 Claim**

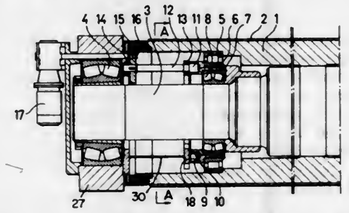
A method of making a mortar shell of AISI 06 steel, and the product produced thereby, comprising forging the steel to a rough shape, rough machining the forged article, heat treating said article to approximately 1,750° F for approximately 2 hours, air-cooling said article, tempering said article at approximately 500° F for approximately 1 hour and finish machining said article to completion.

3,676,908
BROADENING AND STRETCHING ROLLER FOR FLEXIBLE WEBS
Hans Wittler, and Heinz-Otto Holtkamp, both of Brackwede, Germany, assignors to H. Wittler & Co. KG, Brackwede, Germany
Filed Nov. 9, 1970, Ser. No. 88,078
Claims priority, application Germany, Nov. 12, 1969, P 19 56 846.8
Int. Cl. B21b *13/02*
U.S. Cl. 29—116 AD **15 Claims**



This invention relates to a broadening and stretching roller for flexible webs such as webs of textile, paper or plastics material. An outer shell of the roller is mounted on a shaft by means of bearings which in turn are secured between the shell and the shaft by mounting means comprising end cups, tubular section members, and ring means. All of these bearing mounting means are made of plastics material such as duro-plastics or thermo-plastics. Corrosion resistant sleeves of metal and/or of plastics material are secured to the end of the shaft in such position as to be partially overlapped by said end cups.

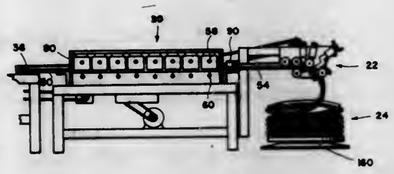
3,676,909
ROLLER
Jorma A. K. Tuomaala, Karhula, Finland, assignor to A. Ahlstrom Osakeyhtio, Noormarkku, Finland
Filed June 1, 1970, Ser. No. 42,237
Claims priority, application Finland, June 4, 1969, 1669/69
Int. Cl. B21b *27/00*
U.S. Cl. 29—110 **1 Claim**



Inside a tubelike mantle a shaft is attached at the middle of the mantle and the shaft has roller bearings at both ends for rotating the mantle on a support or stand. The mantle is

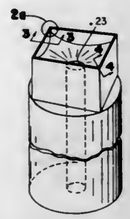
furthermore supported at one or several points between the point at which the shaft is attached to the mantle and the end of the mantle by supporting means mounted either inside the mantle on the shaft or outside the mantle on the support, stand, base or the like.

3,676,910
MACHINE FOR FORMING HEAT-EXCHANGER FINS
Frank Robert Gross, Akron, Ohio, assignor to F. R. Gross Co. Inc., Akron, Ohio
Filed Nov. 19, 1970, Ser. No. 91,052
Int. Cl. B23p 15/26, 11/00
U.S. Cl. 29—202 D 11 Claims



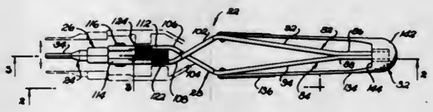
Disclosed is a machine for forming T-shaped fins having a sealing gasket projecting from the leg portion of the T. The machine includes a first forming station which forms two parallel strips into angles. An assembly section guides the two angles into back-to-back relation with a strip of gasket material between the angles and with a flat metallic strip below the angles. A second forming station bends the lateral edges of the flat strip around the bases of the angles to complete the formation of the fin. The machine may also include a set of curling rolls to bend the fin into a curved configuration. One use of the formed fin is as a spiral seal between the inner and outer rolls of the fluid heat-exchanger type roll.

3,676,911
HOLDING TOOL
Frank C. Austin, 9 Meadow Road, Rockport, Mass.
Filed Nov. 12, 1970, Ser. No. 88,754
Int. Cl. H05k 13/04; B23p 13/04
U.S. Cl. 29—203 V 8 Claims



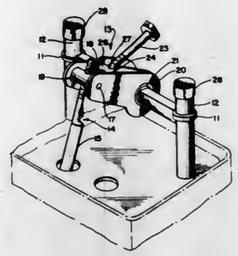
Tool for placing semiconductor chips has a receiving cavity of initial cross-section similar to and slightly larger than the chip, of depth less than the thickness of the chip and a second section inward of the initial section of shape similar thereto but having a changing shape in the corner regions. Proceeding from the first section inwardly, the cross-sections of the second section have progressively smaller corner dimensions; at a cavity depth less than the thickness of the chip these dimensions are smaller than the chip, providing corner regions upon which the chip rests when the cavity is evacuated to draw in a chip. Also a method of forming such a tool using a bar of electrode stock shaped in prism form with rounded end corner regions conforming to the projection of a cone pointed outwardly from the end. This electrode is used in an EDM process to form an impression in a blank of hard metal, and the surfaces surrounding the impression are machined to define thin walls to complete the tool. The electrode is redressed simply by rechucking the bar and returning the conical surface.

3,676,912
ELECTRICAL CONTACT INSERTION-EXTRACTION TOOL
John W. Anhalt, La Crescenta, and Robert M. Morrison, Glendale, both of Calif., assignors to International Telephone and Telegraph Corporation, New York, N.Y.
Filed March 31, 1971, Ser. No. 129,786
Int. Cl. H05k 13/04
U.S. Cl. 29—203 H 6 Claims



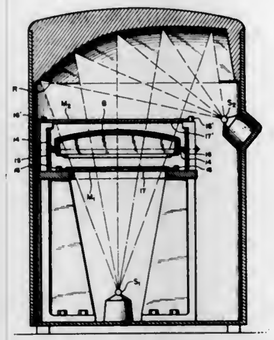
A contact insertion-extraction tool for removing an electrical contact from a connector assembly. A pair of semi-cylindrical portions define a cylinder having an opening at the front end thereof. The rear ends of each of the portions are each secured to a bracket with alignment means on said bracket for assuring correct alignment of the semi-cylindrical portions. The alignment means may be formed of a tongue and groove arrangement on each of the brackets. Further, a tip protector may be provided to protect the front end of the portions when the tool is not in use, as well as to provide protection for the tool operator when the tool is in use.

3,676,913
COMPRESSOR FOR CAM FOLLOWER SPRING
John Fagen, 2318 W. Fourth Avenue, Kennewick, Wash.
Filed Feb. 19, 1971, Ser. No. 116,921
Int. Cl. B23p 19/08
U.S. Cl. 29—217 5 Claims



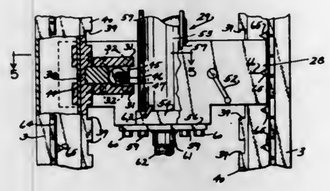
The present invention is directed to a tool for use on diesel engine cylinder heads having a plurality of recessed cam follower springs secured under compression in recesses within the cylinder head by follower spring seat retainers. The tool of the present invention can be removably secured to the cylinder head and will serve to compress the cam follower spring to permit removal of the follower spring seat retainer and subsequent removal of the cam follower assembly.

3,676,914
MANUFACTURE OF SHADOW MASK COLOR PICTURE TUBE
Joseph P. Fiore, Chicago, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.
Filed May 1, 1970, Ser. No. 33,766
Int. Cl. H01j 9/18, 9/36
U.S. Cl. 29—25.16 17 Claims



The mask-frame subassembly of a color picture tube is made with the formed mask portion thereof imperforate and, therefore, a blank. Both surfaces of the blank are coated with a photosensitive resist and exposed through master patterns to create latent images of apertures to be formed in the blank. These images are developed and the mask blank is thereafter etched from both surfaces to produce an aperture pattern determined by that of the masters. The image area of the tube is screened through well-known photoprinting techniques in which a second master is employed to define and precisely locate the pattern of phosphor deposits. After screening, filming and aluminizing, the face panel section of the tube receives the aperture mask-frame subassembly and the tube processing then continues in conventional manner. In developing an aperture pattern in the mask blank and in screening the face panel, a system of studs and leaf springs or supports is employed to establish a coupling of kinematical design. This is characterized by unique positioning of the coupled elements with their geometric centers in a known reference location and makes possible interchangeability of masks and panels.

3,676,915
HYDRAULIC PRESS
Glen V. Ireland, 6605 W. Bennett Avenue, Milwaukee, Wis.
Filed Nov. 9, 1970, Ser. No. 87,918
Int. Cl. B23p 19/02; B30b 1/32
U.S. Cl. 29—251 8 Claims



A hydraulic press including a frame having a base and a pair of vertical columns which extend upwardly from the base, and a cross head is mounted for vertical movement on the columns. Both the base and the columns are hollow and provide a reservoir for hydraulic fluid. The workpiece is supported on a table which is movable on the base from a loading position to a position beneath the cross head. The cross head carries a cylinder unit and the vertical position of the crosshead can be varied with respect to the columns by a cam-actuated locking unit. By releasing the locking unit and bearing the piston rod of the cylinder unit against a fixed object, the cylinder and cross head can be raised and lowered to the desired height with respect to the supporting columns.

3,676,916
METHOD FOR PREPARING METAL MOLDING COMPOSITIONS
Royce G. Schierding, St. Charles, and Tommy L. Tolbert, Chesterfield, both of Mo., assignors to Monsanto Company, St. Louis, Mo.
Filed Jan. 2, 1970, Ser. No. 406
Int. Cl. B23p 17/00; B22f
U.S. Cl. 29—419 3 Claims

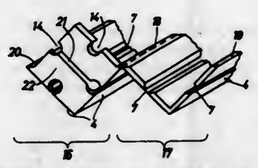
Moldable pellets consisting essentially of a metal matrix having boron filaments positioned therein substantially in parallel and separated from each other by said metal; the method of producing the pellets, and the process of manufacturing shaped composite structures wherein said pellets are molded to the desired shape, e.g., by extrusion or transfer molding.

3,676,917
METHOD OF MAKING A POROUS METAL SPINNING RING
Andrew J. Wayson, Needham, and John T. O'Connell, Medfield, both of Mass., assignors to Morrimass, Inc., Hingham, Mass.
Filed Nov. 10, 1970, Ser. No. 88,262
Int. Cl. B22f 3/24
U.S. Cl. 29—420.5 4 Claims



A powdered metal spinning ring in which the ring, after being initially formed in a press and sintered is then compressed circumferentially to taper the ring body so that the inner wall is in the form of an inverted truncated cone. The exterior of the ring is then machined in conventional manner after which the ring is heat treated and polished to be ready for use in a spinning frame.

3,676,918
METHOD OF MAKING STRUCTURAL ELEMENT
Artur Fischer, Altheimer Str. 219, D-7241 Tumlingen, Germany
Filed Jan. 28, 1970, Ser. No. 6,500
Claims priority, application Germany, Feb. 3, 1969, P 19 05 219.8
Int. Cl. B23p 11/02
U.S. Cl. 29—453 1 Claim



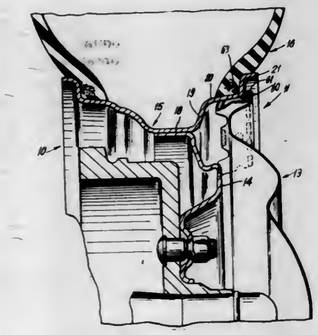
A hollow structural element and a method of making the same are disclosed. The structural element is bounded by

outer peripheral walls at least some of which are provided with coupling elements. It consists of a plurality of discrete sections which together have the configuration of the completed hollow structural element, and which are assembled and connected with one another, releasably or non-releasably, so as together have the configuration of the structural element.

3,676,919
PROCESS FOR MAKING A WHEEL TRIM LOCK RING ASSEMBLY

Herbert Buerger, Walton, N.Y.

Filed May 11, 1970, Ser. No. 36,336
Int. Cl. B23p 21/00
U.S. Cl. 29—469 5 Claims

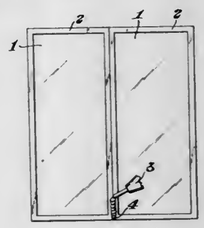


The lock ring is snapped into locking engagement with a wheel cover or other wheel trim. Mastic sealer material is applied to the snap in connection between the wheel and trim. Once the two pieces are locked together they can only be taken out with considerable difficulty. The sealer material is for the purpose of quieting squeaking and preventing relative rotation between the two pieces.

3,676,920
JOINING PROCESS FOR THE ASSEMBLY OF DECORATIVE, STAINED GLASS

Robert M. Pilditch, 2810 Garfield St., Bay City, Mich.

Filed June 22, 1970, Ser. No. 48,275
Int. Cl. B23k 31/02
U.S. Cl. 29—472.5 5 Claims

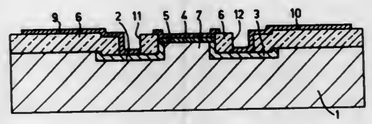


This process relates to the assembly of decorative, stained glass, whereby a polygon-edged pane of stained glass is edged with a thin strip of metal. This edging of the polygon pane of stained glass with thin strips of metal is repeated on other panes until there is present the desired number of panes. These edged panes of stained glass are now assembled by soldering the thin metal strips with soldering composition under appropriate soldering means, whereby there is assembled the desired decorative, stained glass configuration.

3,676,921
SEMICONDUCTOR DEVICE COMPRISING AN INSULATED GATE FIELD EFFECT TRANSISTOR AND METHOD OF MANUFACTURING THE SAME

Else Kooi, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Division of Ser. No. 727,563, May 8, 1968, Pat. No. 3,544,858.
This application March 16, 1970, Ser. No. 19,849
Claims priority, application Netherlands, June 8, 1967, 6707956
Int. Cl. B01j 17/00; H01l 5/00
U.S. Cl. 29—571 20 Claims

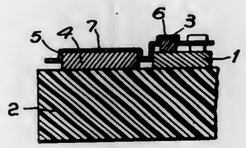


Method of making an insulated gate field effect transistor is described in which the surface of a silicon semiconductor is covered in whole or in part with a layer of a masking material which masks against oxidation, such as silicon nitride. Areas of the silicon surface are exposed for the source and drain regions, leaving the oxidation mask over the future channel. When the source and drain regions have been made, as for example by diffusion, the device is subjected to oxidation, causing the growth of a thick oxide which sinks into the silicon surface where it is not masked by the oxidation mask. Among the advantages obtained are fewer precise masking steps, a flatter device surface, and reduced gate overlap of the source and drain.

3,676,922
METHOD OF FABRICATING A SEMICONDUCTOR DEVICE

Charles R. Cook, Jr., North Palm Beach, Fla., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed Feb. 13, 1970, Ser. No. 11,225
Int. Cl. B01j 17/00; H01l 1/16
U.S. Cl. 29—577 6 Claims

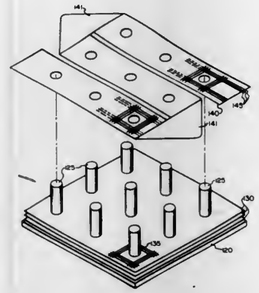


This is a method of forming interconnection leads between connecting pads on an integrated circuit chip and corresponding external conductors for the device. This is accomplished by placing a conductive metal sheet over the chip and surrounding external lead portions in such a manner as to visibly locate each connecting pad and external lead; then each portion of the overlying conductive sheet is bounded to each underlying connecting pad and external lead; the desired interconnection pattern between each of the connecting pads and each of the external leads is formed on the conductive sheet; and portions of the conductive sheet are then removed thus leaving the desired interconnection leads.

3,676,923
METHODS OF PRODUCING SOLENOID ARRAY MEMORIES

William A. Reimer, Wheaton, Ill., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Division of Ser. No. 735,319, June 7, 1968, Pat. No. 3,535,690.
This application March 16, 1970, Ser. No. 19,569
Int. Cl. H01f 7/06
U.S. Cl. 29—604 4 Claims

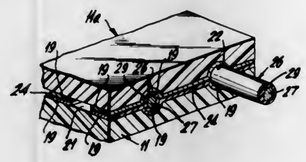


Read only data planes for use with solenoid array memories are woven by processes which employ weaving conductive and non-conductive strands of material as both the warp and the woof (filler) of a fabric. The data planes take two basic forms, one being a woven mat of substantially the same length and width dimensions of its associated memory stack, and another being in the form of a strip which may be folded back and forth, the folded sections being co-extensive to form the data plane. Coding is effected by interrupted and/or connecting selected conductors.

3,676,924
METHOD OF FABRICATING A MAGNETIC MEMORY MATRIX

John M. Cole, New Hope, Pa., and William Sinclair, Frenchtown, N.J., assignors to Thomas & Betts Corporation, Elizabeth, N.J.

Filed July 13, 1970, Ser. No. 54,269
Int. Cl. H01f 7/06; G11b 5/62
U.S. Cl. 29—604 10 Claims

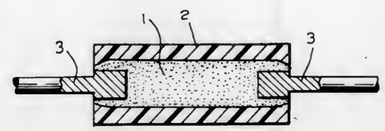


A method of fabricating a magnetic memory device having spaced, parallel, magnetically coated wires received within tunnels and spaced parallel word conductors crossing the magnetically coated wires at right angles and in close proximity thereto, in which a substrate is formed to have a contoured surface of elongated parallel recesses for receiving the magnetically coated wires and the word conductors are electroplated directly onto the contoured surface of the substrate to follow the shape of the substrate surface. The exposed conductive surfaces of the plated word conductors are then coated with a thin film of insulative material and the completed structure forms one side of the memory that is joined to an identical, similarly formed mating opposite dise.

3,676,925
METHOD FOR MAKING MOLDED CARBON COMPOSITION RESISTORS

Kunio Sato; Kanji Sugihara; Takashi Wakabayashi, and Tomio Ishida, all of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed July 28, 1970, Ser. No. 58,780
Int. Cl. H01c 1/02, 17/00
U.S. Cl. 29—613 3 Claims

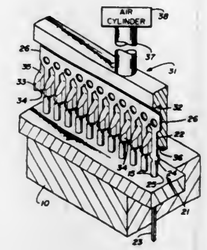


A method of making a molded carbon composition resistor. A core mixture is prepared from a finely divided carbon black or graphite powder and silica powder in a resin at an elevated temperature for giving it the proper plasticity, and the mixture is cooled and crushed into granules. A sleeve mixture is prepared from silica powder in a resin at an elevated temperature for giving it the proper plasticity, and the sleeve mixture is cooled and crushed into granules. The core mixture is formed into an inner core and the sleeve mixture is formed into a sleeve around the inner core. Electrodes are inserted into the ends of the inner core. The method is improved in that prior to the steps of mixing it with the other materials, the silica powder for either the core mixture or the sleeve mixture, or both, is heated to a temperature of from 700 to 1500° C.

3,676,926
METHOD FOR MANUFACTURING CONNECTOR TERMINALS

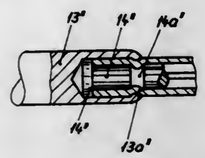
Jerry A. Kendall, Carrollton, Tex., assignor to Elfab Corp., Dallas, Tex.

Filed May 20, 1970, Ser. No. 39,089
Int. Cl. H05k 13/04
U.S. Cl. 29—625 8 Claims



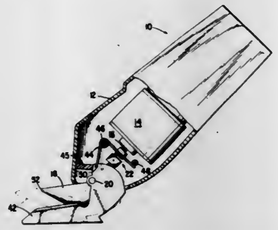
A plurality of electrical connector terminals are formed as part of a common metal strip. The terminals are first inserted into prepunched holes in a mounting board while they are still attached to one another as part of the strip. The terminals are next all press fit simultaneously into the mounting board holes. The strip which connects them together is then broken free and discarded to separate the terminals from one another and leave the individual connector terminals mounted in the board.

3,676,927
METHOD OF MAKING A CONNECTOR PLUG
Robert Maier, Esslingen am Neckar, Staffelesweg 10, Germany
Filed Sept. 15, 1969, Ser. No. 857,757
Claims priority, application Germany, June 18, 1969, P 19 30 806.6; Dec. 23, 1968, P 18 16 614.8
Int. Cl. H02q 15/00
U.S. Cl. 29—629 1 Claim



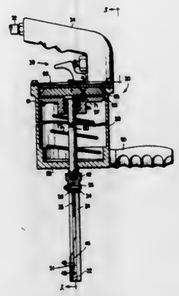
A plug or socket for a plug-and-socket connection is produced by forming a member which includes a main body portion having a plurality of longitudinally extending separate parts of substantially uniform cross section throughout their lengths and an end part connecting the longitudinally extending parts to each other at one end, and thereafter securing one end of the member in a connecting part. The member may be formed by drilling a longitudinally bore into a grooved rod with a radius at least as great as the radius of the roots of grooves running longitudinally of the member leaving a connecting part at one end. It may also be produced by bending an elongated member of semicircular cross section through 180° and securing the free ends in the connecting part by welding two rods of similar cross section at intervals, cutting off a part adjacent one of the welds, separating the resulting legs apart and then bringing them together in a connecting member.

3,676,928
ELECTRIC SCISSORS
John A. Herr, Gardwood, and Oswald M. Porter, Livingston, both of N.J., assignors to The Singer Company, New York, N.Y.
Filed July 1, 1970, Ser. No. 51,466
Int. Cl. B26b 15/00
U.S. Cl. 30—228 8 Claims



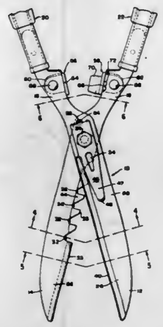
An electric scissors having a rotary motor for oscillating a pivotal cutting blade to effect a cutting engagement along a small portion thereof with a ledger blade. The ledger blade, which is normally non-movable during the cutting operation, is mounted such that it may be selectively pivoted into engagement with the cutting blade to effect a snip cutting stroke along substantially the entire cutting blade or a portion thereof. Two embodiments are shown for effecting the snip cut. A first embodiment biases the ledger blade in a normally fixed position by a torsion spring which may be compressed to effect a snip by pushing the ledger blade against a table-like surface. The other embodiment discloses a lever arrangement whereby the ledger blade is pivoted to effect a snip by manually squeezing a lever-link against the force of a spring.

3,676,929
ANIMAL DEHORNING APPARATUS
Donald R. Nicholson, Route 1, Box 102, Colby, Kans.
Filed Nov. 7, 1969, Ser. No. 874,813
Int. Cl. B26b 15/00
U.S. Cl. 30—228 11 Claims



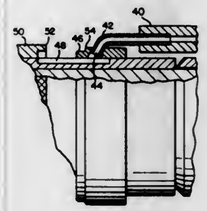
A shear-type dehorning apparatus comprising a pair of generally parallel guide brackets or rails, a fixed blade attached at one end and a shearing blade guided between the pair of guide rails and connected to a piston within a cylinder. A hand operated valve is an integral part of a handle on the cylinder housing and controls introduction of compressed gas from a storage container to thereby provide a power actuated dehorner requiring neither electricity nor an auxiliary engine for operation.

3,676,930
HEDGE SHEARS
James W. Robison, Belpre, Ohio, and Harold L. Eads, Parkersburg, W. Va., assignors to O. Ames Division of McDonough Company, Parkersburg, W. Va.
Filed July 17, 1970, Ser. No. 55,691
Int. Cl. B26b 13/08
U.S. Cl. 30—257 5 Claims



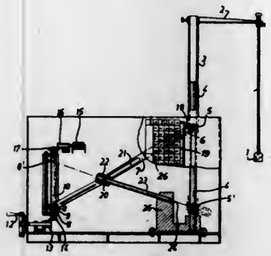
A hedge shears having pivotal shearing and work holding blades. A pivot mounted tensioning spring resiliently biases the blades together for pressured, adherent action from the pivot to the tips. Resilient stop means are rigidly supported on the blades and to compressively engage upon their closing fully together. Work holding notches are formed in the holding blade, shaped or oriented to receive varying size work and firmly hold that in compressing and slicing by the shearing blade.

3,676,931
SPEED CONTROL FOR DENTAL HANDPIECES
Helmut Richard Pietschmann, Karlsruhe, Germany, assignor to Sybron Corporation, Rochester, N.Y.
Filed Aug. 21, 1970, Ser. No. 65,863
Claims priority, application Germany, Sept. 28, 1969, P 19 48 059.2
Int. Cl. A61c 1/10
U.S. Cl. 32—27 6 Claims



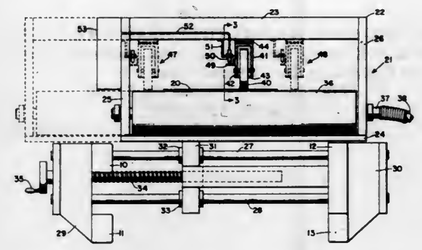
Disclosed is a pneumatic controller for use with electrically or pneumatically driven dental handpieces wherein the controller has a portion mounted directly on the handpiece and in associated with a conventional foot controller so that the speed of the handpiece may be controlled by either the portion mounted on the handpiece or by the conventional foot controller.

3,676,932
DEVICE FOR THE PREPARATION OF MIXTURES OF LIQUIDS IN PRE-DETERMINED PROPORTIONS AND QUANTITIES
Charles F. Druet, 43 Allee des Charmilles, 93 Livry-Gargan, France
Filed May 18, 1970, Ser. No. 38,350
Claims priority, application France, Nov. 6, 1969, 6938269
Int. Cl. G01f 23/04
U.S. Cl. 33—126.7 A 2 Claims



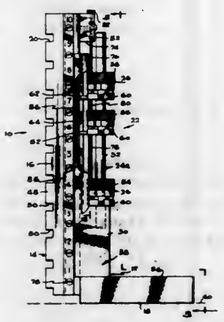
A device for the preparation of mixtures of liquids in predetermined proportions and quantities, comprising the combination of a gauge adapted to be displaced vertically, a device serving as a meter and indicating the position of said gauge, a driving system for said meter and a transmission lever interposed between said gauge and the driving system of said meter, said transmission lever being pivotally mounted about a shaft which is adjustable in position so as to vary the position of said gauge for the same value indicated on said meter. The gauge may be either of the blade type or a float co-operating with a needle and graduated scale.

3,676,933
CONTINUOUS THICKNESS MEASUREMENT OF A MOVING PLASTIC WEB
Thomas J. Slone, Forest Park, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio
Filed Oct. 9, 1969, Ser. No. 865,120
Int. Cl. G01b 5/00, 5/14, 7/00
U.S. Cl. 33—147 L 4 Claims



The thickness of a moving plastic web is continuously monitored as it passes between a pair of co-acting rollers including a web support roller driven at a peripheral speed which corresponds to the linear speed of the moving web and a freely rotating idler roller mounted over the support roller. The periphery of the idler roller is in contact with the web passing over the support roller. The idler roller is resiliently mounted to permit radial movement in response to variations in web thickness. An electromagnetic proximity sensor is associated with the idler roller to sense and detect changes in its relative position which are ultimately transmitted to a control or recorder. The device includes a suitable mechanism for simultaneously moving the rollers laterally with respect to the web in order to obtain a web thickness profile.

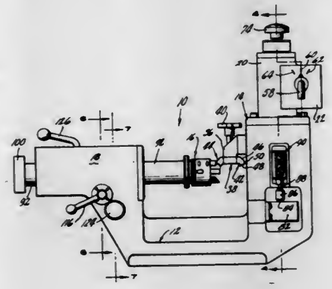
3,676,934
PRECISION DIGITAL LINEAR ADJUSTMENT MECHANISM AND HEIGHT GAGE EMBODYING SAME
Edgar P. Frear, Canoga Park, Calif., assignor to Hubach-Frear Corporation, Los Angeles, Calif.
Filed March 13, 1970, Ser. No. 19,207
Int. Cl. G01b 3/22
U.S. Cl. 33—169 R 14 Claims



A precision digital adjustment mechanism for a linear distance gaging device having a pair of gage members connected for relative movement along a direction line normal to parallel gaging surfaces on the members. The digital adjustment mechanism employs a number of accurately calibrated

gage pins of graduated length mounted in holding means which are adjustable to locate selected combinations of the gage pins in gaging positions, the selected gage pins precisely establish the spacing between the gaging surfaces. A height gage embodying the digital adjustment mechanism.

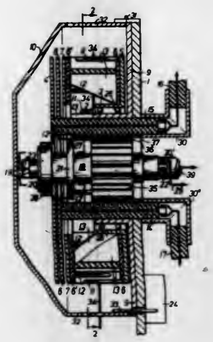
3,676,935
SETTING GAGE FOR MULTIPLE HEAD TOOL HOLDER
Melvin H. Klausing, Chattanooga, Tenn., assignor to Combustion Engineering, Inc., Windsor, Conn.
Filed July 23, 1970, Ser. No. 57,467
Int. Cl. B27g 23/00
U.S. Cl. 33—185 R 5 Claims



A setting gage for a multiple head tool holder wherein the cutting tools thereof are properly aligned to permit complete machining of tube ends in one operational step. A gage block is configured so as to have the shape of the desired finished tube ends; and its vertical location is controlled by a block actuating motor to position the gage block relative to the axis of the multiple head tool holder so that the block represents a tube with the radius of the tube desired to be operated upon. A numerical counter is interrelated with the vertical control motor so as to give an accurate visual indication of the gage block vertical position and thus the diameter of the tube to be operated upon.

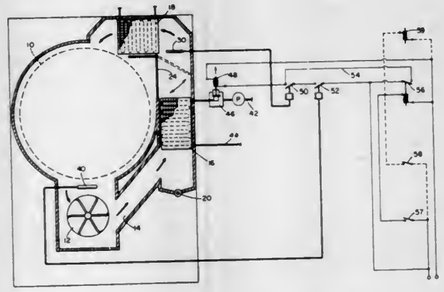
3,676,936
HIGH-FREQUENCY DRYING APPARATUS
Herbert Hauff, Berlin, Germany, assignor to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt, Germany
Filed Aug. 26, 1970, Ser. No. 67,139
Int. Cl. B01k 5/00
U.S. Cl. 34—1 8 Claims

An improved apparatus for the high-frequency drying of strip or thread shaped fibrous material in a continuous process. The high-frequency drying field is produced between adjacent opposite polarity elongated electrodes disposed in the peripheral surface of a rotatably mounted electrode structure or arrangement in the shape of a truncated cylinder. At least one of the side or end plates of the cylinder is provided with an opening to provide the intake of a ventilation channel, which includes the interior of the cylinder between the two side plates and whose outlet passes through the space between adjacent electrodes. The power tube for the high-frequency



generator is disposed in the ventilation channel at least partially in the axial space between the two side plates.

3,676,937
SOLVENT RECLAIMER CONTROLS
Harry W. Janson, Fairhaven, Mass., assignor to Hoyt Manufacturing Corporation, Westport, Mass.
Filed Oct. 22, 1970, Ser. No. 83,041
Int. Cl. F26b 21/06
U.S. Cl. 34—46 2 Claims

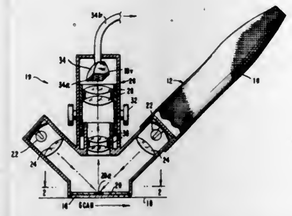


Controls for a solvent recovery apparatus regulate the flow of coolant in a condenser coil responsive to the temperature of air circulating in a closed pathway through a tumbler.

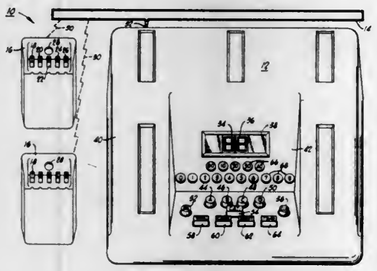
3,676,938
READING DEVICE FOR THE BLIND
Arnold Trehub, 145 Farview Way, Amherst, Mass.
Filed Sept. 1, 1970, Ser. No. 68,722
Int. Cl. G09b 21/00; G06k 9/13
U.S. Cl. 35—35 A 15 Claims

An arrangement to permit blind persons to "read" printed characters by converting such characters into audible analog signals. Means are included for detecting the presence or absence of characters, their size, shape and orientation, and their grouping into words, sentences or paragraphs. Each of these identifying parameters is translated by electro-optical

responsive equipment into distinctive and audible tonal sounds which are associated by the "reader" with the corresponding printed materials, thus allowing continuous comprehension of the materials.



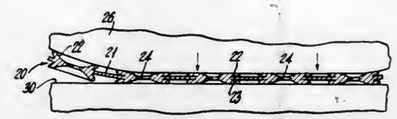
3,676,939
STUDENT RESPONDER TEACHING DEVICE
Charles V. Oberst, and Glen C. Oberst, both of Norman, Okla., assignors to EdAids, Inc., Norman, Okla.
Continuation-in-part of Ser. No. 744,940, July 15, 1968, abandoned. This application April 17, 1970, Ser. No. 29,620
Int. Cl. G09b 7/06
U.S. Cl. 35—48 R 11 Claims



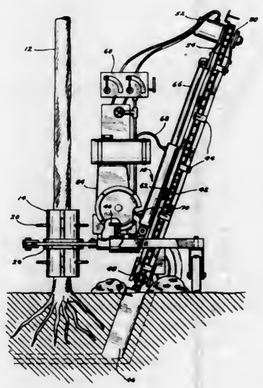
An electronic device for use in facilitating the teacher-to-students communications during tutoring sessions. The device consists of a central control console which is operated by the teacher in conjunction with a plurality of individual transmitter units each used by a student to effect a response. Each student transmitter is capable of operating at a selected one of plural discrete frequencies which are indicative of a selected answer or choice selection, and the control console utilizes a heterodyne receiver with frequency scanning means capable of monitoring the required frequency spectrum. The control console also includes electronic circuitry for evaluating and displaying individual and group student information thereafter to provide further output of the data for computer and related data processing equipment.

3,676,940
ANTI-SLIP APPARATUS
John J. Shively, 515 E. 89th St., New York, N.Y.
Filed Aug. 11, 1970, Ser. No. 62,817
Int. Cl. A43b 5/08
U.S. Cl. 36—8.1 1 Claim

A film or web of rubber or the like is formed with patterns of small closely spaced vacuum cups on each of its faces. When compressed between two surfaces, both of which are smooth, the cups of the two faces grip the two respective surfaces to restrain slippage, but due to the small size of the individual cups, local release is prompt as the area of applied pressure shifts. In applications such as bathing sandal soles or baseball bat grips, aligned cups of the two faces may be vented each to each, so that vacuum release on either face of the gripping element automatically releases the other face.



3,676,941
TREE EXCAVATING MACHINE
Arthur H. Cohrs, 124 Fifth Ave. North, Hopkins, Minn., and Franklin T. Kresse, Route 2, Box 193, Maple Lake, Minn.
Filed Sept. 24, 1969, Ser. No. 860,655
Int. Cl. A01g 23/06
U.S. Cl. 37—2 R 9 Claims



A tree digger which, when mounted on the base of a tree, digs a trench inclined from the vertical about same, the distance of the trench from the tree and the depth of the trench being adjustable.

3,676,942
RECORD DISPLAY DEVICE
Daniel W. Elrod, 4512 N. 14th St., Omaha, Nebr.
Filed May 20, 1970, Ser. No. 39,012
Int. Cl. G09f 1/10
U.S. Cl. 40—124.2 1 Claim

A record display device comprising a plurality of vertically spaced transparent jacket support members adapted to receive and support a record jacket therein. The uppermost support member is suspended from a suitable support means with the other support member being supported from the support member thereabove. The support members are rotatable

about a vertical axis with respect to the other support members. In the modified form of the device, the record jackets are



supported in a vertically spaced relationship by a transparent strap means extending therearound and therebetween.

3,676,943

NON-FLAMMABLE, THIN, INTEGRALLY ILLUMINATED CONTROL PANEL OVERLAY

Thomas L. Kidd, Jr., Norristown, and Albert D. McClain, Jr., Philadelphia, both of Pa., assignors to General Electric Company

Division of Ser. No. 706,044, Feb. 16, 1968. This application July 27, 1970, Ser. No. 64,879
Int. Cl. G09f 13/22
U.S. Cl. 40—130 M 2 Claims



A non-flammable control panel overlay with legible indicia openings, integral illumination and integral supporting means comprises a metallic member with indicia openings on the front thereof backed by a non-flammable, transparent backing member mounted in a recessed area on the back of the member behind the indicia openings, an electroluminescent lamp mounted in a second recessed area behind the transparent backing member and ribs on the back side of the member comprising the unetched areas left when the various mounting recesses are formed. Such a metallic overlay is made by mechanically engraving the indicia, on the front of a metal blank and then chemically etching the rear of the blank, in a stepwise fashion to form the various recesses and remove unnecessary material, until breakthrough to the indicia occurs.

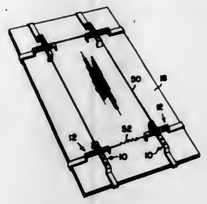
3,676,944

PICTURE FRAME

Joseph P. Eubank, Jr., 2218 Mount Vernon St., Philadelphia, Pa.

Filed Jan. 4, 1971, Ser. No. 103,602
Int. Cl. G09f 1/12
U.S. Cl. 40—155 9 Claims

A picture frame comprising four pairs of bracket members, one pair associated with each corner of a picture assembly. Each bracket engages one of the edges of the picture assembly near a corner thereof and has a post member contacting the back of the picture frame assembly. There is also provided a connection between each associated pair of brackets at a medial location, the brackets being arranged to extend perpendicular from an edge of the picture assembly and to cross each other at said medial location. There is also provided a cord which interconnects all the bracket connections and which is spring biased to be maintained in tension to urge the four associated bracket pairs inwardly toward the center of the picture so that a truss-like action is provided with the post



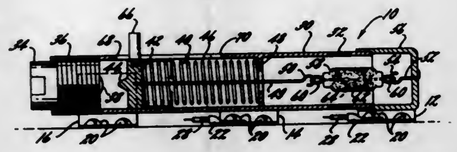
member of each bracket being urged toward the back of the picture assembly.

3,676,945

CARTRIDGE LOADED ALARM DEVICE

Nick C. Neanhouse, 7133 W. 109th St., Worth, Ill.

Filed Oct. 8, 1970, Ser. No. 79,237
Int. Cl. F41c 3/04; E05g 3/00; G08b 15/02
U.S. Cl. 42—1 G 8 Claims



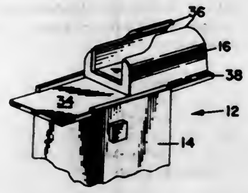
An alarm device for use in buildings, automobiles or the like which is adapted to be actuated in the event an electrical circuit is energized, the device having a spring loaded firing means which is adapted to strike a cartridge containing tear gas, chemical dye or the like. The firing means is normally retained in a cocked condition by a frangible envelope which shatters to release the firing mechanism in the event the electrical circuit is completed. The device may be of an elongated cylindrical configuration that may be inserted within clips in a manner similar to the installation of conventional cartridge fuses.

3,676,946

TWO-PART CARTRIDGE MAGAZINE

Alfred F. Sibilia, Will Palmer Road, Southwick, Mass.

Filed Nov. 24, 1969, Ser. No. 879,136
Int. Cl. F41c 25/02; F42b 39/00
U.S. Cl. 42—50 3 Claims



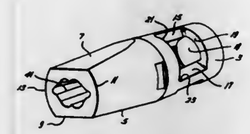
A two-pat cartridge magazine comprises a first part in the form of a head unit, and a second part in the form of a container unit wherein the head unit is removably mounted on the container unit so as to be usable on each of a plurality of container units.

3,676,947

MUZZLE CHOKE

Clifford Logan Ashbrook, 5027 Cheena, Houston, Tex., and Wilson Gordon Wing, 35 E. Rivercrest Drive, Houston, Tex.

Continuation-in-part of Ser. No. 683,200, Nov. 15, 1967. This application Nov. 28, 1969, Ser. No. 880,870
Int. Cl. F41c 21/18
U.S. Cl. 42—79 23 Claims



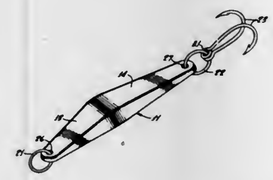
A shotgun muzzle or nozzle construction for producing a uniformly distributed pattern of shot or projectiles within a predetermined confined area. The forward section or diverter is provided with a plurality of internal axially extending shot- or projectile-diverting ridges which define wall means for selectively guiding the projectiles into relative orientation to one another. The ridges define a plurality of walls, the purpose of which is to establish the pattern of projectiles upon a target. Precalculated angular relationships of the various walls and diverter ridges thereon contribute to marked effectiveness of the device.

3,676,948

FISHING LURE

Richard L. Hill, 11140 E. Imperial Highway, Norwalk, Calif.

Filed Aug. 10, 1970, Ser. No. 62,348
Int. Cl. A01k 85/00
U.S. Cl. 43—42.45 3 Claims



A fishing lure for deep water fishing comprises an elongated body, having a specific gravity of not less than 10.5 nor more than 19.3, and diminishing in thickness in opposite direction of its length from a point distant from one end by five-twelths of its total length. Two generally flat surfaces that are contiguous at the point of maximum thickness and fall away beginning at that point to define the diminution in thickness of the body, form the sides of an included angle of between 164° and 170°. At one end the body is adapted to be joined to a line and at its other end it carries two single hooks freely suspended, facing in opposite directions and in overlapping relation.

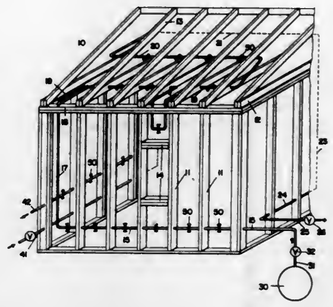
3,676,949

INSECTICIDE DISTRIBUTION SYSTEM

Roy L. Ramsey, 3200 N. 14th St., Ponca City, Okla.

Filed March 19, 1969, Ser. No. 817,228
Int. Cl. A01m 1/20, 1/24
U.S. Cl. 43—124 11 Claims

An insecticide distribution system and method consisting essentially of a pipe system having an inlet and an outlet and a plurality of nozzles along the pipe. In use, the pipe system is filled with insecticide at the inlet until insecticide is present at the outlet. The outlet is then closed off and the system pressured until the nozzles open at the preset pressure at which time the area near the nozzles will be sprayed with insecticide.

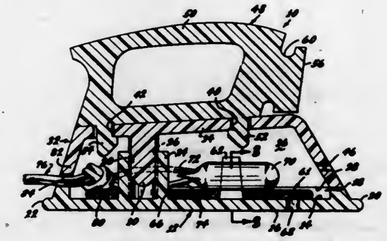


3,676,950

FLATIRON TOY DOLL ACCESSORY

Charles D. Clarke, Redondo Beach, Calif., assignor to Mattel, Inc., Hawthorne, Calif.

Filed Nov. 1, 1971, Ser. No. 194,212
Int. Cl. A63h 3/52
U.S. Cl. 46—14 6 Claims



Plastic soleplate is provided with apertures, a red filter above the apertures, a light bulb above the filter and a light-impervious, upstanding side wall to which a handle-carrying, light-impervious cover is affixed. Red light glows through light apertures when bulb is lit to simulate a hot iron. The flatiron is small enough to serve as a doll accessory simulating an iron which would be used by the doll and the iron is also suitable for use by a child-user.

3,676,951

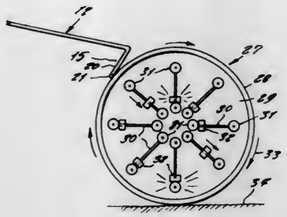
MUSICAL ROLLING HOOP

Bruce Shearer, 5600 Applegate Lane, Louisville, Ky.

Filed Feb. 25, 1971, Ser. No. 118,899
Int. Cl. A63h 5/00
U.S. Cl. 46—114 1 Claim

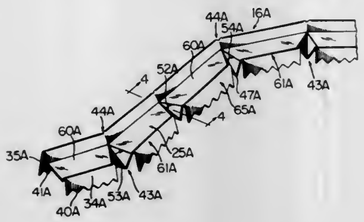
An activity toy comprised of a rolling hoop and a push bar for urging the hoop to roll over the ground or a supporting surface, the push bar being made of detachable segments so to be conveniently packaged when being sold, and the hoop in one form comprising a simple circular rim, in another form comprising the circular rim supporting a disc concentrically

therewithin that is supported by tension springs between the disc and rim, and in a further modified form the hoop being



provided with a series of valves and slideable weights which strike the bells as the hoop rotates during travel.

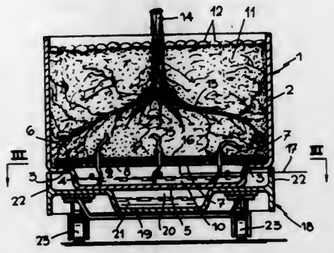
3,676,952
LAWN EDGING DEVICE
Richard M. Watts, Henrico County, Va., assignor to Reynolds Metals Company, Richmond, Va.
Filed Jan. 30, 1970, Ser. No. 7,057
Int. Cl. E01c *11/22*; A01g *1/08*
U.S. Cl. 47—33 7 Claims



A dual-purpose lawn edging device which serves as a grass stop and a track for a lawn mower wheel. The device has a main strip and at least one side wall extending upwardly from one side edge of the strip with the side wall having a top ridge and an extension which extends downwardly from the ridge to define a supporting leg for the device which is adapted to be embedded in the ground to hold the device in position. The main strip is sufficiently wide to define the track and the side wall serves as a guide for the wheel while allowing easy crossing thereover.

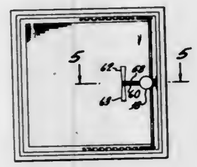
3,676,953
PLANT BOX
Jean Georges Delogne, 8, Place Julien Dillens, Saint Gilles, Belgium
Filed Aug. 31, 1970, Ser. No. 68,090
Claims priority, application Belgium, Sept. 4, 1969, 78.718
Int. Cl. A01g *27/00*
U.S. Cl. 47—38.1 4 Claims

This invention concerns a plant box comprising a container having at a distance from its unperforated bottom a perforated element delimiting with said bottom a drainage chamber containing a quantity of water limited by at least one lateral overflow aperture. This container contains, upon to the perforated element, a mass of mineral substance regularly moistened by wicks conveying water to it by capillary action. The said container rests in a water-tight tray, mounted on rollers, which



contains a further quantity of water serving to humidify the air surrounding the plants.

3,676,954
ESCAPE HATCH
Jerry Rapport, Long Beach, and Garold D. Frymire, Buena Park, both of Calif., assignors to Travel Trim & Vent Co., Compton, Calif.
Filed May 13, 1971, Ser. No. 143,002
Int. Cl. E05c *15/02*
U.S. Cl. 49—141 15 Claims

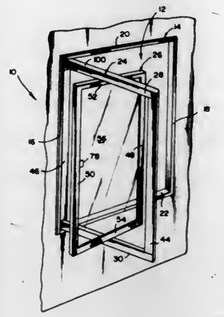


A conventional worm-and-gear operated vent of a recreational vehicle is made operable as an emergency exit by attaching an emergency operating lever that may be rapidly actuated to rotate both the housing of the worm gear drive mechanism and the operating torque shaft that is driven by the mechanism. The housing is rotatably mounted, but normally latched to fix it in position. Operation of the emergency lever achieves both unlatching and rotation of the housing.

3,676,955
REVERSIBLE CLOSURE
Louis L. Schacht, 205 E. 63rd. St., New York, N.Y.
Filed Feb. 22, 1971, Ser. No. 117,596
Int. Cl. E02d *15/52*
U.S. Cl. 49—192 10 Claims

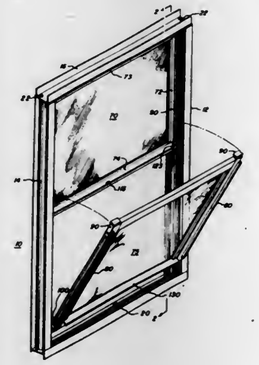
A reversible closure for a wall opening which includes a rectangularly shaped frame member hingedly affixed to a wall and adapted to swing outwardly from the opening for ventilation or egress purposes. A window sash pivotally mounted within the frame member is rotatable about a vertical axis to provide access to the weather side of the sash for cleaning, etc.

Resilient weatherproofing material placed around the periphery of the window sash is designed to reduce wiping



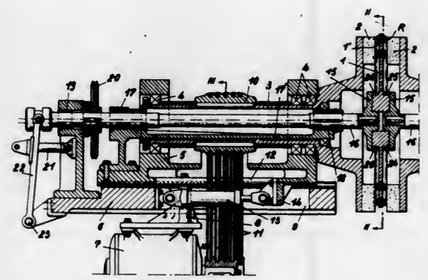
contact with the frame member during rotation of the window sash.

3,676,956
READILY REMOVABLE WINDOW WITH WEATHER-STRIPPING
Henry A. Taylor, York, and Maurice E. Sterner, Jr., Spring Grove, both of Pa., assignors to D. J. Dinsmore Co., Sioux Falls, S. Dak.
Filed June 22, 1971, Ser. No. 155,533
Int. Cl. E05d *13/12*
U.S. Cl. 49—446 18 Claims



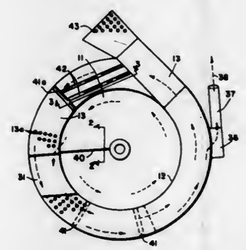
A removable window applicable to single or plural hung sash designs and particularly to metallic construction. The window includes a casing having jamb channels in which are positioned balance assemblies to be rigidly positioned therein with respect to translational or longitudinal movement. The sash rides on the surface of the balance assembly through guide members which are deformable and the opposite edges of the sash include lower guides which are positioned in the jamb channels remote from the balance assemblies to be guided therein. The sash cords of the balance assemblies have hooks which ride beneath the lower guide means on the sash which hook is turned with pivoting of the sash on the lower guides to lock the sash cords in position in the jamb channels as the window is removed. The sash are removed by pivoting the window away from the balance assemblies through the deformable guide means at the upper edge and tilting the sash to release the lower guides from the jamb channels. Weather-stripping on the window casing and on the sash seal the edges of the sash and the tops and bottoms of the same to provide an airtight window assembly.

3,676,957
SPRING GRINDING MACHINES
Jacques Pierre Albert Herckelbout, Paris, France, assignor to Herckelbout Et Fils, Rosny sous Bois, France
Filed April 22, 1970, Ser. No. 30,691
Claims priority, application France, April 25, 1969, 6913219
Int. Cl. B24b *7/16*
U.S. Cl. 51—118 5 Claims



The present invention concerns a machine for grinding helicoid springs which simultaneously permits all the springs to be ground, carried by a magazine-plate which is circular, rotary and removable, to the abrasive action of two grindstones while ensuring a uniform wear of the latter.

3,676,958
VIBRATORY CLEANER
Carl C. Garland, Detroit, Mich., assignor to Parke, Davis & Company, Detroit, Mich.
Filed Nov. 9, 1970, Ser. No. 88,052
Int. Cl. B24b *31/06*
U.S. Cl. 51—163 10 Claims



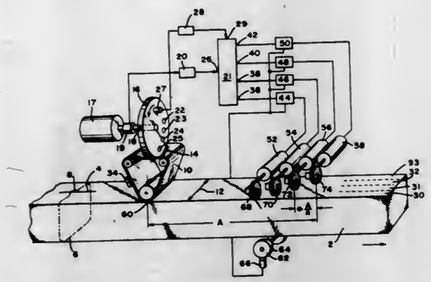
Apparatus and means are provided for cleaning pharmaceutical capsules by vibration in mixing contact with granular cleaning agent while moving the capsules away from the cleaning zone free of cleaning agent.

3,676,959

APPARATUS FOR REPAIRING DEFECTS IN METALLIC WORKPIECES BY AUTOMATIC MEANS

Friedrich M. O. Forster, Grathweilstrasse 4, Reutlingen, Germany

Filed June 29, 1970, Ser. No. 50,458
Claims priority, application Germany, Sept. 13, 1969, P 19 46 510.2
Int. Cl. B24b 49/04
U.S. Cl. 51—165 R 5 Claims



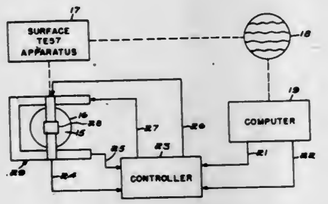
The present invention relates to means for repairing defects in metallic workpieces, such as billets, which means are controlled by stored defect responsive information provided during the nondestructive test process. The nondestructive test apparatus provides defect responsive signals which are recorded and stored by storage means and subsequently recalled from the storage means for actuating defect repair means, such as a grinding wheel, engaging the workpiece at the defect location.

3,676,960

OPTICAL SURFACE GENERATING APPARATUS

Ronald Aspden, Bedford, Mass., assignor to Itek Corporation, Lexington, Mass.

Division of Ser. No. 719,657, April 8, 1968, Pat. No. 3,587,195. This application May 25, 1970, Ser. No. 50,012
Int. Cl. B24b 49/02
U.S. Cl. 51—165.71 7 Claims



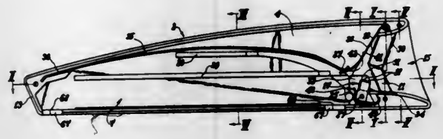
A method wherein an optical blank work surface is figuratively divided into an array of adjoining surface areas and measured to determine the total relative number of uniformly sized blank material decrements that are required in each surface area to produce a desired surface contour. An optical lap moving across the work surface in an irregular continuous path produces one of the uniform decrements upon each traversal across an individual surface area. The lap is controlled such that its travel path exhibits a preference for movement from an occupied area to adjacent areas still requiring the greatest number of material decrements.

3,676,961

KNIFE SCABBARD OR HOLDER

Dennis B. Jackson, Nunawading, Victoria, Australia, assignor to Wiltshire Cutlery Company Proprietary Limited, Australia

Filed April 6, 1970, Ser. No. 25,881
Claims priority, application Australia, May 7, 1969, 54616/69
Int. Cl. B26b 11/00
U.S. Cl. 51—214 26 Claims



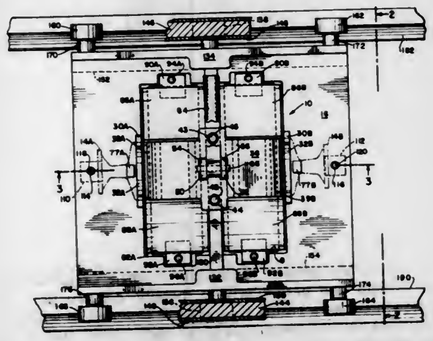
A scabbard for receiving and protecting the blade of a knife and including a device which functions to sharpen the cutting edge of the blade as the blade is inserted into and withdrawn from the scabbard. The sharpening device is pivotally mounted so as to present a respective sharpening edge according to the direction of longitudinal movement of the blade relative to that device, and a cushion spring bears on the sharpening device to limit the pressure acting between the knife blade and the sharpening device, during the sharpening operation. Means is also provided to normally urge the knife blade into engagement with the sharpening device.

3,676,962

APPARATUS FOR ORNAMENTING GLASS ARTICLES

Charles Edward Stevens, East Grand Rapids, Mich., assignor to John M. Exton, Trustee of the Trust, Exton Development Company, New York, N.Y.

Filed Aug. 24, 1970, Ser. No. 66,467
Int. Cl. B24c 3/10
U.S. Cl. 51—227 R 9 Claims



Apparatus for ornamenting glass articles by abrasive blasting techniques comprises an article holding and masking arrangement useful for the mass production of ornamented glass tumblers of high quality. The glass tumblers are clamped within the article holder which includes mounting members for supporting the interior and exterior surfaces of the tumbler. Clamping pressure is applied to the exterior surface of the tumbler so that a mask can be applied with considerable force to an opposite portion of the exterior surface. The construction is such that during the process there is little or no relative displacement between the tumbler and the article

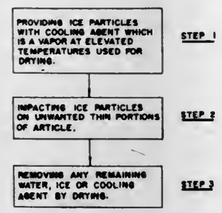
holder. Consequently, after a first design has been blasted into the glass, a second mask can be applied to the article in accurate registry with the design formed through the first mask.

3,676,963

METHOD FOR THE REMOVAL OF UNWANTED PORTIONS OF AN ARTICLE

Edwin Eugene Rice, and Charles Henry Franklin, both of Ann Arbor, Mich., assignors to Chemetronics International, Inc., Ann Arbor, Mich.

Filed March 8, 1971, Ser. No. 122,152
Int. Cl. B24c 1/00
U.S. Cl. 51—320 10 Claims



A method for the removal of unwanted portions of an article such as burrs and flashing utilizing solid particles of ice which are impacted against the unwanted portions is described. The ice particles are maintained in a flowable condition prior to impact by a cooling agent. The cooling agent is in a heat transfer relationship with the ice particles, usually in direct contact with them. Examples of cooling agents which can be mixed with the ice particles and which are easily removed with them are, for instance, solids such as solid carbon dioxide, liquids such as liquid nitrogen or cooled alkanols and/or lower alkanols containing water and cooled gases such as air, carbon dioxide or nitrogen. Kinetic energy imparted to the ice particles causes removal of the unwanted portions of the article upon impact. In addition, the ice particles, and cooling agent when used, cools the impacted area and with thermoplastic and elastic materials thereby embrittles thin sections of flashing and burrs and the like making them more easily removable by the impact of the ice particles.

3,676,964

FRAME AND BUILDING STRUCTURE AND METHOD OF CONSTRUCTING SAME

Carlos Anglade, Jr., Apartado Este 80.084, Caracas, Venezuela

Filed Dec. 29, 1969, Ser. No. 888,495
Int. Cl. E04b 1/32
U.S. Cl. 52—86 21 Claims



A skeleton frame for a building comprises a series of long span arches made up of straight bars joined at their ends. Successive arches are staggered such that the corresponding bars of alternate arches are parallel, and with this relation, each joint between arch bars is connected to all adjacent joints by diagonal struts. Alternate arches of both sets are tied by cross-members extending perpendicularly to the planes of the arches. The complete building is enclosed by sheet material carried by the cross-members and curved in conformity with the arches.

In constructing the frame, the bars making up several arches are laid out flat on the ground, with the struts, and are loosely connected. The structure is then lifted up, as by hoisting at selected points, until it is arch-shaped, and is then secured to ground supports at its free ends. The joints are tightened, and successive arches are added, as by loosely assembling them in further groups on the ground and raising the groups in succession as before.

3,676,965

POLE OR POST MOUNTING FOR GROUND ANCHOR

Robert F. Delke, Cheyenne, Wyo., assignor to William H. Chamberlain and Anna B. Chamberlain, Cheyenne, Wyo., part interest to each

Filed Oct. 15, 1970, Ser. No. 80,894
Int. Cl. E02d 27/42
U.S. Cl. 52—98 9 Claims



A ground anchor for posts, poles and the like having a base plate assembly accommodating pitch or tilt adjustment of the pole or post relative to the anchor and adapted to yield and break away when the pole or post is subjected to a lateral impact force of a predetermined magnitude. The anchor has a pile member driven into the ground carrying tentacles which are ejected to form anchoring roots. A base plate at the upper end of the pile member compacts the underlying earth and rigid vanes underlying the base plate stiffen the assembly and may be helically shaped to provide a screw thread locking relationship with the earth. A post base plate is adjustably anchored to the pile base plate with fasteners that can yield or break when the post is struck by a vehicle. The post may be attached to the pile member by spring means permitting the post to deflect under impact and then retracting the post to an upright position.

3,676,966

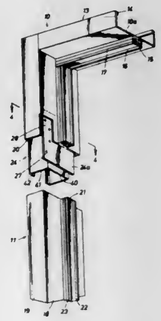
DOOR-FRAME ASSEMBLY

Douglas Ragland, Houston, Tex., assignor to Ragland Manufacturing and Construction Company, Houston, Tex.

Filed Dec. 29, 1969, Ser. No. 888,571
Int. Cl. E06b 1/14
U.S. Cl. 52—211 20 Claims

A door-frame assembly for mounting in the door opening of a wall wherein the weight of the door mounted thereon is carried on concealed support members rather than the jambs. The assembly has a pair of rigid support members mounted on

either side of the door. In the preferred case, plates, secured to the support members, face the door opening and are spaced generally such that the hinges of the door can be fastened directly thereto through openings in the jambs. The jambs can be of the double rabbet type including door stops having a channel facing the door opening and which contain apertures through which screws or other fastening means can be placed to secure the jambs to the plates. The channel is provided with a snap-in, flexible insert such that the fastening means are concealed. The door stop can also have a channel which faces the door side of the assembly and in which is carried a flexible insert to act as a weather seal or gasket. The header section, which serves also to space the support members, can be of



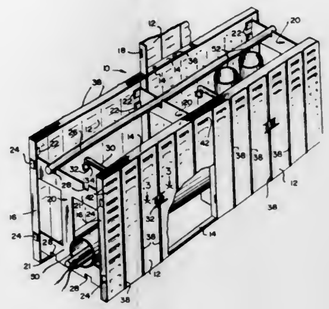
either the same configuration as the jambs or can be comprised of a fascia strip which snaps into a partition cap. The support members can be adjusted vertically to accommodate various door height openings. This is accomplished by means of vertical slots located close to each end of the support through which extend fastening means which are slidable in the slots and adjustably tightenable in lower or upper brackets mounted on the floor or wall supporting members respectively. The sides of the jambs which embrace respective sides of the wall adjacent the door openings are equipped with inturned legs which engage the wall surfaces and which contain longitudinal passageways into which can be inserted dowel pins to allow for splicing thereof.

3,676,967
FORMS FOR CONCRETE WALL CONSTRUCTION

Augustus Frati, 95 Greenlawn Road, Greenlawn, N.Y.

Filed July 1, 1970, Ser. No. 51,523
Int. Cl. E04b 2/68; E04f 17/08
U.S. Cl. 52—220 16 Claims

Rectangular sheets of galvanized metal pans are assembled to construct wall forms at the construction site. Each pan includes inwardly bent flanges along its peripheral edges. A course of several pans is erected by joining a horizontal row of pans along abutting vertical side flanges. Several courses are stacked in a vertical plane to construct one face of a wall form. The other face of the form is constructed of similar pans in spaced parallel relationship to the first face. The abutting edges of the pans are either welded or joined by connector plates. A plurality of spaced vertical ribs project outwardly from the face of each pan. The ribs provide contiguous coplanar surfaces against which sheet wall covering may be mounted. Spaced between the ribs are columns of louvers which serve as a lath if the wall is plastered. A further option is the use of an insulation panel, nestably received on the inside face of each pan between the peripheral edges thereof.

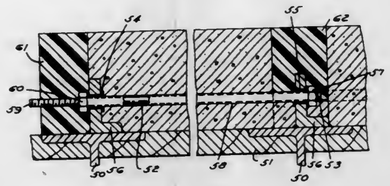


Concrete is poured into the assembled form and the forms remain permanently affixed to the sides of the concrete core.

3,676,968
STRESSED CONCRETE STRUCTURES AND METHOD OF MAKING

Henry Fred Campbell, Belleville, Mich., assignor to Campbell Research Corporation, Detroit, Mich.

Filed June 1, 1970, Ser. No. 41,935
Int. Cl. E04c 3/10, 3/26
U.S. Cl. 52—223 R 6 Claims



A prestressed concrete structure wherein a body of set concrete has at least one reinforcing rod therein. One end of the rod is restrained and the other end of the rod has abutment means thereon. The length of the rod between the abutment means and the restrained end is of predetermined magnitude. After the concrete is set, the rod is heated so that it expands longitudinally permitting a spacer of predetermined length to be inserted between the abutment of the rod and the concrete thereby producing a predetermined stress on the rod.

3,676,969
LOG TYPE BUILDING UNIT

Dan B. Moore, 445 13th Ave., Huntington, W. Va.

Filed April 3, 1970, Ser. No. 25,394
Int. Cl. E04b 1/10; A63h 33/08
U.S. Cl. 52—233 9 Claims

A basic building log or member from which a building with a number of abutting walls can be formed. Each basic log has a first ledge portion at one end of its length, a second ledge portion at the other end of its length for mating with the first ledge portion of a member in an abutting wall, a tongue portion extending along the length of the log on one side thereof from one ledge portion to the other and grooves opening on the side

opposite the side of the basic unit with the tongue portion for receiving the tongue portion of another member in the same wall. Preferably, the basic member is used with a number of sill members which form the base of the structure and which have a tongue portion but no groove and with a number of cap members which are provided with a groove but are flat on the other side which forms the top of each of the abutting walls. If

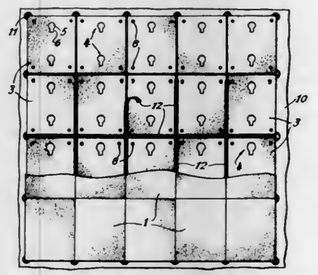


desired, tongue and groove members can be provided respectively on the first and second ledge portions for further locking the members in abutting walls together or the surfaces can be inclined to mate together to lap the corners. Preferably, each of the tongue portions has a cross-sectional dimension near its top which exceeds a dimension near its bottom so that tongue portions snap into the associated groove portions to lock the members together.

3,676,970
FILED SURFACE AND METHOD OF APPLICATION

Frederick James Edwards, Northumberland, England, assignor to Thermal Syndicate Limited, Northumberland, England

Filed April 15, 1970, Ser. No. 28,632
Claims priority, application Great Britain, April 24, 1969, 20,926/69
Int. Cl. E04f 13/14
U.S. Cl. 52—385 6 Claims



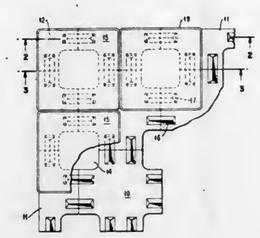
The invention relates to a cladding panel for a building and a method of attaching such a cladding panel to a building. The cladding panel, made of vitreous silica or a glass having a SiO_2 content of greater than 95 percent, is provided with at least one integrally formed projection made of the same material as the rest of the panel, the projection, or each projection having a dove-tailed cross-section in a plane normal to the rear surface of the panel.

The method and apparatus further a backing sheet attached to the building and which locks the projection into a keyhole recess formed in the backing sheet to sandwich an adhesive composition between the panel and the sheet.

3,676,971
TILE STRUCTURE WITH CRUCIFORM SHAPED FOUNDATION SUPPORTING TILES

Edward L. Dombroski, 16 Catskill Ave., Poughkeepsie, N.Y.

Filed Nov. 14, 1969, Ser. No. 876,871
Int. Cl. E04c 1/10; E04f 13/08
U.S. Cl. 52—603 2 Claims

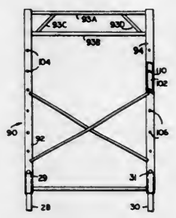


A tile walk or patio in which a plurality of cruciform foundation tiles are laid in a layer without cement with their arms forming drainage sumps; a plurality of surface tiles are then laid on the foundation layer without cement, the surface tiles each overlapping a plurality of foundation tiles and sumps. The foundation tiles are formed with tenons or bosses on their upper surfaces that co-operate, with mortices or sockets formed in the under surface of the surface tiles, to lock the surface tiles from horizontal displacement from the foundation layer and to guide a surface tile, displaced vertically by ice, back to its initial position as the ice melts.

3,676,972
SHORING STRUCTURE

Clayton R. Ballou, San Ramon, Calif., assignor to Jack E. Hursh, Millbrae, Calif., a part interest

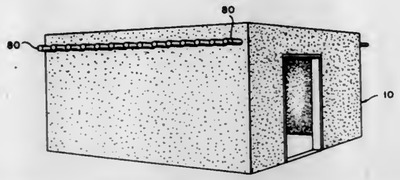
Filed Aug. 1, 1969, Ser. No. 846,759
Int. Cl. E04h 12/00
U.S. Cl. 52—638 3 Claims



Disclosed herein are shorting structures having bases and telescoping members, each shoring structure being fabricated of square tubing. In one embodiment of the structure, square tubing of the telescoping member telescopes inside and along square tubing of the base. In a second embodiment, square tubing of the telescoping member telescopes outside and along square tubing of the base member. In yet another embodiment both inner and outer square tubing of the telescoping member telescopes along square tubing of the base.

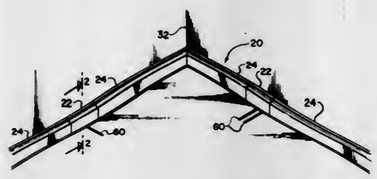
Lock means are associated with the bases and telescoping members to lock thereto cross bracing between base members, telescoping members, etc. Such lock means include a slidable member which is slidable to a position holding the end portion of a cross brace, and to a position freeing the end portion of the cross brace.

3,676,973
MODULAR BUILDING CONSTRUCTION AND METHOD
Paul H. Kellert, Rural Rte #1, Mannford, Okla.
Filed July 6, 1970, Ser. No. 52,610
Int. Cl. E04b 1/04, 2/72
U.S. Cl. 52—262 5 Claims



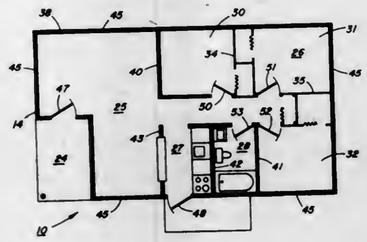
An improved building construction and method of assembly from modular components, each modular component including (as erected) a pair of parallel horizontal Tee channels with the legs of the Tees facing each other, two or more vertical steel pipes suitably slotted and connected at their ends to the legs of the Tee channels, panels of lightweight plastic insulation filling the rectangular spaces formed by the foregoing members and suitably slotted to be received over the legs of the Tee channels, reinforcing wire screen surrounding the pipe sections and both surfaces of the insulation panels and a layer of concrete gunned onto both sides of the insulation material against the wire screens and level with the screed line formed by the outer edges of the Tee channels.

3,676,974
BASEBOARD MOLDING INCORPORATING COVER SECTIONS FOR CONCEALING ELECTRICAL WALL OUTLET RECEPTACLES
John L. Daly, 2256 Morris Ave., Bronx, N.Y.
Filed June 22, 1970, Ser. No. 48,276
Int. Cl. E04f 17/08, 19/04
U.S. Cl. 52—716 8 Claims



The disclosure relates to a sectionalized baseboard molding including sections adapted to be placed over and to thereby conceal electrical wall outlet receptacles and corresponding plug connectors. A hollow removable cover section of molding is positioned over the electrical wall outlet receptacle and is pivotally mounted to adjacent fixed sections of molding to permit rotational displacement of the cover section for insertion and withdrawal of a plug connector. The cover section of molding is spring biased to return to its original position adjacent the wall surface and in one embodiment is so retained by a detent locking arrangement. The pivotal mounting is located at the top of the cover section of molding in one embodiment and at the foot of the cover section of molding in the other embodiment. A third embodiment employs hanger rods extending outwardly from adjacent fixed sections of molding. The cover section of molding in this embodiment can be completely removed for permitting insertion or removal of the plug connector into the outlet receptacle and for this purpose has slotted openings which fit over and engage the hanger rods to thereby support the cover section of molding. All the embodiments utilize a layer of foam material affixed to the bottom edge of the molding for allowing passage of the electrical wire conductors thereunder.

3,676,975
APPARATUS FOR THE CONSTRUCTION OF CONCRETE STRUCTURES
Anthony W. Belluscio, 1611 E. Elizabeth Ave., Linden, N.J.
Filed July 10, 1970, Ser. No. 53,803
Int. Cl. E04b 1/00
U.S. Cl. 52—743 5 Claims



A concrete structure, e. g. a dwelling house, is disclosed to include a base slab, a monolithic divider slab for defining an outside wall and a plurality of interior walls, and a concrete roof. The monolithic divider slab encases conduits for providing electrical service and suitable piping means for providing plumbing services.

The structure is disclosed to be constructed by pouring a base slab on the desired site, erecting a form on the base slab after curing to define an opening for concrete for the monolithic divider slab, filling the opening so defined with concrete and allowing it to cure, removing the forms and positioning a pre-cast concrete roof on and in secure engagement with the monolithic divider slab. The roof may be poured conveniently adjacent the base slab site and thereafter lifted into position on the monolithic divider slab. Where the roof is in sections, a novel sealing structure is disclosed for securing the joint at the interface of the sections.

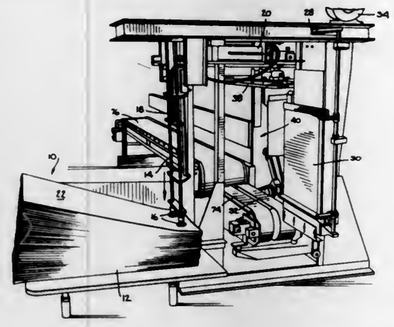
Also disclosed is a novel form arrangement and structure which utilizes sectionalized and pivotally related form sections to accommodate the pouring of the monolithic divider slab as a single pour and to enable the set-up, knock-down and transportation of the forms with a minimum of difficulty.

3,676,976
ROOF STRUCTURE
Jack G. McAllister, 2701 N. Douglas Drive, Minneapolis, Minn.
Filed May 27, 1970, Ser. No. 40,922
Int. Cl. E04b 1/345
U.S. Cl. 52—747 16 Claims



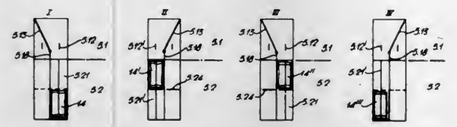
An arcuate roof structure formed by interlocking building units, subassemblies, modules, components, blocks and the like together including the method of raising of the roof structure to a usable position.

3,676,977
BAG APPLICATOR METHOD AND APPARATUS
Harry Edward Rothmann, Valhalla, and Walter Ruf, Spring Valley, both of N.Y., assignors to St. Regis Paper Company, New York, N.Y.
Filed Sept. 17, 1970, Ser. No. 73,034
Int. Cl. B65b 1/22
U.S. Cl. 53—24 14 Claims



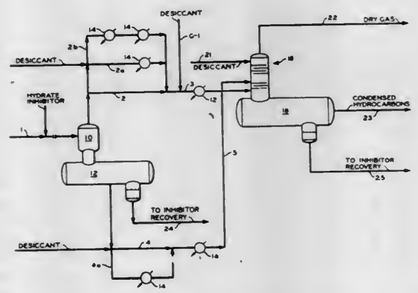
This invention relates to a method and apparatus for applying bags to a bag filling machine and is characterized by apparatus for picking up a single bag from a stack of empty bags and positioning and holding the empty bag in a preselected position, and then transporting the bag to a bag opening and filling station wherein the sides of the bags are collapsed to cause the front and rear faces of the bag to buckle, and then they are pulled outwardly and a filling spout is introduced into the bag for discharging a quantity of material while means for settling and compacting the material in the bag are operating, and thereafter the bottom of the bag is elevated, and the bag is transported to a bag closing and sealing device.

3,676,978
APPARATUS FOR PACKING BAGS IN BOXES OR CARTONS
Gert Gottwels, Wiederitzsch; Michael Herrlich, Leipzig; Gunther Klas, Leipzig; Joachim Schober, Leipzig; Peter Thiede, Leipzig, and Eberhard Zachaus, Leipzig, all of Germany, assignors to Ingenieurburo fur Rationalisierung der Suss- und Dauerbackwarenindustrie, Leipzig, Germany
Filed Feb. 26, 1970, Ser. No. 14,448
Claims priority, application France, April 28, 1969, 2041528; April 28, 1969, 6913506
Int. Cl. B65b 5/10; B65g 57/06
U.S. Cl. 53—59 R 6 Claims



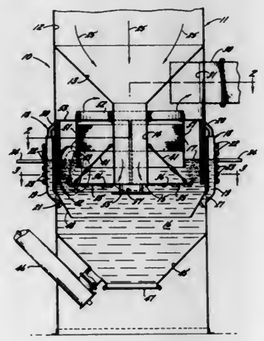
ing is positively gripped at its leading end, is opened out, and this open end is drawn down over the objects to envelop them, whereafter jaws are brought into action automatically to seal and sever the section of enwrapping foil from the parent stock.

3,676,981
TREATMENT OF HYDROCARBON GASES
Ronald L. Afdahl, and Harold W. Barber, both of Bartlesville, Okla., assignors to Phillips Petroleum Company
Filed Feb. 24, 1971, Ser. No. 118,411
Int. Cl. B01d 53/14
U.S. Cl. 55—30 10 Claims



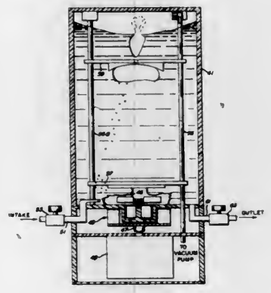
A process for treating hydrocarbon streams comprising methane, ethane and higher boiling fractions which comprises separating the stream into vapor and liquid components; separately cooling the vapor and liquid components; adding to the vapor stream prior to the ultimate cooling stage a desiccant material; and recontacting the chilled liquid and vapor streams in a contact zone. The described process enhances the quality of the separated vapor stream and the recovery of gas hydrate inhibitor chemicals from hydrocarbon gas stream under superatmospheric conditions to which such inhibitor chemicals have been added to inhibit formation of gas hydrates.

3,676,982
METHOD AND APPARATUS FOR SCRUBBING GASES
Franklin Carr Price, 33 W. 16th St., Chicago Heights, Ill.
Filed Aug. 14, 1970, Ser. No. 63,681
Int. Cl. B01d 47/02
U.S. Cl. 55—95 8 Claims



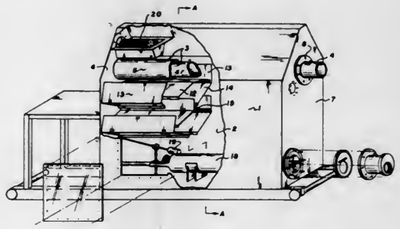
A method and apparatus for efficiently scrubbing gases in which gas is discharged into a body of liquid and forced beneath a flat distributor plate disposed well within the liquid. The gas volumetric radial flow rate and liquid head causes a thin, high velocity gas stream to be developed giving a high scrubbing and reaction efficiency.

3,676,983
APPARATUS AND METHOD FOR DEGASSING A LIQUID
Walter E. Nold, 24 Birch Road, Natick, Mass.
Continuation-in-part of Ser. No. 59,110, July 29, 1970. This application Feb. 14, 1971, Ser. No. 112,698
Int. Cl. B01d 19/00
U.S. Cl. 55—192 2 Claims



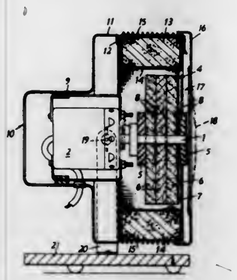
Apparatus and method for removing entrapped gases from liquids by, simultaneously, mechanically agitating the liquid to be processed and drawing a partial vacuum over the free surface of such liquid.

3,676,984
DRILLING MUD DEGASSER
Joseph Edwin Clark, 3132 10th St., N.W., Calgary, Alberta, Canada
Filed Oct. 22, 1970, Ser. No. 83,093
Int. Cl. B01d 19/00
U.S. Cl. 55—193 2 Claims



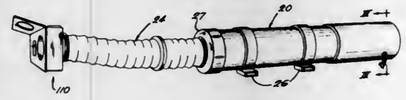
A novel inlet and baffle structure for a drilling and degasser is provided. Gas-cut mud is fed into the degasser vacuum chamber through a horizontal inlet pipe having a long slot cut in its bottom wall. The mud flow is formed into a thin curtain as it passes through this slot. At the same time, its rate of movement is accelerated, with a consequent increase in shear and drop in viscosity. The mud immediately contacts a generally horizontal baffle. The flow is divided into two turbulent, thin layers. It is then conducted through a system of baffles. Due to the change in mud viscosity, induced turbulence and the forming of the mud flow into thin layers of large area, the vacuum within the chamber is able to effectively separate the entrained gas from the mud.

3,676,985
POWER-DRIVEN AIR FILTER
Christopher Roy Foreman, London, and Patricia Violet Shipman, Whitton, both of England, assignors to Patent Protection Limited
Filed June 4, 1970, Ser. No. 43,451
Int. Cl. B01d 45/12
U.S. Cl. 55—317 5 Claims



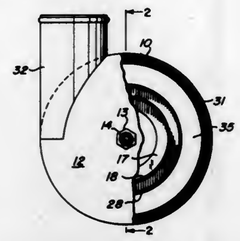
A power-driven air filter comprises a cylindrical body of fibrous or cellular material which is rotated on the shaft of an electric motor to cause contaminated air to be drawn into the front and rear faces of the body and pass through the fibrous or cellular material and so be filtered. The rotary body may be formed as a series of readily replaceable face-to-face discs, held on the shaft by push fit retaining members; and an outermost one of the discs is thinner than at least one other of said discs, with the thinner disc being discarded and replaced, when contaminated, in advance of others of said discs. An annular secondary filter in the form of an agglomeration of activated carbon may be arranged around the rotary body.

3,676,986
BUILT-IN CENTRAL VACUUMING DEVICE
Joseph W. Reiling, Battle Creek, Mich., assignor to Charles Woods, Delton, Mich.
Filed Sept. 15, 1969, Ser. No. 858,079
Int. Cl. B01d 46/02
U.S. Cl. 55—472 17 Claims



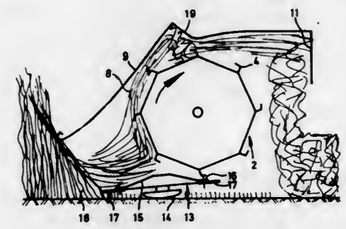
An improved vacuum cleaner device utilizing a housing with portions which are rapidly assembled by interlocking together under compression, to simultaneously seat and mount the motor and impellers as well as the stators within the assembled housings. The device utilizes a flexible motor-mounting element and compressible O-rings, one of which is positioned between the two telescoping housings to provide an air seal as well as axial resilience helping to retain the parts in their assembled state. A similarly interlocking cylindrical extension is provided for use in enlarging the housing to accommodate a larger motor. A wall-mounted receptacle for access to the vacuum from the interior of the habitation has a front cover plate attached to the receptacle by a living hinge, and the entire receptacle can be molded in one piece, so as to bias the cover plate in its fully opened position by the molding orientation of the living hinge.

3,676,987
WATER SEPARATOR
John E. Wunder, Dayton, and Anson S. Coolidge, Centerville, both of Ohio, assignors to United Aircraft Products, Inc., Dayton, Ohio
Filed July 27, 1970, Ser. No. 58,279
Int. Cl. B04c 5/04
U.S. Cl. 55—459 8 Claims



Apparatus including a generally cylindrical housing for interposing in a flowing stream of gaseous fluid. Within the housing, a portion of the inflowing gaseous fluid stream is subjected to hydrocyclonic action and separated liquid is discharged through one end of the housing. Another portion of the inflowing stream is subjected to circuitous flow within the housing and in a portion of the circuitous path is a coalescing means. Inherently separated liquid from the other portion moves to a collection chamber and discharges through a liquid outlet at the other end of the housing.

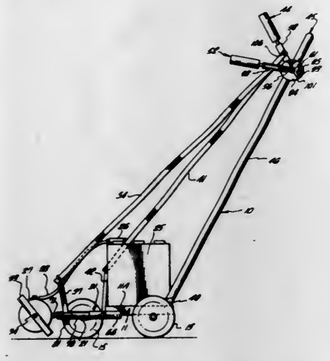
3,676,988
HAY-MAKING MACHINE
Hans Ulrich Hauser-Lienhard, Zurich, Switzerland, assignor to Bucher-Guyer A.G. Maschinenfabrik, Niederweningen, Zurich, Switzerland
Filed Jan. 30, 1970, Ser. No. 7,086
Claims priority, application Switzerland, Jan. 31, 1969, 1535/69
Int. Cl. A01d 43/00
U.S. Cl. 56—1 6 Claims



A hay-making machine comprises a rotary beating drum or drums provided with beater bars for subjecting the cut grass and stalk material to a beating, crushing and buckling action in order to accelerate the consecutive drying process. Rotary pick-up means are arranged ahead of the beating drum to deliver the cut stalk material into the range of the beating drum. A guide plate cooperates with the beating drum to define a conveying conduit for the stalk material. The end of the guide plate is provided with a baffle forming an impact surface against which the stalk material is thrown by the beater drum before it falls again on the ground. A further impact surface may be formed by said guide plate intermediate the length of the conveyer conduit. The pick-up means may be a rotary member provided with prongs for picking up the cut stalk material from the ground, or it may be combined with a disc-type or gyratory mower arranged ahead of the beating

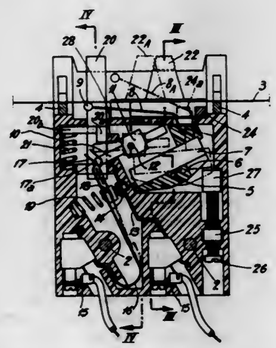
drum for cutting and at the same time picking up the stalk material.

3,676,989
ELECTRIC GRASS EDGER
John W. Slayton, 2148 Stanford Ave., Pomona, Calif.
Filed March 15, 1971, Ser. No. 124,167
Int. Cl. A01g 3/06
U.S. Cl. 56—10.5 6 Claims



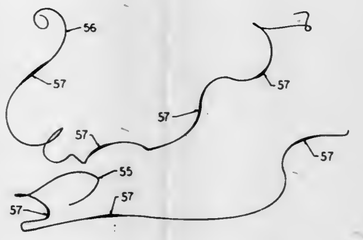
A pusher-handle attaches to a frame which supports a battery and has a rear wheel pair and a vertically articulated front wheel pair to change the height of a cutter blade driven by a DC series-wound motor supported from the frame. The motor is displaceable angularly with respect to the frame by means of a rectangle of interconnecting telescoping and turning links. Controls at the handle set the height of the motor and the blade and set the tilt of the blade. The controls are locked by threaded members which thrust against clutch plates. The battery has a keyed switch.

3,676,990
THREAD-SENSING DEVICE FOR A TEXTILE MACHINE
Fernand Santerre, Yvelines, and Francis Libaud, Hauts-de-Seine, both of France, assignors to La Telemecanique Electrique, Nanterre, Hauts de Seine, France
Filed April 28, 1970, Ser. No. 32,635
Claims priority, application France, April 29, 1969, 6913611
Int. Cl. D01g 31/00; D01h 13/14
U.S. Cl. 57—81 11 Claims



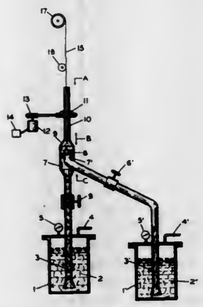
A thread sensing device has contacts suitable to pass currents for operating thread cutters and the like, which contacts are held apart by a ferromagnetic latch. A thread sensor is coupled to a permanent magnet which is moved when thread breakage occurs to bring the magnet into a position in which it acts on the latch to release the contacts.

3,676,991
CRIMPED DISCONTINUOUS FILAMENTS
Hugh J. Fairfield, Galt, Ontario, Canada, assignor to Du Pont of Canada Limited, Montreal, Quebec, Canada
Continuation-in-part of Ser. No. 751,272, Aug. 8, 1968, abandoned, which is a continuation-in-part of Ser. No. 597,263, Nov. 28, 1966, abandoned. This application Nov. 6, 1969, Ser. No. 874,589
Int. Cl. D04h 5/00
U.S. Cl. 57—140 R 11 Claims



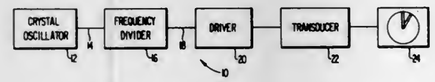
A method of converting a mass of textile filaments in the form of textile material waste, tangled thread waste or cold-drawable continuous filaments of a synthetic polymer, to a useful product by forwarding the mass at a low speed under a restrained condition, while withdrawing the mass at a high speed to separate, randomly stretch and cool the filaments. The filaments are then collected. When the initial material is undrawn cold-drawable continuous filaments of a synthetic polymer, the resulting product is a mass of novel discontinuous drawn filaments having variable lengths, undrawn segments randomly spaced along the lengths, and crimps in the filaments in random directions spaced randomly along the lengths.

3,676,992
FLUID SPINNING PROCESS FOR NOVEL YARNS
Myrne R. Riley, Rolla, Mo., assignor to Monsanto Company, St. Louis, Mo.
Filed Feb. 16, 1970, Ser. No. 11,706
Int. Cl. D01h 1/12, 13/30
U.S. Cl. 57—164 14 Claims



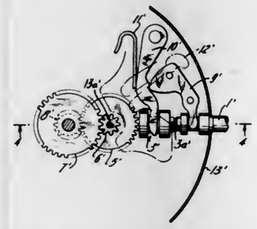
A fluid vortex spinning process for yarns in which a dispersion of high modulus refractory fibers in a viscous carrier liquid is introduced as a flowing stream into a flowing stream of a dispersion of lower modulus fibers in a viscous carrier liquid at the center thereof and the joined stream is rotated about its axis to produce a composite yarn. Composite staple fiber core yarns with a core of compact axially aligned high modulus fibers wrapped by annular lower modulus fibers are embraced, as well as an improved fluid vortex spinning apparatus affording a high degree of control of the properties of composite yarns produced therewith.

3,676,993
ELECTRONIC WATCH
John M. Bergey; James O. Le Van; Richard S. Walton, all of Lancaster, and Louis G. Brethauer, Landisville, all of Pa., assignors to Hamilton Watch Company, Lancaster, Pa.
Filed Aug. 13, 1970, Ser. No. 63,390
Int. Cl. G04c 3/04
U.S. Cl. 58—23 27 Claims



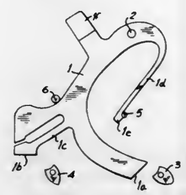
Disclosed is an electronic wristwatch in which a crystal oscillator drives an electromechanical resonator tuned to the oscillator output. The high frequency oscillator is connected through an integrated circuit divider and driver to the resonator coil so that the coil oscillations are slaved to the frequency of the divider output. A lever, rotatable on an eccentric forming a part of the resonator staff, drives an index wheel, in turn connected through a gear train to the watch hands. Provision is made for rapid calendar setting, automatic calendar drive and an on-off switch breaks the electronic circuit from a 3 volt battery in the watch when the setting arbor is moved to the off position.

3,676,994
HAND SETTING MECHANISM FOR WATCHES
Katsuhiko Morita, Tokyo, Japan, assignor to Kabushiki Kaisha Daini, Tokyo, Japan
Filed Aug. 8, 1969, Ser. No. 848,642
Int. Cl. G04b 27/04
U.S. Cl. 58—68 2 Claims



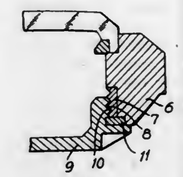
A hand-setting mechanism for wrist and pocket watches having a single clutch gear directly, releasably coupling the watch winding stem to a gear train for setting the hands of a watch. The clutch gear is coupled with the winding stem through a socket thereon releasably receiving an end of the winding stem. Each of the mechanism gears has its axis of rotation in a given common plane passing through the longitudinal axis of the winding stem, and the cross-section of the arrangement has a minimum dimension so that watches provided with the mechanism can have minimum transverse and thickness dimensions.

3,676,995
RETURN MECHANISM FOR A STOPWATCH OR A CHRONOGRAPH
Katsuhiko Morita, and Yoshio Yamamoto, both of Tokyo, Japan, assignors to Kabushiki Kaisha Daini Seikosha, Tokyo, Japan
Filed April 6, 1970, Ser. No. 25,718
Claims priority, application Japan, April 16, 1969, 44/34159; April 16, 1969, 44/34160
Int. Cl. G04f 7/04
U.S. Cl. 58—76 1 Claim



In a return mechanism of a chronograph or stopwatch, a plurality of heart-shaped cams are returned to zero position by means of a rotatable hammer having an equal number of acting surfaces which press against the cams during actuation. Each of the acting surfaces in excess of one is flexible with respect to the remainder of the hammer.

3,676,996
WATERPROOF WATCH CASE
Yoshiaki Fujimori, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan
Filed March 12, 1970, Ser. No. 18,991
Claims priority, application Japan, March 28, 1969, 44/27092
Int. Cl. G04b 37/08
U.S. Cl. 58—90 R 3 Claims

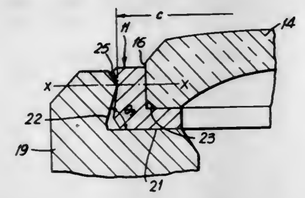


Deterioration of the performance of a watch as the result of fine shavings produced in the assembly of a threaded case-body and a threaded case-back is avoided by interposing an annular ring of a metal of the same hardness as the case-back. Water-tightness of the watch is achieved by seating both the case cover and case-back on a gasket.

3,676,997
STRUCTURE FOR SEALING A WATCH CRYSTAL IN A WATERPROOF WATCH
Yoshiaki Fujimori, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan
Filed Aug. 16, 1971, Ser. No. 171,871
Claims priority, application Japan, Aug. 17, 1970, 45/71598
Int. Cl. G04b 37/08, 39/00
U.S. Cl. 58—90 R 7 Claims

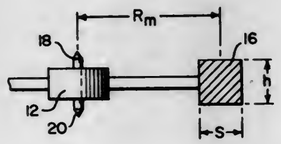
A watch crystal is sealed into a watch by means of an annular gasket of a relatively hard material such as a synthetic resin or soft metal. The parts comprising the seal are so dimensioned that the crystal seats in the gasket in an interference fit

and the gasket fits in the case body in an interference fit. Such gaskets, while providing an effective seal even when subjected



to high pressure, have long life, and hold the crystal sufficiently strongly so that a bezel is not needed.

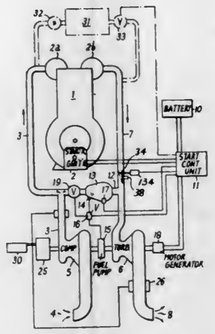
3,676,998
BALANCE FOR A TIME PIECE
Andre Simon-Vermot, Fougeres, and Charles-Andre Grossenbacher, Georges-Perrenoud, both of Switzerland, assignors to Les Fabriques d'Assortiments Reunies, Neuchatel, Switzerland
Continuation-in-part of Ser. No. 733,416, May 31, 1968, abandoned. This application Sept. 1, 1970, Ser. No. 68,696
Claims priority, application Switzerland, June 2, 1967, 7834/67
Int. Cl. G04b *17/00*
U.S. Cl. 58—107 4 Claims



A balance for a timepiece in which the cross-sectional shape of the balance rim is fixed so that the cross-sectional area and the perimeter of such area are related and definable in terms of a single common variable. Fixed relationship between this common variable and the mean radius of the balance rim is established by virtue of the initial instantaneous power available to oscillate the balance at the desired initial amplitude and frequency. Thus, for each value of the mean radius there exists not only a corresponding value of the cross-sectional area of the balance rim but also a corresponding value of the perimeter of such area. Optimum balance dimensions are obtained from these corresponding values by selecting that value of mean radius which, for the corresponding value of cross-sectional area of the balance rim, produces a maximum value of moment of inertia for the balance with a decrease in amplitude after 24 hours within predetermined limits.

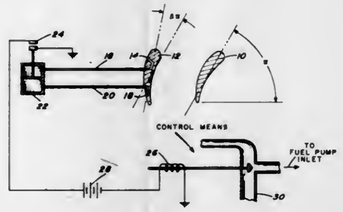
3,676,999
SUPERCHARGING MEANS FOR INTERNAL-COMBUSTION ENGINES
Thomas Alfred Oldfield, Warnsh, England, assignor to The Plessey Company Limited, Ilford, England
Filed Aug. 7, 1970, Ser. No. 62,069
Int. Cl. F02b *37/00*
U.S. Cl. 60—13 2 Claims

To enable achievement, in an I.C. engine having an exhaust-driven turbo-charger, of a desired booster rate, and thus of a desired overall compression ratio, more particularly at low engine speeds and even at the moment of starting, additional operating gas is made available for the turbo-charger by a by-pass from the outlet of the turbo-charger compressor to the inlet of the turbo-charger turbine downstream of the engine and the operation of an auxiliary burner for increasing the supply of driving power to the turbo-charger turbine, utilizing for its combustion such by-pass air and optionally also residual oxygen in the engine exhaust gas, and to further increase the



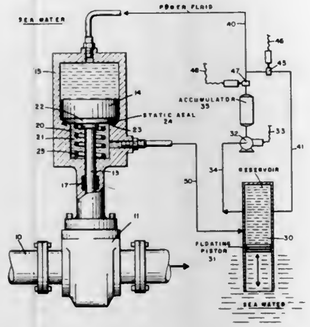
amount for combustion air available in the engine, a dump valve is provided for venting at low engine speeds, the engine exhaust direct to atmosphere while isolating it from the gas flowing from the turbo-charger compressor via the auxiliary burner to the turbo charger turbine.

3,677,000
SYSTEM FOR THE DETECTION AND CONTROL OF COMPRESSOR STALL
Faulkner C. Thomson, 5411 19th Ave., Hillcrest Heights, Md.
Filed April 27, 1970, Ser. No. 32,015
Int. Cl. F02c *9/04*; F01d *17/02, 21/00*
U.S. Cl. 60—39.28 6 Claims



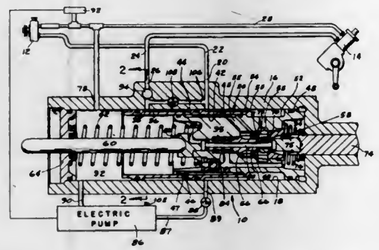
A system for the direct detection of compressor stall during acceleration in gas turbine engines and a direct control which reduces fuel flow in time to prevent the stall. One or more vanes is set at a higher angle of attack than the balance of the vanes in a compressor stage determined to be the most likely to suffer stall first. Flow separation, which is associated with the onset of compressor stall, results in a change in vane surface pressure. This pressure differential is detected by a pressure sensor through taps located in the selected vanes. Actuation of the differential pressure sensor closes a switch to energize a solenoid-operated fuel bypass valve which causes a reduction in fuel flow to eliminate the stall.

3,677,001
SUBMERGED HYDRAULIC SYSTEM
Thomas W. Childers, Woodland Hills; Joseph A. Burkhardt, Chatsworth, and Roger J. Koerner, Santa Monica, all of Calif., assignors to Esso Production Research Company
Division of Ser. No. 787,151, Dec. 26, 1968, abandoned. This application May 4, 1970, Ser. No. 46,585
Int. Cl. F15b *1/02*
U.S. Cl. 60—51 5 Claims



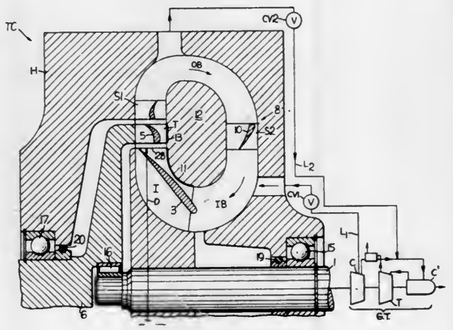
A static seal for a power fluid operated actuator is arranged in a cylinder to close off the space between a piston and a cylinder in which the piston reciprocates at the end of the power stroke of the piston. The piston has a fixed stroke and may be used to actuate apparatus requiring definite movements, such as valves and flow diverters. The piston may be single or double acting. For remote underwater operations, the actuator is connected into a closed hydraulic system which also includes a hydraulic reservoir, an electrically powered pump and a hydraulic accumulator to furnish hydraulic power fluid to the cylinder. Electrically operated valves are used to direct the flow of power fluid in the proper directions. The piston is spring-loaded to permit the piston to exhaust the cylinder and return the piston to its initial position to operate automatically the apparatus being actuated in the event of power failure.

3,677,002
SUBSIDIARY SUPPLY FOR HYDRAULIC BRAKE BOOSTER
Keith H. Fulmer, South Bend, Ind., assignor to The Bendix Corporation
Filed Feb. 4, 1971, Ser. No. 112,524
Int. Cl. F15b *15/18*
U.S. Cl. 60—52 B 10 Claims



A vehicle brake applying mechanism which utilizes a dual source of fluid under pressure to assist the vehicle operator in slowing or stopping the vehicle. The mechanism includes a hydraulic brake booster comprising an operator controlled piston slidably located in a housing for movement at the will of the operator, through the manipulation of valve means to thereby establish a braking force in a master cylinder to which the piston is connected. Under normal conditions the brake booster receives its main source of fluid under pressure from an engine-driven pump which also supplies fluid to the vehicle's steering gear. However, an independent subsidiary source of fluid under pressure is supplied to the booster should the main source of fluid reach a predetermined minimum value. The subsidiary source is activated or rendered effective by a low flow sensitive switch located in the main supply for energizing an electric pump which is in communication with the booster piston via the valve means. The subsidiary source also actuates a shut-off valve interposed between the booster and steering gear to disestablish flow to the gear, thus conserving the subsidiary source for booster use only.

3,677,003
AERODYNAMIC TORQUE CONVERTER
Raymond C. Schneider, Rockford, Ill., assignor to Twin Disc, Incorporated, Racine, Wis.
Filed Feb. 1, 1971, Ser. No. 111,277
Int. Cl. F16d *33/00*; F16h *41/00*
U.S. Cl. 60—54 14 Claims

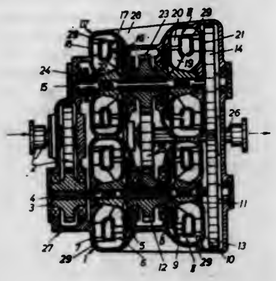


An aerodynamic torque converter of the fixed housing type and having an impeller, a turbine, and either one or more stages of stators. The aerodynamic torque converter has the exit angles of its impeller blades and of its radial inflow stator blades arranged within certain ranges, to provide a flat horsepower input curve, at constant input rotational speed, for the converter. The torque converter finds particular utility with a prime mover which runs at a constant speed and constant torque, such as a gas turbine. An aerodynamic torque converter of the above type also having continually converging flow path areas in the outer and inner bends of the flow path.

3,677,004
HYDRODYNAMIC REVERSING GEAR
Helmut Muller, Heidenheim, and Gustav Pistl, Nattheim, both of Germany, assignors to Voith Getriebe KG, Heidenheim (Brenz), Germany
Filed Nov. 9, 1970, Ser. No. 87,835
Claims priority, application Germany, Nov. 8, 1969, P 19 56 244.8
Int. Cl. F16h *41/00*
U.S. Cl. 60—54 9 Claims

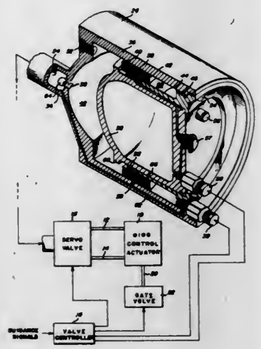
In hydrodynamic reversing gears, in order to eliminate excessive heating due to windage losses generated during rota-

tion in the absence of hydraulic liquid, there are provided in the convertor work chamber air flow obstructing members movable into an operative (blocking) position when hydraulic



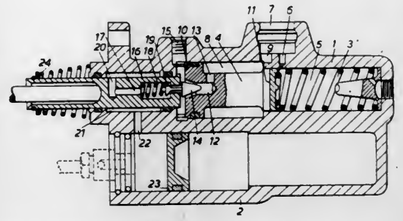
liquid is withdrawn from the work chamber and movable into an inoperative (flow transmitting) position when hydraulic liquid is introduced into the work chamber.

3,677,005
HYDRAULIC POWER UNIT
Raymond J. Estlick, Winchester, Mass., assignor to Raytheon Company, Lexington, Mass.
Filed Sept. 30, 1970, Ser. No. 76,928
Int. Cl. F15b 7/00; F01b 31/00, 7/00
U.S. Cl. 60—54.6 A 12 Claims



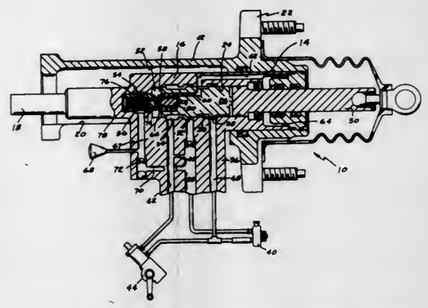
A hydraulic power unit from which a hydraulic fluid may be discharged under pressure to the wing control actuators of a guided missile, the actual pressure at which such fluid is discharged during operation being changed in accordance with the requirements of the wing control actuators. In one of two embodiments disclosed the power unit includes two plenum chambers for the hydraulic fluid, means for independently varying the pressure on the hydraulic fluid in each one of such chambers using a source of substantially constant pressure for such purpose, and means for connecting the wing control actuators to either one of the plenum chambers as required during the flight of the guided missile.

3,677,006
BOOSTER FOR HYDRAULIC SYSTEMS
Hans Erdmann, Neu-Isenburg, Germany, assignor to ITT Industries, Inc., New York, N.Y.
Filed July 21, 1970, Ser. No. 56,829
Claims priority, application Germany, July 23, 1969, P 19 37 317.2
Int. Cl. F15b 7/00
U.S. Cl. 60—54.6 P 14 Claims



This booster for hydraulic brake systems has a control valve arranged within the brake actuating member to control the booster flow. The flow passes through the interior of the actuating member and as the actuator slide moves forward, the valve closes a connection between the reservoir and the working chamber before opening the connection between the booster and the working chamber.

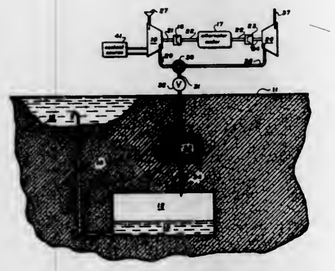
3,677,007
CONCENTRIC BRAKE BOOSTER WITH MOVING HOSES
Edward J. Goscenski, Marshall, Mich., assignor to The Bendix Corporation
Filed Sept. 29, 1970, Ser. No. 76,409
Int. Cl. F15b 7/00; F03b ; F01b 25/02
U.S. Cl. 60—54.6 P 9 Claims



A concentric brake booster is disclosed which includes a housing defining a bore therein, a piston shiftable within the bore, and a spool valve slidably mounted within the piston to selectively admit pressurized fluid into the chamber defined between the end of the piston and a corresponding end of the housing to urge the piston in a direction applying the brakes of the vehicle. A portion of the housing is cut away to define an opening therein. The piston is provided with a portion that extends through the opening that houses an inlet port, an outlet port, and a return or exhaust port. Each of the ports are communicated with other fluid appliances in the vehicle hydraulic system by hoses which move with the piston as the latter shifts within the housing. A fluid storage device or accumulator is provided to supply pressurized fluid to the brake booster to be used to shift the piston when a malfunction prevents proper

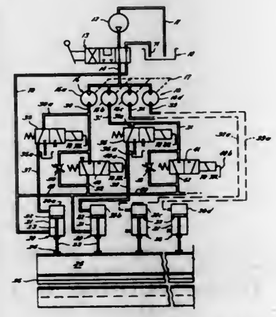
operation of the vehicle's power steering pump which normally supplies pressurized fluid to the booster.

3,677,008
ENERGY STORAGE SYSTEM AND METHOD
Stanley L. Koutz, San Diego, Calif., assignor to Gulf Oil Corporation, Pittsburgh, Pa.
Filed Feb. 12, 1971, Ser. No. 115,017
Int. Cl. F01k 27/00
U.S. Cl. 60—59 T 11 Claims



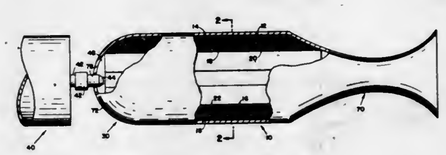
A method and system are described for using compressed air for storing and utilizing energy. Air is compressed and stored and the heat of compression is removed from the air prior to storage. The air is subsequently removed from storage and the stored heat is restored to the air prior to expansion of the air for deriving work.

3,677,009
CONTROL ARRANGEMENT FOR THE MALE DIE OF A HYDRAULIC PRESS BRAKE
Russell S. Thatcher, Galveston, Tex., assignor to Kelso Marine, Inc., Galveston, Tex.
Filed Nov. 12, 1970, Ser. No. 88,531
Int. Cl. F15b 11/22
U.S. Cl. 60—97 E 6 Claims



A control arrangement for maintaining the male die of a hydraulic press brake aligned in a predetermined relationship relative to its longitudinal axis during metal braking operations so as to compensate for variations in the resistance to being formed in the metal work piece to thereby maintain the male die properly aligned longitudinally and inhibit erratic bending of the metal work piece and possible die damage.

3,677,010
ROCKET MOTOR AND METHOD
Robert H. Flak, and Eugene J. Palm, both of Huntsville, Ala., assignors to The United States of America as represented by the Secretary of the Army
Filed March 11, 1964, Ser. No. 351,256
Int. Cl. C06d 5/10; F02k 9/06
U.S. Cl. 60—220 10 Claims



7. The method of operating a solid-fueled rocket motor to vary the total impulse achieved, said motor comprising, in combination, a substantially cylindrical outside wall which forms a chamber, said wall being tapered at the rearward end of said chamber to form a converging-diverging nozzle, said wall also closing the forward end of said chamber except for an opening to receive a tube whereby fluid can be introduced into said chamber; a solid rocket propellant grain rigidly disposed in said chamber, said grain comprising a plurality of concentric layers of propellant, the propellant layer nearest the center of the grain having disposed therein a perforation passing from end to end therethrough along the center axis of said grain, said layers consisting essentially of a cured intimate mixture of polymeric binder, fuel particles, and an oxidizer therefor, said layers being completely separated from each other by a liner, said liner consisting essentially of a cured polymeric material incapable of supporting its own combustion, said method comprising:

a. igniting and burning the innermost layer of propellant, thereby exposing the adjacent liner;

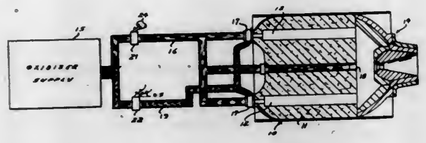
b. introducing into the forward end of said chamber through said opening an oxidizer fluid which is hypergolic with said liner whereby the liner ignites, burns, and in turn ignites the adjacent layer of propellant; and

c. repeating steps (a) and (b) until as many propellant layers as desired have been consumed.

3,677,011
THRUST CONTROL SYSTEM FOR HYBRID ROCKET MOTORS
Clayton W. Vickland, San Jose, Calif., assignor to The United States of America as represented by the Secretary of the Air Force
Filed Jan. 22, 1969, Ser. No. 793,195
Int. Cl. F02k 9/06
U.S. Cl. 60—251 2 Claims

A high specific impulse rocket motor having the impulse delivered at two thrust levels with restart capability has oxidizer supplied to an aft injector and to a plurality of primary

injectors located within the forward ends of a plurality of fuel grain ports. The flow of oxidizer is controlled by two solenoid valves which control the sustain flow and the boost flow of oxidizer. Poppet valves are provided in the primary injectors and the aft injector and are opened by the pressure of the oxidizer delivered through the sustain system.

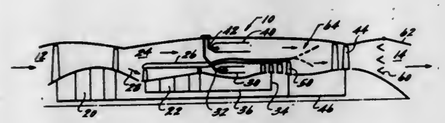


3,677,012

COMPOSITE CYCLE TURBOMACHINERY

Alexander P. Botscha, Cincinnati, Ohio, assignor to General Electric Company

Filed May 31, 1962, Ser. No. 199,191
Int. Cl. F02k 1/02
U.S. Cl. 60—262 7 Claims



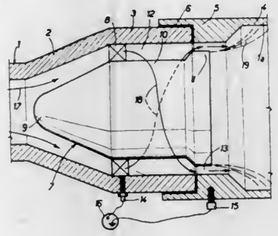
1. A composite fluid flow turbomachine comprising:
a first compressor;
a second compressor, said second compressor being arranged to continuously receive a part only of the flow from said first compressor,
an inner duct surrounding said second compressor;
an outer duct surrounding said first compressor and said inner duct;
means for injecting fuel within said outer duct and said inner duct for supporting combustion therein downstream of said first compressor and said second compressor, respectively;
a first power turbine located in said inner duct and receiving an integral fluid flow stream from said first and second compressors;
a second power turbine located partially in said outer duct, said second power turbine receiving a fluid flow stream from said first compressor and the integral fluid flow stream from said first and second compressors;
an outer driveshaft, said first power turbine and said second compressor being mounted on said outer driveshaft for rotation therewith;
an inner driveshaft concentric to said outer driveshaft, said second power turbine and said first compressor being mounted on said inner driveshaft for rotation therewith;
and a power transfer turbine, said power transfer turbine being arranged in series flow relation with said first and second power turbines, said power transfer turbine being mounted on said inner driveshaft and furnishing power to help drive said first compressor, whereby the overall cycle efficiency of said composite fluid flow turbomachine is increased.

3,677,013

DEVICE FOR BURNING THE UNBURNT RESIDUE IN THE EXHAUST GASES OF INTERNAL COMBUSTION ENGINES

Louis Jules Bauger, Vanves; Roland Robert Charles Beyler, Levallois-Perret; Henri Le Guen, Fontenay-Aux-Roses; Jacques Eloi Pidebois, and Michel Bernard Schenher, both of Paris, all of France, assignors to Societe National D'Etude et de Construction de moteurs D'Aviation, Paris, France

Filed Dec. 28, 1970, Ser. No. 101,737
Claims priority, application France, Dec. 29, 1969, 6945301
Int. Cl. F01n 3/14
U.S. Cl. 60—303 14 Claims



A device for burning the unburnt constituents in the exhaust gases of a heat engine, for example a motor car engine, in which the exhaust gases, to which air may have been added, pass through an annular channel where sparks jump between an inner electrode and an outer electrode forming a wall of a combustion chamber. The annular channel is formed between the inner electrode and a conducting wall insulated electrically from the wall of the combustion chamber, the inner electrode being connected to the conducting wall by conducting vanes which impart a rotational movement to the gases in the annular channel, and the sparks jump in a restricted outlet of the annular channel located between the wall of the combustion chamber and a wider downstream part of the inner electrode.

3,677,014

METHOD OF INHIBITING WIND MOVEMENT OF LOOSE PARTICLES FROM SURFACES

Caleb M. Stout; Kenneth H. Nimerick, and Christ F. Parks, all of Tulsa, Okla., assignors to The Dow Chemical Company, Midland, Mich.

Filed April 2, 1970, Ser. No. 25,245
Int. Cl. E02d 3/12
U.S. Cl. 61—36 6 Claims

Loose soil or piles or heaps of finely divided material, e.g. tailings of mines, can be inhibited against excessive wind movement by applying to the surface thereof a polyacrylamide, either as a slurry or in dry form on a prewet surface or in admixture with a hygroscopic agent.

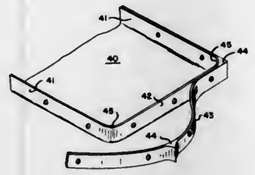
3,677,015

TUNNEL LINING

Nicholas Chlumecky, Youngstown, Ohio, assignor to Commercial Shearing & Stamping Company

Filed March 24, 1971, Ser. No. 127,553
Int. Cl. E21d 11/14
U.S. Cl. 61—45 R 4 Claims

A tunnel liner is provided in the form of a plurality of rectilinear arcuate side by side members forming a cylinder, each member having inturned flange on all edges, a triangular low compressibility elastomer member on each corner of each arcuate member, a layer of elastomer foam on each flange surface and triangular member, and means acting on adjacent flanges to draw them together and place the foam under compression.



ERRATUM

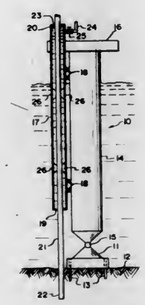
For Class 61—46 see:
Patent No. 3,677,113

3,677,016

CORROSION PROTECTION FOR WELL CASING OF OFFSHORE STRUCTURE

James P. Garrigus, Downers Grove, Ill., assignor to Chicago Bridge & Iron Company, Oak Brook, Ill.

Filed Feb. 8, 1971, Ser. No. 113,190
Int. Cl. E02d 21/00; E21b 15/02
U.S. Cl. 61—46.5 7 Claims



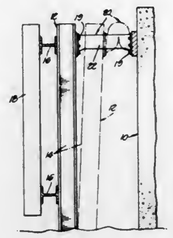
An offshore deep water oscillating oil well drilling or oil production structure having an oil drilling or oil production platform and support therefor having an essentially vertically displaced tubular template fixedly secured to the platform and platform support, said tubular template having its bottom end open and positioned to project below sea level when the platform is positioned offshore in a body of water, a closure at the upper end of the tubular template adapted to seal and close the annular space between the tubular template and a casing positioned in the tubular template, and a conduit communicating with the inside of the tubular template below the closure for feeding oil inside the tubular template.

3,677,017

DOCK FENDER STRUCTURE

John Anoush Shirvany, Sunl, Calif., assignor to Byron Jackson, Inc., Long Beach, Calif.

Filed Oct. 20, 1970, Ser. No. 82,281
Int. Cl. E02b 3/22
U.S. Cl. 61—48 10 Claims



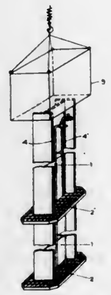
A marine dock fender element having an elastomeric deflection body in connection with support plates at each end of the deflection body with deflection guide members associated with each support plate and the deflection body.

3,677,018

METHOD FOR DRIVING A FOUNDATION ELEMENT INTO THE EARTH BY MEANS OF VIBRATION

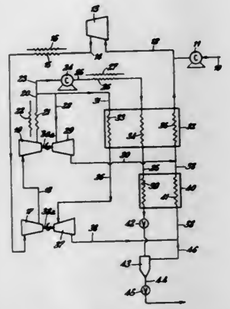
Abraham Francois Van Weele, Waddinxveen, Netherlands, assignor to N.V. tot Aanneming van Werken voorheen H.J. Nederhorst, Gouda, Netherlands

Filed April 15, 1970, Ser. No. 28,709
Claims priority, application Netherlands, April 22, 1969, 6906153
Int. Cl. E02d 7/18, 3/12
U.S. Cl. 61—53.5 3 Claims



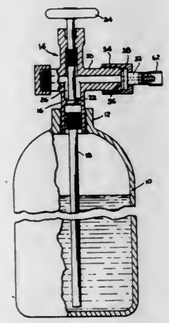
A method for driving a foundation element into the earth by means of vibration. According to the invention at least one perforated supporting member is taken along by the foundation element when this element is vibrated into the earth. This perforated supporting member may be a perforated plate or a grid composed of upstanding partitions.

3,677,019
GAS LIQUEFACTION PROCESS AND APPARATUS
Walter J. Olszewski, Tonawanda, N.Y., assignor to Union Carbide Corporation, New York, N.Y.
Filed Aug. 1, 1969, Ser. No. 846,707
Int. Cl. F25j *1/00, 1/02*
U.S. Cl. 62—9 **15 Claims**



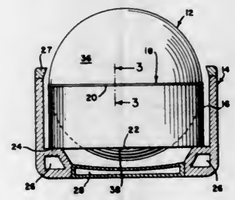
This invention relates to a method and apparatus for the liquefaction of low boiling gases for example nitrogen and natural gas. By the use of parallel refrigerant expansion engines and feed compression the product cooling curve in the liquefaction zone is altered so that the specific heat of the feed gas in the liquefaction zone is reduced to about 1.5-15 times the specific heat of the low pressure refrigerant gas in the zone. This has the effect of distributing the refrigerant required by the feed over a substantially wider temperature range so that the average ΔT may be substantially reduced and the process efficiency improved.

3,677,020
METHOD AND APPARATUS FOR FORMING CARBON DIOXIDE SNOW
Edward A. Munselle, 12591 Singing Woods Road, Santa Ana, Calif.
Filed May 25, 1970, Ser. No. 41,150
Int. Cl. F25J *1/00*
U.S. Cl. 62—10 **14 Claims**



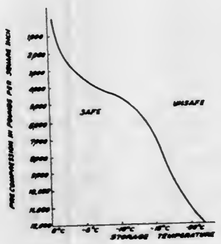
A fitting is attached to the conventional valve of the standard carbon dioxide siphon cylinder. The fitting has an expansion orifice that is positioned immediately adjacent the outlet port of the valve. The position of the orifice and its size, within the range of 0.005 through 0.012 inches, maximize efficiency of production of solid carbon dioxide and minimize time lag between starting and stopping of production upon operation of the standard valve. The expansion orifice is provided by a readily removable and replaceable insert of the fitting and provision is made for quickly securing to the fitting a number of attachments including a curved conduit that optimizes production of solid carbon dioxide in flake form.

3,677,021
TANK CONSTRUCTION FOR LIQUIFIED AND/OR COMPRESSED GAS
Ragnar Bognaes, Jeloy, and Olav Selberg, Oslo, both of Norway, assignors to Kvaerner Brug AS, Oslo, Norway
Filed Oct. 15, 1970, Ser. No. 81,102
Claims priority, application Norway, Oct. 18, 1969, 4146/69
Int. Cl. F17c *13/08*
U.S. Cl. 62—55 **16 Claims**



In a marine vessel for transporting or storing a cargo tank adapted to contain liquified and/or compressed gas which tank is mounted on supporting structure connected to the hull of the vessel, the tank has a peripheral integral interface structure such that the exterior periphery of the interface structure extends beyond the periphery of adjacent portions of the tank to define an extension member which is adapted to be rigidly secured to the tank support structure.

3,677,022
METHOD FOR EXTENDING THE USEFUL STORAGE PERIOD OF BIOLOGICAL SUBSTANCES SUCH AS BLOOD
Ralph E. Schwartz, Elgin, Ariz., assignor to Redeco, Inc.
Continuation-in-part of Ser. No. 757,195, Aug. 8, 1968, Pat. No. 3,579,999. This application July 24, 1969, Ser. No. 844,507
Int. Cl. C12k *1/00*
U.S. Cl. 62—56 **9 Claims**



The invention contemplates extending the useful storage period for biological substances, such as whole blood, beyond the period presently available with the existing technique of mere storage at 4° C. Such extension is achieved by subjecting the biological substance to a "precompression" pressure elevated above ambient atmospheric, commencing at a time which is substantially prior to expiration of the presently accepted useful storage period of 21 days (following extraction from a living body). Useful storage-period extension is achieved (a) following a transient application of the elevated pressure, or (b) by maintaining the elevated pressure for a prolonged period. Aside from the precompression, storage techniques may be conventional.

3,677,023
PROCESS FOR DEHYDRATING ACETIC ACID
Yun-Chung Sun, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.
Filed June 1, 1970, Ser. No. 42,491
Int. Cl. B01d *9/04*; C07c *53/08*
U.S. Cl. 62—58 **6 Claims**

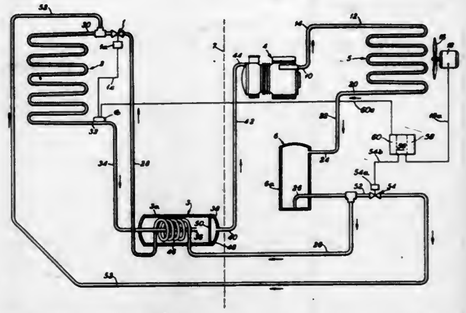
A process for dehydrating acetic acid containing up to about 20 weight percent water is disclosed wherein the crude acetic acid is cooled sufficiently to crystallize a substantial portion of pure acetic acid, and the remaining mother liquor, i.e., uncrystallized material, is vaporized under vacuum, i.e., at a pressure not exceeding about 15 mm. Hg, from the acetic acid crystals at a temperature between the freezing point of acetic acid and the eutectic temperature.

3,677,024
PRESERVATION AND STORAGE OF BIOLOGIC MATERIALS
Paul E. Segall, 15 Cambridge Road, East Rockaway, N.Y.
Filed Jan. 20, 1970, Ser. No. 4,430
Int. Cl. F25d *17/02*
U.S. Cl. 62—64 **15 Claims**

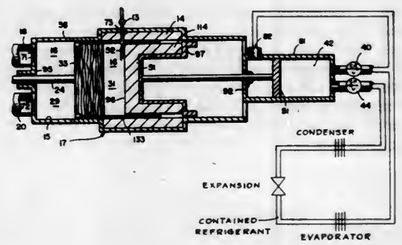
Method for preserving and storing biologic material including viable beings, living tissue and organs, foodstuffs and the like. The biologic material is subjected to ultrahyperbaric pressure of about 2.0×10^3 atmospheres in the presence of inert gas. The temperature is reduced to about −20° C., whereupon the material is subjected to a further pressure increase to below about 3.4×10^3 atmospheres to effect a phase change of water from the liquid phase to the solid phase. The temperature and pressure of the material is then reduced to about atmospheric pressure at the temperature necessary to maintain the formed solid phase of water. Under such conditions the materials may be stored for extended periods of time without significant deterioration. The process of preservation is reversed to restore the material to ambient conditions.

3,677,025
DEFROSTING ARRANGEMENT AND METHOD FOR A REFRIGERATION SYSTEM
Harold R. Payne, La Habra, Calif., assignor to Borg-Warner Corporation, Chicago, Ill.
Filed Jan. 13, 1971, Ser. No. 106,190
Int. Cl. F25b *9/00*
U.S. Cl. 62—81 **5 Claims**

A defrosting gas is provided in a refrigeration system by compressing a gaseous refrigerant and evaporating controlled amounts of liquid refrigerant carried by the gaseous refrigerant, the latent heat of evaporation being used to defrost the evaporator. The defrosting gas is conducted from the compressor discharge outlet to the evaporator inlet by way of the condenser and the receiver, whereby the accumulation of migratory refrigerant in the receiver is prevented to ensure a sufficient supply of refrigerant in the defrosting circuit throughout the defrosting cycle. Means are provided for operating the system in such a manner.



3,677,026
INTERNAL COMBUSTION HEAT ENGINE AND PROCESS
Eric G. U. Gramryd, Viggbyholm, Sweden, assignor to American Gas Association, Arlington, Va.
Filed Nov. 20, 1970, Ser. No. 91,355
Int. Cl. F25b *1/00*; F03g *7/06*; F02b *1/00*
U.S. Cl. 62—115 **17 Claims**

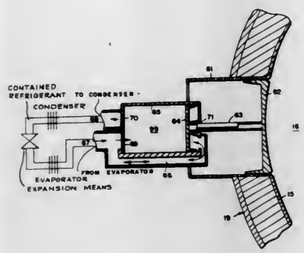


A process for conversion of chemical energy to mechanical energy by heating air within a substantially gastight gas chamber by passage in heat-exchange relation with a moving heat-regenerative means within the chamber, substantially continuous burning of an injected combustible fluid fuel during injection thereof resulting in substantial increase in the average temperature-pressure relation of the gas within the gas chamber, expanding said gas chamber by movement of a pressure-responsive member, and heating the heat-regenerative means by passage of the combustion product gas in heat-exchange relation with the moving heat-regenerative means. An internal combustion heat engine having a movable heat-regenerative means within a sub-stantially gastight gas chamber defined by a casing, the movable heat-regenerative means by its movement causing passage of enclosed gases in heat-exchange relation with the heat-regenerative means, and having an air intake conduit, exhaust conduit, fuel injection means, an ignition means and a pressure-responsive member. A gas cooling system wherein a compression means is actuated by movement of the pressure-responsive member of the internal combustion heat engine.

3,677,027
INTERNAL COMBUSTION HEAT ENGINE AND PROCESS

Eric G. U. Granryd, Viggbyholm, Sweden, assignor to American Gas Association

Filed Nov. 23, 1970, Ser. No. 91,833
Int. Cl. F25b 1/00; F03g 7/06; F02b 1/00
U.S. Cl. 62—115 18 Claims

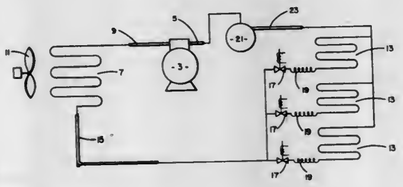


A process for conversion of chemical energy to mechanical energy by heating air within a substantially gastight gas chamber by passage in heat-exchange relation with a heat-regenerative means, within the chamber, substantially continuous burning of an injected combustible fluid fuel during injection thereof resulting in substantial increase in the average temperature-pressure relation of the gas within the gas chamber, expanding said gas chamber by movement of a pressure responsive member, and heating the heat-regenerative means by passage of the combustion product gas in heat-exchange relation with the heat-regenerative means. An internal combustion heat engine having a heat-regenerative means within a generally cylindrical, substantially gastight gas chamber defined by a casing, and semi-arcuate oscillatory displacer to displace enclosed gases in heat-exchange relation with the heat-regenerative means, air intake conduit, exhaust conduit, fuel injection means, an ignition means and a pressure responsive member. A gas cooling system wherein a compression means is actuated by movement of the pressure responsive member of the internal combustion heat engine.

3,677,028
REFRIGERATION SYSTEM

Glendon A. Raymond, Fulton, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Filed Dec. 1, 1970, Ser. No. 94,036
Int. Cl. F25b 5/00
U.S. Cl. 62—200 3 Claims

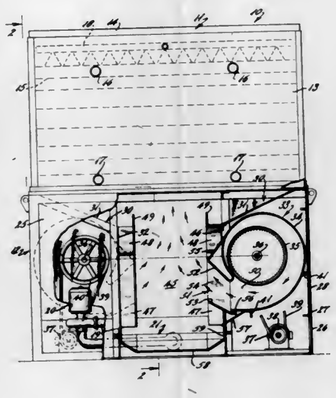


A refrigeration system employing a plurality of evaporator circuits, the refrigerant flow to each circuit being controlled by a shut-off valve and a fixed restriction, the valve when open providing a first stage restriction to minimize the required pressure drop across the fixed restriction.

3,677,029
EVAPORATIVE CONDENSER

Bruce S. Schaeffer, and John A. Pike, both of Waynesboro, Pa., assignors to Frick Company, Waynesboro, Pa.

Filed Dec. 3, 1970, Ser. No. 94,708
Int. Cl. F28d 5/00
U.S. Cl. 62—305 9 Claims

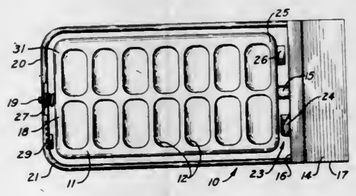


An evaporative condenser of the push-through type has the blower located directly beneath the coils and its horizontal discharge directed upwardly at an angle from the horizontal. An arrangement of roofs and shielding prevent the introduction of water into the fan and the air direction means; drainage is provided for any water that may inadvertently enter the fan housing or air directing means.

3,677,030
AXIALLY MOVABLE TWIST TRAY DOMESTIC ICE MAKER

Duane W. Nicholas, Evansville, Ind., assignor to Whirlpool Corporation

Filed June 17, 1970, Ser. No. 46,924
Int. Cl. F25c 1/10
U.S. Cl. 62—353 7 Claims

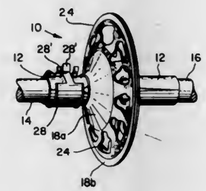


An ice body maker having means for twisting the tray in which the ice bodies are formed to free the ice bodies therefrom for harvesting. The tray is twisted by rotating the tray while temporarily holding one portion of the tray. Upon completion of the freeing operation, the tray is released for continued rotation in completing a cycle of the apparatus.

3,677,031
LOW COST ROTARY SHAFT COUPLING AND METHOD OF MAKING SAME

Stephen J. Zierak, Westwood, and Arnold J. Monteiro, Sharon, both of Mass., assignors to Metal Bellows Corporation, Sharon, Mass.

Continuation-in-part of Ser. No. 32,323, April 27, 1970, abandoned. This application Aug. 24, 1970, Ser. No. 66,261
Int. Cl. F16d 3/78
U.S. Cl. 64—13 5 Claims

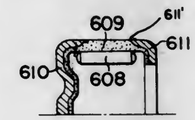


A rotary shaft coupling is composed of two identical sections. Each section consists of a dished annulus whose inner edge is flanged. Each section also includes a hub in the form of a split sleeve, one end of which has radially outwardly projecting tabs. The sleeve is received in the annulus so that the tabs engage the flanged inner edge of the annulus. When the sleeve is seated in this fashion, it is concentric with the annulus and properly positioned axially with respect thereto. The tabs are then brazed to the inner edge of the annulus. Two of these sections are positioned coaxially opposite one another and the outer annulus edges are continuously welded all around to complete the coupling.

3,677,032
SHELL TYPE NEEDLE BEARING

Toshio Suzuki, Fujisawa-shi, Japan, assignor to Nippon Seiko Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 20, 1970, Ser. No. 4,247
Claims priority, application Japan, Jan. 22, 1969, 44/4356; Jan. 22, 1969, 44/4357; Jan. 22, 1969, 44/4358
Int. Cl. F16d 3/24; F16c 19/00
U.S. Cl. 64—17 A 7 Claims



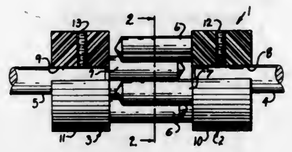
A shell type needle bearing capable of carrying an exceedingly heavy load. The outer ring of the bearing has a carburized layer on the roller contact surface and a non-carburized ductile and tough layer adjacent the carburized layer. The depth of the carburized layer is sufficient to resist the shearing stresses of the bearing load while the depth of the ductile layer is sufficient to resist cracking from sudden shock.

3,677,033
COUPLING

David Kneeland, 1001 W. U.S. 56 Highway, Olathe, Kans.

Filed Oct. 12, 1970, Ser. No. 79,867
Int. Cl. F16d 7/00
U.S. Cl. 64—28 R 9 Claims

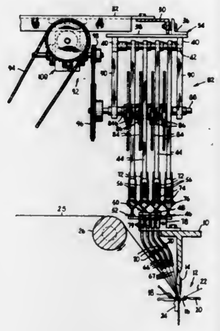
Mating coupling members for transferring motion from one member to another are disclosed which each have a plurality of pins positioned, shaped, and sized to mate with pins of another coupling member wherein each pin of one coupling member is received between and in line contact with a pair of adjacent pins of an other coupling member. Coupling members having cylindrical pins and truncated cone-shaped pins and members having shields enclosing the pins are disclosed as exemplary of the inventive concept.



3,677,034
METHOD OF AND MACHINE FOR MAKING FABRICS

Elsworth C. Simpson, Glens Falls, N.Y., assignor to Polylok Corporation, Glen Falls, N.Y.

Continuation-in-part of Ser. Nos. 639,836, May 19, 1967, Ser. No. 756,001, Aug. 28, 1968, abandoned. This application Feb. 24, 1970, Ser. No. 13,738
Int. Cl. D04b 23/10, 27/26
U.S. Cl. 66—84 14 Claims



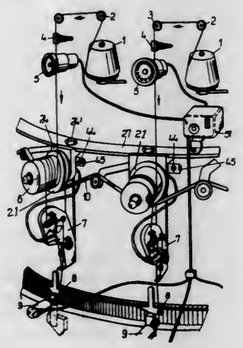
Fabrics comprising a substrate, a multiplicity of spaced-apart design elements laid on the substrate along non-linear paths in the generally warpwise direction, and knit-stitching composed of parallel rows of stitches forming a series of loop chains are made on a stitch-through type machine equipped with a mechanism for feeding the design yarns to the stitch-forming part of the machine. The design element delivery mechanism includes at least one guide bar positioned substantially parallel to the row of stitch-forming elements and driven back and fourth transversely to the warp direction so that the design elements are guided back and forth past a multiplicity of the needles that form the loop chains. The design elements are bound to the substrate at some points by being pierced by the stitching thread and at other points by being embraced between the loops and laps of the stitching, the piercing or embracing being at random.

3,677,035
LATCH NEEDLE FOR KNITTING MACHINES
Wolfgang Wiedurhut; Helmut Landenberger, and Ulrich Hofmann, all of Ebingen, Germany, assignors to Theodor Groz & Ernst Beckert Nadelfabrik Commandit-Gesellschaft, Ebingen, Germany
Filed Dec. 10, 1969, Ser. No. 883,925
Claims priority, application Germany, Feb. 12, 1969, P 19 06 892.9
Int. Cl. D04b 35/04
U.S. Cl. 66—122 2 Claims



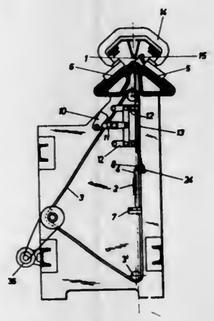
A latch needle for knitting machines having a latch provided with a hole and pivotably located in a longitudinal slot formed between faces of the needle shaft, and having a steel axle pin inserted through the hole, the ends of the pin being rotatably mounted in holes in the shaft faces, wherein the axle pin ends have a larger diameter in the region of the shaft faces than the portion of the pin in the latch hole.

3,677,036
METHOD OF EQUALIZING SUPPLY OF THREAD TO A PLURALITY OF KNITTING STATIONS
Charles Hatay, Alpenweg 7, Busingen near Schaffhausen, Germany
Continuation-in-part of Ser. No. 625,110, March 22, 1967, Pat. No. 3,523,433. This application Nov. 25, 1969, Ser. No. 879,711
Int. Cl. D04b 15/48
U.S. Cl. 66—132 R 5 Claims



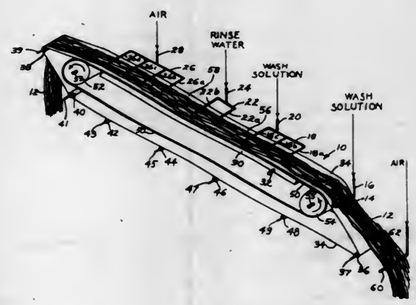
To provide equal supply of thread, a signal is generated representative of thread speed of each of the thread supplies, for example by wrapping thread around a disc subjected to pulsed illumination supplied from a pulse source. One knitting station is adjusted for perfect knitting, and the pulse source is then regulated so that the disc of that one station will appear stationary; thereafter, the other knitting stations are regulated, manually or by means of a servo motor, until they all appear stationary, that is until all the knitting stations are in synchronism. Additionally, thread tension is pre-set and sensed at each station, and the speed of a thread delivery drum controlled to provide constant thread tension to the knitting positions.

3,677,037
FLAT KNITTING MACHINE WITH AUTOMATIC TRANSFER DEVICE
Erich Krause, Bopfingen, Germany, assignor to Universal Maschinenfabrik Dr. Rudolf Schieber KG, Westhausen, Germany
Filed Jan. 19, 1971, Ser. No. 107,678
Claims priority, application Germany, Jan. 30, 1970, P 20 04 286.8
Int. Cl. D04b 35/00
U.S. Cl. 66—147 7 Claims



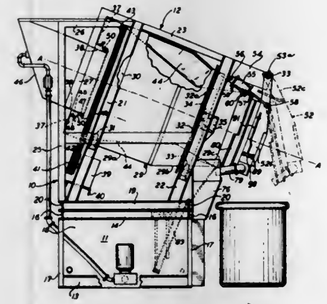
A knitted border is guided from the needles of a flat knitting machine to the points of a transfer bar releasably secured on the machine below the needle beds by gravity along guide wires passing through stitches in the last-knitted course. The stitches are transferred from the needles to the wires by the action of a cam on the knitting carriage.

3,677,038
FIBER WASHING APPARATUS
Warren Emery Hartman, and William Randall Johnson, both of Worthington, Ohio, assignors to Worthington Foods, Inc., Worthington, Ohio
Filed July 6, 1970, Ser. No. 52,393
Int. Cl. B05b 7/00
U.S. Cl. 68—20 6 Claims



Apparatus is described for washing and drying a tow of proteinaceous fibers which comprises conveyor means for conveying the tow along a generally horizontal flow path and a plurality of treating means positioned along the tow flow path for sequentially treating the tow, such treating means comprising means for applying wash solutions to the tow, means for moving wash solution from the tow, means for applying rinse solution to the tow, means for removing rinse solution from the tow and gas flow means for drying the tow.

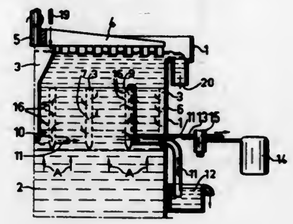
3,677,039
SLANT MOUNTED LAUNDRY MACHINE
William C. Files, Cincinnati, Ohio, assignor to McGraw-Edison Company, Elgin, Ill.
Filed March 11, 1971, Ser. No. 123,175
Int. Cl. D06f 37/04
U.S. Cl. 68—146 14 Claims



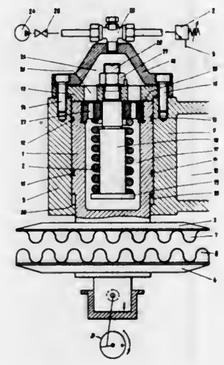
A cylindrical tub of an imperforate leakproof construction is supported on a frame for rotation about its longitudinal axis without the use of an outer stationary shell or case and is mounted with its axis fixed and inclined to the horizontal. The tub is loaded through an opening at its upper end and is unloaded through an opening in its lower end closed during a washing, rinsing or drying operation by a door hinged to the frame. A special dynamic seal between the door and tub permits rotation of the tub without leakage and a chamber in the door which is in communication with the tub through a perforated inside wall of the door provides a hydraulic action between the washing chamber and the body of free washing liquid in the door chamber to achieve an efficient washing action. The rotating tub is provided with internal lifting fins.

3,677,040
APPARATUS FOR THE WASHING OF PRIMARILY, CELLULOSIC PULP
Bengt Edvard Pettersson, Sundsbruk, Sweden, assignor to Sunds Aktiebolag, Sundsvall, Sweden
Division of Ser. No. 850,923, Aug. 18, 1969. This application May 14, 1971, Ser. No. 143,441
Claims priority, application Sweden, Sept. 18, 1968, 12572/68
Int. Cl. D21c 7/00
U.S. Cl. 68—181 R 4 Claims

In the liquid treatment of cellulosic pulp by a procedure comprising passing a column of a slurry of the pulp to be treated through a cylindrical vessel, in one direction, and forcing a treating liquid through the column, in a direction transverse to the major axis of the column, from a delivery space for such treating liquid toward a collection vessel for used treating liquid, said collection vessel having a pervious wall immediately adjacent said column on that side thereof remote from said delivery space, it is desirable—in the interest of preventing clogging of the pervious wall—intermittently to interrupt inflow of liquid into said vessel by pressure variations induced by a gaseous fluid discharged under pressure adjacent said pervious wall.

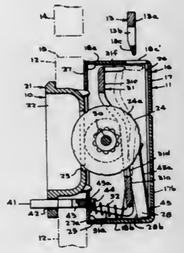


3,677,041
APPARATUS FOR WORKING FLAT, FLEXIBLE MATERIAL
Jiri Dokoupil, Oberursel, Taunus, Germany, assignor to Maschinenfabrik Turner AG, Oberursel, Germany
Filed Aug. 19, 1970, Ser. No. 65,280
Claims priority, application Germany, Aug. 8, 1969, P 19 42 416.9; July 23, 1970, P 20 36 636.3
Int. Cl. C14b 1/40
U.S. Cl. 69—33 14 Claims



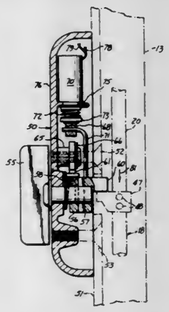
This invention relates to apparatus for working flat, flexible material by means of working members opposing each other. One of the working members is driven back and forth toward and away from the other working member. A piston to which the other working member is connected, is subject to a pressure from a pump and subject to a reset force whereby the piston may be adjusted to predetermined starting elevational positions to provide a desired working pressure. A pressure relief valve assures that the piston yields when the working pressure exceeds said desired pressure and returns to said starting position when the working pressure is reduced again. In a further embodiment an auxiliary pressure space of selectively variable volume is provided for adjusting said piston to different elevational starting positions even during the operation of the apparatus.

3,677,042
COMBINATION LOCK CONSTRUCTION
Wallace E. Atkinson, Petersburg, Va., assignor to Long Manufacturing Co., Inc., Petersburg, Va.
Filed March 19, 1971, Ser. No. 126,108
Int. Cl. E05b 65/52, 37/02
U.S. Cl. 70—70 10 Claims



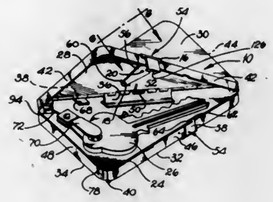
A combination lock for luggage cases and the like, including a keeper having an apertured end, to be mounted on one of the luggage case sections, and a latching sub-assembly to be mounted on the other case section. The latching sub-assembly includes a set of changeable combination dial wheels, and a tiltable fence biased to unlocking position having a latch tongue to interfit into the keeper aperture and having a forwardly projecting foot portion. A manual pushbutton member is provided to engage the foot portion and force the fence to tilt to unlocking position when the proper combination has been dialed and the pushbutton is pushed inwardly, notwithstanding that the keeper may tend to hold the fence in locking position due, for example, to over-packing of the luggage.

3,677,043
REMOTE CONTROL DOOR LOCK
Clifford B. Cox, 917 Buena Vista St., South Pasadena, Calif.
Filed Dec. 7, 1970, Ser. No. 95,781
Int. Cl. E05b 65/10, 47/06
U.S. Cl. 70—92 14 Claims



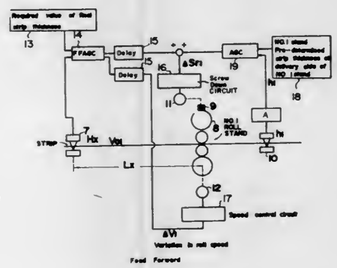
Apparatus for selectively locking and controllably releasing a panic exit door include a lock structure having a door locking position and a door release position and including a pair of vertical bars for locking the door at the top and bottom thereof. A manually actuable crash bar is located on one side of the door for actuating the lock, and a further manually actuable device for actuating the lock is located on the other side of the door. A remotely controllable device selectively blocks and releases the further manually actuable device, and a remote control selectively actuates the remotely controllable device.

3,677,044
KEYCASE
Paul T. De Frees, 321 Via Sol, Palm Springs, Calif.
Filed Oct. 5, 1970, Ser. No. 77,783
Int. Cl. A47g 29/10
U.S. Cl. 70—456 R 10 Claims



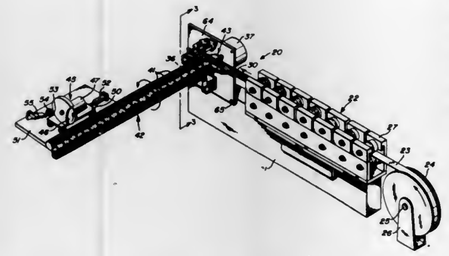
A thin, rectangular keycase divided into four substantially triangular compartments, each of which can be opened independently of the others. The top surface of each compartment is formed tactually distinct from the other compartments which in combination with a spring release and snap latching mechanism enables one-handed retrieval and return to the keycase of any selected key.

3,677,045
METHOD OF FEED-FORWARDLY CONTROLLING A TANDEM ROLLING MILL
Tohru Arimura; Masamoto Kamata; Morio Saito, all of Kawasaki-shi; Hiromu Suzuki, Chiba-shi, and Masakazu Iguchi, Tokyo, all of Japan, assignors to Nippon Kokan Kabishiki Kaisha
Filed Nov. 19, 1969, Ser. No. 877,927
Claims priority, application Japan, Nov. 19, 1968, 43/84198
Int. Cl. B21b 37/12
U.S. Cl. 72—8 10 Claims



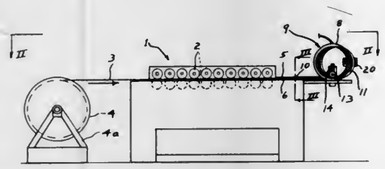
The thickness of the input material is measured at the entry side of the first roll stand and this value is related to the predetermined desired final thickness of the output material of the mill. The screw down mechanism of the first roll stand and the peripheral speed of the rolls of the first roll stand are then adjusted as a function of the measured and desired final thicknesses to produce an output strip having uniform thickness. The screw down and peripheral roll speeds are adjusted to maintain the incoming volumetric feed rate of the input material substantially constant.

3,677,046
APPARATUS FOR AND METHOD OF MANUFACTURING FLEXIBLE TUBING
Harold E. Carroll, Trotwood, Ohio, assignor to United McGill Corporation, Columbus, Ohio
Filed Sept. 10, 1970, Ser. No. 71,034
Int. Cl. B21f 11/00, 35/02
U.S. Cl. 72—49 29 Claims



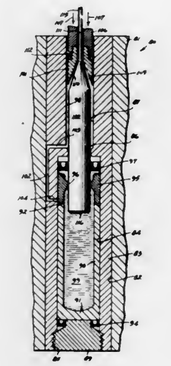
Flexible tubing is made from a continuous strip of material which has a roughly U-shaped portion along one side edge and a flange along an opposite side edge. A leading end portion of the strip is held against a rotatable support during rotation of the support enabling helical winding of the strip into a plurality of adjacent turns to define flexible tubing. Guide means guide the U-shaped portion so that it envelops the flange to define a seam and die means having stationary forming surfaces engage and change the cross-sectional configuration of the seam to interlock the U-shaped portion and flange together.

3,677,047
FORMING OF TUBULAR METAL DUCTING
Noel Victor Holyoake, 34 The Crescent, and David William Barr, 22a Abbot Road, Ngaio, both of Wellington, New Zealand
Filed April 1, 1970, Ser. No. 24,554
Claims priority, application New Zealand, April 3, 1969, 156043
Int. Cl. B21c 37/10
U.S. Cl. 72—50 13 Claims



Apparatus for forming spiral lock seamed ducting from flat strip metal material, the apparatus employing or adapting a machine having at least one pair of driven lock forming rollers with co-operating peripheries and which are capable of drawing flat metal strip from a supply source and shaping opposite longitudinal edge portions of said strip so that one edge portion is capable of being interlocked with the other. In the present invention a circular forming head is provided at the output end of the lock forming machine and wit its axis transversely of and angled to the feed path of lock formed strip fed from the machine so that strip fed through an aperture in the forming head will follow a helical path in such forming head to emerge from one open end of the forming head as spiral formed tubular ducting, the angle of the forming head relative to the strip feed path determining the pitch of the helical path and providing that the leading edge portion of one circumvolution and the trailing edge portion of a preceding circumvolution will overlap. The forming head is provided with an inner curved forming member adjacent the strip inlet to the forming head and co-operating with an inner circumferential bearing surface of the forming head and disposed so that the strip passes between the forming member and the said bearing surface. A tuck-in member extends partly into the forming head adjacent the strip inlet thereto and is arranged to tuck or fold one edge portion of the strip into the opposite complementary shaped edge portion of the next circumvolution; in addition there is provided a compression means which can be in the form of a pair of co-operating rollers disposed so that overlapping edge portions of adjacent circumvolutions are passed therebetween and can be compressed to form a locked seam to the tubular ducting formed by the apparatus.

3,677,048
METHOD OF POSITIVE FLOW EXTRUSION
Francis Joseph Fuchs, Jr., Princeton Junction, N.J., assignor to Western Electric Company Incorporated, New York, N.Y.
Filed Oct. 1, 1969, Ser. No. 862,677
Int. Cl. B21c 27/00
U.S. Cl. 72—60 6 Claims

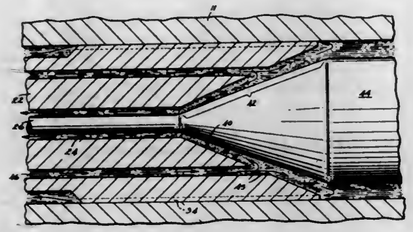


This disclosure is directed to a method for extruding a material to form a product, e.g., wire, wherein deformation of the material is accomplished by passing the material within a controlled flow of pressurized fluid, the pressure of which fluid deforms said material. Also disclosed, with respect to the extrusion of materials by exertion of pressures thereon, is a method for automatically varying the pressures in response to the resistance of the material to extrusion so as to maintain extrusion at a desired product discharge rate.

3,677,049
METHOD OF AND APPRATUS FOR POSITIVE FLUID FLOW EXTRUSION
John Sutton Cartwright, Pennington, and Francis Joseph Fuchs, Jr., Princeton Junction, both of N.J., assignors to Western Electric Company, Incorporated, New York, N.Y.
Filed Oct. 1, 1969, Ser. No. 862,751
Int. Cl. B21c 25/02
U.S. Cl. 72—60 9 Claims

Method of and apparatus for extruding material, e.g., a billet, to form a product, e.g., wire, wherein deformation is accomplished by passing the material within a controlled flow of pressurized fluid, the pressure of which deforms the material.

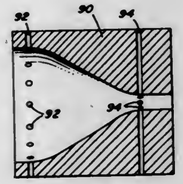
Extrusion fluid is injected into the zone of deformation at maximum pressure and at the maximum pressure point for extruding material under controlled conditions to form a product.



3,677,050
METHOD OF POSTIVE FLUID FLOW EXTRUSION AND OPTIMUM FLUID CONTROL ELEMENT THEREFOR

Nasser Ahmed, New Brunswick, N.J., assignor to Western Electric Company, Incorporated, New York, N.Y.

Filed Oct. 1, 1969, Ser. No. 862,765
Int. Cl. B21c 25/02
U.S. Cl. 72—60 3 Claims



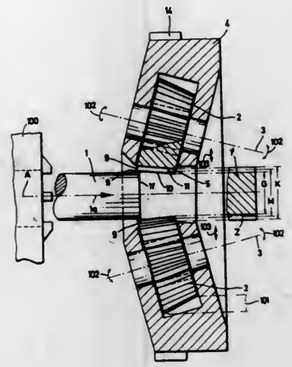
The design and use of an optimum fluid control element for any positive fluid flow extrusion are set forth. The flow control surface of the fluid control element is sigmoidal with a critical clearance between the billet and the flow control surface occupied by pressurized fluid which exerts deformation pressures against the billet and accomplishes a portion of the work of deformation. The fluid occupies between about 3 and 10 percent of the cross-sectional area of the passage defined by the flow control surface through the fluid control element. Use of the fluid control element increases overall extrusion efficiency and homogeneous deformation is approached.

3,677,051
METHOD AND APPARATUS FOR ROLLING GEAR TEETH OR THE LIKE

Ernst Schmidt, Wahlburgstr 40, Remagen, Germany

Filed May 7, 1970, Ser. No. 35,425
Claims priority, application Germany, May 12, 1969, P 19 24 067.6
Int. Cl. B21h 5/02
U.S. Cl. 72—78 11 Claims

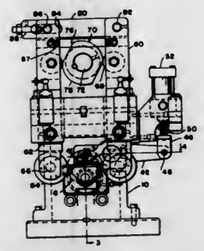
Cylindrical metallic blanks are provided with rolled gear teeth or splines by passing lengthwise between equidistant bevel gear shaped masters whose axes are inclined with reference to the axes of the blanks and which are mounted in a support arranged to orbit the masters about the axes of the blanks. The front end face of an advancing blank engages the teeth of the masters in the region of the larger-diameter ends of cones formed by the crowns of teeth on the masters and the outer diameters of annuli of teeth or splines formed by the masters exceed the diameters of the blanks. The masters are adjustable radially and/or angularly with reference to the axes of the blanks.



3,677,052
RING GEAR ROUNDER

Russell W. Anthony, and Carl H. Metz, both of Harper Woods, Mich., assignors to Lear Siegler, Inc., Santa Monica, Calif.

Continuation-in-part of Ser. No. 728,718, May 13, 1968, abandoned. This application May 1, 1970, Ser. No. 33,795
Int. Cl. B21h 5/00
U.S. Cl. 72—107 11 Claims

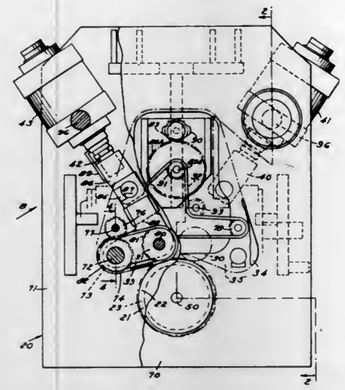


A combined ring gear rounder and gear tooth burnisher in which the gear is driven in rotation by a drive pinion, a burnishing pinion engages the gear teeth diametrically opposite to the drive pinion, means are provided for moving the burnishing pinion toward and away from the drive pinion to provide for loading and to provide burnishing pressure between the teeth of the burnishing pinion and ring gear. Rollers engaging the smooth side of the ring gear at opposite sides thereof at zones intermediate the drive and burnishing pinions are movable radially inwardly and outwardly with respect to the ring gear to effect ring rounding.

3,677,053
PLANISHING MACHINE

Walter L. Jewett, Royal Oak, Mich., assignor to Allied Welder Corporation, Detroit, Mich.

Filed Dec. 10, 1970, Ser. No. 96,698
Int. Cl. B21d 1/02
U.S. Cl. 72—111 6 Claims

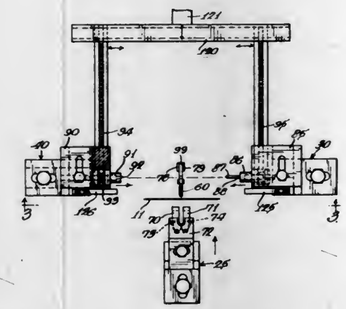


A planishing machine and process for reshaping parts wherein an anvil roll supports a brake shoe plate with a surface of the desired shape of plate. The anvil roll has a radial slot to receive the brake shoe web. Paired form rolls for ironing the plate against the anvil roll under force are swung on paired arms to advance and retract each form roll relative to the anvil roll. The form rolls are triangulated relative to each other and to the anvil roll and to avoid interference in the confined workpiece space and to provide separate control and power means to advance and retract each form roll. Coordinated drives turn the anvil roll and the form rolls at about the same peripheral surface speed.

3,677,054
METHOD OF FORMING A DOUBLE TORSION SPRING AND MACHINE THEREFOR

Edward S. Strzepek, Cicero, Ill., assignor to Lewis Spring & Manufacturing Co.

Filed June 23, 1970, Ser. No. 49,075
Int. Cl. B21f 3/027
U.S. Cl. 72—131 14 Claims

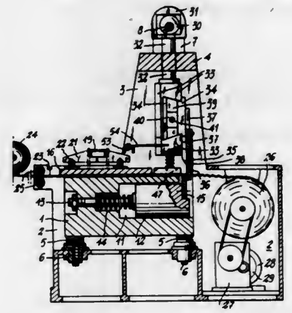


A wire forming machine and method wherein a length of wire is cut and provided with a bow-shape at a coiling station by forming jaws moving relative to a forming arbor and with a pair of wire legs lying to either side of a stationary element at the coiling station. Right and left tool slides each carry a rotatable coiling head which is advanced into engagement with the wire legs and with catch pins on the coiling heads engaging and holding the wire whereby rotation of the coiling heads will form coils in each of the wire legs. The central bowed wire base is free to advance toward the coiling heads while being restrained against rotation whereby the lengths of wire to form the coils are provided by the advancing wire base, rather than by shortening of the free ends of the wire legs.

3,677,055
APPARATUS FOR MAKING SHAPED BORES IN A CONTINUOUS STRIP

Giuseppe Longhi, Via Volturno N° 5, Bergamo, Italy

Filed Feb. 1, 1971, Ser. No. 111,499
Claims priority, application Italy, April 29, 1970, 2918 A/70
Int. Cl. B21d 31/02
U.S. Cl. 72—326 4 Claims



Apparatus for making shaped bores in a metal strip, comprising a base and a vertically alternating press, said strip being blockable therebetween. The base carries a cutting profile bar and the press carries a blade, the lower edge of which is tooth-shaped with a rather substantial thickness. During press downward movement, the blade cooperating with said bar, first shears off a series of separate aligned cuts in the strip and then the bar is moved away from the blade which, continuing its downward movement will deform by its teeth and stretch out the strip at said cuts. As the press along with the blade moves upwards, said bar moves back to operative position and urges the metal strip forward by one step.

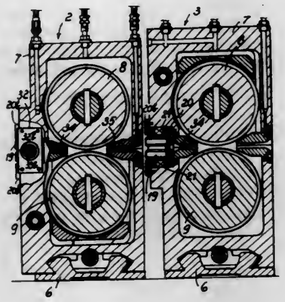
3,677,056
MULTIPLE HOUSING ROLLING MILL

Ilario Properzi, Via Vittor Pisani 8, Milan, Italy

Filed May 26, 1970, Ser. No. 56,990
Claims priority, application Italy, May 27, 1969, 17403 A/69
Int. Cl. B21b 41/00, 13/08
U.S. Cl. 72—227 4 Claims

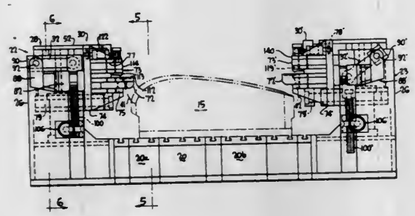
A multiple housing rolling mill for obtaining shaped roll bars such as sector-shaped cores for electric cables including a rolling unit comprising two rollers having shaped grooves in the peripheral surface thereof, which have cross sections corresponding to opposite sections of the outline of the rolled

product to be obtained, and at least a pair of rollers with rotation axis at right angles to said two rollers. Grooves in the said



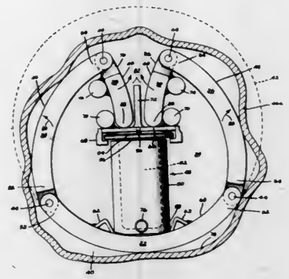
pair of rollers are shaped so as to correspond to remaining opposite sections of the outline of the rolled bar.

3,677,057
DRAW FORMING
Robert A. MacKenzie, 8351 Lucerne Drive, Chagrin Falls, Ohio
Filed Dec. 4, 1970, Ser. No. 95,253
Int. Cl. B21d 11/04
U.S. Cl. 72—305 13 Claims



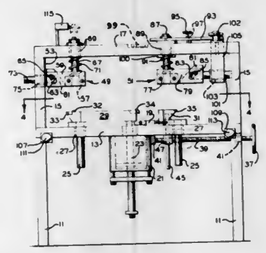
A stretch assembly or fixture for tensioning sheet metal stock in conjunction with draw forming. The stretch assembly supports the lower or bottom die member and has two upright stretch units, one on each of two opposite sides of the die. Each unit includes a work gripping head movable vertically relative to frame structure of the unit. A jaw assembly of each head is adapted to engage one of two opposite edges of a metal sheet to be formed and is movable relative to its head transversely of the vertical path of the head travel to stretch the sheet. Stretch links are pivotally connected between each jaw assembly and the frame structure of the respective stretch unit and move the jaw assemblies in a prescribed path transversely of the path of head travel in response to vertical movement of the gripping heads. The vertical position at which the links are pivoted on the stretch unit frame structure and the effective length of the links can be adjusted to control the movement of the gripping heads. The jaw assemblies include upper and lower jaw members. The upper members are supported for vertical movement to grip and release work and horizontal movement to expose the lower jaw to facilitate loading on extracting work.

3,677,058
APPARATUS AND METHOD FOR RESTORING DEFORMED ROLLS OF SHEET STOCK TO CYLINDRICAL SHAPE
James J. Van Gompel, Fremont, Ind., assignor to Brammall, Inc., Angola, Ind.
Filed Sept. 4, 1970, Ser. No. 69,791
Int. Cl. B21d 3/14
U.S. Cl. 72—393 21 Claims



A plurality of shoe members are provided each having an outward, arcuate curvature defining a segment of a circle having a diameter generally equal to the inside diameter of an undeformed roll core. The shoe members are pivotally connected together in end-to-end relationship being thereby capable of pivotal expansion from a partially collapsed position to an expanded position with the shoe members generally lying on the circle. Power means is provided positioned between and acting outwardly upon at least two of the shoe members for respectively exerting outward force thereon thereby pivotally to expand the members so as to provide a cylindrical core and, in turn, a cylindrical roll.

3,677,059
LITHOPLATE BENDER
Leo H. Miller, Penfield, and James A. Colegrove, Rochester, both of N.Y., assignors to Burroughs Corporation, Detroit, Mich.
Filed Feb. 19, 1971, Ser. No. 116,975
Int. Cl. B21d 5/01
U.S. Cl. 72—403 18 Claims

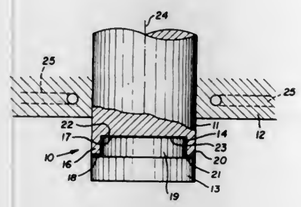


A semiautomatic machine for simultaneously bending the leading and trailing edges of a lithographic printing plate. The plate bender has a ruggedly constructed frame which supports and guides a vertically movable plate supporting bed. The bed has a fixed anvil with a pair of spaced locating pins and an anvil which is movable relative to the fixed anvil to adapt the bender to bend different size printing plates. A fixed and movable pressure block are supported a short distance above

the fixed and movable anvils, respectively. Each of the pressure blocks has a spring biased vertically movable gripping face and a cam operated horizontally movable forming block. An adapter is also provided to enable the bender to shape lithographic plates smaller than the adjustable range of the bender.

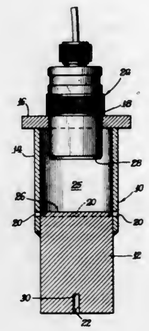
In operation, a prepunched lithographic printing plate is positioned on the locating pins. The plate supporting bed is then driven vertically by a pneumatic cylinder to bring the plate and anvils into engagement with the pressure blocks. The bed continues to rise causing the pressure blocks to firmly grip the printing plate and to rise against the downward biasing force. As the pressure blocks move a camming slot at each end of the blocks acts upon a cam follower within the slot causing it to move in a horizontal direction relative to the pressure block. The cam followers draw the forming blocks inward toward the printing plate causing the leading and trailing edges of the plate to simultaneously bend inward against forming faces on the anvils. After the plate is bent the bed is lowered allowing the operator to slide the formed plate off of the anvils.

3,677,060
COMPOSITE TOOL
Kaj-Ragnar Loqvist, Fagersta, Sweden, assignor to Fagersta Bruks Aktiebolag, Fagersta, Sweden
Filed June 24, 1970, Ser. No. 49,314
Claims priority, application Sweden, June 27, 1969, 9220/69
Int. Cl. B21d 37/00
U.S. Cl. 72—476 12 Claims



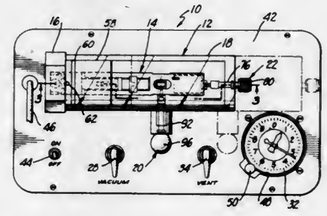
A composite working tool having a working surface and a desired direction of metal working and power transmitting movement comprising a composite composed of two bodies, each of a different metal; one of said metals being harder than the other and being the working surface. The two of said bodies are in direct contact with each other along a plane substantially perpendicular to said direction of movement whereby power is transmitted from one of said bodies to the other across said plane when said composite working tool is moved. One of said bodies has a narrowed portion and the other of said bodies has an opening defined therewithin to receive said narrowed portion. Each of said narrowed portion and said opening have defining walls in the desired direction of movement of the tool. The defined opening is larger in size than the narrowed portion to receive the same therein with clearance between said defining walls. Brazing filler metal is positioned in said clearance between said defining walls to bond the same together in the desired direction of movement of said tool. The working surface of said composite tool is preferably a hard metal carbide and the other metal of said tool is preferably a steel shank. The composite tool is preferably manufactured utilizing cooling of the steel shank when the hard solder is heated.

3,677,061
ULTRASONIC TEST STANDARD
Jan Visser, Elmhurst, Ill., assignor to Amsted Industries Incorporated, Chicago, Ill.
Filed Feb. 10, 1971, Ser. No. 114,119
Int. Cl. G01c 25/00; G01n 29/00
U.S. Cl. 73—1 R 5 Claims



A device for calibrating an ultrasonic testing machine. A test standard unit including a sleeve holder for an ultrasonic transducer and a standard test specimen is provided. The standard test piece closes one end of the sleeve and is secured to it also. The other end of the sleeve holder is arranged to slidably receive the transducer and hold it spaced at a predetermined distance from the standard test piece defining therebetween a water chamber. The transducer picks up sound signals reflected from the article being tested and converts the sound signal to a visual signal on an oscilloscope.

3,677,062
PARACHUTE ACTUATOR TESTING APPARATUS
James Robert King, Van Nuys, and Gerald D. Myers, Sepulveda, both of Calif., assignors to King Nutronics Corporation, Van Nuys, Calif.
Filed Jan. 28, 1971, Ser. No. 110,549
Int. Cl. 73 432 SD; G01x 27/00
U.S. Cl. 73—4 R 6 Claims



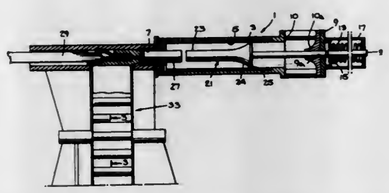
A testing apparatus for an altitude-sensitive parachute actuator, comprising an altitude chamber adapted to support the parachute actuator therein, a vacuum pump connected to the chamber, an on-off vacuum valve interposed between the pump and the chamber, an altimeter connected to the chamber to indicate the altitude therein, an on-off vent valve connected to the chamber to vent same to the atmosphere when open, and a vent restriction in series with the vent valve. The vent valve is a snap-acting toggle valve which can be closed substantially instantaneously when the parachute actuator is triggered so as to stop the altimeter at substantially the triggering altitude. The vent restriction is of a size to bleed

air into the chamber, when the vent valve is open, at a rate corresponding to the rate of descent of a parachutist in free fall, i.e., a rate of descent of the order of 100 to 250 feet per second, and preferably about 180 feet per second.

3,677,063
APPARATUS FOR LABORATORY SIMULATION OF BALLISTIC FIELD TESTING

Merrill Eig, Parsippany, and John J. Scavuzzo, Wayne, both of N.J., assignors to The United States of America as represented by the Secretary of the Army

Filed Sept. 18, 1970, Ser. No. 73,323
Int. Cl. G01n 19/06
U.S. Cl. 73—7 15 Claims

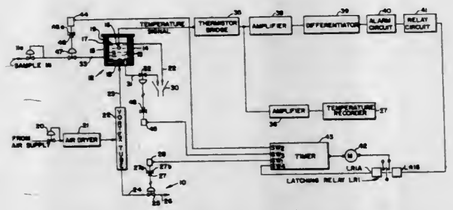


A laboratory test apparatus which duplicates conditions existing within a weapon barrel for testing weapon barrel materials without the need for actual field firing. The apparatus includes a support for a sample of the barrel material to be tested and a spring loaded piston which simulates actual firing conditions at the sample when a test charge is fired within the test apparatus. The charges preferably are formed to be completely consumed when fired which eliminates the need to eject a casing and which facilitates automatic loading into a breech in the sample support from a revolving drum which is driven in synchronism with reciprocating breech closure and charge firing members.

3,677,064
APPARATUS FOR AUTOMATIC CRYSTAL POINT DETECTION

Samuel W. Simpson, Florissant, Mo., assignor to Shell Oil Company, New York, N.Y.

Filed May 13, 1970, Ser. No. 36,836
Int. Cl. G01n 25/02
U.S. Cl. 73—17 R 1 Claim

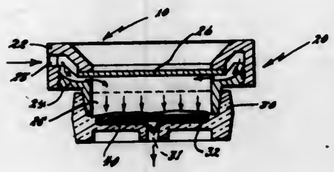


An apparatus for determining the crystal point of a sample of a normally liquid composition having constituents which crystallize upon being cooled by disposing the sample in a container and extending a temperature measuring device into contact with the sample. The sample is cooled while recording the change in temperature thereof on a cooling curve. The temperature of the sample is measured while detecting any changes in the slope of the cooling curve of the sample and the point on the cooling curve when the slope thereof approaches zero is recorded.

3,677,065
TRANSPARENT FLUID SAMPLER PERMITTING PARTICULATE ANALYSIS IN AN ASSEMBLED CONDITION

James G. Davis, Satellite Beach, Fla., assignor to The United States of America as represented by the Secretary of the Air Force

Filed Oct. 14, 1970, Ser. No. 80,704
Int. Cl. G01n 15/02
U.S. Cl. 73—28 4 Claims

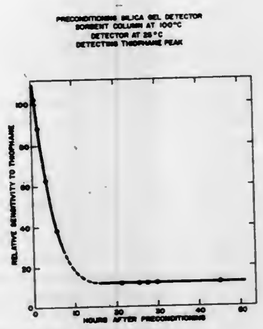


A fluid sampler having a cover assembly with an inlet and a transparent top and a cylinder-like bottom portion open at the upper end and closed at the lower end, except for an outlet. A suitable filter is disposed in the bottom portion over the outlet. The cover assembly and the bottom portion are removably connected and form a cavity. The fluid to be filtered is introduced into the fluid sampler through the inlet; enters the cavity; passes through the filter; and exits through the outlet. The contaminants are left on the filter and may be analyzed or counted by suitable means, such as a microscope, through the transparent top, without removal of the filter from the fluid sampler.

3,677,066
METHOD FOR PRECONDITIONING PIEZOELECTRIC SORPTION DETECTORS

William H. King, Jr., Florham Park, and Walter A. Dietz, Westfield, both of N.J., assignors to Esso Research and Engineering Company

Continuation-in-part of Ser. No. 798,089, Feb. 10, 1969, abandoned. This application July 31, 1970, Ser. No. 59,988
Int. Cl. G01n 29/02
U.S. Cl. 73—23 11 Claims

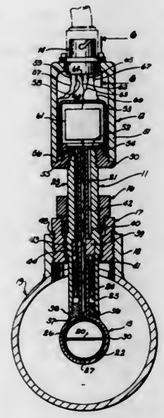


Highly sensitive sorption detectors are prepared from colloidal dispersions of high surface area porous materials. These sensitive sorption detectors are preconditioned by exposure to certain specified liquids. Preconditioning stabilizes the output signal of the detector making them particularly useful in measuring trace components in gas streams.

3,677,067
DENSITOMETER

Charles Eveleigh Miller, and Gerald Lance Schlatter, both of Boulder, Colo., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Aug. 20, 1970, Ser. No. 65,371
Int. Cl. G01n 9/00
U.S. Cl. 73—32 30 Claims



A densitometer which utilizes a thin vane vibrated by a magnetostrictive tube. A piezoelectric crystal pickup feeds an amplifier and tracking filter to energize a coil around the magnetostrictive tube. The device is, in effect, an electromagnetic oscillator in that the coil is driven in phase with the detected signal. Vibration thus increases in amplitude until limited electrically. A linearization circuit provides an output D.C. voltage directly proportional to fluid density, gas, or liquid, which may be impressed upon a conventional D.C. voltmeter calibrated linearly in density. A great many features, both in the mechanical structure and in the electronics, make it possible to easily calibrate the instrument to read, for example, to within an accuracy tolerance of ± 0.1 percent over a fluid density range of, for example, from about 0.08 pounds per cubic foot to 80.0 pounds per cubic foot. Another outstanding advantage of the invention relates to a probe type construction which may be used in a pipeline of any size.

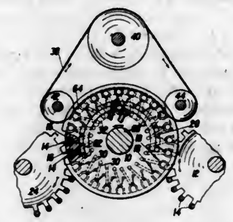
3,677,068
ARRANGEMENT FOR TESTING CIGARETTES

Alfred Schmermund, Postfach 144,, 5820 Gevelsberg, Westphalia, Germany

Filed March 5, 1971, Ser. No. 121,450
Claims priority, application Germany, March 17, 1970, P 20 12 647.0
Int. Cl. G01m 3/04
U.S. Cl. 73—41 12 Claims

A rotatably mounted drum provided with a plurality of axially extending troughs having openings disposed around the circumferential surface of the drum, is disclosed.

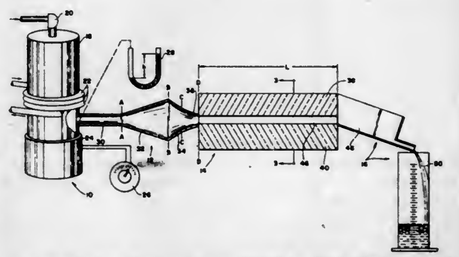
Cigarettes are fed radially into the openings as the drum rotates. The troughs are of such a depth that the cigarettes do not project above the drum surface, consequently, as the drum rotates in contact with a movable belt extending over an arcuate portion of its circumference, the troughs are closed while covered by the belt. While the troughs are so closed, air under pressure is injected into the closed troughs and a vacuum source is applied, via an axial bore in a piston pressed against the cigarettes' end surface, to the respective cigarette. The resulting air displacement, if any, is monitored and, where it exceeds a predetermined amount, indicating that the cigarette wrapping paper is faulty — the cigarette is rejected.



3,677,069
PLANAR VISCOMETER

Jacob C. Rubin, and Gerald J. Suhel, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 6, 1970, Ser. No. 61,595
Int. Cl. G01n 11/06
U.S. Cl. 73—56 8 Claims

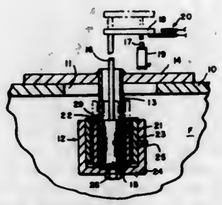


For measuring the viscosity of a thin planar film of fluid which may be simple, may contain solid particles in suspension, may be a mixture of several fluids, or may be any combination of these; a planar viscometer including (1) a mixing tank, (2) a planar flow generator including in series a long straight cylinder, a long diffuser, a short converging nozzle and a planar transition section of constant section, and (3) means forming a laminar flow passage.

3,677,070
MAGNETICALLY COUPLED VISCOMETER

Austin S. Norcross, Newton, Mass., assignor to Norcross Corporation, Newton, Mass.

Filed Dec. 28, 1970, Ser. No. 101,862
Int. Cl. G11n 11/12
U.S. Cl. 73—57 17 Claims



A viscosity measuring apparatus of the type in which a movable body element is caused to move within the fluid to be

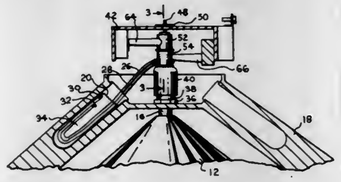
measured, the time period required to move the body a predetermined distance representing an index of the viscosity. A movable driven body element, at least partially made of a magnetic material, has a second movable magnetic driver element magnetically coupled thereto but isolated from the fluid. The driver element is actuated by appropriate means, such as a pneumatic actuation system, which places such elements in a predetermined position at which point they are released and caused to move to a second predetermined position under a substantially constant force, the time required to move between such positions thereby representing a measure of the viscosity of the fluid in which the drive element moves.

3,677,071

METHOD AND APPARATUS FOR DETERMINING THE COEFFICIENT OF DIFFUSION OF A DISSOLVED SOLUTE IN UNSATURATED SOLUTION

Arthur Seymon Martin, 2316 French St., Santa Ana, Calif.

Filed Nov. 12, 1970, Ser. No. 88,846
Int. Cl. G01n 27/06
U.S. Cl. 73—61.4 **3 Claims**



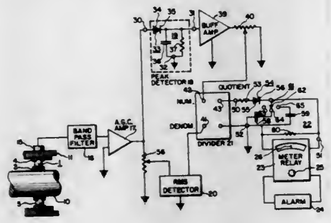
Unsaturated dissolved solute remains in solution by means of diffusion forces. These forces can be determined by centrifugation, by measuring the concentration of the dissolved solute in one part of the solution, and noting the minimum amount of centrifugal force which causes a concentration change. Concentration measurement can be made by any convenient method and, where different concentrations result in different electrical conductivity, resistance measurements are convenient.

3,677,072

DAMAGE DETECTION METHOD AND APPARATUS FOR MACHINE ELEMENTS UTILIZING VIBRATIONS THEREFROM

Bjorn Weichbrodt, and Bernard Darrel, both of Schenectady, N.Y., assignors to General Electric Company

Filed Oct. 30, 1970, Ser. No. 85,332
Int. Cl. G01n 29/00
U.S. Cl. 73—67 **7 Claims**



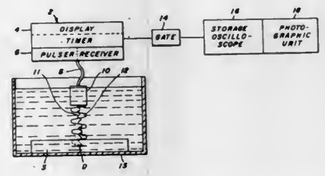
A system for detection of damage to a machine element in rolling engagement with another machine element utilizing vibrations produced by such damage. The peak value of the vibration signal obtained from the machine elements is compared with the mean value of the rectified vibration signal to obtain a ratio which is an indication of and the extent of the damage to the machine element.

3,677,073

METHOD AND APPARATUS FOR EVALUATING METAL CLEANLINESS

Jack B. Morgan, Lower Burrell, Pa., assignor to Allegheny Ludlum Industries, Inc., Brackenbridge, Pa.

Continuation of Ser. No. 778,187, Nov. 22, 1968, abandoned. This application Jan. 27, 1971, Ser. No. 110,325
Int. Cl. G01n 29/04
U.S. Cl. 73—67.9 **4 Claims**



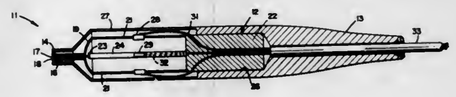
A method and apparatus for determining the presence, location and character of discontinuities in an otherwise homogeneous sample of material, e.g. a steel sample, by bombarding the sample with sonic energy in a controlled pattern, recording the reflection of energy from the sample and relating the reflection to locations on the sample.

3,677,074

TONOMETER PROBE FOR DIGITAL READ-OUT

William C. Murr, Piedmont, Calif., assignor to Berkeley Bio-Engineering, Inc., Berkeley, Calif.

Filed Feb. 1, 1971, Ser. No. 111,367
Int. Cl. A61b 3/16
U.S. Cl. 73—80 **7 Claims**



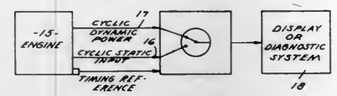
A tonometer probe having two concentric coplanar elements for contact with the surface of an eyeball, the elements being separately displaceable under the influence of applied force and respectively having associated force sensitive transducers for producing electrical signals representative of the applied forces acting on the respective elements. By virtue of the arrangement, the force signal afforded by the annular outer sensing element may be employed to provide information as to when the probe is accurately positioned against the eye and the central sensing element is recording force which is truly representative of that exerted by the internal environment of the eye and which then may be reliably converted to a digital reading for display or for direct input to a computer.

3,677,075

METHOD FOR THE DETECTION AND CLASSIFICATION OF DEFECTS IN INTERNAL COMBUSTION ENGINES

William Kenneth Scott, Royal Oak, Mich., assignor to The United States of America as represented by the Secretary of the Army

Filed Oct. 20, 1970, Ser. No. 82,378
Int. Cl. G01m 15/00
U.S. Cl. 73—117.3 **7 Claims**



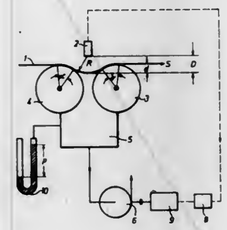
The present invention relates to a method for detecting and classifying cylinder defects in internal combustion engines, and more specifically to a method for classifying such defects into a) fuel system and b) compression defects.

3,677,076

METHOD OF MEASURING WEB TENSION

Peter Herzhoff, Leverkusen; Hans Gref, Cologne; Wolfgang Schweicher, Leverkusen; Hans Frenken, Leverkusen-Schlebusch; Peter Assenmacher, Schildgen, and Dietmar Westen, Opladen, all of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Oct. 5, 1970, Ser. No. 77,908
Claims priority, application Germany, Nov. 15, 1969, P 19 57 485.7
Int. Cl. G01l 5/08
U.S. Cl. 73—144 **3 Claims**



The web tension of webs of material guided on rolls is measured and regulated to a constant value. For measuring the web tension, the web is sucked in between two rolls by means of a negative pressure and the curvature of the web resulting therefrom is used as measurement value for the web tension. As an alternative, the curvature of the web is kept constant and the negative pressure used for the sucking-in effect is used as measurement value for the web tension.

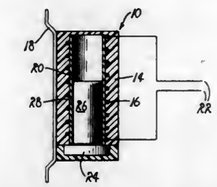
3,677,077

VIBRATION MONITORING SYSTEM

George B. Merryman, 7998 Via Roma Drive, Fair Oaks, Calif., and Joseph H. Merryman, P.O. Box 113, Meadow Vista, Calif.

Filed Jan. 7, 1971, Ser. No. 104,578
Int. Cl. G01m 17/00
U.S. Cl. 73—146 **3 Claims**

A vibration monitoring system particularly suited for use in isolating and measuring vibration of varying magnitudes simultaneously imparted to a plurality of mutually spaced locations defined on a moving vehicle. The system is characterized by a plurality of coiled electrical conductors, each being associated with a reciprocable soft iron core, about which exists a magnetic field, and coupled with a current measuring device through a manually operable selector switch, whereby current separately generated in the conductors, as the cores are reciprocated in response to imposed vibratory motion, is measurable for thus providing intelligence indicative of the magnitude of the vibration imposed at any one of the spaced locations.

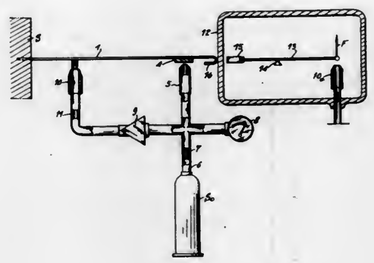


3,677,078

FLUIDIC-PNEUMATIC DEVICES WITH FORCES BALANCING

Claude Fernand Emile Larmurier, Paris, France, assignor to Compagnie Des Compteurs, Montrouse, France

Filed May 6, 1971, Ser. No. 140,746
Claims priority, application France, May 14, 1970, 7017625
Int. Cl. G01l 1/02
U.S. Cl. 73—141 R **3 Claims**



Force balance comprising a beam placed inside an enclosure separated from the outer medium by means of a non-magnetic seal-tight wall in which the means for measuring the position deviation and for transmitting the rebalancing force are made by a fluidic regulating device having a blade provided on one end thereof with a magnetic mass cooperating through the seal-tight wall with another magnetic mass placed on one end of the beam.

3,677,079

COMBINED STEADY-STATE/DYNAMIC TOTAL HEAD PROBE

Richard P. Hoeflinger, Palos Verdes Peninsula, Calif., assignor to The United States of America as represented by the Secretary of the Air Force

Filed May 21, 1970, Ser. No. 39,350
Int. Cl. G01m 9/00
U.S. Cl. 73—147 **6 Claims**

A combined, coaxial probe unit including a diffused diaphragm pressure transducer sensor device positioned within a larger outer tube and mountable within a wind tunnel test model for measuring both inlet total head and static pres-

sure. The sensor device is miniaturized and incorporates built-in protection against impact damage from contaminants in the



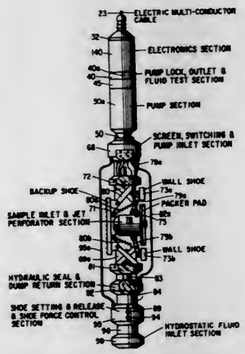
stream flow by means of an integral baffle plate located in the tip of the probe unit immediately upstream from the sensor device.

3,677,080

SIDEWALL WELL-FORMATION FLUID SAMPLER

Bobby Joe Hallmark, Fort Worth, Tex., assignor to Gearhart-Owen Industries, Inc., Fort Worth, Tex.

Filed June 16, 1971, Ser. No. 153,632
Int. Cl. E21b *49/00*
U.S. Cl. 73—155 **10 Claims**



A sidewall tool run on a well logging cable to obtain well-formation fluid samples incorporates a pump that is operated by reciprocating the suspending cable until a satisfactorily contamination-free sample is assured. The tool includes a number of features assuring reliable operation: shoe-setting force provided by hydrostatic pressure is regulated to be constant regardless of submergence; also, the regulated shoe-setting force is divided between large hold-down shoes and the pack-off pad so as not to overstress the mudcake or formation face; a reversible motor actuating a central control rod extending along the tool axis provides pump-locking, sample-sealing, and electrical-switching functions; alternate mechanical releasing operations are available in case of electrical malfunction; and pressure-balancing pistons prevent hydrostatic pressures from interfering with tool mechanical functions.

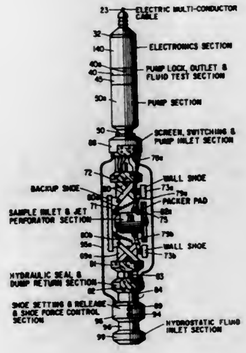
3,677,081

SIDEWALL WELL-FORMATION FLUID SAMPLER

George R. Newton, and Alfred H. Jageler, both of Tulsa, Okla., assignors to Amoco Production Company, Tulsa, Okla.

Filed June 16, 1971, Ser. No. 153,633
Int. Cl. E21b *49/00*
U.S. Cl. 73—155 **5 Claims**

A sidewall tool run on a well logging cable to obtain well-formation fluid samples incorporates a pump that is operated by reciprocating the suspending cable until a satisfactorily contamination-free sample is assured. The conductors of the cable are used both for controlling the various functions of the tool and for telemetering pressure and fluid-character data to the ground surface for recording and/or for monitoring the sampling operation. As the pump suction is the primary agent for inducing sample flow from the formation and is thus completely controllable by manipulation of the logging cable, conventional means such as chokes, water cushions, and the



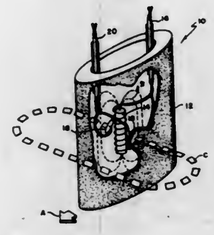
like, for regulating the sample flow rate are unnecessary. Chances of the tool becoming differentially stuck are minimized, as it is approximately centralized in the well bore by the retractable anchoring shoes and packer pad, and the latter can readily be broken free from its backing plate and left behind if necessary.

3,677,082

KNOTMETER FOR SMALL CRAFT

George B. Springsteen, Jr., Bethesda; Samuel L. Thomas, Gaithersburg, and Fred B. Miller, Rockville, all of Md., assignors to The United States of America as represented by the Secretary of the Navy

Filed Nov. 30, 1970, Ser. No. 93,673
Int. Cl. G01c *21/00*
U.S. Cl. 73—181 **2 Claims**



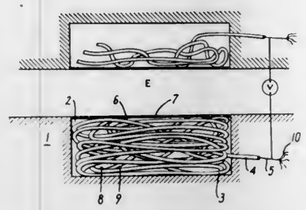
A regulated source of power is used to set up a magnetic field in the water around a rodmeter. The output is fed to an amplifier which in turn is connected to a ring demodulator which produces a pulsating D.C. voltage. A capacitor smoothes the D.C. output and feeds it to an integrating digital voltmeter to provide a display which is proportional to the average speed of the craft through the water.

3,677,083

ELECTRODE FOR MEASURING ALTERNATING VOLTAGES IN AN ELECTROLYTE

Johannes G. A. Van Breugel, Amstellaan 20, Heemstede, Netherlands

Filed May 22, 1970, Ser. No. 39,794
Int. Cl. G01f *1/00*; G01p *5/08*
U.S. Cl. 73—194 EM **6 Claims**



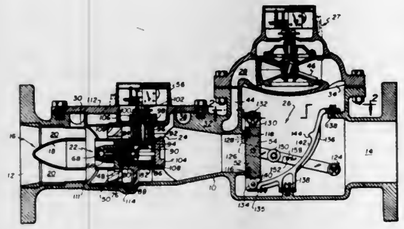
The invention relates to an electrode consisting of a conductor and adjacent to said conductor an electrolyt body, that contains copper ions. The electrolyt body is immobilized by a pervious structure, that may consist of a fine copper wire folded randomly in a recess containing the electrolyt body. Preferably the electrolyt body is bounded by a perforated plate.

3,677,084

COMPOUND FLUID METER

Narinder Masson, Jersey City; William John Korenicki, Linden, and Walter Ludwig Lechner, New Providence, all of N.J., assignors to Gamon-Camet Industries, Inc., Newark, N.J.

Filed March 27, 1970, Ser. No. 23,355
Int. Cl. G01f *7/00*
U.S. Cl. 73—197 **27 Claims**



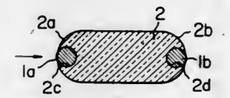
A compound fluid meter including a turbine type high flow metering device disposed in a main metering conduit, a low flow positive displacement metering device disposed in a bypass conduit connected to the main conduit, changeover valve means in said main conduit for preventing fluid flow therethrough when the fluid pressure is less than a predetermined pressure, the bypass conduit being adapted to receive fluid upstream from the valve means and reintroduce it downstream of the valve means, the turbine type high flow metering device comprising a fixed rod-like support member upon which an impeller is rotatably mounted, the rod-like support member having a free end extending towards the upstream end of the main conduit, a recess in said free end of the rod-like support member, a first thrust member loosely disposed in the recess and extending therefrom toward the upstream end of the main conduit, a ball-shaped thrust member and a recess in the hub of the impeller shaped to receive at least the free end of the rod-like support member with the first thrust member extending therefrom and the ball-shaped thrust member disposed between the upstream end of the hub recess and the first thrust member. Holes may be provided in the impeller for introducing the fluid being metered into the hub recess to lubricate and cool the relatively rotating elements therein. Further, face polarized annular permanent magnets are provided for coupling the impeller to an intermediate gear train and the intermediate gear train to the gearing of a register box to permit the intermediate gear train to be disposed in a fluid tight casing. Still further, the changeover valve means may comprise a toggle link mounted valve member having a cam follower adapted to cooperate with a cam for guiding the valve member through its opening and closing movements.

3,677,085

TANDEM-TYPE HOT-WIRE VELOCITY METER PROBE

Hideo Hayakawa, Yokohama, Japan, assignor to Yugen Kaisha Trukasa Sokken, Tokyo, Japan

Filed April 8, 1970, Ser. No. 26,638
Int. Cl. G01f *1/00*
U.S. Cl. 73—204 **6 Claims**



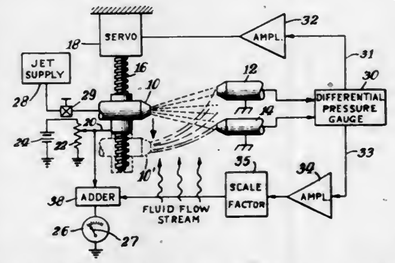
An improved tandem-type hot-wire velocity meter probe for the measurement of flow velocity of liquids and/or gases, comprising two hot-wire members disposed in tandem at upstream and downstream ends of an insulating support member placed in the flow path (e.g., a pipe or a conduit) of the fluid under measurement. The upstream or leading end hot-wire member has its downstream or trailing side buried or otherwise concealed in the insulating support member, while the downstream-end hot-wire member has its upstream side similarly buried or otherwise concealed therein, so that the exposed surfaces of the two hot-wire members indicate a difference between their rates of heat transfer to the fluid in proportion to the flow rate thereof. This difference can be obtained in terms of a difference in electrical resistance between the hot-wire members by means of a meter incorporated in a bridge circuit including the hot-wire members. There are also disclosed herein several examples of the improved flowmeter probe all conforming to the above basic configuration of the two hot-wire members and the support member.

3,677,086

MEASURING SYSTEM FOR A FLUID FLOW STREAM

Victor B. Corey, Bellevue, Wash., assignor to Sundstrand Data Control, Inc.

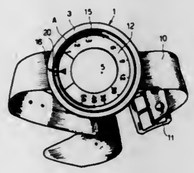
Filed June 10, 1970, Ser. No. 45,017
Int. Cl. G01p *5/00*
U.S. Cl. 73—205 R **9 Claims**



An apparatus for determining a characteristic, as velocity or direction, of a fluid flow stream. Fluid sensors generate signals

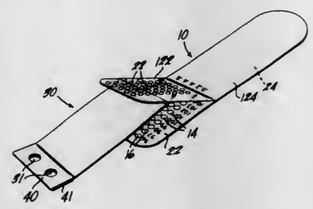
which are differentially compared to produce an error signal representative of the amount of movement, for the sensors or for a fluid stream generator, which is necessary to null the system. A servomechanism produces the nulling movement in response to the error signal. The amount of movement also generates a positional signal indicating the low frequency component or steady state characteristic of the fluid flow stream. A signal adder combines the positional signal with the error signal, containing a high frequency component, to provide an indication of the instantaneous fluid characteristic.

3,677,087
DEPTH GAUGES
Carlo Alinari, Corso Vittorio Emanuele 200, Turin, Italy
Filed Dec. 31, 1970, Ser. No. 103,095
Claims priority, application Italy, Jan. 2, 1970, 67003 A/70
Int. Cl. G01f 23/14
U.S. Cl. 73—300 4 Claims



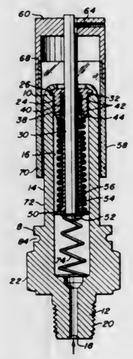
A depth gauge comprises a support of elastomeric material formed with an annular groove in which a thick-walled transparent gauge tube sealed at one end and open at its other end for access of water is snap mounted. Visual contrast between the water and air columns in the gauge tube is improved by the provision of a light-reflecting coating on an inclined portion of the support adjacent the groove receiving the gauge tube.

3,677,088
DISPOSABLE TYPE THERMOMETER
Robert A. Lang, East Hanover, N.J., assignor to Bio-Medical Sciences, Inc., Fairfield, N.J.
Filed March 4, 1971, Ser. No. 120,995
Int. Cl. G01k 11/08, 11/16
U.S. Cl. 73—356 13 Claims



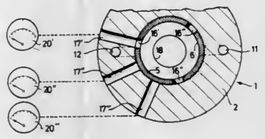
A thermometer having a thermally sensitive substance deposited on a thermally conductive sheet, and an overlying transparent film carrying indicator means which are superpositionably registrable with the thermally responsive substance for communicating therewith to denote specified temperatures upon change of state of the substance is provided with a readily removable flexible shield interposed between the thermally responsive substance and indicator means to prevent communication and reaction between the two until the thermometer is actually required for use. The shield is readily removably adhesively secured to the transparent film and can be peelably removed therefrom by pulling action applied digitally to a pull tab at one end of the shield. Concurrent with peeling of the shield from the transparent film, the latter is pressed against the thermally conductive sheet to position the indicator means in proper overlying communicating registration with the temperature responsive substance on the carrier sheet.

3,677,089
PRESSURE GAUGE
Clyde J. Martin, Cincinnati, Ohio, assignor to Martin Industries, Inc., Cincinnati, Ohio
Filed March 18, 1970, Ser. No. 20,736
Int. Cl. G01l 7/16
U.S. Cl. 73—419 6 Claims



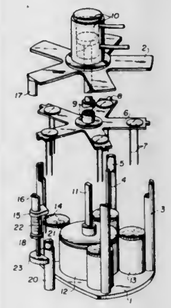
The pressure gauge is characterized by extreme simplicity, and involves the use of a transparent cylindrical reciprocable window through which may be viewed from all angles such scale calibrations as are carried by the gauge body. A booster is provided to assure smooth and accurate operation, aided by lubricant-impregnated bearing elements.

3,677,090
PRESSURE MEASURING DEVICE
Dieter Kolb, Suttgart-Degerloch, Germany, assignor to Lestra AG, Glarus, Switzerland
Filed March 31, 1971, Ser. No. 129,817
Claims priority, application Germany, Oct. 12, 1970, P 20 49 998.3
Int. Cl. G01l 7/00
U.S. Cl. 73—420 12 Claims



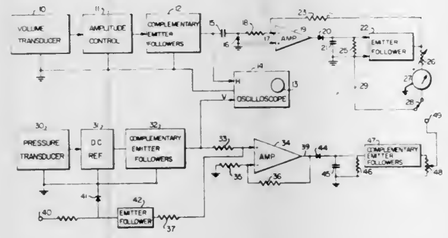
Apparatus for measuring and/or controlling pressures appearing in succession at the same measuring point has a cylinder arranged at a measuring point and defining a chamber. A piston defining a plurality of control passages is arranged in the cylinder chamber so as to be moved by successive pressures appearing at the measuring point. A measuring line is associated with each of the control passages defined in the piston. Means are provided for imparting a rotary control movement to the piston by means of the successive pressures and for consecutively connecting the measuring lines to the measuring point through at least one of the plurality of control passages defined in the piston. The control movement imparting means may be a guide pin cooperating with a circumferential guide groove defined in the piston, or it may be two pairs of cooperating crown gears.

3,677,091
APPARATUS FOR TRANSFERRING LIQUIDS
Jean Guigan, Paris, France, assignor to Hoffman-La Roche Inc., Nutley, N.J.
Filed Aug. 27, 1970, Ser. No. 67,319
Int. Cl. G01n 1/14
U.S. Cl. 73—423 A 14 Claims



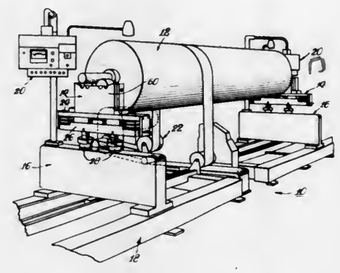
An apparatus for transferring a liquid via a liquid conducting means from a donor receptacle to a receiving receptacle, which includes cleaning and drying means for the liquid conducting means.

3,677,092
VOLUME METERING APPARATUS FOR CIRCULATORY ASSIST PUMPS
Henry R. Guarino, Revere, Mass., assignor to The United States of America as represented by the Secretary Department of Health, Education and Welfare
Filed June 17, 1970, Ser. No. 46,928
Int. Cl. G01d 5/14
U.S. Cl. 73—432 A 4 Claims



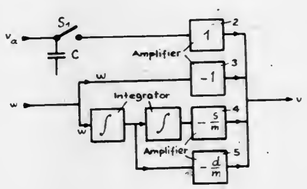
An electronic transient pulse operated volume metering circuit is disclosed which produces a visually readable volume indication derived from signals representative of the stroke of a blood pump in a circulatory assist system. Provisions are made for correcting the volume indication as a function of instantaneous pressure samples such as encountered in the patients circulatory system, and for visually presenting the relationship between the volume and pressure.

3,677,093
BALANCING HEADS FOR DYNAMIC BALANCING MACHINES
Paul D. Hutchings, Sr., Big Rapids, Mich., assignor to Hanchett Company, Big Rapids, Mich.
Filed Oct. 30, 1970, Ser. No. 85,452
Int. Cl. G01m 1/02
U.S. Cl. 73—473 8 Claims



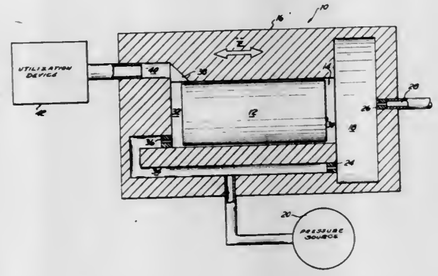
Balancing head used for supporting the opposite ends of a rotor being balanced in a dynamic balance machine constructed with a top head unit adapted to have a rectilinear reciprocatory motion relative to a fixed bottom head unit. A pair of hydrostatic bearings are provided between the top and bottom head units to reduce friction therebetween. A pair of magnetic devices are provided between the top and bottom head units to center the top head unit relative to the bottom head unit and to restrain the override horizontal movement of the top head unit.

3,677,094
METHOD OF PRODUCING A VOLTAGE EQUAL TO THE SPEED OF ROAD VEHICLES
Karl Kupfmuller, Darmstadt, Germany, assignor to ITT Industries, Inc., New York, N.Y.
Filed Jan. 18, 1971, Ser. No. 107,209
Int. Cl. G01p 7/00
U.S. Cl. 73—503 7 Claims



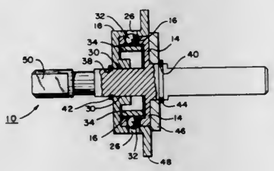
The instantaneous speed of a road vehicle is measured by measuring the speed derived from a number of revolutions of a wheel and adding thereto the integrated value of measured speed variations. The speed variations are measured by means of the relative motion of an elastically suspended mass in the vehicle. The, thusly, measured speed is then modified by the inclination of the vehicle and its variations as measured by a normal and an astatic pendulum, respectively suspended in the vehicle. These measurements are made during the braking to influence the braking process.

3,677,095
FLUID OSCILLATOR FOR A LINEAR OUTPUT ACCELEROMETER
Lael B. Taplin, Livonia, Mich., assignor to The Bendix Corporation
Filed Nov. 16, 1970, Ser. No. 89,669
Int. Cl. G01p 15/02
U.S. Cl. 73—515 6 Claims



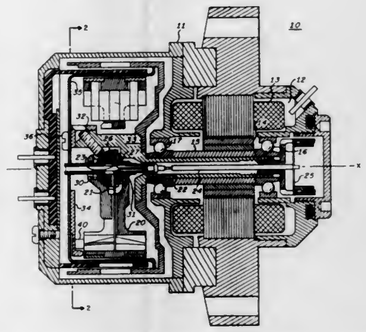
A fluid oscillator suitable for use as an accelerometer is described, comprised of a piston and cylinder housing with a constant pressure applied to one end of the piston and a pressure that is a function of piston position on the other, the resultant forces acting on the piston and its inertia causing the piston to oscillate in the cylinder at a frequency that varies linearly with the external acceleration of the unit along the axis of the piston. The varying frequency of the pressure pulses at the one end of the piston are utilized as a fluid pressure signal indicative of the level of such external acceleration.

3,677,096
MINIATURE INDEXING MECHANISM
Raymond G. Hatman, Lockport, N.Y., assignor to GTE Sylvania Incorporated
Filed June 1, 1971, Ser. No. 148,781
Int. Cl. G05g 5/06
U.S. Cl. 74—527 8 Claims



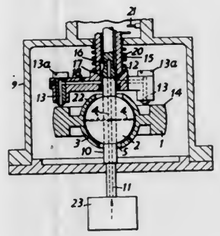
A miniature indexing mechanism employs a shaft of a first diameter having a drum of a second diameter, the second diameter being larger than the first. Two holes are located diametrically opposite each other in the walls of the drum. A hat shaped housing member includes a plurality of smaller holes circumferentially located along the inner wall thereof and has an internal diameter slightly larger than the drum section of the shaft such that the drum section is free to rotate within the wall of the housing member. Ball bearings are inserted in each of the two drum holes and are biased outwardly toward the inner walls of the housing member by a circular leaf spring. As the shaft is rotated, the bearings seat in the holes along the inner walls of the housing thus providing an indexing mechanism.

3,677,097
PROTECTIVE STOPS FOR A FLEXURE SUSPENDED GYROSCOPIC ROTOR
Thomas R. Quermann, Huntington Station, N.Y., assignor to Sperry Rand Corporation
Filed March 5, 1971, Ser. No. 121,424
Int. Cl. G01c 19/18
U.S. Cl. 74—5 5 Claims



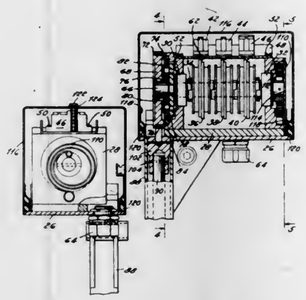
Gyroscopic apparatus having a rotor suspended by axial and radial flexure supports including a spherical shaped hub for limiting the translational deflection of the rotor with respect to a drive shaft, a plurality of leaf springs for limiting the relative angular deflection of the rotor with respect to the drive shaft and stop pins in combination with leaf springs for minimizing the relative rotational displacement of the drive shaft with respect to the rotor.

3,677,098
GYROSCOPE UNCAGING DEVICE
John Christopher Hammond Davis, Wargrave, England, assignor to Plessey Telecommunications Research Limited, Toplow, Great Britain
Filed Sept. 30, 1970, Ser. No. 76,666
Claims priority, application Great Britain, Oct. 11, 1969, 48,149/69
Int. Cl. G01c 19/26, 19/30
U.S. Cl. 74—5.12 5 Claims



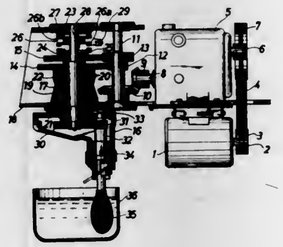
In order to minimize uncaging kicks on the rotor of a gyroscope device, the caging member acts on the rotor through air buffer means which, in air-bearing fashion, produce, during caging, aligning forces as a result of differences in the thickness of the air cushion. These forces rapidly decrease in size during uncaging by withdrawal of the caging member.

3,677,099
MACHINE CONTROL
Gordon H. Cork, Birmingham; David M. Tennaiwood, Troy, and Robert E. Kaptur, Birmingham, all of Mich., assignors to Gemco Electric Company, Clawson, Mich.
Filed Sept. 9, 1970, Ser. No. 70,682
Int. Cl. F16h 27/02
U.S. Cl. 74—89.2 17 Claims



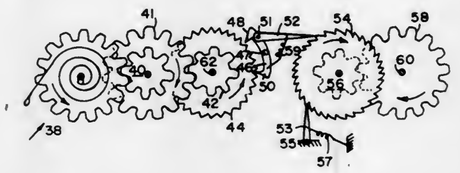
A machine controller for connection to a repetitively linearly movable part on the machine to be controlled, which machine includes means for controlling its operation, comprising a rotatably mounted cam shaft having cams for selectively actuating each of the machine's control means, and means coupled to said shaft and to the linearly moving machine part to translate linear machine movement into rotational movement. Spring means is operably coupled to the assembly biasing it to a normal at rest position corresponding to the start position of the machine being controlled.

3,677,100
MIXER
Tokuji Kajiwara, 13-13-2-chome, Matsugaya, Taito-ku, Tokyo, Japan
Filed Nov. 27, 1970, Ser. No. 92,981
Claims priority, application Japan, Aug. 19, 1970, 45/72610
Int. Cl. F16h 1/28
U.S. Cl. 74—660 1 Claim



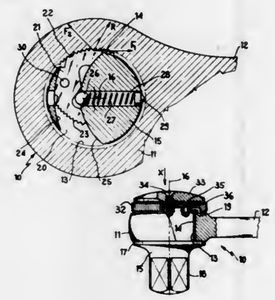
The present invention involves an apparatus for making a rolling circle of epicycloid or hypocycloid with an agitator driven by a single source so as to effectively form as many as possible mixtures, deriving from convective, diffusive or shear mixing, of baking ingredients in a container.

3,677,101
FAIL-SAFE MECHANICAL TIMER
Daniel Blitz, Boston, Mass., assignor to Sanders Associates, Inc., Nashua, N.H.
Filed Aug. 7, 1970, Ser. No. 61,958
Int. Cl. F16h 27/04
U.S. Cl. 74—112 14 Claims



A fail-safe mechanical timer is provided having the speed retarding timing mechanism in series between the input power source and the timer output shaft.

3,677,102
FREE-WHEEL DEVICE FOR TRANSMITTING TORQUES AND REVERSIBLE RATCHET DOG COMPRISING SAME
Enrico Simonetta, Casale Litta, Italy, assignor to USAG S.p.A. Gemonio, Verese, Italy
Filed June 2, 1970, Ser. No. 42,788
Int. Cl. F16h 27/02
U.S. Cl. 74—143 4 Claims

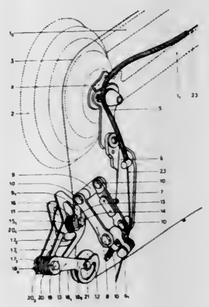


A free-wheel device and reversible ratchet dog comprising same, wherein an engagement between two torque transmitting elements is obtained in either directions of rotation by means of a pawl housed in a first torque transmitting element in such a manner that, when the device is acted upon, said pawl is submitted to dragging and reacting forces which resultant stresses the pawl into engaging relationship with the second torque transmitting element.

3,677,103
GEAR CHANGE FOR BICYCLE OR LIKE MACHINE

Jacques Andre Huret, and Roger Henri Huret, both of 60, Avenue Felix Faure, Nanterre, Haute de Seine, France

Filed Dec. 28, 1970, Ser. No. 101,557
Claims priority, application France, March 3, 1970, 7007559
Int. Cl. F16h 9/00
U.S. Cl. 74—217 B 6 Claims

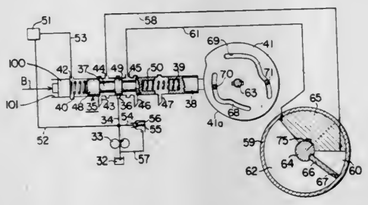


The invention relates to a gear change for bicycle or like machine comprising two rollers linked together by a support, movement of said unit being controlled cross-wise to the free wheel of the bicycle or like machine by means of a control wire, and the support linking the two rollers being made up of two parts articulated one on the other, a spring being positioned between these two parts in order to keep the two rollers constantly separated from each other.

3,677,104
SPEED CHANGE MECHANISM

Koichiro Hirozawa, and Tadao Asano, both of Kariya, Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Aichi, Japan

Filed Oct. 7, 1970, Ser. No. 78,706
Claims priority, application Japan, Oct. 7, 1969, 44/80051; Oct. 7, 1959, 44/80052
Int. Cl. F16h 5/48, 5/40
U.S. Cl. 74—336 7 Claims

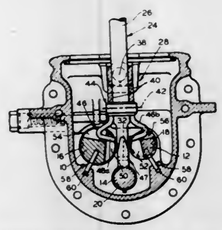


The usual shift collars in a speed change mechanism are operated by a plurality of shift forks. The shift forks are operable under the control of a cam disc having one or more cam grooves therein in which are located a plurality of control pins secured to each shift fork respectively. The cam disc is rotated by means of a hydraulic servo motor which is operable under the control of a vehicle speed responsive device.

3,677,105
HYDRAULIC SHIFTING MECHANISM FOR A MECHANICAL TRANSMISSION

Donald S. Deace, Brooklyn, Mich., assignor to Clark Equipment Company

Filed Sept. 14, 1970, Ser. No. 71,717
Int. Cl. G05g 5/10
U.S. Cl. 74—477 2 Claims

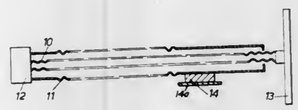


A hydraulic shifting mechanism for a mechanical transmission of the type having a plurality of shiftable pistons for producing corresponding shifting movements in the transmission, and having a manual shift lever and three pistons, including a lower central one and two upper, laterally-spaced ones, the shift lever being movable laterally for selectively engaging the pistons, and movable fore-and-back for shifting the selected piston; the shift lever has a lower end engageable with the selected piston, and is incorporated in a unit having side elements movable laterally with the shift lever but fixed against fore-and-back movement, the pistons having notches and grooves receiving the side elements; the side elements when the shift lever is in neutral or central position, respectively restrain the corresponding upper pistons against fore-and-back movement and when the shift lever is moved laterally in either direction, one of the side elements releases the corresponding upper piston and restrains the lower piston against fore-and-back movement, while the other side element continues to restrain its corresponding upper piston.

3,677,106
STEERING COLUMNS

James Henry Weston, London, England, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Oct. 21, 1970, Ser. No. 82,646
Claims priority, application Great Britain, Nov. 13, 1969, 55,593/69
Int. Cl. B62d 1/18
U.S. Cl. 74—492 8 Claims

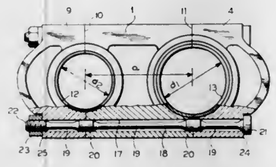


A collapsible energy-absorbing steering column for a motor vehicle including a torque-transmitting assembly, connected between the vehicle's steering column hub mounting and steering box, and an outer non-rotatable partially-corrugated tube surrounding but rotatably separate from the torque-transmitting assembly, wherein the torque-transmitting assembly consists of or includes a corrugated tube designed to begin to collapse, on collision of the vehicle with another object, before the outer corrugated tube, the outer corrugated tube being designed to collapse at a predetermined rate and absorb substantially all of the collision impact energy.

3,677,107
PUSH ROD FOR A CRANK DRIVE MECHANISM

Albert Strebel, Binningen, and Oskar Habegger, Therwil, both of Switzerland, assignors to Maschinenfabrik Burckhardt AG, Basel, Switzerland

Filed June 25, 1970, Ser. No. 49,762
Claims priority, application Switzerland, June 27, 1969, 9913/69
Int. Cl. F16c 7/00
U.S. Cl. 74—579 R 13 Claims

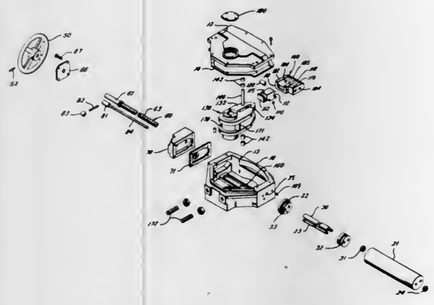


A push rod for the crank drive of double-acting piston machines which makes simple and rapid disassembly possible. The shaft portion under the influence of the traction forces set up, is subjected to only relatively light tensile stressing or to compressive stressing. The push rod is secured assembled by anchoring screws with expanding shanks along its entire length and is subjected to alternating stressing, under the influence of a compressive stress which at least partially cancels the tensile stress set up during operation.

3,677,108
DISENGAGEABLE MANUAL CONTROL

Walter F. Prikryl, Houston, and Ronald A. Gulick, Sugarland, both of Tex., assignors to Research Engineering Company, Houston, Tex.

Filed Aug. 31, 1970, Ser. No. 68,427
Int. Cl. F16h 25/00
U.S. Cl. 74—625 9 Claims



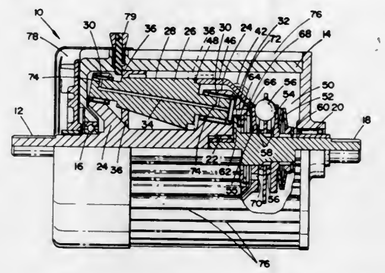
A disengageable, manually operable device for causing movement of a further object; the disengageable portion having a pair of mating threaded members, and facilities for separating them, thereby disengaging the device.

3,677,109
CONTINUOUSLY VARIABLE FRICTION GEAR

Robert E. Stuemky, Denver, Colo., assignor to The Gates Rubber Company, Denver, Colo.

Filed Jan. 14, 1971, Ser. No. 106,464
Int. Cl. F16h 15/50, 13/14, 57/04
U.S. Cl. 74—796 10 Claims

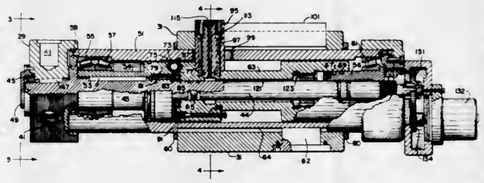
A continuously variable friction gear of the planetary type having a plurality of double cone rollers so arranged that the top cone surface of each roller contacts an imaginary cylindrical surface. The rollers are epicyclically driven by a driver shaft. An internal rim wheel engages the bottom cone surface of each roller and connects to a driven shaft. The gear is shifted between forward and reverse by a non-rotating shifting ring which engages the cylindrically aligned surface of the rollers.



3,677,110
LATHE TURRET

Clement L. McIver, Sr., Wayland, Mass., assignor to Methods Incorporated, Sudbury, Mass.

Filed July 29, 1970, Ser. No. 59,048
Int. Cl. B23b 29/32
U.S. Cl. 74—813 L 7 Claims

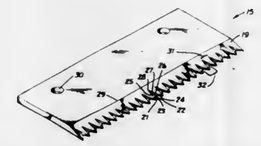


In the lathe turret construction disclosed herein, indexing of the turret to bring successive tools into operating position is accomplished by a separate locking member which is axially slidable, relative to the turret spindle, between a locking position and a release position. The separate locking member includes means for preventing rotation with respect to a fixed frame of reference, independent of the member in which the turret spindle is journaled.

3,677,111
METHOD FOR PRODUCING CUTTING RULES

Sherman L. Dragoo, Yorktown, Ind., assignor to Corrugated Finishing Products, Inc., Anderson, Ind.

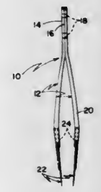
Filed Dec. 3, 1970, Ser. No. 94,729
Int. Cl. B21k 21/00
U.S. Cl. 76—101 R 6 Claims



A method and apparatus for producing cutting rules. The cutting rule has a beveled edge portion with a serration

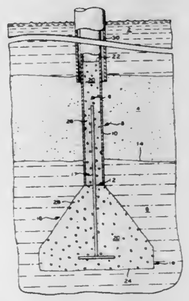
formed thereon. The serration has pointed teeth which are pressed to provide a sharp cutting edge. The apparatus for producing the cutting rule has a support block supporting the cutting rule blank which is positioned under a cutting tool and a forming tool both mounted to a press. The press is operable to force the cutting tool against the cutting rule to punch a serration along the beveled edge portion. The press is also operable to force a forming tool onto the serration providing the sharp cutting edge.

3,677,112
PINCERS
John W. Keniston, P. O. Box 151, Franklin, N.H.
Filed June 8, 1970, Ser. No. 44,353
Int. Cl. B25b 9/02
U.S. Cl. 81—43 4 Claims



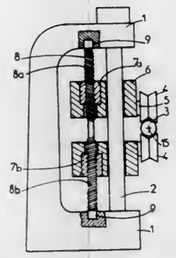
Pincers have a handle portion formed of plastic and gripping members formed of a different material adhesively united to the plastic of the handle portion. Methods include molding the shanks of the gripping members into the handle portions or adhesively bonding the shanks in sockets in premolded handle portions.

3,677,113
METHOD AND APPARATUS FOR FORMING A FOUNDATION-LEG ASSEMBLY FOR AN OFFSHORE PLATFORM
William R. Bowles, Bartlesville, Okla., assignor to Phillips Petroleum Company
Filed Jan. 7, 1971, Ser. No. 104,606
Int. Cl. E02d 5/40, 5/44, 27/32
U.S. Cl. 61—46 13 Claims



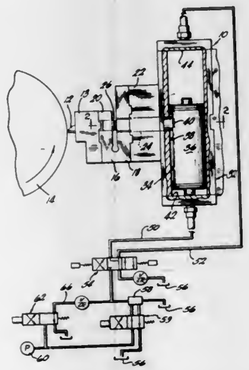
A pile is driven through a first formation and into a subterranean second formation of the earth beneath a body of water, a cavity is formed below the pile and extends outwardly beyond the pile, and a concrete volume is thereafter formed in the cavity and a portion of the pile. The pile is in intimate contact with the first and second formations and the concrete is in intimate sealing contact with the pile and the second formation.

3,677,114
POSITIONING THE WORK IN A MILLING LATHE
Claude Brochard, Dunkerque, and Rene Cassart, Coudekerque-Branche, both of France, assignors to Creusot-Loire, Paris, France
Filed Feb. 9, 1971, Ser. No. 113,830
Claims priority, application France, Feb. 11, 1970, 7004748
Int. Cl. B23b 13/00, 25/00
U.S. Cl. 82—2.5 5 Claims



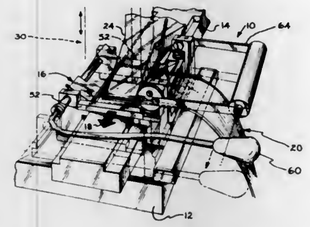
The driving rollers of a milling lathe are moved into driving position by symmetrical jacks and are interconnected by at least one screw having two threads of opposite pitch. The screw is rotated by a motor without longitudinal movement to move the rollers symmetrically toward or away from the axis of the work.

3,677,115
HYDRAULICALLY OPERATED TOOL COMPENSATOR UNIT
James A. Skrentner, Sterling Heights, Mich., assignor to La Salle Machine Tool, Inc., Warren, Mich.
Filed March 16, 1970, Ser. No. 19,898
Int. Cl. B23b 21/00
U.S. Cl. 82—24 3 Claims



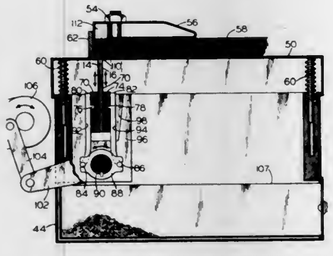
Hydraulically operated apparatus for periodically moving a machine tool to compensate for conditions such as tool wear and automatically maintain a pre-established position of the tool within predetermined tolerance limits. In response to a signal indicating the necessity for resetting the cutting tool to move it either toward or away from the work, a metering device admits a predetermined volume of fluid to a piston and cylinder assembly to provide for adjusted movement of the tool through a predetermined incremental distance.

3,677,116
BLANKING DEVICE FOR RIBBON CABLE
Quentin Berg, New Cumberland, Pa., and Jerry A. Kendall, Garland, Tex., assignors to Berg Electronics, Inc., New Cumberland, Pa.
Filed Aug. 5, 1970, Ser. No. 61,330
Int. Cl. B26f 1/44
U.S. Cl. 83—55 23 Claims



Apparatus and method for removing spacer material from between conductors in a ribbon cable. The spacer material is removed without injuring the conductors despite a cumulative spacing tolerance between the conductors. The apparatus successively feeds each conductor regardless of its position in the cable to a known location adjacent a punch and die so that the spacer material is removed without injuring the conductors.

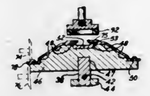
3,677,117
MATERIAL CUTTING APPARATUS WITH RECIPROCATING CUTTING ELEMENTS
James W. Cutter, 276 Galli Drive, Los Altos, Calif.
Filed June 9, 1969, Ser. No. 831,375
Int. Cl. B26f 1/02, 1/14
U.S. Cl. 83—150 22 Claims



Hole cutting and perforating apparatus including one or more suitably configured cutting members which are comprised of two or more cutting elements that are alternately displaced relative to each other as they are caused to impact, perforate and pass through a given work material so that each cutting element independently cuts through a portion of the work material and the sum of the independent cuts forms the desired hole or cut out.

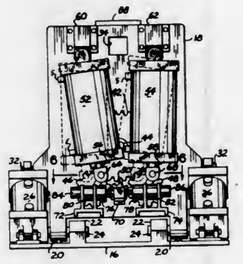
3,677,118
DIAPHRAGM TRIMMER
Malcolm K. Abbott, and David A. Dowdy, both of Toledo, Ohio, assignors to The Bendix Corporation
Filed Aug. 20, 1970, Ser. No. 65,552
Int. Cl. B26d 5/28
U.S. Cl. 83—211 10 Claims

A trimmer apparatus for removing flash from the inner diameter opening and the peripheral surface of a molded diaphragm. A molded diaphragm is placed on a rotatable fixture secured in a turret. Upon activation of an electrical switch the fixture is rotated to a press member station. In this location the turret is held stationary to allow a retractible member to engage a die member under the diaphragm to remove the flash from the inner diameter. In response to an operation signal the retractible member is raised from the die



member and the turret is indexed to a cutting member. The cutting member presses the peripheral surface of the diaphragm against the fixture and is guided by the external surface of the diaphragm to simultaneously remove the flash from the outer edge of a diaphragm while the press member is in operation.

3,677,119
FLYING SHEAR
Julian S. Taylor, 8600 S.W. 8, Oklahoma City, Okla.
Continuation-in-part of Ser. No. 774,112, Nov. 4, 1968. This application Oct. 5, 1970, Ser. No. 77,952
Int. Cl. B23d 25/06
U.S. Cl. 83—316 7 Claims

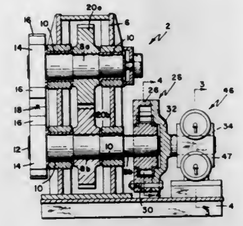


In a flying shear an upright frame is provided with an opening forming a passageway for moving stock to be cut. A stationary blade is mounted on the frame above the opening. A movable blade is reciprocably mounted on the frame for movement toward and away from the stationary blade by a pitman connected with a crank arm coaxially connected with a gear wheel journalled by the frame. Spaced-apart spur gears, mounted on the frame in mesh with the gear wheel, are respectively connected with and driven by a pair of power cylinders for moving the pitman in a to and fro stock cutting stroke in response to shear signal operated electrical and pressure responsive valve means connected with the power cylinders and a control operated cog wheel interposed between the spur gears. Frame connected tilting cylinders, energized with the shear signal, tilt the frame in the direction of stock movement during the cutting action.

3,677,120
SHEAR MECHANISM
Donald Sleurin, Northboro, Mass., assignor to Morgan Construction Company, Worcester, Mass.
Filed Aug. 6, 1970, Ser. No. 61,708
Int. Cl. B26d 1/56
U.S. Cl. 83—343 7 Claims

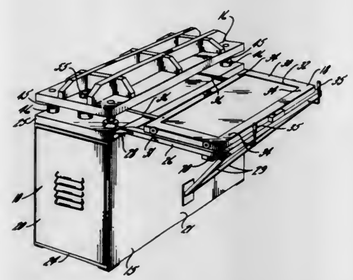
An apparatus for cutting a moving elongated element by

employing cooperative cutting blades mounted on spaced rotatable shafts. The shafts are interconnected by gear means



and are driven by a reciprocally operating drive mechanism acting through a one-way clutch assembly.

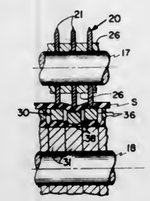
3,677,121
PRINTING PLATES IN REGISTRY
Gordon Etchell, Downers Grove, Ill., assignor to North American Rockwell Corporation, Pittsburgh, Pa.
Filed Oct. 13, 1970, Ser. No. 80,288
Int. Cl. B26d *7/06, 7/16*
U.S. Cl. 83—437 **10 Claims**



A machine for trimming flexible letter press printing plates to final size and simultaneously punching mounting appertures therein in accurate register with the plate image. The illustrated machine includes a vertically moveable die head and a die base plate with structure for supporting an untrimmed flexible printing plate in a predetermined position on the base plate. The die base plate is laterally moveable from an outwardly extended position to a determined position directly below the die head. When the die base plate is in proper position beneath the die head, selectively operable hydraulic actuating elements may lower the die head, into contact with the die base plate to trim and punch the flexible plate in finished form.

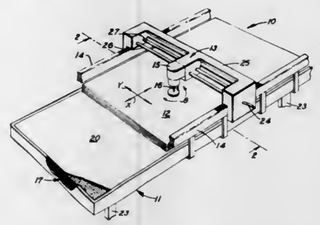
3,677,122
SLITTING APPARATUS HAVING INDEPENDENT RESILIENTLY SUPPORTED ANVIL MEANS
Donald E. Rautine, Erie, Pa., assignor to Lord Corporation, Erie, Pa.
Filed March 23, 1971, Ser. No. 127,097
Int. Cl. B23d *19/06*
U.S. Cl. 83—506 **5 Claims**

Anvil means for a slitting apparatus having a pair of parallel rotatable first and second arbors, and a plurality of slitting discs concentrically mounted and spaced axially along the first arbor for rotation therewith comprising a plurality of annular rings concentrically disposed axially along the second arbor and elastomer means disposed and adhered, preferably bonded, between each of the rings and second arbor and mounting each of the rings for rotation with the second arbor. The elastomer means resiliently hold each of the rings in preloaded rolling engagement with at least one of the discs. Bulge



free areas are defined between adjacent rings and provide for the displacement of the elastomer means whereby each ring is capable of resilient movement radially of the axis of the second arbor independently of each other.

3,677,123
PENETRABLE BED USED FOR CUTTING SHEET MATERIAL
Heinz Joseph Gerber, and David Raymond Pearl, both of West Hartford, Conn., assignors to Gerber Garment Technology Inc., East Hartford, Conn.
Filed Dec. 9, 1970, Ser. No. 96,385
Int. Cl. B26d *7/20*
U.S. Cl. 83—561 **13 Claims**

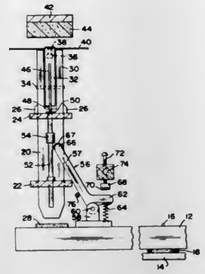


A penetrable bed includes bristles fixedly connected to a base portion thereof with a penetrable filler material disposed in the area around the bristles thereby providing additional support thereto. The penetrable filler material may be selected from a group consisting of a granular substance, a self-healing material or mixtures thereof.

3,677,124
HARPSICHORD WITH SUSTAIN MECHANISM
Walter F. O'Brien, Garrettsville, Ohio, assignor to Philip M. Cucchiara, Cleveland, Ohio, a part interest
Filed Aug. 19, 1970, Ser. No. 64,945
Int. Cl. G10c *1/06*
U.S. Cl. 84—258 **8 Claims**

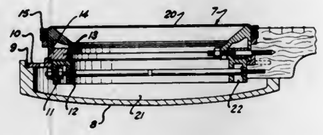
A harpsichord having string plucking means consisting of a vertically moving jack and a plectrum carrying tongue pivotally mounted at the upper end of the jack. A control rod or lever means is associated with each jack and is operated by the same key as the associated jack. The control rod causes the tongue to pivot bringing the plectrum into string plucking position before the jack is raised by the key action. After the string is plucked, the control rod actuating arrangement permits the rod to drop to its rest position before the jack falls thereby preventing the rod from interfering with the retracted position of the tongue and plectrum away from the string,

retraction having occurred when the string was plucked. Hence, when the jack drops, neither the plectrum nor its associated buffer contacts the strings until the key is again



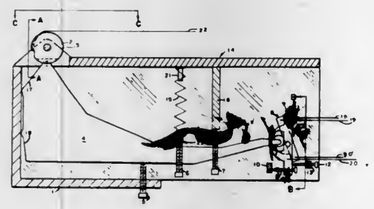
depressed. Blocking means are provided for holding the plectrum carrying tongue in its rest position when it is desired to use a different register of jacks.

3,677,125
BANJO HAVING COMBINATION BANJO BODY AND TONE RINGS
Maywood Oliver, 150 Chestnut Ave., Carlisle, Ohio
Filed Nov. 17, 1970, Ser. No. 90,293
Int. Cl. G10c *1/10*
U.S. Cl. 84—271 **2 Claims**



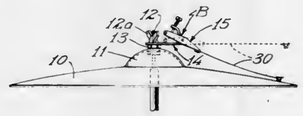
This invention consists of a ring-shaped body mounted in a metal resonator. The just-mentioned body is provided with an inner tone ring as well as with a conventional tone ring and an upper bracket ring and other parts that go to make up a banjo.

3,677,126
APPARATUS FOR STRINGED MUSICAL INSTRUMENTS
Victor F. J. Pierce, c/o Lennox Associates & Company, Room 5, 1161 Melville St., Vancouver 5, British Columbia, Canada
Filed Sept. 29, 1969, Ser. No. 861,946
Int. Cl. G10d *3/14*
U.S. Cl. 84—312 **3 Claims**



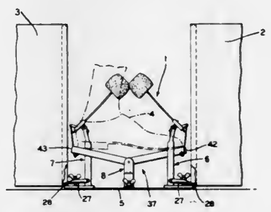
The strings of stringed musical instruments are changed in length to vary their tension through a multiple musical note range for each respective string. In one embodiment foot pedal movements of mechanisms are transferred to the vicinity of string ends to rotate pivot pullers which in turn controllably move respective lever arms, between adjustable stop limitations. The lever arms are secured to disc tighteners to which the string ends are secured. Lever arm movements oscillate the disc tighteners to increase and decrease the string tension to respectively raise and lower the musical pitch of the strings. In another embodiment translating pullers are used in lieu of pivot pullers to controllably move another type of lever arm.

3,677,127
CYMBAL ATTACHMENT
Ernest H. Garven, 6608 Ridgeview Drive, Edina, Minn.
Filed Sept. 8, 1970, Ser. No. 70,081
Int. Cl. G10d *13/08*
U.S. Cl. 84—402 **7 Claims**



A cymbal attachment includes a fixed bracket secured to the cymbal mounting bolt, and a second bracket secured to the fixed bracket. The second bracket supports a number of spring arms having weighted cymbal engaging ends. In one position the weighted arm ends engage the cymbal surface, and in another position the arm ends are held spaced from the symbol surface in inoperative position.

3,677,128
BASS DRUM PEDAL ASSEMBLY
Allan R. Simpson, 5656 Springlake Road N.W., Canton, Ohio
Filed July 26, 1971, Ser. No. 165,485
Int. Cl. G10d *13/00*
U.S. Cl. 84—422 **8 Claims**

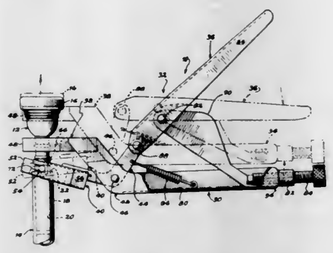


A drum pedal assembly having a pair of drum beater standards mounted on opposite ends of a base and having a drum beater operatively held by each standard. A vertical support is mounted on the base intermediate the pair of standards and pivotally mounts adjacent ends of a pair of foot pedals. The foot pedals extend outward from the pivot support in opposite directions and the swinging ends of the foot pedals are operatively connected to the drum beaters. The pair of foot pedals forms a split pedal that may be operated by a drummer's foot selectively to strike in any sequence either or both of a pair of bass drums, located at the ends of the base opposite the standards, by downward movement of the heel or toe portion of the foot.

3,677,129
DEVICE FOR EXTRACTING MOUTHPIECES FROM MUSICAL INSTRUMENTS

Archie L. Lyon, 482 Lamarch Drive, Cheektowaga, N.Y.

Filed Jan. 7, 1971, Ser. No. 104,591
Int. Cl. G10g 7/00; B25b 7/12
U.S. Cl. 84—453 10 Claims

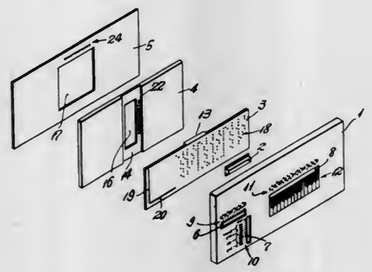


A device for extracting differently sized mouthpieces, which have become stuck in brass type musical instruments, wherein the mouthpieces are characterized as having a mouth end portion and a reduced diameter stem end portion dimensioned to be slip-friction fitted into an end of the musical instrument. The device includes a pair of pivotally joined lever devices, each having jaw end portions and operating end portions, the latter when moved towards one another forcing the jaw end portions to move apart for the purpose of extracting the mouthpiece from the instrument. One of the jaw end portions is configured to freely receive the stem end portion and engage beneath the mouthpiece end portion, whereas the other jaw end portion carries a pair of spreader members, which serve to removably grip the stem end portion and bear against an end surface of the instrument. The spreader members are automatically adjustable relative to their associated jaw end portion in order to prevent binding of the stem end portion within the instrument during the extraction operation.

3,677,130
CHORD TEACHING DEVICE

Michael G. Petreyclk, 510 Lake Ave, Bridgeport, Conn.

Filed June 9, 1971, Ser. No. 151,178
Int. Cl. G09b 15/02; G10b 15/00
U.S. Cl. 84—471 8 Claims

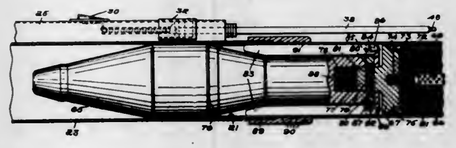


A device for the automatic selection and display of chromatic seals notes and relative keyboard keys corresponding to any preselected major scale or type of chord and any preselected name of major scale or chord whereby the name and type of scale or chord, as well as roots and inversions thereof, can be dialed to identify the corresponding notes and keyboard keys, or, conversely, the desired range of notes and keyboard keys can be dialed to identify the name of the major scale and the name and type of chord, as well as roots and inversions, corresponding to those chromatic notes and keyboard keys.

3,677,131
DISPOSABLE PROJECTILE LAUNCHER OF THE RECOILLESS TYPE

Michael A. Nee, Melrose, Mass., assignor to Norris Industries, Inc., Los Angeles, Calif.

Continuation-in-part of Ser. No. 199, Jan. 2, 1970, abandoned.
This application Dec. 16, 1970, Ser. No. 98,662
Int. Cl. F41f 3/02, 15/00
U.S. Cl. 89—1.703 33 Claims

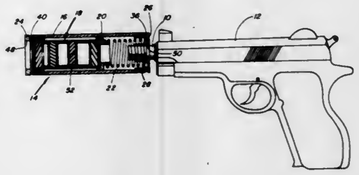


A disposable projectile launcher is disclosed in which a round of ammunition includes a tubular case section having a nozzle and enclosing a projectile and a propellant charge and slidably fitting within the rear end of a launcher section so that the two sections can have a shortened, inoperative relationship and an extended, operative relationship. Firing means are connected to the round and include a trigger carried by the launcher section and operable only in the operative relationship of the sections. A gas pressure retaining seal between the overlap of the sections in their operative relationship maintains internal pressures suitable for the efficient burning of the propellant. The projectile has a releasable connection with the case section at the nozzle end thereof.

3,677,132
WATERPROOF SOUND, FLASH AND RECOIL SUPPRESSOR FOR FIREARMS

Richard D. Plenge, Silver Spring, Md., assignor to The United States of America as represented by the Secretary of the Navy

Filed Aug. 5, 1969, Ser. No. 849,276
Int. Cl. F41c 21/18
U.S. Cl. 89—14 B 5 Claims

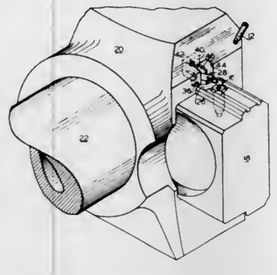


A muzzle attachment for the barrel of a firearm having O-ring seals around a front cap, a rear cap and the barrel of the firearm when engaged therewith and including a device therein for sealing the muzzle attachment behind a bullet passing therethrough to prevent escape of expanding gases therein propelling the bullet and an expansion chamber about the device. A chamber plug positionable in the firearm chamber makes the weapon waterproof from the chamber to the front cap of the muzzle attachment.

3,677,133
EXTRACTOR FOR PRIMER CARTRIDGE CASES

Donald F. Bushey, Watervliet, N.Y., assignor to The United States of America as represented by the Secretary of the Army

Filed Jan. 21, 1971, Ser. No. 108,544
Int. Cl. F41f 13/12, 11/02, 11/04
U.S. Cl. 89—27 B 9 Claims

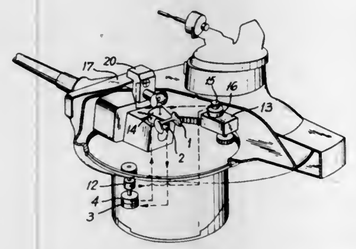


In large caliber guns which utilize rimless primer cartridges to ignite a separately loaded propellant charge, the required mating engagement between the extractor and the cannelure in the rimless end of the cartridge case is achieved by dividing the extractor into a pair of juxtaposed levers terminating in arcuate ends forming a U-shaped opening of slightly smaller diameter than the firing chamber but in axial alignment therewith. The levers are pivotally joined at a common point and are provided with a spring therebetween for urging the arcuate ends into the cannelure of the cartridge case following the insertion thereof through the U-shaped opening and into the firing chamber. The opposite ends of the levers are pivoted for movement about an axis normal to the vertical axis of the firing chamber in position to be cammed outwardly thereof to extract the cartridge case therefrom during the opening of the breech.

3,677,134
GUNNERY CONTROL DEVICE FOR TURRET-MOUNTED FIREARM

Jacques Paul Robert Maximi, Tarbes, and Andre Bernard Maurel, Aureilhan, both of France, assignors to Etat Francais, Paris, France

Filed March 30, 1970, Ser. No. 23,845
Claims priority, application France, March 31, 1969, 6909569
Int. Cl. F41g 3/22
U.S. Cl. 89—41 E 6 Claims



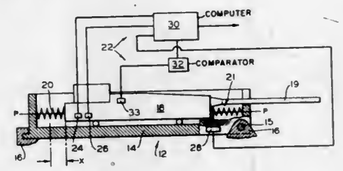
Device to give accurate information as to angular velocity of the turret and automatic interpolation of the tachometric and ballistic corrections dependent on speed, target distance and ballistic parameters in both the laying and sighting of the weapon so that the line of sight is held on target without any personal manipulation by the gun controller.

A turret is driven through a reduction gear box by a hydraulic engine controlled by a servo valve. There is connected to the turret through the reduction gearbox a device including a stator and a rotor, the relative shift between the stator which is connected to the turret and the rotor being used to control in part the servo valve controlling the hydraulic engine driving the turret. The aforesaid rotor is connected to a cylinder driven by a rotating disk at a controllable variable speed inasmuch as the roller is coupled to the disk by displaceable balls which are displaceable diametrally along the disk. The position of the balls between the roller and the disk is controlled through a servo motor in turn controlled by a potentiometer responding to the laying device for the associated gun. A potentiometer indicates the position of the balls between the disk and roller and this information is fed to a potentiometer which is also provided with a signal representing the time required for a projectile to travel to a specific target. The resulting signal is fed to a reticle control in the associated sighting device and a signal is generated indicating the correction of the reticle for purposes of further controlling the aforesaid servo valve.

3,677,135
MACHINE GUN HAVING A FIRING SYSTEM MEANS FOR OBTAINING SUBSTANTIALLY CONSTANT AND MINIMUM RECOIL FORCES

Edward J. Haug, Jr., Davenport, Iowa, assignor to The United States of America as represented by the Secretary of the Army

Filed Nov. 19, 1969, Ser. No. 878,120
Int. Cl. F41f 19/10
U.S. Cl. 89—42 B 5 Claims



A machine gun in which the recoil forces produced during a firing burst are substantially constant and are reduced to a minimum is provided with a cradle, a recoiling mass including a barrel and breech assembly slidingly mounted on the cradle for displacement responsive to discharge forces, a substantially constant accelerating force for driving the recoiling mass forward on the cradle, and a computerized firing system. The firing system comprises sensors providing signals proportional to forward displacement and velocity of the recoiling mass relative to a fixed point on the cradle and the acceleration of the cradle in the direction of fire with a control device comprising a computer and a comparator programmed to fire a round, responsive to signals from the sensors, at a point of time when the forward displacement and velocity of the recoiling mass and the acceleration of the cradle have values such that when a round is fired the impulse imparted to the recoiling mass is sufficient to drive the recoiling mass rearwardly to a reference point where its velocity will be zero.

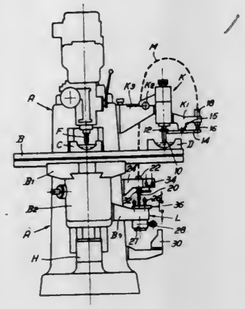
3,677,136
MASTER FOR MACHINE TOOLS, PARTICULARLY FOR MILLING MACHINES, TO REMOVE METAL BY LEVEL LAYERS

Angelo Girola, Via Alba 18, Busto Arsizio, Italy

Filed Dec. 29, 1969, Ser. No. 888,364
Int. Cl. B23q 35/04
U.S. Cl. 90—62 10 Claims

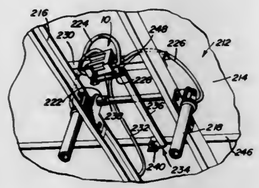
The tracer point of the master is operatively connected with

adjustable stops, which in accordance with the profile to be performed interfere to displace the workpiece in a constant



direction and independently from the profile to be reproduced presented by the template.

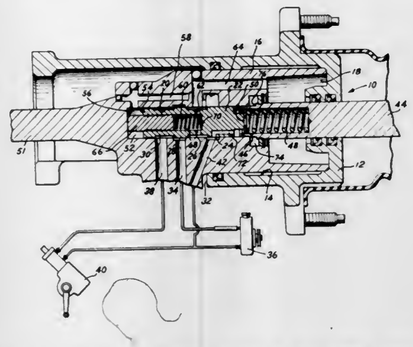
3,677,137
REVERSIBLE DIFFERENTIAL CONTROL VALVE AND SYSTEMS
Orville E. Stockwell, 536 First Ave., Greybull, Wyo.
Filed June 19, 1970, Ser. No. 47,831
Int. Cl. F01b *25/04*; F15b *15/22*
U.S. Cl. 91—6 **22 Claims**



Unequal loading of two or more fluid motor devices simultaneously imparting movement to a load, is sensed by torsional stress of a torque tube to actuate a differential valve assembly controlling flow of fluid between a pressure source and the fluid motor devices. A valve plunger actuated by the torque tube changes the flow paths within the body of the valve assembly under control of check valves to thereby compensate for unequal loading of the fluid motor devices.

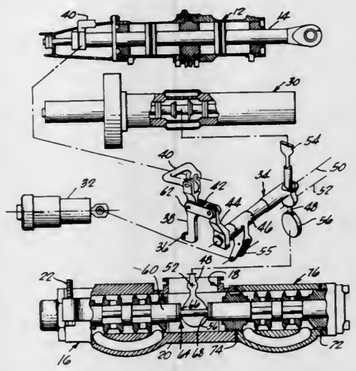
3,677,138
MECHANISM FOR HYDRAULIC BRAKE BOOSTER
Edward J. Goscenski, Marshall, Mich., assignor to The Bendix Corporation
Filed Nov. 19, 1970, Ser. No. 90,930
Int. Cl. F15b *9/10*
U.S. Cl. 91—373 **7 Claims**

A hydraulic brake booster is disclosed which includes a boost piston slidably mounted in a housing. A spool valve is slidably mounted in the piston and is shiftable from a first position venting the housing to a fluid reservoir to a second position communicating the housing with a pressure source. An operator-actuated input rod engages one end of the spool valve for shifting the latter. A compartment in the other end of the spool valve is communicated to the pressure source as the valve is shifted. A sliding plunger extends from the compartment to pressurize the fluid received in the latter whereby the force due to fluid pressure in the compartment is transmitted



to the actuating rod to retard movement of the latter thereby providing braking "feel" to the vehicle operator.

3,677,139
LINE REPLACEABLE UNIT CONTROL VALVE
Mildred S. Wheeler, Long Beach, Calif., assignor to McDonnell Douglas Corporation
Filed July 13, 1970, Ser. No. 54,197
Int. Cl. F15b *9/10*
U.S. Cl. 91—384 **4 Claims**

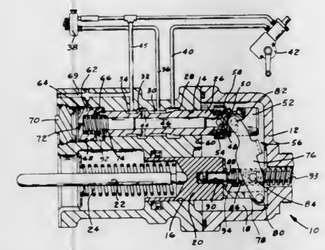


A control valve for a hydraulic actuator assembly is constructed in a manner holding certain dimensions therein within predetermined limits so that the valves are interchangeable without recalibration. In addition, the valves are constructed to be easily removed from a hydraulic actuator assembly with a straight line motion which does not adversely effect the calibration of the control valve and of the actuator assembly.

3,677,140
HYDRAULIC BOOSTER WITH SAFETY DEVICE
Arthur K. Brown, Jr., South Bend, Ind., assignor to The Bendix Corporation
Filed Nov. 23, 1970, Ser. No. 92,058
Int. Cl. F15b *13/10*
U.S. Cl. 91—391 **10 Claims**

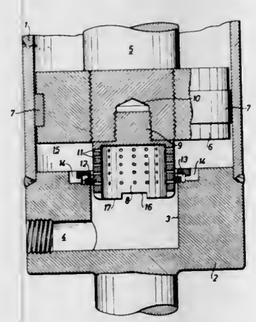
A hydraulic brake booster is disclosed which includes a spool valve slidably mounted within the booster housing to

control fluid communication between a source of hydraulic pressure and the booster pressure chamber. A secondary valve mechanism is slidably mounted on the end of the spool valve which closes when the vehicle operator effects a brake application and the spool valve fails to move. Closure of the secondary valve prevents a surge of hydraulic fluid from being communicated into the booster pressure chamber, should the spool valve move after a manual brake application has been initiated. A stop piston, which is slidably mounted in the



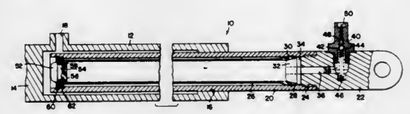
booster housing, engages the other end of the spool valve and cooperates with the secondary valve mechanism to prevent the latter from closing upon actuation of the spool valve if the fluid pressure level at the inlet of the booster is below a predetermined level. This feature permits hydraulic fluid to be communicated into the booster pressure chamber as soon as the vehicle's engine is started to assist the vehicle operator in applying the brakes of the vehicle.

3,677,141
DEVICE IN FLUID-CONTAINING CYLINDERS HAVING A FLUID-OPERATED PISTON
Roger Lagerqvist, and Stig Stenlund, both of Boras, Sweden, assignors to Monsun-Tison AB, Boras, Sweden
Filed Nov. 9, 1970, Ser. No. 87,910
Claims priority, application Sweden, Nov. 7, 1969, 15351/69
Int. Cl. F15b *15/22*
U.S. Cl. 91—394 **9 Claims**



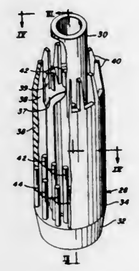
A fluid-controlled buffer device in cylinders having a fluid-operated working piston, comprising a cylindrical buffer piston mounted at the end of the working piston and adapted to enter into a cylindrical fluid outlet bore in an end wall of the cylinder, an annular clearance between the cylindrical surfaces of said buffer piston and said bore being sealed by a sealing-ring mounted with radial play in an annular notch located in either of said cylindrical surfaces the other cylindrical surface being provided with passages which when the buffer piston is moved into said bore initially permit escape of the fluid from the cylinder but then are successively closed by the sealing-ring.

3,677,142
EXPANSIBLE CHAMBER DEVICE WITH INTERNAL ACCUMULATOR
Wolfgang Roth, Oberauerbach, Germany, assignor to Deere and Company, Moline, Ill.
Filed Sept. 18, 1970, Ser. No. 73,375
Claims priority, application Germany, Oct. 30, 1969, P 19 54 604.4
Int. Cl. F01b *19/00*
U.S. Cl. 92—60 **5 Claims**



An extensible and retractable hydraulic motor having an internal accumulator comprising a cylinder, a piston reciprocally mounted within the cylinder, the piston being hollow and forming a chamber open to the interior of the cylinder, and an elastic container within the chamber filled with a compressible gas.

3,677,143
WELL SWAB
Charles D. Crickmer, 12923 Memorial Drive, Houston, Tex.
Filed June 26, 1970, Ser. No. 50,118
Int. Cl. F16j *1/04*
U.S. Cl. 92—241 **9 Claims**

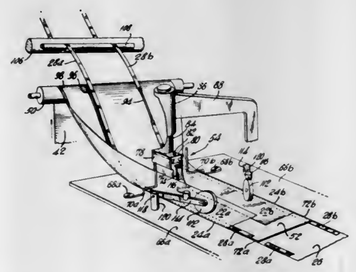


A well swab and more particularly a well swab having an improved arrangement of reinforcing members therein including inner and outer concentric rows of circumferentially spaced reinforcing members with the reinforcing members of the inner and outer rows being spaced such that there is no overlapping therebetween and further that the reinforcing members have upper portions thereof which extend axially upwardly from the swab cup body member.

3,677,144
METHOD AND APPARATUS FOR MANUFACTURING FLAT, TUBULAR WRAPPERS
Earl A. Hudson, Glens Falls, N.Y., assignor to Reliance Paper & Bag Co., Long Island City, N.Y.
Filed May 24, 1971, Ser. No. 146,218
Int. Cl. B31d
U.S. Cl. 93—1 R **15 Claims**

A method and apparatus for folding an elongated web of foldable sheet material into a flat tubular wrapper for receiv-

ing packages of predetermined dimensions. Opposed longitudinal side areas of the web of sheet material are folded into overlapping relation around a pair of opposed edges of a folding plate while a feeding structure continuously feeds the web along the folding plate. Adhesive is applied by a suitable structure, in advance of the folding plate, to elongated narrow zones of the web. One of these zones becomes located between overlapping portions of the folded side areas to fasten them to each other. The other two zones are located respectively beside the fold lines one beside one fold line at the longitudinal central area of the web between the fold lines and the other beside the other fold line outside of the longitudinal



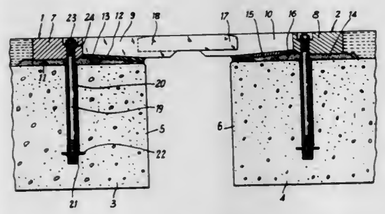
central area of the web. Stiffening strips are delivered to the inner surface of the web prior to folding thereof with these strips being respectively located beside the fold lines at the longitudinal central area between the fold lines. Thus, one of the strips adheres to the adhesive at the zone beside one fold line at the central area of the web while the other strip adheres to a folded side area when the latter is folded around a fold line to become located against the other stiffening strip. The thus folded sheet material together with the stiffening strips adhering thereto is cut into suitable lengths and score lines are provided at predetermined distances from the ends of each length.

3,677,145

EXPANSION JOINT FOR ROAD WORKS

Gerard Charles Lucien Wattiez, La Celle Saint Cloud, France, assignor to Compagnie Industrielle de Precontrainte et d'Equipment des Constructions (C.I.P.E.C.), Asnieres, France

Filed May 25, 1970, Ser. No. 40,199
Int. Cl. E01c *11/10*
U.S. Cl. 94—18 9 Claims



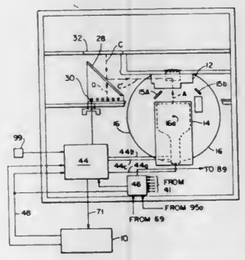
A concrete roadway having a joint between adjacent sections is provided with two plates, one secured upon each section, at the ends. The plates have interdigitating fingers to carry traffic over the joint. The plates are so tightly secured to the concrete by bolting that they remain in compression even when traffic is passing over the joint.

3,677,146

DATA SOURCE MICROFILM RECORDER WITH FORMS OVERLAY

Aager T. Nielsen, San Diego, Calif., assignor to Compufoto, Inc., Wellesley Hills, Mass.

Filed May 19, 1970, Ser. No. 38,718
Int. Cl. G03b *17/24*
U.S. Cl. 95—1.1 20 Claims



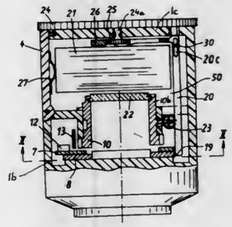
Microfilm apparatus in which a data-generated light display is combined with preprinted overlay information to produce superposed photographs. Featured are a logic system producing a sequential search through a stored series of transparencies with feedback ensuring proper selection of overlay transparency; mounting and positioning of the transparencies by means ensuring alignment; an axially centered disc form rotary transparency carrier together with a detent assembly precisely positioning the transparency and excluding transverse shift; and hard copy input systems sharing portions of the parts of the system, including the camera and in certain embodiments the light source, the screen mounting, the boresight or monitor and the beam combiner.

3,677,147

PHOTOGRAPHIC APPARATUS FOR MAKING EXPOSURES IN ACCORDANCE WITH THE CARRIER FREQUENCY METHOD

Rudolf Kremp, Gruenwald, and Alfred Winkler, Munich, both of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Dec. 21, 1970, Ser. No. 99,773
Claims priority, application Germany, Dec. 22, 1969, P 19 64 230.9
Int. Cl. G03b *19/02, 11/00, 17/36*
U.S. Cl. 95—1 R 19 Claims



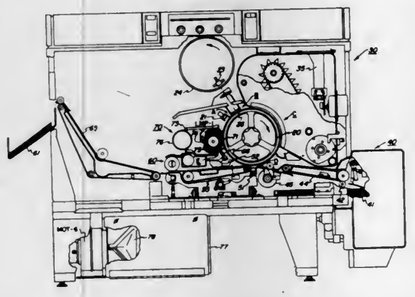
A photographic camera for repeatedly exposing a single film through a grating in accordance with the carrier frequency method has a release element which indexes the grating with reference to the film prior to opening of the shutter. The film is pressed against the grating while the shutter is open and the cassette for film has a shade which overlies the film before the cassette can be removed from the housing of the camera.

3,677,148

OPTICAL RECORDER

Philip L. Chen, Penfield, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 28, 1970, Ser. No. 101,671
Int. Cl. G41b *17/10*; G03g *15/00*
U.S. Cl. 95—4.5 R 10 Claims



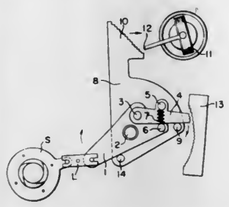
Non-impact printing or recording apparatus adapted for use with a digital computer. The apparatus is characterized by the employment of an optical character generator and timing system therefor capable of printing information on a moving photoresponsive medium.

3,677,149

INTERLOCKING DEVICE FOR THE EXPOSURE METER IN A CAMERA

Tatsuya Taguchi, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed July 23, 1970, Ser. No. 57,730
Claims priority, application Japan, July 28, 1969, 44/71497
Int. Cl. G03b *9/02*
U.S. Cl. 95—10 C 3 Claims



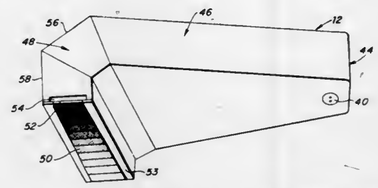
An interlocking device for the exposure meter in a camera includes a rotatable interlocking member engaging an exposure regulating member, a locking lever pivotally mounted on the interlocking member for rotation with the interlocking member, a needle scanning member engageable with the interlocking member and movable in response to the rotation of the interlocking member and the locking lever to scan the position of the needle of the exposure meter, and a fixed locking member. The locking lever is moved with respect to the interlocking member by the movement of the latter when the scanning member is stopped, and that movement of the locking lever is imparted to the fixed locking member without exerting any great force upon the needle of the photoexposure meter. Another embodiment further provides means to make the movement substantially linear of the lever which is moved by the exposure control interlocking pin provided at the lens. Moreover, means are provided for reducing the gap between the needle of the exposure meter and the stepped portion of the interlocking lever before exposure adjustment.

3,677,150

SENSITOMETER LIGHT SOURCE APPARATUS

Lloyd Clifford Sanford, Acton, Mass., assignor to Itek Corporation, Lexington, Mass.

Filed Oct. 2, 1970, Ser. No. 77,466
Int. Cl. G01j *1/52*
U.S. Cl. 95—10 R 19 Claims



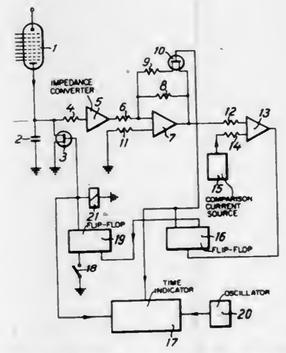
An exposure source unit for a sensitometer. The exposure source unit provides in a single structure the combination of a flash lamp, a photographic density wedge, and a plurality of radiation paths from the flash lamp to an exposure plane in which the photographic density wedge is located. The exposure source unit is constructed to provide substantially uniform radiation over the entire area of the exposure plane. In first and second embodiments, a flash lamp is located adjacent to one end of the exposure source unit, and the exposure source unit presents a plurality of folded optical paths to the exposure plane. The folded optical paths prevent radiation from directly striking the exposure plane. The cross sectional area of the exposure source unit increases as the distance from the flash lamp increases. The internal walls of the unit are formed of highly reflective, light scattering surfaces so that light is thoroughly scattered before reaching the exposure plane. In a third embodiment, the exposure source unit is constructed of clear plastic and is shaped so radiation from the lamp is selectively internally reflected within the unit and selectively transmitted from the unit to provide substantially uniform radiation over the entire area of the exposure plane.

3,677,151

ELECTRONIC EXPOSURE TIME MEASURING CIRCUIT WITH TIME INDICATOR AND SHUTTER CONTROL MEANS

Nickel Werner, Sinn, Germany, and Christopoulos Nikolaos, Piraus, Greece, assignors to Ernst Leitz GmbH, Wetzlar, Germany

Filed Jan. 11, 1971, Ser. No. 105,574
Claims priority, application Germany, Feb. 11, 1970, P 20 06 025.07
Int. Cl. G03b *17/18, 9/62, 7/08*
U.S. Cl. 95—10 CE 4 Claims



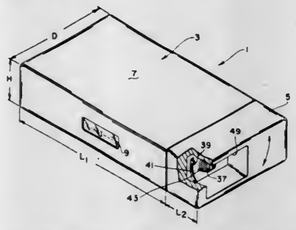
A combined electronic exposure time measuring device with time indicator and shutter control means. The shutter

control means is operated in dependence on the voltage level of a capacitor, and electronic means are provided for amplifying the capacitor voltage immediately at the beginning of the measurement during a fraction of the exposure time to be expected. The voltage thus reaches quickly a comparison level and the pulse obtained thereby is used for stopping the indicating device and also for switching the amplification to a ratio of 1:1. Thereafter, the voltage level approaches slowly again the comparison level and the second pulse obtained is used for controlling the shutter and bringing the circuit back to its starting condition.

3,677,152
CAMERA

James E. Dierks, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 27, 1971, Ser. No. 110,218
Int. Cl. G03b *19/02*
U.S. Cl. 95—11 R **7 Claims**

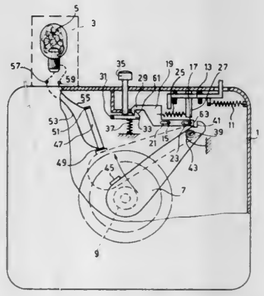


A camera including a generally prismatic body which includes a pair of relatively rotatable sections. One section houses a mechanism for transporting film strip past an exposure station at which frames of film are sequentially exposed, and the other section is coupled to the transport mechanism and is rotatable for successively actuating the mechanism to effect the incremental advancement of the film. The provision of the actuating means changes no camera dimension other than slightly increasing the length of the camera.

3,677,153
CAMERA WITH PIEZOELECTRIC CRYSTAL FLASH IGNITION SYSTEM

Johannes Gerardus Bok, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Sept. 24, 1969, Ser. No. 860,582
Claims priority, application Netherlands, Sept. 27, 1968, 6813923
Int. Cl. G03b *19/02*
U.S. Cl. 95—11 R **1 Claim**

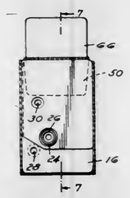


A camera comprising percussive means on the shutter blade for striking a piezoelectric crystal device and thereby producing an electric voltage for igniting flashlamps when the aperture of the lens is exposed by the shutter blade. The energy required for exposing the lens aperture and striking the crystal is provided by a spring that is tensioned by the film transport mechanism.

3,677,154
CARD AND HOLDER FOR FINGERPRINT IDENTIFICATION SYSTEM

Charles K. Lee, Van Nuys, Calif., and Vernon J. Burzan, Dexter, Mich., assignors to KMS Industries, Inc., Ann Arbor, Mich.

Filed July 23, 1970, Ser. No. 57,580
Int. Cl. G03b *17/24*
U.S. Cl. 95—1.1 **6 Claims**

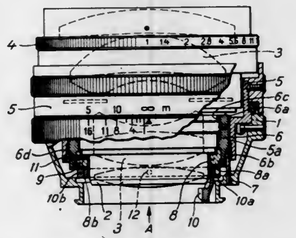


An identification card and holder for personal identification in the form of an apertured sheet of material carrying a holographic transparency at a perforation for holding data such as a finger print, and a holder for said card in the form of an envelope with apertures to register with the transparency and a light mask slidable in the envelope from a position covering the transparency to a position to expose the transparency to a light source, the envelope and mask cooperating to position the mask in a covering position or an exposed position.

3,677,155
LENS MOUNT

Gerhart Bechmann, Midland, Ontario, Canada, assignor to Ernst Leitz GmbH, Wetzlar, Germany

Filed Aug. 2, 1971, Ser. No. 168,032
Claims priority, application Germany, Aug. 13, 1970, P 20 40 227.1
Int. Cl. G03b *13/02*
U.S. Cl. 95—44 C **4 Claims**



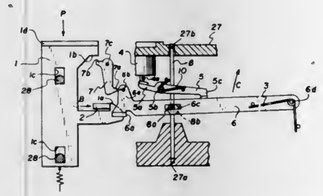
For setting a photographic objective to a specific object distance, the objective is provided with an inner lens barrel (2) wherein a plurality of lenses are mounted, and with an outer range adjustment ring (5). The lens barrel moves back and forward in axial direction upon rotation of the adjustment ring (8). A cam ring having its cam extending in axial backward direction is coaxially mounted around the lens barrel for joint back and forward movement. Mechanical means

(6) interconnect the cam ring with the range adjustment ring so that the cam ring is both displaced axially and also rotated when the objective is set to a specific distance. A cam follower is tiltably provided in the lens mount having one arm projecting in the direction of the camera body. The arm moves back and forward during range adjustment as a function of the difference between the lens barrel displacement and the cam gradient and transmits information to the range finder in the camera body.

3,677,156
SIMPLIFIED SYNCHRONIZING MECHANISM FOR CAMERAS ADAPTED TO USE MECHANICALLY FIRED FLASH LAMPS

Helmut Ettischer, Stuttgart-Wangen, Germany, assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 19, 1970, Ser. No. 65,035
Claims priority, application Germany, Aug. 23, 1969, P 19 43 054.7
Int. Cl. G03b *15/04*
U.S. Cl. 95—11.5 R **2 Claims**



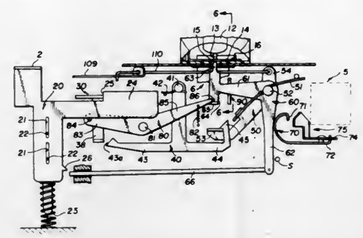
A photographic camera is provided with a simplified flash synchronizing mechanism utilizing a flash control lever which is positioned to be operative only when a flash unit is mounted. For natural light photography, shutter driver release is controlled solely by a latch arm which is an element of the camera release. With a flash unit mounted, the flash control lever is moved to an operative position where it is actuated through a linkage with the camera release and serves both as a final latch releasing the shutter driver and as a connecting link transmitting actuating force to the flash unit. Since both shutter and flash actuation are effected through a single operative motion of the flash control lever, synchronized operation is achieved.

3,677,157
CONTROL, SIGNAL AND ACTUATING MECHANISM FOR USE WITH PHOTOFLASH LAMP UNITS HAVING PRE-ENERGIZED STRIKERS

Edward L. Sturm, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 14, 1968, Ser. No. 767,145
Int. Cl. G03b *15/04*
U.S. Cl. 95—11.5 R **13 Claims**

A sensing probe movable into contact with a pre-energized striker element of a percussion-ignitable photoflash lamp in response to partial actuation of the shutter release of a camera. In response to the sensing probe, a signal is presented in the camera view finder and/or the shutter release lever is locked to prevent picture-taking. A control is provided to prevent operation of the sensing member when a flash unit is not mounted in the camera. The striking element is released

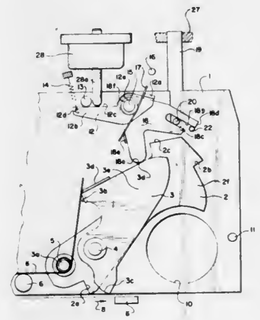


by first non-releasingly engaging the striker with an actuating member, then striking the member to effect release.

3,677,158
MECHANISM FOR SYNCHRONIZING OPERATION OF A CAMERA SHUTTER AND A MECHANICALLY ACTUATED FLASH DEVICE

Wolfgang Ort, Stuttgart-Bad Cannstatt, Germany, assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 29, 1970, Ser. No. 86,528
Claims priority, application Germany, Nov. 3, 1969, P 19 55 080.2; Nov. 3, 1969, G 69 42 571.4
Int. Cl. G03b *9/70*
U.S. Cl. 95—11.5 **3 Claims**



A member is positioned to act as a stop on shutter blade travel thus controlling camera exposure time. The member has a normal position and a flash position to which it is moved by the mounting of a flash device. In the flash position the member permits increased shutter travel thus increasing exposure time and it further acts as a linkage transmitting energy from the shutter blade to actuate a mechanically operable flash device.

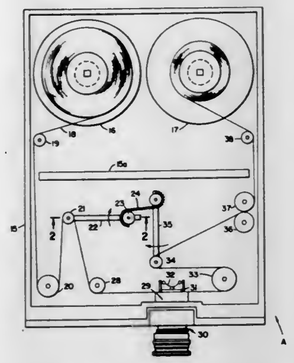
3,677,159
MICROFILM CAMERA

David K. Studley, Palo Alto, Calif., assignor to Quantor Corporation, Cupertino, Calif.

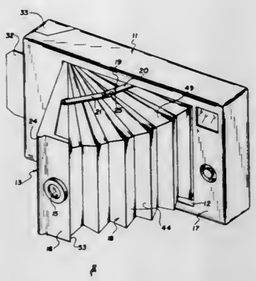
Filed July 27, 1970, Ser. No. 58,380
Int. Cl. G03b *1/18, 1/54, 21/43*
U.S. Cl. 95—31 EL **12 Claims**

A microfilm camera having a high speed frame advance system comprising a pair of idler arms adapted to control the supply and take-up of microfilm so as to maintain substantially constant tension thereon. An aperture at which the microfilm is photographically exposed and a frame advance drive roller

are disposed between the idler arms. The frame advance drive roller is rotatably driven, on demand, by a servomotor which is energized by a digital control circuit. The digital control circuit receives feedback information from a shaft encoder connected to the servomotor and functions to accelerate and decelerate the servomotor in response thereto.

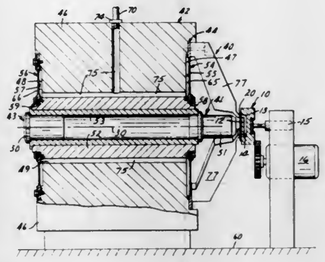


3,677,160
COMPACT FILM-PACK CAMERA
Donald M. Harvey, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Dec. 2, 1970, Ser. No. 94,360
Int. Cl. G03b *17/04*
U.S. Cl. 95—40 4 Claims



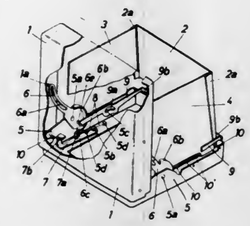
A self-processing film-pack camera is provided with a cover door having one end hinged to a boxlike camera housing and an opposite end for supporting an objective of the camera. A three-sided light-tight bellows is coupled between the housing and door in a manner permitting movement of the latter between a closed position, wherein the door is substantially parallel to one wall of the housing, and an open position, wherein the door extends outwardly from the housing at an oblique angle. When the door is closed, the bellows is collapsed with its three sides located within the housing laterally adjacent corresponding sides of the housing. Exposed film units are removed from the housing through an opening in a fourth side aligned with an opening in the camera housing. This construction allows the thickness of the closed camera to be reduced in comparison to similar previously known cameras in which a collapsed bellows is located between the film pack and the camera door.

3,677,161
HIGH REDUCTION CAMERA AND LOCATING APPARATUS
Derrick A. Jones, Woodbury, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Feb. 16, 1970, Ser. No. 11,367
Int. Cl. G03b *3/10*
U.S. Cl. 95—45 2 Claims



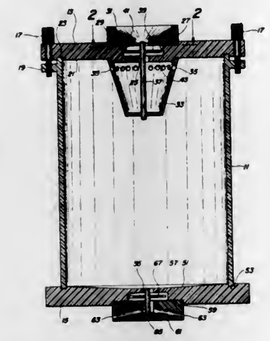
Locating apparatus, utilized in combination with a high reduction imaging system including a photographic film holder, an image projector and wherein the locating apparatus includes two circular diaphragms for supporting a lens holder, and pressurized fluid means acting on the diaphragms to produce a differential force to deflect the diaphragms and precisely position the lens holder relative to a test sample of photographic film.

3,677,162
HOOD FOR A FOCUSING SCREEN OF A CAMERA
Junichi Yokozato, Tokyo, Japan, assignor to Zenza Bronica Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 1, 1970, Ser. No. 93,955
Claims priority, application Japan, Dec. 8, 1969, 44/116580
Int. Cl. G03b *11/04*
U.S. Cl. 95—47 4 Claims



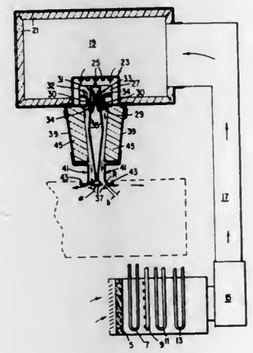
A focusing or light-hood for a focusing screen of a photographic camera, the hood having three hinged plates and a hinged front covering plate, forming a square hood, in which the front covering plate can be folded over the focusing screen, the hood having a structure wherein the uppermost front covering plate is pressed to be turned backward for being folded, the turning movement of which is transmitted to the other three covering plates pivotally mounted on two sides and the back of the screen, the closure of the hood being caused by pressing the front covering plate; the hood which is thus collapsed can be erected with one touch of the front covering plate.

3,677,163
METHOD AND APPARATUS FOR PROCESSING PHOTOGRAPHIC FILM
Roy Donald Porter, Victoria, Australia, assignor to Eastman Kodak Company, Rochester, N.Y.
Filed May 10, 1965, Ser. No. 454,543
Int. Cl. G03d *1/14*
U.S. Cl. 95—90.5 6 Claims



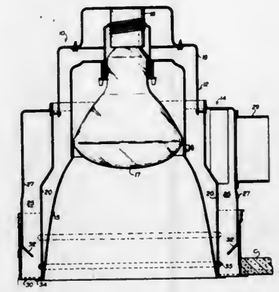
A light-tight tubular processor housing adapted to receive a sheet of photographic material therein and having a liquid admitting opening at one end, a liquid discharge opening at the other end and a reservoir within the housing which communicates with the liquid admitting opening and with the interior of the housing. The reservoir receives a processing liquid and stores the same out of contact with the interior of the housing in a first orientation and subsequently discharges the liquid into the housing upon movement of the latter to a second orientation.

3,677,164
CEILING AIR TERMINAL
Darwin G. Traver, De Witt, and Carl C. Herb, Syracuse, both of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.
Filed Nov. 29, 1968, Ser. No. 779,834
Int. Cl. F24f *13/08*
U.S. Cl. 98—40 D 1 Claim



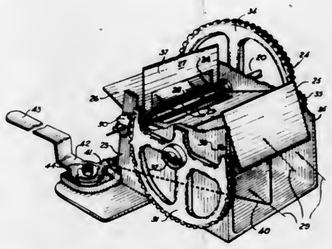
A ceiling air terminal employing inflatable bladders for regulating the volume of conditioned air discharged therefrom into the area being conditioned.

3,677,165
ADJUSTABLE AIR PATTERN AIR DIFFUSER
James C. Gibbs, and Harry Danielsersch, both of Danbury, Conn., assignors to Connor Engineering Corporation, Danbury, Conn.
Filed Oct. 23, 1970, Ser. No. 83,436
Int. Cl. F24f *13/06*
U.S. Cl. 98—40 DL 5 Claims



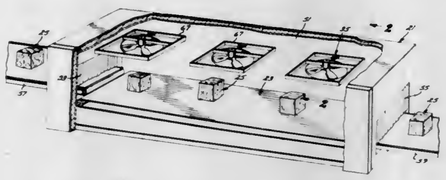
An air diffuser providing a selectively adjustable air distribution pattern for use in combination with lighting fixtures or the like. An air distributing plenum is formed by an inner wall surrounding the lighting fixture, or the like and an outer wall spaced from the inner wall and defining an air flow channel between said walls leading to an outlet adjacent the open end of the lighting fixture. The pattern of discharge of air from the channel outlet is selectively controlled by means of an elastic deflector band surrounding and elastically gripping the inner wall, said band extending into the air path in the channel and subject to selective positioning with respect to the channel outlet to deflect the air discharge from the outlet.

3,677,166
ADJUSTABLE SPEED AIR DRIVE-AIR SWEEP FOR AIR CONDITIONER
George William Siak, Jr.; Arthur William Miller, and Frank Koleszar, all of Evansville, Ind., assignors to Whirlpool Corporation
Filed April 30, 1970, Ser. No. 33,403
Int. Cl. E06b *7/084*
U.S. Cl. 98—94 13 Claims



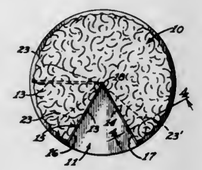
A variable directing apparatus for a fluid stream that may be used, for example, to direct air emerging from a room air conditioner. The apparatus includes movable directing means for changing the direction of the fluid stream and a fluid propelled rotatable device in a portion of the fluid stream for moving the directing means. The apparatus also has an adjustable fluid blocking device for blocking the stream to the rotatable device to a desired degree so as to regulate the speed of rotation of the rotatable means and thus the speed of movement of the movable fluid directing device.

3,677,167
APPARATUS FOR PRESERVATION OF MEAT
Dennis Richard Berg, 10216 Vultee #2, Downey, Calif.
Filed Jan. 7, 1970, Ser. No. 1,263
Int. Cl. A47J 47/02
U.S. Cl. 99—234 6 Claims



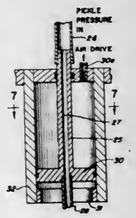
A method for packing meat in a preservative atmosphere including the steps of subjecting the meat to a freezing atmosphere of preservative gas for a time sufficient to freeze a crust on the meat to trap a quantity of such gas therein. The meat is then placed in a container and the container hermetically sealed. Thereafter, the meat may be stored and the crust thawed to release such quantity of gas to create a preservative atmosphere within the container.

3,677,168
PIE AND CAKE SAVER
R. Gordon Bell, 6815 N. 58th Place, Scottsdale, Ariz.
Filed June 4, 1971, Ser. No. 150,032
Int. Cl. A47J 43/00
U.S. Cl. 99—234 S 5 Claims



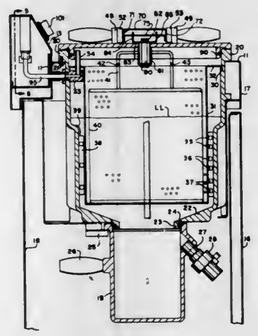
A culinary device for shielding the cut surfaces of cakes, pies and the like comprising one continuous piece forming two flat plates pivotally attached by an integrated hinge structure.

3,677,169
MEAT PICKLING MACHINES AND THE LIKE
Joseph S. Francis, 1057 E. 161st St., South Holland, Ill.
Filed Nov. 4, 1970, Ser. No. 86,725
Int. Cl. A23b 1/16
U.S. Cl. 99—256 2 Claims



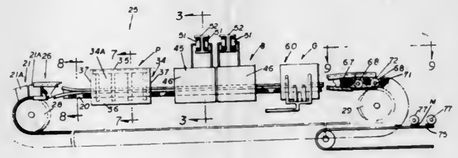
A meat pickling machine of the type wherein the meat body is advanced either continuously or intermittently past a pickling stage where a pickling needle is driven up and down to pierce the body being pickled, such needle being provided with a longitudinally extending pickling liquid supply passage terminating in a tapered and pointed lower end, such passage being connected to a source of pickling fluid which is delivered out from such longitudinal needle passage through one or more lateral openings of the needle during the interval of pierce of the meat body by such needle, provision being made for return of the needle to its non-piercing position after each piercing and liquid delivering operation preparatory to the succeeding operation, the present improvements concerning structural and operational features of the piercing needle and the cylinder wherein it operates and the manner wherein such operations are produced.

3,677,170
PRESSURE COOKING APPARATUS
Winston L. Shelton, Jeffersontown, and Eugene A. Pottinger, Louisville, both of Ky., assignors to Commercial Appliances, Inc., Jeffersontown, Ky.
Filed Sept. 29, 1970, Ser. No. 76,557
Int. Cl. A47J 37/12
U.S. Cl. 99—337 7 Claims



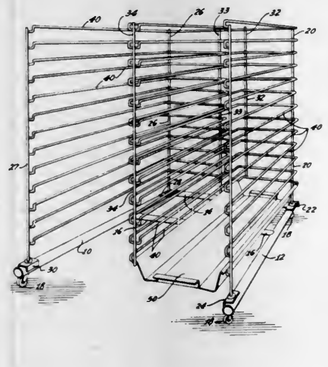
An apparatus for cooking food under pressure in a basket while immersed in a batch of cooling liquid includes a separable unit for collecting particles of food dropping from the basket, and for enhancing the useful life of the liquid and the edibility of the food. The cooking vessel is controllably heated and the apparatus is provided with a plurality of pressure relieving means for protection of the user.

3,677,171
APPARATUS FOR COOKING STRIPS OF MEAT
Wayne P. Le Van, 310 E. 44th St., New York, N.Y.
Filed July 24, 1970, Ser. No. 57,904
Int. Cl. A47J 37/00
U.S. Cl. 99—339 23 Claims



This disclosure is directed to a method and apparatus for cooking or broiling strips of bacon or the like by conveying a plurality of strips of bacon between a pair of complementary heat pervious belts arranged to travel in unison so that the relative linear speed therebetween is maintained substantially zero. The strips so conveyed are first advanced through a steam oven or bath wherein the strips are preheated to a predetermined temperature. The preheated strips are then conveyed through a broiling oven. Subsequent to the broiling operation the cooked strips are passed through a vacuum chamber in which the liquified fat or grease is removed by evacuation. The bacon strips are then subsequently blotted on each side to further remove the grease or fat adhering thereto prior to the packaging operation.

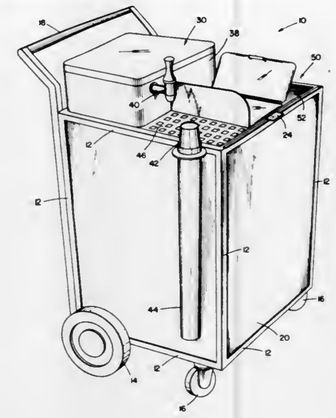
3,677,172
COOKING RACK-PAN COMBINATION
James D. Wilson, Long Beach, Calif., assignor to Banner Metals, Inc., Compton, Calif.
Continuation-in-part of Ser. No. 853,380, Aug. 27, 1969, abandoned. This application Sept. 2, 1970, Ser. No. 68,850
Int. Cl. A47J 37/10
U.S. Cl. 99—347 4 Claims



An improved rack-pan combination is provided which has particular utility in the industrial cooking of food, such as fish. The combination of the invention includes an improved rack which may be nested with other similar racks, and it includes a plurality of impervious pans, which likewise may be nested with other similar pans, the pans being supported in a stacked relationship on the rack and supporting the food being cooked.

3,677,173
STEAMER AND SODA-DISPENSING SYSTEM
William A. Fogle, Jr., 3008 Dunmurray Road; Joseph B. Jason, 3018 Liberty Parkway, and Richard A. Head, 2239 Searles Road, all of Baltimore, Md.
Filed Aug. 3, 1970, Ser. No. 60,327
Int. Cl. A47J 39/02
U.S. Cl. 99—357 10 Claims

A steamer and soda-dispensing system includes an enclosed housing having removable side panels and is provided with rollers for portability. A handle is mounted on an upper portion of the housing to facilitate manual control and movement of the housing. Pressurized, soda containers are positioned inside the housing and feed soda through a cooling unit to a manually operated dispensing faucet. A burner and an associated fuel tank are located inside of the housing and facilitate the heating of a steaming unit for cooking hot dogs and the like. A cup dispenser and facilities for supporting mustard and catchup containers are included with the housing.



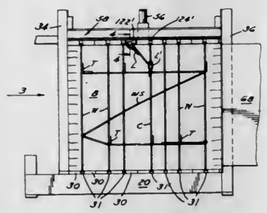
3,677,174
DEEP FAT FRYING EQUIPMENT AND METHOD OF USE
Arthur F. Pelster, and Donald D. Modglin, both of Nashville, Tenn., assignors to Kentucky Fried Chicken Corporation
Filed Dec. 10, 1970, Ser. No. 96,790
Int. Cl. A47J 37/12
U.S. Cl. 99—417 8 Claims



Equipment for and method of use of a closed, pressurized cooking system for deep fat frying of moisture-containing foods, e.g., chicken parts, which includes a cooker having a closable steam-tight cooking chamber to contain a pool of hot liquefied fat of predetermined depth. This cooker is adapted to have removably immersed therein a plural-tiered support rack which has a series of vertically spaced supporting devices removably to carry respectively a stack of food-loaded racks. The invention provides in combination therewith at least one substantially closed, substitute tank of relatively high heat transfer character, such as aluminum, and equipped with an upwardly extending, filler standpipe having an open top end to extend above the level of the surface of the pool, for delivery into the tank chamber of a quantity of water and for venting therefrom steam to which the water is converted during the cooking procedure. The weight of the standpipe-equipped tank and its contained water approximates the weight of a normally food-loaded shelf rack for which it is substituted with the rate of venting of the steam approximating that from the food carried by this shelf rack should the latter be supported in the stack rather than the substitute water-containing tank.

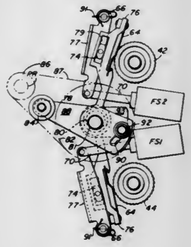
A group of such water-containing substitute tanks are provided to occupy the positions in the plural-tiered support rack of the stack of food-loaded shelf racks except the bottom position which is at least always occupied during each cooking cycle by one of the food-loaded shelf racks.

3,677,175
BALE EJECTOR
Neil T. Marvin, Novi, Mich., assignor to Bra-Can Industries, Inc., Livonia, Mich.
Filed April 12, 1971, Ser. No. 133,141
Int. Cl. B30b *15/32*
U.S. Cl. 100—35 10 Claims



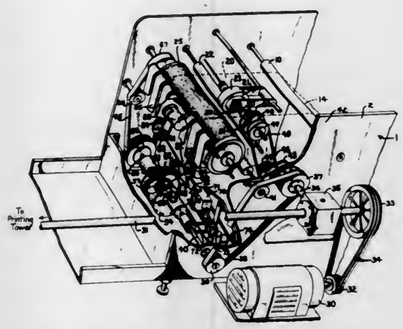
The removal of bales from a baler having a vertically reciprocable press platen and a side opening baling chamber door is effected by passing a lifting cable around the bale while in the chamber and connecting the cable to a bale lifting arm projecting laterally from the compacting platen over and beyond the chamber door opening such that upon raising the platen the bale is swung outwardly from the chamber and upon descent of the platen the bale may be rested on a support outside the chamber.

3,677,176
RIBBON CONTROL APPARATUS FOR HIGH SPEED PRINTERS
John J. Foley, West Acton; Wallace J. Satas, Hudson, and Joseph Konkel, Lynnfield, all of Mass., assignors to Data Printer Corporation, Cambridge, Mass.
Filed Sept. 10, 1970, Ser. No. 71,154
Int. Cl. B41j *34/14*
U.S. Cl. 101—96 5 Claims



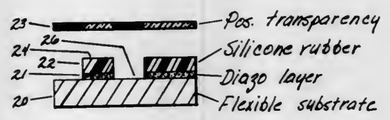
Ribbon control apparatus for a high speed printer in which the ribbon is intermittently and reversibly driven between a pair of reels while being steered from side to side to prevent a net uneven takeup on one reel or the other. The ribbon drive is synchronized with the type carrier and enabled by a print signal produced while printing is in progress. Counting means stepped by the counter when the print signal is absent delays disengagement of the ribbon drive to ensure movement of the ribbon at least one each print cycle.

3,677,177
DRIVE FOR CONTROLLING WEB LENGTH IN ROTARY PRINTING PRESSES
Roy R. Smith, Jr., Leawood, Kans., assignor to Smith R.P.M. Corporation, Kansas City, Mo.
Filed July 28, 1970, Ser. No. 58,809
Int. Cl. B41f *13/02*
U.S. Cl. 101—228 1 Claim



A rotary press web infeed includes a differential transmission having a spider assembly rotatable through a variable speed drive controlled by a reversible motor operated by a web length measuring system, providing extremely fine control of paper infeed to the press.

3,677,178
DRY PLANOGRAPHIC PLATES AND METHODS, PRODUCTION AND USE
Harry F. Gipe, Baltimore, Md., assignor to Scott Paper Company, Delaware County, Pa.
Continuation-in-part of Ser. No. 494,768, Oct. 11, 1965, abandoned. This application Feb. 19, 1968, Ser. No. 706,286
Int. Cl. B32b *25/20*; B41m *1/00*; B41n *1/12*
U.S. Cl. 101—450 9 Claims



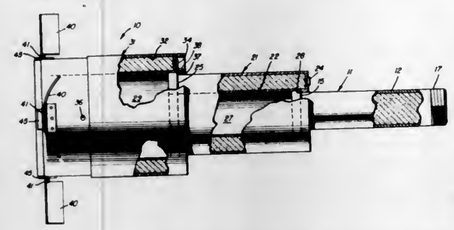
A new "dry planographic" plate comprised of a flexible substrate having coated thereon a cured solid but elastic silicone rubber film which will not remove conventional lithographic ink from an ink roller on a printing press, a method of producing this plate and a new "dry planographic" process wherein the new planographic plate of the present invention is not wet with a fountain solution.

3,677,179
TELESCOPING ORDNANCE DEVICE
Lester A. Potteiger, Fredericksburgh, Va., and The United States of America as represented by the Secretary of the Navy
Filed Sept. 29, 1966, Ser. No. 583,498
Int. Cl. F42b *13/32*
U.S. Cl. 102—56 12 Claims

1. An ordnance device adapted for flight through the air comprising:

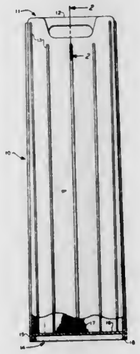
a plurality of individual warheads in telescoped relation;

means for extending the length of the ordnance device from a collapsed position for storage to an extended position in flight; and



stop means on each of said warheads for preventing separation of adjacent warheads when said device is in its extended position.

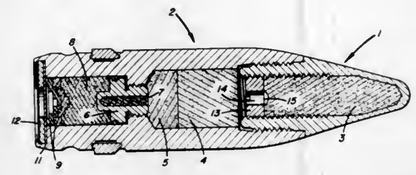
3,677,180
EXPLOSIVE DEVICE AND CONTAINER
William E. Thomas, Bartlesville, Okla., assignor to Phillips Petroleum Company
Filed Nov. 20, 1970, Ser. No. 91,274
Int. Cl. F42b *3/00*
U.S. Cl. 102—24 R 5 Claims



An explosive device is formed by an elongated, tapered tube closed at the smaller diameter end. A carrying handle is formed on the closed end. The interior of the tube is filled with an explosive material, such as a mixture of ammonium nitrate and a liquid hydrocarbon. A cap is sealed across the larger diameter end of the tube.

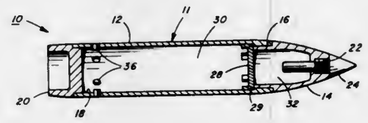
3,677,181
PROJECTILE WITH MULTIPLE EFFECT
Gunnar Giljarhus, and Hans Vien, both of Raufoss, Norway, assignors to A/S Raufoss Ammunisjonsfabrikker, Raufoss, Norway
Filed Oct. 15, 1969, Ser. No. 866,662
Int. Cl. F42b *13/04*
U.S. Cl. 102—52 4 Claims

A multiple effect projectile having two incendiary charges connected by a bore and an explosive charge behind the



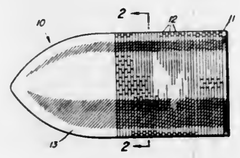
second incendiary charge so that the explosive charge is detonated without a separate fuse.

3,677,182
BASE EJECTING PROJECTILE
Ralph Peterson, Morris County, N.J., assignor to The United States of America as represented by the Secretary of the Army
Filed Oct. 29, 1970, Ser. No. 85,071
Int. Cl. F42b *13/46*
U.S. Cl. 102—66 5 Claims



A base ejecting projectile includes a casing defining a cavity, fuse means closing the cavity at one end and an end cap closing the cavity at the other end. Actuation of an ignition device and an expelling charge generates pressurized gas within the cavity, which pressurized gas causes a piston to slide within the cavity and expel a cargo therefrom. Escape of the pressurized gas from the cavity with an attendant signature noise is precluded by sealing means which prevent the rapid escape of pressurized gas from the cavity concurrently with or subsequent to cargo expulsion.

3,677,183
PRE-SHAPED FRAGMENTATION DEVICE
James C. Talley, Dahlgren, Va., assignor to The United States of America as represented by the Secretary of the Navy
Filed Oct. 31, 1966, Ser. No. 591,005
Int. Cl. F42b *13/48*
U.S. Cl. 102—67 7 Claims

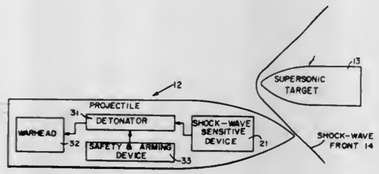


There is disclosed a cylindrically-shaped fragmentation device consisting of a plurality of preformed shims or wafers arranged in brick-like fashion to form an explosive casing. The shims project edge-on when the munition is detonated but due to their unique shape they assume a dynamically stabilized flight path.

3,677,184
PROXIMITY FUZES

Jacob Rabinow, Takoma Park; Israel Rotkin, Silver Spring, and Allen V. Astin, Bethesda, all of Md., assignors to The United States of America as represented by the Secretary of the Army

Filed Aug. 16, 1955, Ser. No. 528,856
Int. Cl. F42c 11/02, 13/06, 5/00
U.S. Cl. 102—70.2 P 1 Claim



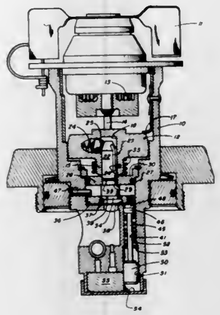
1. In an ordnance missile, a proximity-type ordnance fuze adapted to detonate said missile when said missile passes through the shock-wave front produced by a high velocity target, said fuze comprising in combination: a pressure-sensitive switch; said switch comprising a cylindrical housing, a perforated electrically conductive diaphragm mounted in said housing, the diameter of said diaphragm being substantially normal to the axis of said missile and the longitudinal axis of said cylindrical housing, one end of said housing being internally threaded an externally threaded ring adapted to mate with the threaded end of said housing and movable therein in a direction parallel to said axis of said missile, said ring and diaphragm being positioned such that movement of said ring in said direction causes said ring to press against said diaphragm thereby increasing the tension of said diaphragm, an electrical contact fixed in said housing substantially perpendicular to the diameter of said diaphragm, said contact extending adjacent to and spaced from said diaphragm, said contact being insulated from said housing, said diaphragm being sufficiently flexible so that said diaphragm can contact said contact as a result of abrupt changes in pressure encountered when said missile passes through said shock-wave front; detonation means adapted to detonate said missile in response to the application of a firing signal thereto; and an energy source connected in series with said detonation means and said switch, the contacting of said diaphragm and contact causing a firing signal to be applied by said energy source to said detonation means thereby causing detonation of said missile.

3,677,185
ARMING DEVICE

William H. Reams, Columbia, Md., assignor to The United States of America as represented by the Secretary of the Navy

Filed Oct. 13, 1969, Ser. No. 865,707
Int. Cl. F42c 15/24
U.S. Cl. 102—78 4 Claims

An arming device which requires both air vane rotation of a predetermined duration and target impact in sequence to complete arming. Movement of an arming rotor from an unarmed to an armed position is blocked by a plunger biased from the arming rotor path of movement but prevented from responding to the biasing action by a rotary element in the path of the plunger. The rotary element is freed for movement by the plunger only upon sensing of the sequential occurrence

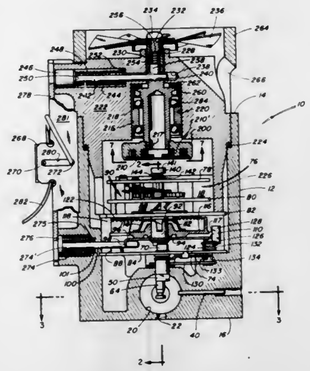


of the air vane rotation of predetermined duration and target impact.

3,677,186
VELOCITY DISCRIMINATING TIME MECHANICAL ORDNANCE FUZE

Arnold S. Munach, Rockville, Md., assignor to The United States of America as represented by the Secretary of the Navy

Filed Oct. 1, 1969, Ser. No. 862,700
Int. Cl. F42c 9/02
U.S. Cl. 102—83 20 Claims

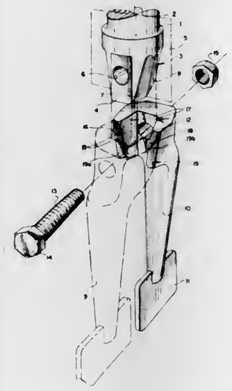


A mechanical ordnance fuze having an arming slider held by a timer controlled lock and a catch rod. Axially aligned with the catch rod are a pair of centrifugally opened detents attached to a shaft rotated by a wind driven vane. When the vane is rotating sufficiently fast to open the detents, the catch rod, released by the timer, passes between the detents and clears the arming slider, thereby allowing the slider to arm when released by the lock. Otherwise the catch rod is blocked by the unopened detents and when the timer operates to unlock the slider, it is caught by the catch rod and the fuze remains unarmed.

3,677,187
REVERSIBLE TAMPING BAR

John Kenneth Stewart, Columbia, S.C., assignor to Tamper Inc., West Columbia, S.C.

Filed Aug. 17, 1970, Ser. No. 64,351
Int. Cl. E01b 27/00
U.S. Cl. 104—10 1 Claim

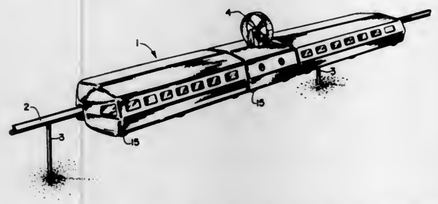


Railway ballast tamping mechanism has an oscillatable shaft terminating at its lower end in a nose which has a lateral bore. A pair of tamping tool supports have similar lateral bores adapted to be aligned with the nose bore to receive the shank of the bolt of a nut and bolt combination for securing the supports one on each side of the nose. The nose has faces inclined inwardly both from top to bottom and laterally from a vertical plane which contains the axis of the shaft and is perpendicular to the horizontal plane containing the axes of the bores. The nose has four of such faces, two on each side of and adjoining said plane, and the supports have opposed pairs of faces correspondingly inclined to mate with the nose faces so that any tendency of the supports to move upward places the bolt in tension.

3,677,188
STABILIZING MONORAIL VEHICLE

Marcel E. Bordes, P. O. Box 26124, New Orleans, La.

Filed May 12, 1969, Ser. No. 823,580
Int. Cl. B61b 13/06; B61c 13/08; B61d 17/02
U.S. Cl. 104—120 20 Claims

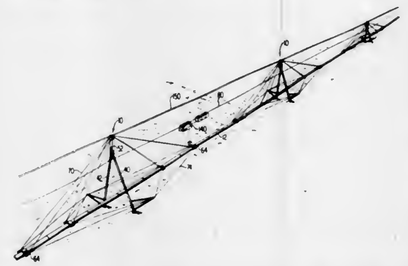


A vehicle for a monorail system wherein the vehicle straddles and freely turns about the rail either directly in the case of a cylindrical monorail or by means of specially designed running gear wherein the cab proper then turns about the running gear; the center of gravity of the vehicle is located below the axis of as oscillation of or turn center and the sides are symmetrically and conversely formed in order to divert side winds both above and below the vehicle for negating the effects of side winds; the vehicle can be easily removed from the rail; the seats and baggage platforms or other weights are moved laterally to balance the vehicle and emergency braking system is provided, which includes a friction member on the underside of the vehicle which mates with the rail upon withdrawal of the running gear.

3,677,189
AERIAL PIPELINE SYSTEM

Weldon F. Appelt, 2102 Quenby, Houston, Tex.

Filed July 10, 1970, Ser. No. 53,717
Int. Cl. E01b 25/22
U.S. Cl. 104—124 6 Claims

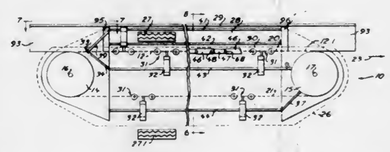


The aerial pipeline system provides for suspending large diameter pipe between a plurality of spaced towers across every conceivable type of terrain and in all climates. Each of the towers is of approximate A-frame configuration with an aerial tramway cable suspended between each tower through the opening between the legs of the tower for the purpose of transporting the pipe and other supplies during construction of the pipeline and for transporting inspection and maintenance personnel and supplies subsequent to construction. The pipeline will be suspended from the towers and extend through the opening between the legs. Depending upon the loading, the pipeline may be arranged for either vertical or horizontal expansion and contraction. A multiple section, hinged trolley beam is also disclosed for supporting and transporting long sections of pipe along the cable which is suspended in a sagging manner between adjacent towers. A smaller manually portable cable tramway is also provided for bringing in supplies for the construction of the pipeline.

3,677,190
SURFACE AUTOMOBILE CONVEYOR

Charles Peter Koch, Vancouver, British Columbia, Canada, assignor to Monarch Western Equipment Ltd., Vancouver, British Columbia, Canada

Filed Oct. 22, 1970, Ser. No. 82,876
Int. Cl. B65g 17/24
U.S. Cl. 104—172 B 9 Claims



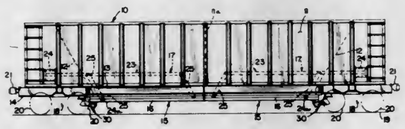
An automobile conveyor which has a plurality of automobile pushing units having pushing rollers spaced at intervals along an endless chain which travels over sprockets mounted for rotation about vertical axes. The rollers are swingable in a plane transversely to the chain. Means is provided for selec-

tively swinging any of the rollers on an advance run of the chain into a pushing position behind a tire of a wheel of an automobile so as to move the automobile and means is provided for enabling a roller pushing an automobile to swing away from the tire after the automobile has been moved a required distance.

ERRATUM

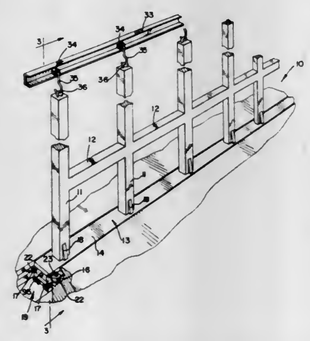
For Class 105—197 see:
Patent No. 3,677,363

3,677,191
RAILROAD HOPPER CAR WITH PLOW
Ernest J. Nagy, Munster, Ind., assignor to Pullman Incorporated, Chicago, Ill.
Filed Dec. 12, 1969, Ser. No. 884,536
Int. Cl. B61d 7/00
U.S. Cl. 105—248 15 Claims



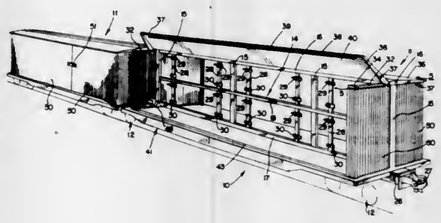
This invention relates to an ore plow which displaces the discharged lading from the surface of railway tracks to prevent a buildup of the lading which could result in a derailment. The ore plow is pivotally suspended beneath the car and operates in conjunction with the door operating levers, being lowered into position to clear the tracks when the hopper doors are opened and returning to an inoperative or raised position upon closing the hopper doors. The plow has a lower edge to clear ore off the rails and has plow deflecting members to divert ore away from the rails, or in alternate form plow deflecting member to divert the ore in between the rails.

3,677,192
CARGO HANDLING AND TRANSPORTATION SYSTEM
Norman E. Bateson, Munster, Ind., and William L. Pringle, Grosse Pointe Shores, Mich., assignors to Pullman Incorporated, Chicago, Ill.
Filed Aug. 21, 1970, Ser. No. 65,875
Int. Cl. B60p 3/06
U.S. Cl. 105—368 R 3 Claims



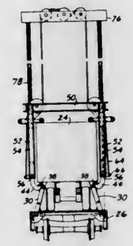
A cargo handling and transportation system includes a truss type of frame on which vehicles are suspended upon leaving the manufacturer's assembly line. The frame is connected to a longitudinal beam which moves in a track and transports the vehicles from the factory to a means of ground or highway transportation. In loading a railway car, the truss and vehicles thereon are removed from the longitudinal beam by a crane and are lowered through the open roof of the car into connecting relation with brackets disposed within the car so that the frame and cargo are ready for shipment. Similarly, the truss frames may be removed from the highway trailers or railway cars by lift mechanisms which shift the frames into aircraft or into holds of ships for further transportation. The longitudinal beams are movable in tracks below the ground, and may be removably connected to the lower ends of the truss to be transported therewith so that they may be guided in suitable track members in a ramp loading arrangement, such as may be desired for loading aircraft. The frames also may be stored within the hull of a ship or airplane fuselage in similar tracks which are engaged by the longitudinal beams removably connected to the lower ends of the truss frame.

3,677,193
RAILWAY CAR
William L. Pringle, Grosse Pointe Shores, Mich., assignor to Pullman Incorporated, Chicago, Ill.
Filed Aug. 21, 1970, Ser. No. 65,831
Int. Cl. B60p 3/06; B61d 19/00, 17/00
U.S. Cl. 105—368 R 3 Claims



A railway car of articulated design is provided with identical car sections each of which includes an upright longitudinally extending truss structure on which vehicles or other cargo may be suspended. Each of the car sections is provided at its longitudinally outer ends with a laterally extending stabilizing member connected to the truss, said stabilizing members being supported on car trucks in a conventional manner. The sections are connected together by articulating means also supported on a conventional truck. The upright truss structure of each section is the primary structural member and is of a relatively narrow width which includes suitable bracket means on which vehicles or other cargo may be suspended on opposite sides thereof. The truss structure includes an upper longitudinally extending beam to which hinged roof panels are connected, pivotal to open and closed positions. The bottom of the car also includes a horizontal panel which is provided to enclose the bottom of the car and includes longitudinal and transversely extending track members in which the lower ends of a flexible enclosure or curtain are slidingly disposed. The hinged roof panels and upper supporting end structures, on opposite ends of each section, are also provided with transverse tracks within which the upper ends of a flexible enclosure are slidingly disposed. The flexible doors or closures are thus easily moved to stored positions whereby the sides of the car may be completely opened for loading purposes or locked to protect the cargo.

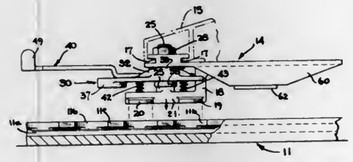
3,677,194
UNIT LOAD HOLD-DOWN AND MOUNTING
Leonard D. Barry, 19300 Pennington Drive, Detroit, Mich.
Division of Ser. No. 640,131, May 22, 1967, Pat. No. 3,528,569, Continuation-in-part of Ser. No. 591,369, Oct. 14, 1966, Pat. No. 3,483,829. This application Dec. 12, 1969, Ser. No. 884,566
Int. Cl. B60p 3/06; B65j 1/22
U.S. Cl. 105—368 B 21 Claims



This invention adapts railway flat cars or other vehicles to secure a semitrailer on pedestals or a cargo container either on or between the pedestals. Automatic locking latches on the pedestals secure the trailer when set down thereon. A lifting device releases latches and lifts the load from the pedestals. The pedestals support the trailer bed at height above the bed of the car for trailer wheels to be relieved of carrying weight of trailer. The latches can be opened and a crank shaft turned to lower the pedestals and move them to the side to set the trailer on the bed of the car for endwise (circus-type) loading and unloading of trailers and for setting cargo containers or other loads on locking devices between the pedestals.

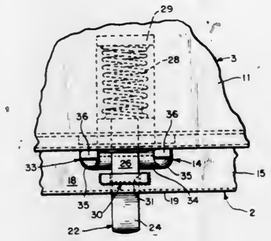
This invention relates to means to hold down, release and transfer cargo pallets, containers, or vehicles to vehicles for transportation or for storage and in particular to means to automatically hook a load down and to automatically release it when engaged.

3,677,195
ANCHOR FITTING FOR RETAINING ARTICLES IN A RETAINER TRACK
Ernest Prete, Jr., Woodland Hills, Calif., assignor to Ancra Corporation, El Segundo, Calif.
Filed Sept. 3, 1971, Ser. No. 177,788
Int. Cl. B61d 45/00; B60p 7/08
U.S. Cl. 105—369 A 14 Claims



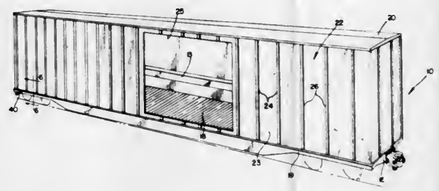
An anchor fitting has a pad member which fits into a slot of a track having a plurality of notched portions separated by narrow neck portions. The fitting has a camming lever which may be operated to drive a follower plate to cause the pad member, when it is positioned in the track in the slot opposite the neck portions, to be driven against such neck portions in holding engagement therewith.

3,677,196
COVERED HOPPER CAR
James J. Schuller, Dolton, Ill., assignor to Pullman Incorporated, Chicago, Ill.
Filed Dec. 19, 1969, Ser. No. 886,506
Int. Cl. B61d 39/00
U.S. Cl. 105—377 4 Claims



A covered hopper car having an open car body pivotally supporting between opened and closed positions a releasably lockable roof which may be hinged from either side while the other side is unhinged attendant to dumping a load through the open roof car body, the car body having mounted on each of its sides a plurality of releasable locking hinges connected to respective hinge structures on each of the car roof sides, each car body releasable hinge being provided with release plungers biased to the locked position and releasable by car rotating structure whereby one side of the roof moves away from the car during rotation and the other side remains hinged to permit the contents in the car body to fall outwardly therefrom.

3,677,197
FLEXIBLE MOVABLE ENCLOSURE FOR VEHICLES
James R. Hounshell, Flat Rock, and William L. Pringle, Grosse Pointe Shores, both of Mich., assignors to Pullman Incorporated, Chicago, Ill.
Filed Aug. 21, 1970, Ser. No. 65,832
Int. Cl. B61d 17/08, 19/00
U.S. Cl. 105—378 9 Claims



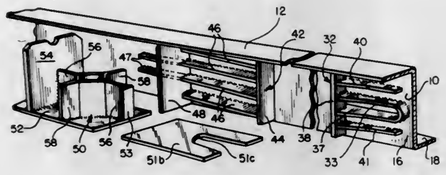
A vehicle such as a railway car or over-the-highway carrier is provided with a floor and roof construction which defines a cargo space enclosed by a flexible sliding wall of endless configuration. The wall includes an opening which upon the operation of an actuating mechanism is moved to a plurality of longitudinally spaced positions providing access to the cargo space from opposite sides of the vehicle. In one of the positions a solid vertical wall section masks the opening in the wall and the cargo space is fully enclosed.

A modified construction includes a pair of flexible wall sections which are moved to open and closed positions by winch mechanisms.

3,677,198
DRAFT SILL ARRANGEMENT FOR HIGH CAPACITY CAR

Tung H. Yang, and John H. Spence, both of Munster, Ind., assignors to Pullman Incorporated, Chicago, Ill.

Filed March 25, 1971, Ser. No. 127,981
Int. Cl. B61f 1/00, 1/08
U.S. Cl. 105—420 10 Claims

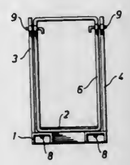


This invention relates to an improved lug arrangement used in a draft sill of a railway vehicle for transmission of coupler draft forces to the center sill. Vertical lug members are welded to both a key slot reinforcing member and to reinforcing ribs in such a manner as to more evenly distribute coupler draft forces from the vertical lugs through the reinforcing ribs and into the center sill. Sharp corners in the area of the elongated slot through which the coupler key may move have been eliminated to provide a draft gear key slot and front stop configuration capable of withstanding high forces.

3,677,199
ARRANGEMENT IN LOADING PALLETS WITH SUPPORTING WALLS

Karl Sigvard Rune Lindqvist, Grythyttan, Sweden, assignor to Combitainer S.A., Geneva, Switzerland

Filed Feb. 5, 1971, Ser. No. 112,948
Claims priority, application Sweden, March 25, 1970, 4139/70
Int. Cl. B65d 19/18
U.S. Cl. 108—55 2 Claims

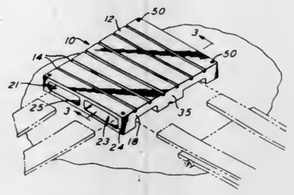


The invention is concerned with a loading pallet having two opposite parallel supporting side walls, a supporting rear wall and a detachable supporting front wall. The pallet also has a bottom frame shaped as a U, the open portion of said U facing said front wall and providing an attachment for said supporting walls. A bottom plate is placed on the bottom frame so as to fit between the supporting walls and adapted to be folded up against the rear supporting wall or one of the supporting side walls. The dimensions are such as to permit two similar loading pallets, viz. a first and a second loading pallet, with their front supporting walls and their bottom plates in folded-up position to be fitted together front to front so that the side supporting of the first loading pallet will be surrounded by two supporting side walls of the second loading pallet.

3,677,200
PALLET

Daniel T. Coccagna, 417 Jonathan Place, Philadelphia, Pa., and Salah Eldin A. El Damati, 6607 Bonnie Ridge Drive Apt. No. 201, Mount Washington, Baltimore, Md.

Filed Jan. 4, 1971, Ser. No. 103,455
Int. Cl. B65d 19/18
U.S. Cl. 108—58 2 Claims

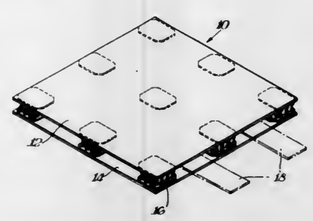


A pallet formed from plastic material including means to permit four-way entry. Encircled sockets are provided on two side faces of the pallet to permit the tines of a forklift truck to engage the pallet. The other two side faces of the pallet have openings to permit the tines of a hand truck to enter and engage the pallet. The pallet is constructed and arranged to provide substantial structural strength with minimum weight and is provided with a top non-skid surface.

3,677,201
PALLET

Gilbert R. Chadbourne, Oakland, Maine, assignor to Keyes Fibre Company, Waterville, Maine

Filed Dec. 17, 1969, Ser. No. 885,947
Int. Cl. B65d 19/18
U.S. Cl. 108—58 14 Claims



Pallet includes upper load bearing platform with plurality of composite support members secured thereto for spacing platform predetermined distance away from surface upon which pallet is resting. Each support member comprises upper and lower molded sheets of uniform thickness throughout. Each sheet has alternately arranged hollow pocket and post formations. Lower sheet is inverted relative to upper sheet with pocket formations of upper sheet nested inside hollow post formations of inverted lower sheet. Upper and lower sheets are secured together.

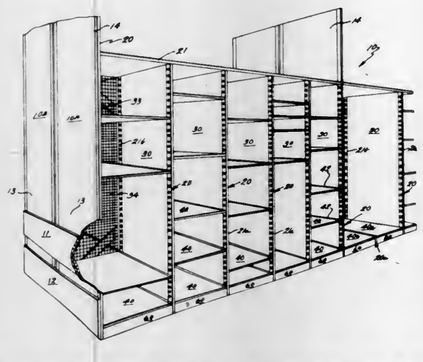
3,677,202
STORAGE SYSTEM

Herbert Young, West Hartford, Conn., assignor to Walter Kidde & Company, Inc., Grand Rapids, Mich.

Filed July 27, 1970, Ser. No. 58,214
Int. Cl. A47b 57/16
U.S. Cl. 108—109 15 Claims

A storage system including a series of spaced, elongated, load-bearing members, each such member including two spaced uprights. Each of the uprights include opposed, spaced

surfaces, each such surface having a series of vertically spaced, tongue-like members extending upwardly therealong. Article supporting means such as shelves, hanger rods and the like are adapted to be suspended between two of the load-bearing members, the supporting means including at least four

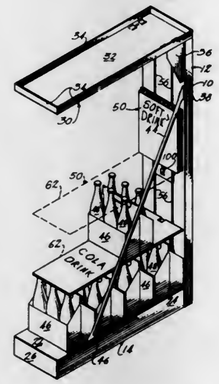


spaced tongue-like member engaging means, the spacing between said engaging means, said uprights and said bearing members being such that each of the engaging means is engageable with one of the tongue-like members on a different surface.

3,677,203
MERCHANDISE SUPPORT WITH HINGED SHELF

Wade H. Barrineau, De Kalb County, Ga., assignor to Southern Cross Industries, Inc., Atlanta, Ga.

Filed June 16, 1970, Ser. No. 46,768
Int. Cl. A47b 5/00
U.S. Cl. 108—111 13 Claims

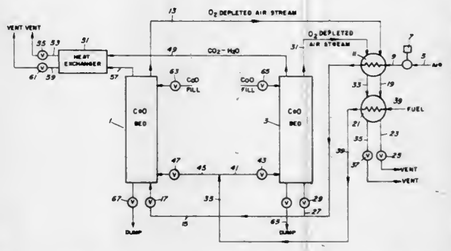


A merchandise shelf arrangement which may be used to display and arrange soft drink bottles in a supermarket. Each of a number of spaced shelves is hinged to a vertical support for vertical adjustment thereon relative to the merchandise above or below. The shelf may be injection molded with a plastic pressure adjustment bracket on one end to which the shelf is hinged along a living hinge of plastic material such as polypropylene material. The bracket is also hinged in two pieces along a plastic hinge line whereby the pieces may be confined in a channel in the shelf in place at a selected position while permitting manual relocation by applying pressure to the bracket. A flat spring inserted in the bracket and extending across the hinge line is "cocked" in place by the load of the merchandise whereby the shelf will rise when the load is removed.

3,677,204
HIGH TEMPERATURE HEAT GENERATOR

Lawrence E. Leas, Simi, Calif.; Robert L. Leas, and Cecil J. Johnson, both of Columbia City, Ind., assignors to Leas Brothers Development Corporation, Columbia City, Ind.

Filed Jan. 12, 1970, Ser. No. 2,451
Int. Cl. F23b 7/00
U.S. Cl. 110—1 5 Claims

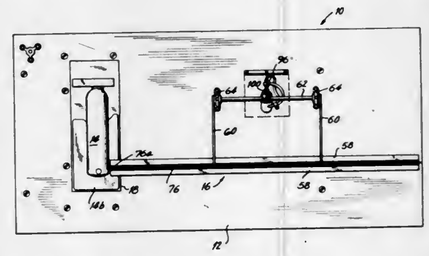


The present invention relates to a method and apparatus for generating high temperature heat in the range of 1,000° to 5,000° F. or within the range as limited by the materials of construction of the containment vessels. In the process of the present invention, single or multiple beds of cobalt oxide operating in series and/or parallel between two basic cycles of oxidizing and reducing of the metal oxide with air and fuel, respectively, discharges stack gas and heat alternately, thereby liberating very high temperature gases for various heating applications. The present invention uses many different types of fuel including gases, liquids, and/or solid fuel. In its metal oxidizing step, the lower oxide is oxidized with air to the higher oxide form liberating both heat and inert nitrogen. In the reducing step the chemical combined oxygen is used to burn the fuel thereby liberating high temperature heat for outside heating applications. The heat carrying gases are primarily carbon dioxide and/or steam depending on the type of fuel.

3,677,205
CREASING MACHINE

Anthony V. Igneri, Levittown; Joseph Milack, Jr., Elmont, and John Longo, Copiague, all of N.Y., assignors to Fairfield-Noble Corporation, Farmingdale, N.Y.

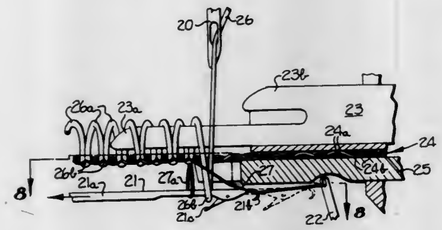
Filed Aug. 3, 1970, Ser. No. 60,316
Int. Cl. D05b 35/00
U.S. Cl. 112—2 3 Claims



Apparatus for forming a permanent crease in fabric includes a work table and cooperating guide frame assembly for

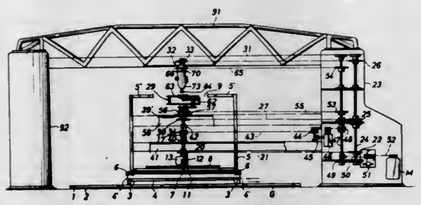
feeding flat lengths of fabric to a double needle sewing machine in a perfectly straight line with a longitudinal ripple of selected height at the desired crease location so that parallel rows of chain stitches inserted on opposite sides of the ripple draw the sides of the ripple together into a stitched fold forming a permanent crease.

3,677,206
APPARATUS FOR MAKING TUFTED FABRICS
John T. MacIsaac, Jr., and James E. Troy, both of Eden, N.C., assignors to Fieldcrest Mills, Inc., Eden, N.C.
Filed Jan. 29, 1971, Ser. No. 110,851
Int. Cl. D05c *15/22*
U.S. Cl. 112—79 R **10 Claims**



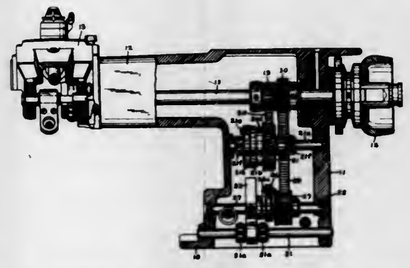
The apparatus includes cooperating tufting needles, pile formers and latch needles for forming pile tufts on a backing fabric while positioning small locking threads through lower bight portions on the tufts being formed to secure them to the backing fabric. To permit the use of less pile yarn for obtaining any given height of pile on the upper face of the backing fabric, the tufting yarns are under relatively high tension so that they are drawn upwardly relative to the backing fabric and so that portions of the locking threads passing through the lower bight portions are displaced upwardly into the backing fabric. Also, novel means are provided for guiding the locking threads into the hooks of the latch needles each time they enter through the tuft lower bight portions so that the latch needles will draw corresponding stitches of lockin thread through the respective lower bight portions.

3,677,207
SEWING MACHINE FOR SEWING PATTERNS
Hideo Iwase, 27-8,1-chome, Kamesawa, Sumida-ku, Tokyo, Japan
Filed April 7, 1970, Ser. No. 26,387
Claims priority, application Japan, May 20, 1969, 44/39257
Int. Cl. D05b *11/00*
U.S. Cl. 112—118 **6 Claims**



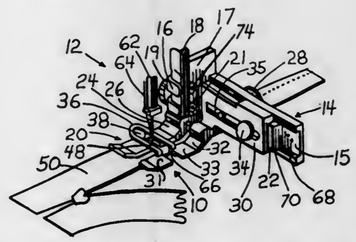
A sewing machine for automatically producing a stitch pattern each having the same contour as that of a pattern made of a plurality of straight and curved line segment rails arranged on a supporting frame which can move vertically and horizontally and carries a fabric to be sewn in tension, wherein the transmission of the movement of a guide pulley riding upon the rails, disposed within a detection box for detecting the curved line segment portions of a pattern is made independent of the transmission of a force driving the guide pulley and is carried away in synchronism through chains and chain wheels of all the same pitch diameters to an arm and a bed of the sewing machine which corresponding movement is made each independent of the oscillation of a needle bar within The arm and of the driving of a feed dog within the bed respectively to follow exactly the contour of the pattern.

3,677,208
BLINDSTITCH SEWING MACHINE
Roy W. Fletcher, Riverdale, and Anthony D. Forte, Chicago, both of Ill., assignors to Union Special Machine Company, Chicago, Ill.
Filed Aug. 19, 1968, Ser. No. 753,357
Int. Cl. D05b *1/24*
U.S. Cl. 112—178 **8 Claims**



In a blindstitch sewing machine adapted to selectively produce non-skip stitches or skip stitches whenever desired, adjustable means for determining the normal position of a rockable work support carrying a node former to enable the machine to properly provide either type of stitching in work of different thicknesses and foldability. Said adjustable means and members controlled thereby serve to readily and accurately determine the normal position of the work support and the extent of rocking movement imparted thereto in forming skip stitches. The adjustable means includes a rotatable knob, the turning of which to a given extent will always provide the same extent of adjustment of the work support about its supporting axis.

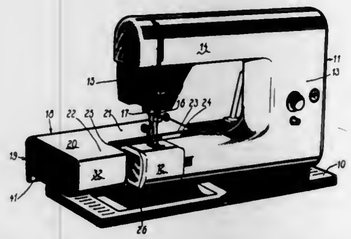
3,677,209
ZIPPER FOOT ATTACHMENT FOR SEWING MACHINES
Leoda J. Gooderum, 1133 Vine St., La Crosse, Wis.
Continuation-in-part of Ser. No. 736,166, June 11, 1968. This application May 27, 1970, Ser. No. 40,900
Int. Cl. D05b *29/12*
U.S. Cl. 112—240 **14 Claims**



A presser bar attachment for sewing machines of different types, accommodating the sewing of zipper tapes to garments.

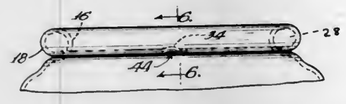
A pair of foot elements are adjustably spaced from one another forming a guide channel to receive and guide zipper chains of different widths while the foot elements are engagable with the garment fabric. Both foot elements are also adjustably spaced, in relation to the needle, and to opposite sides of the needle. When the main foot element is adjustably positioned the needle is received into an alignment slot formed in its edge confronting with the edge of the second auxiliary foot element. Also, when the auxiliary foot element is adjustably positioned the needle is received into a slot formed and developed between two material engaging sections of the auxiliary foot element which are connected by a U shaped arm.

3,677,210
SEWING MACHINE WITH BASE EXTENSION
Silvano Perlino, Pavia, Italy, assignor to Necchi S.p.A., Pavia, Italy
Filed July 6, 1970, Ser. No. 52,427
Claims priority, application Italy, July 21, 1969, 32415 A
Int. Cl. D05b *75/00*
U.S. Cl. 112—258 **5 Claims**



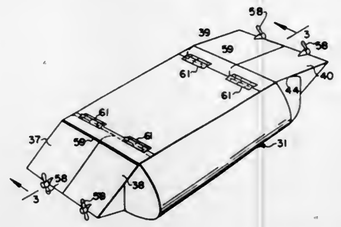
A base member for converting a cylindrical base sewing machine into one having a flat base, said member including a built-in accessory drawer.

3,677,211
METHOD OF VENTING AN AEROSOL DOME
Stanley J. Miller, and James P. Davidson, both of Chicago, Ill., assignors to National Can Corporation, Chicago, Ill.
Filed April 13, 1970, Ser. No. 27,780
Int. Cl. B21d *51/00*
U.S. Cl. 113—121 AA **11 Claims**



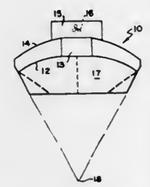
A method of forming a bead surrounding an opening in one end of a container body by rolling a neck extending from the body to a position where the free edge and an adjacent end portion of the neck overlap an adjacent outer surface of the body. A method contemplates rolling at least one selected portion of the neck to a smaller internal diameter than the internal diameter of the remainder of the neck so as to space a segment of the free edge from the outer surface of the body to provide a vent opening placing the internal area of the bead in communication with the surrounding outside area. In one embodiment, the smaller diameter portion of the bead is formed by producing projections extending above the free edge of the neck. A second embodiment contemplates outwardly deforming a selected portion of the neck and, in a third embodiment, the reduced diameter portion is deformed by inwardly deforming a selected portion of the neck.

3,677,212
SUBMERSIBLE WATERCRAFT
Resta S. Gregoire, Newport, Pa., assignor to Gregoire Engineering & Development Co., Adelphi, Md.
Continuation of Ser. No. 756,696, June 11, 1968, Pat. No. 3,512,494. This application May 18, 1970, Ser. No. 37,970
Int. Cl. B63b *1/10*
U.S. Cl. 114—61 **9 Claims**



The present invention comprises a streamlined hull of a catamaran type having a tear drop sectioned pontoon portion along each side with a horizontal substantially rectangular shaped body portion fixed between the pontoon portions, and a pair of power pods with a tear drop vertical cross section taken axially of the craft, an impeller on a shaft extending from a motor in each pod through the pointed edge at the outer end of each pod, and each pair of pods being rotatably mounted for independent angular adjustment about a horizontal axis at each end of the craft, said horizontal axis extending substantially through the radial center of the round end of the tear drop section of the pods. The impeller drive motors are independently controlled for operation in either direction so that unique maneuverability is obtainable either on or under the surface of the water by proper coordination of the speed and direction controls for the operation of the four power pods, or even if only one pair of pods are operated to provide rolling, looping speed and direction controls. The power pod and cargo and operating equipment spaces are not closed for pressurization so that the outside walls of the hull body may be comparatively light even for operation at great depths since the same pressures are effective on both sides of these walls no matter how deep the operation. The spherical or tubular personnel housing portions of the hull, occupying only a small portion of the entire hull space, will be comparatively light in structure because of the smaller dimensional requirements.

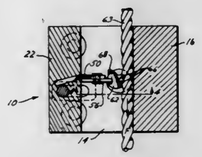
3,677,213
SKIRTED AIR CUSHIONED PLANING HULL
Allen G. Ford, 6816 Old Stage Road, Rockville, Md.
Filed Sept. 17, 1970, Ser. No. 72,960
Int. Cl. B63b *1/38*
U.S. Cl. 114—67 A **1 Claim**



A modified planing hull vessel containing flexible stable seals completely surrounding the periphery of the hull except at the stern section where the hull itself acts as its own seal by being in close proximity with the water. The vessel rests on

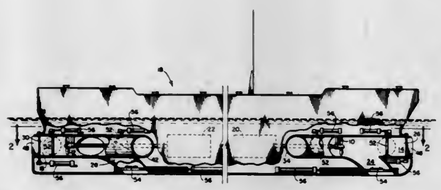
both an air cushion confined within the area formed by the flexible seals and on a small wetted section of the bottom of the hull.

3,677,214
JAM CLEAT
Robert J. Bernstein, 764 Judson, Highland Park, Ill.
Continuation-in-part of Ser. No. 22,750, March 26, 1970, abandoned. This application Dec. 4, 1970, Ser. No. 95,049
Int. Cl. B63b *21/04*
U.S. Cl. 114—218 6 Claims



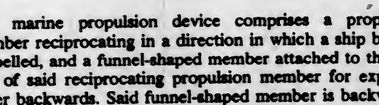
A jam cleat for use on sailboats and the like has a base adapted to be secured to a desired support surface. The base has an upper surface and a side wall perpendicular to the upper surface. A line-engaging member is mounted adjacent the base side wall and is pivotable in a first plane parallel to the base upper surface as well as in a second plane normal to the first plane. The relationship is such that as the axial load on a line loaded into the cleat between the line-engaging member and the adjacent side wall is increased, the line-engaging member is correspondingly pivoted in the first plane to jam the line in the cleat, whereas the line-engaging member is pivoted in the second plane when the line is removed from the cleat.

3,677,215
POWER ASSIST BARGE FOR OCEAN SERVICE
Robert D. Moss, 524 Lake St., Metairie, La.
Filed Jan. 25, 1971, Ser. No. 109,343
Int. Cl. B63h *25/46*
U.S. Cl. 115—16 5 Claims



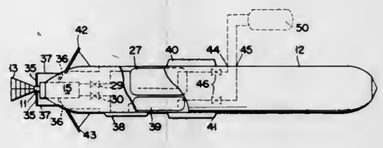
A barge having fore and aft propellers respectively mounted in longitudinal tunnels has bottom intake and discharge respectively forward of their associated propellers and has combination intake and discharge ports at the outboard ends of said longitudinal tunnels. The respective end ports are guarded against entry of debris by a plurality of vertical vanes movably mounted to swing around their respective vertical axes for additional steering purposes. Respective transverse tunnels having combination intake and discharge side ports at their outer ends and joining the respective longitudinal tunnels at their inner ends are located forward of the aft propeller and aft of the forward propeller. Side ports are protected by grills to prevent entry of debris. Vertically installed valves are mounted in the respective tunnels adjacent the respective propellers for opening and closing the tunnels individually. Horizontally installed valves are mounted in the bottom intake ports for similar purposes. Extendable fins are recessed into the fore and aft sides of each side port, the forward side fins being extendable slanting aft and the after side fins forward for directing the flow therefrom. The placing of the bottom ports forward of their associated propellers enables the barge to lift and dig itself free if it should ever run aground. The extendable fin mounted adjacent the side ports assist in sterring the barge. The propellers are driven by engines that can also be remotely controlled. A radio antenna can receive control signals and electronically controlled machinery can be adapted to actuate all movable parts.

3,677,216
ROWING DEVICE
Arthur J. Gentemann, 16715 S.W. 17th Ave., Tigard, Oreg.
Filed July 29, 1970, Ser. No. 59,049
Int. Cl. B63h *16/04*, *16/06*
U.S. Cl. 115—24.1 8 Claims



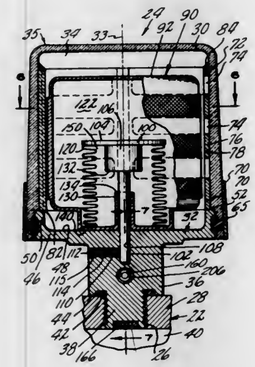
An oar is provided with a pivotal paddle blade for self-feathering action on the return stroke without lifting the paddle blade out of the water. When two such cars are used in conventional oarlocks, the boat is rowed by merely moving the oar handles horizontally back and forth without the customary lowering of the handles on the return strokes. A boat may be propelled by a single on of such oars having a ball on the shaft of the oar to support the oar for pivotal movement in a vertical plane. The oar may thus be mounted on a transom bracket or on a pedestal housing in the bottom of the boat. By rotating the oar about its own axis to different positions, simple back and forth oscillation of the oar in different vertical planes will propel the boat backward, forward, sideways or in a turning movement, as desired.

3,677,217
MARINE PROPULSION DEVICE
Syozo Takimoto, 1-48 Minato Honcho, Aichi-ken, Handa-shi, Japan
Filed Aug. 18, 1970, Ser. No. 64,760
Claims priority, application Japan, Sept. 1, 1969, 44/69175; Sept. 2, 1969, 44/69885
Int. Cl. B63h *1/32*
U.S. Cl. 115—31 21 Claims



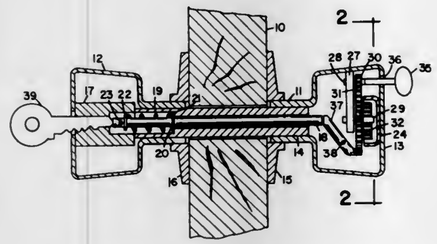
A marine propulsion device comprises a propulsion member reciprocating in a direction in which a ship body is propelled, and a funnel-shaped member attached to the rear end of said reciprocating propulsion member for expelling water backwards. Said funnel-shaped member is backwardly thrust by a strong force applied to said propulsion member.

3,677,218
FLUID PRESSURE VARIATION SENSOR AND INDICATOR
Thomas P. Dixon, Stratford, and Robert J. Worrell, Ansonia, both of Conn., assignors to United Aircraft Corporation, East Hartford, Conn.
Continuation of Ser. No. 640,237, May 22, 1967, abandoned. This application Feb. 22, 1971, Ser. No. 117,476
Int. Cl. G01l *19/12*
U.S. Cl. 116—70 9 Claims



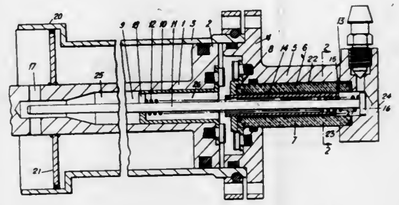
A pressure variation sensor and indicator having an expandable, sealed reference pressure capsule positioned within a sealed chamber subjected to a pressure under surveillance so that pressure differential across the walls of the capsule will cause the capsule to move within the chamber to indicate loss of the pressure under surveillance, rupture of the capsule or rupture of the indicator and including quick attach detach means to permit the easy replaceability and interchangeability of the capsule within the chamber without calibration.

3,677,219
LOCK WITH KEY ACTIVATING ALARM MECHANISM
Miguel Da Silva, 91 Old York Road, Somerville, N.J.
Filed Nov. 2, 1970, Ser. No. 85,891
Int. Cl. G08b *13/02*
U.S. Cl. 116—80 1 Claim



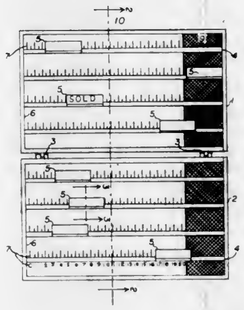
A mechanical alarm in a door closure assembly whereby the insertion of a key into the outside lock will set in motion a device which will cause an audible signal.

3,677,220
VOLUME INDICATOR FOR FLUID TANKS
Fritz Ostwald, Buchschlag, and Siegfried Hertell, Kelsterbach, both of Germany, assignors to ITT Industries, Inc., New York, N.Y.
Filed June 5, 1970, Ser. No. 43,885
Claims priority, application Germany, June 6, 1969, P 19 28 850.7
Int. Cl. G01f *23/00*
U.S. Cl. 116—118 7 Claims



A fluid volume indicator for tanks having a follower, the position of which is directly proportional to the volume of the fluid in the tank and a visible indicator between the follower and a fixed wall, the indicator being movable along the axis of the follower and being acted upon by the two opposed helical compression springs, one between the indicator and the follower and the other one between the indicator and the fixed wall of the tank so that the movement of the indicator is proportional to the movement of the follower.

3,677,221
TALLYING DEVICES
Walter W. Giles, 2631 Locksley Place, Los Angeles, Calif.
Filed March 9, 1970, Ser. No. 17,532
Int. Cl. G09f *9/00*
U.S. Cl. 116—135 1 Claim

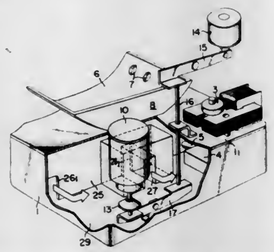


A tally board with tally indicators manually movable along scales of graduations on its face for tallying variable values is specified.

3,677,222
DEVICE FOR AUTOMATICALLY REGULATING THE CONCENTRATION OF DEVELOPING SOLUTION

Shigehiro Komori, Kawasaki-shi, and Hiroyuki Hattori, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 26, 1970, Ser. No. 5,794
Claims priority, application Japan, Feb. 24, 1969, 44/16745
Int. Cl. G03g *13/08*
U.S. Cl. 118—7 6 Claims

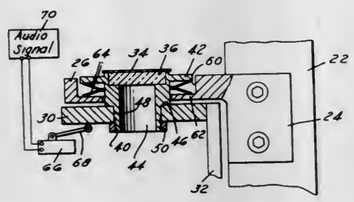


Device for automatically regulating the concentration of developing solution in a wet type electrophotographic machine. Stirrer means is used to stir the developing solution for circulation through a developing tray and a reservoir, and a concentration detector is disposed in the stream of developing solution. The concentration detector has a source of radiation such as light and two elements sensitive to the radiation and the detection circuit including two elements. The concentration detector provided within the stream can effect the regulation of concentration with high accuracy and stability.

3,677,223
PRESSURE SENSITIVE FINGERPRINT INPUT FOR IDENTIFICATION APPARATUS

William D. Hall, and Lewis H. Shaefer, both of Van Nuys, Calif., assignors to KMS Industries, Inc., Ann Arbor, Mich.

Filed Oct. 7, 1970, Ser. No. 78,838
Int. Cl. B05c *11/00*; B41r *1/00*
U.S. Cl. 118—10 2 Claims



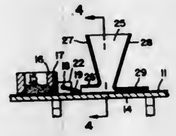
In a fingerprint identification system utilizing real time fingerprint input of a person, a means for limiting the pressure with which a fingerprint is applied to prevent illegible or smudged prints which are not faithful reproductions of the intended input.

3,677,224
TONER CHARGING AND FEEDING MACHINE

Alonzo W. Noon, Los Altos, Calif., assignor to Electroprint, Inc., Palo Alto, Calif.

Filed Sept. 18, 1970, Ser. No. 73,397
Int. Cl. B05c *11/00*
U.S. Cl. 118—63 17 Claims

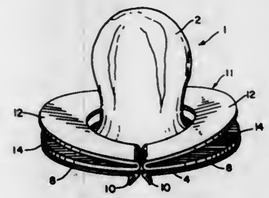
A toner charging and feeding machine using a generally flat carrier having a rough outer surface and means for driving the carrier along a predetermined path, toner supply means positioned across the carrier for depositing toner thereon, scraper means positioned across the carrier surface for scraping off excess toner deposited above the protuberances of the rough outer surface of the carrier, a toner cloud chamber positioned over the carrier, and means for directing a stream of air against the outer surface of the carrier and into the toner cloud chamber for entraining toner particles in the air stream, charging the particles, and developing a toner cloud.



3,677,225
CONTRACEPTIVE DEVICE

Julius Czirely, 1614 Palisade Avenue, Union City, N.J.

Filed Oct. 1, 1970, Ser. No. 77,269
Int. Cl. A61f *5/42*
U.S. Cl. 128—132 5 Claims

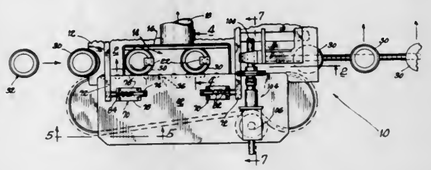


A contraceptive device the principal component of which is an elongated seminal container for attachment to the tip of a male organ such as by an adhesive layer applied over the inside edge of the container. Strippable protective webbing protects the adhesive layer until it is to be exposed for use. Suitably annular handling webbing is strippably attached onto the exterior of the container to facilitate handling prior to and during the application thereof.

3,677,226
APPARATUS FOR COATING ARTICLES

Lawrence D. Stepenske, and Edward K. Cassidy, both of Chicago, Ill., assignors to National Can Corporation, Chicago, Ill.

Filed Sept. 8, 1970, Ser. No. 70,153
Int. Cl. B05c *5/00*
U.S. Cl. 118—70 10 Claims

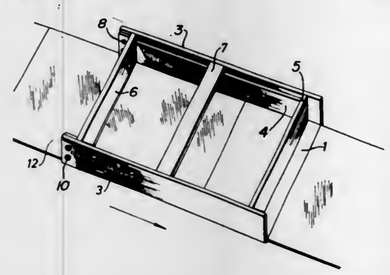


A conveyor for conveying disc like articles past a spraying station. The conveyor comprises a roller, link chain having a first flight extending along one side of a path for the articles, with articles being fed between adjacent pairs of rollers. A spring bar is positioned in a fixed location adjacent the opposite sides of the path to continually force the articles in tangential contact with the pairs of rollers. The spring bar also acts as a friction surface so that driving the flight of the chain along the path will move the articles past the spraying station and will simultaneously rotate the articles. The spraying station includes one spray head, a substantially rectangular spray pattern having a length greater than the diameter of the objects or articles and a second dimension substantially less than the diameter of the articles to prevent spraying of the chain and backing member.

3,677,227
COATING DEVICE FOR PRODUCING A THIN LAYER OF A FLUID OR SEMI-FLUID MATERIAL

Nils Goran Nybom, deceased, late of Kristianstad, Sweden (by Ethel Barbro Louise Nybom, administratrix), assignor to AB Instrumenta, Lund, Sweden

Filed Feb. 11, 1971, Ser. No. 114,643
Int. Cl. B05c *3/02*
U.S. Cl. 118—415 6 Claims

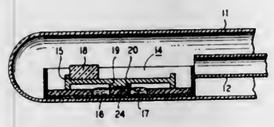


To coat the upper surface of a file of plates laid in end-to-end relation, a box frame containing the material to be applied and having an open bottom is moved longitudinally of the file of plates. The thickness of the coating is determined by vertical adjustment of the lower edge of a trailing and transversely extending control bar on the frame above the upper surface of the plates, the frame also being provided with a leading transversely extending control bar which engages the upper surface of the plates and lateral guide walls engageable with the sides of the plates for longitudinal guidance of the frame. Sealing strips located at the inside surface of the laterally positioned guide walls function to maintain a uniform thickness of the applied coating regardless of variations in plate thickness.

3,677,228
CRYSTAL GROWTH APPARATUS

Morton B. Panish, Springfield, and Stanley Sumski, New Providence, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Division of Ser. No. 727,927, May 9, 1968. This application April 17, 1970, Ser. No. 29,540
Int. Cl. B05c *3/00*; B01d *9/00*
U.S. Cl. 118—422 1 Claim

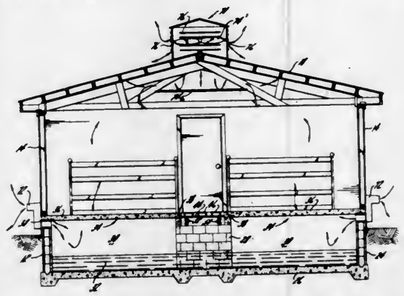


A crystal growth apparatus suitable for preparing epitaxial films of Group III(*a*) – V(*a*) compounds by tipping techniques is described. The novel apparatus includes means for removing deleterious oxides from the surface of source solutions prior to the deposition thereon of seed crystals.

3,677,229
LIVESTOCK CONFINEMENT HOUSE WITH IMPROVED ENVIRONMENTAL CONTROL

Ronald S. Blough, Fairfield, and Norval Curry, Ames, both of Iowa, assignors to Fairfield Engineering & Manufacturing Company, Fairfield, Iowa

Filed July 30, 1970, Ser. No. 59,654
Int. Cl. A01k *01/00*; F24f *07/06*
U.S. Cl. 119—16 12 Claims

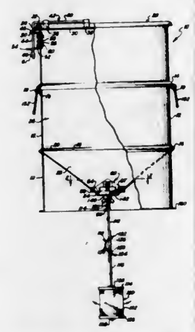


A livestock confinement house having a waste disposal pit and a slotted concrete floor positioned over the pit. The slotted floor comprises a plurality of elongated concrete slats spanning the pit, with each of the slats having a conduit positioned therein to reinforce the concrete. The conduits are interconnected to form a floor circulation system through which a temperature controlling fluid may pass to alternately heat or cool the floor. Ventilating ducts communicating the exterior of the building with the pit coupled with reversible ventilating fans in the roof of the house permit air circulation either upwardly or downwardly through the slotted concrete floor. Valves in the floor circulation system permit selective temperature regulation or complete blocking of sections of the house floor from the circulation system.

3,677,230
FISH FOOD FEEDING APPARATUS

Alvin H. Braden, 130 Haverhill, San Antonio, Tex.

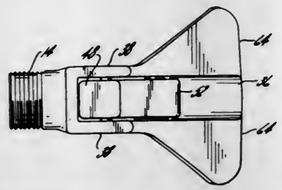
Filed Sept. 9, 1970, Ser. No. 70,820
Int. Cl. A01k *61/02*
U.S. Cl. 119—51 9 Claims



A hopper for holding a supply of fish food to be dispensed therefrom by the force of gravity, and including a normally

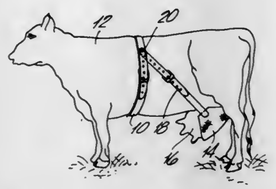
closed valve means disposed in the food dispensing path, the valve means being operable for movement to its open position to effect the dispensing of the fish food from the hopper upon forceable engagement thereof by a fish.

3,677,231
LIVESTOCK DRINKING DEVICE
Ronald S. Blough, Fairfield, Iowa, assignor to Fairfield Engineering & Manufacturing Company, Fairfield, Iowa
Filed Aug. 3, 1970, Ser. No. 60,672
Int. Cl. A01k *07/00*
U.S. Cl. 119—75 **10 Claims**



An animal watering device for hogs or the like adapted to connect to a source of water. The device includes a housing having a passageway with a valve means therein that is operated by an adjustable valve operator. The valve operator is partially positioned in a downwardly inclined spout that has outwardly extending web elements. The animal bites the spout and valve operator to open the valve means permitting the animal to drink the water. The web elements preclude operation of the device from any position other than substantially directly in front of it.

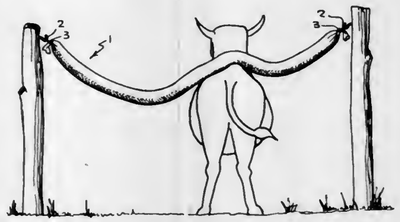
3,677,232
MILKING ASSISTANCE DEVICE
John Matthew La Croce, 40 Fulton Street, Middletown, N.Y.
Filed Sept. 8, 1970, Ser. No. 70,358
Int. Cl. A01k *29/00*
U.S. Cl. 119—146 **4 Claims**



A milking assistance device which is strapped around a cow to raise its udder upwardly and forwardly to permit proper attachment to a suitable milk collection means. A first adjustable strap is disposed around the heart girth, a canvas sheet is positioned behind the udder and each end is secured to strap members which are adjustably and detachably secured to the first strap.

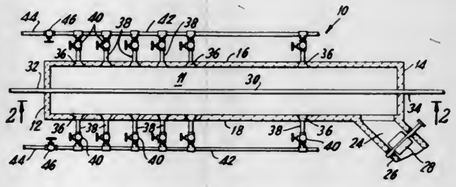
3,677,233
LIVESTOCK INSECTICIDE APPLICATOR
Pierce H. White, Jr., Dyersburg, Tenn.
Filed March 19, 1971, Ser. No. 126,107
Int. Cl. A01k *29/00*
U.S. Cl. 119—157 **10 Claims**

Livestock insecticide applicator in the form of an elongated member, circular in cross-section, adapted to be suspended by its ends for rubbing contact by animals. It is composed of a core of shearings, or clippings, from napped acrylic fabric, and



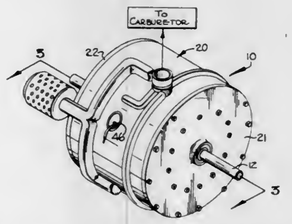
a cover of knitted, preferably rib-knitted, tubular Orlon, or similar material. The ends of the knitted tube are tied, and rings are secured to the tied ends for mounting the applicator.

3,677,234
HEATING APPARATUS AND PROCESS
Bronislaw K. Dutkiewicz, New York, N.Y., assignor to Stone & Webster Engineering Corporation, Boston, Mass.
Filed Jan. 19, 1970, Ser. No. 3,832
Int. Cl. F22b *31/00*
U.S. Cl. 122—240 A **8 Claims**



Furnace apparatus and process for heating a fluid. The furnace has an elongated heating chamber, a fluid conveying conduit which extends axially through the chamber, furnace burners and means to control the temperature profile and heat energy in the furnace. The heating chamber is provided with a flue gas outlet adjacent the conduit outlet. In operation, the furnace is fired differentially with the heaviest firing at the conduit inlet. The hot combustion gases from the burners flow parallel and cocurrently with the fluid in the conduit and discharge from the furnace at the flue gas opening.

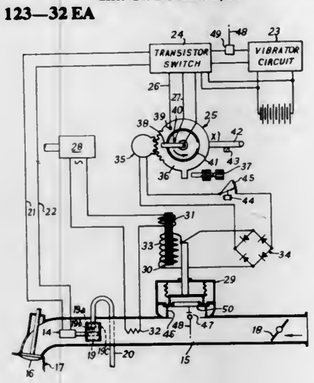
3,677,235
ROTARY ENGINE
Murray R. Adkins, 1140 Pecan Circle, Rock Hill, S.C.
Filed Nov. 12, 1970, Ser. No. 88,837
Int. Cl. F02b *53/00*
U.S. Cl. 123—8.35 **6 Claims**



A rotary internal combustion engine wherein a plurality of piston members oscillate between a position withdrawn within

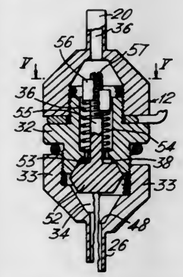
a generally right circular cylindrical driven member and a position extended outwardly thereof, for cooperation with combustion chamber pockets spaced circumferentially about the driven member in applying force to the driven member at the extreme outer periphery thereof. Oscillatory movement of the piston members between the withdrawn and the extended positions proceeds under cam control, while the piston members are returned to a position substantially aligned with the driven member by cooperation with the combustion chamber pockets.

3,677,236
FUEL-INJECTION DEVICES FOR MIXTURE-ASPIRING INTERNAL-COMBUSTION ENGINES
Norman Moss, Ilford, England, assignor to The Plessey Company Limited, Ilford, England
Continuation-in-part of Ser. No. 727,976, May 9, 1968, abandoned. This application Sept. 8, 1970, Ser. No. 70,038
Int. Cl. F02m *51/06*
U.S. Cl. 123—32 EA **6 Claims**



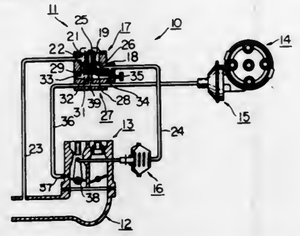
To control the rate of fuel injection into the induction pipe of a combustion engine, a transistor switch is arranged to vary the length of each energization of a periodically energized ultrasonic transducer which produces fuel atomization by longitudinally vibrating the open outlet end of a fuel nozzle which leads into the induction pipe and in which the fuel pressure is kept in balance with the air pressure in the induction pipe.

3,677,237
AUXILIARY AIR VALVE
Poul E. Hansen, Islington, Ontario, Canada, assignor to Emisco, Inc., c/o Carrick, O'Connor, Coutts & Cranne, Toronta, Ontario, Canada
Filed Dec. 21, 1970, Ser. No. 100,085
Int. Cl. F02m *23/00*; **F02d** *9/00*
U.S. Cl. 123—97 B **6 Claims**



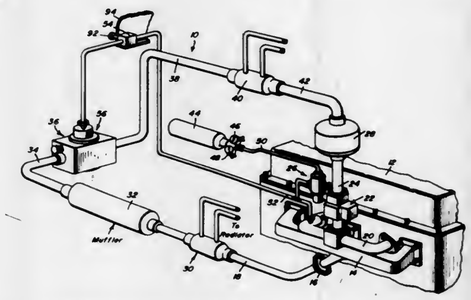
The present auxiliary air valve controls admission of supplementary air to the fuel mixture of an internal combustion engine responsive to special demand. The device is comprised of a pair of body elements assembled to provide a valve housing with opposed inlet and outlet ports accommodating a suction displaceable valve normally spring-biased externally of said housing into flow-blocking abutment with the inlet port. The housing is expandable and contractable to vary the spacing of the ports and the degree of spring bias is also independently adjustable, thus affording control over both the minimum level of vacuum at which the device opens to admit auxiliary air to the intake manifold, and the maximum level of vacuum at which the supply of such air will then be reduced.

3,677,238
CONTINUOUS VACUUM ADVANCE SYSTEM OF IGNITION TIMING
Motoo Harada, No. 2-19-2 Midorigaoka, Meguro-ku, Tokyo, and Kenichi Sasaki, Sakonyama Danchi 3-5-204, No. 157, Kodaka-cho, Hodogaya-ku, Yokohama, both of Japan
Filed Jan. 28, 1970, Ser. No. 6,474
Claims priority, application Japan, Jan. 31, 1969, 44/7916
Int. Cl. F02p *5/10*
U.S. Cl. 123—117 A **6 Claims**



A vacuum advance control system of ignition timing for reducing the hydrocarbon content of engine exhaust gases emitted especially during deceleration of a motor vehicle. The system is provided an advance control assembly composed of a vacuum operated sensing valve and a flow modulating needle valve cooperating with each other. The assembly operates in association with a conventional intake manifold, carburetor, distributor and distributor advance vacuum actuator in order to control continuously the level of the vacuum to be introduced into the actuator in response to the intake manifold vacuum which increases abruptly for the decelerating condition.

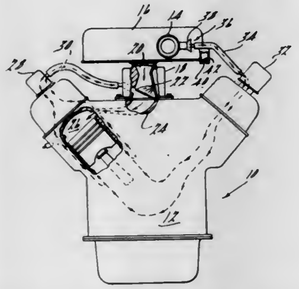
3,677,239
NON-POLLUTING EXHAUST SYSTEM FOR INTERNAL COMBUSTION ENGINES
James L. Elkins, Route 6, Box 312, Fayetteville, N.C.
Filed June 24, 1970, Ser. No. 49,488
Int. Cl. F02m *25/06*
U.S. Cl. 123—119 A **12 Claims**



Combustion products from the exhaust manifold of an internal combustion engine are recirculated through a filter to a

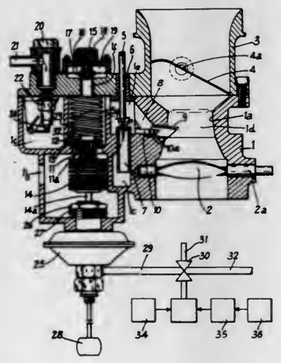
fuel mixing carburetor supplying a fuel mixture to the intake manifold. A metered flow of oxygen under pressure is supplied to the careburetor during engine operation for recharging the exhaust gas being returned to the engine as part of the fuel mixture.

3,677,240
CRANKCASE VENTILATION
Jerma O. Sarto, Orchard Lake, Mich., assignor to Chrysler Corporation, Highland Park, Mich.
Filed Nov. 18, 1970, Ser. No. 90,591
Int. Cl. F02f *9/00*
U.S. Cl. 123—119 B **4 Claims**



An aspirator is included in a crankcase ventilator conduit extending between the crankcase and carburetor air cleaner for drawing air into the conduit when vapors flow therethrough from the crankcase thereby diluting them.

3,677,241
CARBURETTORS OPERATING UNDER A CONSTANT REDUCED PRESSURE
Pierre Gele, Odos Tarbes, and Bernard Laprade, Arudy, both of France, assignors to Les Usines Laprade S.A., Arudy, France, by said Bernard Laprade
Filed May 7, 1971, Ser. No. 141,161
Claims priority, application France, May 8, 1970, 7016860; Dec. 30, 1970, 704769
Int. Cl. F02m *7/05, 1/08*
U.S. Cl. 123—119 DB **6 Claims**

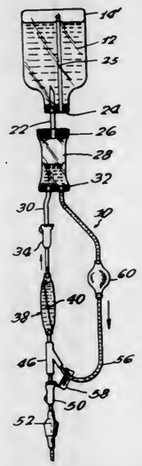


A carburettor operating under a constant reduced pressure comprising a mixing chamber formed in the intake manifold between the main and an auxiliary throttle valve, and fed with air and fuel by an emulsifying chamber, the input of air in which as required for idling and reduced load conditions, is controlled by a valve controlled in its turn by a vacuum chamber which is selectively connected with the atmosphere and with the intake manifold so as to make said valve close the corresponding input whenever the rotary speed of the engine is above a predetermined value and the main throttle valve is simultaneously closed or substantially so or else whenever the temperature of the engine cooling medium sinks underneath a predetermined value.

ERRATA

For Classes 123—148 thru 128—172 see:
Patents Nos. 3,677,253 thru 3,677,268

3,677,242
AIR BLOCK PREVENTION SYSTEM
Nat Shaye, Lindenwold, N.J., assignor to Baxter Laboratories Inc., Morton Grove, Ill.
Filed Jan. 11, 1971, Ser. No. 105,555
Int. Cl. A61m *05/16*
U.S. Cl. 128—214 C **8 Claims**

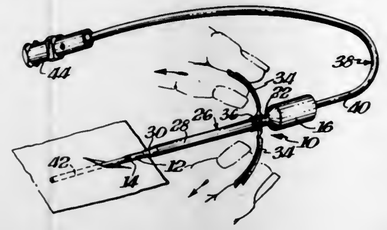


Air Block Prevention System for intravenous fluid administration sets or the like having a hydrophilic (i.e., wettable) filter utilizes a fluid filled purge line to permit air trapped above the filter when a solution container has run dry to be expressed from the fluid path so as to permit a continuation of fluid delivery to a patient without requiring withdrawal and reinsertion of the needle in the patient and without danger of air embolism.

3,677,243
SEPARABLE SURGICAL NEEDLE
Joseph E. Nerz, Willow Grove, Pa., assignor to Extracorporeal Medical Specialties, Inc.
Filed Sept. 24, 1971, Ser. No. 183,572
Int. Cl. A61m *05/00*
U.S. Cl. 128—214.4 **10 Claims**

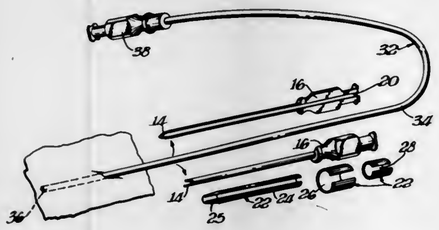
A hollow surgical needle the shaft portion of which may be split in half longitudinally and the two mating halves of which are secured together with heat shrinkable material which includes two parallel score lines located externally of the band to facilitate tearing the band apart into two separate pieces so that the two halves of the needle can be removed from around

a flexible tubular catheter having an enlarged fitting on one end after the other end of the catheter has been threaded



through the hollow needle and is properly positioned in the patient.

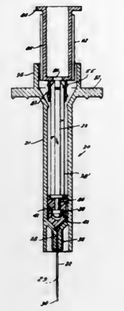
3,677,244
REMOVABLE CATHETER NEEDLE
Robert J. Hassinger, King of Prussia, Pa., assignor to Extracorporeal Medical Specialties, Inc.
Filed Aug. 4, 1969, Ser. No. 847,331
Int. Cl. A61m *05/00, 05/32*
U.S. Cl. 128—214.4 **4 Claims**



A hollow catheter needle which is split in half longitudinally and the two mating halves are secured together with heat shrinkable material which is easily cut by a sharp instrument such as a scapel and removed so that the two halves of the needle can be removed from around a flexible tubular catheter having an enlarged fitting on one end after the other end of the catheter has been threaded through the hollow needle and is properly positioned in the patient.

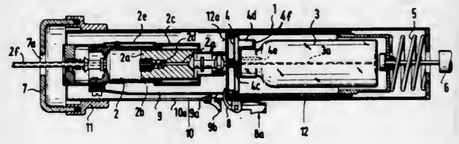
3,677,245
SELF-CONTAINED DISPOSABLE SYRINGE
Joseph T. Welch, Skyline Lakes, N.J., assignor to Becton Dickinson and Company, East Rutherford, N.J.
Filed April 6, 1970, Ser. No. 26,021
Int. Cl. A61m *05/00*
U.S. Cl. 128—218 S **10 Claims**

A self-contained disposable syringe including a syringe barrel with an open rear end and a needle mounted on the forward end. The needle has a passage therethrough which communicates with the interior of the barrel. A plunger is positioned within the syringe barrel and is movable with respect to the barrel. A needle shield is normally positioned in sealing engagement with the forward end of the syringe barrel and surrounds the needle so as to protect the needle from damage and loss of sterility. A removable seal on the rear end of the syringe barrel normally provides a compact sealed self-contained disposable syringe in sterile condition and suitable for shipment and storage. The needle shield is adapted for removal from the forward end of the barrel and is adapted for engagement with the rear end of the plunger to form finger gripping means on said plunger to facilitate the movement of



the plunger with respect to the barrel when the sealed syringe is open for use.

3,677,246
HYPODERMIC SYRINGE
Walter Stein, 3591 Emdenau, Sanatorium, Germany
Filed Feb. 17, 1971, Ser. No. 116,108
Claims priority, application Austria, Feb. 19, 1970, A 1492/70
Int. Cl. A61m *5/20, 5/18, 5/24*
U.S. Cl. 128—218 G **10 Claims**

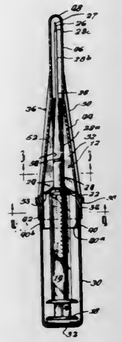


A hypodermic syringe which is provided with a relatively small injection chamber the volume of which is adjustable and from which an injection solution such as insulin or the like may be ejected by a piston through a hypodermic needle, and with a second relatively larger chamber, for example an ampoule, which is adapted to hold a relatively large supply of the injection solution and from which the injection chamber may be filled repeatedly for several injections.

3,677,247
NEEDLE CAP FOR SYRINGE PACKAGE
Alexander M. Brown, Daytona Beach, Fla., assignor to Sherwood Medical Industries Inc.
Continuation of Ser. No. 715,238, March 22, 1968, abandoned. This application Dec. 3, 1970, Ser. No. 94,953
Int. Cl. A61m *5/32*
U.S. Cl. 128—221 **5 Claims**

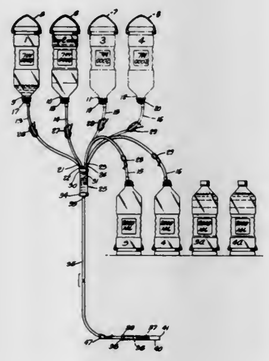
A two piece syringe package of the type having a cap for enclosing the barrel end of a syringe and a sheath for enclosing the needle end of the syringe, characterized in that the sheath extends over the barrel end of the syringe with the inner diameter of the sheath spaced from the barrel outer diameter,

and having a surface for receiving the cap on the outer diameter of the sheath, with the sheath further being provided with



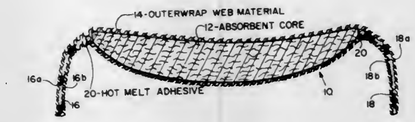
ribs on the interior thereof for centering the needle portion of the syringe during assembly, storage and shipment.

3,677,248
SURGICAL IRRIGATION APPARATUS AND METHOD OF USING SAME
Charles J. McPhee, Sylmar, Calif., assignor to American Hospital Supply Corporation
Filed Aug. 27, 1970, Ser. No. 67,375
Int. Cl. A61m *3/00*
U.S. Cl. 128—227 **19 Claims**



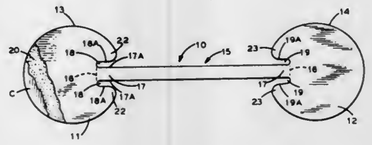
Apparatus for delivering large quantities of sterile medical liquid at both a fast flow rate and a low pressure to a resectoscope used by a physician in performing prostate surgery. Each of several 2-liter bottles suspended above the patient has an outlet tube providing for simultaneous concurrent flow of liquid and air between the bottle and an air trap chamber of the apparatus. In the process of maintaining a constant supply of bubble-free liquid to the resectoscope for flushing out blood and tissue, any randomly selected bottle of the apparatus that becomes empty can be disconnected from its outlet tube and replaced with a full bottle without disrupting the liquid supply to the air trap chamber from any other bottle of the apparatus.

3,677,249
ARCUATELY SHAPED SANITARY NAPKIN AND METHOD OF FORMATION
Darrel D. Kolex, Greenhills, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio
Filed Sept. 29, 1969, Ser. No. 861,772
Int. Cl. A61f *13/16*
U.S. Cl. 128—290 **6 Claims**



A sanitary napkin having an absorbent core held in longitudinally arcuate configuration by a snug fitting substantially inelastic outer cover, the end extensions of which are fastened immediately adjacent each core end.

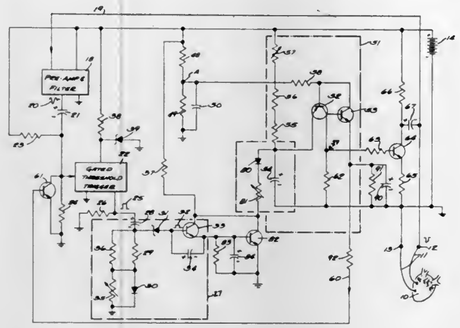
3,677,250
TABBED ANCHORING TAPE MEANS
Morton I. Thomas, 125 South Street, Monroe, N.Y.
Filed Feb. 11, 1971, Ser. No. 114,478
Int. Cl. A61m *25/02*
U.S. Cl. 128—348 **10 Claims**



Adhesive tape for anchoring to a given substrate, elongated members such as surgical tubing or the like, consisting of at least one anchoring tab portion with strap means extending from the tab portion for wrapped engagement with the tubing; the strap means being connected to the tab portion in a manner to prevent peeling and separation of the tab portion from the substrate upon tensioning of the strap means; the tape being selectively used in a manner to (1) restrain the tubing against both lateral and longitudinal movement relative to the substrate; or (2) restrain the tubing only against lateral movement while permitting longitudinal movement relative to the substrate.

3,677,251
BODY ORGAN STIMULATOR WITH INTERFERENCE REJECTOR
David L. Bowers, West Allis, Wis., assignor to General Electric Company
Filed March 10, 1970, Ser. No. 18,132
Int. Cl. A61n *1/34*
U.S. Cl. 128—419 P **1 Claim**

A pace pulse generator connects to an organ which is to be electrically stimulated. Natural and artificial stimulating signals on the body are detected and used to control the pace pulse generator. An interference rejector distinguishes between detected natural body signals and extraneous electrical interference. The rejector is also adaptable for control of



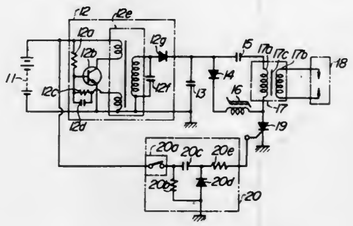
atrial and ventricular tachycardia and arrhythmia in connection with heart stimulators.

3,677,252
UNITARY BRASSIERE AND SLIP COMBINATION
Dianne Pedley, New York, N.Y., assignor to Maidenform Inc., New York, N.Y.
Filed July 17, 1970, Ser. No. 55,913
Int. Cl. A41c *3/08*
U.S. Cl. 128—454 **1 Claim**



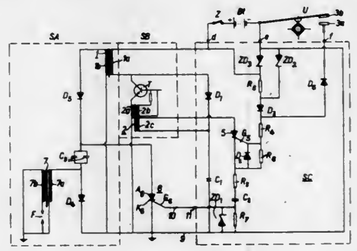
A combined brassiere and slip, having the softness, lightness in weight and look of lingerie, in which the brassiere is formed with a front piece, which may be lined with a like piece, so cut and seam-joined at critical cut areas as to provide two fulled cups having stretch at opposed angular stretch lines, vertical stretch where it is not desired at the top of the cups, from their peaks inwardly, being resisted, whereas below the peaks of the cups and outwardly thereof, the cup fabric has stretch in the line of stretch resistance st the tops of the cups, or substantially so. This is the result of cutting the cup area of the fabric into three lower-marginal widely separated points, and moving the two outermost points into juxtaposition with the third and central point, where the points are seamed together and providing a rounded pair of fulled cups having the contradistinguished stretch lines aforesaid, then connecting a back band and skirt assembly, the latter preferably being lined as well as the brassiere element.

3,677,253
CAPACITOR DISCHARGE TYPE IGNITION SYSTEM FOR INTERNAL COMBUSTION ENGINES
Kazuo Oishi; Tokuhiro Kurebayashi; Noriyoshi Ando; Noboru Yamamoto, and Hiroshi Yoshida, all of Kariya, Japan, assignors to Nippondenso Kabushiki Kaisha, Aichi-ken, Japan
Filed Aug. 20, 1970, Ser. No. 65,586
Claims priority, application Japan, Jan. 13, 1970, 44/3694
Int. Cl. F02p *3/06*
U.S. Cl. 123—148 E **20 Claims**



In a capacitor discharge type ignition system for internal combustion engines, which generates ignition sparks between electrodes of a spark plug by rapidly discharging a charged capacitor through the primary circuit of an ignition coil, the improvement residing in that the said primary circuit is provided with additional reactance elements so that said reactance elements constitute an oscillation circuit including said primary circuit, to thereby extend the duration of the ignition spark and ensure relative and effective operation of the ignition system.

3,677,254
THYRISTOR CIRCUIT ARRANGEMENT, ESPECIALLY FOR PERIODICALLY SWITCHING-IN AND SWITCHING-OUT A LOAD
Rudolf Diener, Zurich, Switzerland, assignor to Autoelektronik AG, Graubunden, Switzerland
Filed Nov. 17, 1970, Ser. No. 90,385
Claims priority, application Switzerland, Nov. 20, 1969, 17307/69
Int. Cl. F02p *3/06*
U.S. Cl. 123—148 E **9 Claims**



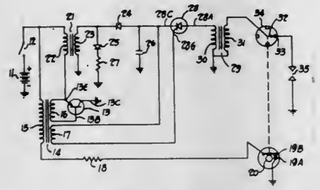
A thyristor circuit arrangement, especially for periodically switching-in and switching-out a load, comprising a thyristor including a control electrode and an ignition circuit electrically coupled with such control electrode. The circuit embodies a control transmitter-switch means capable of being switched into a first and second switching state for controlling the ignition sequence, and upon switching of such control transmitter switch means from its first switching state into its second switching state the thyristor fires. The invention contemplates that the ignition circuit embodies an ignition capaci-

tor electrically coupled with the control electrode of the thyristor in order to fire such thyristor by means of a charging current surge. The ignition capacitor can be connected for charging, by means of an auxiliary control circuit and electronic switch means electrically coupled with said auxiliary control circuit, with a charging voltage source, and for discharging can be connected with a discharge circuit. The control transmitter-switch means controls the auxiliary control circuit and the discharge circuit, so that during switching of such control transmitter-switch means from its first switching state into its second switching state the electronic switch means is switched-in with the discharge circuit open, and in its first switching state closes said discharge circuit.

3,677,255
ELECTRICAL IGNITION SYSTEM

Donald D. Withem, Chagrin Falls, Ohio, assignor to Eleanor Burditt Krost

Continuation-in-part of Ser. No. 871,672, Nov. 19, 1969, which is a continuation of Ser. No. 767,915, Sept. 30, 1968, abandoned, which is a continuation-in-part of Ser. No. 570,845, Aug. 8, 1966, abandoned. This application Feb. 18, 1971, Ser. No. 116,440
Int. Cl. F02p *3/06*
U.S. Cl. 123—148 E **57 Claims**

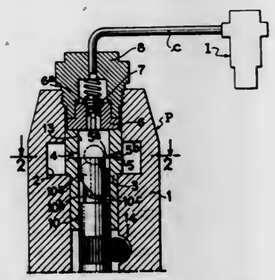


An automotive ignition system in which a storage condenser or capacitor is charged during the time that the points or contacts are closed, the condenser or capacitor being charged from a source of DC energy through a power supply circuit that steps up the voltage.

3,677,256
FUEL INJECTION DEVICE FOR AN INTERNAL COMBUSTION ENGINE

Marcel Regneault, Paris, and Maurice Le Creurer, Taverny, both of France, assignors to Automobiles Peugeot, Paris, France

Filed Aug. 26, 1970, Ser. No. 67,173
Claims priority, application France, Nov. 20, 1969, 6939888
Int. Cl. F02b *3/00*; F02m *39/00*
U.S. Cl. 123—32 G **9 Claims**

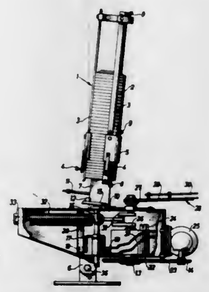


A fuel injection device for a pressure-ignited internal combustion engine having pumps in line, that is, in which each injection pump supplies fuel to one cylinder of the engine. There are in each piston and cylinder assembly of the injection pump, complementary means adapted to cooperate in at least one given angular position of, and in at least one part of the delivery stroke of, the piston so as to deduct a part of the fuel displaced in the course of said delivery stroke.

3,677,257
SPRING TYPE DISC PROJECTING DEVICE WITH CAM OPERATED COCKING MECHANISM

Bror Henrik Segerkvist, Ymsenvagen 9, 121 42, Johanneshov, Sweden

Filed Nov. 12, 1970, Ser. No. 88,965
Int. Cl. F41b *3/04*
U.S. Cl. 124—8 **7 Claims**

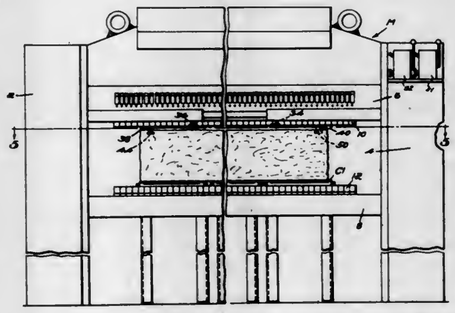


A target projecting device having a cam mechanism operated target transfer mechanism. The target transfer mechanism transfers the target from a magazine to a throwing arm. The cam mechanism is connected to the throwing arm so that movement of the cam will cause movement of the throwing arm. The magazine has a resilient bar that biases the targets against the side of the magazine and only when the bar is acted upon by a target transfer plate will a target be transfered to a target feed plate.

3,677,258
APPARATUS FOR CONTINUOUSLY GAUGING AND CUTTING STONE IN A GUILLOTINE TYPE CUTTING MACHINE

Ralph A. Fletcher, Bedford, N.H., and Joseph R. Oliver, Lowell, Mass., assignors to H. E. Fletcher Co., Westford, Mass.

Filed April 24, 1970, Ser. No. 31,608
Int. Cl. B28d *1/22*
U.S. Cl. 125—23 C **6 Claims**



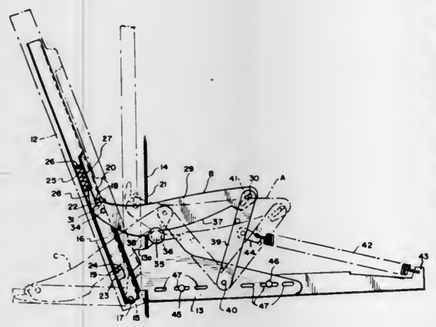
Relatively large blocks of granite and other stone, weighing several tons or more, are conveyed into a guillotine type

cutting machine and are quickly gauged and stopped in an aligned position to cutting chisels by means of a rigidly reinforced gauging stop mechanism. The gauging stop mechanism is uniquely combined with chisel adjusting mechanism of the guillotine machine so that very large bearing surfaces are provided for the stop mechanism to withstand heavy impact forces of a moving block. The gauging stop mechanism is movable downwardly into a gauging position for contacting an upper leading edge of a block of stone at points in front of the cutting chisels when the cutting chisels are raised. With the gauging mechanism in its lowered position, the cutting chisels are locked out of operation. The stop mechanism when moved upwardly releases the cutting chisels and simultaneously provide a cleared space into which cut-off sections of stone may be displaced forwardly of the cutting chisels without damage to the stop mechanism. The gauging stop mechanism further includes a set of detachable spacer plates of different sizes which are interchangeable to vary their spaced relationship to the upper set of cutting chisels.

3,677,259
REMOVABLE DOOR STRUCTURE

John T. Doner, Marion, Ohio, assignor to Whirlpool Corporation

Filed Nov. 4, 1970, Ser. No. 86,730
Int. Cl. F23m *7/00*
U.S. Cl. 126—194 **11 Claims**

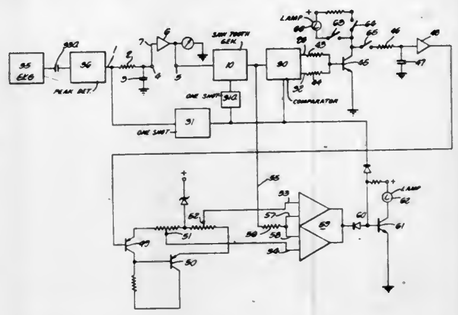


A door such as an oven door structure in which an enclosure such as the oven has an access opening with a door for closing the opening mounted for rotation about an axis between closed and open positions with the door being easily removable when desired by moving it to a position between open and closed and moving the door by pushing the door downward against a yieldable urging means in a direction to move a pin of each of two pairs of pins into alignment with a side opening in a slot, moving these pins through the opening followed by moving a second pair of pins out of their openings with the result that the door is completely removed from the enclosure. In the preferred construction a pivotally mounted link arm on each side of the door is movable about an axis spaced from the door axis so that the link arms and the door pivot at different rates and with a cavity in each arm that coincides with a pin removal slot only when the door is in its intermediate removable position so that the door can only be removed in the above manner in this intermediate position. An automatic safety catch is provided so that when the door is removed the hinge mechanism is prevented from closing against the enclosure prior to reinstallation of the door on the hinge mechanism.

3,677,260
ARRHYTHMIA DETECTOR

Horst Funfstuck, and Samuel Elazar, both of Camarillo, Calif., assignors to Statham Instruments Inc., Oxnard, Calif.

Continuation-in-part of Ser. No. 69,796, Sept. 4, 1970. This application Sept. 4, 1970, Ser. No. 69,634
Int. Cl. A61b *5/04*
U.S. Cl. 128—2.06 A **6 Claims**

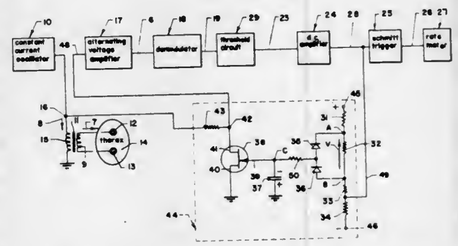


This application relates to means for measuring and recording variations in frequency of repetitive events which may be subject to large changes in frequency and is particularly useful in connection with the measuring and recording of the frequency of ectopic heartbeats. This is accomplished by generating the train of pulses responsive to the frequency of the events of interest, establishing a potential responsive to the frequency of said train of pulses, generating a linear sawtooth pulse whose amplitude is responsive to the frequency of the applied pulses and comparing said amplitude of said sawtooth pulse with a reference potential, establishing the difference between the amplitude potential and said reference potential, means responsive to said difference to indicate the frequency of the pulses resulting in said difference whose magnitude varies from that resulting from a predetermined variation of the frequency of said repetitive events.

3,677,261
IMPEDANCE PNEUMOGRAPH

Christopher C. Day, Newtonville, Mass., assignor to American Optical Corporation, Southbridge, Mass.

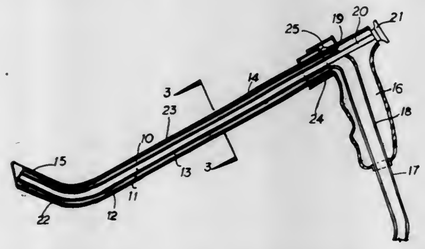
Filed April 3, 1970, Ser. No. 25,353
Int. Cl. A61b *5/05*
U.S. Cl. 128—2.1 Z **11 Claims**



An impedance pneumograph, utilizing the change in thoracic impedance due to respiration to amplitude modulate a fixed amplitude electrical carrier signal applied to the thorax of a mammalian subject, wherein the modulation provides breathing rate information for monitoring purposes. A gain stabilizer circuit is provided to automatically adjust the gain

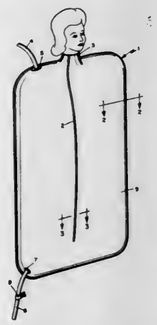
when the carrier component deviates from a predetermined voltage range, to be insensitive to fluctuations of the carrier component when it does not deviate from that predetermined range, and to be unresponsive to the modulation signal.

3,677,262
SURGICAL INSTRUMENT ILLUMINATING ENDOTRACHEAL TUBE INSERTER
Henry J. Zukowski, 72 N. Deeplands Road, Grosse Pointe Shores, Mich.
Filed July 23, 1970, Ser. No. 57,502
Int. Cl. A61b 1/06; A61m 16/00; G02b 5/16
U.S. Cl. 128—6 6 Claims



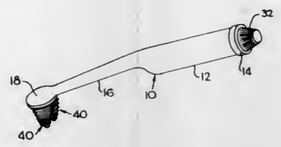
A surgical instrument used as an endotracheal tube introducer consists of a central curved fiberoptic bundle for viewing and a surrounding tubular fiberoptic bundle to carry light to the area to be viewed and an outermost metallic sheath to give rigidity. The distal end of the instrument is bent laterally at an angle so that it can be twisted to permit scanning around anatomical obstructions so that a path of entry can be found whereby the instrument will bypass obstructions without damage. The tube to be inserted is sleeved on the instrument with provision for detaching the tube after insertion into the trachea thereby permitting withdrawal of the instrument after intubation.

3,677,263
PORTABLE BATH CAPSULE
Frances Mignon Allen, 3685-31 Vista Campana N., San Diego, Calif.
Filed Sept. 16, 1970, Ser. No. 72,691
Int. Cl. A61h 29/00
U.S. Cl. 128—24.1 2 Claims



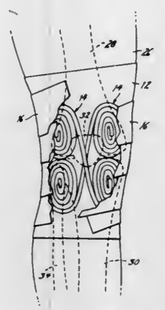
A capsule for administering bed baths and massage comprising an elongated sheath of flexible fluid tight material enclosing the patient except for the head and having means for admitting fluid to and drawing fluid from the capsule.

3,677,264
TOOTHBRUSH
Edwin Brockman, 31 Joseph Drive, Tonawanda, N.Y.
Filed Aug. 27, 1970, Ser. No. 67,352
Int. Cl. A61h 7/00
U.S. Cl. 128—62 A 9 Claims



A toothbrush head having a pair of spaced, rotatable, hollow, generally conical implements mounted thereon for simultaneously cleaning the teeth and massaging the gums of the user. The conical implements are composed of rubber or other suitable resiliently yieldable material adapted to be pressed against and conform to the contours of the user's teeth and gums. The walls of the implements are corrugated and comprise a series of annular accordion pleats decreasing in cross section away from the head and terminating in bulbous formations. A plurality of perforations extend through the corrugated walls of the implements. The other ends of the implements are provided with shafts having axially extending shanks releasably secured into diametrically opposed gears meshing with a central idler gear captively received in the head of the toothbrush.

3,677,265
KNEE SUPPORT
John J. Brabazon, 1207 W. Bristol Road, Warminster, Pa.
Filed Jan. 4, 1971, Ser. No. 103,601
Int. Cl. A61f 3/00
U.S. Cl. 128—80 C 10 Claims

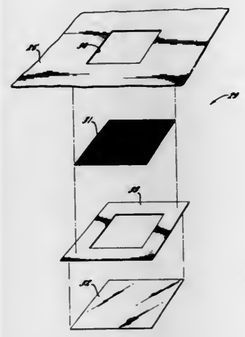


A knee support adapted to strengthen and protect injured knees. The support is particularly adapted for use by athletes. The support includes an elastic sleeve and an elastic covering which aid in strengthening the knee by retaining all of the tendons, ligaments, cartilage and muscles firmly in place. Coiled tubes of rubber are positioned between the elastic sleeve and the elastic casing, and are positioned above, below and on the sides of the kneecap when the device is worn. The coiled rubber tubes absorb any shock that may be inflicted on the knee, thereby protecting the injured knee.

ERRATUM

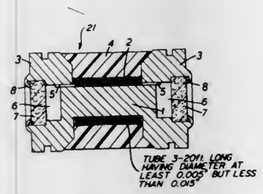
For Class 128—132 see:
Patent No. 3,677,225

3,677,266
GAUZE SECTION FOR A SURGICAL DRAPE SHEET
Angelica G. Green, Neenah, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.
Filed Dec. 31, 1970, Ser. No. 103,064
Int. Cl. A61f 13/00
U.S. Cl. 128—132 D 3 Claims



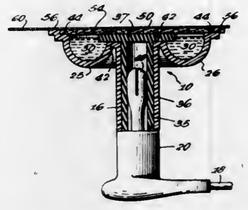
A surgical drape sheet forming an opening over which is placed a gauze layer extending under and onto the main surgical sheet body where the gauze layer is attached; a plastic film is placed under that portion of the gauze layer covering the opening and extending along all its sides onto an area including the surgical sheet where it is attached at different points along its edges.

3,677,267
CLOSED CIRCUIT BREATHING APPARATUS
Brian John Richards, Farnborough, England, assignor to Siebe Gorman & Company Limited, Chessington, Surrey, England
Filed Sept. 25, 1967, Ser. No. 670,061
Claims priority, application Great Britain, Sept. 30, 1966, 43,895/66
Int. Cl. A61m 16/00; A62b 7/02
U.S. Cl. 128—145.8 5 Claims



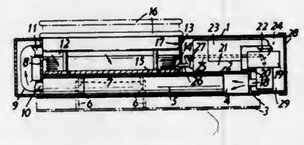
Closed-circuit breathing apparatus comprising a source of supply of a respirable gas, a user's mouthpiece or face mask, and a gas flow-regulating device between said source and mouthpiece or face mask. The gas flow-regulating device includes a tube having a length between 1 foot and 20 feet and an internal diameter between 0.002 and 0.015 inch, which tube prevents icing. The tube is mounted in a coil about a spool having a pair of flanged ends. One end of the tube passes through one flange and the other end passes through the other flange. Each tube end communicates with a recess in its respective flange end which recess is closed by a filter. The tube may be encapsulated between the flanged ends by a synthetic plastic material.

3,677,268
IONTOPHORESIS ELECTRODE
Richard A. Reeves, Creve Coeur, Mo., assignor to Sherwood Medical Industries Inc.
Filed Nov. 28, 1969, Ser. No. 880,767
Int. Cl. A61n 3/06
U.S. Cl. 128—172.1 8 Claims



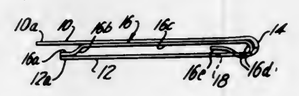
A self-contained iontophoresis electrode, disposable after use on a patient, is prefilled with an inducing iontophoresis liquid completely contained within a chamber covered by a filter cover. A protective cover, impenetrable to liquids and to light energy, seals the filter cover and is removable when the electrode is to be used.

3,677,269
TOBACCO ADDITIVE DEVICE
Perry B. Hudson, New City, N.Y., assignor to American Chemosol Corporation, New York, N.Y.
Filed March 23, 1970, Ser. No. 21,659
Int. Cl. A24b 09/00, 15/04; A24f 25/00
U.S. Cl. 131—134 7 Claims



The invention provides apparatus for treating prepared tobacco by inserting the tobacco in an enclosure, either as "loose" tobacco alone or in a temporary container or as a smokers' article such as a cigarette, cigarillo or cigar, and applying suction or fluid pressure across the matrix of tobacco so as to result in a flow of fluid therethrough for the purpose of introducing a treating substance to be carried by the flow of fluid into the tobacco.

3,677,270
SPRING-TONGUE CLASPS
Jacob Goodman, New York, N.Y., assignor to H. Goodman & Sons, Inc., Kearny, N.J.
Filed June 4, 1971, Ser. No. 150,039
Int. Cl. A45d 8/24
U.S. Cl. 132—48 R 7 Claims



Clasps for use as barrettes and bobby pins include spaced-apart top and bottom strips extending from a rounded bend to free tips. A resilient tongue extends between the top and bot-

tom strips, close to or against the top strip for most of its length. At one extremity, the tongue is united to the tip of the bottom strip. At the other extremity, the tongue has an end part that extends into an opening in the bottom strip near or at the bend that connects the top and bottom strips. In use, the tongue and the top strip grip a lock of hair with distributed pressure, and there is practically no chance of hair being caught or snagged anywhere in the clasp.

3,677,271

COSMETICS CONTAINER

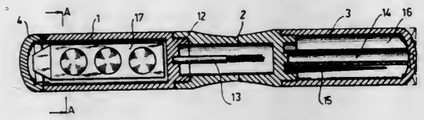
De Pietri Luciano, Reggio Emilia, Italy, assignor to Intercosmo s.n.c., Bologna, Italy

Filed Aug. 11, 1970, Ser. No. 62,996

Claims priority, application Italy, Aug. 13, 1969, 33619 A/69

Int. Cl. A45d *40/00*

U.S. Cl. 132—79 **1 Claim**



A container for cosmetics, means for applying the cosmetics, and means for aiding in the application of the cosmetics, comprises three tubular parts releasably interconnectable one with another. The hollow interior of each part may be divided into a plurality of compartments for receiving different cosmetics. An eyelash stretcher extends outwardly from the end of one part and extends into the hollow interior of the immediately adjacent part and a brush extends outwardly from the opposite end of said immediately adjacent part and extends into the hollow interior of the third part.

3,677,272

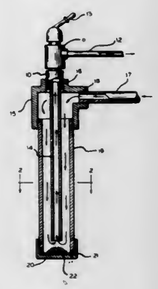
CLEANING DEVICE FOR BEVERAGE DISPENSERS

Shirley L. Schrank, 3540 So. Shore Drive, Hubertus, Wis.; John M. Berelc; Dorothy C. Berelc, both of 4530 N. 49th St., Milwaukee, Wis., and Charles O. Shrank, 3540 So. Shore Drive, Hubertus, Wis.

Filed Nov. 23, 1970, Ser. No. 91,673

Int. Cl. B08b *9/06*

U.S. Cl. 134—93 **5 Claims**



A tubular housing receives the pipe of a standard beer keg tap or pump. Water is forced, under pressure, through the tubular housing, pipe and pump in order to clean it out.

3,677,273

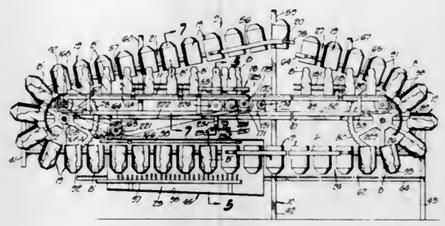
BOTTLE RINSING APPARATUS

Gerald F. Mahlstede, Brea, and Buster L. Carruth, Placentia, both of Calif., assignors to Polar Chilled Products Co., Inc., Brea, Calif.

Filed Jan. 5, 1970, Ser. No. 745

Int. Cl. B08b *3/02, 9/08*

U.S. Cl. 134—127 **12 Claims**



Bottle rinsing apparatus wherein a first horizontal receiver conveyor carries upright bottles between the upper and lower runs of a continuous second conveyor which has a plurality of bottle receiving receptacles. The second conveyor has a first upper run segment in which receptacles are carried downwardly at an angle to the first conveyor so as to respectively encompass a bottle on the first conveyor. The encompassed bottles are inverted by the receptacle conveyor and passed over rinsing jets on a lower run segment of the second conveyor. Each bottle receptacle is open at both ends, with one end having a restricted opening to retain the bottle neck when the bottle is inverted, while still affording a path to the bottle interior for the rinsing jets and for drainage. The second conveyor has a second upper run segment in which the receptacles are carried upwardly at an angle adjacent a horizontal retrieval conveyor which receives the bottles in upright position from the receptacles.

3,677,274

UMBRELLAS

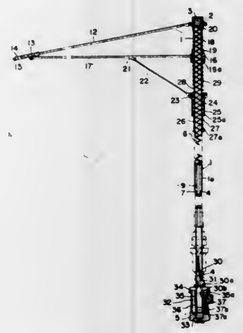
Hiroyuki Yasuda, Funabashi, and Choji Arai, Kitakatsushika-gun, both of Japan, assignors to Kabushiki Kaisha Ideal, Tokyo, Japan

Filed July 17, 1970, Ser. No. 55,847

Claims priority, application Japan, July 23, 1969, 44/69770; July 23, 1969, 44/69771

Int. Cl. A45b *25/16*

U.S. Cl. 135—24 **3 Claims**



In a collapsible, automatically openable umbrella comprising: a telescopic dual shaft having a tubular inner lower shaft

member and a tubular outer upper shaft member, a compression spring means housed in said shaft for urging said members to mutually extended positions, a slidable tubular intermediate member pivotably carrying rib-supporting spokes, and a slidable tubular lower member pivotably carrying spoke-supporting rods, the opening of the umbrella is greatly facilitated by the provision of a slidable tubular push-up member urged upwardly by a compression spring provided in the bore of the grip secured to the lower end of the tubular inner lower shaft member, a resilient member provided on said tubular intermediate member or urge the spreading of the rib-supporting spokes. A buffer member secured at the top of the shaft serves to alleviate the impact arising when the top edge of the tubular intermediate member hits against the shaft top.

3,677,275

METHOD AND APPARATUS FOR CONTROLLING THE FLOW OF GASES

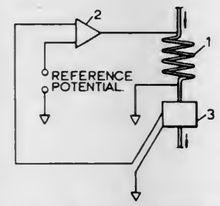
James E. Lovelock, Bowerchalke, near Salisbury, England, assignor to Pye Limited, Cambridge, England

Filed Dec. 22, 1969, Ser. No. 887,028

Claims priority, application Great Britain, Dec. 31, 1968, 61,981/68; March 31, 1969, 16,647/69

Int. Cl. F15d *1/02*; F15c *1/04*

U.S. Cl. 137—13 **9 Claims**



The invention relates to a method and apparatus for controlling the flow rate of a gas. The flow rate of a gas through a tube which is long compared to its internal diameter is inversely proportional to the gas viscosity, which in turn, is directly related to the square root of the absolute temperature of the gas and is independent of the gas pressure. The gas is passed through a single tube, or a number of interconnected tubes, the tube or tubes being heated electrically whereby to change the gas viscosity and hence flow rate. Changes in gas flow may be detected by a transducer to initiate a signal controlling the heating current.

3,677,276

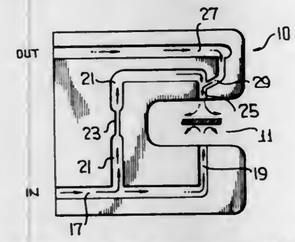
INTERRUPTIBLE JET SENSOR

Anthony Kopera, Beltsville, Md., assignor to Bowles Fluidics Corporation, Silver SPrings, Md.

Filed Oct. 2, 1970, Ser. No. 77,595

Int. Cl. F15b *5/00*; G06d *16/00*

U.S. Cl. 137—14 **9 Claims**



Object presence in a gap is detected by a fluid jet issued across the gap toward a sensor opening and interruptible by the object. Supply and outlet passages communicate with the sensor opening. Jet interruption permits supply passage fluid to exit from the sensor opening and aspirate the outlet passage. The uninterrupted jet impacts supply passage fluid just outside the sensor opening, producing a back pressure in the opening which directs supply passage fluid into the outlet passage. Supply passage fluid pressure is selected to prevent entry of the unblocked jet into the sensor opening, thereby assuring flow of only clean supply fluid through the outlet passage.

3,677,277

MECHANO-HYDRAULICALLY OPERATED GOVERNOR

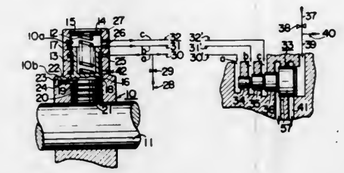
Koichiro Hirozawa, and Shigeo Takahashi, both of Kariya, Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Aichi Pref., Japan

Filed Oct. 7, 1970, Ser. No. 78,707

Claims priority, application Japan, Oct. 7, 1969, 44/80050

Int. Cl. G05d *13/36*

U.S. Cl. 137—54 **10 Claims**



A mechano-hydraulically operated governor is provided with a main body rigidly mounted on a rotational shaft and a supplemental control valve means operationally connected with the body. In the main body valve means are mounted on the shaft so as to be moved radially or axially relative thereto under the action of the centrifugal force generated by the rotation of the shaft.

Hydraulic output governor pressure can be varied in a stepped mode for a continuously increased or decreased rotation of the shaft.

3,677,278

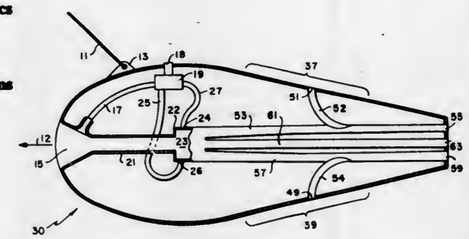
SELF ACTIVATED FLUIDIC CONTROL FOR A SUBMERGED TOWED BODY

John L. Joynes, Annapolis, Md., assignor to The United States of America as represented by the Secretary of the Navy

Filed Nov. 25, 1970, Ser. No. 92,751

Int. Cl. F15c *4/00*

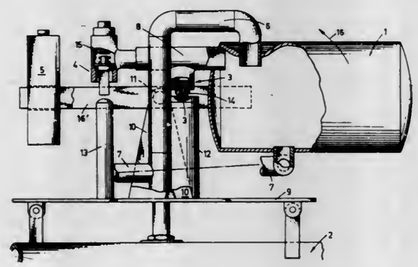
U.S. Cl. 137—81.5 **5 Claims**



A bi-stable fluidic amplifier is inserted in a towed body. The nose of the towed body is opened to admit fluid, which is funnelled under the force of the flow stream into the fluidic amplifier. A passive pressure sensor, preset to a desired depth or altitude controls the direction of the fluid leaving the fluidic device through exit conduits connected from the fluidic

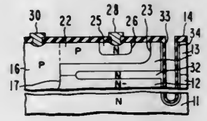
device, one to the upper and one to lower surface of the towed body. These exit lines terminate at approximately the separation point of the fluid flowing around the body. The pressure regulator reacting to changes in depth directs a control signal to the fluidic amplifier to divert the passage of the fluid to either the upper or lower exit conduits, depending upon the pressure. Fluid from an exit port is entrained back along the side of the body causing the separation point on that side of the body to move back along the body thereby increasing lift on that side of the body. The change in the lifting force on one side of the body without an equal change on the opposite side forces a change in the attitude or angle of attack of the body to the fluid so it will either plane towards the surface or dives, until the body reaches the pressure level preset on the pressure sensor.

3,677,279
AUTOMATIC GAS-TRAP
Henri Lenfant, Heppenbach, Belgium
Filed Sept. 24, 1970, Ser. No. 74,952
Claims priority, application Belgium, Sept. 26, 1969, 739,453
Int. Cl. F16r 45/02
U.S. Cl. 137—197 **2 Claims**



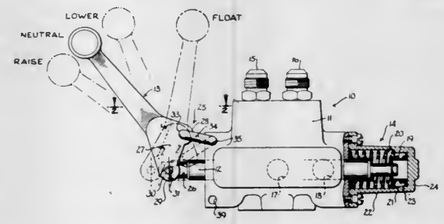
An automatic gas-trap for discharging undesirable gas accumulation in a liquid chamber. The chamber is mounted for movement between a first, gas relief position, and a second, closed position. Two valves are arranged on a rigid duct attached to the chamber, both valves being designed to open when the chamber moves to the first position to enable expulsion of the gas therefrom. When gas pressure is reduced inside the chamber, the chamber moves back to its second position which corresponds to the closing of the two valves.

3,677,280
OPTIMUM HIGH GAIN-BANDWIDTH PHOTOTRANSISTOR STRUCTURE
Gene P. Weckler, Campbell, Calif., assignor to Fairchild Camera and Instrument Corporation, Mount View, Calif.
Continuation of Ser. No. 845,303, July 28, 1969, abandoned. This application June 21, 1971, Ser. No. 155,363
Int. Cl. H01l 15/06, 19/00
U.S. Cl. 317—235 R **12 Claims**



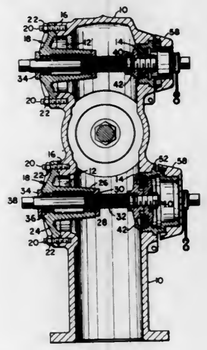
The fabrication of two semiconductor structures such as a high speed, optimum sensitivity photodiode and a maximum gain-bandwidth transistor on the same wafer is described. A thin, low resistivity layer is formed on a higher resistivity substrate and the diode junction is then formed in one part of the wafer by diffusing the junction-forming region through the layer and down into the substrate. This provides a diode of low capacitance and optimum light sensitivity. The transistor is then formed in another part of the same wafer by first diffusing the base-collector junction into the thin layer followed by a diffusion therein of the emitter-base junction. This diffusion into the layer is very shallow and results in a high gain-bandwidth transistor. The photodiode structure is affected very little by the processing required to form the transistor, thus allowing each structure to be independently optimized.

3,677,281
CONTROL VALVE AND ACTUATING LEVER ASSEMBLY THEREFOR
Francis H. Tennis, Oconomowoc, Wis., assignor to Hydraulic Industries, Inc., Hartland, Wis.
Filed Aug. 28, 1970, Ser. No. 67,710
Int. Cl. F16k 31/28, 31/46
U.S. Cl. 137—270 **6 Claims**



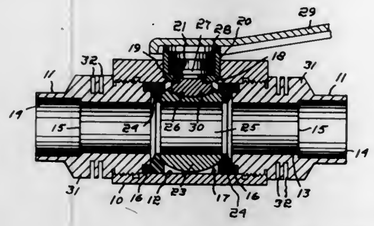
A control valve with an actuating lever which is selectively connectible in any of a number of different attitudes with a supporting link and with the valve member to be actuated. Lever produced movement of the valve member to one of its operating positions effects cocking of a toggle joint defined by the link and part of the lever connected thereto. The return spring acting upon the valve member yieldingly holds the toggle joint in cocked condition.

3,677,282
FIRE HYDRANT
Edward Page, Walnut Creek, Calif., assignor to Rich Manufacturing Company of California
Filed Dec. 24, 1969, Ser. No. 887,955
Int. Cl. E03b 9/04; F16k 31/50
U.S. Cl. 137—283 **6 Claims**



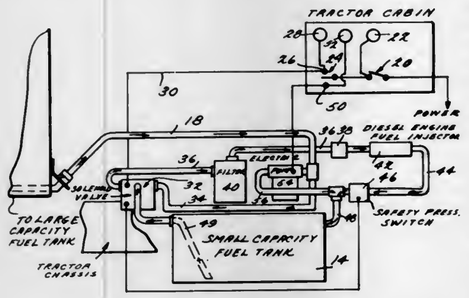
A fire hydrant having a water filled housing and easily removable operating valves. The valves are carried on bolted-in assemblies and provided with screw-in valve seats against which the valves operate. The valve assembly has a removable valve carrier which permits substitution of slow opening or quick opening valve parts.

3,677,283
BALL VALVE
Kostag V. Tito, 14 Forest Street, Saco, Maine
Filed April 16, 1970, Ser. No. 29,179
Int. Cl. F16k 49/00
U.S. Cl. 137—338 **4 Claims**



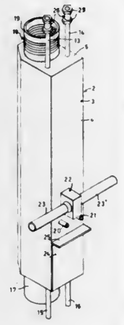
Ball valves are disclosed that are particularly adapted for constructions where their ports are to have conduit ends connected thereto by soldering, brazing, or welding. For such uses, the sealing means of the valves are protected by a heat-dissipating fin arrangement. The valve bodies preferably consist of sleeve-like members with port members threaded into the ends thereof. The bore through each sleeve-like member is eccentric enabling it to have minimum cross-sectional dimensions with its thickest part providing adequate stock for the support of the operating means which preferably consist of a key on a stem insertable through a slot in the bottom of the bonnet into a keyway in the ball valve element and seating the stem when the key is caught under the bottom of the bonnet.

3,677,284
FUEL TRANSFER SYSTEM FOR TRACTOR TRAILER VEHICLES
Charles E. Mendez, P. O. Box 426, Tampa, Fla.
Filed Oct. 6, 1966, Ser. No. 584,867
Int. Cl. F17d 1/00
U.S. Cl. 137—351 **6 Claims**



A relatively large auxiliary fuel supply tank is carried by a trailer of a tractor-trailer combination. A fuel supply system provides for a transfer of fuel from the large, separate tank of the trailer to a point of consumption for an engine carried by the tractor of the combination. In one embodiment, fuel can be transferred from the separate fuel tank to the engine itself by a conventional fuel pump carried by the engine, and in another embodiment fuel can be transferred from the separate fuel tank into one or more small-capacity fuel tanks carried by the tractor. Automatic control means are provided for maintaining a desired level of fuel in the small-capacity fuel tanks in the second embodiment.

3,677,285
DUCT ASSEMBLY UNIT FOR AIR-WATER INDUCTION SYSTEM OF AIR CONDITIONING IN MULTI-STORY BUILDINGS
Wade L. Adams, 735 Bowhill, Hillsborough, Calif.
Filed April 6, 1971, Ser. No. 131,663
Int. Cl. F16l 39/02; F17d 1/04
U.S. Cl. 137—357 **6 Claims**

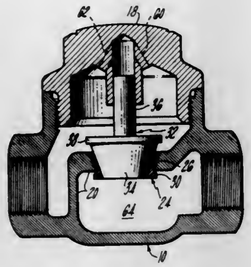


A unit for conducting air and water in an induction system of air conditioning in a multi-story building comprising a modular assembly of water pipes and an air duct stationarily enclosed within a housing and heat insulated from each other and the walls of the housing with projecting terminal end portions on opposite ends of the pipes and duct provided with couplings for connecting adjacent terminal end portions of the water pipes and air ducts of adjacent units after the units are in longitudinal alignment. A support on each unit or module is adapted to support each unit on one floor of each adjacent pair of stories in the building in said longitudinal alignment in position for effecting the coupling between the pipes and air ducts of adjacent units while so supported, and each unit is provided with air and water take-offs for connecting with an induction unit in the space between the floors of each adjacent pair of stories. The projecting terminal end portions of the pipes and air ducts are preferably not threaded and the couplings therefor are longitudinally extensible elements, with the coupling for the air ducts secured on one terminal end portion of each unit for said extension to connect with the duct on the adjacent unit or module.

3,677,286
VALVE
Joseph Wolfson, Rocky Hill, Conn., assignor to Bloomfield Valve Corporation, Bloomfield, Conn.
Division of Ser. No. 837,769, June 30, 1969, Pat. No. 3,598,145. This application Nov. 25, 1970, Ser. No. 92,570The portion of the term of this patent subsequent to Aug. 10, 1988, has been disclaimed.
Int. Cl. F16k 15/06
U.S. Cl. 137—469 **1 Claim**

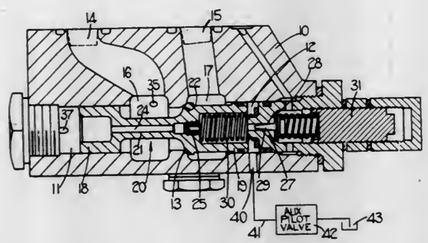
A valve having a disc member which cooperates with the valve seat to perform the valving action, the disc member being characterized by a sail which will be acted upon by fluid in the system to cause rapid and full opening and closing of the

valve regardless of the position thereof. The seat and disc members respectively have a complementary frustoconical



aperture and a plug portion and the sail is spaced from the seat with the valve in the closed condition.

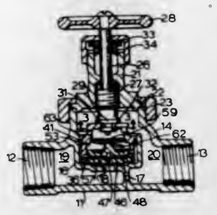
3,677,287
RELIEF VALVE
John Morris, Haisall, Nr. Ormskirk, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England
Filed Dec. 9, 1970, Ser. No. 96,523
Claims priority, application Great Britain, Dec. 9, 1969, 59,937/69
Int. Cl. F16k *31/12*
U.S. Cl. 137—491 **7 Claims**



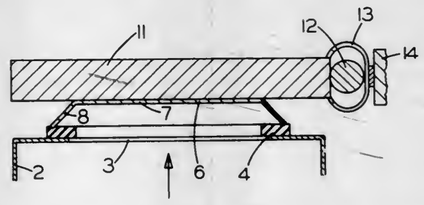
A relief valve for a reversible delivery pump includes a bore having two portions of different diameters and a pair of ports opening into the bore on either side of a valve seat located between the two portions. A spool is slidable in the bore to engage the seat and includes two piston parts engaged in the respective portions of the bore. A selector valve allows the smaller of the pistons to communicate with whichever of the ports is at the higher pressure. Opposite ends of the spool intercommunicate via restricted orifice, the flow through the orifice being regulated by pilot valve responsive to the higher pressure.

3,677,288
FLOW CONTROL VALVE
Thomas B. Martin, Micro-Pump Corporation, 1021 Shary Court, Danville, Calif.
Filed Oct. 8, 1970, Ser. No. 79,085
Int. Cl. F16k *31/36*
U.S. Cl. 137—501 **9 Claims**

A structure is provided for use in a globe valve or the like in installations where constant flow is desired despite variations in inlet and outlet pressures. The valve stem is attached to the structure and movement of the stem determines the effective maximum flow through the valve. Inlet and outlet pressures operate upon opposite sides of a diaphragm, and the differential in pressure causes movement of a valve member relative to an orifice and thereby maintains constant flow through said orifice.

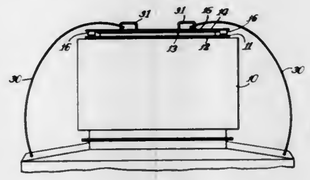


3,677,289
PRESSURE RELIEF VALVE
Richard D. Rivers; Thomas W. Byers, and Edward J. Fortener, all of Louisville, Ky., assignors to American Air Filter Company, Inc., Louisville, Ky.
Filed Sept. 9, 1970, Ser. No. 70,704
Int. Cl. F16k *15/03*
U.S. Cl. 137—527.8 **3 Claims**



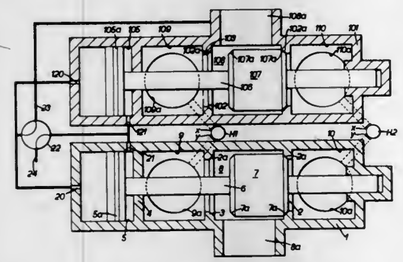
A pressure relief valve assembly for a plenum chamber including a ported valve seat communicating with an outlet of the chamber and a weighted relief valve cooperating with the ported valve seat, the extreme edge of the valve engaging in sharp-line contact with the ported valve seat.

3,677,290
PRESSURE VENTING ASSEMBLY
Frederick Adolph Giesecke, Riverside, Ill., assignor to CPC International Inc.
Filed Sept. 24, 1970, Ser. No. 75,152
Int. Cl. F16k *17/02, 31/08*
U.S. Cl. 137—528 **2 Claims**



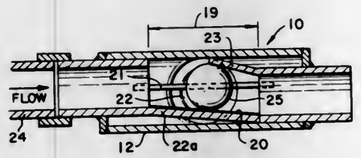
This invention discloses a pressure venting assembly for an enclosure comprising, in combination, (a) a flange around the periphery of an opening in said enclosure having a raised inward portion; (b) a compressible gasket disposed on the raised portion of the flange and extending around the opening; (c) a plurality of magnets spaced around the opening and adjustably mounted on the flange relative to the height of the raised portion of the flange; and (d) a cover plate for the opening, of magnetically susceptible material, capable of resting on the gasket and engaging the magnets.

3,677,291
CHANGE-OVER VALVES
Peter Laws, 16 Steele's Road, London, N.W. 5, England
Continuation-in-part of Ser. No. 687,954, Nov. 15, 1967, abandoned. This application Sept. 28, 1970, Ser. No. 76,192
Int. Cl. F16k *37/00*
U.S. Cl. 137—554 **6 Claims**



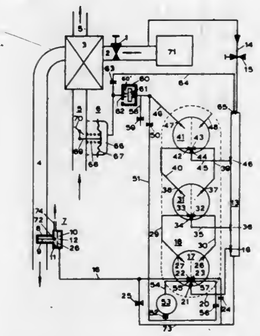
The invention provides a fluid flow path or source selector valve, comprising a valve body defining a valve chamber with a main port a pair of subsidiary ports and a valve seat internally of the chamber for each subsidiary port, valve means mounted in the chamber for movement across the chamber between the valve seats and defining a pair of valve faces each adapted for sealing engagement with one of said valve seats, and fluid pressure operated actuating means for effecting movement of the valve means across the valve chamber to selectively seal off one or other of said subsidiary ports.

3,677,292
PIPELINE FLOW TEE
Howard F. Bell, and John A. Scheineman, both of Houston, Tex., assignors to Shell Oil Company, New York, N.Y.
Filed Feb. 11, 1970, Ser. No. 10,544
Int. Cl. F16l *41/00*
U.S. Cl. 137—544 **2 Claims**



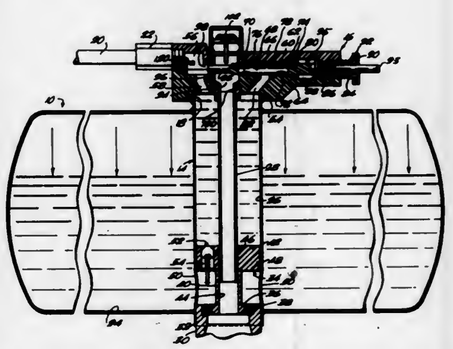
A method and apparatus for passing a pipeline sphere through a flow tee disposed in a pipeline whereby fluid flowing through the pipeline may selectively be flowed through at least one of the outlets of the run of the flow tee or the branch outlet of the flow tee while preventing the sphere from entering the branch outlet. A gap is formed in the run of the flow tee at its junction with the branch outlet so that fluid may pass through either the run or the branch outlet when the run is occupied by a pipeline sphere. This gap is approximately equal to between 1½ and 2 times the diameter of the sphere.

3,677,293
FLUID FLOW CONTROL SYSTEMS
Owen D. Furlong; Alan C. Rowe, and Eric F. Wright, all of Yeovil, Somerset, England, assignors to Westland Aircraft Limited, Yeovil, Somerset, England
Filed Feb. 10, 1966, Ser. No. 526,597
Claims priority, application Great Britain, April 2, 1965, 14,078/65
Int. Cl. F15c *1/04*
U.S. Cl. 137—561 **9 Claims**



A fluid flow control system for controlling conditions of flow in first and second ducts. A signal representing a condition in one duct is supplied to a fluid amplifying device, the output of which operates a control apparatus to vary the operating conditions, preferably in another fluid flow duct.

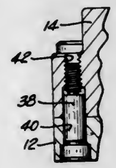
3,677,294
HYDRAULIC FLUSH TANK
James W. Gibbs, and John L. Gibbs, both of Hialeah, Fla., assignors to Marine Bank and Trust Company
Filed April 12, 1971, Ser. No. 133,242
Int. Cl. E03d *3/04*
U.S. Cl. 137—572 **13 Claims**



A hydraulic assembly for filling and rapidly discharging a liquid from a hermetically sealed tank. The assembly includes a flush tank having a cylindrical sleeve extending vertically therethrough and a tubular axially disposed air vent within the sleeve. A valve means, slidably disposed within the sleeve on the tubular air vent adjacent the lower end thereof, is closed by the normal water line pressure, entering through the top of

the sleeve, to hermetically seal the flush tank and the chamber within the sleeve, permitting the pressure therein to build until it balances the water line pressure. Manually operated valve means are provided at the top of the sleeve to open the pressurized chamber within the sleeve to the air vent causing the rapid discharge through the air vent of part of the water within the sleeve chamber, which, because of the pressure differential thus created, opens the valve at the bottom of the sleeve causing a rapid discharge of the pressurized water from the tank.

3,677,295
DIRECTIONAL VALVE CONTROL
John R. Schultz, Milwaukee, Wis., assignor to Applied Power Industries, Inc., Milwaukee, Wis.
Filed Feb. 1, 1971, Ser. No. 111,276
Int. Cl. F16k *11/06*
U.S. Cl. 137—596.12 **2 Claims**

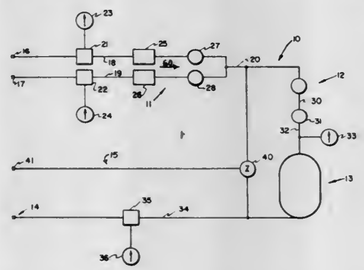


A directional control valve having a valve body with four ports equally spaced around a common axis, a wide land seal assembly in diametrically opposite ports and a movable valve disc mounted for rotary motion on one face of the valve body, the valve disc includes a pair of passages having openings positioned to engage the ports, check valves are provided in each of the passages to limit fluid flow to one direction through the passages, and a central passage for bypassing fluid through the valve body. The wide land seal assemblies each include a metal seal disc having a tapered flange on one side and a resilient sleeve bonded to the flange to seal the assembly in the port and to bias the metallic disc against the valve disc.

ERRATUM

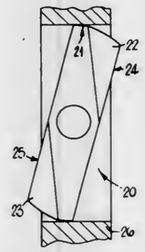
For Class 137—596.16 see:
Patent No. 3,677,826

3,677,296
FLUID PROPORTIONER MEANS
James E. Berger, 124 Second Avenue, Newton, Mass.
Filed March 16, 1970, Ser. No. 19,771
Int. Cl. F16k *31/12*
U.S. Cl. 137—606 **1 Claim**



A fluid proportioning system for obtaining desired mixtures of fluids has at least two fluid inlet conduits with each of said conduits carrying a flow meter and flow control means. A common conduit interconnects the inlet conduits and leads to an automatic fluid supply control valve means for permitting passage of fluid in the common conduit at a predetermined pressure and cutting off fluid flow at a second predetermined pressure. A surge tank is interconnected with the automatic fluid supply control valve means for receiving fluid from the common conduit and an output conduit delivers fluid from the surge tank. Preferably the automatic supply control valve means is a mechanically operated pressure valve circuit which has an inlet means for admitting fluid flow and an outlet means for delivering fluid from the inlet means. Valve means permits fluid flow from the inlet means to the outlet means in a first position of the valve means and cuts off fluid flow from the inlet to the outlet means in a second position. A fluid pressure sensitive means controls the valve means to make it automatically responsive to a buildup in pressure at the outlet means to shift from the first to second position and automatically responsive to a lowering of pressure in the outlet means to cause the valve means to shift from the second position to the first position.

3,677,297
BUTTERFLY VALVES
Peter Walton, Gloucester, England, assignor to Serck Industries Limited, Birmingham, England
Filed June 22, 1970, Ser. No. 48,303
Claims priority, application Great Britain, Sept. 22, 1969, 46,486/69
Int. Cl. F16k *1/22*
U.S. Cl. 137—625.28 **4 Claims**

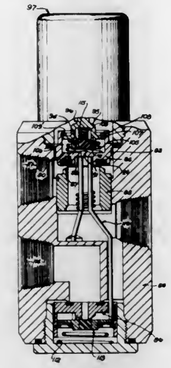


A butterfly valve has a vane in the form of a disc with part-spherical periphery. The periphery engages the valve housing to shut the valve. Portions of the vane are removed so that as the valve is opened the whole of the fluid flow passes over the relieved portion. By selection of the shape of the relieved portions a desired flow characteristic may be obtained.

3,677,298
PILOT VALVE OPERATED MAIN VALVE WITH LOST MOTION CONNECTED AND TANDEM OPERATED VALVES
Roger Greenwood, Valencia, and John P. Etcheverry, Sylmar, both of Calif., assignors to International Telephone and Telegraph Corporation, New York, N.Y.
Filed Dec. 24, 1970, Ser. No. 101,330
Int. Cl. F16k *11/02*
U.S. Cl. 137—625.64 **8 Claims**

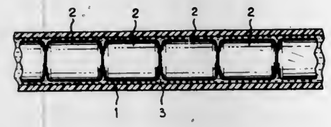
A solenoid actuated three-way valve to admit air under pressure to a spring biased piston in a cylinder and, alternatively, to exhaust the cylinder to the atmosphere. Two pilot valves are operated substantially in tandem. The operator has a lost motion connection with the valves for positive valve actuation in the event of pressure failure. A framework between one main valve and one pilot valve for the other main valve causes the one pilot valve to close when the one main valve

opens, and vice versa. Both main valves are oriented so that fluid pressure biases them in a closing direction. Small closing



bias springs and a small solenoid may thus be utilized. Good valve seating is thus obtainable. The overall size of the valve is also reduced.

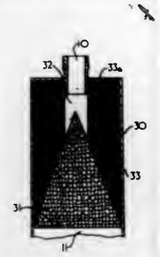
3,677,299
HYDRAULIC CIRCUITS
Pierre Cibie, Paris, France, assignor to Projecteurs Cibie
Filed July 31, 1970, Ser. No. 59,878
Claims priority, application France, Aug. 5, 1969, 6926812
Int. Cl. F16l *55/04*; **E03b** *7/10*
U.S. Cl. 138—26 **8 Claims**



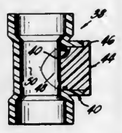
A hydraulic control circuit particularly for use in motor vehicles for the orientation of headlamps in which there is a flexible tube enclosing a transmission medium whereof the volumetric coefficient of expansion is equal to three times the linear expansion of the tube. This transmission medium consists of a number of solid elements located end-to-end within the tube and being surrounded by a hydraulic liquid which fills the spaces between the tube and the solid elements. These elements are contiguous or joints and their contacting surfaces are rounded to permit relative rolling. The solid elements may be cylindrical with rounded ends or spheres.

3,677,300
PRESSURE REDUCING DEVICES
Colin F. King, Erdington, England, assignor to Dunlop Holdings Limited, London, England
Filed July 8, 1970, Ser. No. 53,162
Claims priority, application Great Britain, Jan. 15, 1970, 2,001/70
Int. Cl. F15d *1/02*
U.S. Cl. 138—42 **16 Claims**

A pressure reducing device comprises an inlet for high pressure gas, an outlet for low pressure gas and a path therebetween for flow of gas from inlet to outlet. The path includes at least one porous baffle having a relatively coarse pore inner portion disposed in an inner zone of said path and a relatively fine pore outer portion in an outer zone of said path. Porous materials that may be used include layers of gauze, expanded metal, sintered metal, ceramic foams and plastics foams such as rigidified foams.

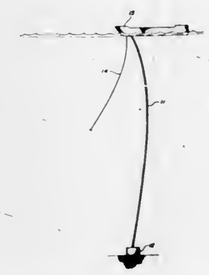


3,677,301
PLASTIC PIPE FITTING AND CLOSURE
Robert M. Williams, Davison, Mich., assignor to Genova Products, Davidson, Mich.
Filed April 21, 1970, Ser. No. 30,433
Int. Cl. F16l *55/10*
U.S. Cl. 138—92 **2 Claims**



A cleanout for a plastic pipe system which includes a threadless socket and a threadless plug fitted in sealing relation in said socket and interconnected to prevent internal forces from displacing the plug. The socket and plug can be utilized in a pipe system for other purposes than that of a cleanout.

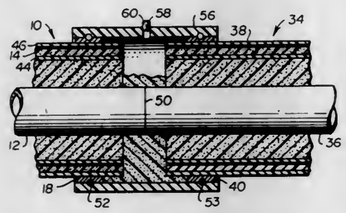
3,677,302
BI-AXIAL ARTICULATING PIPELINE STRUCTURE
George W. Morgan, Anaheim, Calif., assignor to Subsea Equipment Associates Limited, Hamilton, Bermuda
Filed March 9, 1970, Ser. No. 17,649
Int. Cl. F16s *7/00*
U.S. Cl. 138—106 **6 Claims**



A riser is disclosed wherein a plurality of substantially rigid pipes are enclosed within a larger outer pipe. The outer pipe is divided into rigid sections that are hinged together to allow the

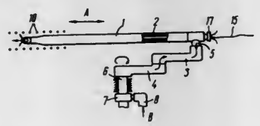
riser to bend on a bending axis normal to the riser axis. Alternate bending axes are disposed normal to the interstitial bending axes. The larger of the enclosed pipes are disposed along the diameter that coincides with the bending axes whereby the pipes form a helical twist of 90° to the next hinged-connection. The other enclosed pipes are layed spaced from and near to these larger pipes also in a helically twisting fashion thereby preserving their individual flexibility.

3,677,303
PREFABRICATED CONDUIT
Joseph L. Martin, Windsor, England, assignor to Anvil Industries, Inc., Brecksville, Ohio
Continuation-in-part of Ser. No. 541,233, April 8, 1966. This application April 14, 1969, Ser. No. 826,751
Int. Cl. F16l 9/14
U.S. Cl. 138—109 **2 Claims**



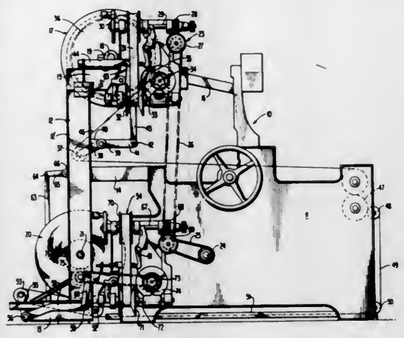
A conduit comprising a fluid conducting pipe supported within a casing, the casing being formed by a pair of coaxial, radially spaced plastic tubes and including corrugated structure and an insulating material in the space between the tubes. In one embodiment the pipe is supported within the casing in spaced relation to its inner surface by pipe supports disposed along the pipe to provide an insulating air space around the pipe, and in another embodiment the casing is filled with a foamed resin around the pipe. Sections of the conduit may be connected together by a tubular sheath surrounding and extending between the ends of adjacent casing sections and structure including O-rings mounted between the ends of the sheath and the casing sections.

3,677,304
PNEUMATIC RAPIER FOR INSERTING WEFT THREAD INTO WARP SHEDS
Nikolai Ivanovich Makachev, ulitsa Tsjurupy, 12, korpus 1, kv. 27, and Alexei Nikolaevich Parshin, Nagornaya ulitsa, 34, korpus 43, kv. 53, both of Moscow, U.S.S.R.
Filed June 10, 1970, Ser. No. 45,003
Claims priority, application U.S.S.R., Aug. 4, 1969, 1341950; July 18, 1969, 1339167
Int. Cl. D03d 47/30
U.S. Cl. 139—127 P **2 Claims**



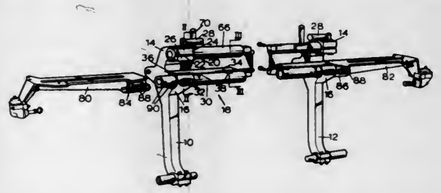
A rapier for inserting a weft thread into a warp shed, in which a tube is located in a casing, with one end of the tube being connected to an attachment for generating therein a pressure flow, and the other end projecting from the casing, with its butt being sheared at an acute angle so that the far end of the shear is the closest to the reed, and the near end the closest to the fabric fell.

3,677,305
LOOM HAVING INTERCONNECTED WARP LET-OFF AND CLOTH TAKE-UP MEANS AT BACK OF LOOM
Arch E. Cutting; Carlos L. Owens, both of Greenville; Dewey H. Williams, Greer, and Felix E. Hooper, Greenville, all of S.C., assignors to Southern Machinery Company, Greer, S.C.
Filed Feb. 19, 1971, Ser. No. 116,940
Int. Cl. D03d 49/06, 49/20
U.S. Cl. 139—99 **5 Claims**



A conventional weaving loom is equipped with a back frame which supports the warp beam in an elevated position and supports the cloth take-up roll in the position normally occupied by the warp beam. A first overhead variable speed drive or let-off controls the feeding of warps to the loom at constant speed and under a constant tension. A second substantially identical variable speed drive at a lower elevation interconnected with the first drive causes controlled winding up of cloth on the take-up roll at constant speed and under constant tension. Two guide rolls at the front of the loom reverse the cloth toward the back of the loom and the cloth travels through a protective tunnel near floor level. Up to five times more cloth can be wound on the take-up roll than is possible with conventional arrangements. The warp beams and cloth rolls are handled in one alley at the back of the loom with a great lessening of the doffing problem, and existing beam handling equipment may be utilized.

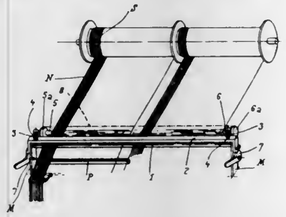
3,677,306
LOOM SLEYS
Cyril Millward Atkinson, Silverdale, Carnforth, England, assignor to Northrop Weaving Machinery Limited, Dalsyfield, Blackburn, Lancashire, England
Filed Oct. 1, 1969, Ser. No. 862,870
Int. Cl. D03d 49/60
U.S. Cl. 139—188 **4 Claims**



A loom sley capable of use in high speed looms comprises a substantially tubular member, said tubular member having attached thereto a race board plate and a reed support device, said race board plate and said reed support device being either

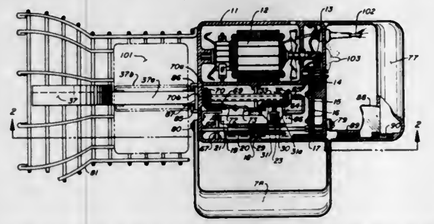
permanently or detachably secured by welding or by screw means respectively, said reed support device comprising a reed support and a reed cap carrier, said reed cap carrier also being made as a tubular member and being supported at or near its ends, said reed cap carrier also being rotatable. The sley extends outside each sley sword to carry shuttle boxes.

3,677,307
ARRANGEMENT PROVIDED WITH A PHOTO-CELL AND CONTROLLING THE DETECTING MEANS AND THE STOP MOTION IN A LOOM UPON BREAKING OF A THREAD IN THE WARPING, WEAVING AND KNITTING SYSTEMS
Georges P. Florucci, 69, Avenue de l'Hippodrome, 6 La Tour de Salvagny, France
Filed June 22, 1970, Ser. No. 48,278
Claims priority, application France, June 27, 1969, 6921900
Int. Cl. D03d 51/20; D02h 13/04; D04b 35/16
U.S. Cl. 139—353 **6 Claims**



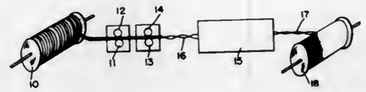
In a loom or warping system, a safety arrangement is provided for operating machine-stopping or detecting means whenever a thread breaks. To this end, the sheet of parallel threads is constrained to pass over a braking member, in practice between frictionally acting parallel transverse bars, so that upon breaking of a thread beyond the braking member, said thread may continue progressing to the rear of and towards the latter by reason of the driving action of the adjacent threads. The broken thread gathers thus into a ball adjacent the braking member on the path of a pencil of light grazing the sheet of threads just before it reaches the braking member and sent out by a source of light towards a photo-cell releasing an alarm or the like mechanism whenever a thread breaks. The source of light and photo-cell are advantageoulsy rigid with the braking member so as to make the operation independent of the vibrations of the loom, warping system or the like machine.

3,677,308
POWER-DRIVEN WIRE TYING MECHANISM
Forest M. Sarff, P.O. Box 419, Newhall, Calif., and Silas B. Birch, Jr., 9284 Dorrington Place, Arleta, Calif.
Filed Nov. 20, 1970, Ser. No. 91,267
Int. Cl. B21f 9/02, 15/04
U.S. Cl. 140—93.6 **1 Claim**



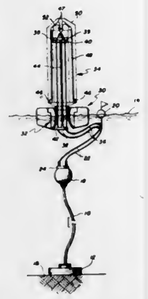
This invention relates to wire tying mechanisms, and more particularly to a power-driven mechanism for making wire ties for the purpose of bundling materials, tying the tops of sacked material, tying reinforcing steel together prior to placing concrete in reinforced concrete structures, for tying together such assemblies as garden stakes, fencing and similar packages or assemblies, or any assembly, the parts of which can be secured together by wire ties.

3,677,309
WIRE FORMING APPARATUS
Andrew J. Grandy, 2707 Grant Avenue, North Hills, Pa.
Division of Ser. No. 823,232, March 28, 1969, Pat. No. 3,566,504, which is a division of Ser. No. 180,058, March 15, 1962, Pat. No. 3,470,861. This application June 24, 1970, Ser. No. 49,484
Int. Cl. B21f 7/00
U.S. Cl. 140—149 **2 Claims**



Apparatus for forming a wire for use in a wire gun in which pairs of rollers are provided to twist the wire in its soft condition beyond its elastic limit prior to heat treating and stress relieving the wire. Additional pairs of rollers are provided to reverse the twist in the wire below the elastic limit of the wire to a flat wire condition for winding into a coil upon a reel having a locking slot. The wire thus formed is subjected to but a single stress below the elastic limit of the wire and the tendency of the wire to fracture is eliminated. The wire has the capacity to store a maximum of torsional energy.

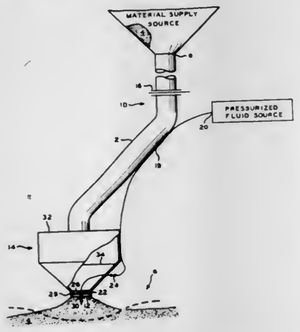
3,677,310
METHOD FOR CONNECTION OF AN UNDERWATER RISER TO A FLOATING FACILITY
Christian D. Dobler, Riverside, and Herbert J. Lilly, Jr., Mission Viejo, both of Calif., assignors to Subsea Equipment Associates Limited, Hamilton, Bermuda
Filed July 9, 1970, Ser. No. 53,363
Int. Cl. B65b 1/04, 3/04
U.S. Cl. 141—1 **9 Claims**



This specification discloses a method and apparatus for connecting a flowline of a well or satellite system which is located at a substantial distance beneath the surface of a body of water. A flowline, which is known as a riser, is provided at a well head or riser manifold. At the upper free end, off the flowline, there is a riser buoy which is releasably attached to a tanker during flowing operations and disconnectable during storms or otherwise violent sea conditions. In the disconnected mode, the riser remains submerged under the ocean surface to avoid excess structural loading. The riser is sup-

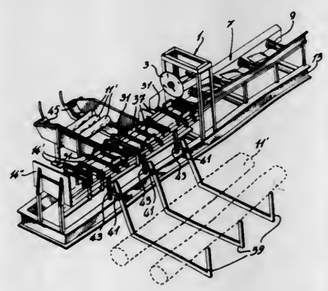
ported by means of a float to maintain tension within acceptable stress limits throughout a wide range of changes in vertical and some horizontal movements when the riser is disengaged from the tanker.

3,677,311
MATERIAL MOVING APPARATUS AND METHOD
Russell C. Parrish, Bartlesville, Okla., assignor to Phillips Petroleum Company
Filed Feb. 8, 1971, Ser. No. 113,305
Int. Cl. B65b *1/04, 3/04*
U.S. Cl. 141—1 **10 Claims**



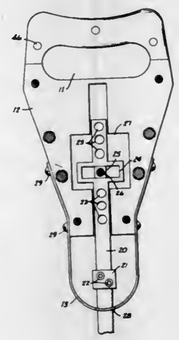
A first end of a delivery conduit is in communication with a supply source which extends generally downwardly therefrom and has a second end positioned above a second location. A pressurized fluid conduit is positioned within a discharge end of the delivery conduit with said pressurized fluid conduit being directed outwardly therefrom. Means are provided for intermittently discharging pressurized fluid from the pressurized fluid conduit and the delivery conduit for moving material through and from the delivery conduit.

3,677,312
SLASHER FOR CUTTING TREE STEMS INTO LOGS OF SELECTED LENGTH
Jean Paul Tanguay, St. Prime, Quebec, Canada, assignor to Placements Jean Paul Tanguay Limited, Quebec, Canada
Filed Aug. 25, 1970, Ser. No. 66,804
Int. Cl. B27b *5/02, 27/10*
U.S. Cl. 143—46 F **8 Claims**



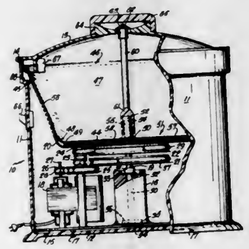
A slasher for cutting tree stems into logs of predetermined selected length by means of a saw located at a cutting station, the stems being moved to cutting position by a first conveyor formed of spaced gripping rollers. A series of retractable arresting plates are provided on the first conveyor, downstream of the station, the plates being selectively movable upwardly to stop the stems to allow their being cut into logs of which the length corresponds to the position, along the conveyor, of the selected arresting plate. An endless conveyor travelling across the first conveyor and provided with upstanding discharge plates pushes the logs laterally off the first conveyor.

3,677,313
POWER HAND SAW
Henry M. Hessler, Indianapolis, Ind., assignor to George J. Pazder, Jr., Greenwood and Alva James Rudkin, Jr., New Whiteland, Ind., part interest to each
Filed Jan. 22, 1970, Ser. No. 4,879
Int. Cl. B27b *19/08*
U.S. Cl. 143—68 F **2 Claims**



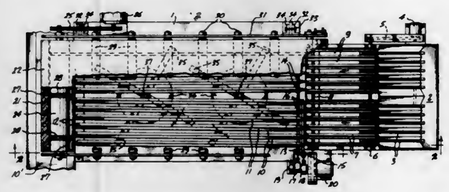
A motor powered hand saw. Power is applied by a motor causing a shaft in the hand saw to rotate. The rotating shaft in conjunction with a slide-channel mechanism results in the reciprocation of a cross shaped member. Attached to the cross shaped member is the saw blade.

3,677,314
AUTOMATIC VEGETABLE PEELER
Salvio Plana, 325 Lindsey Street-Apt. 3, Drummondville, Quebec, Canada
Filed Sept. 8, 1970, Ser. No. 70,440
Int. Cl. A23n *7/00*
U.S. Cl. 146—49 B **7 Claims**



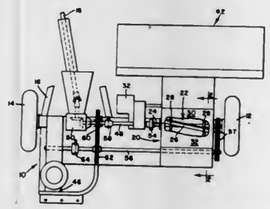
A vegetable peeler comrising a housing and a peeling bowl having an abrasive inner surface supported for rotation in the housing. A flat turntable is supported for rotation in close proximity to the bottom of the peeling bowl. The turntable is also provided with an abrasive upper surface. The peeling bowl and the turntable are both driven in opposite direction to one another.

3,677,315
METHOD FOR TRIMMING PROJECTIONS FROM GLOBULAR ARTICLES
James P. Cox, Burnaby, British Columbia, Canada, assignor to John Inglis Frozen Foods Company, Modesto, Calif.
Division of Ser. No. 707,512, Feb. 21, 1968, Pat. No. 3,538,969. This application July 6, 1970, Ser. No. 52,564
Int. Cl. A23n *15/02*
U.S. Cl. 146—224 **6 Claims**



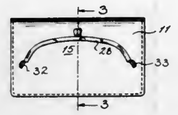
By engagement of pad means with the upper side of a globular article, it is rolled along a slotted guideway in a compound rotation which periodically moves a projection of the article through the slot of the guideway. Such compound rotation in one form is effected by moving a pad above a linear guideway in a direction generally lengthwise of the guideway while the guideway is oscillated transversely of its length. A knife blade is rotated closely beneath the guideway to sever the projection of an article extending through the slot of the guideway. The knife blade is adjustable to vary the spacing between it and the bottom of the guideway to regulate the trimming of the projections.

3,677,316
METHOD AND APPARATUS FOR SHARPENING FORAGE HARVESTER KNIVES
David Rees Markham, Ottumwa, Iowa, assignor to Deere & Company, Moline, Ill.
Filed March 11, 1970, Ser. No. 18,410
Int. Cl. A01d *75/08*
U.S. Cl. 146—242 **13 Claims**



A forage harvester has an axially horizontal cylinder-type cutterhead with a plurality of elongated angularly spaced and axially extending knives at the cutterhead periphery with parallel cutting edges generating a cylinder as the cutterhead rotates. A knife sharpening device is mounted on the harvester adjacent to the cutterhead and includes a sharpening stone adjustable into engagement with the knives at the cutterhead periphery and reciprocatable along the entire length of the knives parallel to the cutterhead axis. In operation the cutterhead is rotated so that the cutting edges are on the advance side of the knives. However, means are provided for reversing the rotation of the cutterhead while the knives are being sharpened so that the sharpening stone engages the heel portion of each knife before the cutting edge, the outward deflection of the sharpening stone due to the engagement with the knives providing a small degree of heel relief on the knives.

3,677,317
LADIES CLUTCH BAG WITH COIN PURSE
Ervin Kery, West Bend, Wis., assignor to Enger Kress Company, West Bend, Wis.
Filed Nov. 12, 1970, Ser. No. 88,630
Int. Cl. A45c *3/00*
U.S. Cl. 150—28 R **9 Claims**



A ladies' clutch bag has an inverted U-shaped slit in its back wall providing an opening to receive material which forms the interior and inner wall of a coin purse, the outer wall of the coin purse being in common with that portion of the material of the back wall of the clutch bag which is below and within the confines of the slit. There are separable metal frame elements for the upper edges of the coin purse, the front one being connected to the upper margin of said last-mentioned common material, and the rear one being connected to the margin of a section of material at the inner side of the coin purse which can be flexed away from the wall of the clutch bag.

3,677,318
RADIAL TIRES
Eduard Glass, Wippersuer Str. 45, 565 Solingen-Landwehr, and Heinrich Alker, Aachener Str. 26, 565 Solingen-Ohligs, both of Germany
Filed Sept. 15, 1970, Ser. No. 72,414
Int. Cl. B60c *9/06*
U.S. Cl. 152—356 **6 Claims**

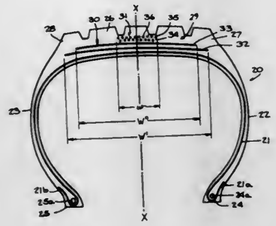


Radial tires are provided with plies made from a fabric with warp filaments running across the carcass of the tire at right angles to the direction of rotation, and weft filaments running circumferentially of the tire, the weft filaments being made from two or more different materials whose strength and stretch properties differ so that the warp filaments are able to spread uniformly during curving of the tire blank.

3,677,319
BELTED PNEUMATIC TIRES
Henri Mirtain, Compiegne, France, assignor to Uniroyal Englebert France S.A., Neuilly sur Seine, France
Filed July 23, 1970, Ser. No. 57,705
Claims priority, application France, Aug. 19, 1969, 6928426
Int. Cl. B60c *9/18*
U.S. Cl. 152—361 **35 Claims**

Belted pneumatic tires characterized by improved tread-reinforcing breaker constructions are disclosed. In any such breaker, a single-section plural-layer non-metallic textile cord ply structure having the cords thereof oriented at a 0° angle to the median equatorial plane of the tire is combined with a plural-layer ply structure of metallic wires or strips which in each layer are crossed relative to those in the other layer and are oriented at a substantial bias angle, preferably between about 18° and 75°, to the said plane. The plural-layer textile cord ply

structure, which may be located radially outwardly or inwardly of the metal ply structure or between the layers thereof, is constituted by a single length of breaker cord fabric wound in a continuous spiral circumferentially of the carcass for at least a plurality of full turns and is considerably narrower than the metal ply structure. Such tires are found to be



possessed of good road-holding or cornering ability while affording good riding comfort. This abstract is not to be taken either as a complete exposition or as a limitation of the present invention, however, the full nature and extent of the invention being discernible only by reference to and from the entire disclosure.

3,677,320

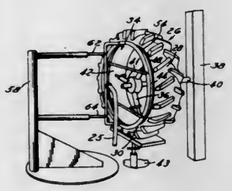
TIRE BEAD SEATING AND INFLATION APPARATUS AND METHOD FOR USING SAME

Lee M. Corless, Grosse Pointe Woods, Mich., assignor to B & J Manufacturing Company, Glenwood, Ill.

Filed Oct. 12, 1970, Ser. No. 79,876. The portion of the term of this patent subsequent to Jan. 5, 1988, has been disclaimed.

Int. Cl. B60c *25/06*

U.S. Cl. 157—1.1 11 Claims



A method and apparatus for bead seating and inflating tubeless tires on a vehicle wheel is provided. The system is particularly adapted for use in connection with large tires such as are used on farm tractors. The apparatus for seating the tire beads comprises an annular tube having orifice means for injection of air under pressure peripherally around the tire through the space between the wheel rim and the tire bead. The inflation apparatus comprises means for connection to the conventional tire valve. Control means are provided for simultaneously injecting air into the tire from the bead seating apparatus and through the conventional tire valve. The control means include means for initially injecting high pressure air for rapid bead seating and inflation. Means are provided to discontinue the flow of high pressure air at a predetermined safe point and to continue to completely inflate the tire by means of low pressure air. The method of the invention relates to the manipulation of the tire and control apparatus during seating and inflation.

3,677,321

SPRAY-DRYING PROCESS

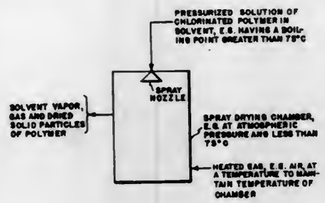
Edward Felstead, Runcorn, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Jan. 13, 1970, Ser. No. 2,668

Claims priority, application Great Britain, Jan. 27, 1969, 4,445/69

Int. Cl. B01d *1/16*; C08f *1/88*; F26b *3/12*; C08d *5/06*

U.S. Cl. 159—48 10 Claims



The spray-drying of solutions of chlorinated polydienes is carried out by atomizing the solution into an evaporation zone maintained at a temperature below 75° C through which gas is flowing.

3,677,322

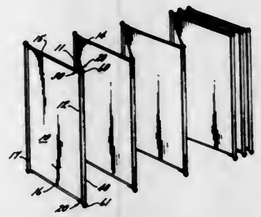
MOUNTING ARRANGEMENT FOR PIVOTAL SPACE DIVIDER

Donald L. Brorson, Hinsdale, and Raymond A. Magnuson, Western Springs, both of Ill., assignors to Beatrice Food Co., Chicago, Ill.

Filed Sept. 15, 1970, Ser. No. 72,465

Int. Cl. E06b *9/06*

U.S. Cl. 160—135 3 Claims



An improved mounting means consisting of complementary offset brackets suitable for use with an interior space dividing arrangement. The offset brackets permit a plurality of space-dividing panels or the like to be pivotably mounted to a common post so that said elements can be rotated closely parallel to each other in pairs to facilitate storage or relocation.

3,677,323

PROCESS AND APPARATUS FOR PROVIDING STEEL INGOT

Manfred Wahlster, Bochum-Stiepel, and Alok Choudhury, Hattingen, both of Germany, assignors to Rheinstahl Huttenwerke A.G., Essen, Germany

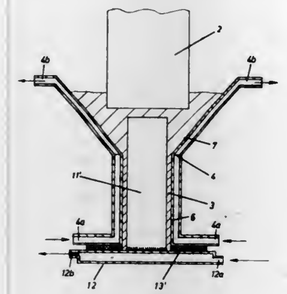
Filed Nov. 17, 1969, Ser. No. 877,371

Claims priority, application Germany, Nov. 22, 1968, P 18 10 371.4

Int. Cl. B22d *27/02*

U.S. Cl. 164—52 1 Claim

A process for the production of a steel ingot of small cross sections comprises forming the ingot within the lower end of a mold which has a head portion which widens out in a conical configuration at its upper end and which carries in its conical portion a slag bath. A consuming electrode is dipped into the slag bath and it melts down in drops due to the passage of current and solidifies in the continuous casting mold at the top of the ingot. The electrode is moved at a speed such that it approaches the mold at a speed to remain immersed with its full cross section in the slag and so that the solid as well as the liquid parts of the ingot are present only in the lower part of



the mold. The apparatus for carrying out this process includes a mold having a lower end of uniform cross section and an upper outwardly flaring conical end. The walls of the conical portion have an opening angle of between 60° and 120° and preferably 90° and this is sufficient to contain a slag bath to permit the electrode of a larger diameter than the ingot to be lowered into the bath with its full cross section.

3,677,324

METHOD AND APPARATUS FOR PRODUCING A METAL ARTICLE

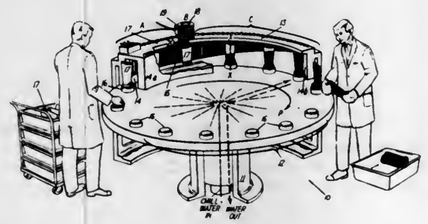
Gordon John Spencer Higginbotham, Derby, and Douglas Wilson Hall, Bradsford, both of England, assignors to Rolls-Royce Limited, Derby, Derbyshire, England

Filed July 9, 1970, Ser. No. 53,514

Claims priority, application Great Britain, July 11, 1969, 35,121/69

Int. Cl. B22d *25/06*

U.S. Cl. 164—60 10 Claims



A method of producing a metal article having a unidirectional grain structure in a given direction comprises the steps of heating a mould for the article to a temperature above the melting point of the metal, charging molten metal into, or melting metal in, the mould, effecting relative movement between the mould and a furnace so that said mould moves through the furnace, said furnace having a heat front which is so disposed with respect to the direction of relative movement between the mould and the furnace, so that said heat front moves substantially perpendicular to said direction towards one end of the mould, and cooling the opposite end of said mould so that said heat front produces said grain structure in the article. There is also disclosed an apparatus for carrying out the method.

3,677,325

PROCESS OF SUBMERGED NOZZLE CONTINUOUS CASTING USING A BASALT FLUX

George Wesley Austin, Nechells, England, assignor to Foseco International Limited, Birmingham, England

Filed Sept. 28, 1970, Ser. No. 76,264

Claims priority, application Great Britain, Oct. 10, 1969, 49,929/69

Int. Cl. B22d *11/10*

U.S. Cl. 164—73 8 Claims

A process of submerged nozzle continuous casting wherein there is used, as a flux layer on the upper surface of the molten metal in the casting mould, a flux composition including the mineral basalt.

ERRATA

For Classes 164—108 thru 164—154 see:
Patent Nos. 3,677,330 thru 3,677,333

3,677,326

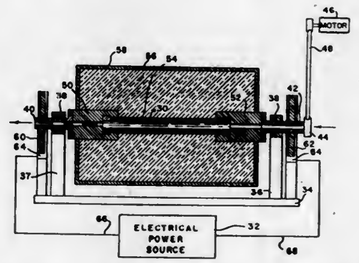
METHOD OF REDUCING REACTION BETWEEN ADJACENT LAYERS OF LIQUID SUBSTANCES HAVING DIFFERENT DENSITIES

Aristid V. Grosse, Haverford, Pa., assignor to Reynolds Metals Company, Richmond, Va.

Division of Ser. No. 686,924, Nov. 30, 1967, Pat. No. 3,536,818. This application May 21, 1970, Ser. No. 39,218

Int. Cl. F27b *7/08*

U.S. Cl. 165—1 6 Claims



A hollow pipe whose walls are formed of concentric cylinders of different substances may serve as a container for or as a furnace generating high temperatures on the order of 3,000° K. The substances of each cylinder which may be solid at start up are chosen to have liquid densities so that when the substances melt and the pipe is rotated to rim the substances, the layers maintain their desired relationships. One of the cylindrical layers may include uranium disposed so as to support a neutron chain reaction. Other cylindrical layers are provided to protect the uranium against loss due to vaporization and reaction with elements passing through the pipe and to support the uranium layer even when a liquid. Practical applications of the high temperature apparatus include rocketry, MHD generation, and generally any process requiring high temperatures.

3,677,327

METHOD FOR THE RECOVERY OF HEAT FROM HOT GRANULAR MATERIAL

Osmo O. Vartiainen, Kokkola, Finland, assignor to Outokumpu Oy, Toolonkatu, Helsinki, Finland

Filed June 24, 1969, Ser. No. 843,899

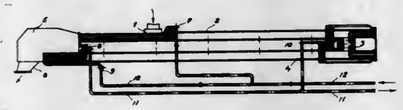
Claims priority, application Finland, June 26, 1968, 1807/68

Int. Cl. F24h *3/02*

U.S. Cl. 165—1 3 Claims

This invention relates to a method and to a device for recovery of heat from hot granular or fragmentary material

during its transportation on a conveyor the heat being transmitted by conduction or radiation to a cooling medium flowing in channels built in a track having at least one cooling surface with which at least the conveyor is in contact during the transportation and which track preferably surrounds the conveyor and the granular material to be cooled.

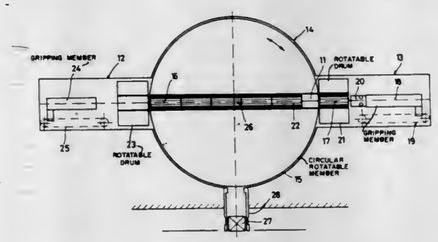


3,677,328

APPARATUS FOR CHARGING AND DISCHARGING FUEL ELEMENTS IN A VERTICAL-CHANNEL NUCLEAR REACTOR

Umberto Buzzi, Laveno; Jacques Pierre Dufresne, Varese, and Flaviano Farfaletti-Casali, Milan, all of Italy, assignors to European Atomic Energy Community (Euratom), European Center Kirchberg, Luxembourg

Filed Jan. 28, 1970, Ser. No. 6,532
Claims priority, application Italy, Feb. 5, 1969, 34745 A/69
Int. Cl. G21c *19/20*
U.S. Cl. 165—47 **7 Claims**



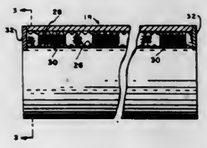
Apparatus for use in manipulation of fuel elements for a vertical channel nuclear reactor comprises a receptacle for a column of elements which is vertical for charging and discharging of the reactor but is turned into a horizontal position for replacement of one or more of the elements.

3,677,329

ANNULAR HEAT PIPE

Milton E. Kirkpatrick, Palos Verdes Peninsula, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Division of Ser. No. 797,725, Jan. 31, 1969, Continuation-in-part of Ser. No. 637,193, May 9, 1967, abandoned. This application Nov. 16, 1970, Ser. No. 89,705
Int. Cl. F28d *15/00*
U.S. Cl. 165—105 **7 Claims**



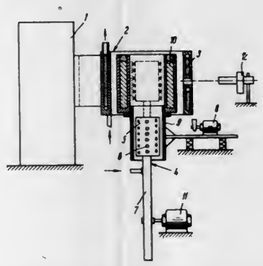
Spaced inner and outer tubes form a closed annular chamber whose inner surfaces contain coverings of wick material that are interconnected through vane-like wicks. The wick material transports a vaporizable working fluid from cold areas where the vapor condenses to warm areas where the fluid vaporizes. An isothermal working space is produced within the central volume bounded by the inner tube and along its entire length, which may be used to advantage for oven or furnace applications or for providing an isothermal jacket.

3,677,330

METHOD OF MANUFACTURING BIMETALLIC ROTORS EMPLOYED IN ELECTRIC MACHINES

Boleslav Ivanovich Maximovich; Daniil Andreevich Duoko; Nikolai Georgievich Agafonov; Igor Petrovich Maximov, all of Kiev; Vadim Grigorievich Andreev, Moscow; Nikolai Yakovievich Lepilov, Moscow; Alexei Kapitonovich Svinov, Moscow; Alexandr Borisovich Slonimsky, Moscow; Boris Zakharovich Volk, Moscow; Alexandr Ivanovich Gubin, Moscow, and Berta Osipovna Katsman, Moscow, all of U.S.S.R., assignors to Institut Elektrosvarki imeni E.O. Patona ul. Gorkogo, Kiev, U.S.S.R.

Filed April 24, 1969, Ser. No. 818,897
Int. Cl. B22d *19/00*
U.S. Cl. 164—108 **5 Claims**



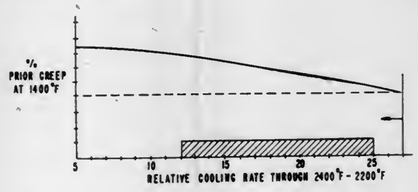
A bimetallic rotor is manufactured by incorporating in a mold magnetically conducting metal members separated by spaces and filling the spaces in the mold with a magnetically non-conducting metal. The mold is then heated to a temperature to melt the magnetically non-conducting metal over a period of time for a complete diffusion of the metals. Thereafter the metals are cooled to a temperature at which the magnetically non-conducting metal solidifies with oriented crystallization.

3,677,331

CASTING PROCESS FOR NICKEL BASE ALLOYS

Carl H. Lund, Arlington Heights; John Hockin, Palatine, and Michael J. Woulds, Schaumburg, all of Ill., assignors to Martin Marietta Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 725,074, April 29, 1968, abandoned. This application July 14, 1969, Ser. No. 841,408
Int. Cl. B22d *27/04*
U.S. Cl. 164—122 **5 Claims**



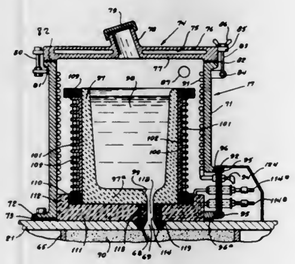
A casting process and castings produced thereby wherein a nickel-base, chrominum containing alloy which also contains sufficient amounts of aluminum and titanium to produce eutectic gamma-prime phase in the alloy as cast is caused to contain about 0.5 percent to about 5 percent hafnium, is cast into final configuration and is cooled from the molten state rapidly through the range of 2,200° to 1,850° F. to maximize creep characteristics at 1,800° F. while at the same time providing castings which are thermally conditioned to exhibit good mechanical characteristics, especially prior creep at 1,400° F.

3,677,332

VACUUM CASTING PROCESS

George A. Smiernow, 825 S. 48th Street, Philadelphia, Pa.

Filed June 13, 1969, Ser. No. 832,896
Int. Cl. B22d *35/00, 37/00*
U.S. Cl. 164—133 **2 Claims**



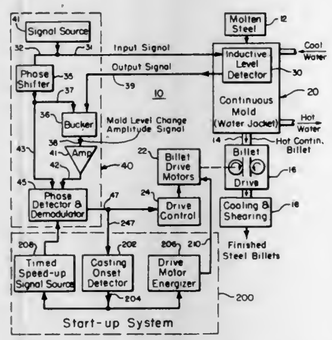
The disclosure relates to a process and apparatus for casting metals by controlling the relative pressure of the space above the molten metal body to be cast with respect to the pressure within the interior of the mold. Numerous features of the mechanism are shown and described.

3,677,333

START-UP SYSTEM FOR CONTINUOUS CASTING MOLD

Jack R. Crowell, Cedar Lake, Ind., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Jan. 26, 1970, Ser. No. 5,833
Int. Cl. B22d *17/32, 11/08*
U.S. Cl. 164—154 **9 Claims**



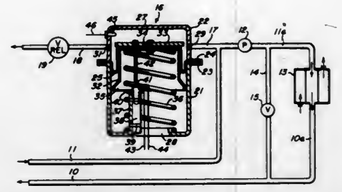
A start-up system for a continuous casting mold level control system which uses the control signal to detect the onset of casting and in response thereto, energizes the drive motors and alters, for an initial predetermined short period, the control signal fed to the drive motor controls to speed up the withdrawal of continuous billet for that period. Thereafter it automatically restores the control system to normal operation.

3,677,334

REMOTE ACCUMULATOR CHARGE INDICATOR

Pritam S. Bathia, and Carl E. Simmons, both of Dayton, Ohio, assignors to United Aircraft Products, Inc., Dayton, Ohio

Filed Dec. 30, 1970, Ser. No. 102,777
Int. Cl. F28f
U.S. Cl. 165—11 **7 Claims**



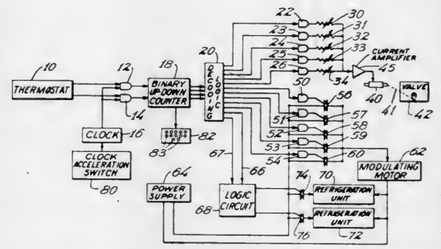
An accumulator-reservoir device, used in a system circulating a liquid coolant or the like, in which a biased pressure applying member moves to reflect changing temperature induced density of the coolant. A remote indicator signals that the system has attained a properly charged condition, or that it has failed to remain fully charged. Electrical controls including variable resistors responding to changes in system temperature and to movement of the piston comprise a triggering circuit. Other controls including a signaling means and a gated Silicon Controlled Rectifier comprise a signaling circuit activated and deactivated by the triggering circuit.

3,677,335

STAGED HEATING AND COOLING SYSTEM

Richard N. Weatherston, St. Paul, Minn., assignor to Weather-Rite Inc., St. Paul, Minn.

Filed Jan. 28, 1971, Ser. No. 110,526
Int. Cl. F25b *29/00*
U.S. Cl. 165—12 **8 Claims**



A control system for a heating and cooling system in which the amount of heating and the amount of cooling are both controlled in timed incremental stages by means of a signal from an up-down electronic counter which operates to call for the next successive stage at timed intervals in accordance with an electronic clock.

3,677,336

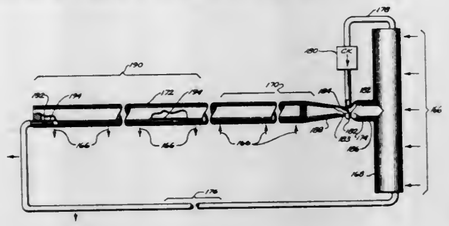
HEAT LINK, A HEAT TRANSFER DEVICE WITH ISOLATED FLUID FLOW PATHS

Robert David Moore, Jr., 817 W. Camino Real, Arcadia, Calif.

Filed July 6, 1970, Ser. No. 52,642
Int. Cl. F28d *15/00*
U.S. Cl. 165—105 **8 Claims**

A heat transfer device, defined here as a heat link, having a capillary vaporizer adjacent a heat source, transfers heat to a heat sink by vaporization and condensation of a heat transfer

fluid within the device. A first passage is provided for conveying vapor from the capillary vaporizer to the heat sink. Another passage which is essentially a continuation of the first passage, conveys condensed liquid from the heat sink to the vaporizer, thus allowing the distance that the liquid must flow through capillary material to be quite short. Contact of the returning liquid with the surface of the vaporizer is assured by providing means for maintaining the temperature of the liquid in the return line at a sufficiently low temperature that any vapor will condense; or, alternatively, by having means for extracting any vapor formed in the returning liquid. In this manner, the heat link operates with high heat flux without any substantial resistance to liquid flow through a long capillary

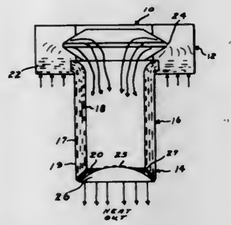


flow path. By this replacing almost all of the liquid return wick, with its high resistance to fluid flow, of heat pipes with a low flow resistance liquid passage or conduit, the heat flux capacity of the heat link is greatly increased over that of the heat pipe while the quantity of porous material used and the heat link weight are considerably reduced so that a heat link typically has 10 to 1,000 times the heat flux capacity of a heat pipe having the same weight. "Boosted" embodiments of the heat link employing additional means for circulating the fluid, such as vapor jet pumps, powered at least in part by vapor from the capillary vaporizer, are also described. Some "-boosted" heat links are capable of handling heat fluxes in the multi-megawatt range while having no moving parts except for check valves and the fluid itself.

3,677,337
HEAT TRANSFER APPARATUS WITH OSMOTIC PUMPING

Lawrence L. Middlo, Centerville, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force

Filed Sept. 10, 1970, Ser. No. 70,977
Int. Cl. F28d *15/00*
U.S. Cl. 165—105 **10 Claims**

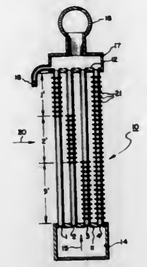


An apparatus for transferring thermal energy from a heat source to a heat sink having a closed space containing a saline solution and an evaporator wherein the heat input evaporates the liquid so that a water vapor moves toward a condenser where heat is rejected to return the water vapor to the liquid phase. The closed space containing the saline solution extends to the region of the condenser and has a water permeable membrane positioned adjacent the condenser. The water is returned to the evaporator by osmotic pumping.

3,677,338
SURFACE CONDENSER

Fred W. Staub, Scotia, N.Y., assignor to General Electric Company

Filed Feb. 17, 1971, Ser. No. 116,068
Int. Cl. F28b *1/06*
U.S. Cl. 165—111 **8 Claims**

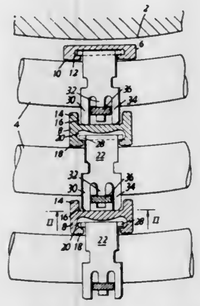


In a surface condenser including a plurality of parallel tubes arranged in a plurality of parallel rows between an inlet and an outlet manifold for condensing a vaporous medium by a stream of coolant, freeze-up of the tubes is prevented and improved performance is provided by selectively finning the tubes. The tubes in the row adjacent the upstream end of the stream of coolant are finned along a section adjacent the outlet manifold. Rows progressively farther removed from the upstream end of the coolant are finned in sections located progressively closer to the inlet manifold. Sections located progressively closer to the inlet manifold are progressively longer. Accordingly, uniform flow of coolant on the outside surfaces of the tubes and a balanced flow of vaporous medium through the tubes are provided, and in addition contact between excessively low temperature coolant and tubes containing insufficient vapor is prevented.

3,677,339
COILED TUBE BANKS

Alfred J. Perrin, 2 Windermere Av., Kenton, Harrow, Middlesex; John D. Dell, 10 Lovell Close, Henley-on-Thames, Oxfordshire; David B. Evans, 9 Clifford Avenue, Cranmore Park, Chislehurst, Kent, and George Stanley Lewis, 28 Beechwood Close, Little Chalfont, all of England

Filed Jan. 15, 1970, Ser. No. 3,088
Int. Cl. F22b *37/20*; F28d *7/10*
U.S. Cl. 165—162 **4 Claims**

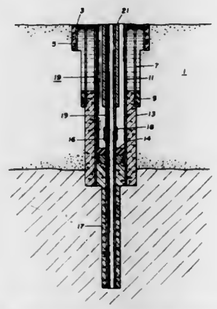


A tube bank arrangement comprising a plurality of concentric coils provided with spacing means and including, for each coil, at least one spacer bar extending parallel to the axis of the tube bank. The spacer bar being aligned with the spacer bar of the next adjacent coil and including radially extending lugs mounted on one of the two adjacent spacer bars and straddling the coil segments passing therebetween. The lugs maintaining the spacing between adjacent spacer bars and cooperating with a locking strip to secure the coil segments to the associated spacer bar.

3,677,340
PERMAFROST COMPLETION

Elmo M. Blount, Irving; Earl S. Snavely, Jr., Arlington; Joseph U. Messenger, Dallas, all of Tex., and Nicolas J. Prueger, Spenard, Alaska, assignors to Mobil Oil Corporation

Filed July 23, 1970, Ser. No. 57,635
Int. Cl. E21b *43/00*
U.S. Cl. 166—315 **8 Claims**



This specification discloses completion methods for wells drilled through permafrost zones of the earth. Two concentric strings of casing are set in a well and liquid is withdrawn from the annulus intermediate these casing strings adjacent the permafrost zones, leaving the annulus dry. Thereafter, insulation is installed in the dry annulus adjacent the permafrost zones.

3,677,341
HANGER AND PACKER WELL TOOL

Erwin Burns, and Alan D. Stevenson, both of c/o 8346 Salt Lake Avenue, Bell, Calif.

Filed Feb. 8, 1971, Ser. No. 113,151
Int. Cl. E21b *43/10*
U.S. Cl. 166—124 **11 Claims**

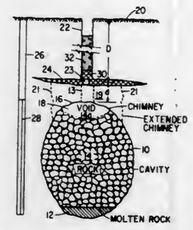


A combination oil well liner hanger and packer with a related setting tool which is such that the packer can not be actuated to seal between the tool and a surrounding casing until after the casing engaging slips have been set in engagement with and between the tool and said casing. The tool including novel latch means to releasably hold relatively rotatable parts in their normal unactuated position and utilizing elements and parts of the liner hanger means and the actuating means for said liner hanger means and the packer means; and further including novel means for cooperatively receiving and establishing quick and easy fluid tight connection with a sealing tool on the lower end of a fluid conducting tubing string, above the tool, after it has been set in the casing.

3,677,342
METHOD OF INCREASING SIZE OF UNDERGROUND NUCLEAR CHIMNEY

Daniel Silverman, Tulsa, Okla., assignor to Pan American Petroleum Corporation, Tulsa, Okla.

Filed Dec. 29, 1969, Ser. No. 888,577
Int. Cl. E21b *43/26*
U.S. Cl. 166—247 **4 Claims**

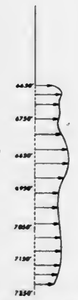


An underground cavity formed deep in the earth by detonation of a nuclear device is extended vertically by drilling a borehole from the earth's surface to a depth D which is above the expected top of the cavity chimney by a distance equal to or greater than *d*, where *d* is the thickness of a slab of rock of the diameter of the chimney that will be self-supporting. A horizontal propped fracture is created at depth D, and liquid explosive is placed in the fracture and detonated. The shock force of the explosion causes the slab of thickness *d* to be rubbleized and driven down into the chimney. This process can be repeated for successive slabs of thickness *d*. Alternatively, vertical boreholes can be drilled outside of an adjacent the wall of the cavity, vertical fractures created with their planes parallel to the wall of the borehole, the fractures loaded with liquid explosive and detonated, causing a slab of the wall to be driven into the chimney and rubbleized.

3,677,343
METHOD FOR IMPROVING THE INJECTION PROFILE OF A WATER INJECTION WELL

William E. Showalter, Seal Beach, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

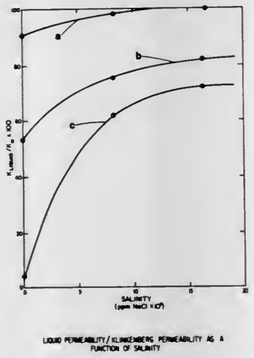
Filed July 16, 1970, Ser. No. 55,339
Int. Cl. E21b *43/22*
U.S. Cl. 166—252 **5 Claims**



A method for improving the injection profile of flood water into a heterogeneous subterranean formation penetrated by a

water injection well which comprises first establishing a flow of flood water into the formation through the injection well such that the velocity of the water in the well is sufficient to transport subsequently injected solid diverting agent particles down the well and, while maintaining a substantially constant flow of flood water into the well, dispersing in the flood water particles of a solid water-insoluble diverting agent.

3,677,344
MOBILITY CONTROL IN FLOODING RESERVOIRS CONTAINING WATER-SENSITIVE CLAY MINERALS
John B. Hayes, and Bruce L. Knight, both of Littleton, Colo., assignors to Marathon Oil Company, Findlay, Ohio
Filed Sept. 22, 1970, Ser. No. 74,336
Int. Cl. E21b *43/22*
U.S. Cl. 166—252 **13 Claims**

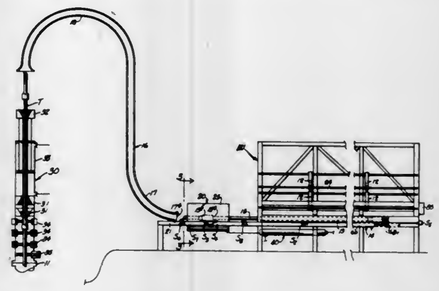


LIQUID PERMEABILITY / KLINKENBERG PERMEABILITY AS A FUNCTION OF SALINITY

Improved mobility control in flooding an oil-bearing subterranean formation containing water-sensitive clay minerals is obtained by injecting into the formation a micellar dispersion containing a lower concentration of electrolytes than is present in the interstitial water of the formation, the effect being to impart a reduced permeability to the flow of the micellar dispersion through the formation and thus obtain better mobility control of the process. A mobility buffer can optionally be injected behind the micellar dispersion, the buffer containing a lesser concentration of electrolyte than the electrolyte within the interstitial water; the result being to obtain reduced permeabilities to the flow of the buffer and thus better mobility control.

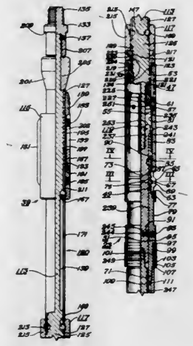
3,677,345
PIPE HANDLING APPARATUS AND METHOD
Phillip S. Sizer, Dallas, Tex., assignor to Otis Engineering Corporation, Dallas, Tex.
Filed May 13, 1970, Ser. No. 36,875
Int. Cl. E21b *43/00, 19/00*
U.S. Cl. 166—315 **22 Claims**

Apparatus for handling pipe, making up joints of pipe into an elongate string, inserting the string into a well and removing it from the well with a minimum of manual handling. Pipe joints are racked in units which are made up in a substantially horizontal position and flexed around curves into a well bore and out of a well bore, without the use of conventional hoisting equipment. A basket type circular receiving vessel or receptable is provided for coiling the string of pipe as it is removed from the well bore and for insertion into the well bore if the pipe string is not to be broken into separate lengths or sections. Means is provided for storing the pipe in either the horizontal racks or in the basket in a coil. The pipe handling



equipment is in one form mounted on a conveyance such as a barge or the like.

3,677,346
REVERSIBLE ARMING METHOD AND APPARATUS FOR EMPLACING A LOCKING DEVICE IN TUBING
Jack W. Tamplen, Rural Route 2, Celina, Tex.
Filed Dec. 21, 1970, Ser. No. 99,752
Int. Cl. F21b *43/00*; E21b *23/00*
U.S. Cl. 166—315 **50 Claims**

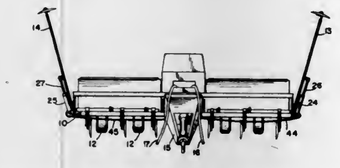


A locking device and method and apparatus for emplacing same within tubing in a well characterized by having locking dogs that are run into the well retracted; and that are reversibly operable into a no-go, or armed, position at a desired depth for thereafter stopping the locking device at the top of a restricted portion such as a nipple; and that are lockable into a recess such as defined by a landing nipple or a collar immediately above the restricted portion. Both the running tool employed in emplacing the locking device, and the locking device, can be armed into and disarmed from the no-go position but cannot be inadvertently locked in the tubing until the locking dogs encounter the restricted portion. Also disclosed are specific and preferred structural embodiments wherein the running tool and the locking device are reversibly armed and the locking device locked and left in the tubing by reciprocal movement of the tool in the tubing, which operates slot arrangements and a driven sleeve and without the use of complicated electric motors, hydraulic connections or the like; and wherein a simplified tool is employed for setting in the top nipples in the tubing.

3,677,347
METHOD OF EXTINGUISHING FIRES AND COMPOSITIONS THEREFOR CONTAINING CATIONIC SILICONE SURFACTANTS
Meyer R. Rosen, Irvington, and Bela Prokai, Mahopac, both of N.Y., assignors to Union Carbide Corporation, New York, N.Y.
Filed Dec. 22, 1969, Ser. No. 887,341
Int. Cl. A62c *1/12*; A62d *1/00*
U.S. Cl. 169—1 A **31 Claims**

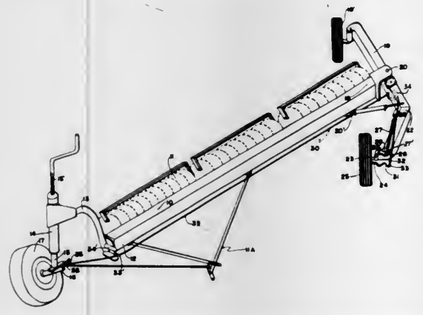
Cationic siloxanes in the liquid phase of fire extinguishing foams, with or without other materials as foam promoters, stabilizers or special purpose additives, provide rapid extinguishment of flames, are capable of forming vapor-securing films over burning hydrocarbon liquids to prevent reignition upon foam rupture or disintegration and impart unique elastic properties useful in producing high expansion foams and in producing low expansion foams for sprinkler systems.

3,677,348
HYDRAULIC ALTERNATOR
Charles Boetto, Naperville, and Wayne L. Orkwiszewski, Romeoville, both of Ill., assignors to International Harvester Company, Chicago, Ill.
Filed March 15, 1971, Ser. No. 124,140
Int. Cl. A01b *41/06, 33/32*
U.S. Cl. 172—2 **9 Claims**



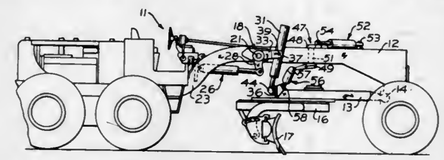
An implement vertically movable between an operating and transport position including a row marker on each side of the implement that is raised and lowered by a separate hydraulic cylinder. The cylinders receive fluid from a common source through a valve that is controlled by actuating means that are responsive to vertical movement of the implement.

3,677,349
STEERING DEVICE FOR CULTIVATING IMPLEMENTS
Robert J. Gugin, Minnedosa, Manitoba, Canada, assignor to Agristeel Limited, Minnedosa, Manitoba, Canada
Filed March 27, 1970, Ser. No. 23,435
Int. Cl. A01b *69/00*
U.S. Cl. 172—285 **1 Claim**



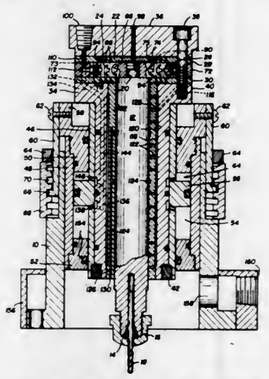
A cable extends between an arm on the front furrow wheel, around guiding elements, to a further arm on the land wheel so that movement of one wheel initiates corresponding movement of the other wheel against spring pressure on the land wheel which maintains the cable taut under all conditions.

3,677,350
HYDRAULIC MOTOR GRADER BLADE LIFT, CENTERSHIFT CONTROL
Harold M. Johnson, and Russell D. Page, both of Decatur, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.
Filed Nov. 2, 1970, Ser. No. 86,110
Int. Cl. E02f *3/12*
U.S. Cl. 172—789 **9 Claims**



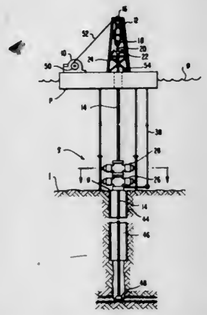
An all-hydraulic control including two sets of vertically extending and horizontally extending jacks interconnected in pairs by bell cranks pivoted on opposite sides of the main frame of a motor grader, the horizontal jacks being coupled to the main frame and the vertical jacks being coupled to the blade support circle carrying drawbar of the grader, whereby correlated actuation of the jacks controls the elevation of the blade. The lift linkage is complemented by a centershift control linkage which includes a pivotable member rotatable on the frame about a vertical axis, a jack acting between the frame and the pivotal member, and a jack acting between the pivotal member and the drawbar. The centershift control jacks are actuated individually or jointly in combination with the lift linkage to provide minor or extreme lateral blade adjustments. The overall linkage accomplishes complete control conveniently while maintaining excellent operator visibility about the blade and forward part of the vehicle.

3,677,351
ROTARY TOOL AND TURBINE THEREFOR
Ulrich M. Geissler, Ft. Lauderdale, Fla., assignor to Harrington-Geissler & Associates, Inc., Dania, Fla.
Filed Oct. 6, 1970, Ser. No. 78,383
Int. Cl. B25d *9/00*; B23b *45/04*
U.S. Cl. 173—57 **20 Claims**



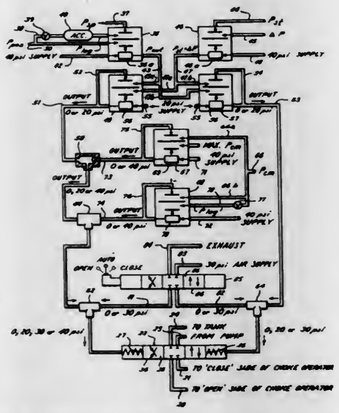
A rotary tool comprising a housing in which a spindle is mounted. The spindle being driven by air turbine, and having an air cushion bearing. The turbine simultaneously is provided with an air cushion bearing. Means are provided for pneumatically extending and retracting the spindle.

3,677,352
BLOWOUT PREVENTION APPARATUS FOR SUBAQUEOUS DRILLING
Samuel H. Lloyd, Los Angeles, Calif., assignor to Santa Fe International Corporation, Los Angeles, Calif.
Filed April 20, 1970, Ser. No. 30,184
Int. Cl. E21c 19/00
U.S. Cl. 175—7 11 Claims



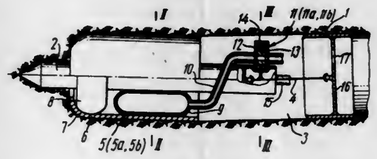
The apparatus includes a vessel carrying a derrick and composite main electric and hydraulic draw works, each being dead ended to the other. In normal operations, the main draw works is employed to raise and lower the drill string with the anchor line dead ended to the hydraulic draw works. When a "kick" or other abnormality in the well occurs and the blowout preventors are actuated, the drill string is lowered such that a tool joint rests on the blowout preventer rams. The hydraulic draw works is then actuated and provides a constant tension on the drill string whereby the rams support the drill string below the rams and the hydraulic draw works supports the drill string above the rams. The constant tension hydraulic draw works precludes relative motion between the drill string and the ram heads which motion would otherwise occur due to vessel motion.

3,677,353
APPARATUS FOR CONTROLLING WELL PRESSURE
Gerald S. Baker, Houston, Tex., assignor to Cameron Iron Works, Inc., Houston, Tex.
Filed July 15, 1970, Ser. No. 55,105
Int. Cl. E21b 7/00
U.S. Cl. 175—25 14 Claims



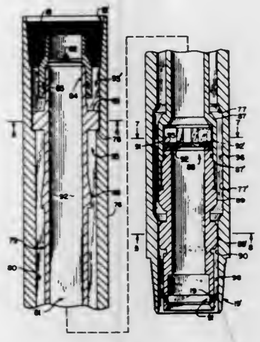
There is disclosed apparatus which includes a choke for connection to the annulus between a well bore and a drill string extending into the bore, and a means for operating the choke to impose a back pressure on drilling fluid in the annulus either manually or automatically in response to certain well characteristics so as to maintain a predetermined pressure differential between it and formation fluid at the bottom of the well bore.

3,677,354
DEVICE FOR STABILIZING THE COURSE OF THE TUNNELLING ELEMENT
Alexandr Dmitrievich Kostylev, ulitsa Derzhavina, 19, kv. 42; Konstantin Stepanovich Gurkov, ulitsa Derzhavina, 19, kv. 68; Khai Berkovich Ikach, ulitsa Televizionnaya, 11, kv. 11, and Nikolai Prokhorovich Cheparnoi, prospekt Dzerzhinskogo, 25a, kv. 53, all of Novosibirsk, U.S.S.R.
Filed Dec. 15, 1970, Ser. No. 98,273
Int. Cl. E21b 7/10
U.S. Cl. 175—76 2 Claims



A device for stabilizing the course of the tunnelling element, provided with a follow-up unit interacting with the walls of the hole and operating the power units which introduce corrections into the course of the tunnelling element.

3,677,355
CORE RETRIEVING APPARATUS
Wayland D. Elenburg, P.O. Box 1588, Monahans, Tex.
Division of Ser. No. 831,361, June 9, 1969, Pat. No. 3,596,723, which is a continuation-in-part of Ser. No. 714,551, March 20, 1968, Pat. No. 3,473,617. This application Dec. 16, 1970, Ser. No. 98,634
Int. Cl. E21b 9/20
U.S. Cl. 175—215 11 Claims

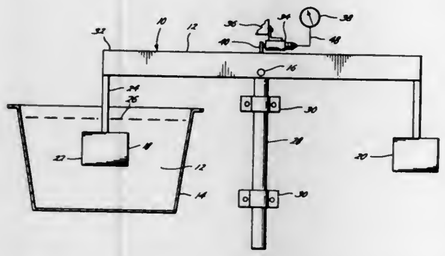


Apparatus for retrieving cores while drilling a borehole which enables an elongated cylindrical solid core sample to be obtained from a formation. A coring bit together with a core barrel which remains stationary with respect to the core being cut enables the core to be broken into predetermined lengths and circulated up-hole to where the core is captured within a core retriever made in accordance with the present invention, and which enables the intact core to be removed from the drill string.

ERRATUM

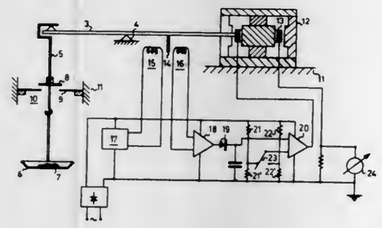
For Class 177—15 see:
Patent No. 3,678,204

3,677,356
WEIGHING APPARATUS FOR LIQUIDS
Zeno E. Goodwin, P.O. Box 2354, Morgan City, La.
Filed Aug. 6, 1971, Ser. No. 169,720
Int. Cl. G01g 1/22, 5/02, 5/04
U.S. Cl. 177—190 7 Claims



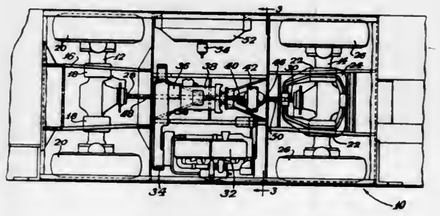
A weighing apparatus for weighing liquids which includes a balance beam pivotally supported from a pivot pin and having first and second members of equal weight supported on opposite sides of the pivot point, one of the members being adapted to be positioned in the liquid to be measured for displacing a predetermined volume of liquid. A fluid piston and cylinder assembly fixedly supported and in contact with the beam whereby the buoyant force exerted on the one member is transmitted to the fluid assembly and a pressure gauge connected to the assembly for measuring the pressure therein which is an indication of the weight of the liquid in which the one member is inserted. The one member including first and second horizontal sections of different cross-sectional areas with the upper cross-sectional area being smaller whereby the volume of fluid being displaced when the member is inserted in the fluid is accurately measured. The beam including a vertical extending shoulder adjacent the pivot point which is in contact with the fluid assembly thereby multiplying the buoyant force applied by the liquid to the fluid assembly.

3,677,357
ELECTROMAGNETIC LOAD COMPENSATED WEIGHING APPARATUS INCLUDING DAMPING
Max Baumgartner, Etzelstrasse 4, CH-8712, Stafa, Switzerland
Filed May 21, 1971, Ser. No. 145,718
Claims priority, application Switzerland, June 18, 1970, 8618/70
Int. Cl. G01g 1/22, 7/04, 23/06
U.S. Cl. 177—188 10 Claims



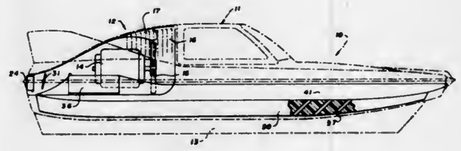
Weighing apparatus of the electromagnetic load compensation type including a vertically movable load suspension member, characterized by the provision of damping means for damping pendulum oscillations of the load suspension member when said member is in a given damping position relative to the frame of the apparatus, and control means for interrupting the weighing operation of the apparatus and for utilizing the electromagnetic load compensating means to place the load suspension member in the damping position.

3,677,358
DRIVE TRAIN FOR LOW PROFILE VEHICLE
Robert G. Luft, Wildwood, Ill., assignor to International Harvester Company, Chicago, Ill.
Filed April 16, 1971, Ser. No. 134,557
Int. Cl. B60k 5/08
U.S. Cl. 180—44 R 5 Claims



A compact drive train for a low profile vehicle positions the engine, torque converter and transmission between the vehicle axles, the engine being offset from the longitudinal centerline of the vehicle and the transmission being positioned on the centerline of the vehicle in side-by-side relationship with the engine, and both axles being driven from a drop box by means of a pair of drive shafts, one of which extends underneath the transmission.

3,677,359
AIR CUSHION VEHICLE
Dan E. Gray, Calgary, Alberta, Canada, assignor to Shair of Canada Limited, Vancouver, Canada
Filed June 5, 1970, Ser. No. 43,840
Int. Cl. B60v 1/14, 1/16
U.S. Cl. 180—121 3 Claims

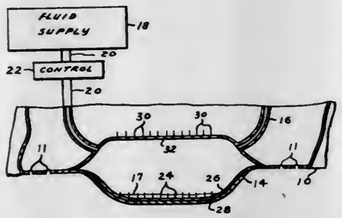


A ground effect machine in which the skirt is divided into a plurality of rearwardly directed and separate compartments so as to be less vulnerable to damage and to obtain thrust from the air issuing from the skirt.

3,677,360
HEAT REMOVAL SYSTEM FOR BRAKES

Kennerly H. Digges, Kettering, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force

Filed Feb. 23, 1971, Ser. No. 118,011
Int. Cl. B60v 1/00
U.S. Cl. 180—124 6 Claims

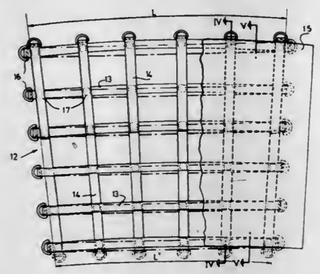


A braking system for an air cushion landing system having inflatable braking pillows with a fluid provided near the wall adjacent the braking surface which, when evaporated by heat generated at the braking surface, rises and contacts a condenser surface which transfers heat to air passing through the trunk of the air cushion landing system.

3,677,361
PRESSURE FLUID CONFINING FACILITY FOR GROUND-EFFECT MACHINE

Jean Henri Bertin, Neuilly-sur-Seine, France, assignor to Societe d'Etudes et de Development des Aeroglisseurs Marins Terrestres et Amphibies S. E. D. A. M., Paris, France

Filed May 18, 1970, Ser. No. 38,081
Claims priority, application France, May 19, 1969, 6916133
Int. Cl. B60v 1/16
U.S. Cl. 180—127 5 Claims



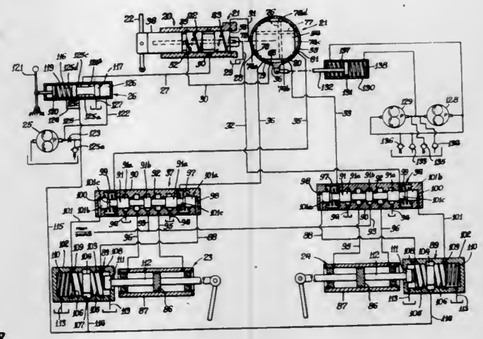
A pressure fluid confining skirt facility for a ground-effect machine formed by a juxtaposition of sealing-tight detachable elementary panels each comprising a network of criss-crossed resilient elements which act as strong reinforcements and are connected to attaching members disposed towards the periphery of the panel for its attachment in position in the skirt facility.

3,677,362
HYDROSTATIC TRANSMISSION HYDRAULIC CONTROL AND SINGLE LEVER FOR OPERATING SAME

Probir K. Chatterjea, Evanston, Ill., assignor to International Harvester Company, Chicago, Ill.

Filed Sept. 2, 1970, Ser. No. 69,019
Int. Cl. B62d 11/04
U.S. Cl. 180—6.48 12 Claims

Hydraulic control for two hydrostatic transmissions driving a vehicle. Straight-line movement of certain parts of the hydraulic control moves the vehicle in forward and reverse. Angular movement of certain other parts of the hydraulic control turns the vehicle. A single joy stick is directly connected with the first set of parts, and indirectly connected with the

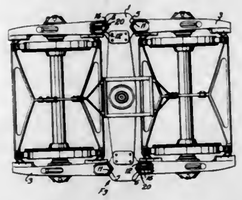


second set of parts. One type of movement of the joy stick causes the vehicle to move in forward and reverse, and another type of movement of the joy stick brings about turning of the vehicle.

3,677,363
DAMPING AND CONTROL DEVICE FOR A BOGIE BOLSTER

Paul Henricot, Ceroux-Mousty, Belgium, assignor to Societe Anonyme Usines Emile Henricot, Saint-Etienne, Belgium

Filed June 22, 1970, Ser. No. 48,349
Int. Cl. B60g 9/00
U.S. Cl. 105—197 D 1 Claim



The invention relates to a damping and control device for a bogie bolster allowing relative movements between sideframes and bolster, said movements being however controlled and damped so as to return to an equilibrium position.

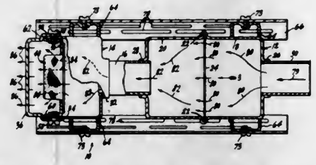
3,677,364
SPARK ARRESTER AND MUFFLER CONSTRUCTION

Julian S. Pawlina, Elkhart, Ind., assignor to Tecumseh Products Company, Tecumseh, Mich.

Filed May 6, 1971, Ser. No. 140,811
Int. Cl. F01n 1/08, 3/06, 7/18
U.S. Cl. 181—36 R 19 Claims

A combined muffle and spark arrester for use with small internal combustion engines. The muffler includes two expansion chambers through which engine exhaust is passed and a hat-shaped spark-arresting screen positioned within the second chamber. The screen removes particles from the exhaust having a size greater than the screen mesh to prevent the discharge of potentially dangerous sparks. A curved heat shield is supported on the muffler by a plurality of U-shaped

brackets which are projection welded to the two chambers. The muffler construction is particularly rigid and the muffler

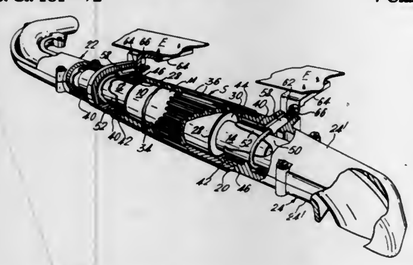


is provided with a removable end cap to provide convenient access for removing the screen for cleaning.

3,677,365
AUTOMOTIVE EXHAUST SYSTEM

Peter C. Wright, Etobicoke, and Donald L. Kirsch, Toronto, Ontario, both of Canada, assignors to Gidon Industries Limited, Rexdale, Ontario, Canada

Filed Dec. 9, 1970, Ser. No. 96,429
Int. Cl. F01m 7/00
U.S. Cl. 181—72 7 Claims

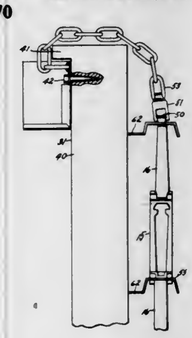


An automobile exhaust system is provided with a muffler having a separate composite outer shell encasing the muffler to provide an auxiliary flow path for exhaust gases escaping from the muffler, the shell having longitudinal reinforcing ribs extending along its central portion serving also as fins for heat dissipation. The shell is of corrosion resistant material suited to withstand damage from road salt, and constructed to facilitate ready access to the muffler of the system.

3,677,366
SELF-STORING FIRE ESCAPE LADDER

Emil Loeffel, 141 Centre Street, Waldwick, N.J.

Filed July 2, 1971, Ser. No. 159,212
Int. Cl. E06c 1/383
U.S. Cl. 182—70 7 Claims

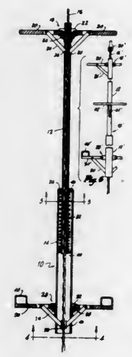


A concealed storage fire escape ladder of the general type disclosed in U.S. Pat. No. 3,547,226, and having structural refinements affording greater strength during use and improved convenience in assembly. Retractable means including a nylon rope affords a shock-absorbing function when the ladder is dropped into position for use. The individual step elements of the ladder are nestable, and utilization of space within a lowermost tread when the device is stored within a storage cabinet permits storage of a chain interconnecting the ladder with the storage cabinet to be stored within said space.

3,677,367
MANUALLY OPERABLE ELEVATOR

Albert Shotmeyer, c/o Shotmeyer Brothers Company, Hawthorne, N.J.

Filed June 14, 1971, Ser. No. 152,740
Int. Cl. A63b 27/02
U.S. Cl. 182—136 10 Claims

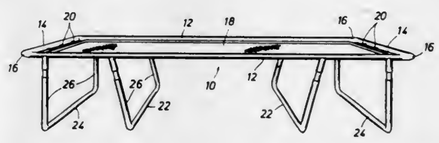


A manually operable elevator consisting of a pair of tubular members telescopically interconnected, each tubular member having a manually operable brake cooperable with a rope passing through the tubular members. One of said tubular members includes a seat for the operator. To lower one's self, the operator occupies the seat and controls the rate of descent by applying one or both brakes, one brake operable by the hands, and the other operable by the feet. In ascending, the elevator is raised by alternately locking one tubular member to the rope by applying a brake while raising the other tubular member.

3,677,368
TRAMPOLINE

Victor J. Green, 8121 Barkley Drive, Houston, Tex.

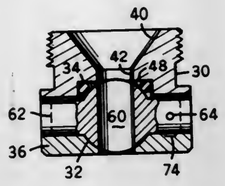
Filed Sept. 25, 1970, Ser. No. 75,363
Int. Cl. A63b 5/00
U.S. Cl. 182—139 7 Claims



A trampoline having a frame formed of tubular material, generally rectangular in shape and supported on legs constructed to yieldingly resist downward movement of the frame bodily and to allow downward yielding movement of a portion of the frame in response to the exertion of a downward impact thereon. The invention includes yieldingly supported pad

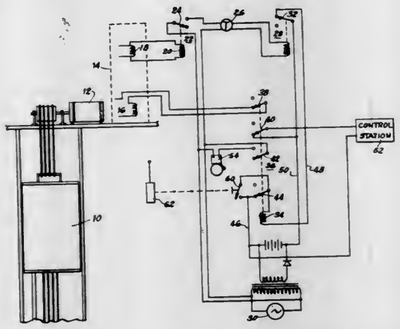
means on the frame of the trampoline positioned to cushion the impact of the user on the frame.

3,677,369
AUTOMOTIVE OIL CRANK CASE DRAIN VALVE
Richard F. Schramm, 4359 Weber Road, St. Louis, Mo.
Filed Jan. 4, 1971, Ser. No. 103,653
Int. Cl. F01m *11/04*; F16k *31/44*
U.S. Cl. 184—1.5 2 Claims



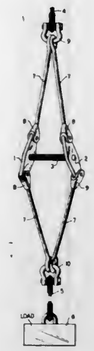
A drain valve for automotive crank cases. The drain valve is substituted for the usual crank case drain plug and is in the form of a threaded plug having a manually operable valve permitting drainage of the crank case oil without removal of the plug. A spherical valve body is seated in a hemispherical valve seat provided in the plug and by means of radial arms extending from the valve body and which are journaled between the plug and a cap, rotation provides for registry of a diametrical opening in the valve body with a plug opening to drain the oil. Operation of the valve arms can be effected either manually, by a screw driver, wrench or the like, or by remote control by linkage connecting the operating arm to a remote control handle on the dashboard of an automobile. A simple cap held in by struckover flanges holds the valve body in the plug and permits ready assemblage.

3,677,370
ELEVATOR ALARM SYSTEM
Edward Devine, Chicago, Ill., assignor to Security Systems, Inc.
Filed Aug. 19, 1970, Ser. No. 65,110
Int. Cl. B66b *3/00*
U.S. Cl. 187—37 5 Claims



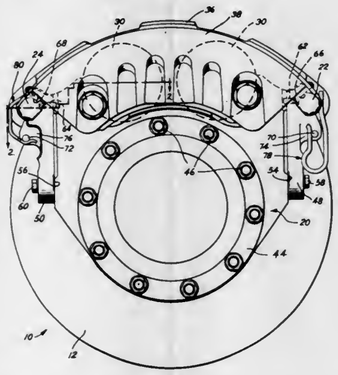
An alarm system is connected to conventional elevator control apparatus. If the inside elevator doors are opened between floors, the conventional switch responsive to such opening will actuate timing means in the alarm system. If the inner doors remain open for a predetermined time interval, a main alarm switch will become operative (1) to signal a remote control station, (2) to energize a local portable alarm, and (3) to deenergize the main elevator drive motor until the main alarm switch is reset.

3,677,371
IMPACT ENERGY ABSORBER
Milton Lutchansky, Randolph Township, and Warren Joseph Rhines, Convent Station, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Oct. 27, 1970, Ser. No. 84,407
Int. Cl. F16f *7/12*
U.S. Cl. 188—1 C 5 Claims



An impact energy absorber for preventing overloading of the tensile load in a suspension system carrying a mass which may have kinetic energy generated therein by high impact loading. The device transforms the tensile load into at least two tensile forces which are translated into two different torque loadings. Excessive torque loading causes a torsion member to yield and become permanently plastically deformed thus absorbing kinetic energy of the mass and thereby avoiding a break in the suspension system that might otherwise result from a sudden acceleration of the suspended mass. A modification of the device increases its energy absorption capacity. Another modification provides a more nearly constant load level during the yielding process.

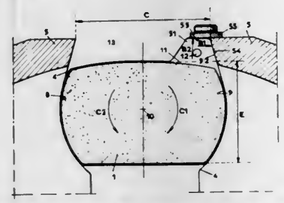
3,677,372
DISC BRAKE MOUNTING MEANS
Richard T. Burnett, South Bend, Ind., assignor to The Bendix Corporation
Filed Sept. 29, 1970, Ser. No. 76,410
U.S. Cl. 188—73.3 1 Claim



A disc brake is disclosed which includes a three-piece torque member. The inner portion of the torque member is

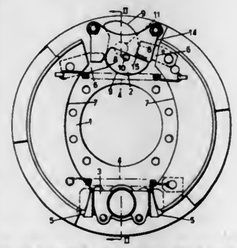
mounted on the vehicle. A pair of allochiral outer members are secured to symmetrically opposite edges of the inner member. Each of the allochiral outer members are provided with recesses which slidably support a corresponding pin carried by the caliper of the brake. Spring members carried by each of the outer members yieldably maintain the pins in their corresponding recesses and also prevent the caliper from rattling. The brake assembly, including the outer members and spring members, can be assembled to or removed from the vehicle by assembling or removing one bolt through each of the outer members.

3,677,373
DISC BRAKE ASSEMBLY WITH REPLACEABLE FRICTION MEMBERS
Rene Lucien, Neuilly-sur-Seine, France, assignor to Societe Messier, Paris, France
Filed Aug. 7, 1970, Ser. No. 61,971
Claims priority, application France, Aug. 7, 1969, 6927223; Sept. 12, 1969, 6931221
Int. Cl. F16d *55/228*
U.S. Cl. 188—73.6 15 Claims



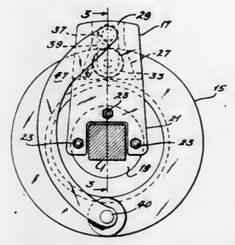
A pair of friction members are mounted on opposite sides of a brake disc for engagement therewith during a braking operation and the friction members are mounted in a stationary housing for replacement. The friction members are generally quadrangular in shape and have opposite curved side surfaces which are rotatably engaged with corresponding side surfaces of the housing. A releasable holding means acts on the friction members to hold the same in position during braking operations. The holding means may be in the form of springs, plates or rods and when they are released, the friction members can be rotated 90° to be removable through a recess in the housing through which the friction members are otherwise not passable when in their original position.

3,677,374
CAM ACTUATED DRUM BRAKE
Charles Newstead, Walsall; John Lesley Cullen, Stratford upon Avon, and Michal Zajko, Coventry, all of England, assignors to Girling Limited, Birmingham, England
Filed June 2, 1970, Ser. No. 42,701
Claims priority, application Great Britain, June 25, 1969, 32,027/69; April 22, 1970, 19,228/70
Int. Cl. F16d *51/22*
U.S. Cl. 188—329 7 Claims



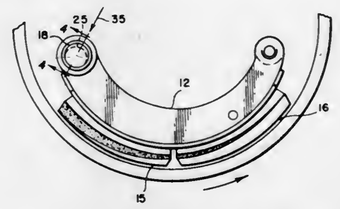
An S-cam drum brake, for example, has shoes each of which pivot at one end when the other ends are forced apart by means of the S-cam but in addition the one end can slide and/or tilt in at least one other mode of movement to provide more even wear and to cater for conicalness of the drum respectively. Shoe pull off springs cooperate with an abutment at said one end to provide a radial inward bias which is counteracted by the cam profile and the profile of a slipper on the shoe there abutting. The abutment is preferably an adjuster. A fixed or variable stop can be used to set a minimum rise position of the S-cam.

3,677,375
VEHICLE BRAKE
Lloyd J. Wolf, 2425 Irving Blvd., Dallas, Tex.
Filed Aug. 31, 1970, Ser. No. 68,164
Int. Cl. F16d *65/34*
U.S. Cl. 188—138 6 Claims



A vehicle brake of the spread shoe type is provided with a ball spreading device for spreading the shoes into braking engagement with a pair of spaced apart disks, there being a lever operatively connected at one end to the latter and at the other end mounting an electromagnet in proximity to one of the disks whereby upon energization of the electromagnet the lever follows the disk, causing the balls to spread and thereby spreading the shoes into braking engagement with the disks.

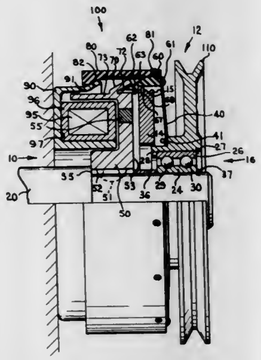
3,677,376
BRAKE
Joseph W. Barajas, 811 Lovera Blvd., San Antonio, Tex.
Filed May 18, 1970, Ser. No. 38,334
Int. Cl. F16d *51/22*, *65/03*
U.S. Cl. 188—341 6 Claims



A brake mechanism, particularly for trucks and buses, of the type wherein each shoe is independently anchored by a separate anchor pin, wherein the anchor pin of the secondary shoe is modified to have a generally eccentric cross-sectional configuration. The pin fits within a circular hole in the brake shoe, and the arrangement is such as to permit the shoe, when operating as a secondary brake shoe, to move outwardly at its end adjacent the anchor pin in a direction toward the brake drum when actuated. The arrangement does not, however, permit movement of the anchor pin end of the shoe in the opposite direction from its normal position, i.e., in a direction away from the brake drum. The improved mechanism results

in increased braking effectiveness, more even wear of the brake lining, and vitually eliminates brake squealing.

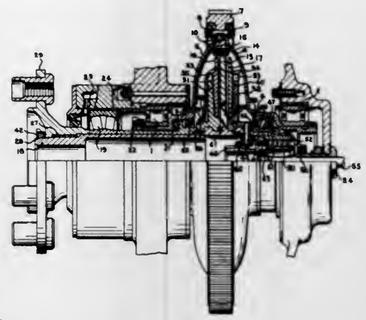
3,677,377
SELF-ADJUSTING ELECTROMAGNETIC CLUTCH-BRAKE
Donald L. Miller, Horseheads, N.Y., assignor to The Bendix Corporation
Filed March 31, 1971, Ser. No. 129,743
Int. Cl. F16d *67/02*
U.S. Cl. 192—18 B **6 Claims**



An electromagnetic clutch-brake with wear compensating means having mating frusto-conical friction members for transmitting torque and a ferromagnetic armature threaded to one of such friction members for clutch engagement. When the clutch is energized, the armature, which is not in the drive train, comes into contact with the pole faces of the electromagnet, causing the freely mounted armature to rotate with the input member. The relative rotational motion between the armature and the driven friction member causes the driven friction member to advance on its helical thread until engagement with the driving friction member. The output member is driven through a flexible member connected to the driven friction member. As a safety feature, the driven friction member biased by the flexible torque transmitting member is caused to bear against a stationary braking body to achieve braking whenever the driven friction member is not in torque transmitting contact with the input member.

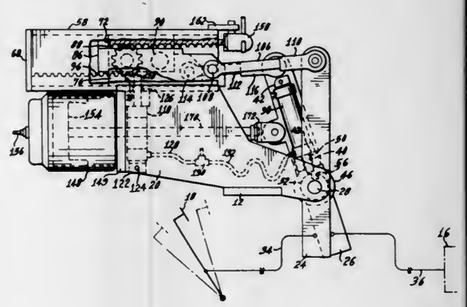
3,677,378
SELF-ENERGIZING TORQUE LIMITING DISC CLUTCH
Henry Troeger, Cooperstown, N.Y., assignor to The Bendix Corporation
Filed Dec. 28, 1970, Ser. No. 101,891
Int. Cl. F16d *43/20*
U.S. Cl. 192—54 R **6 Claims**

A self-energizing, torque limiting, manually controlled disk clutch is disclosed herein. The clutch comprises an actuating member which advances on a helical spline to rotate a pressure plate carrier in response to an input control member. After the pressure plate makes initial contact with the friction disk, the clutch self-energizes to a preset torque capacity selected to accelerate the rotor to synchronism as rapidly as reasonable without stalling the engine. After synchronization opposite motion of the control member will increase torque capacity beyond engine rated torque. Thereafter the clutch cannot be manually disengaged but will disengage when the torque is reduced to a predetermined low or negative value, at which time it will completely disengage and overrun. While



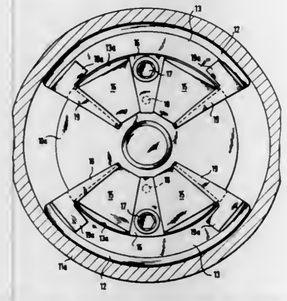
overrunning, the clutch can be re-engaged by operation of the input member until synchronization is attained.

3,677,379
POWER ASSISTING ASSEMBLY FOR A CLUTCH MECHANISM
Madison B. Adams, 8063 San Jose Blvd., Jacksonville, Fla.
Filed June 9, 1970, Ser. No. 44,724
Int. Cl. F16d *25/08*
U.S. Cl. 192—91 R **29 Claims**



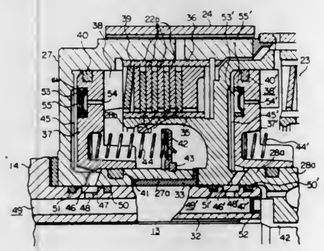
The assembly includes a pair of levers with a link between one lever and clutch pedal and another link between the other lever and clutch plate. A spring loaded piston and cylinder selectively locks the levers together for normal actuation of the plate by depression on the pedal by an operator. The levers are unlocked by actuation of a valve to supply fluid pressure to the latter cylinder, and a pinion portion of a rack and pinion mechanism is attached to one lever connected to the pedal with a rack portion of the mechanism being coupled to the other lever. Another piston and cylinder selectively locks the one lever in a short pedal stroke position for receiving the power assist from a selectively actuatable piston and cylinder which is operably coupled to the other lever connected to the plate for forcibly moving same in response to control forces on the pedal. A valve controls the latter piston and cylinder upon control forces being applied to the pedal by an operator to supply pressurized fluid thereto.

3,677,380
COUPLING OPERATING BY CENTRIFUGAL FORCE
Gerhard Kirschey, Ittertaler Strasse 52, 56 Wuppertal-Vohwinkel, Germany
Filed March 1, 1971, Ser. No. 119,534
Claims priority, application Germany, March 2, 1970, P 20 09 607.5
Int. Cl. F16d *23/10*
U.S. Cl. 192—105 BA **12 Claims**



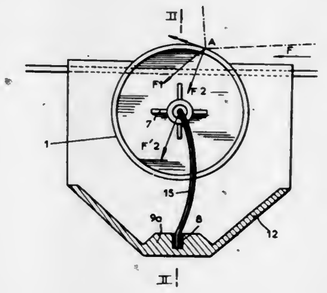
A centrifugal clutch which comprises an elastic coupling element connected with the driving side of the clutch. Centrifuge bodies carry a layer on the outside and cooperate with the driven side of the clutch. The coupling element comprises coupling-cushion structural units. Each of the coupling-cushion structural units includes two equal coupling cushions, pretensioned in longitudinal direction under pressure against each other, upset in the longitudinal axis, extending substantially in secantial planes and disposed at an angle toward each other. The units are connected at their sides pointing toward each other with a coupling-cushion connector formed as a driving stay connected with the driving side of the clutch. A centrifuge body segment engages the coupling-cushion structural-unit on the outside curve-like surrounding on the opposite ends of the coupling cushions. The centrifuge body segment engages the driving stay with the coupling cushion structural unit formed as a pretensioned coupling-built-in-segment by abutment of the inner side of the centrifuge-body segment pointing toward the coupling-cushion structural unit, thereby shot-cutting all pretension forces.

3,677,381
HYDRAULIC CLUTCH WITH DUMP VALVE
Takeshi Takagi; Tamio Kawamoto, and Toshio Miyazaki, all of Yokohama, Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan
Filed June 2, 1970, Ser. No. 42,697
Claims priority, application Japan, June 30, 1969, 44/51680
Int. Cl. F16d *25/00*
U.S. Cl. 192—106 F **5 Claims**



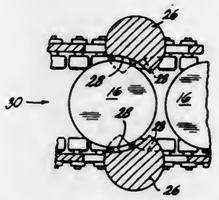
Means for regulating the fluid pressure in a clutch servo mechanism of an automatic transmission for automotive vehicles, said means comprising an orifice control valve device having a center plate, a plurality of radial extensions extending radially from the center plate, and arms circumferentially extending from each of the radial extensions and tilted axially, which arms serve as spring means to regulate the closing and opening of the valve device.

3,677,382
FLEXIBLE BEARING FOR A CONVEYOR ROLLER CAPABLE OF BEING INCORPORATED IN A ROLLING PLANE
Georges Coppel, St. Ouen, France, assignor to "Constructions Mills-K", Saint-Ouen, France
Filed Feb. 9, 1971, Ser. No. 113,873
Claims priority, application France, Feb. 17, 1970, 7005707
Int. Cl. B65g *13/00*
U.S. Cl. 193—35 B **8 Claims**



A conveyor roller bearing which supports the center of the roller through a flexible structure. The latter comprises two branches of a spring wire which have two lateral coaxial portions inserted in the roller on each side of the latter. The branches have lower end portions anchored in the bottom of a fork-shaped support. The branches are arcuate and have a concavity facing in the direction of the destination of the objects which pass over the roller. Oblique lateral abutments on the lateral walls of the support enable an additional force of compression to be applied to the arcuate branches.

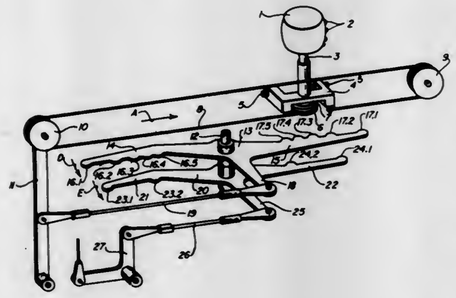
3,677,383
PART METER
Donald P. Lamb, Ann Arbor, Mich., assignor to La Salle Machine Tool, Inc., Warren, Mich.
Filed Nov. 20, 1970, Ser. No. 91,271
Int. Cl. B65g *13/00, 47/29*
U.S. Cl. 193—35 A **2 Claims**



A meter for use in a conveyor system for parts in which the parts flow in one direction along a track and it is desired to interrupt the flow of parts at one point in their travel along the track and eject the parts singly from that point. The part meter

comprises a pair of generally cylindrical body members which are substantially parallel and are mounted for rotatable movement. The body members are provided with grooved portions located adjacent the track and capable of engaging a part so as to interrupt its flow and also of forming a path through the meter through which a single interrupted part can flow. A fluid actuated cylinder assembly is operable to concurrently rotate the body members between positions in which they interrupt parts and provide the desired path through the meter.

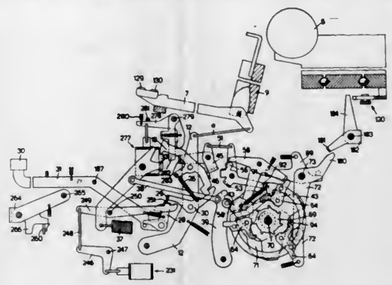
3,677,384
MECHANISM FOR POSITIONING SINGLE ELEMENT TYPE CARRIERS
Manfred Link, Nuernberg, Germany, assignor to Triumph Werke, Nuernberg, Germany
Filed Dec. 16, 1970, Ser. No. 98,695
Int. Cl. B41J *23/02*
U.S. Cl. 197—16 **10 Claims**



Mechanism is provided to selectively rotate and tilt a single element type carrier to position a character in a selected row and column location for printing. Rotation and tilt from a rest position is effected by spring biased cranks normally held in a rest position by a fixed stop on one of a pair of cyclically operable bails. The rest position defining stop is located farthest from the bail pivot in the path of contact surfaces on the cranks. Other stops on the bails are located at various distances from the bail pivots and are selectively positionable for cooperation with contact surfaces located at various distances from the crank pivots where-by the degree and direction of rotational movement of the cranks are controlled according to the distance of positioned stops on the bails from their pivots as the bails are oscillated or, if no stop is positioned then by the fixed stop.

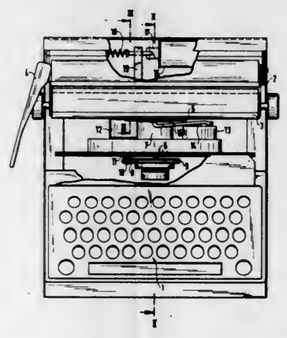
3,677,385
AUTOMATIC WRITING ARRANGEMENTS FOR ACCOUNTING OR CALCULATING MACHINES
Franco Bretti, Are' Di Caluso (Torino), Italy, assignor to Ing. C. Olivetti & C., S.p.A., Ivrea (Turin), Italy
Filed Oct. 2, 1969, Ser. No. 863,058
Claims priority, application Italy, Oct. 26, 1969, 53640 A/68
Int. Cl. B41J *23/08*
U.S. Cl. 197—19 **2 Claims**

An accounting machine comprises an automatic printing device controlled by a store which emits during a data transfer period a group of code combinations each adapted to select the type to be printed. The printing device includes a one-cycle clutch adapted to be engaged each time for printing the selected type. A locking element is actuated by a synchronizing electromagnet throughout the said transfer period in such manner as to lock the clutch in the engaged position, whereas the code combinations are called up synchronously to cause the synchronous printing of the corresponding characters. To actuate the spacing mechanism repeatedly by a particular



code combination, a second one-cycle clutch is conditioned by a second electromagnet to continuously actuate the mechanism.

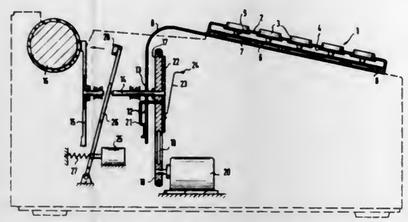
3,677,386
ELECTRICALLY OPERATED TYPEWRITER
Walter Herterich, Dachau; Georg Probst, Munich, and Bruno Wurm, Dachau-Rothschwaige, all of Germany, assignors to Ecofon Verkaufsgesellschaft Probst KG, Munich, Germany
Filed June 23, 1970, Ser. No. 49,031
Claims priority, application Germany, June 26, 1969, P 19 32 481.3
Int. Cl. B41J *1/22*
U.S. Cl. 197—53 **10 Claims**



An electrically operated typewriter in which type carried on the radially slotted circumference of a rotating disc is driven against paper by an electromagnetically operated hammer when a type selected by pressing a key of a keyboard is in the path of the hammer, and the disc is stopped momentarily and uncoupled from its drive motor when the hammer strikes.

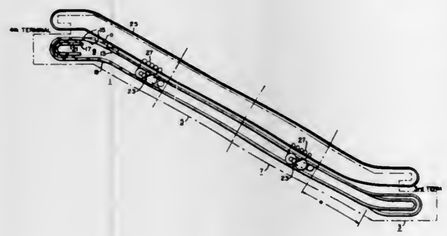
3,677,387
ELECTRIC TYPEWRITER WITH PRINTED CIRCUIT KEYBOARD
Walter Herterich, Dachau; Georg Probst, Munich, and Bruno Wurm, Dachau-Rothschwaige, all of Germany, assignors to Ecofon Verkaufsgesellschaft Probst KG, Munich, Germany
Filed June 23, 1970, Ser. No. 49,027
Claims priority, application Germany, June 26, 1969, P 19 32 518.9
Int. Cl. B41J *5/08*
U.S. Cl. 197—98 **10 Claims**

An electric typewriter in which a printed circuit board is arranged under the keys of the keyboard, respective conductive areas of the circuit being associated with the keys and connected conductively to an amplifier through a synchronizing



mechanism, the types being moved against a paper wrapped about a cylinder when the associated key is depressed toward the printed circuit.

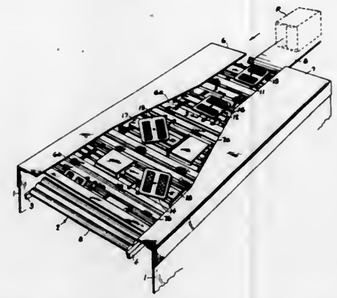
3,677,388
MODULAR DRIVE UNIT FOR A CONVEYOR
Henry Boltrek, Freeport, N.Y., and Joseph K. Kraft, Verona, N.J., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Nov. 23, 1970, Ser. No. 91,959
Int. Cl. B65g *23/16*; B66b *9/12*
U.S. Cl. 198—16 **19 Claims**



A multiple strand driving chain is lifted into engagement with teeth carried on the endless belt of a conveyor by sprocket wheels which straddle the teeth. Preferably such multiple strand driving chains are incorporated into a modular drive unit where they are urged into engagement with the teeth on the top and bottom runs on both sides of the endless belt. Additionally, the teeth on the endless belt may be provided with a negative pitch angle whereby the multiple strand chain is drawn into and retained in engagement with the teeth on the endless belt throughout the distance between the sprocket wheels. The multiple strand driving chains are longitudinally adjustable with respect to the teeth on the moving belt.

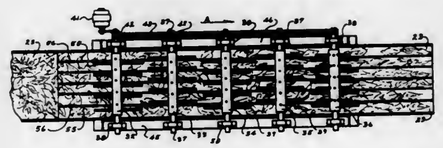
3,677,389
DIVIDER-ROTATOR MECHANISM
Victor Benatar, Atlanta, and Roy A. Johnson, Marietta, both of Ga., assignors to The Mead Corporation
Filed Oct. 21, 1970, Ser. No. 82,758
Int. Cl. B65g *47/24*, *47/26*
U.S. Cl. 198—31 AB **4 Claims**

For dividing a series of items moving in a single row into two or more rows and for rotating certain of the items, conveyor means is provided having a working reach movable along a straight path and a plurality of support elements and a plurality of support plates are mounted on the conveyor and arranged for transverse sliding movement thereon together with a plurality of platforms rotatably mounted respectively on the support elements and a plurality of abutment elements are mounted on the conveyor in fixed relationship thereon adjacent the support elements respectively for engaging parts of



the rotatable platforms respectively in coordination with transverse movement of the associated support elements to impart rotary movement thereto.

3,677,390
LEAF ALIGNING METHOD AND MACHINERY
Samuel A. Parker, Maysville, and Edwin L. Wilding, Louisville, both of Ky., assignors to Griffin & Company; Louis Scheu, Jr., Louisville, Ky. and Samuel A. Parker, part interest to each
Filed Aug. 5, 1970, Ser. No. 61,350
Int. Cl. B65g *47/24*
U.S. Cl. 198—33 R **14 Claims**

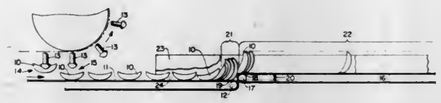


Tobacco leaves are aligned in troughs by a combination of mechanical vibrations, rotating doffer structure and optional air flow. The leaves are deposited on a vibrated receiving surface and are conveyed onto longitudinal parallel troughs separated by rims. Skew leaves initially lie on the rims across the troughs, while aligned leaves drop into the troughs. The doffer means includes one or more hubs extending across the troughs and rims, and arms extending from the hubs which brush or move unaligned leaves unsymmetrically to turn them and thereby reorient them. Air orifices may be included in the rims and/or doffer arms to lift or turn unaligned leaves which lie on the trough rims and reorient them.

3,677,391
APPARATUS AND METHOD FOR SHINGLING ARTICLES OF UNIFORM NON-PLANAR SHAPE
Richard A. Schaeffer, Wyoming, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio
Filed Oct. 26, 1970, Ser. No. 83,998
Int. Cl. B65g *57/00*, *37/00*
U.S. Cl. 198—35 **10 Claims**

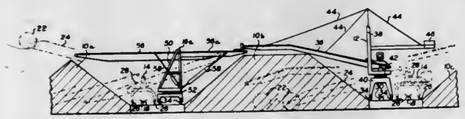
An apparatus and method for handling an advancing column of individual articles of uniform non-planar shape such that the articles which are initially moving in spaced-apart fashion are transformed into a horizontally compact "shingled" relationship. The articles are initially moved in spaced relationship on a first conveyor surface. A second con-

veyor surface is provided which moves at a slower speed and which is mounted in a slightly higher plane just beyond the end of the first conveyor in position to receive the articles therefrom. The articles are continuously moved into a contacting relationship against the stop formed by the second



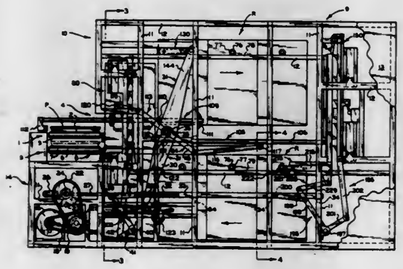
conveyor at the terminus of the first conveyor to transform the spaced articles into an inventory of shingled articles on the first conveyor whereupon they are individually transferred to said second conveyor upon which the articles form a continuously shingled array.

3,677,392
APPARATUS FOR STORING PARTICULATE MATERIAL
Paul Soros, 1102 Oenoke Ridge, New Canaan, Conn.
Filed Sept. 15, 1970, Ser. No. 72,382
Int. Cl. B65g *65/28*
U.S. Cl. 198—36 **5 Claims**



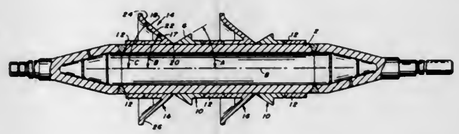
A stacker mechanism in a particulate material stockpiling arrangement is modified to extend over a stack and between an adjacent stacker on one side thereof and an adjacent stack on the opposite side thereof to enable elimination of its stacker feeding conveyor by permitting the modified stacker mechanism to be fed from the adjacent stacker.

3,677,393
BAKERY PRODUCTS HANDLING APPARATUS
Hiram E. Temple, Ventura, Calif., assignor to Baker Perkins Inc., Saginaw, Mich.
Division of Ser. No. 593,777, Nov. 14, 1966, Pat. No. 3,526,325, which is a division of Ser. No. 332,813, Dec. 23, 1963, Pat. No. 3,319,806. This application June 22, 1970, Ser. No. 48,332. The portion of the term of this patent subsequent to May 16, 1984, has been disclaimed.
Int. Cl. B65g *1/06*
U.S. Cl. 198—85 **3 Claims**



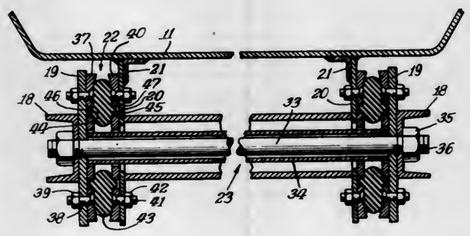
A baker proofer or cooler wherein a series of rack carriers having vertically spaced shelves for supporting bakery products and the like are moved around a conveyor circuit in a continuous path. The carriers are moved along longitudinally extending upper and lower conveyor circuit runs joined at their ends by elevator and lowerator runs and at least one of the lowerator and elevator runs has a series of vertically spaced support stations spaced to substantially correspond to the vertical spacing of the shelves of the rack carriers, so that the carriers may be indexed vertically a shelf at a time. A vertically operative, carrier indexing member is provided to move the carriers vertically from support station to support station in increments and means is provided at the terminal portion of at least one of the longitudinal runs for positively moving the endmost carrier longitudinally from the longitudinal run to position it on the vertically moving member.

3,677,394
CONVEYOR ROLL
William M. Bloom, Pittsburgh, Pa., assignor to Allegheny Ludlum Industries, Inc., Pittsburgh, Pa.
Filed April 20, 1970, Ser. No. 29,918
Int. Cl. B60b *15/00*; **B21b** *31/08*; **B65g** *13/02*
U.S. Cl. 198—127 **5 Claims**



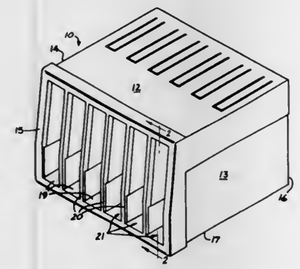
Improved conveyor roll structure for retaining thereon advancing elongated work pieces such as steel rods, bars, or the like wherein the roll exhibits a first retaining surface of revolution inclined at an angle less than 45° to the axis of the roll and a second inclined retaining surface of revolution meeting the first at an angle greater than 90° and inclined from the roll axis at an angle of less than 45°, the second surface of revolution having a depression therein whereby the cross section of said second surface presents a generally concave aspect and the second surface extends outwardly from the juncture of the first and second surfaces a predetermined distance such that the longitudinal centroid of the conveyed work piece may be contained within the vertical extent of the first and second retaining surfaces while being advanced across a plurality of rolls comprising the conveyor.

3,677,395
DRIVE STRUCTURE FOR USE WITH VIBRATORY DEVICES
Albert Musschoot, Barrington, Ill., assignor to General Kinematics Corporation
Filed Jan. 4, 1971, Ser. No. 103,382
Int. Cl. B65g *27/10*
U.S. Cl. 198—220 DA **8 Claims**



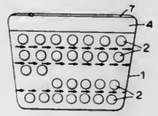
A vibratory device, such as for use in conveying pulverulent materials and the like. The device is powered by a reciprocating drive connected to a material-carrying member by a connecting structure. The connecting structure includes resilient force transfer means affording improved vibratory operation of the device.

3,677,396
STORAGE BOX FOR TAPE-CONTAINING CASSETTES AND THE LIKE
Theophiel Clement Josef Lodewijk Staar, Kraainem, Belgium, assignor to Staar, S.A., Brussels, Belgium
Filed Oct. 30, 1970, Ser. No. 85,430
Claims priority, application Belgium, March 16, 1970, 747,431
Int. Cl. B65d *39/00*
U.S. Cl. 206—1 R **13 Claims**



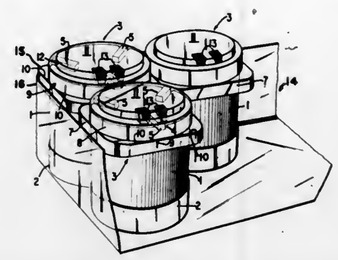
A storage facility or box for storing sound tape cassettes having projecting finger elements which positively retain each cassette within a compartment when the cassette is inserted. Projecting finger elements also immobilize the cassette tape reel hubs and cassette pressure pads to prevent tape unwinding and cassette rattling.

3,677,397
PACKAGE FOR DOSAGE UNITS
Robinson Beckham, Durham, England, assignor to B D H Pharmaceuticals Limited, Edinburgh, Scotland
Filed April 22, 1970, Ser. No. 30,822
Claims priority, application Great Britain, April 25, 1969, 21,181/69
Int. Cl. B65d *83/04*
U.S. Cl. 206—42 **3 Claims**



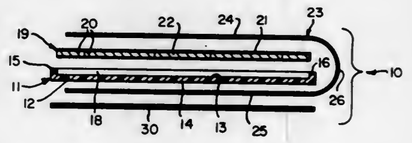
This invention relates to packages for dosage units comprising a sheet-like holder in which the dosage units are arranged in rows and a wallet in which the holder is removably enclosed, the wallet having an internal shape complementary to the external shape of the wallet such that the holder can be inserted in the wallet in only one position.

3,677,398
PACK FOR GAS MANTLES
Claus Siegfried Nather, Berlin, Germany, assignor to Auergesellschaft GmbH, Berlin, Germany
Filed Oct. 5, 1970, Ser. No. 78,058
Claims priority, application Germany, Oct. 8, 1969, P 19 51 443.3
Int. Cl. B65d *25/00, 81/02*
U.S. Cl. 206—45.34 **8 Claims**



This invention relates to a pack for gas mantles, comprising an outer container having a transparent lid and arranged to hold a plurality of individual gas mantle holders, the holders also having transparent lids. The mantles are held feet uppermost in the individual holders so that their condition is immediately visible from the outside of the pack. The relative positions of the mantles, when loaded into the container, remain the same so that an easy inspection is possible and so that loading of the mantles into the holders and the holders into the container is relatively easy.

3,677,399
PUZZLE POSTCARD
Frank J. Tatar, Lakeview, N.Y., assignor to Comon Tatar Inc., Buffalo, N.Y.
Filed May 6, 1970, Ser. No. 35,096
Int. Cl. A63f *9/10*
U.S. Cl. 206—46 AM **4 Claims**

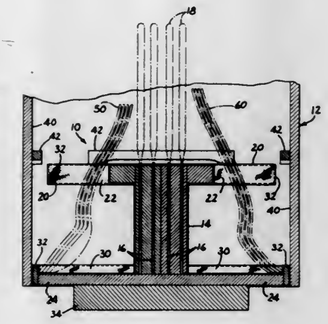


A puzzle postcard including a tray member having a peripheral upstanding wall for containing a puzzle, a plastic envelope shrunk fit around the puzzle in the tray to securely hold it therein, and a postcard adhesively secured to the plastic envelope on the rear of the tray.

3,677,400
STORAGE UNIT FOR FLATWARE
Jerome B. Spier, Wilmette, Ill., assignor to M. I. Naken Company, Chicago, Ill.
Filed May 28, 1970, Ser. No. 41,452
Int. Cl. B65d *47/20*
U.S. Cl. 206—75 **2 Claims**

A storage unit for flatware comprising a central body portion having slots therein for supporting a plurality of knives, or the like, in an upright position. Joined to the body portion, and extending outwardly from each side thereof, are upper and lower vertically spaced flatware support arms. The upper arms have a plurality of spaced channels for receiving the handles

of flatware such as spoons, forks and serving pieces, while the lower arms have recesses aligned with the channels of the upper arms for receiving an end of each piece of flatware engaged in the channels whereby the flatware is supported in a substantially upright position. The unit includes a cover which overlies the central body portion, the support arms, and the flatware stored in the unit.

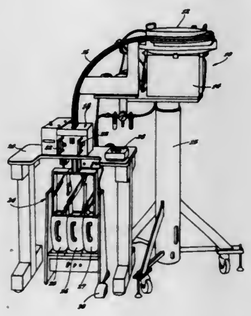


3,677,401

INTEGRATED CIRCUIT HANDLING SYSTEM

John J. Chaparro; Lowell V. Ellis, both of San Diego; Doyle W. Meanor, Lakeside; William D. Morton, Jr.; Bernd H. Richelmann, both of San Diego; George B. Ross, Mill Valley, and John E. Toth, San Diego, all of Calif., assignors to Delta Design, Inc., La Mesa, Calif.

Filed June 8, 1970, Ser. No. 44,401
Int. Cl. B07c *5/344*
U.S. Cl. 209—73 9 Claims



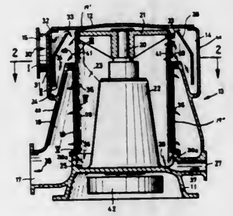
A handling system, including an environmental system, for bringing a manufactured I.C. component into contact with a test contactor. Various parts, portions, and subcombinations of the system, including a hand feeder and orientor, an extension feeding conduit with an air pressure or friction wheel drive, a quick connect-disconnect output chute connector, a handling mechanism, a connector to attach a test contactor to a handling mechanism, a five place sorting apparatus, an environmental handling mechanism, and an insulated housing are detailed.

3,677,402

CENTRIFUGAL CLASSIFIER

Emil Holz, Reutlingen-Betzingen, Germany, assignor to Hermann Finckh Metalltuch-und Maschinenfabrik, Reutlingen, Germany

Filed Sept. 17, 1970, Ser. No. 73,021
Claims priority, application Germany, Sept. 17, 1969, P 19 46 948.8
Int. Cl. B07b *1/24*
U.S. Cl. 209—270 5 Claims



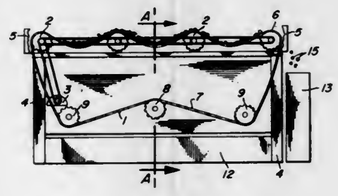
A centrifugal classifier for sorting suspensions of fibrous materials has a housing with an intake defined in the upper region thereof. A stationary sieve basket is arranged with its axis vertically oriented in the housing and defines a plurality of perforations of a predetermined size. A rotatable sieve basket is mounted adjacent and coaxial with respect to the stationary basket and extends beyond the upper edge of the stationary basket to the vicinity of the intake. A plurality of perforations are also defined in the rotatable basket, the perforations in the lower region being of a predetermined size larger than the perforations in the stationary basket and the perforations in the upper end being of a predetermined size larger than the perforations in the lower region of the rotatable basket. The suspension flows from the largest to the smallest perforations.

3,677,403

TUMBLE SCREEN CONVEYOR

Claude F. Young, Niagara Falls, and Richard O. De Weese, Tonawanda, both of N.Y., assignors to Union Carbide Corporation, New York, N.Y.

Filed Dec. 5, 1969, Ser. No. 882,633
Int. Cl. B07b *1/10*
U.S. Cl. 209—308 6 Claims



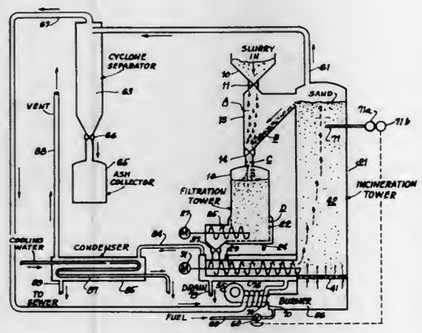
A tumble screen conveyor for use in imparting a gentle tumbling action to alloy sizes for removing fins or friable protrusions from their surfaces while simultaneously separating the desired alloy sizes from an admixture of fines of the alloy and/or from other material added to the alloy for insulation or quenching purposes.

3,677,404

MOVING BED FILTRATION METHOD

Herbert Kenneth Staffin, Colonia, N.J., assignor to Procedyne Corporation, New Brunswick, N.J.

Filed Nov. 25, 1970, Ser. No. 92,592
Int. Cl. B01d *23/10, 33/16*
U.S. Cl. 210—67 4 Claims



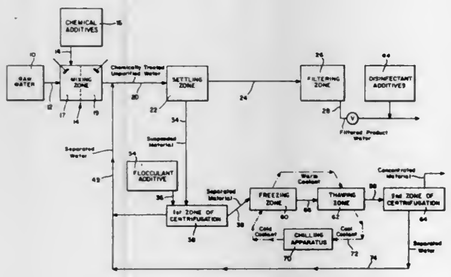
Apparatus utilizing a continuously-moving, continuously-regenerated filtration bed of granular material to filter materials that tend to obstruct porous media, operating in conjunction with a fluidized solids bed incinerator.

3,677,405

LIQUID AND SLUDGE TREATMENT

Frederick Walter Keith, Jr., Gladwyne, Pa., assignor to Pennwalt Corporation, Philadelphia, Pa.

Filed Sept. 25, 1970, Ser. No. 75,421
Int. Cl. B01d *21/26*
U.S. Cl. 210—71 20 Claims



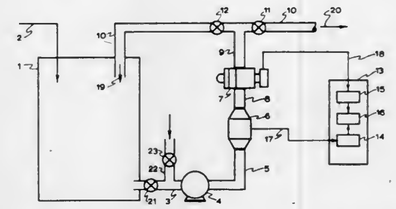
In water or liquid treatment, settled soft sludge is subjected to a first centrifugation to obtain cleaned water or liquid, and a concentrated aqueous sludge. This aqueous sludge is then continually fed through a freezing zone, and a thawing zone, after which it is subjected to a second centrifugation to obtain concentrated solids which are highly suitable for land fill, and further cleaned water or liquid which may be reprocessed.

3,677,406

FILTER AID SLURRY METERING PROCESS

James A. King, and David R. Maxam, both of Green River, Wyo., assignors to Stauffer Chemical Company, New York, N.Y.

Filed Sept. 25, 1970, Ser. No. 75,587
Int. Cl. B01d *37/02*
U.S. Cl. 210—75 3 Claims



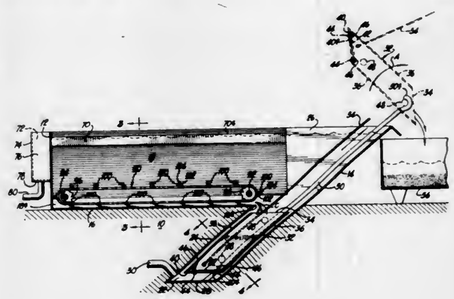
A system for measuring the solids content on a dry basis in a filter aid water slurry and pumping the filter aid back into a filter is described herein. The system circulates the filter aid water slurry through a density gauge and flowmeter to measure the dry weight of solids therein. Then, the slurry is pumped back into the filter for reuse.

3,677,407

METHOD AND APPARATUS FOR REMOVING SLUDGE FROM LIQUID

Robert L. McIlvaine, Glencoe, Ill., assignor to National Dust Collector Corporation, Skokie, Ill.

Filed Oct. 21, 1970, Ser. No. 82,644
Int. Cl. B01d *21/24*
U.S. Cl. 210—83 11 Claims

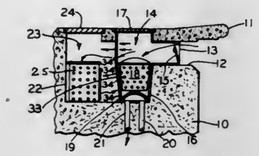


A method and apparatus for removing sludge from liquid utilizing a settling tank having a lower settling surface for collecting settled out sludge and a lower pit at one end of the surface for receiving the settled out material. A removable sludge collection bucket is normally disposed in the pit with the upper edges of the bucket below the level of the settling surface in order to receive collected sludge. Conveyor means is provided for moving collected sludge along the settling surface for discharge into the bucket positioned in the pit. The bucket includes a bottom having valve means therein operable to close the bucket during elevation from the pit out of the tank for the discharge of collected sludge and to open for admittance of liquid when the bucket is lowered back into a collecting position within the pit. Elevator means is provided for periodically elevating the bucket from the pit in order to discharge collected sludge externally of the sludge tank, and the bucket is elevated and discharged while the level of collected sludge is below the upper edge of the bucket, thus avoiding redispersion of the material into the liquid.

3,677,408
SWIMMING POOL WATER PURIFIER

Philip T. Dinizo, Jr., 1029 Mountain Avenue, Berkeley Heights, N.J.

Filed Jan. 21, 1971, Ser. No. 108,451
Int. Cl. E04h 3/20
U.S. Cl. 210—169 3 Claims

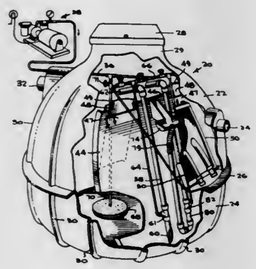


A swimming pool water purifier encased in the inner wall of a swimming pool, comprises a chamber located behind the wall of the pool and extending out of the pool wall in an opening. A skimmer is placed in this chamber and it has at least its rear wall portion perforated to permit the flow of water through it. Another chamber is located behind the first, and it has a coverable top opening. In the second chamber, a container is placed therein and it holds a solid purifying agent designed to liberate slowly a dissolved purifying agent into the water. The container may have a wall opening of contollable area for maintaining a predetermined concentration of purifying agent in the water.

3,677,409
SEWAGE TREATMENT SYSTEM

Carl W. Ferm, 950 Main Street, South Williamsport, and Fred R. Sechler, 2025 Mahaffey Lane, Williamsport, both of Pa.

Filed Oct. 15, 1970, Ser. No. 80,942
Int. Cl. C02c 1/12
U.S. Cl. 210—195 12 Claims



A sewage treatment system in which a bulbous shaped fiberglass tank is provided with an inlet and an outlet with an internal divider plate separating the tank into an aeration compartment and a settling compartment and a continuously activated air-nozzle sludge removing conduit for removing sludge from the bottom of the settling compartment and filtering means upstream of the outlet for preventing the discharge of solid particles with a back-wash liquid air nozzle beneath the liquid surface for continuously back-washing the filter means and for creating surface turbulence in the settling compartment for enhancing the operation of an air-nozzle operated skimmer means mounted adjacent the surface of liquid in the settling compartment.

3,677,410
SINTERED CHROMATOGRAPHIC PLATE AND METHOD FOR PRODUCING THE SAME

Tamotsu Okumura, and Tetsuro Kadono, both of Osaka Pref., Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

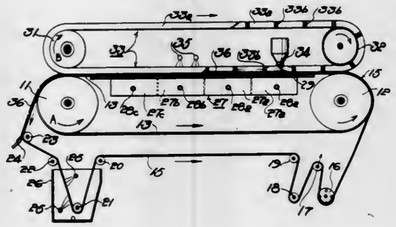
Filed Jan. 28, 1971, Ser. No. 110,773
Claims priority, application Japan, Feb. 13, 1970, 45/12864; March 14, 1970, 45/21740; Dec. 29, 1970, 45/126286
Int. Cl. B01d 15/08
U.S. Cl. 210—198 17 Claims

A plate or thin-layer chromatographic element made by coating a refractory and chemically stable support with a dispersion of fine particles of chromatographically-active inorganic adsorbent and a powdered glass binder in liquid dispersing medium, removing the dispersing medium, and heating the coated layer to make it adherent and thereby to form a continuous, coherent and porous sintered-layer. Particles of the powdered glass contained in said sintered-layer hold a uniform distribution of the adsorbent particles and form firm bondings between each other and with the surface of the support without any detriment to the activity of the adsorbent. The element can withstand "visualization" techniques including charring with corrosive agents such as sulfuric acid and cannot be deactivated or destroyed even after repeated treatments for regeneration.

3,677,411
HORIZONTALLY TRAVELLING-TYPE VACUUM FILTER

Eiichi Ishigaki, Sakaide, Japan, assignor to Ishigaki Kiko Co., Ltd., Sakaide, Japan

Filed Dec. 8, 1970, Ser. No. 96,054
Int. Cl. B01d 31/04
U.S. Cl. 210—393 7 Claims

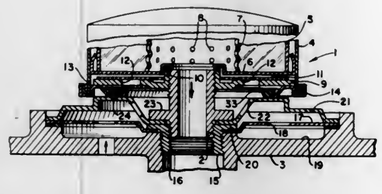


A novel horizontally travelling-type vacuum filter wherein a conveyor belt and an endless filter medium are trained over a pair of drums so as to travel the medium together with the conveyor belt, a filtering frame belt in the form of an endless ladder is traveled on the filter medium with keeping an intimate contact with the upper face of the medium so that filtering frames are formed on the medium and slurry is charged into each of said filtering frames whereby said slurry is filtered under vacuum after once filling each of the filtering frames, so that the decrease in vacuum degree due to the ill-balanced charge of slurry is fully avoided. Further, the endless filter medium once leaves the conveyor belt after the completion of filtering and separation of cakes on the medium and washing of the medium are carried out very easily and perfectly on the way of travel of the medium in the separated state of the medium from the conveyor belt.

3,677,412
OIL FILTER AND SEAL MEANS THEREFOR

Augustus S. Connor, Gastonia, N.C., assignor to Wix Corporation, Gastonia, N.C.

Filed Nov. 13, 1970, Ser. No. 89,199
Int. Cl. B01d 27/00
U.S. Cl. 210—440 3 Claims

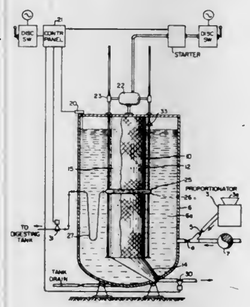


An oil filter of the screw-in throw-away type having unique seal means on an end wall thereof which is urged into tight sealing engagement by both the oil pressure within the filter and the engagement between the seal means and an associated structure against which the seal means seals when the filter is in use.

3,677,413
TERTIARY FILTERING ARRANGEMENT

Salem Booruly, Chatham, N.J., assignor to Environmental Sciences, Inc., Berkeley Heights, N.J.

Division of Ser. No. 855,626, Sept. 5, 1969, Pat. No. 3,574,098. This application Dec. 28, 1970, Ser. No. 102,103
Int. Cl. B01d 39/00
U.S. Cl. 210—502 2 Claims

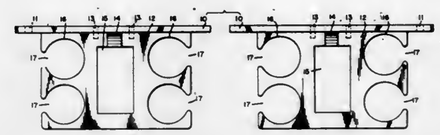


A method of preparing material for use in purifying water is disclosed. The material is advantageously processed from used, waste newsprint by grinding it until it will pass through a 70–80 mesh screen, cleaning the ground newsprint with solvent to remove residual oil, scorching the cleaned newsprint and then regrinding to a fineness that will pass through a 400-mesh screen. The material when added to water to be purified reduces the BOD content of the water being treated.

3,677,414
PRE-TIED NECKTIE RACK

Salvatore J. Rock, 1809 Brickell Avenue, Apt. 417, Miami, Fla.

Filed Sept. 14, 1970, Ser. No. 71,646
Int. Cl. A47f 7/00
U.S. Cl. 211—13 1 Claim

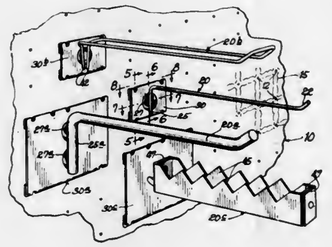


This unique invention relates to a necktie rack adapted for pre-tied neckties.

3,677,415
CANTILEVER MERCHANDISE SUPPORT

John R. Radek, Hinsdale, Ill., assignor to Ready Metal Manufacturing Co., Chicago, Ill.

Filed Sept. 17, 1970, Ser. No. 73,026
Int. Cl. A47f 7/00
U.S. Cl. 211—59 5 Claims



Supporting means of cantilever type designed to display articles for sale in a retail store. The invention contemplates a panel designed to be an improvement over the usual pegboard in that the holes are virtually invisible by reason of surface treatment of the panel and reduced size of the holes. The invention also contemplates special cantilever supporting bars having special attaching means locking them positively on an apertured panel, which may be that of the invention or a standard or other type of pegboard.

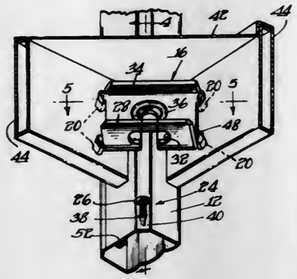
3,677,416
SHELVING STRUCTURE

Leonard A. Block, Kenosha, Wis., and William J. Dunn, Libertyville, Ill., assignors to Quaker Industries Inc., Antioch, Ill.

Filed June 1, 1970, Ser. No. 41,976
Int. Cl. A47f 5/00
U.S. Cl. 211—148 10 Claims

A shelving structure of the knock-down type which includes novel clip members for maintaining the individual shelf units and end standards in assembled relationship. Each of the clip members includes a body portion having tangs or prongs engageable with adjacent peripheral flanges on the individual shelf units and a slot opened at one edge of the body portion for receiving one of a plurality of fastening devices which is

preferably pre-connected to an associated end standard, the fastening device being thereafter further secured to the end



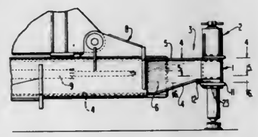
standard for drawing the shelf unit, clip member and end standard into a tight assembled relationship.

3,677,417

MOUNTING ASSEMBLY FOR INSTALLATION OF HYDRAULIC JACKS ON OUTRIGGER

Joseph H. Keller, Jr., Hagerstown, Md., and Russell L. Sterner, Greencastle, Pa., assignors to Grove Manufacturing Company, Shady Grove, Pa.

Filed Dec. 15, 1970, Ser. No. 98,394
Int. Cl. B66c 23/62
U.S. Cl. 212—145 3 Claims



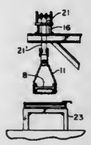
A mounting assembly for installing a hydraulic jack on the end of a box-beam type outrigger wherein a flanged collar, welded to the lower end portion of the jack cylinder, is bolted to flanges on the bottom wall of the outrigger, and a C-plate encircling the medial portion of the jack cylinder and bolted to flanges on the top wall of the outrigger thereby clamping the hydraulic jack in a substantially vertical position with respect to the outrigger.

3,677,418

POWER OPERATED I-BEAM ROTATOR

Walter B. Franzen, Rockford, Ill., assignor to W. A. Whitney Corp., Rockford, Ill.

Filed Aug. 3, 1970, Ser. No. 60,374
Int. Cl. B65g 7/00
U.S. Cl. 214—1 QC 14 Claims



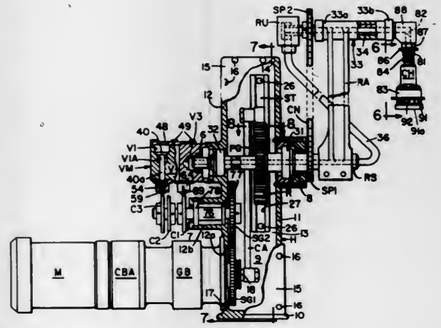
This power operated I-beam turner has endless chain loops in which to cradle the beam carried in a plurality of coaxially spaced pulleys that are profiled circumferentially for meshing engagement with chains to enable transmitting drive thereto, all at the same speed in either direction for a beam turning operation. The pulley blocks can be hoisted and lowered relative to a roller conveyor system on which the beam is movable endwise when placed thereon by the chain loops, spaces being provided in this conveyor system in which the chains can operate when free of the beam. A pair of forked, spring operated spreader arms are provided on each pulley block pivoted at one end on the block and having chain guides in the other end slidably engaging both sides of the chain loop on the inner side to spread it enough when it is not cradling a beam so that it stays clear of the beam and won't interfere with its freedom of movement on the conveyor system while punching or other operations are being performed.

3,677,419

ARTICLE TRANSFER APPARATUS

James W. Giffen, 109 Sly Avenue, Corning, N.Y.

Filed May 27, 1971, Ser. No. 147,426
Int. Cl. B65g 7/00
U.S. Cl. 214—1 BV 14 Claims



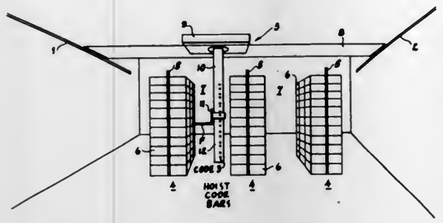
Apparatus for individually and sequentially transferring from an article transfer station to an article receiving station each of a plurality or sequence of articles of ware such as disk or dish-like articles which are intermittently delivered in a selected time sequence to said transfer station. The apparatus includes a rocker arm having one end secured to a rockshaft for reciprocative movement through an approximately 180° vertical arc of travel and supporting on its second end an aeriform fluid chuck for carrying each article between the transfer station and the receiving station. The output shaft of an electric motor is connected to the input shaft of a gear box through electrically actuated clutch-brake means which are selectively energized in synchronism with the delivery of each article to the transfer station and the transfer of each article to the receiving station. The output shaft of the gear box is connected to supply the reciprocative movement to the rockshaft and the rocker arm through a rack and pinion gear means. Valve means are also provided to selectively supply negative and, if desired, positive aeriform fluid to the chuck in a selected relationship with the reciprocative movement of the rockshaft and the rocker arm.

3,677,420

STORAGE AND RETRIEVAL SYSTEM WITH A MOTOR CURRENT SENSING TO DETECT OBSTRUCTIONS

Ronald K. Cotton, Rockledge, Fla., and Barney O. Rae, Shorewood, Wis., assignors to Cutler-Hammer, Inc., Milwaukee, Wis.

Division of Ser. No. 670,094, Nov. 25, 1967, Pat. No. 3,537,602, which is a division of Ser. No. 498,326, Oct. 20, 1965, Pat. No. 3,504,245, Division of Ser. No. 7,889, Feb. 2, 1970, abandoned, which is a continuation of Ser. No. 198,210, Nov. 12, 1970. This application Feb. 2, 1970, Ser. No. 7,756
Int. Cl. B65g 1/06
U.S. Cl. 214—16.4 A 2 Claims



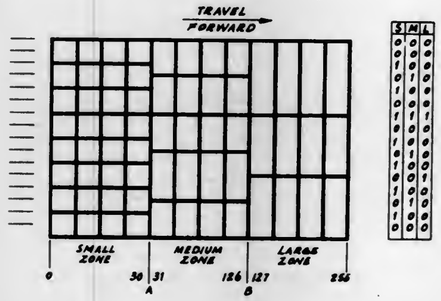
An automatic warehouse system which allows an operator to sit at a fixed station and by placing punched cards into card readers and pressing a "GO" button can cause a fork to take one article from a pickup station into storage and to retrieve any other article from storage on its return trip and bring it to a point. Depending upon the information punched on the card, it can skip either the storage or the retrieval operation and perform the other or it can cause the fork to move an article from any rack in the warehouse to any other rack without returning to the pickup or set-down stations. In performing these movements in three dimensions, the system is provided with apparatus which recalculates the position of the fork every step of the way so as to eliminate any error that may occur, and stops, backs out or returns to the pickup station if it detects a full bin or other obstruction.

3,677,421

STORAGE COURIER BOUNDARY CONTROL SYSTEM

Paul M. Kintner, Bayside, Wis., assignor to Cutler-Hammer, Inc., Milwaukee, Wis.

Filed Aug. 20, 1969, Ser. No. 851,666
Int. Cl. B65g 1/06
U.S. Cl. 214—16.4 A 11 Claims



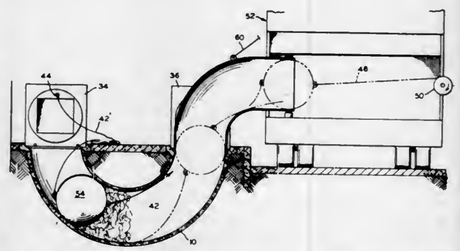
In a warehouse having horizontal rows and vertical columns of bins in which packages are stored by a positive address code controlled courier (stacker crane), different size bins vary in height and are divided into zones of small, medium and large size bins. This system is arranged to check the size of the package. Subtraction of the read code from zone boundary codes provides information indicative of the zone of arrival. And comparison of the sizing information with the zone information will either allow the action to proceed or will return the package. Shelf error is handled by providing a code for each hoist address that defines the validity of the address for the several zones of different size bins. The integrated circuits send the package back to the pickup station if the validity code indicates that there is no shelf at the hoist address. In the event of a power failure, upon restoration, the integrated circuits automatically program for a large package sizing indication.

3,677,422

REFUSE HANDLING SYSTEM

Peter G. Meyers, Manchester; Eric C. Sweeney, Glastonbury, and Frederick W. Brunkhardt, South Glastonbury, all of Conn., assignors to Meyers Electrocooling Products, Inc., Manchester, Conn.

Filed March 26, 1971, Ser. No. 128,310
Int. Cl. B65g 67/06
U.S. Cl. 214—17 D 11 Claims



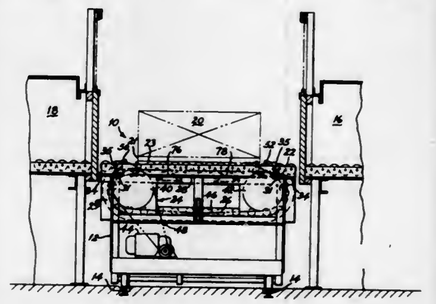
A refuse handling system is presented for temporary storage of solid refuse matter in underground depositories. A large, curved pipe, with openings at both ends, serves as the underground depository, and the openings at both ends are covered by removable plates, one or more of which also has a deposit box for deposit of refuse. Refuse is removed from the depository by a piston device carried on a collection vehicle.

3,677,423

WORK TRANSFER APPARATUS

Warren H. Tollefsrud, and Edward W. Shriver, both of Toledo, Ohio, assignors to Midland-Ross Corporation, Toledo, Ohio

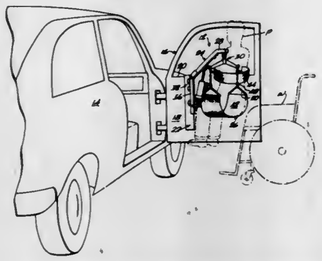
Filed Nov. 5, 1970, Ser. No. 87,061
Int. Cl. B65g 1/00
U.S. Cl. 214—18 R 3 Claims



A car apparatus for transporting a workpiece carrier tray between separate work processing units and transferring the

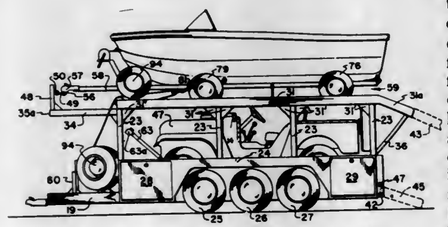
tray into and out of the units laterally with respect to the direction of car travel. The apparatus includes a push-pull means having a head assembly for engaging the tray. The head assembly comprises a frame slidable mounted upon a four wheeled carriage for relative movement between forward and rearward positions on the carriage. A hook member pivotally mounted on the frame is moved from a tray depositing mode to a tray withdrawing mode by shifting the frame into these alternate positions. The frame is shifted to the rearward position during a push stroke by the forward movement of the head assembly in combination with the resistance to this movement encountered when a bumper on the slidable frame engages a heavily laden tray to be charged into a processing unit. The frame is reset to its forward position during a pull stroke when a depending lug on the frame is pushed against a resiliently mounted abutment located on the car.

3,677,424
INVALID LIFTING APPARATUS
William G. Anderson, 1006 Brookwood Drive, Tallahassee, Fla.
Filed Aug. 6, 1970, Ser. No. 61,631
Int. Cl. B60p *1/48*
U.S. Cl. 214—77 **12 Claims**



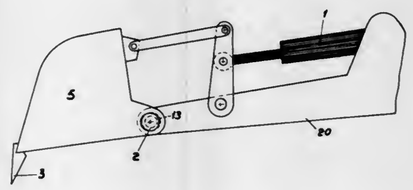
This invention pertains to invalid lifting apparatus having sling and derrick means for pendantly supporting and lifting an infirm or invalid person from one place to another place, as for example, for transferring the person between automobile, boat, airplane, wheel chair, bed, bathtub or the like. The lifting apparatus is suitable for multi-purpose application and may, if desired, include a plurality of base bracket means adapted for selective use in operatively supporting the derrick-sling construction of the apparatus on various conventional support structure such as an automobile door, a bedpost, wall or floor structure in a building or the like.

3,677,425
LAND AND WATER CRAFT TRAILER UNIT
Dan H. Patten, P.O. Box 18517, Salt Lake City, Utah
Filed June 15, 1970, Ser. No. 46,256
Int. Cl. B60p *3/08*
U.S. Cl. 214—85.1 **5 Claims**



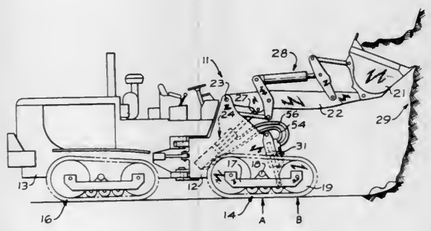
A trailer unit that will simultaneously haul land and water craft and wherein a supporting trailer for the water craft is adapted to be winched into place or with minor modifications to be used as a separate towing trailer.

3,677,426
HYDRAULICALLY OPERATED EQUIPMENT
Dieter G. Luck, 2 Aandblom Avenue, Kempton Park, Republic of South Africa
Filed Dec. 19, 1969, Ser. No. 886,667
Int. Cl. E02f *3/00*
U.S. Cl. 214—138 R **3 Claims**



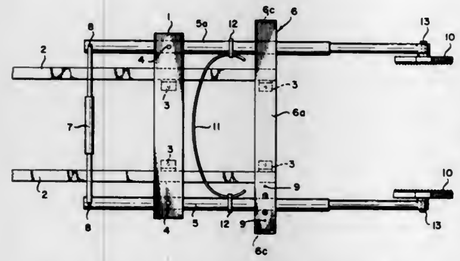
Hydraulic equipment including at least one ancillary assembly in a pressure relief by-pass circuit arranged to impart an added and different motion to the normal motion of the implement and utilizing energy for this purpose which is normally dissipated as waste.

3,677,427
STABILIZING STRUT FOR TRACKED LOADER
Thomas E. Allen, Mustangtea, Okla., assignor to Caterpillar Tractor Co., Peoria, Ill.
Filed April 23, 1971, Ser. No. 136,868
Int. Cl. B66f *9/00*
U.S. Cl. 214—140 **11 Claims**



A hydraulic strut secured between the tractor frame and each front track roller frame of a loader that serves as a tipping mode stabilizer under conditions of high bucket load, or as a damper of roller frame oscillation under low or no load conditions. The strut may be arranged to apply a stabilizing force tending to prevent roller frame pivotable movement as a function of pressure in the head end of the loader arm lift cylinder when the pressure is high, while permitting controllably dampened, relatively free movement of the track roller assembly for maximum ground contact and smooth flotation over irregular ground conditions when the head end pressure is low. The strut may be further arranged such that it is rendered inoperative or insensitive to high pressures at the head end of the lift cylinder when the roller frame idler is located clockwise from its normal level state in order that the normal mobility of the loader is not detrimented.

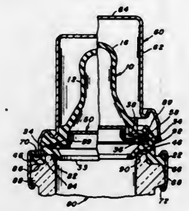
3,677,428
BALE LIFTER
Wallace L. E. Mallett, Union Road, R.R. 3, Charlottetown, Prince Edward Island, Canada
Filed Oct. 20, 1970, Ser. No. 82,454
Int. Cl. B66c *1/44*
U.S. Cl. 214—147 G **5 Claims**



This invention is an attachment and improvement to be used in combination with the conventional hydraulically operated front-end loaders commonly used attached to farm-tractors, and provides new means for handling, lifting and moving bales of hay, cotton, or any other produce or material capable of being handled in bale form, and means for handling relatively larger numbers of bales than any previous art. It is therefore a labor and time saver and of general economic benefit. It consists of a combination of an oblong rectangular metal plate attached by removable means to the arms of the front-end loader, having two metal arms disposed over the metal plate and attached by means thereto, and extending over and behind the metal plate, where a hydraulic cylinder; connected by conventional means to the hydraulic pump system on the tractor; is disposed between and attached to the arms, which also extend over and in front of the metal plate, to, through and in front of, an oblong open-sided box-like receptacle, which is also attached by removable means to the arms of the front-end loader. The box-like receptacle protects and supports the two arms of the invention and holds one of them by means in various stationary positions, allowing the other to move within the box-like receptacle, when actuated by the hydraulic cylinder. An expansion spring holds the arms of the invention apart. The said arms each have a corrugated metal plate, disposed and adapted to be attached by removable means to the inner side of their ends. The combination is attached to the front-end loader arms. The operator on a tractor moves the tractor toward the bales of produce or material to be moved; positions same between the metal plates attached to the ends of the arms of the invention; actuates the hydraulic cylinder from the tractor, which brings the movable arm against the bales tightly enough to grasp and hold them while they are being lifted; the operator then actuates the front-end loader from the tractor, lifting the bales, moves same over a vehicle or over a pile or storage place; releases the movable arm, which drops the bales where they are required.

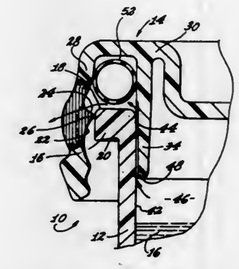
3,677,429
NIPPLE ASSEMBLY AND PACKAGE
Robert L. La Barge, Ben Avon, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.
Filed Feb. 16, 1971, Ser. No. 115,597
Int. Cl. A61j *11/02, 9/00*; B65d *51/16*
U.S. Cl. 215—11 C **4 Claims**

An elastic dispensing nipple is provided which has an inwardly open annular recess in its base and a sealing disc disposed in the nipple base with the peripheral edge portion of the disc seated in the recess, the recess having a plurality of radially extending ribs on the undersurface of its top wall and on the upper surface of its bottom wall, and the disc having a plurality of radial ribs and a circumferential rib in its peripheral edge portion. An assembly of such nipple and disc



is adapted to be sealed on a container entrance mouth with a shroud thereover to seal the contents in a container, and to dispense the contents of the container through the nipple after the shroud has been removed.

3,677,430
SELF-CENTERING AND VENTING CLOSURE
George Yates, Jr., Glendale, Calif., assignor to Growth International Industries Corp., Cleveland, Ohio
Continuation-in-part of Ser. No. 883,694, Dec. 10, 1969, abandoned. This application Aug. 24, 1970, Ser. No. 66,529
Int. Cl. B65d *41/22*
U.S. Cl. 215—41 **9 Claims**

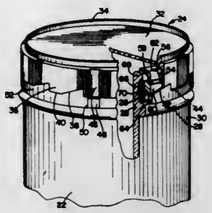


A closure having an outer annular leg to engage a bead about the rim of an open container body, an annular flexible sealing leg having spaced recesses to allow compressed gas to escape during the engagement of the closure to the container body and to provide a seal when the engagement is complete, an inner annular leg and a generally flat center portion to compensate for stresses during cooling of the molded closure and to act as a receptacle for a stacked container. The outer annular leg also has an end recess for self centering of the closure upon the container rim.

3,677,431
CONTAINER CLOSURE
James E. Westfall, Western Springs, Ill., assignor to Continental Can Company, Inc., New York, N.Y.
Filed April 6, 1970, Ser. No. 25,787
Int. Cl. B65d *41/04*
U.S. Cl. 215—43 **16 Claims**

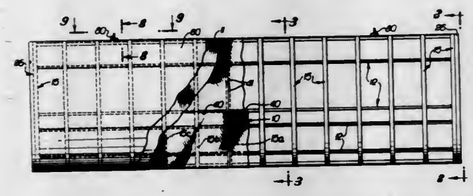
A closure and finish ring assembly for a container in which both the closure proper and the finish ring which is received over the container and at the same time in turn receives the closure, may be formed as a unit and installed on the container by a press-on action without intentional rotation. After the ring and closure are in place on the container, the closure is removed by rotation thereof after releasing a lock provided to

provide the container with a so-called tamper proof feature. In one form, the closure is cammed axially upwardly at the same time the closure skirt is deflected slightly outwardly for release from the finish ring. In another embodiment, complete or partial threads are formed on the ring associated with the container for separating the closure from the ring as the closure is



moved axially. The closure and ring may be formed as a single unit by double injection molding, with the interface between the ring and closure forming, in effect, part of the mold for formation of the associated part. Molding materials and processing steps are selected so that the ring and closure do not bond to each other during formation.

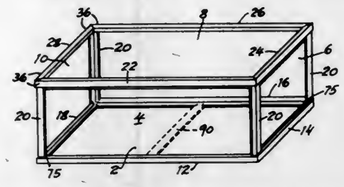
3,677,432
COMPOSITE STRUCTURE
Charles E. Kaempen, 3202 Larkstone Drive, Orange, Calif.
Filed May 2, 1969, Ser. No. 821,327
Int. Cl. B32b 3/04
U.S. Cl. 220—3 **21 Claims**



A structure comprising flattened expanded metal, or the like, having a sealed fabric of nylon or glass cloth bonded thereto by an intervening polyurethane elastomeric plastic. The structure disclosed is a storage tank having a framework, including circumferentially spaced longerons and longitudinally spaced rings secured to the longerons, with the sealed fabric bonded by the elastomeric plastic to the expanded metal and the surfaces of the framework which is engages. End portions of the framework have flattened expanded metals secured thereto and to which the sealed fabric is bonded by the polyurethane elastomeric plastic. A band of continuous filament glass may be wound around and bonded to the fabric.

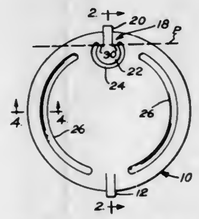
3,677,433
CORNER CONSTRUCTION FOR AQUARIUM OR THE LIKE
David R. Collins, R.D. 1, Newtown, Pa.
Filed April 3, 1970, Ser. No. 25,429
Int. Cl. B65d 7/32; A01k 64/00; F16b 9/02
U.S. Cl. 220—4 R **7 Claims**

A three-dimensional framing assembly adapted for use in the construction of aquariums, show cases, tables and other structures wherein three intersecting members, which may be formed of extruded metal strips, are assembled to form a corner construction that is neat in appearance and strongly connected. The assembly in some instances may be designed



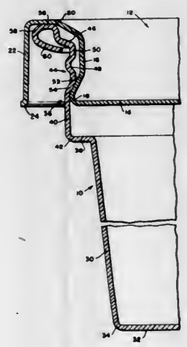
for the reception of glass, slate or other panels in a manner to prevent leakage between such panels and the framing members.

3,677,434
LOCKING DEVICES
Fred S. Boyer, 5638 Kostner Avenue, N., Chicago, Ill.
Filed May 18, 1970, Ser. No. 38,290
Int. Cl. A47j 27/08
U.S. Cl. 220—59 **22 Claims**



Locking devices for sheet metal plugs and other hole closures, include at least one locking member which is hingedly connected to the disc and which includes a tab portion, which when struck an impacting blow, causes the locking member to rotate about its hinge into a position where the closure is locked in the hole.

3,677,435
CONTAINER
Paul Davis, Swampscott, Mass., assignor to Sweetheart Plastics, Inc., Wilmington, Mass.
Continuation-in-part of Ser. No. 875,605, Oct. 30, 1969, abandoned. This application July 6, 1970, Ser. No. 52,587
Int. Cl. B65d 43/10, 21/02, 51/16
U.S. Cl. 220—60 R **5 Claims**



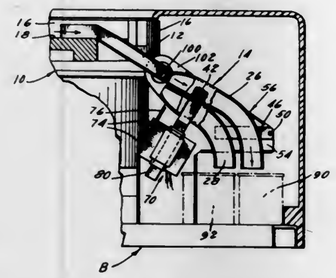
A container with a combination lid retaining bead and nesting ring disposed at the top of the container side wall with the bead being axially interrupted to facilitate positioning of the lid on the rim without permanently distorting the lid.

3,677,436
DRUM PALLET
Gunnar H. Danielson, Minneapolis, Minn., assignor to Valley Craft Products, Inc., Lake City, Minn.
Filed Dec. 4, 1969, Ser. No. 882,063
Int. Cl. B65d 21/02, 19/02
U.S. Cl. 220—97 B **8 Claims**



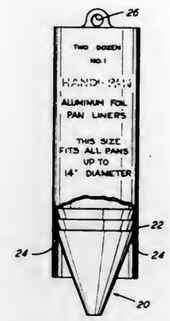
Handling of drums, barrels and similar contains is facilitated by the provision of pallet means thereon comprising at least a pair of runners temporarily or permanently attached to a portion of a drum, usually one of the circular ends, cleats attached to the runners and means securing the runners to the drum or container. The cleats may be straight or bevelled and are positioned on the runners to serve the dual purpose of providing a ground engaging means when the ground is the support and by providing a centering action when another drum is the support. External fasteners or weld means serve to secure the pallet means to the lower rim or chime of the drum.

3,677,437
PILL COUNTING APPARATUS HAVING CHUTE SHIFTING ON PREDETERMINED COUNT
John S. Haigler, 9581 Calendula Avenue, Westminster, Calif.
Filed March 27, 1970, Ser. No. 23,244
Int. Cl. G07f 11/00
U.S. Cl. 221—7 **6 Claims**



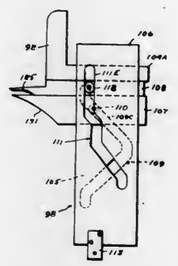
Apparatus for counting and dispensing articles such as pills, having a vibratory device for automatically separating, spacing and feeding the separated, spaced and counted pills to a chute. A photoelectric cell and a light source function to energize a solenoid of a counter as the pills slide down the chute and interrupt a beam of light between the light source and the photoelectric cell. A lower part of the chute is divided and pivoted and is actuated from the normal position whereat the counted pills are conveyed to a container therefor to a position whereat the remaining pills are conveyed to a container for the oversupply, excess, surplus, remainder or extra pills which can then be returned to a large storage container or to the hopper of the separating and feeding device.

3,677,438
DISPENSING LINER AND PAD FOR UTENSILS
Joseph Alexander Esposito, 1113 Hollen Road, Baltimore, Md.
Filed Feb. 26, 1970, Ser. No. 14,363
Int. Cl. B65h 1/00
U.S. Cl. 221—63 **4 Claims**



A tube-dispensable combination expanding pan-liner and hotpad for pans and the like, comprising a metal foil disc having the periphery folded inward, the disc folded inward over the inwardly folded periphery about a diameter of the disc to semi-disc configuration, and the semi-disc rolled into a coiled funnel configuration approximating the overall shape of a conical drinking cup, and dispensable in the same manner as a conical drinking cup from a tubular dispenser having an internal constriction.

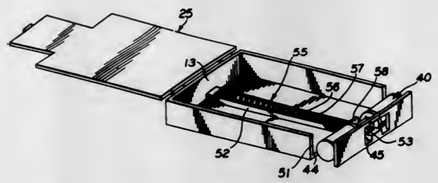
3,677,439
CARTON DISPENSERS HAVING PLURAL CAM DENESTERS
Delbert B. Bosworth, and Ernest E. Goodridge, both of Portland, Maine, assignors to United Industrial Syndicate, Inc., Portland, Maine
Filed July 30, 1970, Ser. No. 59,424
Int. Cl. B65g 59/10
U.S. Cl. 221—251 **23 Claims**



Dispensers are disclosed for a stack of nested articles of a type having marginal portions by which they may be supported and which are spaced so that the ends of supported members having cam surfaces may be inserted between them to force them apart. The dispensers are discussed with particular reference to open egg cartons with the marginal portions being the ends of the hinge connection between their covers and bottoms. The dispensers have first and second members at both of its sides and means, in preferred embodiments vertically reciprocable cam plates, operable to actuate the members so that the ends of the first and second members al-

ternately support the stack of articles. The ends of the second members are spaced from the ends of the first members by a distance such that the ends of the second members may be entered between the marginal portions of two articles when the stack is supported by the ends of the first members. The second member ends have cam surfaces operable, in one embodiment, to free the lowermost article, as they move into article supporting positions, if the lowermost article adheres to the bottom of the stack when the first member ends are retracted. In a preferred embodiment, the first member ends include cam surfaces and the second member ends are operative at least to increase the distance between the articles between which they are entered so that the first member ends may also be entered therebetween as the first member ends approach their stack supporting positions so that both members cooperate in ejecting articles. The member operating means provide for the operative position of the first member ends following the movement of the second member ends into their operative positions thereby to cooperate therewith in article ejection. Desirably, the dispenser has resiliently yieldable fingers arranged to receive and support articles whether freed by the second members or by the combined effort of the two sets of members and then be forced therefrom by the cam surfaces of the first members after predetermined travel.

3,677,440
RECEPTACLE FOR DISPENSING ROLLABLE PILL CONTAINERS
James A. Davis, 574 Kieffer Street, Wooster, Ohio
Filed Dec. 7, 1970, Ser. No. 95,474
Int. Cl. B65g *59/06*
U.S. Cl. 221—279 **9 Claims**



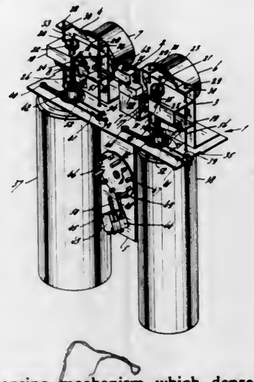
A pill dispenser having a receptacle for carrying a plurality of sealed pill or capsule rollers each containing one or more doses and adapted to roll by gravity to the dispensing end of the receptacle. Both closed outer ends of the rollers are exposed to view at the dispensing end where they may be separately opened and the roller removed.

ERRATUM

For Class 222—23 see:
Patent No. 3,677,540

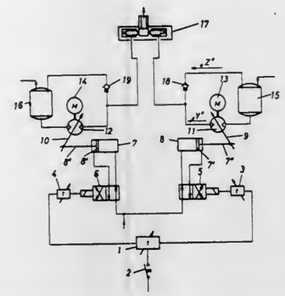
3,677,441
MULTIPLE AEROSOL DISPENSER
Dalbro R. Nixon, Jr., Chesapeake; David J. McIlhenny, Suffolk, and Marvin L. Harrell, Portsmouth, all of Va., assignors to Virginia Chemicals Inc., Portsmouth, Va.
Continuation-in-part of Ser. No. 71,055, Sept. 10, 1970, Pat. No. 3,647,116. This application Nov. 16, 1970, Ser. No. 89,601
Int. Cl. B67d *5/08*
U.S. Cl. 222—63 **4 Claims**

Aerosol bombs of the type having a cylindrical body portion and a neck dispensing portion with a collar and a dispensing valve, particularly a mounting bracket and plural dispensers for mounting two or more aerosol bombs and a motor ac-



tivated dispensing mechanism which depresses the bomb valves, so as to discharge the bombs simultaneously or sequentially at pre-selected time intervals.

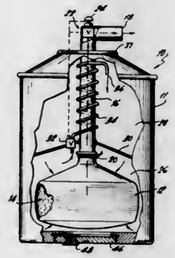
3,677,442
MACHINE FOR DELIVERING MULTI-COMPONENT PLASTICS MIXTURE
Joachim Ruhnau, Auf der Heide 11, 3001 Isernhagen Hohenhorster Baurschaft, Germany
Filed Feb. 18, 1970, Ser. No. 12,340
Claims priority, application Germany, Feb. 19, 1969, P 19 08 210.1
Int. Cl. B67d *5/08*
U.S. Cl. 222—70 **2 Claims**



An apparatus is provided for mixing components which will react together to form a plastic such as a polyurethane foam that combines a mixer with an axial piston pump which normally circulates a component but delivers metered amounts of the component to the mixer when it is reversed by a piston actuated in an air cylinder a predetermined interval of time by a valve controlled by an electric timer.

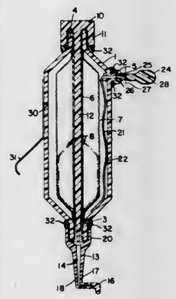
3,677,443
APPARATUS FOR DISPENSING FROZEN COMESTIBLES
Yechiel Smadar, New York, and Abraham H. Goodman, Great Neck, both of N.Y., assignors to DCA Food Industries, Inc., New York, N.Y.
Filed July 14, 1969, Ser. No. 841,193
Int. Cl. B65d *35/22*; **B67d** *5/62*
U.S. Cl. 222—94 **7 Claims**

A non-dairy food product having the texture and eating characteristics of soft-serve ice cream is prepared from a composition of matter comprising a sweetener, hydrolyzed starch conversion products, microcrystalline cellulose, hydrogenated shortening, caseinate and water. The product, as well as other food products, can be dispensed from a self-refrigerating dispenser containing a refrigerant under pressure surrounding



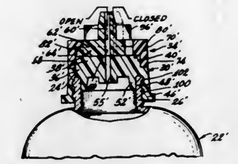
a flexible product bag. Actuation of control means on the dispenser permits a portion of the refrigerant to expand thereby cooling the product while the unexpanded portion of the refrigerant squeezes the product bag causing the product to flow.

3,677,444
MICROPUMP
Edward W. Merrill, Cambridge, Mass., assignor to Hans H. Estin, Leonard W. Cronkhite, Jr. & William W. Wolbach, Trustees of the Charles River Foundation, Boston, Mass.
Filed March 6, 1970, Ser. No. 17,169
Int. Cl. B67d *5/40*
U.S. Cl. 222—135 **3 Claims**



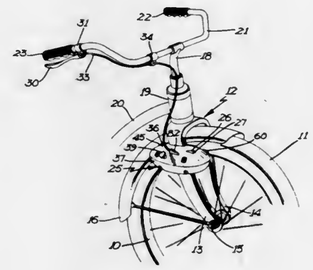
A pump for delivering liquid at a relatively constant rate from a chamber having a compliant membrane wall which exerts a substantially constant resistive force when expanded under a pressure within the range of between zero and atmospheric and within the mechanical limits imposed on it. The outside surface of the membrane is located in a second chamber wherein the pressure is increased to atmospheric by diffusing gas through an elastomeric diffusion membrane. The pump is especially adapted for delivering microquantities of liquid at a constant rate for long periods.

3,677,445
SPOUT-TYPE SAFETY DISPENSING CAP
Robert P. Linkletter, 875 Comstock Ave., Los Angeles, Calif.
Filed Oct. 30, 1970, Ser. No. 85,378
Int. Cl. B67d *5/32*
U.S. Cl. 222—153 **17 Claims**



A safety dispensing cap for liquid containers such as bottles and cans, having a spout-type dispensing valve mounted in a channel in a closure member secured to the container. The valve is movable between an open position and a closed position, and a rotatable safety ring encircles a portion of the closure member and must be precisely aligned in a preselected position relative to the valve before the valve can be moved from the closed position to the open position. In one embodiment, the valve has a base which is rotatable within the channel and in a second embodiment, the base is slidable within the channel, the base being movable in both embodiments only when a recess in the ring is properly aligned with an end abutment on the base.

3,677,446
LIQUID GUN FOR USE ON WHEELED VEHICLE
Reynolds W. Guyer, Jr., Mendota Heights; Norton M. Cross, Jr., White Bear Lake; Barbara Allen Griggs, St. Paul, and Martin A. Lundquist, Plymouth, all of Minn., assignors to Reynolds W. Guyer, Jr., Winsor Concepts, Minneapolis, Minn.
Filed Aug. 4, 1969, Ser. No. 847,034
Int. Cl. B05b *9/06*
U.S. Cl. 222—177 **7 Claims**

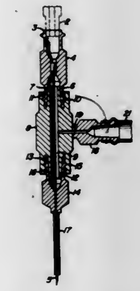


A water gun for use on a bicycle or tricycle vehicle in which a pump driven by a roller engageable with a wheel of the vehicle drives a pump to pump water from a container through a nozzle. A cable controlled by a handle secured to the handle bar of the vehicle is used to move the roller into engagement with the wheel when it is desired to squirt water. A clacker may also be actuated by the roller to produce a sound simulating that of a machine gun.

3,677,447
INTERCHANGEABLE TIP FOR DISCRETE DROPPING APPARATUS

John C. Rentz, Joppa, Md., assignor to The United States of America as represented by the Secretary of the Army

Filed March 29, 1971, Ser. No. 128,842
Int. Cl. B67d 5/54
U.S. Cl. 222—193 8 Claims

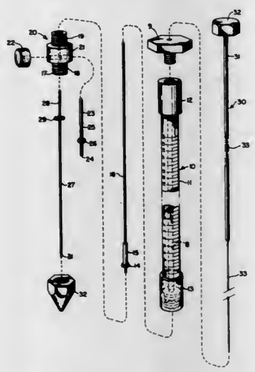


An apparatus and method for dispensing accurate monodispersed aerosol droplets wherein a syringe, a dropping needle, a conduit needle, and a fluid supply are arranged in a combination to form a droplet of liquid on the tip of the dropping needle from the syringe and to blow the droplet off of the dropping needle to a receiver means by the fluid supply.

3,677,448
SYRINGE WITH WIRE PLUNGER FOR DISPENSING INFINITESIMALLY SMALL, ACCURATELY MEASURED QUANTITIES OF FLUID

Rano J. Harris, Sr., and Rano J. Harris, Jr., both of Baton Rouge, La., assignors to Precision Sampling Corporation

Filed Jan. 29, 1971, Ser. No. 110,900
Int. Cl. G01f 11/00
U.S. Cl. 222—387 8 Claims

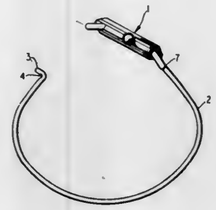


A syringe for use in dispensing infinitesimally small, accurately measured quantities of fluid. The syringe is comprised generally of a tubular body, a needle and lateral vent-valve assembly mounted in the forward end of the tubular body. The needle and lateral vent-valve assembly comprises a resilient tubular body, a tubular plunger guide mounted at one side thereof and within the axial opening of the tubular body, a needle mounted on the resilient tubular body at the forward or opposite side of the tubular guide and an on-off valved lateral vent communicated to the bores through the hollow needle, the resilient tubular member and the plunger guide. The plunger assembly includes a telescoping tubular member which is reciprocably mounted upon the plunger guide, and a wire plunger associated therewith which extends through the bore of the plunger guide, the resilient tubular member with which it is snugly fitted and sealed, and is loosely fitted through the bore of the needle. The wire plunger traverses the length of the needle and the annulus formed between the external surface of the plunger and inter wall surface of the needle can be readily cleaned or filled with an accurately measured quantity of fluid when the valve is open and injected when the valve is closed.

3,677,449
WRIST WATCH ASSEMBLY

Bill D. Williams, 612 Marion Drive, P.O. Box 243, Madison, Ala.

Continuation-in-part of Ser. No. 780,407, Dec. 2, 1968, abandoned. This application March 23, 1970, Ser. No. 21,865
Int. Cl. A44c 5/00
U.S. Cl. 224—4 E 2 Claims

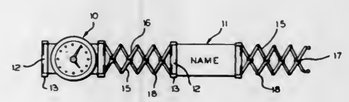


A one piece resilient watch band having at one end an opening therethrough for hingedly connecting that end to the watch by means of one of the usual watch band connecting pins, and a C-shaped slot near the other end opening outwardly of the band for receiving and releasably holding the other watch band connecting pin, whereby a watch may be hingedly connected to said watch band at one end, and releasably connected to the other end.

3,677,450
WRIST BANDS

Jo Hodgson, Route 2, Shullsburg, Wis.

Filed Dec. 24, 1970, Ser. No. 101,331
Int. Cl. A44c 5/06, 5/14
U.S. Cl. 224—4 E 7 Claims

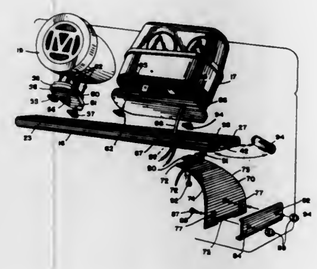


An expandable watch band has an identification plate therein for receiving identification, allergy, or medical information thereon. The ends of the bracelet have disconnect features which enable an easy removal of the expandable bracelet for engraving the plate.

3,677,451
SUPPORTING BAR ASSEMBLY FOR VEHICLE

Oliver John Burland, 214 Rugley Road, Western Springs, Ill.

Filed Dec. 22, 1969, Ser. No. 886,829
Int. Cl. B60r 11/00
U.S. Cl. 224—47.1 F 4 Claims

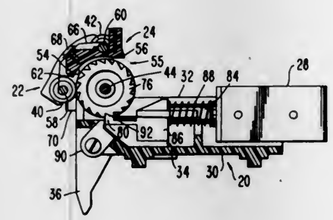


A supporting bar structure for a vehicle includes an elongated bar and a pair of end brackets for securing the bar above the vehicle roof. The bar includes substantially planar top and bottom surfaces, and at least one longitudinally extending T-shaped slot is provided in each of the surfaces. A pair of T-fittings is slidably received by the bottom slot, and a bracket is adjustably secured adjacent each end of the bar by a bolt extending through the bracket into one of the T-fittings to tighten the T-fitting and the bracket against the bottom wall of the bar. The brackets are equipped with clamping means for anchoring the bar to the vehicle. T-fittings can be received by the slot in the upper surface of the bar for securing vehicle warning lights, sirens, and the like to the support bar.

3,677,452
INTERMITTENT WEB ADVANCING DEVICE

Harry L. Wallace, Garden City, Mich., assignor to Burroughs Corporation, Detroit, Mich.

Filed Dec. 28, 1970, Ser. No. 101,985
Int. Cl. B26f 3/02
U.S. Cl. 225—11 21 Claims

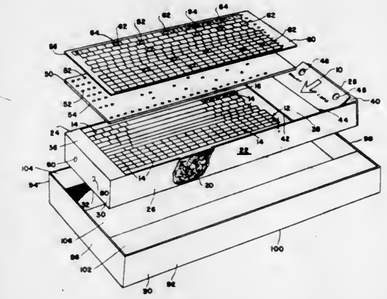


A pawl and ratchet web drive device is provided, the pawl being formed on the free end of a resilient furcation of a reciprocable, bifurcated plunger, the free end of the other furcation forming a back-up stop abuttable by the pawl to render it unyieldable when it is moved effectively against the trailing face of a tooth of a ratchet wheel to incrementally rotate the same, the pawl being deflectible laterally when it is retracted across the leading face of a tooth for performing a succeeding incremental movement. The device further includes a fixed detent interengageable with the teeth to prevent return rotation of the ratchet wheel and being deflectible out of its normal position when the wheel is moved by the pawl. Preferably, the parts of the ratchet mechanism are composed of hardened, molded plastic material having the inherent resiliency for performing the aforementioned deflections.

3,677,453
PORTABLE CARD PUNCHING APPARATUS

Miles E. Parks, 1055 Parmelee Avenue, N. W., and Robert J. Scranton, 1830 Kenowa Avenue, S. W., both of Grand Rapids, Mich.

Filed Sept. 10, 1970, Ser. No. 71,159
Int. Cl. G06k 21/06
U.S. Cl. 225—93 19 Claims



a plurality of printed information cards identifying informational units are positionable over a data processing card and each includes a slotted portion corresponding to one of the rows or columns on the card to facilitate registration of information on the data card by a conventional stylus. The slotted portion of the printed cards are staggered with respect to each other so that as each printed card is positioned over the data card for recording, a different row or column of the data card is exposed. A plastic template having a plurality of perforations corresponding to the scored portions on the data card is positioned over the card for indexing the stylus. A selector card is positioned over the template beneath the printed cards and selectively shields portions of the data card to prevent accidental or undesired recordings. A Styrofoam cleaning base supports the data card to facilitate positive indexing of the stylus and an enclosing container is provided which also aligns the data card, template and selector card into proper registration. The printed cards are hingedly connected to the enclosure to permit rapid and facile registration of each individual card for informational registration. Each card is detachable from the apparatus after it has been used to permit registration of the next card. A reversible mailer is provided to facilitate ease in sending and returning the apparatus through the mails.

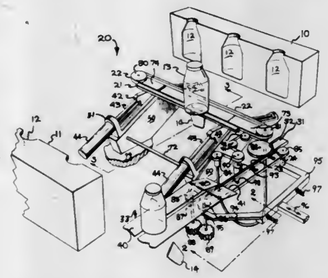
3,677,454
APPARATUS FOR TRIMMING BLOWN PLASTIC ARTICLES

Joseph E. Boyer, Warson Woods, Mo., assignor to Owens-Illinois, Inc.

Filed June 3, 1970, Ser. No. 42,929
Int. Cl. B26f 3/02
U.S. Cl. 225—99 8 Claims

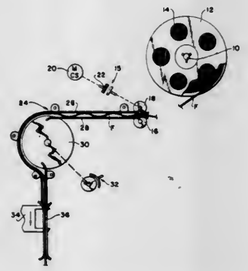
The present invention relates to an apparatus for making blown plastic articles such as bottles. A coacting chain and bar mechanism is positioned below the dies of a blow molding

machine to facilitate removal of the blown article by grasping the tail portion thereof. Separation of the tail from the blown



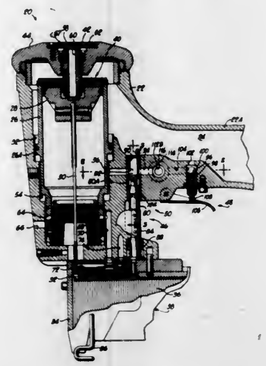
article is achieved by moving the article up an inclined plane in a direction away from the moving chain.

3,677,455
FILM ADVANCING DEVICE
Robert B. Johnson, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Oct. 1, 1970, Ser. No. 77,206
Int. Cl. G03b 1/40
U.S. Cl. 226—49 **11 Claims**



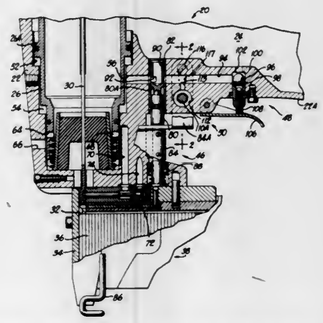
A motion picture projector having selectively operable means for intermittently moving film through a projection gate in either forward or reverse directions and for continuously moving film through the gate for rewind operation includes a device for advancing film between a supply roll and the gate in forward projection, reverse projection and rewind modes of operation of the projector. Film is advanced by the device through a channel defined by at least one rotatable roller and wall means spaced apart sufficiently to permit an excess of film to build up ahead of the gate. The channel defining means may be coated with a high friction material so that during forward projection when film is pushed into the channel from the supply roll by a tendency drive mechanism, contact between the film and the high friction material coating prevents movement of more film into the channel by the tendency drive than is withdrawn from the other end of the channel by the intermittent film moving means. During reverse projection operation of the projector, contact of the film with the high friction material attenuates the force applied to the film by the tendency drive and prevents that force from reaching the film in the gate. The force attenuating effect is reduced during threading and rewind operation by permitting the roller to be rotated by the film passing thereover.

3,677,456
SAFETY FOR FASTENER DRIVING TOOL
Howard B. Ramspeck, Chicago, and Allen R. Obergfell, Park Ridge, both of Ill., assignors to Fastener Corporation, Franklin Park, Ill.
Filed July 15, 1970, Ser. No. 55,178
Int. Cl. B27f 7/22
U.S. Cl. 227—8 **19 Claims**



A pneumatic fastener driving tool includes a safety arrangement that requires the tool to be placed against a workpiece before a manual trigger valve is operated in order to permit the tool to fire. Once the tool is placed against the workpiece the safety arrangement prevents "touch" firing by moving the tool toward and away from the workpiece. In two embodiments, the safety arrangement includes a piston valve which is fluid operated to close off a control line tc the main valve of the tool whenever the trigger is operated before the tool is placed against a workpiece and when an attempt is made to "-touch" fire the tool with the trigger held operated. In a third embodiment, metering orifices in a valve actuated by moving the tool against a workpiece prevent repeated "touch" operation of the tool.

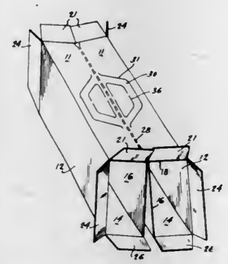
3,677,457
SAFETY FOR FASTENER DRIVING TOOL
Howard B. Ramspeck, Chicago, and Raymond F. Novak, Schiller Park, both of Ill., assignors to Fastener Corporation, Franklin Park, Ill.
Filed July 15, 1970, Ser. No. 55,179
Int. Cl. B27f 7/22
U.S. Cl. 227—8 **14 Claims**



A pneumatic fastener driving tool includes a safety arrangement that requires the tool to be placed against a workpiece

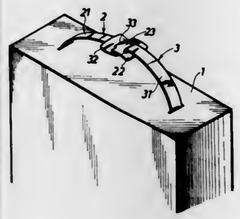
before a manual trigger valve is operated in order to permit the tool to fire. Once the tool is placed against the workpiece the safety arrangement prevents "touch" firing by moving the tool toward and away from the workpiece. In one embodiment, the safety arrangement includes a fluid controlled piston which is operated to mechanically latch a workpiece actuated safety in its normal position to prevent tool operation whenever the trigger is operated before the tool is placed against a workpiece and whenever an attempt is made to "-touch" fire the tool with the trigger held operated. In a second embodiment, a fluid controlled piston mechanically latches the trigger valve in normal position until after the workpiece actuated safety has been operated.

3,677,458
END LOADING TWIN BEVERAGE CARTON
Dickinson Gosling, Victoria, British Columbia, Canada, assignor to John Labatt Limited, London, Ontario, Canada
Filed April 2, 1970, Ser. No. 25,086
Int. Cl. B65d 5/46
U.S. Cl. 229—27 **9 Claims**



An end loading, twin carton separable into two cartons, embodying folded handles usable in the twin and also the separated mode. A blank for the carton is also disclosed.

3,677,459
HANDLE GRIPS FOR CARTON BOXES
Rinnosuke Susuki, Tokyo; Hiroshi Hoshi, Narashino; Shinichi Araki, Funabashi, and Masao Ishii, Yachiyoshi, all of Japan, assignors to Raion Yushi Kabushiki Kaisha, Tokyo, Japan
Filed Oct. 9, 1970, Ser. No. 79,576
Claims priority, application Japan, Oct. 17, 1969, 44/98883
Int. Cl. B65d 5/46
U.S. Cl. 229—52 A **1 Claim**

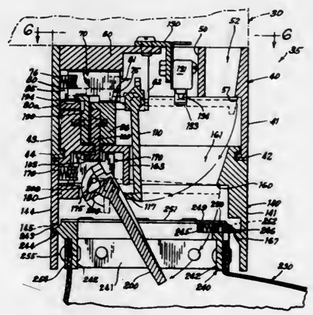


This invention relates generally to a handle grip that can be firmly attached to a carton box, more particularly a convenient handle grip which is suitable for carrying a carton box relatively heavy as well as large in size. This handle grip comprises a pair of handle grip pieces having two main parts, two broader heads and two slits. The idea is that each main part is inserted through the slit of the other, respective main part, the ends of the two main parts distally of the respective heads being firmly attached to the flap of the carton box.

3,677,460
ENVELOPE HAVING CHEMICALLY TREATED EDGES
Nelson Whitman, Lincoln, Mass., assignor to Econo-Mail, Inc., New York, N.Y.
Filed April 13, 1970, Ser. No. 28,051
Int. Cl. B43m 7/00
U.S. Cl. 229—85 **4 Claims**

The present process is for opening paper constructions of structures, such as the marginal edges of envelopes, by treating a portion with a sensitizing agent which comprises an alkyl sodium sulfate, thereafter applying a developing agent comprising a strong organic acid to the sensitized portion, heating the developed portion to degrade it and thereafter applying mild mechanical action to remove the degraded portion.

3,677,461
SECURITY DEVICE
Robert M. Nitschneider, Cary; Charles G. Neumann, Palatine, and Harvey R. Krueger, Carpentersville, all of Ill., assignors to Reynolds Products Inc., Schaumburg, Ill.
Filed July 23, 1970, Ser. No. 57,699
Int. Cl. G07f 9/06
U.S. Cl. 232—15 **7 Claims**

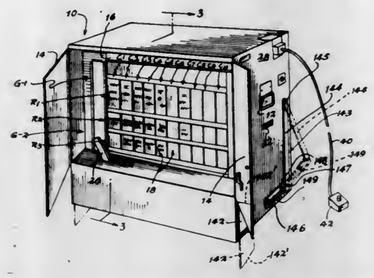


An input conduit is attached to the outlet of a coin-processing mechanism and an output conduit is attached to the inlet of a coin container. The conduits are respectively provided with gates which are opened when the conduits are united to provide a passageway for coins to pass from the coin-processing mechanism to the coin container, and which are closed when the conduits are separated, to prevent withdrawal of coins from the coin container and the coin-processing mechanism.

3,677,462
MECHANICAL VOTING MACHINE
Michael Terrance Moldovan, Jr., Lakewood, N.Y., assignor to AVM Corporation, Jamestown, N.Y.
Filed June 28, 1971, Ser. No. 157,446
Int. Cl. G07c 13/00
U.S. Cl. 235—54 R **14 Claims**

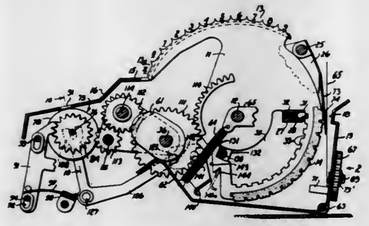
An improved mechanical voting machine embodying means facilitating the making of a single selection from a plurality of available ballot choices for each of two or more offices; such choices being presented as indicia carried on the faces of a plurality of voter operated push button selectors. The machine features an election official operated "entrance" control;

means for preventing the voter from causing the machine to record more than one vote for each office, while requiring that



a vote be cast for both offices before he leaves the machine; and means for printing the election results on required numbers of print out sheets.

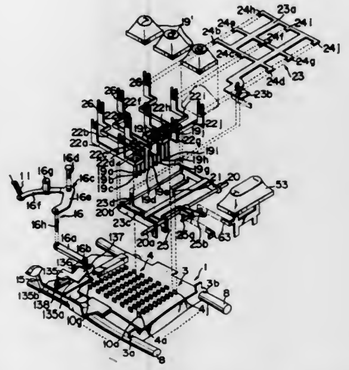
3,677,463
CHECKWRITER
Michael W. Grey, Azusa, Calif., assignor to Addmaster Corporation, San Gabriel, Calif.
Filed Aug. 4, 1971, Ser. No. 168,979
Int. Cl. G06k *1/00*
U.S. Cl. 235—58 CW 8 Claims



A checkwriter having differentially settable printing sectors for printing amounts on checks and for subtracting such amounts from an accumulator which registers the balance in s user's bank account. The sectors are also used to add amounts in the accumulator representing deposits in the user's bank account. The sectors are manually advanced to different amount representing positions from home positions wherein they locate special symbols to be printed in lieu of amounts. After printing, the sectors are returned towards their home positions and during this movement they digitize the accumulator. Overthrow preventing means momentarily arrest the sectors and accumulator at zero registration of the sectors. The accumulator is then demeshed and the sectors are further returned to home positions. Intermeshing check locating members are provided to adjust a check relative to the printing line.

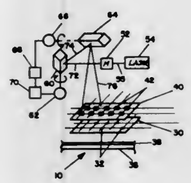
3,677,464
ADDING, SUBTRACTING AND TOTALING CALCULATOR
Harutaro Oba; Toshihiko Sawazu; Segio Takeuchi, and Norio Yamaguchi, all of Shizuoka-ken, Japan, assignors to Tokyo Electric Co., Ltd., Tokyo, Japan
Filed Feb. 4, 1970, Ser. No. 8,680
Claims priority, application Japan, Feb. 6, 1969, 44/10339
Int. Cl. G06c *7/10*
U.S. Cl. 235—60 TK 3 Claims

A carriage shifting mechanism for portable adding, subtracting and totaling calculators comprising shift pins arranged vertically on a carriage which is urged towards the higher order numerical positions, a carriage shifting member to depress, upon operating one of digit keys on a keyboard, the shift pin corresponding to the decimal place in which a



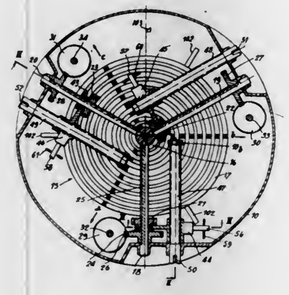
digit is set, and a stop member which is engaged with the shift pin when it is not depressed and which is disengaged therefrom when it is depressed, thereby enabling the carriage to be shifted by one decimal place towards a higher order decimal position upon depression of the shift pin.

3,677,465
METHOD AND APPARATUS FOR AUTHENTICATION OF INFORMATION RECORDS
Everett A. Johnson, 15 S. Prospect Avenue, Park Ridge, Ill., and Daniel Silverman, 5969 S. Birmingham, Tulsa, Okla.
Continuation-in-part of Ser. No. 60,399, Aug. 3, 1970. This application Sept. 21, 1970, Ser. No. 74,066
Int. Cl. G06k *5/00*
U.S. Cl. 235—61.7 R 24 Claims



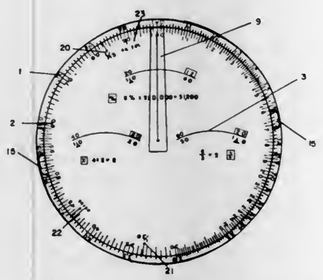
This invention is concerned with apparatus and methods for unerasably marking computer and other information documents in a precise, machine readable manner so as to identify the particular document, and to control access to the information stored thereon. The method involves preparing a master card of opaque material, through which microperforations have been burned in a predetermined pattern by a laser. This card is used as a pattern for a second laser, passing through the microperforations to burn an identical pattern through a facsimile card and/or through an opaque layer of the document, such as a digital photographic film or magnetic tape. The facsimile card is used, in conjunction with a reading means, to detect the pattern, identify the document and to control the operation of a computer to utilize the information on the document.

3,677,466
VARIATOR FOR A LIQUID DISPENSER
Henri Soupeaue, Clamart, France, assignor to Compagnie Des Compteurs, Paris, France
Filed Dec. 12, 1969, Ser. No. 884,605
Claims priority, application France, Dec. 13, 1968, 178,097
Int. Cl. B67d *5/22*
U.S. Cl. 235—61 L 4 Claims



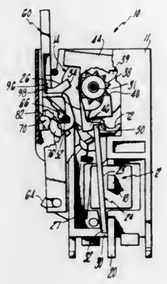
A gear box or mechanical speed variator particularly for liquid distributing measuring apparatus comprising a set of nine crown wheels arranged concentrically and whose number of teeth varies in the ratio of 1 to 9, said set of wheels cooperating with an assembly of sliding gears, each one of said gear selectively coming into engagement with any one of the gears of the multiple gear device.

3,677,467
DISC COMPUTER
Laurance Pierce, 2302 Calypso Road, Madison, Wis.
Filed June 23, 1970, Ser. No. 49,108
Int. Cl. G06g *1/08*
U.S. Cl. 235—78 1 Claim



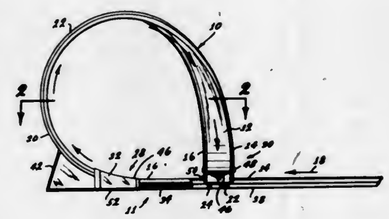
A disc computer having a lower disc with a peripheral scale at the edge of its upper face and an upper disc rotatably and concentrically secured at its center to the first disc. The upper disc being smaller in diameter than the lower disc and having a peripheral scale at the edge of its upper face for use in conjunction with the scale on the lower disc. The upper disc has a pair of diametrically opposed, transparent lugs extending from its peripheral edge substantially to, but not beyond the peripheral edge of the larger bottom disc to facilitate manipulation of the upper disc.

3,677,468
COUNTER MECHANISM
Lloyd J. LaPointe, West Hartford, and Howard J. Voegelin, Cheshire, both of Conn., assignors to Veeder Industries, Inc., Hartford, Conn.
Filed July 22, 1970, Ser. No. 57,137
Int. Cl. G06c *15/42*
U.S. Cl. 235—144 PN 11 Claims



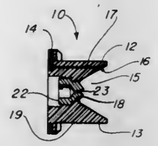
A resettable counter having an electromagnetic stepping mechanism and a reset mechanism with a manually operable slide for sequentially laterally withdrawing a transfer pinion shaft for disconnecting the counter wheels and pivoting a reset finger comb about the pinion shaft for resetting the counter wheels. The manual reset slide is connected for axially pivoting a stepping pawl of the electromagnetic stepping mechanism out of engagement with a star wheel coupled to the lowest order counter wheel to permit the counter wheel to be reset.

3,677,469
LOOPED TRACK SYSTEM FOR TOY WHEELED VEHICLES
Russell C. Edmisson, Manhattan Beach, and Stanley R. Starr, Hermosa Beach, both of Calif., assignors to Mattel, Inc., Hawthorne, Calif.
Filed Sept. 2, 1970, Ser. No. 69,083
Int. Cl. A63h *19/30, 19/32*
U.S. Cl. 238—10 E 11 Claims



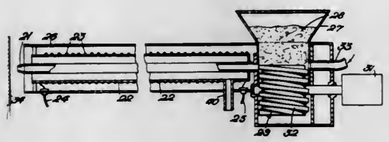
This is an accessory for a track system usable with toy wheeled vehicles which serves to change the direction of travel of vehicles traversing the track while at the same time causing the vehicles to travel through an essentially vertical loop. The track system utilizes well known linear sections of elongated flexible track and includes a loop-turn fixture having track securing members which serve to secure the track to the loop turn fixture.

3,677,470
NOZZLE HOLDER
Richard O. Probst, and Albert H. Moos, both of Indianapolis, Ind., assignors to Ransburg Electro-Coating Corp., Indianapolis, Ind.
Filed June 1, 1970, Ser. No. 41,898
Int. Cl. B05b 5/06
U.S. Cl. 239—15 11 Claims



A holder adapted to receive a nozzle of an electrostatic spray coating apparatus. The holder includes a body of electrically insulative material having an aperture adapted to receive the nozzle, forwardly extending means formed in the body and an electrode carried by the means. The electrode terminates prior to the termination point of any of the forwardly extending means and is at an angle with respect to the axis of the aperture in the body adapted to receive the nozzle.

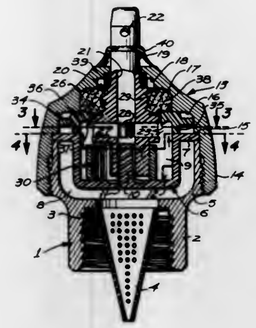
3,677,471
APPARATUS AND PROCESS THEREOF FOR COATING WITH POLYTETRAFLUOROETHYLENE AND OTHER MATERIALS
Stanley Thomas Deakin, Portsmouth, England, assignor to Sealectro Corporation, Mamaroneck, N.Y.
Division of Ser. No. 507,504, Nov. 12, 1965, abandoned. This application March 1, 1971, Ser. No. 119,850
Int. Cl. B44d 3/60
U.S. Cl. 239—85 5 Claims



An apparatus and method thereof are described for coating surfaces with a continuous unitary film of polytetrafluoroethylene (PTFE) by spraying a heated stream of particles from a spray gun. The gun includes a heating means such as an electrical resistance unit, a mixing chamber where gas and preferably inert gas is mixed with the particles, and means for directing a stream of gas through the gun to force the heated particles onto the surface to be coated. Obviously, other plastic materials may be used at their appropriate melting temperatures.

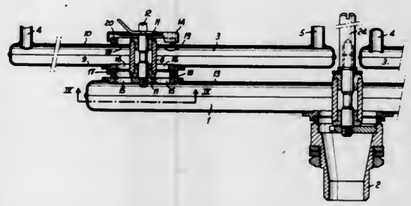
3,677,472
ROTARY SPRINKLER
Dennis L. Hart, Hacienda Hieghts, and Robert A. Howery, Covina, both of Calif., assignors to Raid Bird Sprinkler Mfg. Corp., Glendora, Calif.
Filed Oct. 15, 1970, Ser. No. 81,035
Int. Cl. B05b 3/04
U.S. Cl. 239—230 8 Claims

A rotary sprinkler including a tubular rotor having impact lobes and a surrounding impact ring, contained in a motor chamber into which water is admitted in a manner to produce a swirling action thereby to cause rotation of the impact ring. The lower end of the rotor fits an upstanding journal pin provided with grooves permitting the flushing of particles carried in the water. A thrust bearing is provided at the upper portion of the rotor and a labyrinth packing aided by a deflector ring



prevents entrance of particles into the bearing. Water exits from the motor chamber above the motor and below the deflector ring through passageways which tend to neutralize the swirling movement of the water.

3,677,473
SPRAYING ROTOR FOR A DISH WASHING MACHINE OR AN INDUSTRIAL GLASSWARE WASHING MACHINE
James Frank Belaieff, Collonge-Bellerive, Switzerland, assignor to Frame S.A., Fribourg, Switzerland
Filed Dec. 21, 1970, Ser. No. 100,273
Claims priority, application Switzerland, Jan. 29, 1970, 1247/70
Int. Cl. B05b 3/06
U.S. Cl. 239—251 9 Claims



The invention concerns a spraying rotor for an industrial glassware washing machine, characterized by the fact that it comprises a main arm pivoted along its transverse symmetry axis, provided with a propulsion nozzle. Said main arm carries at each of its ends a rotatable injector that is mounted on the main arm by means of a push compensation device. Thus in working, the injector revolves freely and is not subjected to axial forces.

3,677,474
ADJUSTABLE LIQUID DISCHARGE JET
Walter C. Lorenzen, Hacienda Heights, Calif., assignor to Ansen Products, Inc., Arcadia, Calif.
Filed May 6, 1970, Ser. No. 35,081
Int. Cl. B05b 15/08
U.S. Cl. 239—587 4 Claims

A housing adapted for enclosure in a pool wall has a chamber connecting between an inlet conduit and a discharge

jet tube mounted in a hollow ball retained by a face plate across the housing chamber. A spring biases a semispherical cup against the ball containing the discharge jet tube to secure the ball in movable sealing contact with a socket in the face

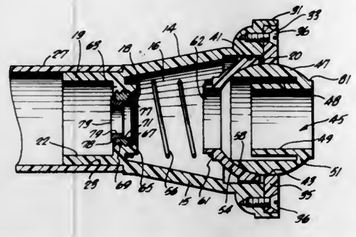
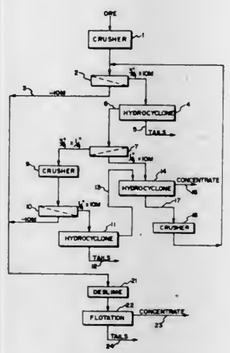


plate. Pressure on a protruding portion of the ball frees the ball for repositioning to redirect the jet tube. A threaded throat in the chamber receives bushings with varying orifices to change liquid flow from the jet tube.

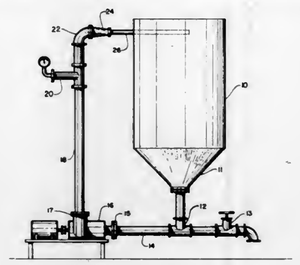
3,677,475
BENEFICIATION OF CLAY-CONTAINING SYLVINITE ORE
William B. Dancy, Lakeland, Fla., assignor to International Minerals & Chemical Corporation
Filed Oct. 2, 1970, Ser. No. 77,630
Int. Cl. B03b 7/00
U.S. Cl. 241—20 14 Claims



Coarse clay-containing sylvinite is subjected to gravity separation and the overflow is divided into two portions by sizing at about one-quarter inch. The finer fraction is subjected to a gravity separation to provide a sylvite product while the coarser fraction is crushed to minus about one-quarter inch and then subjected to gravity separation to provide a sylvite concentrate which is subjected to another gravity separation to provide a sylvite product.

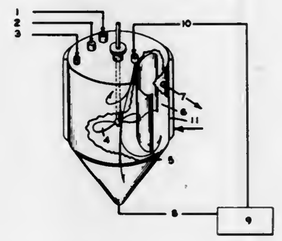
3,677,476
METHOD OF FINE-GRINDING
William L. Harned, Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed July 1, 1970, Ser. No. 51,478
Int. Cl. B02c 17/00
U.S. Cl. 241—21 4 Claims

A method of grinding particulate matter comprising passing a fluid mixture comprising particulate matter and grinding bodies of a size between about 60 and about 200 mesh in a fluid vehicle through an impeller rotating at a speed to impart kinetic energy to said fluid mixture sufficient to achieve grinding. Preferably, particulate matter is ground to a size from about 0.5 to about 1.5 microns by circulating a fluid mixture



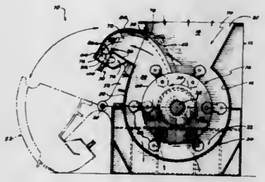
comprising particulate matter to be ground and annealed glass grinding bodies of a size between about 60 and about 200 mesh in a fluid vehicle through an impeller of a centrifugal pump, the impeller rotating at a peripheral speed of at least 3,000 ft/min.

3,677,477
APPARATUS FOR PREPARING DISPERSIONS OF FINELY-DIVIDED ALKALI METAL
Lloyd M. Watson, and William R. Birchall, both of Cincinnati, Ohio, assignors to National Distillers and Chemical Corporation, New York, N.Y.
Division of Ser. No. 667,023, Aug. 18, 1967, Pat. No. 3,580,860. This application June 1, 1970, Ser. No. 54,075
Int. Cl. B02c 11/06
U.S. Cl. 241—31 5 Claims



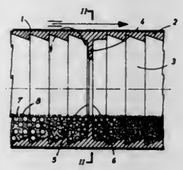
Apparatus for preparing dispersions of finely divided alkali metal substantially uniform in alkali metal concentration and having a narrow particle size below a predetermined median, said apparatus comprising a mixing tank divided by a vertically disposed baffle into a mixing zone and a substantially smaller quiescent, settling zone. Molten sodium feed and a dispersing aid mixture is agitated within said mixing zone in an inert gas blanket and alkali metal particles gravitate through the settling zone to the bottom of the mixing tank at which point the mixture containing said particles is drawn off in a continuous operation and passed to an homogenizer providing a high shear dispersion zone wherein the metallic particles are reduced in size and the mixture is returned to the mixing tank. Through repeated recirculation, such metallic particles as become reduced in size to the predetermined median size desired rise to the top of the quiescent, settling zone at which point the desired uniform dispersion containing only fine metallic particles within a closely controlled range is withdrawn.

3,677,478
METAL TRAP FOR HAMMER MILLS OR THE LIKE
Harry D. Schutte, Williamsville, N.Y., assignor to Schutte Pulverizer Co., Inc., Buffalo, N.Y.
Filed Nov. 19, 1970, Ser. No. 91,108
Int. Cl. B02c *13/06, 13/282*
U.S. Cl. 241—82 5 Claims



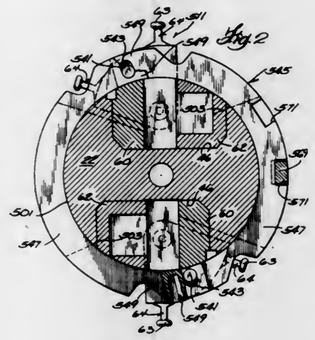
A trap for foreign objects, such as tramp metal, introduced into a hammer mill or the like having impact hammers supported within a mill cavity for rotational movement about a generally horizontal axis. The trap is characterized as being supported exteriorally of the mill cavity on a mill cavity access door and as being arranged in communication with the mill cavity through an access door defined opening disposed adjacent an inlet opening of the cavity. The trap is formed with a receiving chamber, a smoothly curved top wall plate extending from an upper edge of the trap opening for directing objects propelled therethrough by the impact hammers downwardly into the receiving chamber, a retaining plate extending from a lower edge of the trap opening in overlying relation to the receiving chamber for retaining objects collected therein, and a door bounding the receiving chamber for affording access to the collected objects.

3,677,479
AUTOMATIC GRADING LININGS FOR CYLINDRICAL TUBE OR SIMILAR MILLS
Pierre Arsene Siegten, 158 Ave. du Prince d'Orange, 1180 Brussels, Belgium
Filed July 28, 1970, Ser. No. 58,962
Claims priority, application Belgium, July 31, 1969, 736,856
Int. Cl. B02c *17/22*
U.S. Cl. 241—183 7 Claims



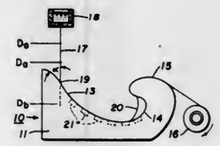
The invention relates to an automatic grading lining for a cylindrical tube or a similar mill, the inner surface in the mill bounding a series of trunco-conical volumes which are flared towards the mill entry and which lining further comprises one or more diaphragms having a central aperture of smaller diameter than the narrowest diameter portions of the trunco-conical volumes and being disposed in a plane substantially perpendicular to the mill axis.

3,677,480
DOUBLE NEEDLE WINDING HEAD
Robert L. Schanke, Muskego, Wis., assignor to Lincoln Tool & Manufacturing Co., Milwaukee, Wis.
Filed June 15, 1970, Ser. No. 46,274
Int. Cl. H02k *15/09*
U.S. Cl. 242—1.1 R 5 Claims



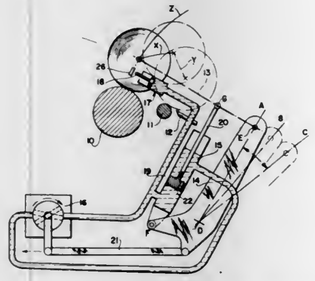
Disclosed herein is a winding head having a needle assembly which is mounted on a housing for movement between first and second positions and which includes first and second needles located in spaced relation to each other such, that when the needle assembly is in the first position, one of the needles extends from the housing and the other needle is retracted and such that, when the needle assembly is in the second position, the other needle extends from the housing and the one needle is retracted. Also included in the winding head is means for displacing the needle assembly between the first and second positions and means for releasably and selectively locking the needle assembly in either of the first and second positions.

3,677,481
METHOD AND APPARATUS FOR TAKING UP FIBER
David J. Haley, Durham; Robert E. Cunningham, and Wilbur J. Privott, Jr., both of Raleigh, all of N.C., assignors to Monsanto Company, St. Louis, Mo.
Filed June 9, 1970, Ser. No. 44,821
Int. Cl. B65h *54/00*
U.S. Cl. 242—18 R 17 Claims



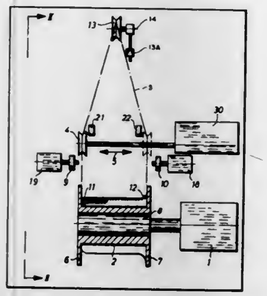
An in-line take-up apparatus and process isolate the tensional forces needed in a fiber for good packaging about a wind-up member from the portion of a fiber having very low tensile strength which occurs immediately after extrusion.

3,677,482
WINDING MACHINE
John McKenzie, Whitefield, England, assignor to Leesona Limited
Filed Nov. 18, 1969, Ser. No. 877,863
Claims priority, application Great Britain, Nov. 19, 1968, 54,737/68
Int. Cl. B65h *54/10, 63/00, 67/00*
U.S. Cl. 242—18 R 6 Claims



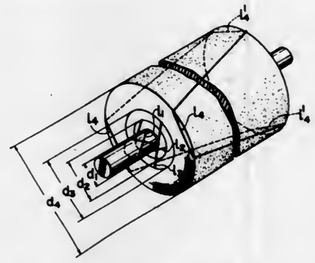
Braking mechanism for use with a winding machine is disclosed. The winding machine includes a package holder which is movable from a winding position to a displaced position upon interruption of the yarn being wound on the holder. As the package holder shifts to its displaced position a hydraulic push rod is extended to actuate a package holder brake located interiorly of the package holder thereby arresting rotation of the package holder and the yarn thereon.

3,677,483
APPARATUS FOR WINDING WIRE AND THE LIKE
Werner Henrich, 6349 Horbach (Dillkreis), am Wachtgipfel, Germany
Filed Feb. 4, 1970, Ser. No. 8,523
Claims priority, application Germany, Sept. 12, 1969, P 19 46 220.5
Int. Cl. B65h *54/02, 54/28*
U.S. Cl. 242—25 R 6 Claims



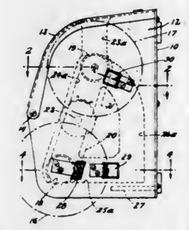
A wire winding apparatus reciprocates a wire along the length of a drum so that wire is wound around the drum in uniform layers. The limits of reciprocation of the wire are controlled by limit switches whose positions are adjusted in response to the tension of the wire just before it is reciprocated. Before being reciprocated, the wire passes over a pivotally mounted counterbalanced pulley with the pivotal movement of the pulley, in response to the tension of the wire, controlling a mechanism for adjusting the limit switches to obtain uniform layers of wire around the drum.

3,677,484
METHOD FOR WINDING UP A THIN LAYER MATERIAL HAVING A BROAD WIDTH
Masahide Yazawa, and Haruhisa Tani, both of Tokyo, Japan, assignors to Polymer Processing Research Institute Ltd., Tokyo, Japan
Filed Oct. 8, 1970, Ser. No. 79,091
Claims priority, application Japan, Dec. 9, 1969, 44/99208
Int. Cl. B65h *75/00*
U.S. Cl. 242—54 R 1 Claim



A thin layer material having a large width can be wound up around a winding core by continuously supplying and inserting an elongated continuous yarn-like material, which traverses the thin layer material, in between one wound layer and another to leave a clearance along the inserted yarn-like material. Irregularities in thickness of the thin layer material are absorbed into the clearance, whereby a long length of wide thin layer material can be wound up into a cylindrical form of larger diameter. Further, by making a width to which the yarn-like material is extended, when supplied by reciprocatingly traversing the layer material, larger than the width of the wound thin layer material, and thus supplying the yarn-like material beyond both the edge parts of the thin layer material, the greater portion of thus supplied yarn-like material can be formed into almost wound at first and then arc chords at both the side faces of the wound cylindrical roll of the thin layer material, and the resulting chords cover the side surfaces of the woundup cylindrical roll of the layer material, whereby the side faces of the wound roll are protected through a large number of the yarn-like materials forming said arc chords, and at the same time, deformation, such as telescoping of the wound thin layer material can be prevented, even when loosely wound up and also the successive unwinding can be easily assured.

3,677,485
PAPER ROLL DISPENSER
Coleman David Berg, Philadelphia, Pa., assignor to Fleck Industries, Inc., Willow Grove, Pa.
Filed Aug. 19, 1970, Ser. No. 64,960
Int. Cl. B65h *19/04*
U.S. Cl. 242—55.3 13 Claims



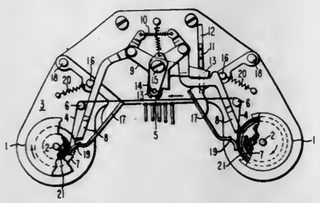
A paper roll dispenser adapted to sequentially dispense paper from a plurality of paper rolls and including a pair of roll

mounting spindles having interconnecting linkage for positioning the spindles in spaced parallel relation, and mounting means for the spindles including guiding means providing for sequential movement of the paper rolls to a dispensing station.

ERRATUM

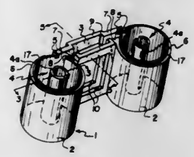
For Class 242—56 see:
Patent No. 3,677,505

3,677,486
UNIFORM RIBBON FEED APPARATUS
Campbell Findlay, Dumbarton, Scotland, assignor to Burroughs Corporation, Detroit, Mich.
Filed Dec. 1, 1970, Ser. No. 94,108
Claims priority, application Great Britain, May 1, 1970, 21,168/70
Int. Cl. B65h *17/02*; B41j *33/14*
U.S. Cl. 242—67.4 **6 Claims**



A ribbon feeding apparatus having a ratcheted ribbon spool engageable by a reciprocating pawl to incrementally rotate the ribbon spool. A camming lug operatively coupling the pawl and responsive to the diameter of the ribbon on the spool inversely varies the increment of angular engagement of the pawl with the ratchet wheel as the ribbon diameter increases, thus effecting uniform ribbon feed.

3,677,487
APPARATUS FOR STORING STRIP MATERIAL
Frederick G. Knowles, Rochester, and Clarence R. Taylor, Penfield, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Feb. 3, 1970, Ser. No. 8,267
Int. Cl. G03b *1/04, 23/04*
U.S. Cl. 242—71.2 **4 Claims**



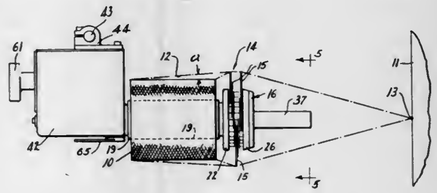
Strip storage apparatus is disclosed for use in a film viewer, which includes two storage chambers and is open on one end to allow rapid insertion of two film take-up members on shafts disposed in the chambers. In one aspect of the invention, the take-up members have a slot therein and are rotatably held in the storage apparatus and rotatably coupled to the shaft by means of a fastening member inserted in the slot of each take-up member. In a second aspect of this invention, the take-up member includes a flange or cover portion for closing the chamber when the take-up member is disposed therein. A keyway on the end of each take-up member may be engaged by suitable drive means in the viewer to selectively rotate one of the take-up members.

3,677,488
TRIM AND DAMPING CYLINDER
Wilfred E. Boehringer, Fullerton, Calif., assignor to McDonnell Douglas Corporation
Filed Feb. 16, 1971, Ser. No. 115,229
Int. Cl. B64c *25/34*
U.S. Cl. 244—103 R **15 Claims**



A centering and damping cylinder which includes a primary piston for damping and a secondary piston for trim, each piston being of the differential area type and slidable within an internally stepped cylinder housing. In addition to a damping orifice in the primary piston, an internal relief valve may be provided within the cylinder for relieving pressure when the damping orifice cannot handle the required damping flow rate.

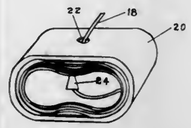
3,677,489
GUIDE FOR UNWINDING THREAD FROM A PACKAGE
George R. Dilling, Rockford, Ill., assignor to Barber-Colman Company, Rockford, Ill.
Filed Sept. 14, 1970, Ser. No. 71,746
Int. Cl. B65h *49/00*
U.S. Cl. 242—129.72 **9 Claims**



A generally circular, collapsible guide over which thread is drawn as it is unwound from a package for use in a loom or the like. The guide is collapsed progressively so that its diameter substantially retains a preselected relationship with the decreasing diameter of the package to reduce the possibility of thread sloughing on the package and to reduce various tension problems, especially in the case of cylindrical packages. The guide includes curved fingers which swing in to achieve the collapsing of the guide.

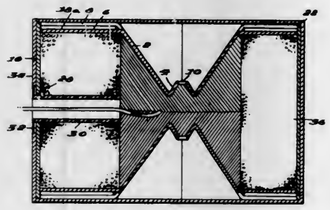
3,677,490
PACKAGE OF FLEXIBLE MATERIAL
William F. Gordon, Yonkers, and James W. Newman, Scarsdale, both of N.Y., assignors to Windings, Inc., Yonkers, N.Y.
Continuation-in-part of Ser. Nos. 709,305, Feb. 29, 1968, abandoned, and Ser. No. 18,780, March 2, 1970. This application July 16, 1970, Ser. No. 55,407
Int. Cl. B65h *55/02*
U.S. Cl. 242—163 **14 Claims**

A package of flexible material is produced by a winding in the nature of a universal wind on a spindle of oblong shape, or by winding a package on a cylindrical spindle and thereafter compressing the package in a direction transverse to the spindle axis into an oval shape. A radial hole is built into the package, preferably substantially at one of the sides of the oblong, and the flexible material is fed out from the interior of the package through this hole by means of a payout tube inserted in the hole and extending into the central interior of the package where it flares outwardly. The completed package, if wound on a mandrel having flat sides, while the guide and the spindle maintain constant speeds, will be thicker in the elongated sides than in the substantially semi-edge portions because the cross-overs in the end portions are spaced further



apart than in the side portions. Thus when one or both of the side walls are flattened, as by insertion in a container, the flattened side wall portions push inwardly so that the interior walls of the axial space are closer together at the center than at the sides. By driving the spindle at a suitable variable speed, the cross-overs can be spaced evenly around the package and the thickening of the longer sides is avoided.

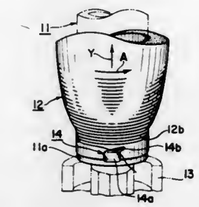
3,677,491
BOX WITH INWARDLY TAPERING GUIDE CONES FOR UNIVERSAL WIND PACKAGE WITH RADIAL PAY-OUT
Jeffrey C. Gerwig, Yonkers, N.Y., assignor to Windings, Inc., Yonkers, N.Y.
Filed Oct. 9, 1970, Ser. No. 79,455
Int. Cl. B65h *55/00*
U.S. Cl. 242—163 **7 Claims**



A package for a wind of flexible material wound with a universal wind but having a radial opening into the axial opening through which the inner end of the material is brought out is enclosed in a box having end-forming flaps hinged about axes perpendicular to the axial opening of the wind. The coils being pulled off of the interior of the wind are controlled by inwardly tapering members, such as truncated pyramids, projecting inwardly from the end walls. These pyramids are formed by the folding of a blank of cardboard, which has extending flaps which are interengaged with the end flaps of the box to hold the pyramids in position.

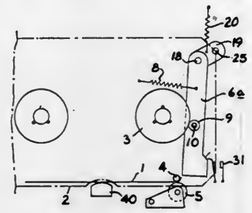
3,677,492
BOBBING WINDING
Haruo Ueda; Masanao Sugi, and Hiroshi Chayamichi, all of Nobeoka, Japan, assignors to Asashi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan
Filed July 16, 1970, Ser. No. 55,302
Claims priority, application Japan, Jan. 23, 1970, 45/5722
Int. Cl. B65h *55/00*
U.S. Cl. 242—164 **1 Claim**

This invention relates to a bobbin structure, bearing an adhesively stuck tab having an adhesive-bearing main part and at least a non-adhesive-bearing flap. The improvement resides in that said flap is formed laterally of said main part and a rounded leading nose is formed on said flap in an inclined and



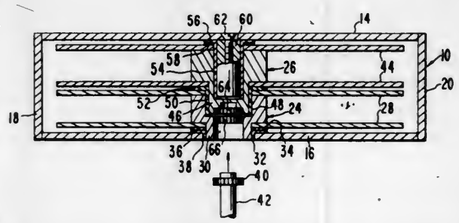
axially projecting way, the critical zone between said adhesive-bearing main part and the flap free of adhesive directing substantially circumferentially of the bobbin.

3,677,493
AUTOMATIC STOP MECHANISM FOR A RECORDER USING MAGNETIC TAPE STORED IN A CASSETTE
Marcel Jules Helene Staar, Brussels, Belgium, assignor to Staar Development Co., Brussels, Belgium
Filed Feb. 16, 1971, Ser. No. 115,199
Claims priority, application Belgium, Feb. 13, 1970, 745964
Int. Cl. B65h *59/38*; G03b *1/02*; G11b *15/13*
U.S. Cl. 242—191 **9 Claims**



A take-up reel drive control for tape recorders incorporating an automatic shut-off feature which utilizes the same motive force that drives the take up reel for actuating the automatic shut-off mechanism. Additionally, the same motive force can be used to bring the recording-playback elements, such as the payback head, into their inoperative position.

3,677,494
TAPE CARTRIDGE CONSTRUCTION
Arthur I. Protas, Cupertino, Calif., assignor to Cartridge Television, Inc., New York, N.Y.
Filed Dec. 8, 1969, Ser. No. 883,084
Int. Cl. G03b *1/04*; G11b *15/32*
U.S. Cl. 242—194 **21 Claims**



A reel-over-reel tape cartridge having a pair of axially aligned tape hubs and improved means for mounting the hubs

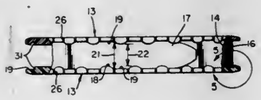
for rotation independently of each other within a cartridge housing. One hub has a tubular extension permitting it to be rotatably mounted on one wall member of the housing and the other hub has an extension and a tubular body to permit it to be rotatably mounted on the one hub and on a second wall member of the cartridge housing. The hubs are formed to permit a rotatable drive member to be alternately coupled thereto to cause rotation thereof in the same direction to avoid the need for a reversible drive means for the hubs. The cartridge can be provided with a removable reel having a tape which mates with a tape leader attached to a rotatable hub in the cartridge for receiving the tape of the removable reel. The removable reel feature can also be used with a cartridge having the reels side by side with each other.

3,677,495

TAPE RETAINING REEL CARTRIDGE

Walter H. Villers, Chicago, and Ernest B. Johnson, Niles, both of Ill., assignors to Ampex Corporation, Redwood City, Calif.

Filed March 5, 1971, Ser. No. 121,503
Int. Cl. G11b *23/10*
U.S. Cl. 242—197 **10 Claims**



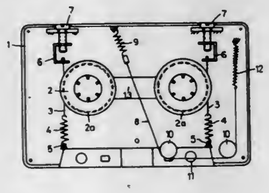
A tape retaining reel cartridge, of the type including a hub and two side flanges, has spaced lips at the periphery of each flange to retain a leader attached to tape that is wound upon the hub. The lips are staggered so that the lips of one flange axially confront the spaces between the lips of the other flange. In one embodiment the flanges have radial cuts between the lips and spaces so that the lips can flex when the leader is tripped off the reel. The tape is narrower than the leader and passes freely between the lips. The lip sectors of the flanges are relieved to increase flexibility. The flanges are formed with circumferential ledges to hold the leader axially outwardly, and portions of the flanges between the ledges and the lips are formed to sloping shape to urge the leader radially inwardly. In another embodiment, the reel is mounted inside a housing, with a stripper for the leader that permits stripping only when the housing is mounted on a suitable transport mechanism.

3,677,496

TAPE TENSION CHECKING DEVICE FOR CASSETTE RECORDERS

Siegfried Apitz, Pforzheim, Germany, assignor to International Standard Electric Corporation, New York, N.Y.

Filed April 15, 1970, Ser. No. 28,886
Claims priority, application Germany, April 16, 1969, P 19 19 371.6
Int. Cl. G03b *1/04*; G11b *15/32, 23/04*
U.S. Cl. 242—199 **3 Claims**



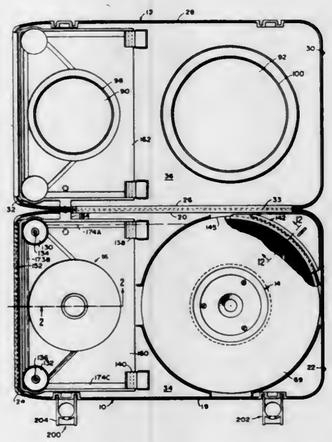
This invention relates to a tape tension checking device for cassette type tape recorders. The torques to be measured are simulated by limiting-force clutches which are accommodated in a tape cassette (cartridge). From either the rotation of the simulated tape spools, or the standstill thereof it can be immediately determined whether there exists the necessary tape tension or torque respectively.

3,677,497

TAPE CARTRIDGE MECHANISM FOR COMPUTER

Alan B. Lowry, Canton; Gregory Mathus, Cambridge, both of Mass., and Leon Staciokas, Lionville, Pa., assignors to Data Packaging Corporation, Cambridge, Mass. and Digital Information Devices, Inc., Norristown, Pa.

Filed June 8, 1970, Ser. No. 44,112
Int. Cl. G03b *1/04*; G11b *15/32, 23/04*
U.S. Cl. 242—199 **20 Claims**



A cartridge having a stabilizer system for standard IBM-type computer tape reels that may be placed in the cartridge for recording and subsequently be removed from the cartridge for use on a computer. A separate take-up reel is provided in the cartridge onto which the tape is wound. Each reel is movable axially and laterally in the cartridge and can be engaged by external drive spindles.

3,677,498

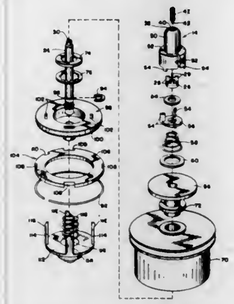
SPINDLE ASSEMBLY FOR WEB HANDLING APPARATUS

Robert B. Johnson, and Thomas G. Kira, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed March 1, 1971, Ser. No. 119,693
Int. Cl. B11b *15/32*; G03b *1/04*
U.S. Cl. 242—207 **10 Claims**

A spindle assembly for use in a web handling apparatus is selectively adjustable to establish between a drive member for a roll of web material and a power input member either a weight responsive, friction drive connection or a direct coupled connection. The axis of rotation of the spindle assembly

is movable relative to the web handling apparatus to selectively position the spindle assembly at different ones of predetermined positions for supporting rolls of various capacities of web material.

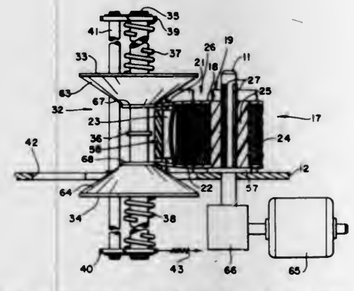


3,677,499

APPARATUS FOR FEEDING STRIP MATERIAL OF DIFFERENT WIDTHS

Elmer O. Wangerin, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 29, 1971, Ser. No. 110,915
Int. Cl. G11b *15/66, 15/32*
U.S. Cl. 242—210 **14 Claims**



Strip feeding apparatus of the kind in which a pair of opposed rollers successively flex toward each other opposed regions of the flange members of a rotating reel as those regions are respectively rotated past the rollers, includes a pair of flange-flexing rollers which are movable relative to each other to vary the distance therebetween and thereby provide flexing engagement selectively with reels of different flange member spacing.

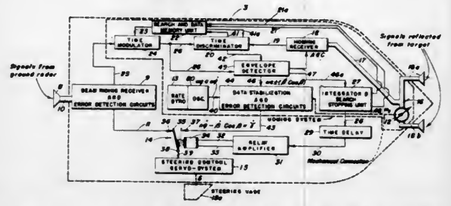
3,677,500

SCANNING INTERFEROMETER-BEAM RIDER GUIDANCE SYSTEM

Carl W. Brown; Allen B. Reppert, and Billy D. Dobbins, all of Silver Spring, Md., assignors to The United States of America as represented by the Secretary of the Navy

Filed Nov. 10, 1952, Ser. No. 319,624
Int. Cl. F41g *7/18*
U.S. Cl. 244—3.13 **20 Claims**

1. A missile guidance system including, in combination with a missile and a source of electromagnetic energy, said source being remote from the missile and projecting a guiding beam, means for maintaining the missile in and under the control of said beam, said means including an antenna mounted on the missile and a receiver connected to the antenna, a steering vane on the missile, a servo for controlling the vane, said servo being responsive to signals entering the receiver through the antenna from the beam, switching means between the receiver



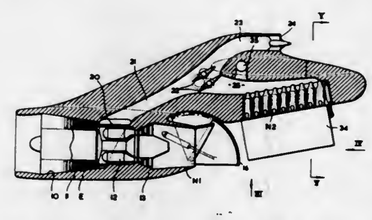
and the servo, means in the missile for searching for a target, and means controlled by said last mentioned means and operable in response to a signal reflected from an acquired target for actuating said switching means whereby operation of the servo will be transferred from the first-mentioned means to the reflected-signal operated means for controlling the vane for guiding the missile into the target.

3,677,501

JET PROPULSION POWER PLANT

Ralph Murch Denning, Bristol, England, assignor to Rolls-Royce Limited

Filed March 9, 1970, Ser. No. 17,852
Claims priority, application Great Britain, March 8, 1969, 12,338/69; March 8, 1969, 12,339/69
Int. Cl. B64c *15/06, 15/14*
U.S. Cl. 244—12 B **6 Claims**



This disclosure pertains to a jet propulsion power plant comprising a gas turbine engine having a first exhaust nozzle whose noise level is kept low by a relatively low pressure/area ratio at the nozzle, and having a plurality of second exhaust nozzles whose noise level is kept low by a pressure/area ratio of the individual nozzles which is sufficiently high to cause the peak of the noise spectrum to be of ultrasonic frequency.

3,677,502

SUPERSONIC AIRCRAFT

Andrei Nikolaevich Tupolev, Leninsky prospekt, 14; Alexei Andreevich Tupolev, ulitsa Stanislavskogo, 15, kv. 25; Georgy Alexeevich Cheremukhin, Krasnokazarmennaya, 9, kv. 174; Valentin Ivanovich Bilzajuk, ulitsa 11 Parkovaya, 37, korpus 3, kv. 46, all of Moscow; Alexandr Leonidovich Pukhov, ulitsa Gagarina, 35, kv. 47, Zhukovsky Moskovskoi oblasti; Georgy Petrovich Svischev, ulitsa Kirova, 40a, kv. 26; Georgy Sergeevich Bjushgens, ulitsa Suvorovskaya, I/2, kv. 26, both of Moscow, and Vitaly Georgievich Mikeladze, ulitsa Mayakovskogo, 17, kv. 20, Zhukovsky Moskovskoi oblasti, all of U.S.S.R.

Filed March 10, 1970, Ser. No. 18,049
Claims priority, application U.S.S.R., March 10, 1969, 1348853; March 10, 1969, 1348854
Int. Cl. B64c *1/00*
U.S. Cl. 244—13 **2 Claims**

A supersonic aircraft particularly for use under the conditions of an endurance flight at supersonic speeds in which the

fuselage is provided with a delta wing having engines mounted under the middle portion thereof and with a tail portion disposed behind the wing. The cross section of the aircraft tail portion is convex along its whole length, with the tail portion



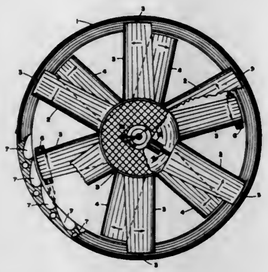
proper being somewhat raised with respect to the wing from its bottom to the end to preclude the contact thereof with the gas stream exhausted from the engines and the nose portion has substantially improved properties of reflecting heat rays.

3,677,503

REACTION--IMPULSE--COUNTERROTATING--AIRFOIL

Carlos A. Freeman, Jr., P.O. Box 135, Snow Hill, Md.

Filed July 31, 1968, Ser. No. 749,112
Int. Cl. B64c *29/00*
U.S. Cl. 244—23 **15 Claims**



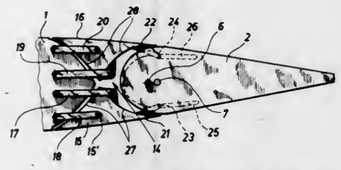
This invention relates to a self-contained flight machine that may function in and of itself as an aircraft or that may form a part or all of the lift and/or propulsion element or elements of an aircraft. The invention consists of two separate airfoil systems, each borne upon and radially extending in the horizontal plane from a concentrically located shaft, about which they are driven in rotation and counterrotation by the reaction of two or more propulsion engines mounted upon the radial extremity of the airfoils of one of the systems; the exhaust impulse of the aforesaid engines is employed to drive the other airfoil system in counterrotation, thusly constituting an impulse reaction drive system. The drive is encompassed by an aerodynamic duct borne upon the radial extremity of the airfoils of the counterrotation system. This ducting, or collar, provides for the mounting of the deflection vanes that receive the impulse from the reaction engines, as well as ducting the airflow resultant from the combined thrust of the airfoil systems and the exhausted gases of combustion through the craft in a manner similar to that of fan or propeller driven aerodynamic ducts. A control, passenger and/or payload platform is affixed to the aforesaid concentric shaft. The aircraft takes off vertically and means are provided to cant the unit so as to travel and maneuver in the horizontal plane.

3,677,504

CONTROL FLAP ARRANGEMENT

Hans-Jurgen Schwarzler, Munich, Germany, assignor to Vereinigte Flugtechnische Werke-Fokker Gesellschaft mit beschrankter Haftung, Bremen, Germany

Filed Aug. 25, 1970, Ser. No. 66,784
Claims priority, application Germany, Aug. 28, 1969, P 19 43 680.7
Int. Cl. B64c *9/18*
U.S. Cl. 244—42 CC **4 Claims**



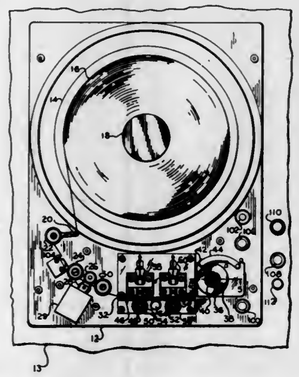
A control flap arrangement for an airfoil of an aircraft has a control flap with a nose surface defined by a center of curvature. The control flap is mounted to the airfoil for pivoting movement with respect thereto, and is actuated by a fluid piston-cylinder device which is connected to the airfoil and to the control flap at a point offset from the pivot point thereof. Cover members are mounted in the slot formed between the control flap and the airfoil in such a manner that when the control flap is pivoted with respect to the airfoil the respective one of the cover members arranged in the slot on the side to which the control flap is pivoting will move away from the airfoil to divert air through the slot and the control flap will move away from the other device to form the slot.

3,677,505

TAPE WINDING MECHANISM

George Van Taylor, Indianapolis, Ind., assignor to RCA Corporation

Filed Aug. 10, 1970, Ser. No. 62,474
Int. Cl. B65h *19/20*
U.S. Cl. 242—56 R **25 Claims**



A tape winding machine includes a supply reel of tape having a portion which is to be transferred to two hubs. The tape is unwound from the supply reel and is wound onto one of the hubs which is mounted on a rotatably driven spindle. The spindle is driven by a motor through a clutch. The other hub is mounted on a stationary spindle adjacent a staking mechanism. The staking mechanism stakes the tape to the second hub while the tape is in motion. The staking causes the clutch to slip and thereby abruptly terminate the rotation of the first hub.

ERRATUM

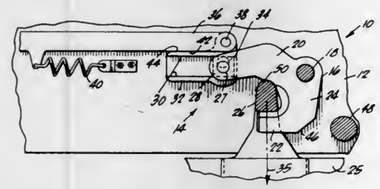
For Class 244—103 see:
Patent No. 3,677,488

3,677,506

STORE RACK HOOK ASSEMBLY

Emmett T. La Roe, Los Angeles, Calif., assignor to McDonnel Douglas Corporation

Filed Nov. 23, 1970, Ser. No. 91,930
Int. Cl. B64c *1/22*
U.S. Cl. 244—137 **13 Claims**



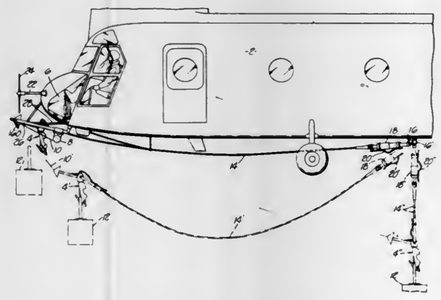
A hook assembly for supporting a bomb or other type store to a carrying vehicle such as an aircraft. The store hook of the assembly is supported at pivots on opposite sides of its store lug engaging portion to distribute the load applied thereto. The assembly includes a cam which when rotated allows movement of one of the hook supports so that the hook can rotate to disengage itself from the store lug.

3,677,507

TACTICAL CARGO HOOK

Giles Arthur Kendall, Tarzana, and Robert Minick, Glendale, both of Calif., assignors to Menasco Manufacturing Company, Burbank, Calif.

Division of Ser. No. 718,531, April 3, 1968, Pat. No. 3,608,948. This application July 23, 1970, Ser. No. 63,993
Int. Cl. B64c *1/22*
U.S. Cl. 244—137 **6 Claims**



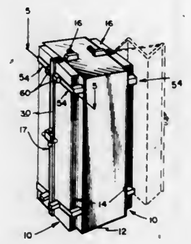
A cargo hook system having a drogue which may be supported on the nose of a helicopter; a cargo hook assembly and a probe supported from the cargo hook assembly, said cargo hook assembly having a hook movable from an open to a closed position, and means to maintain the hook in an unloaded condition in a direction facing toward the probe, means to position the hook in any desired direction when supporting a load, means to open and close the hook, means to lock the hook in its closed position when loaded, and latch means to prevent removal of a load from said hook in its closed position; support means for the cargo hook assembly which may be connected to a helicopter at or near its center of mass; and means to guide the probe into the drogue, to maintain the probe in the drogue when the cargo hook assembly is not in use, and to release the probe from the drogue when the cargo hook assembly is in use. A cargo hook assembly having a support housing; a hook supported by the housing and being rotatable with respect thereto; the hook having an open and a closed position; means to open and close the hook; means to lock the hook in its closed position when supporting a load; means to bias the rotational direction of the hook to a predetermined position with respect to the support housing; means to position the hook in any desired rotational direction with respect to the support housing when supporting a load; and a latch means to prevent removal of a load from the hook in its closed position. A pick-up adaptor having a plurality of frame members connected pivotally in a sequential end-to-end relation; the end-most frame members connected to load support means; means biasing the frame members to maintain the unloaded adaptor in a collapsed condition in which one of the frame members having a curved and a straight portion has its straight portion in a substantially horizontal position to provide a target area for the engagement of a hook; the frame members forming an inverted V-frame structure when the adaptor is loaded, the load being supported by a hook which engages the horizontal straight portion of the said frame member having a curved portion, the hook sliding upwardly to the curved portion of the member as the adaptor forms an erect inverted V-frame structure under load conditions.

3,677,508

FOLDING DEPLOYABLE PANEL STRUCTURE HAVING ROLL-UP RETAINING SPRING FOR STOWAGE

Paul A. Dillard, Littleton, Colo., and Donald R. Baker, Lawndale, Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed Sept. 21, 1970, Ser. No. 73,884
Int. Cl. B64g *1/30*
U.S. Cl. 244—1 SS **9 Claims**



A deployable folding panel structure for a spacecraft solar array and other uses having a folding panel which is extendable from a folded stowed configuration to a flat unfolded deployed configuration, and self-coiling panel retaining springs which are held flat against the folded panel sections in stowed configuration to retain the panel sections firmly in position and are released at the start of deployment to roll up or coil by elastic strain energy to retracted positions wherein the springs clear the panel for extension to deployed configuration.

3,677,509

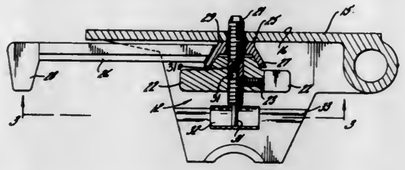
TIEDOWN DEVICE

Chadwell O'Connor, 3490 E. Foothill Boulevard, Pasadena, Calif.

Filed Aug. 31, 1970, Ser. No. 68,342
Int. Cl. F16m *11/08*
U.S. Cl. 248—187 **4 Claims**

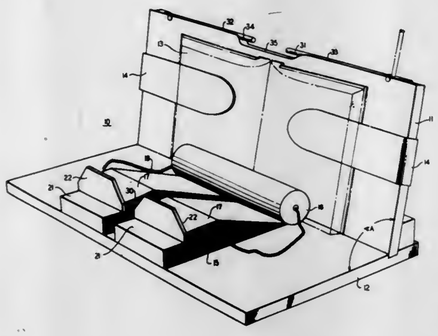
A lever operated locking device suitable for a camera-panhead assembly in which a manually rotatable camera tiedown

screw is supplemented by a bushing and locking lever interposed between the screwhead and the tripod mounting plate. Conical, mating clutch surfaces are provided between the screwhead and the bushing so that during loose engagement of



a camera the screwhead may be easily turned independently of the locking lever, with final tight locking or unlocking movement being accomplished by moving the locking lever through a small arc.

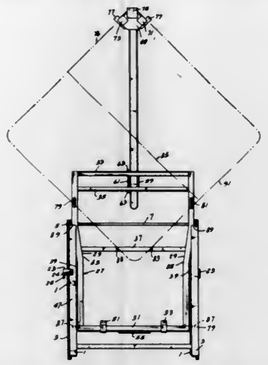
3,677,510
BOOK SUPPORT FOR THE PHYSICALLY INFIRM
Edward Albert Kenwell, 21 Meadowbrook Drive, Somerville, N.J.
Filed Jan. 11, 1971, Ser. No. 105,243
Int. Cl. A47b *23/04*
U.S. Cl. 248—441 **8 Claims**



Book supports are herein adapted for use by the physically infirm via the use of a lightweight roller which engages the pages of a book and keeps them from turning. The roller is secured to a ramp arrangement which is part of the margin support upon which a book sits. Only when the roller is at the top of the ramp, are the pages free to turn.

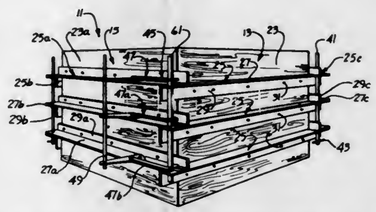
3,677,511
PORTABLE FOLDING WARNING SIGN STANDARD
Clarence C. Dicke, Downers Grove, Ill., assignor to Dicke Tool Company, Downers Grove, Ill.
Filed Dec. 15, 1970, Ser. No. 98,307
Int. Cl. G09f *19/00*
U.S. Cl. 248—448 **13 Claims**

A portable folding standard for supporting a sign has an A-frame pivoted at the top so that the legs can be collapsed into a folded position, bracing links pivoted to the A-frame which can be locked when the frame is in open position and folded alongside the frame when the frame is in closed position, a swinging frame pivoted to the top of the A-frame, balancing springs connected between the swinging frame and the A-frame, and a vertical mast, adaptable for elevation, carried on the swinging frame. The frame and mast are provided with



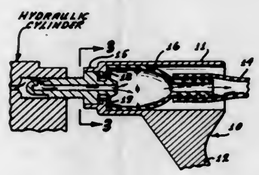
means for exhibiting a sign when the standard is in open position and for storing the sign when the standard is in folded or closed position.

3,677,512
PRE-FAB FORM FOR CONCRETE
Robert E. Thomas, 9581 Vons Drive, Garden Grove, Calif.
Filed July 27, 1970, Ser. No. 58,611
Int. Cl. E04q *13/02*
U.S. Cl. 249—48 **15 Claims**



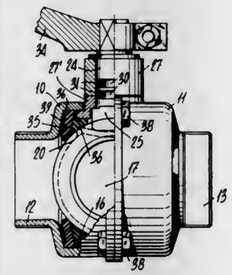
A pre-fab form for concrete comprising a plurality of walls pivotally interconnected and capable of being arranged to substantially circumscribe a region into which concrete can be poured. A lock mechanism releasably interconnects one pair of walls to permit selectively opening and closing of the form.

3,677,513
WRENCH WITH FLUID DRAINING PROVISION
Edward L. Truelove, 14836 Calahan St., Panorama City, Calif.
Filed Sept. 16, 1970, Ser. No. 72,645
Int. Cl. F16k *51/00*
U.S. Cl. 251—148 **2 Claims**



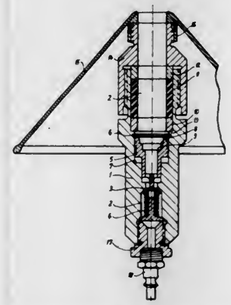
A wrench for removing drain plugs, opening or bleeding hydraulic valves or the like when fluid is released. The wrench is provided with an elongated tubular conduit continuous with the head of the wrench so that the released fluid enters the wrench and flows through the tubular conduit to a remote location for storage or disposal purposes.

3,677,514
BALL-VALVE
Vittorio Mencarelli, Viale Monza, 16, Milan, Italy
Filed Feb. 24, 1971, Ser. No. 118,347
Claims priority, application Italy, March 3, 1970, 21421 A/70; Feb. 11, 1971, 20418 A/71
Int. Cl. F16k *5/02*
U.S. Cl. 251—148 **17 Claims**



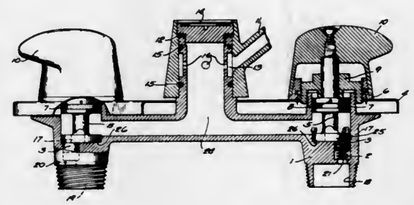
A ball valve of stamped plate, comprising a hollow valve body having fluid inlet and outlet, within said body a cylindrical band containing a hollow ball provided with two diametrically opposite apertures, said ball being rotatable according to an axis at right angles to the flow direction between open and closed positions, a ball control rod engaging said ball by its lower end and, in turn, being pivoted in a collar projecting from said cylindrical band, seals being interposed between said ball, cylindrical band and housing.

3,677,515
COUPLING FOR COMBUSTION TUBES
Edwin Eduard Fassler, Wibichstrasse 25, Zurich, Switzerland
Filed Nov. 16, 1970, Ser. No. 89,770
Claims priority, application Switzerland, Nov. 20, 1969, 17283/69
Int. Cl. F16l *37/28;* **F16k** *17/38*
U.S. Cl. 251—149.7 **6 Claims**



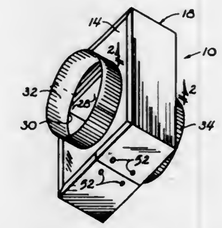
A coupling for connecting a thermal lance to an oxygen supply pipe having a casing with a valve therein held shut by a spring and the casing having an axial passage therein fitted with a pipe connection and a plunger therein slidable to open the valve, a clamping device is provided in the casing having at least one resilient ring-shaped member at that end of the hollow plunger which faces away from the valve and the clamping device adapted to receive the lance.

3,677,516
FAUCET.
Glenn W. Hicks, 2749 North 75th St., Milwaukee, Wis.
Filed March 16, 1970, Ser. No. 11,748
Int. Cl. F16k *3/08, 3/10*
U.S. Cl. 251—174 **13 Claims**



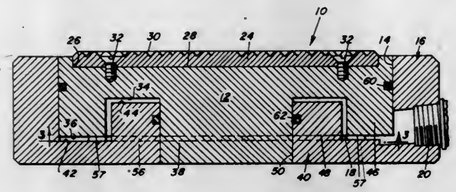
A faucet of the type for controlling the flow of fluids therethrough in which the rotational action of the faucet valve stem within the body of a faucet, together with limiting control of axial displacement of the valve stem, provides for control of fluid through the faucet, and wherein effective seal means between the valve stem and other fixed portions of the faucet are simplified and essentially free from wear, thereby eliminating the normal compression and wearing problems inherent in faucet construction.

3,677,517
WRAP-AROUND DAMPER FRAME
James R. Root, Independence, and Thomas D. Hill, Kansas City, Mo., assignors to Ruskin Manufacturing Company, Grandview, Mo.
Filed March 3, 1971, Ser. No. 120,650
Int. Cl. F16k *27/04;* **F24f** *13/08*
U.S. Cl. 251—366 **10 Claims**



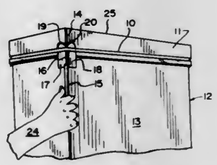
A damper comprises a housing which defines a control opening, and a foldable blade assembly disposed in the housing for selectively blocking the flow of fluid through the opening. The damper is adapted to be disposed in a fluid conduit, and a pair of planar members are disposed on either side of the housing, with each of the members being provided with a projecting flange which is of a configuration complemental to the configuration of the fluid conduit. An uninterrupted, unitary, U-shaped frame circumscribes the housing in gripping engagement with the planar members to provide a rigid damper assembly. The bight portion of the frame overlies the members with the housing sandwiched therebetween, and the leg portions of the frame form an angle of less than 90° with the bight portion to grip the members and present a rigid damper assembly.

3,677,518
HYDRAULIC JACK
Pieter Buys, Oldenzaal, Netherlands, assignor to Applied Power Industries, Inc., Milwaukee, Wis.
Filed Dec. 8, 1970, Ser. No. 96,131
Int. Cl. B66f 3/24
U.S. Cl. 254—93 R **4 Claims**



A short stroke hydraulic jack for lifting heavy loads. The jack comprises a piston and an open-ended cylinder of substantially equal length, which length is much greater than the length of the stroke of sad piston but much shorter than the respective diameter of the piston and cylinder. The piston is provided on one side with a load-bearing surface and on the other side with axially spaced concentric work surfaces and a centrally disposed shank. The cylinder has an end wall having a central opening therein for receiving said shank and axially spaced surfaces mating with the work surfaces of said piston whereby vertical surface-to-surface contact between the piston and cylinder is maintained in two radially spaced annular areas throughout the length of the stroke of the piston.

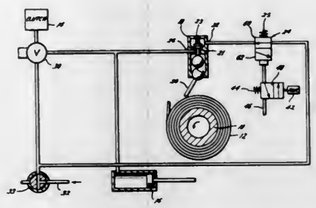
3,677,519
BAND REMOVER FOR CARTONS
Gerald E. Gast, Benton Harbor, Mich., assignor to Whirlpool Corporation
Filed Sept. 25, 1970, Ser. No. 75,418
Int. Cl. B66f 3/00
U.S. Cl. 254—131 **8 Claims**



A tool for removing a peripheral band from a yieldable carton having an outwardly projecting non-planar area traversed by the band adjacent to an end of the carton in which the tool has a wedge end of substantial width with a lateral contour similar to the contour of this non-planar area, a fulcrum portion adjacent the end of the tool about which the tool is rockable and a handle attached to the wedge end for prying the band relative to the carton both in removing the band and applying the band to the carton once the wedge end of the tool has been inserted between the band and the carton.

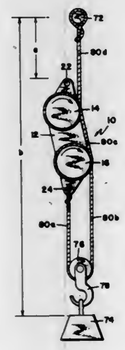
3,677,520
SAFETY APPARATUS FOR DRILLING RIG
Paul C. Koomey, Houston, Tex., assignor to C. Jim Stewart & Stevenson, Inc., Houston, Tex.
Filed Feb. 1, 1971, Ser. No. 111,477
Int. Cl. B66d 1/48
U.S. Cl. 254—173 **2 Claims**

In an apparatus for preventing the traveling block of a drilling rig from being drawn into the top of the rig and having a toggle valve engaging the cable on a cable drum to control the rig brake and rig clutch, a manual safety override which allows longer lengths of drill pipe, drill collars or other special tools to be handled. A relay air valve normally allowing the passage of air to the toggle valve inlet for automatic operation



but when actuated closing the air supply to the toggle valve and venting the air from the toggle inlet, and a manually actuated second air valve for actuating the relay valve with spring means normally holding the second valve in the closed position whereby the operator must constantly hold the second valve in order to override the toggle valve automatic control.

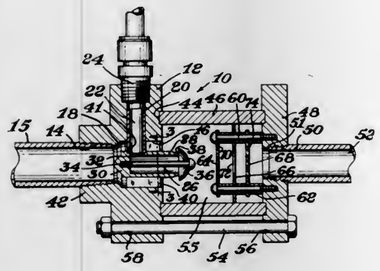
3,677,521
SELF-TAILING PORTABLE CAPSTAN
Roger Kinnicutt, Jr., 50 Berwick St., Worcester, Mass.
Filed March 13, 1970, Ser. No. 19,432
Int. Cl. B66d 1/26
U.S. Cl. 254—183 **3 Claims**



A self-tailing capstan for use in pulling and/or hoisting heavy loads or for tensioning lines, etc., includes a frame upon which first and second drums are rotatably mounted with their axes parallel. The first drum is rotatable in only one direction with reverse rotation being prevented typically by a ratchet and pawl assembly, while the second drum is freely rotatable in either direction. A detachable turning means such as a lever is provided the preferred embodiment of the invention to turn either drum as desired. In operation of the preferred embodiment, a flexible line is wrapped at least once around each drum. The length of line winding onto the two drums during hauling is defined as the "leading segment," and the length of line unwinding from the second drum is defined as the "tailing segment." The tailing segment always passes through a block attached either to the load or to a fixed anchor. The leading end of the line is attached to either the load or the anchor, except when the frame itself is anchored, in which case the leading end passes through a block and then is attached to a block or blocks through which one or more parts of the tailing segment is passed. The frictional grasp of the line wraps around the second drum is greater than that of the wraps around the first drum so that reverse rotation of the second drum may release line tension or lower the load without disengagement of the first drum's ratchet and pawl assembly.

In a modified form of the invention, a differential driving assembly is provided to rotate the two drums simultaneously but at different circumferential speeds. The modified form of the invention may be employed with an endless line reeving to achieve an extremely high mechanical advantage.

3,677,522
FEEDER STREAM MIXER
Paul Hargash, Saginaw, Mich., assignor to The Dow Chemical Company, Midland, Mich.
Filed Dec. 2, 1970, Ser. No. 94,346
Int. Cl. B01f 15/02
U.S. Cl. 259—4 **7 Claims**

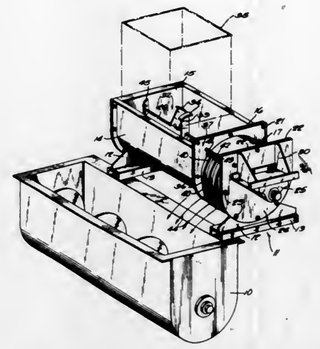


The invention relates to a device for dispersing, dissolving and/or mixing viscous materials which uses no power driven or moving parts. The device comprises an in-line chamber having an entry and exit end. There is an axially disposed baffled viscous material nozzle near the input and whereby the viscous material entering the chamber from said nozzle is sheared by solvent flow through the chamber. Baffle plates arrayed across the exit end result in turbulent flow and further mixing before the materials leave through the exit end.

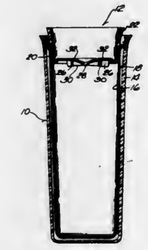
As the viscous material is pumped against an adjustable dished heat it emerges as a thin sheet which is sheared by the flow of solvents which flows through the sheet. Mixing is aided by turbulent flow in the device plus perforated baffle plates in the flow path through the device.

3,677,523
REBOUND PUG MILL
Nelson Hartley, Towson, Md., assignor to Hartley Controls Corporation, Neenah, Wis.
Continuation of Ser. No. 843,628, July 22, 1969, abandoned.
This application April 29, 1971, Ser. No. 138,634
Int. Cl. B01f 7/04
U.S. Cl. 259—69 **15 Claims**

A main pug mill or clay mixer has a rebound pug mill adjacent thereto. The rebound pug mill has a trough with an inlet for rebound material and an extruding head at the end of the trough with an outlet discharging into the main pug mill. Paddles in the trough comminute rebound material admitted through the inlet. Paddles in the extruding head extrude comminuted rebound material through the discharge outlet and into the main pug mill, thus to meter rebound material gradually into the main pug mill.



3,677,524
BEVERAGE CONTAINER
David Douglas, 1119 Lincoln Boulevard, Manitowoc, Wis.
Filed Sept. 29, 1970, Ser. No. 76,555
Int. Cl. A47j 43/27
U.S. Cl. 259—72 **2 Claims**

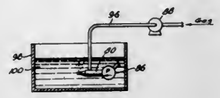


A beverage container including a container and a cover member therefor. A plurality of mixing vanes are formed integrally with the bottom face of the cover member and extend radially outwardly from a central hub portion to outer end portions. The vanes are tapered from a relatively narrow width at the hub portion to a greater width at the end portions. The vanes serve to impart a swirling action to liquid in the container when the container is moved rapidly up and down.

3,677,525
PRESSURE WAVE ATOMIZING APPARATUS
Robert E. Schurig, Maywood, and Joseph Korn, Fort Lee, both of N.J., assignors to Sonic Development Corporation of America, Yonkers, N.Y.
Continuation-in-part of Ser. No. 699,109, Jan. 19, 1968, abandoned. This application Dec. 31, 1969, Ser. No. 889,596
Int. Cl. B01f 3/04
U.S. Cl. 261—1 **2 Claims**

The liquid preferably is a body of liquid in a container. A liquid is forced through a converging-diverging nozzle towards a nearby resonator cavity, and the gas is introduced into the

flowing liquid before it reaches the cavity. Preferably, the nozzle and resonator cavity both are immersed in the body of



liquid. Intimate contact between the gas and liquid results from the tiny gas bubbles which are produced in the liquid body by this device and method.

3,677,526
CARBURETION DEVICES FOR INTERNAL COMBUSTION ENGINE

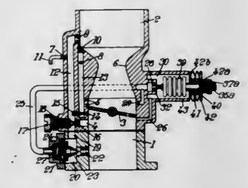
Michel Eugene Pierlot, Le Pecq, France, assignor to Societe Industrielle de Brevets et D'Etudes S. I. B. E., Neuilly-sur-Seine, France

Filed Feb. 26, 1970, Ser. No. 14,456

Claims priority, application France, March 3, 1969, 6905748; Sept. 30, 1969, 6933379

Int. Cl. F02m 7/22

U.S. Cl. 261—23 A **6 Claims**



The device has a main jet for normal operation and an idling circuit, both opening into the intake pipe and provided with calibrated orifices to adjust the richness of the air/fuel mixture. An adjustable throttle enables the idling mixture to be adjusted. The adjustable throttle can be bypassed through a passage to the mixing channel during deceleration. The passage has a closing member actuated by a capsule governed by the suction in the intake and by a member sensitive to the engine's speed. When the bypass is closed the capsule is connected to atmospheric pressure. The capsule is fixed to an element compensating for altitude.

3,677,527
HUMIDIFICATION EQUIPMENT FOR GASES

Dag Olof Alfred Johannisson, Lidingo, Sweden, assignor to AGA Aktiebolag, Lidingo, Sweden

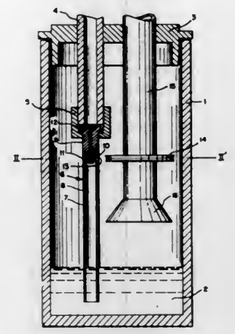
Filed April 15, 1970, Ser. No. 28,737

Claims priority, application Sweden, April 17, 1969, 5404/69

Int. Cl. B01f 3/04

U.S. Cl. 261—76 **3 Claims**

A humidifier for gas comprising a liquid tank, gas inlet means projecting axially into a liquid introducing means for sucking in of liquid, said liquid introducing means having a larger inside cross-sectional area than said gas inlet means, said gas inlet means and liquid introducing means having a common radial opening through which the gas supplied can be blown out together with the sucked in liquid as a gas jet con-



taining liquid particles, and a diffuser arranged in the tank opposite said common radial opening for the dividing of the liquid particles in said gas jet.

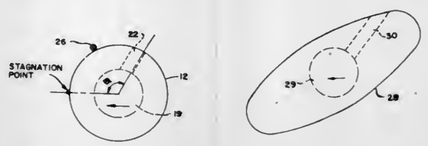
3,677,528
FLUID DIFFUSION APPARATUS

Godfrey Q. Martin, Moraga, Calif., assignor to Shell Oil Company, New York, N.Y.

Continuation of Ser. No. 724,043, April 25, 1968, abandoned. This application Dec. 31, 1970, Ser. No. 103,281

Int. Cl. B01f 3/04

U.S. Cl. 261—87 **2 Claims**



Apparatus for entraining a light fluid into a denser fluid. A substantially hollow vessel is provided which is adapted to contain therein the denser fluid. A rotatable drive shaft having impeller means arranged at its lower end is disposed within the vessel. Both the drive shaft and the impeller means have interconnecting passageway means. The drive shaft passageway means includes light fluid inlet means whereas the impeller means passageway means includes aperture means transverse to and in communication with both its passageway means and the interior of the vessel. The aperture means are also spaced radially outwardly of the drive shaft. As the impeller means is rotated by means of the drive shaft, the lighter fluid is passed from the fluid inlet means through the drive shaft and out of the aperture means whereby the lighter fluid is entrained in the denser fluid within the vessel.

3,677,529
LIQUID FUEL AND AIR MIXTURE CHARGE FORMING DEVICE

Mary Zane Johnson, 212 N.E. 26th St., Miami, Fla.

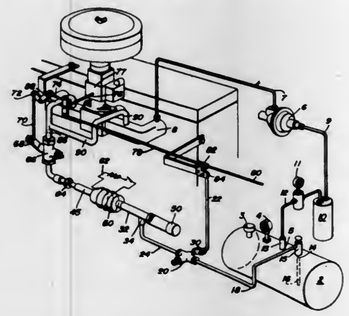
Filed Jan. 17, 1968, Ser. No. 698,507

Int. Cl. F02m 9/08, 13/00, 37/12

U.S. Cl. 261—129 **7 Claims**

A charge forming device for increasing the combustibility of a volatile fuel including a valve unit for mixing compressed air and fuel. The resultant mixture is conducted along a path in-

cluding metering valves responsive to a throttle setting. The mixture flow is subjected to heat and then metered through a valve responsive to the temperature of the heated mixture. The resultant metered fuel mixture is then injected into the intake manifold of an internal combustion engine, the latter including an independent parallel path of forced air. A vacuum actuated air compressing pump compresses the air to a preselected pressure and the intake of the pump is connected to the intake manifold. The exhaust of the pump is connected to a compressed air storage tank and the tank includes an exhaust port. A pressure regulator is connected to the exhaust



port of the storage tank. An adjustable verturi regulator is inserted between the valve responsive to the temperature of the mixture and one of the metering valves. A second embodiment of the present device includes the aforementioned construction in addition to a conventional carburetor system which furnishes the intake manifold with an independent parallel supply of carbureted fuel. The mixture forming unit in this embodiment includes a two port inlet T-connector. The first inlet port receives fuel and the second inlet port receives compressed air. The outlet port of the T-connector delivers the mixture to the metering valves.

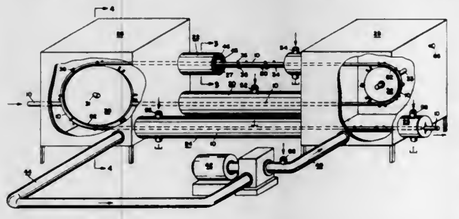
3,677,530
OVEN FOR HEATING CONTINUOUS TUBING

Richard MacDuff, Newark, and Paul M. Stewart, Pembrey, both of Del., assignors to Hercules Incorporated, Wilmington, Del.

Filed Feb. 10, 1971, Ser. No. 114,164

Int. Cl. F27b 9/28

U.S. Cl. 263—3 **17 Claims**



A multiple pass oven for heating continuous tubing of a thermoplastic polymer prior to orienting the same comprises an inlet chamber, an exit chamber and at least three conduits interconnecting the chambers. Rotatable wheels are provided in each chamber and spaced guide members are located in the conduits and on the peripheral edge of the wheels for receiving the tube therein. The guides are so designed that practically speaking the entire tube is at all times exposed to turbulent hot air circulating from the exit chamber through all of the conduits to the inlet chamber.

3,677,531
METHOD FOR HEATING METAL SLABS OR BILLETS IN CONTINUOUS PUSHER-TYPE FURNACES

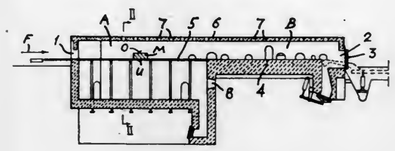
Carlo Pere, 2 Via Mura del Prato, and Fulvio Tornich, 18 Via Bottini, both of Genoa, Italy

Filed Nov. 10, 1970, Ser. No. 88,324

Claims priority, application Italy, Nov. 18, 1969, 7454 A/69

Int. Cl. F27b 9/14

U.S. Cl. 263—6 R **6 Claims**



Metal ingots are heated in a continuous pusher-type furnace. In a heating zone the upper and lower surfaces of the ingots are heated differently so that in the initial stages of a soaking zone following the heating zone, the surface temperature of the upper surface of the ingots is above, and the surface temperature of the lower surface is below, the required ejection temperature of the ingots. In the soaking zone no heat is applied to the lower surface while some heat is applied to the upper surface and heat flow occurs through the center of the ingot from the upper to the lower surface.

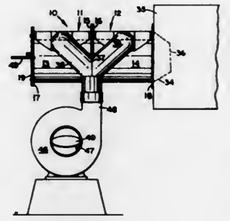
3,677,532
TWO CHAMBER FUEL BURNER

John J. Wolfersperger, 21 Strawberry Circle, Mill Valley, Calif.

Division of Ser. No. 806,357, March 12, 1969, Pat. No. 3,539,284. This application July 6, 1970, Ser. No. 60,987

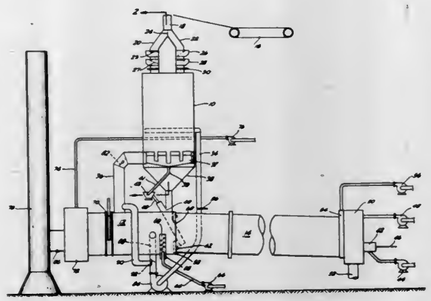
Int. Cl. F23l 9/04

U.S. Cl. 263—19 A **5 Claims**



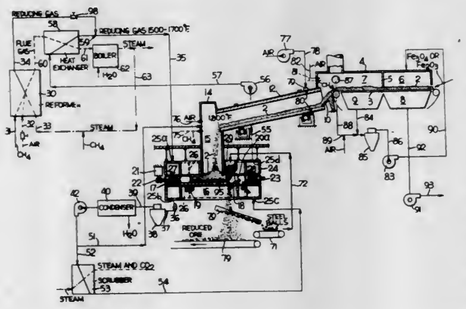
This two-chamber burner delivers completed combustion. Two flanged housings are joined together, one for each chamber, and both chambers have long narrow rectangular tangential air inlets into their cylindrical housing. The first chamber has a fuel inlet for gas or oil and a first cylindrical baffle spaced axially from the end wall and radially from the housing to provide an annular air inlet chamber. Air scoops connect air from the space between the housing and baffle into the interior space inside the baffle. When using oil as the fuel, a second baffle is spaced near the end of this first baffle, with an overlap, and is of greater diameter. It terminates near a first conical shell that leads into a second chamber, where it is surrounded by a further cylindrical baffle, also spaced from the housing to provide an annular chamber, into which the air inlet for that chamber opens. This further baffle terminates near a second frustoconical shell that leads into a boiler or other such device.

3,677,533
METHOD OF USING A COKE PREHEATER
Robert K. Olover, San Luis Obispo, and George L. Ford, Arroyo Grande, both of Calif., assignors to Union Oil Company of California, Los Angeles, Calif.
Filed Feb. 8, 1971, Ser. No. 113,122
Int. Cl. F27b 7/02
U.S. Cl. 263—52 9 Claims



A method is described for preheating coke in a calcining process to a temperature between about 600° to 850° F. This preheating avoids shattering of the coke into undesirable small particles in the calcining kiln. The hot combustion gases from the kiln are admixed with air to burn all volatile combustible material contained in the gases and a portion of the resultant hot gases is admixed with cooler recycle gas from the preheater to obtain a heating gas for the preheater having a temperature between about 800° and 850° F. This heating gas is supplied to the preheater in sufficient volume to preheat the coke to above about 600° F. The coke is passed through the preheater and kiln at the kiln capacity feed rate, sufficient to provide a coke residence time in the kiln no greater than about 54 to 58 minutes.

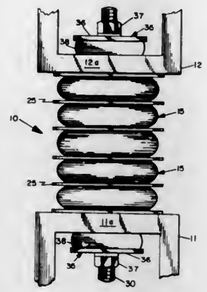
3,677,534
APPARATUS FOR REDUCING OXYGEN CONTENT OF OXIDIC MINERAL ORE
Robert D. Frans, 16075 Ramona Drive, Middleburg Heights, Ohio
Division of Ser. No. 772,753, Nov. 1, 1968. This application Sept. 21, 1970, Ser. No. 74,114
Int. Cl. F27b 21/02
U.S. Cl. 266—20 18 Claims



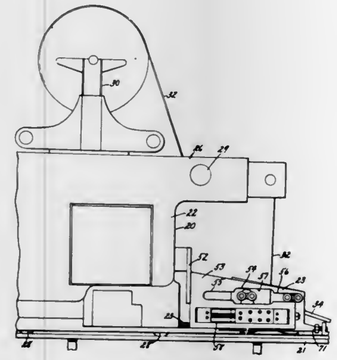
A system with several variations is disclosed for reducing the oxygen content of mineral ore. The preferred embodiment of the system includes first, in mineral flow sequence, a preliminary traveling grate apparatus for drying and preheating agglomerates of finely divided mineral ore. Next, a rotary kiln is provided to further heat the agglomerates in a reducing atmosphere and preferably at least initiate the relatively more easily accomplished reducing steps which in the case of iron ore is the reduction of Fe_2O_3 or Fe_3O_4 to FeO. After the kiln, a reactor apparatus preferably having a horizontal annular rotary grate is provided to perform additional steps, which in the case of iron ore is the more difficult reducing step of reducing FeO to Fe, form a network of metal bridges throughout the agglomerates to provide agglomerate strength and degradation resistance, and thereafter recover the heat for the process and cool the reduced mineral product. A gas flow system is provided to direct a gas stream generally counter to material flow with the gas stream being of reducing character as it passes through the reactor and at least a major portion of the length of the kiln. Near the gas discharge end of the kiln controlled amounts of air may be admitted to provide highly heated strongly oxidizing gases to dry and preheat the agglomerates on the preliminary grate and impart sufficient physical strength to the agglomerates so they can survive the tumbling action they will receive in the kiln. Strongly reducing gases are provided for the reactor by delivering methane or natural gas along with steam to a reformer, or by the partial combustion of hydrocarbon or carbonaceous fuels, for producing a gas stream rich in hydrogen or carbon monoxide and preferably both. After passing through a reducing portion of the reactor, the gas stream is passed through a condenser to remove the water formed by the reducing action of the hydrogen, and the gas stream is then divided into two separate branch streams with a first branch being directed to flow through the kiln. A second branch stream is directed through a carbon dioxide scrubbing system to scrub out CO_2 formed by the reducing action of the CO; after which this gas stream is passed through a heat recovery and cooling portion of the reactor to recover heat for the process by heating the gas stream and cooling the reduced mineral product. The second branch gas stream which then has itself been heated by the agglomerate cooling operation, may be further heated, indirectly, by reformer flue gases, and thereafter have admixed with the second branch gas stream, fresh rich reducing gas from the reformer to provide a combined heated gas stream for passing through the reducing portion of the reactor. A layer of heat transfer media, such as steel balls, are provided to form a bed on the annular grate beneath the mineral ore agglomerates, to provide for the recovery of heat for the process by temporarily storing heat in the media while the gas stream is passed through a condenser and carbon dioxide scrubbing system, after which the gases again pass through the media on the annular grate to recover heat stored in the media and then recover additional heat for the process by cooling, to extent possible, the reduced mineral agglomerates.

3,677,535
AXIAL SUSPENSION SYSTEM THAT ACCOMMODATE RELATIVE LATERAL MOVEMENT
Merrill G. Beck, Erie, Pa., assignor to Lord Corporation, Erie, Pa.
Filed Aug. 24, 1970, Ser. No. 66,365
Int. Cl. F16f 1/40
U.S. Cl. 267—63 13 Claims

A plurality of superimposed precompressed resilient pad means are disposed between normally axially spaced support and supported members. An elongate guide member is operatively disposed through the superimposed resilient pad means for maintaining alignment therebetween and is operatively associated with the support and supported members for permitting relative axial, lateral and axially out-of-parallel movement therebetween. The resilient pad means are alternatively compressible and expandable in response to relative axial or axially parallel movement between the support and supported members for absorbing substantially all of such relative movement therebetween while cooperating with the guide member and support and supported members for permitting relative lateral and cocking or axially out-of-parallel movement between the support and supported members. Each of the plurality of superimposed resilient pad means are so constructed as to have a load-deflection rate which increases with load to provide improved operating performance of the suspension system.

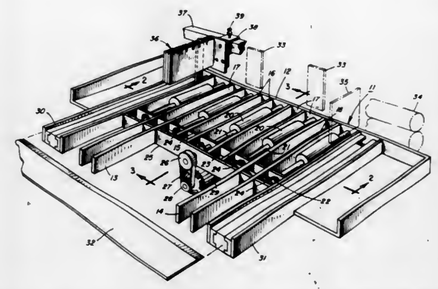


3,677,536
SLACK FORMING DEVICE FOR CLOTH LAYING MACHINES
Stephen Paterson, Forest Hills, N.Y., assignor to Cutting Room Appliances, New York City, N.Y.
Filed May 27, 1970, Ser. No. 40,819
Int. Cl. B65h 29/46
U.S. Cl. 270—31 5 Claims



Improved slack-forming means for use in conjunction with a cloth laying carriage having a positively driven web feed roller to provide additional cloth web links at the completion of an end fold, particularly when laying cloth having an excessive tendancy to stretch under tension. The improved structure includes the mounting of known fold forming bars for relative longitudinal movement with respect to the carriage. Means is provided on the cloth laying table for arresting movement of the bar structure prior to the arresting of the carriage at the end of each cloth laying cycle, so that with the additional movement of the carriage, the positively driven roller continues to feed a short length of cloth web to thereby provide necessary slack for performing a uniform fold.

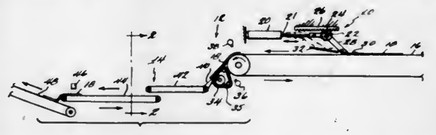
3,677,537
APPARATUS AND METHODS FOR FEEDING SHEETS OF MATERIAL FROM STACKS WITH ONE SIDE IN VERTICAL REGISTRATION
William C. Hawthorne, 218 Phelps Road, Ridgewood, N.J.
Filed March 26, 1971, Ser. No. 128,480
Int. Cl. B65h 1/06, 3/08
U.S. Cl. 271—29 8 Claims



Apparatus and methods for feeding sheets of material from stacks with one side in vertical registration wherein the method comprises stacking the sheets flat on a generally horizontal support with the bottom of the lowermost sheet in contact with lateral propulsion means, exerting a vacuum on the lowermost sheet from beneath sufficient to significantly increase the force of contact between the lowermost sheet and the said lateral propulsion means and preferably sufficient to deflect the lowermost sheet around the propulsion means to a limited degree, simultaneously propelling the lowermost sheet from beneath by the propulsion means laterally against a side guide and thereafter propelling the lowermost sheet forwardly while in contact with the side guide.

The apparatus comprises a generally horizontal support having at least one vacuum chamber open at the top of the support, the support and chamber conveniently being defined by a plurality of spaced apart, generally upstanding flat bars, means for generating a vacuum communicating with the said chamber, power driven lateral propulsion means in proximity to the chamber, said propulsion means projecting above the top of the support and engageable with the bottom of the lowermost sheet of the stack. The said propulsion means conveniently being a power driven rotatable roller positioned within the chamber between spaced apart bars, a side guide engageable with the side edge of the lowermost sheet in the direction of lateral propulsion, and means for propelling the lowermost sheet forwardly while in contact with the side guide, said means being conveniently a reciprocating feeder bar.

3,677,538
AUTOMATIC DOFFER FOR ARTICLES ADHERED TO A CONVEYOR BELT
Thomas M. Wall, Halawaka Creek, Ala., assignor to West Point-Pepperell Inc., West Point, Ga.
Filed Aug. 31, 1970, Ser. No. 68,079
Int. Cl. B65h 29/16
U.S. Cl. 271—76 7 Claims



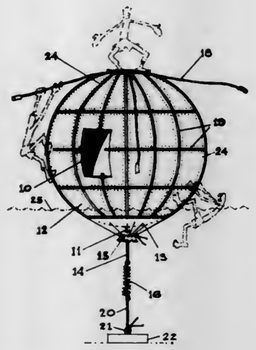
Method and means for automatically transferring articles

from a conveyor belt when the articles are adhered thereto. The articles are shown as being flat and flexible or drapable. The adhesion between the belt and the leading edge of the article is first automatically broken and then the separated leading edge is pulled and guided away from the end of the conveyor. Special exemplary means are disclosed which include a reciprocating blade for breaking loose the leading edge and interleaved doffer belts and guide combs for pulling and guiding the articles from the belt. Pressurized gases may also be blown under the separated leading edge and onto the trailing edge for facilitating the operations.

3,677,539
BUOYANT AQUATIC AMUSEMENT DEVICE WITH REINFORCING COVER

Maureen Constance Bennet, Ste. #104, 1124, Meadowlands Drive, Ottawa, Ontario, K2E-6H9, Carleton, Canada

Filed Aug. 5, 1970, Ser. No. 61,083
Claims priority, application Canada, March 19, 1970, 77,817
Int. Cl. A63g *31/12*
U.S. Cl. 272—1 B 2 Claims



A spherical, inflated elastic body enclosed in an inelastic cover. The body has ropes dangling downwardly from its top and also has a network of cords disposed on the exterior surface of the cover. The cord network provides finger holds and toe holds which, along with the dangling ropes, assist a person in climbing out of the water onto the top of the body.

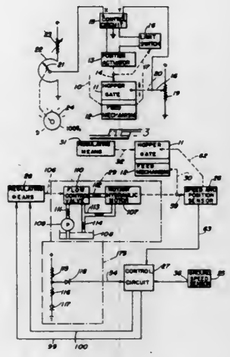
The bottom of the body is connected to a mooring line which is secured through a tension spring to an anchor block.

3,677,540
MATERIAL DISCHARGE CONTROL APPARATUS

Paul C. Weiss, Evanston, Ill., assignor to Ambac Industries Incorporated, Garden City, N.Y.

Filed April 21, 1969, Ser. No. 817,837
Int. Cl. B67d *5/08*
U.S. Cl. 222—23 16 Claims

Discharge of material from the hopper of a vehicular spreader is determined by the opening of the hopper gate and the speed of the conveyor or auger feed mechanism. By interrelating the apparatus for controlling the gate with the apparatus for regulating the feed mechanism the engine or motor driving the latter can be caused to operate within its optimum range. The gate position can be controlled automatically or manually; in the latter case the operator is provided with an

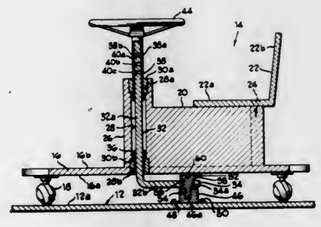


appropriate signal defining the optimum range. The apparatus is also ground speed responsive for maintaining a constant selectable discharge rate.

3,677,541
CHILD'S OCCUPANT PROPELLED RIDING TOY ROUNDABOUT

Andras Race, Chicago, Ill., assignor to Marvin Glass & Associates

Filed Dec. 15, 1970, Ser. No. 98,292
Int. Cl. A63g *1/12*
U.S. Cl. 272—33 R 1 Claim



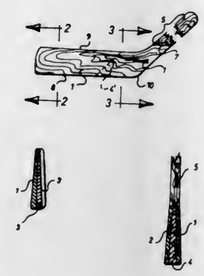
An amusement device of the type including a movable seating apparatus rotatably mounted on a platform, characterized by the provision of a steering mechanism on the seating apparatus, with the steering mechanism eccentrically rotatably mounted to the platform.

3,677,542
HOCKEY STICK

Andre Michaud, 1545 Caron St., Sherbrooke, Quebec, Canada

Filed May 11, 1970, Ser. No. 39,191
Int. Cl. A63b *59/12*
U.S. Cl. 273—67 A 7 Claims

A hockey stick in which the end of the handle adapted to be joined to the blade, forms a wedge and the blade is made of two laminations or plies overlapping the handle wedge, resulting in a stronger joint and easier and less expensive manufacture of the hockey stick.



3,677,543
ELASTIC PULL TYPE EXERCISER

John H. Richardson, 222 Gerrymander, Sonora, Calif.

Filed Sept. 30, 1970, Ser. No. 76,748
Int. Cl. A63b *23/02, 23/04, 21/00*
U.S. Cl. 272—82 1 Claim



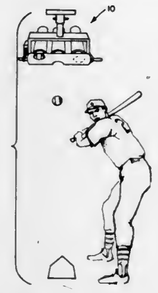
A pull type exercising device including a single piece of elastic tubing with loops formed at the respective ends of the tubing by S-shaped hooks that receive folded ends of the tubing. On each looped portion of the tubing there is a sleeve. A slidable ring with an anchoring attachment is mounted on the tubular member. A use inserts an arm or leg in the loops and pulls on the anchored tubular member.

3,677,544
BASEBALL PRACTICE DEVICE

Walter E. Meyers, 9141-4th Ave, South, Minneapolis, Minn.; Richard D. Meyers, 7544-17th Ave, South, Minneapolis, Minn., and Warren H. Meyers, 5550-38th Ave, South, Minneapolis, Minn.

Filed April 9, 1970, Ser. No. 27,048
Int. Cl. A63b *69/00*
U.S. Cl. 273—26 D 6 Claims

Baseball batting device for sequentially delivering baseballs to a hitter for batting practice and comprising ball storage tubes for retaining a plurality of baseballs for sequential introduction into a baseball delivery apparatus wherein the baseball delivery apparatus intermittently receives baseballs from the ball storage tubes so as to intermittently drop the baseballs to the hitter. The delivery apparatus includes a ball receiving member journaled for axial rotation along a point disposed adjacent the storage tubes, the delivery tubes being



provided with at least one ball receiving socket formed as a radially extending cavity therein for receiving and dispatching baseballs therefrom. In addition, a mount is provided for positioning the baseball batting practice device in elevated disposition for gravitational dropping of baseballs from the delivery apparatus.

3,677,545
VISUAL AND AUDIBLE SIGNAL PRODUCING TARGET APPARATUS

Jeffrey Dale Breslow, Chicago, Ill., assignor to Marvin Glass & Associates

Filed Feb. 10, 1970, Ser. No. 10,251
Int. Cl. A63b *63/00*
U.S. Cl. 273—102.1 C 8 Claims



A game device of the type employing a target-like element and a ball to be thrown thereat, characterized by spring biased movable audible signal striking arms underlying the target area cover and having color coded target portions movable away from a position underlying openings in the cover when struck and the signal striking arms engage a signal element responsive to contact of the colored target portions by a thrown ball.

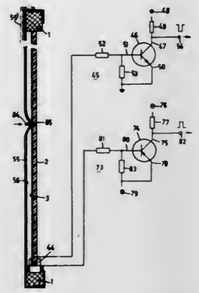
3,677,546
IMPENETRABLE AUTOMATICALLY REGISTERING TARGET

Hermann Walter Oetiker, Oberlunkhofen, Switzerland, assignor to Polytronic SA, St-Aubin NE, Switzerland

Filed March 26, 1970, Ser. No. 22,806
Claims priority, application Switzerland, March 27, 1969, 4901/69
Int. Cl. F41j *5/04*
U.S. Cl. 273—102.2 R 7 Claims

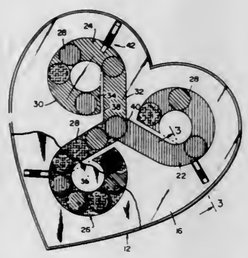
The present invention relates to the field of shooting techniques and particularly to automatically working shooting targets. The invention concerns a shooting target comprising essentially an electrically conducting sheet or plate and an

electrically conducting elastic membrane placed in a predetermined relationship in front of the said conducting sheet or



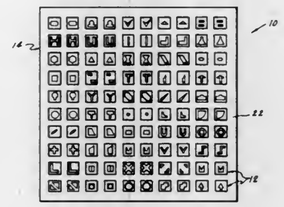
plate, said conducting sheet and membrane being insulated each from the other and being each electrically connected to at least one terminal mounted on the target.

3,677,547
PUZZLE WITH MULTIPLE PASSAGEWAYS HAVING A COMMON INTERSECTION AND OBJECTS SHIFTABLE AMONG SAID COMPARTMENTS
Alan A. Hicks, Weston, Conn., assignor to Kohner Bros., Inc., East Paterson, N.J.
Filed Nov. 9, 1970, Ser. No. 87,997
Int. Cl. A63f 7/04
U.S. Cl. 273—109 **13 Claims**



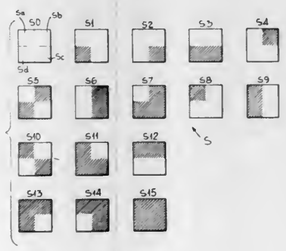
A puzzle comprising several passageways. The distal ends of the passageways are closed and retroverted. The proximal ends of the passageways meet at a common intersection. The passageways contain shiftable objects such as spheres which are individually wider than half the width of the passageways so that there never can be two objects abreast in a passageway. The number of objects does not exceed the total number of objects that can be accommodated in all but one passageway. By way of example in a typical puzzle with three passageways, each long enough to contain eight objects, there are 16 objects in all. The objects are characterized, as by color, in a fashion such that they can be subdivided into groups equal in number to the number of passageways with the solution of the puzzle consisting of shuttling the objects into and out of the passageways through the intersection until there is a different group of objects of like character in each different passageway. Thus, with three passageways and 16 objects, there may be five objects, each of three different colors, to be arranged for correct solution by manually tilting the puzzle so that five similarly colored objects are situated in each different passageway with the sixteenth differently colored object situated at the intersection. Each of the passageways may have a slide gate to selectively retain objects in any passageway in order to facilitate solving of the puzzle.

3,677,548
BOARD GAME APPARATUS
Thomas W. Hincz, 1207 Farmstead, Wichita, Kans.
Filed Nov. 2, 1970, Ser. No. 85,926
Int. Cl. A63f 3/00
U.S. Cl. 273—130 R **6 Claims**



Game apparatus including a game board with a plurality of receptacles therein, and a plurality of sets of playing pieces, each set having a plurality of like playing pieces. The playing pieces fit in the receptacles in the game board, and each set of playing pieces has a different geometrically shaped portion on one side thereof than the other sets and a handle on the opposite side. The game is played by selecting two of the playing pieces from the game board, examining them to determine if like ones have been selected then replacing them if not, or retaining them if matched.

3,677,549
BOARD GAME APPARATUS
Ivan Moscovich, Ha. Universita St. 79,, Ramat Aviv, Israel
Filed June 14, 1971, Ser. No. 152,520
Int. Cl. A63f 9/20
U.S. Cl. 273—135 R **6 Claims**



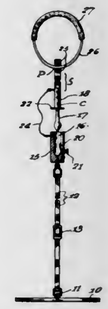
A board game of educational value in familiarizing the player with the binary-system, comprises a playing board and a set of identically-shaped playing pieces, each playing piece having "n" (e.g. 4) equal sides and being divided into "n" equal parts. The parts of the playing pieces are colored in two distinctive colors providing 2^n possibilities of color-part combinations, each set including a playing piece for each of the 2^n color part combinations. The playing board includes markings dividing the board into a plurality of at least 2^n divisions, each division having an external shape identical to that of the playing pieces. Each playing piece represents a value in the binary-system of notation according to the position played on the board.

3,677,550
CHESSMEN
Ronald Alexander Mathers, 4 Naplershall St., Glasgow, N. W., Scotland
Filed Oct. 26, 1970, Ser. No. 83,887
Claims priority, application Great Britain, Dec. 11, 1969, 60,431/69
Int. Cl. A63f 3/02
U.S. Cl. 273—137 R **1 Claim**



Each piece in a set of chessmen, other than the kings, has a uniform cross-sectional shape which is linearly symbolic of its permitted mobility on a chessboard.

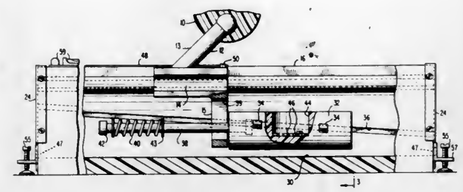
3,677,551
GOLF TRAINING DEVICE
Douglas I. Schaus, 462 Hilltop Road, Elgin, Ill.
Filed July 26, 1971, Ser. No. 165,965
Int. Cl. A63b 69/36
U.S. Cl. 273—183 B **7 Claims**



The device of the present invention is intended to assist in developing the correct swing of a golf club. Briefly, the device includes a base plate for locating or positioning the feet, a loop adapted for encircling the neck and a flexible link between the base plate and neck loop. The flexible link includes a pulley to hold the loop, a swivel and an adjustable break-a-way coupling which may be in the form of interlocking male and female parts, held together by magnetic attraction, which will disengage if an incorrect golf swing occurs.

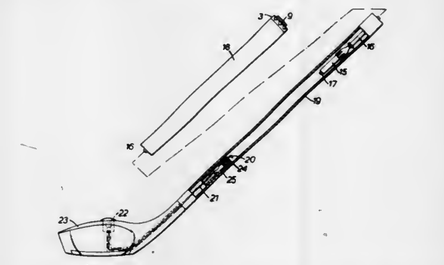
3,677,552
GOLF PRACTICE APPARATUS
August R. Werft, 233 Dixon Blvd., Uniontown, Pa.
Filed June 25, 1971, Ser. No. 156,683
Int. Cl. A63b 69/36
U.S. Cl. 273—184 B **18 Claims**

Apparatus permitting the playing within a small area of a simulated game of golf. A golf ball is connected by a tee assembly to a torpedo within an elongated housing. In one embodiment, the torpedo carries weights, and when the golf ball is struck the torpedo moves up a uniform grade within the housing to slow the torpedo. In a second embodiment, the torpedo carries magnets and the housing includes oppositely-poled magnets so that as the torpedo carries its magnets over those of the housing, the magnetic attraction slows the tor-



pedo. The distance the ball and torpedo move is scaled to indicate the distance which would have been achieved by a freely hit ball on a golf course. A calibration unit includes a weight for striking the ball a fixed blow to move it a fixed distance.

3,677,553
PRACTICE GOLF CLUB
Eric Desmond Moore, 11 Stanmore Hill, Stanmore, England
Filed Sept. 14, 1970, Ser. No. 71,957
Claims priority, application Great Britain, Oct. 3, 1969, 48,658/69
Int. Cl. A63b 69/36
U.S. Cl. 273—186 A **5 Claims**

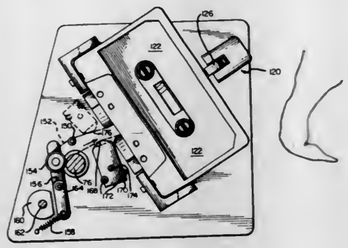


The invention consists in providing in the shaft of a golf club a spring supported weight, preferably a dry battery, which is slidable in said shaft under the action of centrifugal force and against the action of said spring attached thereto to cause said weight to engage an electric contact in the circuit of a lamp bulb mounted in the club head to cause said lamp to light up during the swinging of said club. The spring to which the battery is attached is carried by a rod which may be axially adjusted within a guide sleeve in the shaft of the club by rotating an adjusting knob mounted on the end of said shaft by means of a friction plug and fixed to a screw connected to axially displace said rod when said knob is rotated. The electrical contact is mounted on an insulating plug in said shaft at a point spaced from the battery.

3,677,554
DUPLICATING APPARATUS FOR CASSETTES
Francis Rawdon Smith, Maple Tree Farm, Box 216, Peters Rd., Frederick, Md., and John E. Horne, 6001-34th Ave., Hyattsville, Md.
Filed July 16, 1970, Ser. No. 55,419
Int. Cl. G11b 5/86
U.S. Cl. 274—3 **21 Claims**

Apparatus for fast, high quality duplication for magnetic tape in cassettes, having mounts for the cassettes with openings for a loop of tape to extend out from each cassette and to be positively driven. The loop is positioned around a

short idler and the idler is then biased against a drive mandrel common to all stations in the apparatus. At each station a



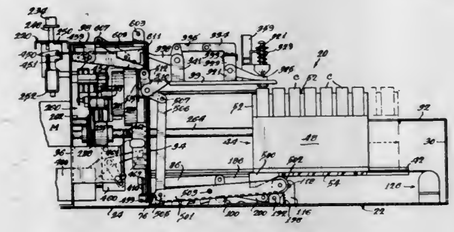
transducer is located past the drive mandrel shortly ahead of the location at which the looped tape re-enters the opening of the mount.

3,677,555

CASSETTE CHANGER

Thomas W. Vail, Des Plaines, and Allen L. Ryan, Chicago, both of Ill., assignors to Warwick Electronics, Inc.

Filed Nov. 21, 1968, Ser. No. 777,689
Int. Cl. G11b 27/22, 23/12
U.S. Cl. 274—4 F **10 Claims**



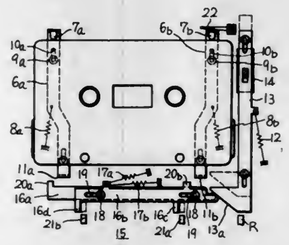
A cassette changer having a plurality of elements for either record or playback operation relative to a tape and defining a tape path wherein a holder for a plurality of cassettes can be indexed sequentially to bring successive cassettes into position to have a portion of the tape carried thereby in line with the tape path and with a capstan for driving the tape along with a pair of spindles extending through the reels of each cassette and having driving engagement with one reel of a cassette in playing position. The operations are primarily controlled by a main control member movable through two different strokes with a full stroke thereof causing retraction of cassette probe means, disengagement of the drive to the driven one of the spindles, lifting of certain of the head and transport components away from the tape, and indexing of the cassette holder. Movement of the main control member through less than a full stroke, as required in pause, fast-forward, and rewind operations, causes the foregoing operations except for indexing of the said holder. The main control member is moved through a full stroke by power means which can be operated by either of a reject switch, an end-of-tape sensor switch, or a record interlock switch when a tape appearing at playing position to be recorded upon is actually pre-recorded. The main control member can be moved through less than a full stroke by operation of either a stop member or last cassette shut-off mechanism, or by actuable elements, such as buttons, operable to provide the pause, fast-forward, and rewind operations, with the first two mentioned operations operating through the power means but interposing an abutment in the path of the main control member to limit the main control member to the shorter stroke. The probe has three distinct positions to detect either a pre-recorded tape cassette, a non-recorded tape cassette, or the absence of a cassette, with the last-referred to position causing further operation of the indexing means. The drive for the reel spindles is by means of an idler wheel system, with the first normally operative idler wheel being movable from an operative position causing normal speed operation of the tape, a second optionally operative idler wheel providing for fast-forward operation, and a third optionally operative idler wheel providing for rewind operation, and with the first idler wheel always being disengaged by the main control member upon movement thereof.

3,677,556

MAGNETIC RECORDING AND REPRODUCING DEVICE

Koozo Oosone, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed June 11, 1969, Ser. No. 832,233
Claims priority, application Japan, June 13, 1968, 43/40716
Int. Cl. G11b 27/24
U.S. Cl. 274—4 C **9 Claims**



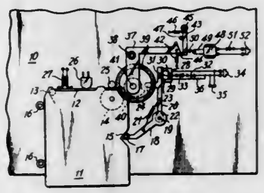
An auto-reverse type magnetic recording and reproducing device for Philips type cassettes which has means for detecting faulty-erasure-preventing means provided in the cassettes so as to avoid faulty erasure of recorded signals on the tape during recording not only in a forward direction but also in a reverse direction.

3,677,557

ENDLESS MAGNETIC TAPE CARTRIDGE REMOVING APPARATUS

Itsuki Ban, 829 Higashi-Oizumimachi, Nerima-ku, Tokyo, Japan

Filed March 30, 1970, Ser. No. 23,537
Int. Cl. G11b 5/00
U.S. Cl. 274—4 B **10 Claims**



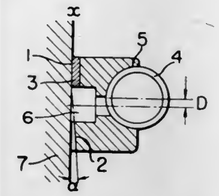
An apparatus moving a cartridge to and from a play position in a tape cartridge player comprising a displaceable member supporting a retension member which is engageable with a notch in the cartridge and which exerts a forward force to the cartridge for holding the cartridge in the play position with respect to the capstan and the magnetic head, and means for moving the displaceable member to the position where the retention member escapes from the notch of the cartridge, the cartridge being removed from the play position as said forward force on the cartridge is extinguished by the retention member escaping from the notch of the cartridge.

3,677,558

OIL STRIPPING PISTON RING

Eisuke Sugahara, Tokyo, Japan, assignor to Nippon Piston Ring Co., Ltd., Tokyo, Japan

Filed Feb. 11, 1971, Ser. No. 114,552
Int. Cl. F16j 9/06
U.S. Cl. 277—138 **4 Claims**



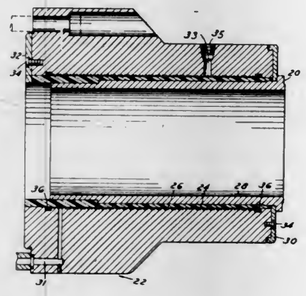
An oil stripping piston employed on an internal combustion engine, especially aimed at elevated contact pressure and drastic reduction of lubrication oil consumption, on which a hardened surface is provided either on the top or bottom rubbing surface of the oil stripping piston ring and on the back of said oil stripping piston ring. An expander is mounted in the position selected for even distribution of rubbing wear of the hardened surface and the base material of the piston ring for maintaining a constant wear step between the said two rubbing surfaces.

3,677,559

HYDROSTATIC HOLDING DEVICE

Eugene R. Andre, and John M. Rautio, both of 12024 East Nine Mile Rd., Warren, Mich.

Continuation-in-part of Ser. No. 736,840, June 13, 1968, abandoned. This application Jan. 19, 1971, Ser. No. 107,817
Int. Cl. B23b 31/10
U.S. Cl. 279—1 Q **7 Claims**



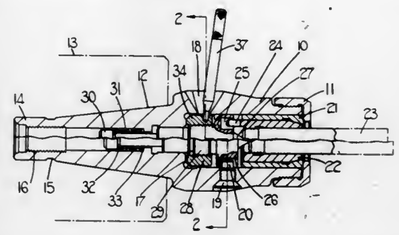
A hydrostatic holding device which employs a relatively thin wall sleeve in either internal or external holding units and utilizing a sleeve of pliant material such as nylon which is relatively soft compared to metal parts which are to be clamped, the concept being a sleeve material which will conform to the surface conditions of the part being held and exert pressure thereon without changing the shape of the part. Additional features include differential pressures and differential wall thicknesses to compensate for differential thicknesses in the work part. Other features include the use of pressure and vacuum to manipulate the pliant wall to assure proper gripping particularly on parts which may have a recessed portion.

3,677,560

CHUCK HAVING MEANS TO AXIALLY POSITION TOOL

Frank Henry Clarkson, Nuneaton, Warwickshire, Guernsey (Channel Islands), assignor to Clarkson International Tools Limited, Nunecton, Warwickshire, England

Filed Nov. 2, 1970, Ser. No. 85,873
Int. Cl. B23b 31/04
U.S. Cl. 279—47 **3 Claims**



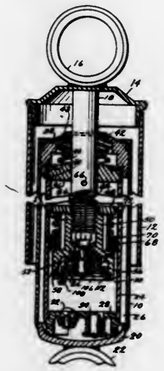
A chuck comprising a body, tool gripping means in the body, a tool locating part slidably mounted in the body to control the axial position of the tool whilst maintaining its concentricity, an adjusting ring engaging the tool locating part and being axially located within the body, the body having a lateral opening for access to the adjusting ring, and means on the adjusting ring accessible through the opening whereby it can be rotated by a suitable tool to control axial position of the tool locating part in the body.

3,677,561

ADJUSTABLE SHOCK ABSORBER ASSEMBLIES

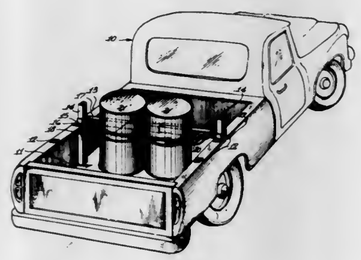
Sellers B. McNally, Homewood, Ill., assignor to Maremont Corporation, Chicago, Ill.

Filed Jan. 5, 1971, Ser. No. 104,117
Int. Cl. B60g 77/04
U.S. Cl. 280—124 F **9 Claims**



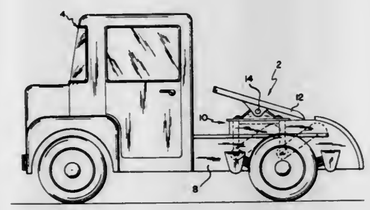
A set of direct, double acting, hydraulic shock absorbers for use in a racing vehicle having front and rear wheels, one pair of shock absorbers being adapted for mounting in the front suspension system and a second pair of shock absorbers for mounting in the rear suspension system; manually adjustable means in the form of a variable flow passage and an adjustable valve are provided for controlling the damping characteristics of each of the shock absorbers of the set so that the shock absorbers may be used on a vehicle under ordinary road conditions and be adjusted to meet the conditions encountered when the vehicle is used in high-speed races.

3,677,562
PICK-UP LOAD HOLDER
Benjamin Bronstein, McLure, British Columbia, Canada
Filed Dec. 14, 1970, Ser. No. 97,642
Claims priority, application Canada, Sept. 1, 1970, 092085
Int. Cl. B60p 7/12
U.S. Cl. 280—179 A 1 Claim



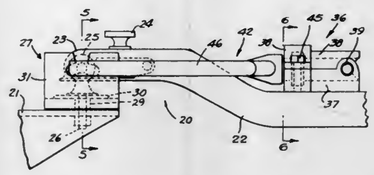
In a load carrying vehicle such as a pick-up truck, a cross-beam spans the load carrying area and is connected at each end thereof to a vertical stake mounted in a stake pocket which is normally part of the vehicle body. The load can be secured against the cross-beam with a load retainer, such as a chain and cinch mechanism, the ends of which are firmly attached to the stakes.

3,677,563
FIFTH WHEEL COUPLER APPARATUS
Ned Bott, 2169 Westview Drive, Ashland, Ohio
Filed July 1, 1969, Ser. No. 838,154
Int. Cl. B62d 53/08
U.S. Cl. 280—425 R 5 Claims



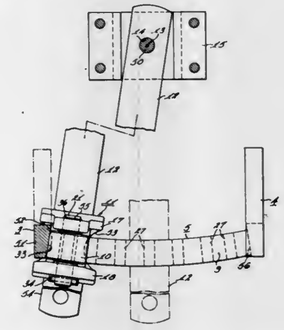
A fifth wheel coupler apparatus adapted for use with a tractor vehicle for hauling a semi-trailer vehicle including a pair of trackways carried by the tractor vehicle and a carriage assembly supported for riding movement on the trackways. A fifth wheel is mounted on the carriage assembly adapted for coupling the trailer vehicle to the front end of the semi-trailer vehicle. The trackways are inclined in a generally upwardly and rearwardly direction with respect to the horizontal or normal direction of movement of the tractor vehicle enabling the carriage assembly, and thus, the front end of the trailer vehicle to be elevated upon relative movement of the tractor vehicle with respect to the semi-trailer vehicle. A locking unit is provided to hold the carriage assembly in the raised position while the semi-trailer vehicle is transported from one location to another.

3,677,564
SAFETY TRAILER HITCH
Gilbert C. Kothmann, P.O. Box 680, Mason, Tex.
Filed March 27, 1970, Ser. No. 23,373
Int. Cl. B60d 1/12
U.S. Cl. 280—457 5 Claims



A safety trailer hitch in which a yoke is secured to the tow bar of the trailer and to the hitch of the towing vehicle to prevent the trailer from becoming disconnected should the socket portion on the trailer become detached from the ball. The yoke may be easily disconnected from the trailer hitch when disconnecting the trailer from the towing vehicle. In a modified form of the invention a finger on the trailer hitch is arranged to be swung into a position overlying the socket to prevent the socket from detaching from the ball. When disconnecting the trailer the finger is swung out of the way to permit the socket to be lifted off of the ball.

3,677,565
SWINGING DRAWBAR
Michael L. Slosiarek, Milwaukee, Wis., assignor to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.
Filed Oct. 26, 1970, Ser. No. 83,690
Int. Cl. B60d 1/14
U.S. Cl. 280—499 10 Claims

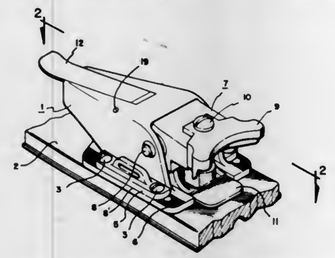


A swinging drawbar and drawbar carriage supported on a bail assembly forming lateral abutments engaging the drawbar and carriage to overcome twisting and distorting moments on the drawbar when lateral movement of the drawbar is arrested at its extreme lateral positions.

3,677,566
SKI-BINDING HEEL MECHANISM
John S. Lawrence, Ogden, Utah, assignor to Browning Arms Company, Morgan, Utah
Filed Oct. 6, 1970, Ser. No. 78,501
Int. Cl. A63c 9/00
U.S. Cl. 280—11.35 T 9 Claims

A ski-binding heel mechanism comprising a movable housing to a main housing to be attached to a ski. The movable

housing is provided with a step plate and also a heel clamp. In particular, the movable housing is provided with a cam roller that reacts against a compound cam surface of a spring-loaded plunger provided in the main housing. Said compound cam surface comprises an upper (hold) face and a lower (release) face. A lever is provided in the main housing which is independent of the movable housing and which operates to effect a



manual release of the ski boot, by pressing down upon a reaction member associated with the movable housing.

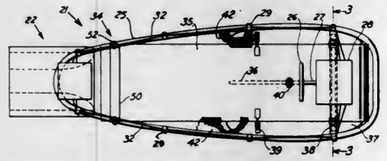
In a preferred form of the invention, the heel clamp is pivoted to the movable housing by a bolt to allow adjustment of the heel clamp for different sized boots. Also, a set screw adjustment is provided to permit adjustment of the release pressure.

3,677,567
LOW FRICTION BEARING ARRANGEMENT FOR SKI BOOT IN CONTACT WITH A SKI
Georges P. J. Salomon, 34 Ave. de Loverchy Annecy, Haute-Savoie, France
Filed Sept. 2, 1969, Ser. No. 854,366
Claims priority, application France, Sept. 6, 1968, 1067-74
Int. Cl. A63c 9/00
U.S. Cl. 280—11.35 C 7 Claims



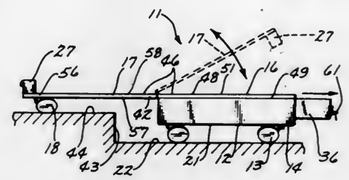
A low friction bearing arrangement for a ski boot contacting a ski comprising at least one slot having a smooth bottom surface extending substantially across the ski boot and at least one corresponding friction plate secured to the ski.

3,677,568
SNOW SLED
Gordon E. Nelson, 51 Blossom Lane, Marlboro, Mass.
Filed Aug. 7, 1970, Ser. No. 62,023
Int. Cl. B62b 13/08
U.S. Cl. 280—21 R 18 Claims



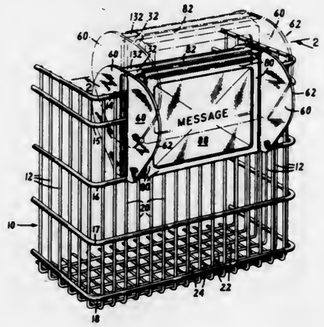
Disclosed is a snow sled which may be controlled in a variety of snow conditions by placement and manipulation of several control surfaces including a rearwardly mounted movable rudder which compresses and directs snow, and laterally mounted auxiliary guides.

3,677,569
FOLDABLE CRAWLER
Howard M. Larson, 1005 13th St., Ames, Iowa
Filed March 9, 1970, Ser. No. 17,410
Int. Cl. B62b 11/00; B25h 5/00
U.S. Cl. 280—32.6 7 Claims



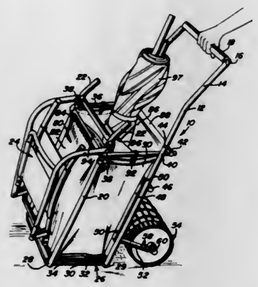
A foldable crawler is provided herein which, in its folded position, has a valise-like configuration. The crawler comprises a bottom side having wheels mounted thereon, sidewalls, and a top side. An extender is hingeably attached at one end to one end of the top side. A wheel is affixed to the top surface of the extender. in its folded position, proximate the other end of the extender. The extender can be rotated 180° and the wheel on the extender can contact a raised surface, such as the floor inside a kitchen cabinet, to provide a substantially flat, rollable working surface.

3,677,570
DISPLAY DEVICE FOR NESTABLE TYPE SHOPPING CART
Jon Hedu, Watertown, Conn., assignor to Actmedia, Inc., Westhampton Beach, N.Y.
Filed April 9, 1971, Ser. No. 132,775
Int. Cl. G09f 3/18
U.S. Cl. 280—33.99 A 16 Claims



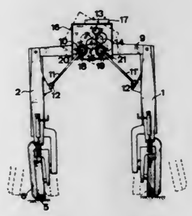
A display device for mounting on the vertical front wall part of a nestable type shopping cart, the display device having a pair of display panels carrying intelligence mounted on opposite faces of said front wall part for vertical sliding travel between a lowered retracted position and an upper extended display position. Biasing means normally maintain the device in extended display position. When a shopping cart is nested into a second like shopping cart, the upwardly swingable rear wall part of the second cart is engaged by camming structure on at least one display panel to swing said rear wall part upwardly and thereby apply downwardly directed force against said display device to vertically slide it to retracted position.

3,677,571
BEACH CART
Thomas F. Maturo, Jr., 2535 S. Lincoln Ave., Vineland, N.J., and Frank Prisinzano, Harding Highway, R.D. #1, Richland, N.J.
Filed Sept. 9, 1970, Ser. No. 70,673
Int. Cl. B62b 11/00
U.S. Cl. 280—36 R 3 Claims



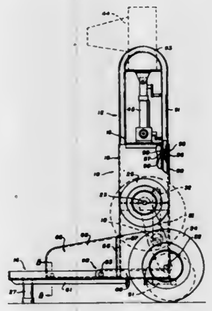
A collapsible tubular frame attaches a carrying bag for storing articles therein. A roller is connected to the frame to allow transport of the cart through sand. The roller is constructed of annular end plates with a cylindrical mesh screen attached to the end plates. The frame includes extending arms for conveniently supporting a beach chair.

3,677,572
STRADDLE TRACTORS
Andre Fontan, 11, rue Nationale, Nogaro, and Rene Benac, Avenue Saint Roch, Mirande, both of France
Filed Oct. 19, 1970, Ser. No. 81,736
Claims priority, application France, Oct. 20, 1969, 6935875
Int. Cl. B62d 61/12
U.S. Cl. 280—39 5 Claims



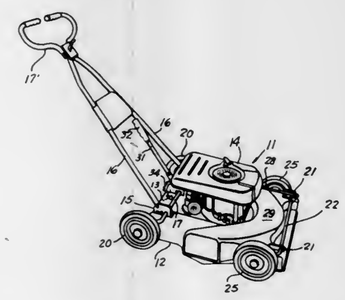
A straddle tractor of variable tractor width and utilizable on sloping ground, intended especially for carrying or hauling a machine for agricultural or public works, comprises four upright members having wheels articulated on their lower extremities and which are rigidly fixed together two by two by cross-members in order to form two rigid lateral flanks coupled to each other by at least one upper arm articulated on the said flanks in such manner that each flank is capable of pivoting with respect to the said arm about a horizontal axis, each of the two lateral flanks being further attached to the upper arm by means of a member of variable length articulated both on the arm and on the flank considered. Each of the members of variable length is constituted by an endless screw engaged in a tubular nut and capable of rotating with respect to the said nut by the action of driving means having two directions of rotation, transmission means fixed to the upper arm and comprising a device for reversing the direction of operation, being provided in order to transmit the movement of rotation to both the two rotating screws and permitting the direction of rotation of one screw to be reversed with respect to the other.

3,677,573
PHOTOGRAPHIC EQUIPMENT CART
Sonny B. Chin, 5750 Charles St., Burnaby, British Columbia, Canada
Filed Sept. 25, 1970, Ser. No. 75,354
Int. Cl. B62b 1/10; B62d 61/12
U.S. Cl. 280—43.1 10 Claims



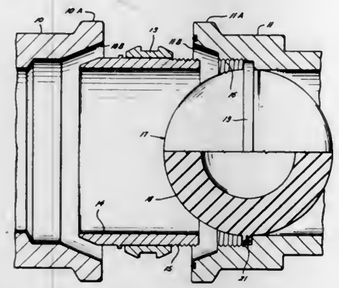
A cart having two sets of wheels which are interchangeable, one set for another, so that the cart can readily be converted from outdoor use to indoor use and vice versa. The cart is capable of transporting equipment such as that used by a photographer and also providing a steady base for the camera mount. Parts of the cart are foldable and others collapsible for convenience in storing the cart in a confined space.

3,677,574
MEANS FOR ADJUSTING HEIGHTS OF CUT IN POWER MOWER
Lawrence Cyr, Rte. No. 3, Noblesville, Ind.
Filed Oct. 9, 1970, Ser. No. 79,421
Int. Cl. B62d 21/18
U.S. Cl. 280—43.13 5 Claims



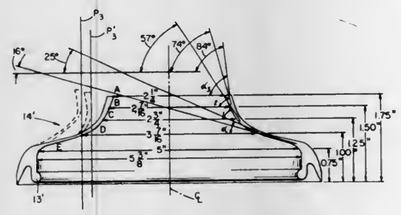
A power lawn mower having a frame supported on a pair of rotatable spaced transverse shafts provided at their ends with crank arms on which supporting wheels are journaled. The shafts are linked together and one of the shafts is provided with a control lever having a dog engagable with a notched sector member on the frame to lock the mower at an adjusted cutting height.

3,677,575
APPARATUS FOR TEMPORARILY CLOSING A PIPELINE
Alfred W. Wedel, Houston, Tex., assignor to Cameron Iron Works, Inc., Houston, Tex.
Filed Aug. 3, 1970, Ser. No. 46,491
Int. Cl. F16l 35/00
U.S. Cl. 285—3 10 Claims



There is disclosed a body having an outer elastic surface of a diameter which fits closely within a pipe, and a shearable flange about the body which is tightly engaged in a groove within the pipe to temporarily retain the body in position to close the pipe.

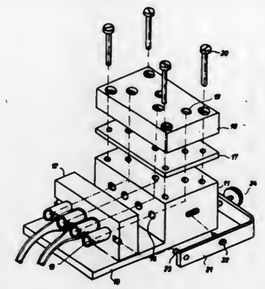
3,677,576
ROOF FLANGE WITH ELASTOMERIC COLLAR
Craig S. Gustafson, Blueberry Lane, Lincoln, Mass.
Filed Aug. 5, 1970, Ser. No. 61,099
Int. Cl. E04d 13/00
U.S. Cl. 285—43 6 Claims



Roof flanges with elastomeric collars having improved sealing characteristics. With the collar belling gradually from its opening, defining a convex surface engaging the pipe over a substantial distance, a liquid-tight seal results despite variations in the size or surface of the pipe. A pre-applied lubricant on the sealing surface enables attachment of high pressure collars while improving sealing.

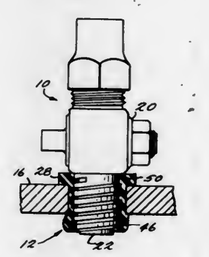
3,677,577
APPARATUS FOR CHANGING TUBES IN PERISTALTIC PUMPS
Werner Krauer, and Alfred Martinelli, both of Zurich, Switzerland, assignors to Polymetron Ltd., Glattbrugg, Switzerland
Filed Nov. 17, 1969, Ser. No. 877,296
Claims priority, application Switzerland, March 21, 1969, 4278/69
Int. Cl. F16l 39/00
U.S. Cl. 285—137 R 9 Claims

An apparatus for changing tubes in peristaltic pumps comprising a coupling member arranged to receive the tubes of the peristaltic pump and a clamping means for pressing the coupling member against a support. The coupling member has a plurality of nipples corresponding to the number of pump tubes and each nipple is surrounded by a sealing ring. The inlet and outlet conduits to the peristaltic pump are inserted in



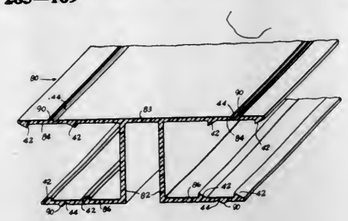
a cover plate which is fixed to the support with a gasket being provided between the plate and the support. The clamping means is in the shape of a stirrup having a tightening screw and a pin on each side of the stirrup for engaging in a notch of the coupling member when the stirrup is moved backwards by means of the tightening screw.

3,677,578
CONNECTION FITTING FOR A PIPE
Robert R. Roos, Decator, Ill., assignor to Mueller Co., Decatur, Ill.
Filed Feb. 19, 1971, Ser. No. 117,024
Int. Cl. F16l 41/04
U.S. Cl. 285—162 9 Claims



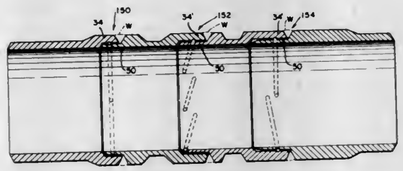
A fitting and sealing sleeve for establishing a fluid tight connection with a main of the type constructed from asbestos-cement; the fitting has an exteriorly threaded tubular member having a through bore, one end of which on the exterior thereof has a reduced diameter threaded portion which progressively increases to a diameter substantially equal to the diameter of the remaining threaded portion of the tubular member; the sealing sleeve is constructed from a resiliently deformable material and has a helical coil partially embedded in its interior wall so that a portion of the coil's edge projects radially inwardly with respect to the longitudinal axis of the sleeve; arcuate ring segments are carried between adjacent turns of the coil at one end of the sleeve; when the sleeve is inserted into an opening in the main and the tubular member threaded down into the sleeve, the exterior surface of the tubular member will expand the sleeve to press it into sealing engagement with the wall of the opening and, when the tubular element is fully inserted into the sleeve, the ring segments will be expanded outwardly to form an external bead on the sleeve to prevent removal of the fitting back through the opening.

3,677,579
CONNECTIONS FOR CONDITIONED AIR DUCTS
Wayne N. La Vanchy, 2303 Ida Drive, Arnold, Mo.
Filed Feb. 20, 1970, Ser. No. 13,085
Int. Cl. F16l 55/00
U.S. Cl. 285—169 4 Claims



Prefabricated rigid vinyl or similar plastic connector elements adapted to facilitate the installation of an air duct system in the basement of a building and the like. Particularly although not exclusively designed for connections in duct systems of the rectangular rigid board type. The connectors serve to obviate the tedious and time-consuming grooving, shiplap and sealing operations currently required and employed.

3,677,580
ADJUSTABLE PIPE COUPLING
Charles E. Klanke, 1416 Luke Lane, Indianapolis, Ind.
Filed April 7, 1970, Ser. No. 26,303
Int. Cl. F16l 13/04
U.S. Cl. 285—184 6 Claims

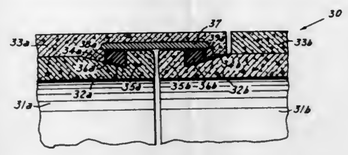


A pair of cooperative pipe sections have telescopic male and female ends. Bearing means is supported by the end of one of said sections, the other of said sections having groove means therein receiving said bearing means to enable rotation of the sections with respect to one another but preventing separation thereof in a longitudinal direction. The two sections are provided with cooperative adjacent weld bevels to enable the sections to be rigidly welded to one another.

The first form of the invention permits rotation of one section with respect to another through an angle of 360°. A second form of the invention permits extension of one section with respect to another in a longitudinal direction, and a third form of the invention enables one section to be slanted at an angle with respect to the adjacent section. These different forms of the invention may be combined in various combinations.

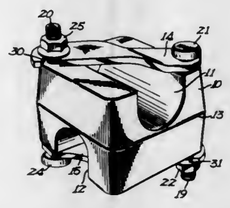
3,677,581
KEYED JOINT ARRANGEMENT FOR INTERCONNECTING PIPE SECTIONS
Thomas K. Breitfuss, 17541 Orange Tree Lane, Tustin, Calif.
Filed Sept. 30, 1970, Ser. No. 76,855
Int. Cl. F16l 21/02
U.S. Cl. 285—292 12 Claims

Sections of pipe are connected by a keyed joint arrangement. A peripheral groove is formed in the end of one pipe section. An envelope attached to the other pipe section extends longitudinally over the groove. A tongue formed on the envelope mates with the groove to key the pipe sections together in a joint arrangement which limits the longitudinal movement of the pipe sections relative to each other. Gaskets,



joint sleeves and unbonded surfaces may be incorporated into the joint arrangement so that the formed joint is flexible and watertight. The joint arrangement is shown incorporated in a composite or encased pipeline and also as a composite or encased joint formed around preformed pipe sections.

3,677,582
SCAFFOLDING CLAMP
Kenneth E. Flick, New Brighton, Minn., assignor to Jewel Manufacturing Company
Filed Aug. 5, 1970, Ser. No. 61,101
Int. Cl. F16b 7/04
U.S. Cl. 287—49 4 Claims

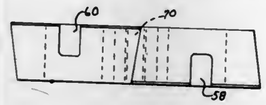


A scaffolding clamp construction in which two elongated scaffolding members are secured together at a desired angle with respect to each other by a scaffolding clamp having a pair of grooves on opposite sides of a block means, the grooves being of a depth sufficient so that the scaffolding members are substantially disposed within the grooves, there being clamping members for retaining the scaffolding members in position in the clamp. The block means may consist of two separate blocks which can be angularly adjusted with respect to each other to adjust the angular position of the scaffolding members. In the preferred form, however, the block is a solid block and bolts extend through the block on opposite diagonal corners, the bolts acting both as means for pivotally holding the clamping bars at one end and clamping the bar at its opposite end against the scaffolding member. By reason of the fact that the assemblage of the two clamp bars and the two bolts completely surround the two scaffolding members at the area where they cross each other and that the bars and bolts are of material having a relatively high tensile strength, the material of the block means need not necessarily be of such high tensile strength.

3,677,583
BUSHING AND METHOD OF MANUFACTURING
Fred J. Steinke, South Bend, Ind., assignor to Reliance Electric Company, Mishawaka, Ind.
Filed July 30, 1970, Ser. No. 59,481
Int. Cl. F16d 1/06
U.S. Cl. 287—52.06 14 Claims

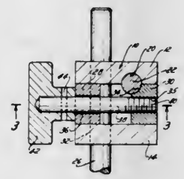
A method of fabricating tapered bushings for use with hubs having a tapered internal wall corresponding to the external

taper on the bushing, for use with securing screws inserted in holes intersecting the tapered surfaces. The method includes the steps of placing the blanks having the tapered surfaces together and drilling a single hole in the area of contact between the two blanks and tapping the hole while said blanks are in contact with one another. The hole may be drilled with



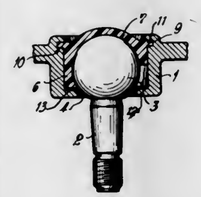
the bushings facing in opposite directions to one another with the blanks facing in the same direction, in which flattened surfaces are provided on the two blanks at the point of contact with one another. The bushing having the foregoing configuration with the flattened surfaces also constitutes a part of the present concept.

3,677,584
TWO DIRECTION QUICK ADJUSTING BAR CLAMP
Henry O. Short, Lynchburg, Va., assignor to Simplimatic Engineering Co., Lynchburg, Va.
Filed March 24, 1971, Ser. No. 127,567
Int. Cl. F16b 7/04
U.S. Cl. 287—49 2 Claims



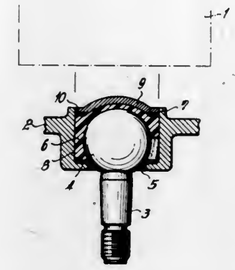
A bar clamp for quickly adjusting two bars arranged in different planes and in two different directions employing a single control device, operative for simultaneously tightening and simultaneously releasing the two bars to and from the clamp in any position of adjustment of the bars relative to each other in said two directions.

3,677,585
BALL JOINT FOR VEHICLE LINKAGES
Wolfgang Scheerer, Strump, Germany, assignor to A. Ehrenreich & Cie
Filed Sept. 22, 1970, Ser. No. 74,414
Claims priority, application Germany, Oct. 23, 1969, P 19 53 396.1
Int. Cl. F16c 11/06
U.S. Cl. 287—87 3 Claims



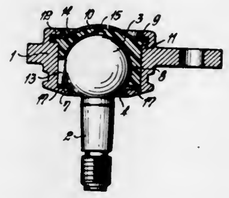
A ball and socket joint wherein the bearing member positioned between the ball element and the joint housing is formed as an integral, unitary member with the housing cover.

3,677,586
BALL JOINT WITH COVER PLATE FOR VEHICLES LINKAGES
Klaus Stuck, Buderich, Germany, assignor to A. Ehrenreich & Cie
Filed Sept. 22, 1970, Ser. No. 74,415
Claims priority, application Germany, Oct. 22, 1969, P 19 53 115.8
Int. Cl. F16c 11/06
U.S. Cl. 287—87 2 Claims



A ball and socket joint having a cylindrical bore in the joint housing, a bearing element in the bore surrounding the ball member and a cover having a peripheral edge coextensive with the end of the housing and electron beam welded thereto.

3,677,587
BALL JOINT FOR VEHICLE LINKAGES
Andreas Schmidt, Osterath-Bovert, and Paul Muller, Dusseldorf-Oberkassel, both of Germany, assignors to A. Ehrenreich & Cie
Filed Sept. 22, 1970, Ser. No. 74,444
Claims priority, application Germany, Oct. 22, 1969, P 19 53 116.9
Int. Cl. F16c 11/06
U.S. Cl. 287—87 7 Claims

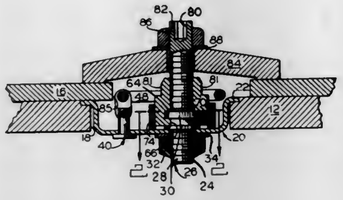


A ball and socket joint including a bearing member in the joint housing, the bearing having a plurality of small protrusions on one end thereof. The protrusions may be flattened during assembly to compensate for tolerances in production.

3,677,588
FASTENER
George C. Coffield, Jr., Pleasant Valley, Iowa, assignor to The United States of America as represented by the Secretary of the Army
Filed Dec. 1, 1970, Ser. No. 93,936
Int. Cl. F16b 5/02, 35/00
U.S. Cl. 287—189.36F 5 Claims

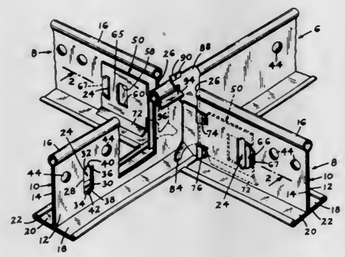
A fastener assembly is fixedly attached to a stud recessed in a partition and includes a set screw attached by an adaptor to

the stud for axial extension therefrom through a hole in the item to be fastened. A nut engaged with the extending end of



the set screw is tightened against a washer larger in diameter than the hole and mounted on the set screw to draw the item to the partition and secure it thereto.

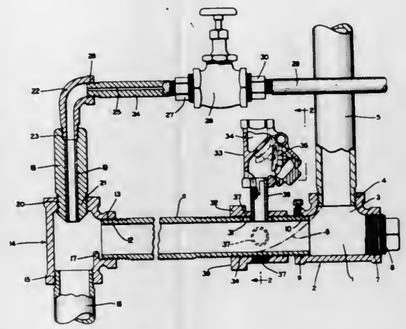
3,677,589
FIELD INSTALLATION CLIP FOR EXPOSED GRID SYSTEMS
David Jack Roles, Baltimore, Md., assignor to Eastern Products Corporation, Columbia, Md.
Filed Feb. 18, 1971, Ser. No. 116,520
Int. Cl. E04c *2/42*
U.S. Cl. 287—189.36A **6 Claims**



In the fabrication of suspended ceiling exposed grid systems, a field installation clip may be used to releasably lock main runners in abutting relationship, serially connect cross-T's across a main runner, releasably lock cross-T's in abutting relationship and releasably lock cross-T's in parallel between two main runners.

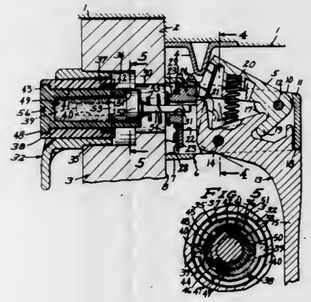
3,677,590
FLUIDIZED SAND TRAP EJECTOR
Waldama Bente, 314 Miller Ave., Dennison, Ohio
Filed Dec. 16, 1970, Ser. No. 98,636
Int. Cl. B60b *39/08*; B61c *15/10*; B65g *53/54*
U.S. Cl. 291—3 **7 Claims**

An ejector for a sand trap for sanding track rails by eduction. A sand chamber has an inlet through which sand may be continuously fed as by gravity, and an outlet connected by a tubular casing to the upper end of a sand delivery pipe to the track rail. The exterior of the tubular casing is threaded and there is a longitudinally disposed elongated opening therein. A sand metering device, in the form of a sleeve with a plurality of tapped apertures therein, is threaded upon the tubular casing. A check valve has a threaded neck selectively threaded into one of said tapped apertures and inserted into said elongated



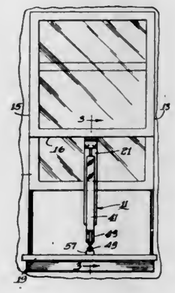
opening. A nozzle connected to an air pressure supply is located above the upper end of the sand delivery pipe.

3,677,591
EMERGENCY LOCK RELEASE
Russell W. Waldo, St. Paul, Minn., assignor to Ideal Security Hardware Corporation, St. Paul, Minn.
Filed Dec. 23, 1970, Ser. No. 100,855
Int. Cl. E05c *3/16*
U.S. Cl. 292—221 **3 Claims**



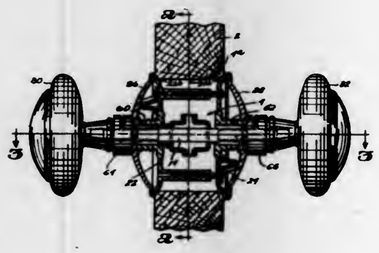
An emergency lock release for a door having a fixed outer handle and a latch releasing pushbutton mounted in the fixed handle on the outer side of a door, such as a bathroom door. The pushbutton is operatively coupled to a latch locking mechanism mounted on the inner side of a door and is provided with a recess for reception of a tool by means of which the pushbutton may be rotated to unlock the latch mechanism from the opposite or outer side of the door, when a person at the inner side becomes incapacitated or cannot otherwise unlock the door from the inner side thereof.

3,677,592
WINDOW BRACE
Joseph Navara, 2105 West Walton, Chicago, Ill.
Filed Aug. 24, 1970, Ser. No. 66,334
Int. Cl. E05c *19/18*
U.S. Cl. 292—288 **4 Claims**



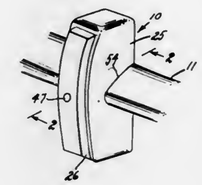
An adjustable window brace for positioning balanced and storm windows at a selected position.

3,677,593
DOOR HARDWARE MECHANISM INCLUDING DECORATIVE DOOR KNOBS AND DOOR BACK PLATES
Edward John Wahlberg, Hanover, Mass., assignor to Dekhar, Inc., Watertown, Mass.
Filed Dec. 30, 1970, Ser. No. 102,643
Int. Cl. E05b *15/00*
U.S. Cl. 292—356 **2 Claims**



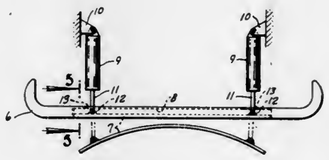
A lock set for a door predrilled to receive a cylindrical type lock includes a pair of apertured centering plate members which can be mounted over a threaded lock spindle and secured to one another at opposite sides of a predrilled door opening in correctly centered positions. The centering plate members when thus secured together present tubular door knob holder portions constituting a solid anchoring base operable to hold rotatable door knobs and spindle portions in coaxial relationship with the drilled hole and in suitably spaced relation to adjacent door surfaces. Back plates are adjustably supported externally of the door knob holder portions without fastenings to constitute a quality door hardware assembly which can be very quickly and cheaply installed.

3,677,594
BUMPER GUARD MOUNTING ASSEMBLY
Seymour I. Gussack, New Rochelle, and Hugh Berry, Scarsdale, both of N.Y., assignors to X-L-O Automotive Accessories, Inc., West Nyack, N.Y.
Filed Nov. 12, 1970, Ser. No. 88,794
Int. Cl. B60r *19/04, 19/08*; B61f *19/04*
U.S. Cl. 293—67 **2 Claims**



An automotive bumper overrider guard adapted to be pushed onto an automotive bumper, and tightened in place through an access opening on an exposed outer surface thereof, the access opening being subsequently closed by a protective and/or decorative cap.

3,677,595
AUTOMOBILE BUMPER
Douglas L. P. Hamilton, 8110 N. Beach Drive, Milwaukee, Wis.
Filed June 30, 1970, Ser. No. 51,176
Int. Cl. B60r *19/04*
U.S. Cl. 293—73 **4 Claims**

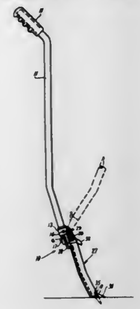


The modern ornamental automobile bumper which is notoriously ineffective to withstand the impact of even a low speed collision is equipped with a sturdy spring steel impact receiving bar that is projected from a retracted position unobstrusively seated in a recess in the bumper to an operative position outwardly of the bumper as a consequence of the sudden forceful depression of the brake pedal by a driver attempting to avoid a collision.

3,677,596
CADDY FOR DISPOSABLE PLASTIC BAGS
Rosemary C. Yonaites, and Gary A. Yonaites, both of 1529 Greenleaf Street, Evanston, Ill.
Filed July 14, 1970, Ser. No. 54,689
Int. Cl. A47f *13/08*
U.S. Cl. 294—19 **5 Claims**

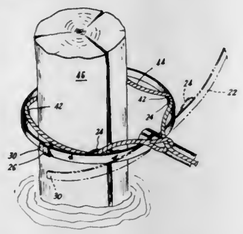
A caddy for disposable plastic bags which supports the bag with the mouth open to receive trash to be swept therein. The bag is clamped on a wire frame by a moveable open frame having a U-shaped groove in which the wire frame is seated. A

wedge shaped lip is pivotally mounted on the lower end of the caddy and is spring urged downwardly. The lip is engaged



against the surface and the caddy is pressed downwardly to hold the lip tightly against the surface while it serves as a ramp for the sweeping when filling the bag.

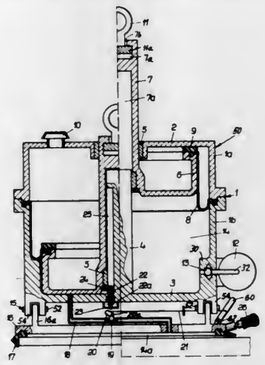
3,677,597
LOOP-SUPPORTING DEVICE
Harold A. Stipek, 160 Victoria Road, New Britain, Conn.
Filed March 30, 1971, Ser. No. 129,522
Int. Cl. B63b *21/04*
U.S. Cl. 294—19 R **7 Claims**



A loop-supporting device is provided by an elongated handle and a resiliently deformable, elongated frame member of generally rectilinear configuration in its open position. A clasp is provided for disengagably securing the frame member in closed position of generally circular configuration, and the frame member has a plurality of line support elements spaced along the length thereof. With the frame member in its closed position, the loop of a line may be supported thereby, after which the loop and frame member may be positioned about a piling, as in a boat mooring operation. Drawing the frame member against the piling releases the engagement by the clasp and allows the frame member to return to its open, generally rectilinear position. This, in turn, permits release of the line and removal of the device with the loop remaining about the piling.

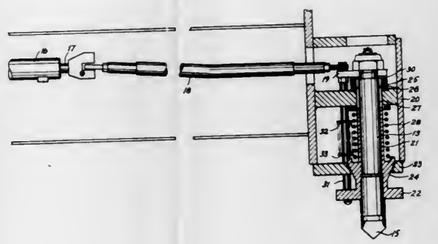
3,677,598
SYPHON LIFTING DEVICE HAVING PISTON ACTUATED VENTING VALVE
Klaus Becker, Volmarstein/Ruhr, Germany, assignor to Demag Aktiengesellschaft, Duisburg, Germany
Filed April 21, 1970, Ser. No. 30,547
Claims priority, application Germany, May 13, 1969, P 19 24 293.4
Int. Cl. B66c *1/02*
U.S. Cl. 294—64 R **9 Claims**

A syphon for lifting solid articles includes a piston which is guided within a cylinder on a centrally arranged upstanding guide member and it is connected to a rod portion having means for connecting the device to a hoisting unit. A rolling diaphragm is connected from the upper end of the piston to an intermediate annular wall portion of the cylinder so that upward movement of the piston creates a vacuum in the space therebelow which is communicated through a conduit to a



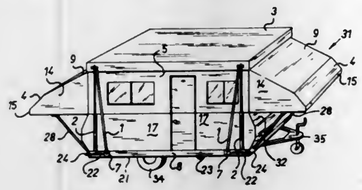
sealing area defined below a suction plate. The plate may be guided into association with an article to be lifted by a handle and the interior of the cylinder may be vented by a hand operated valve control which will open the lower portion of the cylinder to the atmosphere only when the piston has been lowered so as to permit actuation of the valve control.

3,677,599
SELF ALIGNING LATCHING MECHANISM ON A CARGO CONTAINER SPREADER
James William Shannon, Doubleview, Australia, assignor to Vickers Haskins Pty. Limited,, Railway Parade, Ashfield, Western Australia, Australia
Filed Nov. 6, 1970, Ser. No. 87,540
Int. Cl. B66c *1/42*
U.S. Cl. 294—67 DA **1 Claim**



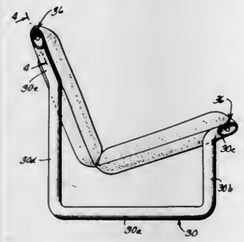
A self aligning latching mechanism on a cargo container spreader, the mechanism mounted so as to surround a post of the spreader and including biasing means to normally keep the post substantially vertical whilst allowing the post limited movement upwardly against the action of the biasing means to a position where its longitudinal axis can be displaced to a slight angle to the vertical. The mechanism serves to allow the spreader to be connected to a container which has one or more of its recesses out of alignment.

3,677,600
CAMPER TRAILER
Jean Charron, 137 Morel St., Repentigny, Quebec, Canada
Filed Feb. 22, 1971, Ser. No. 117,282
Int. Cl. B60p *3/32*
U.S. Cl. 296—27 **11 Claims**



A camper trailer which is collapsible and entirely made of rigid panels. The camper trailer comprises an open top box-like body, a main roof, means to raise the main roof, longitudinal wall panels hinged to the longitudinal sides of said body and, when erected, closing the space between the main roof and the said longitudinal body sides. Extensible parts, entirely made of rigid panels hinged one to the other, can be moved out to protrude from the body and main roof. Each extensible part comprises a horizontal platform mounted on slides, a roof made of panels hinged to the outer end of the platform and to the underside of the main roof and movable in slides under said main roof and of longitudinal panels hinged to the sides of the platform and capable of taking an upright position engaging the roof of the extensible part. The main roof is raised by a system of bars actuated by a winch and cable arrangement.

3,677,601
SLUNG FURNITURE
Andrew Ivar Morrison, Brooklyn, and Bruce R. Hannah, Staten Island, both of N.Y., assignors to Knoll International, Inc., New York, N.Y.
Filed June 8, 1970, Ser. No. 44,200
Int. Cl. A47c *7/02, 7/14, 4/02*
U.S. Cl. 297—441 **8 Claims**



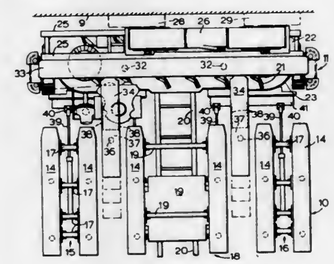
An article of furniture such as a chair formed from two identical side pieces joined together by identical front and rear stretchers. A fabric or other support surface is slung between the front and rear stretchers through the use of a channel in each stretcher defined by an interior portion of the stretcher and an access opening thereto through the stretcher wall. The front and rear edges of the support structure are positioned within the channels in the stretchers. An upholstered cushion structure may be slung in this fashion, with a cushion being formed from top and bottom sheets of fabric material sewn together along two sides thereof to form an open-ended bag, which is then filled with resilient material. An enlargement, such as a cord, is attached to each end of each fabric piece at each open end of the bag, to provide a total of four enlargements, two at each end of the bag. The open ends of the bags are secured to the two stretchers by positioning the two enlargements at each open bag end within the corresponding stretcher channel, thereby holding the cushion and closing the ends of the bag.

3,677,602
TUNNELING MACHINE WITH CONCRETE WALL FORMING MECHANISM
John R. Tabor, 3400 Spruce St., Racine, Wis.
Division of Ser. No. 743,363, July 9, 1968, Pat. No. 3,561,223.
This application Feb. 24, 1970, Ser. No. 17,004
Int. Cl. E01g *3/03*
U.S. Cl. 299—31 **5 Claims**



A tunneling machine having a shield with a spoil excavator at its head end, a truss trailing said shield, a wheeled support for the truss and comprising cradle supports which rest on the tunnel floor and upon which the truss is rollably supported, a thrust connection between the truss and the shield whereby the truss will be drawn forwardly with the shield as the shield is advanced and means for shifting the cradle supports longitudinally along the truss to periodically advance the cradle supports along the tunnel floor.

3,677,603
MINE ROOF SUPPORTS
Fred Small, Ormskirk, England, assignor to Gullick Dobson Limited, Ince, Wigan, Lancashire, England
Filed Oct. 16, 1970, Ser. No. 81,270
Claims priority, application Great Britain, Oct. 16, 1969, 50,856/69
Int. Cl. E21c *29/02*
U.S. Cl. 299—31 **2 Claims**

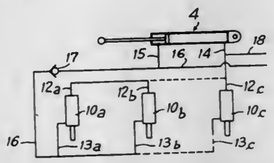


A mine roof support comprises two assemblies one in front of another. The forward assembly carries a mined-material conveyor means, staker means, and a guide or support carrying a mineral winning machine such as a rotary shearer. The rearward assembly serves to support the roof. The support as a whole can be installed in a mine road way or in the stable and can advance itself to extend the roadway or to form a new stable.

3,677,604
HYDRAULIC CONTROL FOR HYDRAULIC BUCKET HAVING RECIPROCATING TEETH

Pierre J. Leyrat, Triport, France, assignor to Societe Anonyme Poclain, Le Plessis-Belleville, France

Filed Sept. 23, 1970, Ser. No. 74,568
Claims priority, application France, Sept. 29, 1969, 6933171
Int. Cl. E02f 3/81
U.S. Cl. 299—67 4 Claims

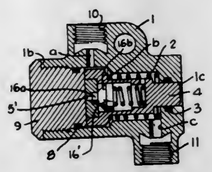


This invention relates to a device for the hydraulic control of a bucket in public works machines provided with at least one movable tooth coupled to a hydraulic hammer, comprising at least one double-action hydraulic jack coupled between the bucket and the structural element on which said bucket is mounted to oscillate, wherein the feed conduits and the delivery conduits of the jack and hydraulic hammers coupled respectively to the bucket and to each of the movable teeth are respectively connected in parallel.

3,677,605
PRESSURE CONTROL VALVE FOR BRAKES AND THE LIKE

Shigeru Matsumoto, and Toshiaki Gotoh, both of Sakado-machi, Irumagun, Japan, assignors to Nippon Oil Seal Industry Co., Ltd., Tokyo-to, Japan

Filed Jan. 8, 1970, Ser. No. 1,341
Int. Cl. B60t 8/26, 11/34
U.S. Cl. 303—6 C 2 Claims



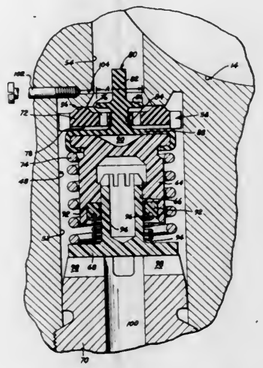
Pressure control valve for brakes and the like including a movable valve stem having two valve means associated therewith. The first valve means is normally open and permits fluid pressure to flow from the inlet to the outlet. This valve means closes when the fluid pressure reaches a first predetermined level. The second valve means is normally closed and does not open until the pressure rises to a predetermined level above the level at which the first valve means is closed. This arrangement precludes "brake lock" and "skid" or "spin" while insuring that a vehicle will stop within a given distance.

3,677,606
METERING VALVE

Paul B. Shutt, St. Joseph, Mich., assignor to The Bendix Corporation

Filed Aug. 5, 1970, Ser. No. 62,237
Int. Cl. B60t 8/26
U.S. Cl. 303—6 C 7 Claims

A metering valve is provided that is installed in the outlet passage of a master cylinder. The outlet passage has a smaller diameter inlet chamber and a larger diameter outlet chamber with a shoulder therebetween. Valve means located in the outlet passage include a first valve member normally urged into engagement with the shoulder and a second valve member is normally urged away from the first valve member to permit fluid communication through the passage. When the pressure

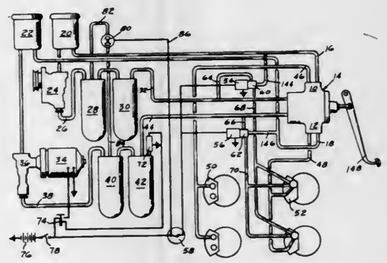


in the passage reaches a first predetermined level, the second valve member is driven into sealing engagement with the first valve member to prevent fluid communication through the passage. The first valve member is driven away from the shoulder to resume fluid communication through the passage when the pressure in the inlet chamber reaches a second predetermined level higher than said first predetermined level.

3,677,607
HYDRAULIC POWER BRAKE SYSTEM

Harold B. Schultz; Keith H. Fulmer, and Richard T. Burnett, all of 401 North Bendix Drive, South Bend, Ind.

Division of Ser. No. 797,530, Feb. 7, 1969, Pat. No. 3,599,761.
This application April 5, 1971, Ser. No. 131,200
Int. Cl. B60t 13/14
U.S. Cl. 303—10 14 Claims

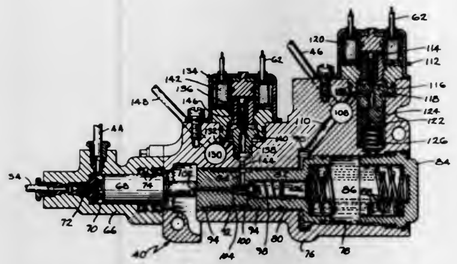


This invention relates to a hydraulic power brake means having two separate sources for hydraulic pressure controlled by a valve to provide separate pressures to a vehicle's front and rear brakes that also is able to regulate a mechanical brake applicator for at least one of the front or rear brakes.

3,677,608
ADAPTIVE BRAKING SYSTEM WITH HYDRAULICALLY POWERED MODULATOR

Richard L. Lewis, South Bend, Ind., assignor to The Bendix Corporation

Filed June 1, 1970, Ser. No. 42,398
Int. Cl. B60t 8/02
U.S. Cl. 303—21 F 1 Claim

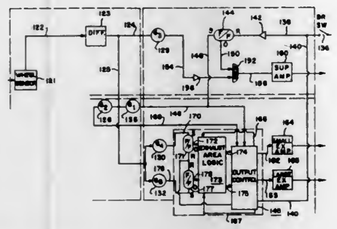


An adaptive braking system for a motor vehicle including a hydraulically actuated brake pressure modulator controlled by solenoid valves which are responsive to signals from wheel deceleration sensors transmitted through a computer. The power piston of the modulator is prevented from separating from the modulating piston by passing the control fluid through a valve positioned in the power piston and held open by contact with the modulating piston.

3,677,609
ADAPTIVE CONTROL FOR FLUID PRESSURE BRAKING SYSTEM

Dennis J. Davis; Dennis J. Sudnick; John E. Juhasz, and Sham Kurichh, all of Elyria, Ohio, assignors to The Bendix Corporation

Filed Sept. 25, 1970, Ser. No. 75,314
Int. Cl. B60t 8/12
U.S. Cl. 303—21 BE 14 Claims

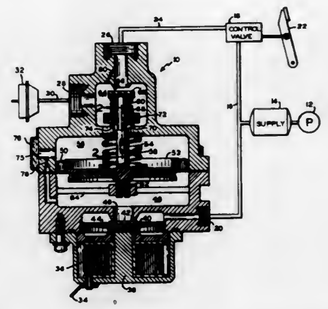


An adaptive fluid pressure braking system responsive to wheel deceleration and acceleration for cyclicly decreasing and increasing braking effort at optimum levels to prevent wheel lock-up and provide maximum deceleration. The system includes band control apparatus responsive to a pair of pre-selected wheel acceleration levels whereby, instead of taking corrective action as soon as sensed, whenever wheel acceleration during a preceding cycle is less than the lower level or greater than the upper level, a signal is generated whereby corrective action is taken during the next cycle. Where maximum wheel acceleration falls between the pre-selected levels no corrective action signal is generated for the next cycle. The corrective action may comprise a greater rate of decrease in braking pressure during the next cycle or a lesser rate of decrease in pressure.

3,677,610
ADAPTIVE BRAKING CONTROL VALVE

Edward M. Pauwels, and James K. Roberts, both of South Bend, Ind., assignors to The Bendix Corporation

Filed Nov. 16, 1970, Ser. No. 89,971
Int. Cl. B60t 17/18
U.S. Cl. 303—21 F 10 Claims

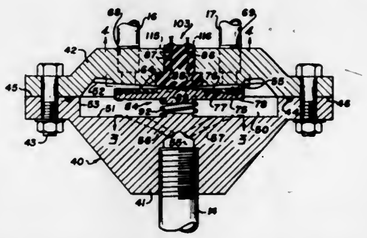


A control valve for use in an adaptive braking system to modulate the pressure delivered to a braked wheel when a skid condition is sensed. The adaptive braking control valve will permit normal unobstructed flow of pressure from the driver's control valve to and from the wheel brake actuating device. Upon sensing an imminent skid condition by the adaptive braking system, a solenoid will be energized that allows a source of pressurized fluid to enter the control valve. The source of pressurized fluid in the control valve will move a diaphragm which closes the pressure received from the driver's control valve and, subsequently, reduces the pressure in the wheel brake actuating device. When an imminent skid condition no longer exists, the solenoid will de-energize thereby terminating the source of pressurized fluid from the control valve. The pressurized fluid acting against the diaphragm is decayed by a bleed orifice, thereby restoring normal communication between the driver's control valve and the wheel-brake actuating device. A small bypass is included to allow a slow pressure build rate in the wheel brake actuating device during the time interval between the stopping of normal communication and the reduction of pressure from the wheel brake actuating device.

3,677,611
ISOLATOR VALVE FOR PNEUMATIC BRAKE SYSTEMS

Joseph A. Vriend, P.O. Box 505, Squamish, British Columbia, Canada

Filed July 23, 1970, Ser. No. 57,437
Int. Cl. B60t 17/22
U.S. Cl. 303—84 A 7 Claims



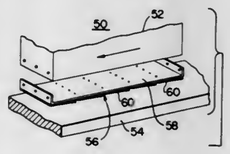
A valve having a disc mounted in a valve chamber for limited rocking movement in any direction about a centrally

disposed pivot. The valve chamber has outlet ports connected by lines to the brakes of a vehicle and arranged in a circle within the circumference of the valve disc and also an inlet port opposite the outlet ports. The valve disc is supported in a normally open and balanced position when air pressure at the outlet ports is substantially equal but, when a predetermined drop in pressure is sensed at one of the outlet ports, as would occur if the brake line connected to that outlet port was ruptured, then the valve disc is rocked to close off that particular outlet port while the remaining outlet ports are kept fully open to operate the brakes of the remaining wheels of the vehicle. The valve disc is included in an electric circuit which is energized whenever the valve disc is rocked to close off an inlet port and a warning device in the electric circuit tells the driver of the vehicle which brake line is ruptured.

3,677,612
COATED FLUID BEARING FOILS AND FABRICATING METHOD

Morris A. Barnett, Palos Verdes Estates, and Alexander Silver, Tarzana, both of Calif., assignors to The Garrett Corporation, Los Angeles, Calif.

Filed April 3, 1969, Ser. No. 813,066
Int. Cl. F16c *17/00, 17/02, 17/04*
U.S. Cl. 308—5 **6 Claims**

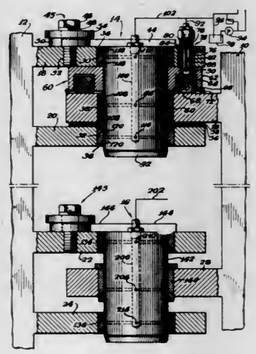


A method of providing an improved fluid foil bearing by coating the foil segments with a solid lubricant. Coated foils for both journal and thrust bearings are also disclosed.

3,677,613
SELF ALIGNING AND SELF ADJUSTING THRUST BUSHING ASSEMBLY

Kenneth E. Houtz, Streamwood, Ill., assignor to International Harvester Company, Chicago, Ill.

Filed May 21, 1971, Ser. No. 145,674
Int. Cl. F16c *17/10*
U.S. Cl. 308—135 **12 Claims**

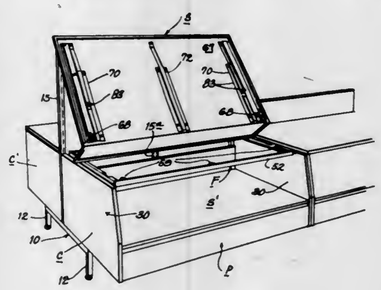


A self aligning and self adjusting thrust bushing assembly for pivotally connecting a pair of frame sections, such as those on an articulated tractor, including a clevis and a hinge plate with a hinge pin extending through the clevis and plate to define a pivot axis. An annular cylinder and piston assembly surrounds the pin and is connected with a source of hydraulic fluid pressure. A check valve permits flow of fluid only into the cylinder.

3,677,614
MERCHANDISE CABINET

John R. Radek, Hinsdale, Ill., assignor to Ready Metal Manufacturing Company, Chicago, Ill.

Filed Sept. 8, 1969, Ser. No. 862,613
Int. Cl. A47b *87/00, 88/00*
U.S. Cl. 312—108 **6 Claims**

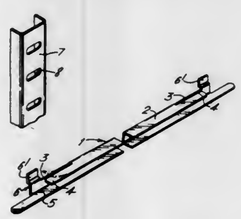


A knockdown merchandise display cabinet primarily designed for retail stores, with a primary objective of simplicity in construction and ready assembly, formed mainly of sheet metal and standard skeleton metal framework, the various parts being relatively flat to permit packing and shipping in compact, shallow packages. Roll-out shelving or drawers are supported on a horizontal frame, with anti-friction means therebetween, to permit sliding action with minimum effort. The shelf-supporting frame in turn is detachably carried by cantilever supports detachably mounted on the skeleton framework for vertically selective attachment. The shelf supporting frame has raceways for bearings under the shelves, which raceways incline downwardly and rearwardly in the back portion thereof, to induce automatic retraction of the shelving.

3,677,615
DRAWER UNITS AND RUNNERS THEREFOR

Leslie Gordon Hudson, Little Copped Hall, Epping, Essex, England

Filed March 12, 1971, Ser. No. 123,684
Claims priority, application Great Britain, March 16, 1970, 12,571/70
Int. Cl. A47b *88/04;* **F16c** *32/00*
U.S. Cl. 312—346 **5 Claims**

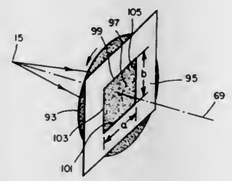


The invention relates to a runner which is removably mounted in a support unit for sliding drawers, the runner including integrally cranked arm portions which engage in slots in uprights of the support unit and locking tongues which are adjustable when the runner is in position to provide against unintentional removal of the runner from the uprights.

3,677,616
REDUCED NOISE HIGH RESOLUTION HOLOGRAPHIC IMAGING USING SPATIALLY INCOHERENT RECONSTRUCTING RADIATION

Robert W. Lewis, Ann Arbor, Mich., assignor to Battelle Development Corporation, Columbus, Ohio

Filed May 3, 1971, Ser. No. 139,341
Int. Cl. G02b *27/00*
U.S. Cl. 350—3.5 **4 Claims**

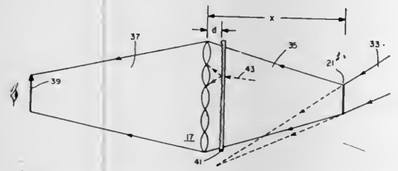


An improved technique for coherent illumination and imaging of non-diffuse objects, including non-diffuse transparencies, wherein a periodic intensity variation across the illuminating beam at the object is substantially eliminated by integrating the pattern over some distance during the viewing or recordation of an object image. A spatially incoherent source having a size related to the period of the intensity distribution is disclosed to accomplish this integration in both direct imaging of an object and holographic reconstruction thereof.

3,677,617
TECHNIQUES OF HOLOGRAPHIC DATA REDUCTION UTILIZING AN ADDITIONAL DIFFUSING STRUCTURE DURING RECONSTRUCTION

Juris Upatnieks, Ann Arbor, Mich., assignor to Battelle Development Corporation, Columbus, Ohio

Filed May 27, 1971, Ser. No. 147,517
Int. Cl. G02b *27/22*
U.S. Cl. 350—3.5 **5 Claims**

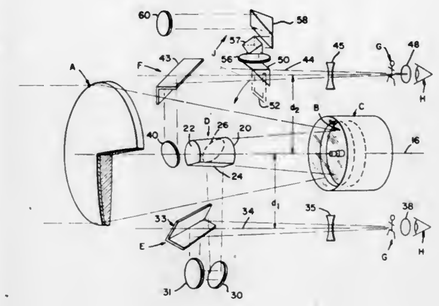


An off-axis optical hologram is constructed of an object with an object modified light being passed through an array of small lenses or some other light modulator. Upon reconstruction of the hologram, a diffracted wavefront is passed back through the array of small lenses or other light modulator. Additionally, during reconstruction, a separate light diffusing element is placed in the path of the diffracted image-carrying beam prior to its striking the light modulator.

3,677,618
BINOCULARS HAVING STABILIZING REFLECTORS

Arnold J. Schwemin, Oakland, Calif., assignor to Optical Research and Development Corporation, Oakland, Calif.

Filed Sept. 28, 1970, Ser. No. 75,906
Int. Cl. G02b *23/00*
U.S. Cl. 350—16 **3 Claims**

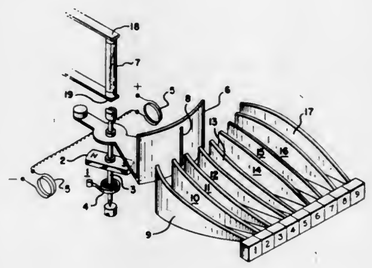


An optical instrument is disclosed having a single light input, paired variable ocular outputs and a folded and split light path therebetween. Provision is made in the folding of the light path for the insertion of a stabilizing mirror to remove apparent image vibration due to ambient instrument vibration.

3,677,619
READOUT DEVICES WITH LIGHT CONDUCTING CHANNELS

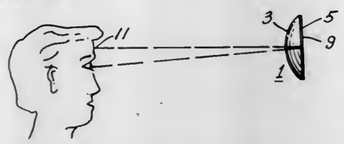
Elbert K. Mackenzie, North Wales, Pa., assignor to Electro-Mechanical Instrument Company, Inc., Perkasie, Pa.

Filed April 20, 1970, Ser. No. 30,034
Int. Cl. G02b *27/02*
U.S. Cl. 350—110 **13 Claims**



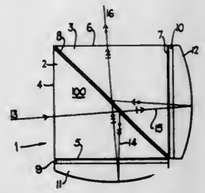
In a readout device a beam of light is moved to a position which represents an input condition. An electrical meter movement rotates a light mask which produces the beam of light. Light-conducting channels are positioned to selectively receive the beam of light. Output means at the other end of the light channels digitally indicate the input condition by the selective illumination from said beam of light.

3,677,620
CORRECTIVE MIRROR ASSEMBLY
Joseph Bettencourt, Albany, Calif., assignor to John D. Pleich, Albany and Paul Holland, Berkeley, Calif., part interest to each
Filed Nov. 20, 1967, Ser. No. 684,208
Int. Cl. G02b *27/02, 17/00, 7/18*
U.S. Cl. 350—145 **1 Claim**



A lens-mirror device corresponding substantially to the spectacle lens optical requirements of an individual and corrected for use at a distance of the order of 20 centimeters from the individual's eyes, to facilitate makeup and other routine operations around the eyes and the adjacent areas of the face.

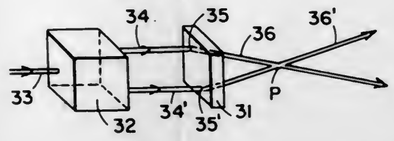
3,677,621
OPTICAL FIELD FLATTENING DEVICES
Francis Hughes Smith, York, England, assignor to Vickers Limited, London, England
Filed Nov. 24, 1970, Ser. No. 92,395
Claims priority, application Great Britain, Nov. 24, 1969, 57,463/69
Int. Cl. G02b *27/28*
U.S. Cl. 350—157 **15 Claims**



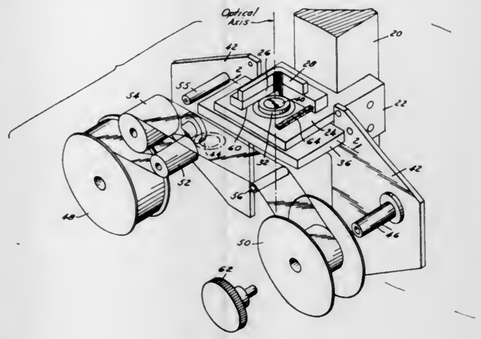
An optical device, for imposing a preselected degree of curvature upon an optical field associated with an image-bearing incident light beam, employs a light-polarizing beam splitter for splitting the incident light beam into a transmitted first beam and a reflected second beam, which first and second beams are linearly polarized in mutually perpendicular respective directions. Respective concave mirrors reflect the first and second beams so as to return them to the beam splitter, but respective polarization-changing members, mounted between the beam splitter and the concave mirrors, rotate the directions of linear polarization of the first and the second beams through 90° in the course of their passage from and back to the beam splitter. As a result, the returned first beam is reflected by the beam splitter, and the returned second beam is transmitted thereby for recombination with the first beam to form a single output beam.

3,677,622
LIGHT DEFLECTOR COMPRISING CASCADED LIGHT DISPLACEMENT MEANS AND HOLOGRAM PLATE
Nobuo Nishida, and Mitsuhito Sakaguchi, both of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan
Filed Sept. 18, 1970, Ser. No. 73,457
Claims priority, application Japan, Sept. 25, 1969, 44/75806
Int. Cl. G02b *27/00*
U.S. Cl. 350—163 **3 Claims**

A deflector for deflecting an incident coherent light beam in a desired direction includes a recording plate in which an interference fringe pattern is recorded. A light beam displacement device is disposed in front of the recording plate to displace a coherent beam incident thereon to a desired path parallel to and displaced from the incident beam.



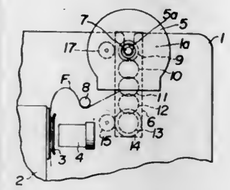
3,677,623
CLEAN WINDOW ASSEMBLY FOR REAL TIME FINGERPRINT INPUT TO FINGERPRINTIDENTIFICATION SYSTEM
William D. Hall, Van Nuys, Calif., and Vernon J. Burzan, Dexter, Mich., assignors to KMS Industries, Inc., Ann Arbor, Mich.
Filed Nov. 2, 1970, Ser. No. 86,087
Int. Cl. G01b *11/24*
U.S. Cl. 350—321 **4 Claims**



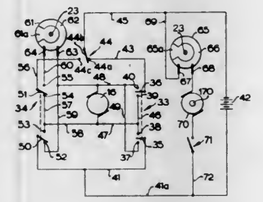
An assembly for the introduction of fingerprint data in an identification system including an input surface to lie on an optical axis and a strip of light transmitting film carried on suitable wind-out and wind-in reels to provide a fresh surface when moved incrementally across the input surface. Assembly also may be moved in limited rotation for alignment.

3,677,624
MOVIE PROJECTOR FOR USE WITH A FILM CARTRIDGE OR REEL
Tatsusuke Kadowaki, Yokohama, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan
Filed Sept. 14, 1970, Ser. No. 71,860
Claims priority, application Japan, Sept. 17, 1969, 44/74231
Int. Cl. G03b *23/02*
U.S. Cl. 352—73 **7 Claims**

An 8mm movie projector is operable selectively with either a film cartridge or an open reel, and includes a reel support arm provided in the upper part of the projector housing for vertical displacement into and out of the projector. The reel support arm has a spindle projecting laterally therefrom adjacent its upper edge, for fitting of a film reel over the spindle. When the reel support arm is in an upper position in which it projects from the projector, an open reel can be used with the projector. When the reel support arm is retracted to a lower position within the projector, a film cartridge can be used with the projector. A drive mechanism is engaged with the spindle and is selectively operable to rotate the spindle in the rewind direction, and a drive member is included in the drive mechanism and is engaged with a driven member of the film driving member in each of the two positions of the reel support arm. The drive mechanism includes a normally disengaged selectively operable clutch.



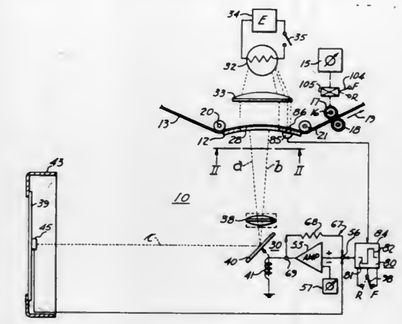
3,677,625
MOTION PICTURE CAMERA WITH DISSOLVING SHUTTER AND VARIABLE-FOCUS LENS
Ralf J. Stolzenwald, Stuttgart, and Peter Korner, Reichenbach, both of Germany, assignors to Robert Bosch Photokino GmbH, Stuttgart, Unterturkheim, Germany
Filed July 23, 1971, Ser. No. 165,651
Claims priority, application Germany, June 31, 1970, P 20 38 089.6
Int. Cl. G03b *21/36*
U.S. Cl. 352—91 **20 Claims**



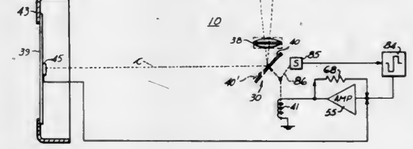
A motion picture camera with a variable-focus lens and a fading mechanism having a dissolving shutter is provided with two electric motors one of which drives the pull-down for film transport (**70**) and the other of which can selectively adjust the variable-focus lens or the shutter (**16**). The other motor (**16**) is normally connected with the variable-focus lens but can be disconnected from the variable-focus lens and connected with the dissolving shutter during the making of exposures with fade-out or fade-in effect. The other motor (**16**) is reversible and the one motor (**70**) is also of the reversible type if the camera is designed to effect the rearward transport of those film frames which were exposed with fade-out effect in order to expose such film frames with fade-in effect.

3,677,626
IMAGE DISPLAY FROM CONTINUOUSLY MOVING IMAGE CARRIER
Leonard A. Ferrari, San Dimas, Calif., assignor to Bell & Howell Company, Chicago, Ill.
Filed Jan. 11, 1971, Ser. No. 105,393
Int. Cl. G03b *41/10*
U.S. Cl. 352—109 **12 Claims**

Images are displayed from a continuously moving image carrier with the aid of a repeatedly advanced and reset optical compensator. The compensator is reset by electric pulse doublets which are generated by differentiator and single-stage multivibrator equipment.



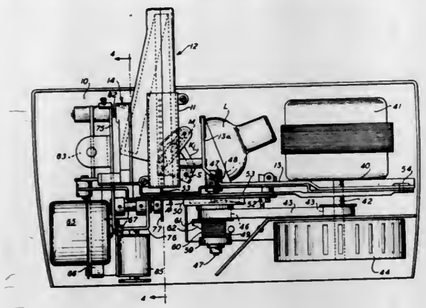
3,677,627
FILM SPROCKET HOLE SENSING
Robert F. Johnston, Wildwood, and Wieslaw Lichodziejewski, Mount Prospect, both of Ill., assignors to Bell & Howell Company, Chicago, Ill.
Filed Feb. 17, 1971, Ser. No. 116,053
Int. Cl. G03b *41/10*
U.S. Cl. 352—109 **15 Claims**

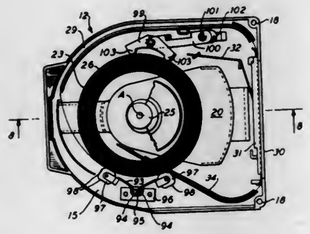


Film sprocket hole sensing methods project borderline images along with sprocket hole images from film with transparent film margins. The borderline images are darker than the sprocket hole images and adjacent luminous areas arising from the penetration of light through the transparent film margin. Movement of the luminous sprocket holes is sensed by sensing movement of the borderline images with light-sensitive sensing devices.

3,677,628
REVERSIBLE ENDLESS LOOP CARTRIDGE PROJECTOR FOR TEACHING MACHINES
Richard K. Walker, Convent, N.J., assignor to E. R. E. Laboratory, Inc., West Orange, N.J.
Filed Nov. 2, 1970, Ser. No. 86,076
Int. Cl. G03b *21/00, 21/12;* **G11b** *23/06*
U.S. Cl. 352—128 **10 Claims**

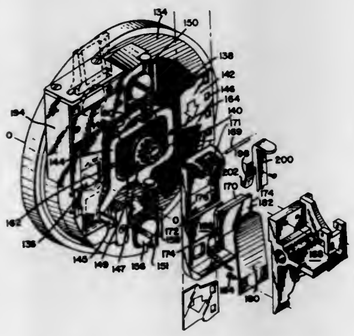
A motion picture projector for educational purposes is provided using an endless loop cartridge. The projector has a step advance for projecting single frames or motion pictures and





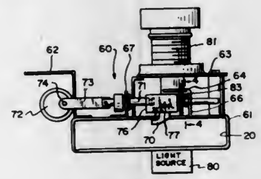
tridge has special means to keep the film roll in a loose condition to permit continuous drive of the film in either direction without jamming.

3,677,629
INTERMITTENT FILM PRESSURE MECHANISM FOR CINEMATOGRAPHIC CAMERAS
Russell M. Heinonen, Jr., Hudson, Mass., assignor to Technical Operations, Incorporated, Burlington, Mass.
Filed April 3, 1970, Ser. No. 25,474
Int. Cl. G03b *1/48*
U.S. Cl. 352—225 **5 Claims**



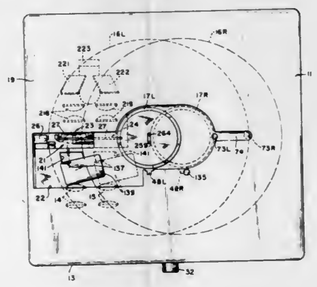
A cine camera has a color-encoding filter disposed on the optical axis with a rear surface thereof contiguous to the film exposure area. An intermittent pressure-applying means presses a film strip into firm engagement with the rear surface of the filter during each exposure interval. The pressure-applying means is driven away from the film by a film pull-down claw during each film advance interval.

3,677,630
AUDIO-VISUAL DISPLAY APPARATUS FOR RECEIVING CARTRIDGES CONTAINING AUDIO VISUAL INFORMATION
Donald V. O'Neal, River Grove, and Edward T. Kizielewski, Chicago, both of Ill., assignors to Motorola, Inc., Franklin Park, Ill.
Filed Aug. 20, 1970, Ser. No. 65,451
Int. Cl. G03b *31/00*
U.S. Cl. 353—15 **4 Claims**



An apparatus for receiving a cartridge having the physical characteristics of an eight track stereo cartridge and capable of playing such eight track cartridges while principally being designed to accommodate cartridges containing audio-visual information. The apparatus has an entryway for receiving the cartridge and a pawl mechanism located in the entryway to be pivotally moved when engaged by the cartridge as it is inserted or removed from the entryway. The pawl rotates into position and enters an opening in the cartridge to engage notches formed in a film disc. The pawl is then selectively axially actuated, in a direction transverse to its pivotal direction, to advance the film disc in the cartridge a step at a time.

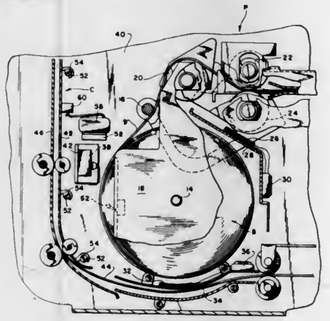
3,677,631
LAP DISSOLVE SLIDE PROJECTOR WITH SINGLE SHIFTABLE SLIDE TRAY
George M. Inglis, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed May 14, 1970, Ser. No. 37,232
Int. Cl. G03b *21/14, 23/00*
U.S. Cl. 353—83 **17 Claims**



A lap dissolve slide projector alternately displays slides supported in two laterally adjacent stationary slide gates provided with corresponding separate objective lens systems. A single multiple compartment slide tray is laterally movable by a tray supporting carriage and cam mechanism into alternate alignment with one gate and then the other, and is also advanced

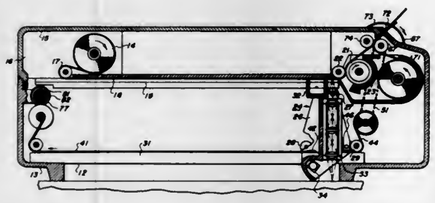
and retracted automatically so that the slides are fed into the projector and displayed in the sequence in which they are initially arranged in the tray and are returned to the tray in the same sequence.

3,677,632
ENVIRONMENT CONTROL DEVICE FOR ELECTROPHOTOGRAPHIC APPARATUS
William A. MacDonald, Jr., Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Sept. 10, 1970, Ser. No. 71,163
Int. Cl. G03g *15/00*
U.S. Cl. 355—3 **4 Claims**



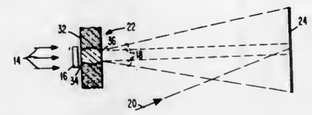
Moisture content of receiver material is controlled within an electrophotographic apparatus by providing one or more heaters in proximity to a supply of receiver material which heaters heat the surrounding air in response to a humidistat control to keep the humidity from exceeding a predetermined level. One of the heaters is arranged to heat both the supply of receiver material and a paper feed path along which the material is fed from the supply. Thus, paper which remains in the feed path when the machine is not operating will be maintained at the correct moisture content.

3,677,633
PORTABLE DOCUMENT ABSTRACTOR
Charles L. Huber, Marion, N.Y., assignor to Xerox Corporation, Rochester, N.Y.
Filed Dec. 31, 1969, Ser. No. 889,377
Int. Cl. G03g *15/00*
U.S. Cl. 355—7 **5 Claims**



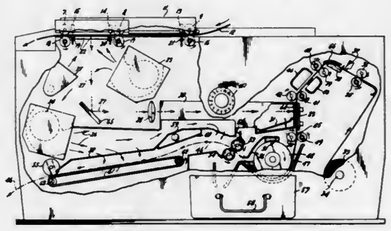
Apparatus for copying various types of information such as words, phrases, sentences, symbols or the like. This complete apparatus, which is adapted to copy selected portions of a complete text, is characterized by the incorporation of a shutter mechanism, which forms an integral part of a carriage transport structure, which carriage transport supports a lens system and lamp therefor, and a charging unit. The shutter is biased in one direction by means of a spring which serves to drive the carriage in the exposing mode. Another part of the shutter is so coupled to manually operable mechanism as to be capable of returning the carriage to its initial position.

3,677,634
CONTACTLESS MASK PATTERN EXPOSURE PROCESS AND APPARATUS SYSTEM HAVING VIRTUAL EXTENDED DEPTH OF FOCUS
Elnar S. Mathisen, Poughkeepsie, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 23, 1968, Ser. No. 785,898
Int. Cl. G03b *27/28*
U.S. Cl. 355—2 **12 Claims**



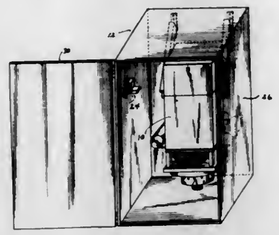
Forming a photoresist mask pattern by employing a three-dimensional mask having non-reflective passages. The mask pattern is recorded on a holographic plate to form a holographic pattern. Thereafter, the holographic pattern is spatially reconstructed so as to form a reconstructed radiation mask pattern having a virtual extended depth of focus defined by the mask entrance and exit images which is used to expose a photo-sensitized surface.

3,677,635
COPYING MACHINE SYSTEM
John A. Van Auken, Miami Beach; Mahlon Gene Kaufman, Miami, and Fritz Blank, Miramar, all of Fla., assignors to Saxon Industries, Inc., New York, N.Y.
Filed April 22, 1970, Ser. No. 30,923
Int. Cl. G03b *27/62*
U.S. Cl. 355—11 **67 Claims**



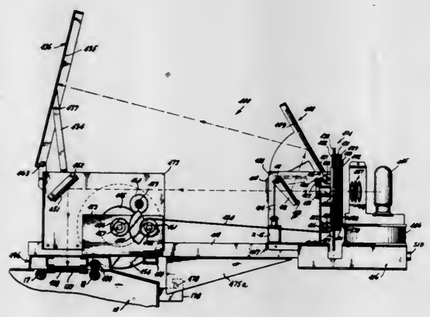
An electrostatic copying machine system including a copying machine and a plurality of attachments therefor to enable the machine to make copies of different types of originals. The attachments include a letter copying bridge for making copies of sheet documents, a book platen for making copies of a page of a book or some other bulky article, and a microfilm scanner for making copies of a microfilm original. At the top of the basic machine there are a plurality of rollers. Each of the attachments is driven by at least one of the machine rollers, so that the original to be copied can be scanned in synchronism with the machine operation. The electrical circuit of the basic machine includes a plurality of terminals extended to respective pins in a connector at the top of the machine. Each of the attachments includes a mating electrical connector which changes the overall circuit of the machine. In this manner, each attachment causes the machine operation to be changed to meet the specific needs of the particular type of original to be copied.

3,677,636
TRANSPORTABLE PHOTOGRAPHIC ENLARGER
Leo Stein, Box 1063, F.D.R. Station, New York, N.Y.
Filed Dec. 12, 1969, Ser. No. 884,475
Int. Cl. G03b 27/32
U.S. Cl. 355—18 7 Claims



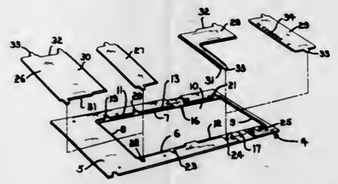
A photographic enlarger having means for mounting the enlarger inside a carrying case, said mounting means adapted to move the enlarger with respect to the case to an operating position where photographic enlargements may be made. The mounting means is adapted to conduct the heat generated in the enlarger during operation to the carrying case where it is dissipated to the atmosphere. The enlarger has a moveable standard containing the enlarging lens with means for locking the standard in the desired position.

3,677,637
MICROFILM ATTACHMENT FOR COPYING MACHINE
John Van Auken, Miami Beach; M. Gene Kaufman, South Miami, both of Fla., and William A. Pfaff, Centerport, N.Y., assignors to Saxon Industries, Inc., New York, N.Y.
Filed April 22, 1970, Ser. No. 30,922
Int. Cl. G03b 13/28
U.S. Cl. 355—45 36 Claims



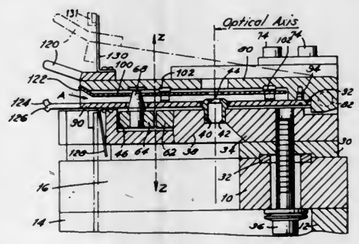
A microfilm attachment for an electrostatic copying machine. The copying machine includes a scanning window and a roller exposed at the upper surface thereof. The microfilm attachment is placed on top of the machine and includes a roller which engages the machine roller. The attachment roller is coupled to a plate which carries a microfilm original to be copied. As the machine cycles, the machine and attachment rollers turn, and the microfilm original is moved. A projection lamp initially images the microfilm on a screen. At the start of the copying cycle, a mirror in the attachment is moved to direct light transmitted through the moving microfilm original to the scanning window for the purpose of exposing copy paper which is moved past an exposure window in the machine at the same time. Because when the microfilm original is initially imaged on the screen it is centrally disposed relative to the machine scanning window, at the start of the copying cycle the microfilm original is actually moved in the reverse direction until it clears the scanning window. Thereafter, it is moved in the forward direction past the scanning window. At the end of the scanning sequence, the microfilm original is returned in the reverse direction to the initial position. The copy paper feed begins while the microfilm original first moves in the reverse direction so that the copy paper reaches the exposure window just when forward movement of the microfilm original is to begin. The microfilm attachment includes several switches which are operated depending upon the position of the microfilm original during the sequence. These switches are extended through connectors on the attachment and the copying machine to the control circuit within the machine so that the machine is properly sequenced with respect to movement of the microfilm original.

3,677,638
PHOTOGRAPHIC PRINTING APPARATUS
Arthur J. Daugherty, Belton, Mo., assignor to Bremson Photo Industries, Inc., Kansas City, Mo.
Filed July 2, 1970, Ser. No. 51,832
Int. Cl. G03b 27/58
U.S. Cl. 355—74 5 Claims



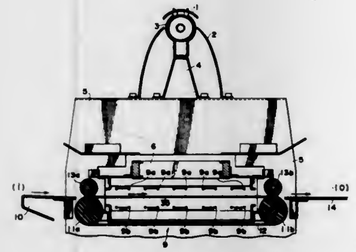
Rapid conversion of commercial photographic projection printing apparatus for producing different print sizes, including multiprint formats, comprises a paper mask frame with a plurality of interchangeable mask members adapted to selectively assemble with the frame for modifying the light transmission opening.

3,677,639
IDENTIFICATION CARD LOCATOR ASSEMBLY
Vernon J. Burzan, Dexter, Mich., assignor to KMS Industries, Inc., Ann Arbor, Mich.
Filed Nov. 6, 1970, Ser. No. 87,424
Int. Cl. G03b 27/62
U.S. Cl. 355—76 10 Claims



A holder for use selectively with an identification card in an identification system to locate the card in proper position relative to an optical axis for photographic exposure or for comparison purposes; the holder has a base plate apertured for the optical system and provided with registry pins to receive the card in proper location, and a card receiver assembly is positioned to receive a card and movable to shift the card to a registered position on the base plate for use in the optical identification system.

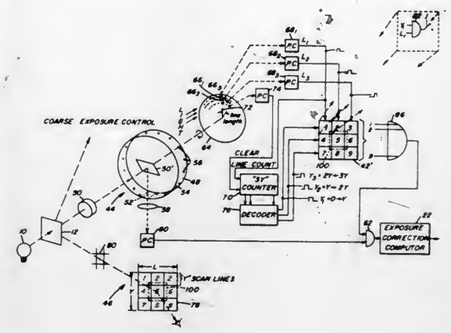
3,677,640
ELECTROSTATIC CONTACT PRINTING DEVICE FOR USE IN A PHOTOGRAPHIC CONTACT PRINTER
Keiji Nakatani, and Kaoru Takebe, both of Toyokawa, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka-shi, Japan
Filed April 9, 1971, Ser. No. 132,733
Claims priority, application Japan, April 10, 1970, 45/34424; May 21, 1970, 45/49886
Int. Cl. G03b 27/02
U.S. Cl. 355—78 4 Claims



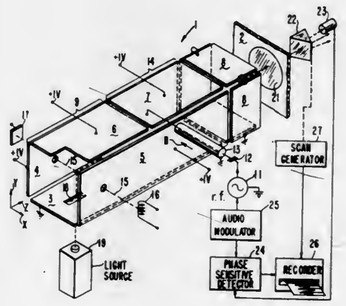
In a photographic contact printer, an electrostatic contact printing device comprises an electrode assembly consisting of several pairs of juxtaposed electrodes, each pair of electrodes being oppositely disposed so that an original sheet and a photosensitive sheet which have been superposed pass between. A high electric voltage is applied to the electrodes to create an electrostatic suction force therebetween, and an illuminating light source is located outwardly from the electrodes disposed on the original sheet side, whereby a high electric voltage is applied thereto simultaneously with the printing so that the original sheet and photosensitive sheet are electrostatically enforced to come into close contact with each other. A modification of the structure includes an additional set of electrodes which establish a pre-charge on the superposed original and photosensitive sheet of opposite polarity to the electrostatic charge of the adjoining electrodes.

3,677,641
PHOTOGRAPHIC PRINTING APPARATUS
James L. King, Rochester, and Lee O. Arrington, Hamlin, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Aug. 24, 1970, Ser. No. 66,299
Int. Cl. G03b 27/78
U.S. Cl. 355—83 9 Claims

The need for a manual adjustment to the exposure to be made by a photographic printer having average and point-by-point density determining apparatuses is obviated by a device for selecting a principal subject area of a negative from which said point-by-point density data is derived.

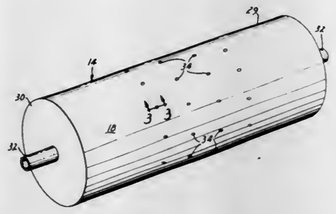


3,677,642
ION CYCLOTRON RESONANCE STIMULATED GLOW-DISCHARGE METHOD AND APPARATUS FOR SPECTRAL ANALYSIS
John D. Baldeschwieler, Menlo Park, Calif., assignor to Varian Associates, Palo Alto, Calif.
Filed Aug. 4, 1967, Ser. No. 658,366
Int. Cl. G01j 3/30
U.S. Cl. 356—85 5 Claims



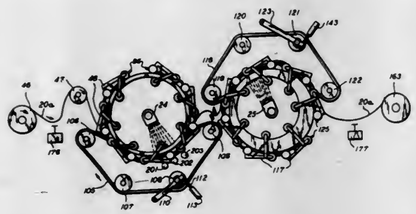
Ion cyclotron resonance stimulated glow-discharge devices are disclosed. In these devices an ensemble of gaseous material comprising at least two different gaseous constituents is ionized to produce ions of at least one of the gaseous constituents. A radio-frequency field at the cyclotron resonance frequency of the ionized gaseous constituent is applied to the gas for exciting cyclotron resonance of the ionized constituent in a magnetic field. The cyclotron resonant ion absorbs energy from the applied radio-frequency field substantially increasing its translational velocity. The cyclotron resonant ion is chemically interacted as by an exchange collision with the second gaseous constituent of the gas sample to produce a gaseous product having an excited electronic energy state. The excited electronic energy state decays by the emission of photons of optical radiation which are extracted from the ensemble of gas for use.

3,677,643
REFLECTIVE PLATEN
Burt K. Sagawa, Bloomington, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.
Filed April 20, 1971, Ser. No. 135,704
Int. Cl. G03b 27/20
U.S. Cl. 355—91 **10 Claims**



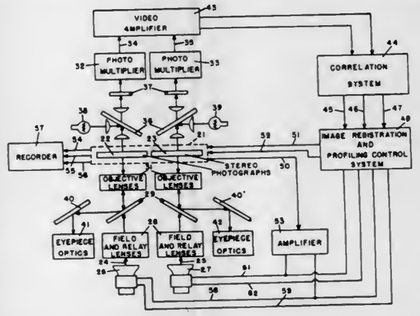
A platen having a wall defining a reflective supporting surface upon which a first sheet of material is to be supported for exposure of graphic intelligence on the first sheet by directing light toward the platen and first sheet to afford reproduction of said graphic intelligence on a second sheet. The wall may be formed with a multiplicity of orifices communicating between the first sheet on the supporting surface and a means for reducing air pressure in the orifices to attract the first sheet to the platen. A recess in the supporting surface defined by a converging wall is formed about each orifice. The converging wall is formed to reflect incident light through the discontinuity in the supporting surface defined by the recess in generally an even intensity across the discontinuity and with generally the same intensity as light is reflected by the supporting surface thereby destroying the reflected image of the orifices and recesses at the supporting surface.

3,677,644
APPARATUS FOR CONVEYING AND EXPOSING A STRIP OF RADIANT ENERGY SENSITIVE MATERIAL
Richard A. Harris, Greensboro, N.C., assignor to Western Electric Company, Incorporated, New York, N.Y.
Filed Oct. 13, 1970, Ser. No. 80,365
Int. Cl. G03b 27/06
U.S. Cl. 355—96 **12 Claims**



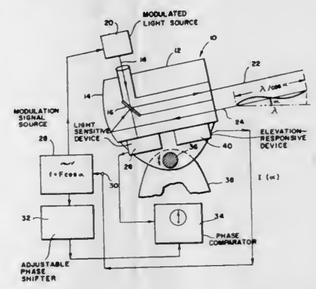
An apparatus for conveying and exposing a radiant energy sensitive strip of material, such as flexible printed circuit material, utilizes a plurality of carriages movable along closed tracks. Each carriage has a mask thereon against which the strip is pressed as the carriages are moved past a radiant energy source. Each mask is mounted free to move within predetermined limits relative to the carriage so that registration pins on each mask can be accurately aligned with registration holes punched in successive sections of the strip. The tracks along which wheels on the carriages roll include a plurality of circular outwardly facing and inwardly facing tracks located in parallel planes. Each carriage has spring biased arms with wheels engaging the inwardly facing tracks to retain the carriages on the tracks. In a second carriage and track arrangement, the inwardly facing tracks are eccentric with the outwardly facing tracks so that the spring biased arms urge the carriage toward the point when the inwardly facing tracks are closest to the outwardly facing tracks.

3,677,645
AUTOMATIC STEREOPLOTTING APPARATUS HAVING A LOW INERTIA SERVO SYSTEM
H. Ronald Johnston, Vancouver, British Columbia, Canada, assignor to Itek Corporation, Lexington, Mass.
Filed June 1, 1970, Ser. No. 42,096
Int. Cl. G01c 11/12
U.S. Cl. 356—2 **6 Claims**



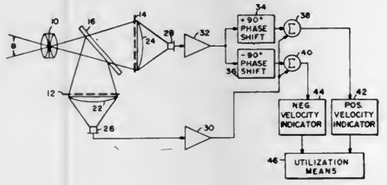
An automatic stereoplotting system employing both a high speed primary servo-system for inducing substantially instantaneous primary relative displacements between scanning patterns to eliminate detected parallax, and a more massive and slower reacting auxiliary servo system for inducing relative displacements between photographs being scanned. The auxiliary displacements of the photographs replace the initial primary displacements of the scanning patterns and a readout mechanism records measured elevations by continuously indicating the algebraic summations of both the primary and auxiliary displacements.

3,677,646
INSTRUMENT FOR MEASURING DISTANCE
Carl Erik Granqvist, Lidingo, Sweden, assignor to Aga Aktiebolag, Lidingo, Sweden
Filed Sept. 8, 1969, Ser. No. 856,130
Claims priority, application Sweden, Sept. 12, 1968, 12253/68
Int. Cl. G01c 3/08
U.S. Cl. 356—4 **5 Claims**



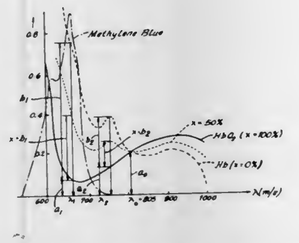
A distance measuring instrument of the type wherein a modulated beam of light is transmitted along a path to be measured, the light is reflected at the distance to be measured and received at the instrument, and a comparison is made between the modulation phase of the received signal and that of the transmitted signal to determine the distance in terms of the wavelength of the modulation signal, includes an arrangement for varying the wavelength in inverse proportion to the sine or cosine of the angle of elevation whereby the measurement obtained is related to the vertical or horizontal projection of the distance irrespective of the elevation of the instrument.

3,677,647
ELECTRO-OPTICAL TARGET MOTION SENSOR
Victor A. Misek, Hudson, N.H., assignor to Sanders Associates, Inc., Nashua, N.H.
Filed Aug. 17, 1970, Ser. No. 66,156
Int. Cl. G01p 3/36; G01c 1/00
U.S. Cl. 356—28 **10 Claims**



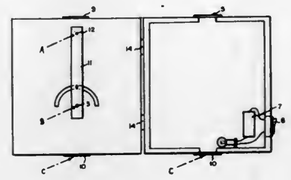
An electro-optical target motion sensor comprises a pair of photodetector elements upon which an image is focused through cross correlation gratings which are spatially phase shifted with respect to one another. The detector outputs are electrically phase shifted and processed to provide output signals representative to the velocity and direction of motion of a target image.

3,677,648
METHOD AND APPARATUS FOR THE MEASUREMENT OF DYE DILUTION IN BLOOD
Johannes Dorsch, Schonhausenstrasse 11, Bremen, Germany
Continuation of Ser. No. 416,863, Dec. 8, 1964, abandoned. This application June 22, 1970, Ser. No. 48,194
Int. Cl. G01n 33/16
U.S. Cl. 356—40 **2 Claims**



A method for determining cardiac volume parameters wherein a test dye is added to blood and a photometric measurement of the light absorption of dyed blood is carried out by an electro-optical system which includes a photosensitive means to determine dye dilution in the blood.

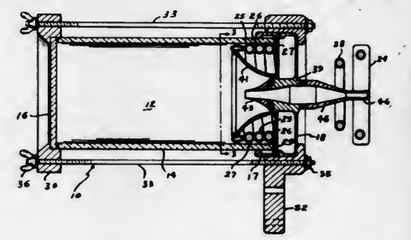
3,677,649
SIMPLE SPECTROMETER
Keiji Miyashita, 18-10, 5-chome, Kami Renjaku, Tokyo, Japan
Filed Nov. 4, 1970, Ser. No. 86,674
Claims priority, application Japan, Dec. 17, 1969, 44/100880
Int. Cl. G01j 3/28
U.S. Cl. 356—74 **3 Claims**



A simple spectrometer. A box has a top with a first lever pivotally mounted on the outside surface of the top at a point B with a scale moving needle on the end thereof spaced from the pivot a distance equal to the distance between point B and a point A. A graduated wave length scale is pivotally mounted on the top at point A and is coupled to the first lever for pivotal movement around point A as the first lever pivots around point B and in proportion to the movement of the first lever. A second lever is mounted on the inside surface of the top for movement about said point B and is coupled to the first lever for movement with the first lever. A spectrum registering needle is mounted on the free end of the second lever and projects into the box. The box has an opening in the side at a point C in line with points A and B and a replica of a diffraction grating is mounted in the opening. The box further has a slit in the side thereof opposite the diffraction grating. Light means are provided within the box controllable from outside of the box for illuminating the spectrum-registering needle. When light comes through the slit and falls on the replica of the diffraction grating and the levers are moved to locate the spectrum registering needle in register with the line spectrum on the replica of the diffraction grating, the scale moving needle moves along the graduated scale to indicate the wave length of the line spectrum.

ERRATUM
For Class 356—85 see:
Patent No. 3,677,642

3,677,650
APPARATUS FOR ACCUMULATING AND DISPLAYING FINE PARTICLES IN A GAS
George A. Klingler, 300 Patterson Road, Dayton, Ohio
Filed June 28, 1971, Ser. No. 157,136
Int. Cl. G01n 21/00
U.S. Cl. 356—103 **6 Claims**



A particle accumulator display having a closed transparent chamber with a plurality of input nozzles to provide a vortex

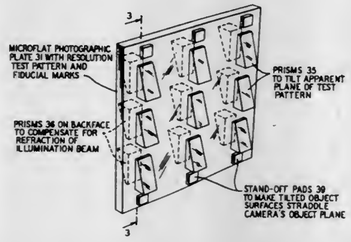
flow within the chamber. An ejection nozzle is centrally located within the chamber at the end adjacent the input nozzles. The input nozzles and ejection nozzles are spaced apart with an approximately bell shaped flow stabilizer being positioned between them. The chamber is enclosed in a light tight housing with a viewing eyepiece positioned at the end remote from the input and ejection nozzles, and a second eyepiece adapted to be adjustably positioned around the chamber. A light is provided to illuminate particle columns accumulated within the chamber.

3,677,651

FOCUS AND MAGNIFICATION ADJUSTMENT OF A HIGH-PERFORMANCE CAMERA

Donald Richard Herriott, Morris Township, Morris County, and Eric Gordon Rawson, Murray Hill, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Sept. 29, 1970, Ser. No. 76,549
Int. Cl. G01b 9/00
U.S. Cl. 356—126 **9 Claims**



A method and apparatus are disclosed for adjusting the location of the image and object planes of a camera to minimize focus and magnification errors. A special test reticle is used comprised of at least one, and preferably nine, test patterns on one side of the reticle. Over each pattern a first prism is mounted to tilt the apparent plane of the test pattern as seen in the prism and a second prism is ordinarily mounted to the other side of the reticle to compensate for the refraction due to the first prism. In use, the test reticle is placed in the object plane of the camera and a test image plate is exposed and developed. The sharpest points in the image of each of the tilted test patterns as well as the spacing between certain fiducial marks are then measured. From this data are derived the corrections that should be made in the positions of the object and image planes. With six to eight iterations of this procedure, good adjustment of the camera is achieved.

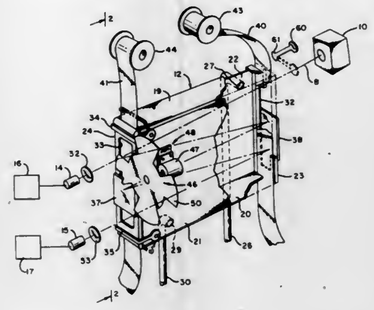
3,677,652

FLUID ANALYZER APPARATUS

John C. Little, Menlo Park, Calif., assignor to GTE Sylvania Incorporated

Division of Ser. No. 802,541, Feb. 26, 1969, Pat. No. 3,572,946. This application June 15, 1971, Ser. No. 57,417
Int. Cl. G01n 21/26
U.S. Cl. 356—183 **5 Claims**

A hollow cell with opposed windows is connected in series with conduits through which automobile exhaust gas to be analyzed flows continuously. A broadband infrared source directs a beam through the windows to a first photodetector which measures the absorption of light at one wavelength to which one of the gas components, such as carbon monoxide (CO), is responsive. This beam is alternately directed over a longer path through the cell by a reflective chopper wheel adjacent the exit window and by mirrors mounted outside both windows to another photodetector which measures absorption of light at a different wavelength corresponding to another component, such as a hydrocarbon (HC). The outputs of both photodetectors are utilized to give continuous direct readout of the concentrations of the components. Each window is formed with a length of transparent plastic tape releasably sealed against the cell body and connected to a roll of the tape mounted adjacent to the cell. A clean window is provided by simply advancing a fresh length of tape into the cell and discarding the used portion.

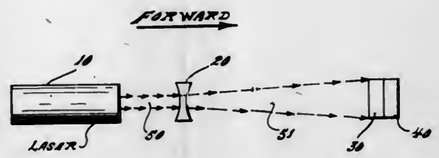


3,677,653

LASER SENSITOMETER

Richard L. Hocker, 1110 Birch St., VAFB, Calif.; Conrad P. Czerniejewski, 7550 Norwood Ave., Melbourne, Fla., and John D. Hopper, 1389 Stanley Lane, Melbourne, Fla.

Filed Oct. 23, 1970, Ser. No. 83,563
Int. Cl. G01j 1/52
U.S. Cl. 356—256 **1 Claim**



A laser and a negative lens are used in a sensitometer to produce a diverging beam of coherent monochromatic light which is desirable in making sensitometric test strips from light-sensitive material that is being tested for resolution response.

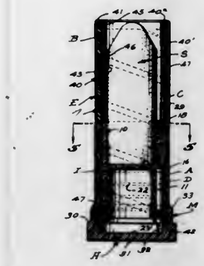
3,677,654

LIPSTICK DISPENSER

Hazel E. Davis, 5901 Rose, Long Beach, Calif.

Filed Sept. 21, 1970, Ser. No. 73,835
Int. Cl. A45d 40/06
U.S. Cl. 401—63 **2 Claims**

A lipstick dispenser including an elongate, vertical cylindrical body with an axial guide slot, a drive barrel with an axially extending helical cam groove and an annular race way at its upper end and surrounding the body and a lipstick supporting cup comprising a tubular cup shell in the body and having an axially extending guiding slot and a cam pin engaged through the guide slot and into engagement in the groove and a cup bottom normally engaged in the lower portion of the cup shell and having a cam lug engaged through the guide and guiding slots and into the groove; an elongate lipstick with a base portion normally engaged in the upper portion of the cup shell and engaging the cup bottom, the cup shell and cup bottom adapted to be moved longitudinally in the body together upon relative rotation of the body and barrel and when the pin and lug are engaged in the groove and said cup bottom adapted to be moved longitudinally upwardly in the cup shell upon relative rotation of the body and barrel and when said pin is engaged in said race way.

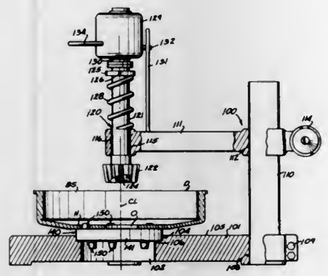


3,677,655

BRAKE DRUM TRUING METHOD AND APPARATUS

James Ratteree, 4126 Flat Ridge Drive, Stone Mountain, Ga., and James A. Seaman, 4900 Northside Drive, N.W., Atlanta Ga.

Continuation-in-part of Ser. No. 40,120, May 25, 1970. This application Nov. 5, 1970, Ser. No. 87,146
Int. Cl. B23b 35/00
U.S. Cl. 408—1 **10 Claims**



Apparatus and method for redefining the central opening through a brake drum so that the central opening is concentric with respect to the lug hole arrangement in the brake drum wherein the apparatus includes a support means carrying a plurality of support pins which engage and support the brake drum through its lug holes, a tool for selected engagement with the brake drum about its central opening and positioning means for locating the tool along the effective rotational axis of the brake drum when carried by the support means so that the tool can engage the drum and redefine the central opening concentric about the rotational axis and within the lug hole arrangement. The support pins may be mounted in an adapter so as to provide for different lug hole arrangements.

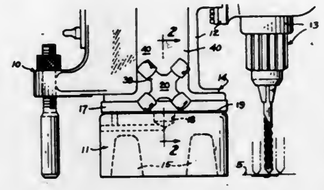
The method includes supporting a brake drum to have its central opening redefined; positioning a tool concentrically within the lug hole arrangement; and engaging the brake drum about its central opening with the tool while maintaining its concentricity with respect to the lug hole arrangement to redefine the central opening.

3,677,656

RADIAL POSITIONER, LOCK AND ROTARY CONTACTS FOR ELECTROMAGNETIC DRILL MOUNT

Eugene W. Buck, 110 Lansberry Court, Los Gatos, Calif.

Continuation-in-part of Ser. No. 857,114, Sept. 11, 1969, abandoned. This application Feb. 19, 1971, Ser. No. 116,950
Int. Cl. B23b 45/14
U.S. Cl. 408—76 **11 Claims**



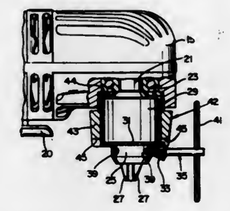
For the rotary mount of a drill press support mounted on a rotary bearing plate having a diametrically extending open center mounted on a center pin extending upwardly from a fixed base, rotary electrical contacts in the center pin eliminating twisting of the wires therein and a radial positioner and locking means in the form of a radially extending lever offset from the drill on the drill press support and threaded to a yoke circumscribing the center pin and confining rollable members between spaced races on the pin for pressing the rotary bearing plate into locked engagement with the fixed base.

3,677,657

CHUCK GUARD

William S. Brucker, Towson, Md., assignor to The Black and Decker Manufacturing Company, Towson, Md.

Filed Sept. 3, 1970, Ser. No. 69,331
Int. Cl. B23b 47/00; B23q 11/08
U.S. Cl. 408—241 G **9 Claims**



A portable electric drill including a housing having a motor driven chuck rotatably supported thereon. The chuck is the conventional jaw-type which utilizes a key to open and close the jaws and secure a tool bit therein. A lever on the housing is movable to turn the motor on and rotate the chuck and tool bit, and a novel guard on the housing prevents the chuck from turning should the lever be actuated when the key is in place.

3,677,658

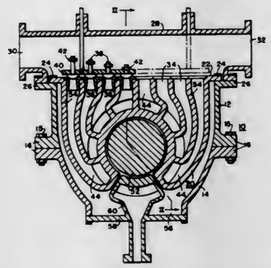
SPLIT CASTING STEAM CHEST, NOZZLE CHAMBER AND CASING ASSEMBLY FOR TURBINES

Philip A. Dinenno, Jr., Glenriddle; Joseph S. Bonk, Philadelphia; Kenneth C. Conrad, Springfield; Rodney S. Moore, Broomall; Harry E. Lochman, Collingdale, and Daniel D. Torello, Avondale, all of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Dec. 8, 1970, Ser. No. 95,997
Int. Cl. F01d 1/00; F04d 29/40
U.S. Cl. 415—108 **6 Claims**

In an elastic fluid turbine, an improved construction of the casing, the steam chest and the nozzle chamber which permits

free expansion of parts subject to thermal transients at reduced cost and higher assurance of quality. This is accomplished by casting the nozzle chamber, the upper and lowe halves of the outer casing and at least a portion of the steam chest as separate pieces and then bolting them together. In



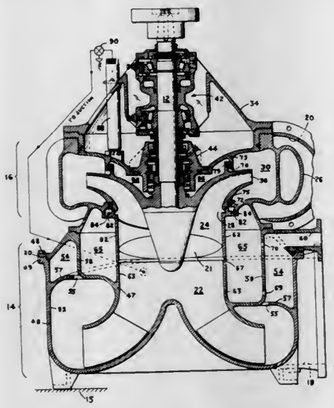
cases where a high pressure nozzle chamber is employed, this also is cast separate from the lower casing half and fitted into an opening in that part. Forming the assembly from a number of parts in this manner considerably reduces the problems encountered in casting complex shapes which are costly and difficult to fabricate.

3,677,659

MULTI-STAGE PUMP AND COMPONENTS THEREFOR

John G. Williams, Warren Township, Somerset County, N.J., assignor to Worthington Corporation, Harrison, N.J.

Filed July 31, 1970, Ser. No. 59,928
Int. Cl. F01d *11/00*
U.S. Cl. 415—111 **17 Claims**



A multi-stage pump including a casing having an inducer section and at least one impeller section. A shaft rotatably driven by a suitable prime mover extends into the casing and the inducer and the impeller or impellers as the case may be in the casing are mounted on and are rotatable with the shaft.

Novel spaced tapered roller bearing assemblies support the shaft, each bearing assembly being separately lubricated by a lubricant, e.g. grease, which is pumped by the action of the roller bearings through connected chambers and passages about the respective roller bearing assemblies. The spaced roller bearing assemblies are stressed for rigidity in assembled position by a telescoping piston means which defines a fluid chamber into which any suitable fluid can be introduced to force the piston means to engage and exert stress on the outer races of the respective tapered roller bearing assemblies for maintaining the tapered rollers thereof in contact with the races at all times during operation. Alternatively, slingers can be mounted for rotation with the shaft adjacent each of the tapered roller bearing assemblies for assisting the pumping action of the tapered roller bearings and for dissipating bearing heat.

Axial thrust along the shaft is balanced by a fluid line connecting a leakage cavity behind the back shroud of the last mounted impeller to the inlet or suction side of the impeller. A pressure regulating valve may be provided in the fluid line for varying the pressure of the fluid in the leakage cavity as a function of variations in the pressure of the fluid flowing into the inlet or suction side of the pump.

The pump provides for a reduction in cavitation at low load conditions by withdrawing or passing back flowing fluid from the periphery of the inducer through a leakage passage in communication with the pump suction. Additionally, cavitation over the entire operating range of the pump is reduced by communicating the leakage joints of the impeller casing wearing rings with the pump suction.

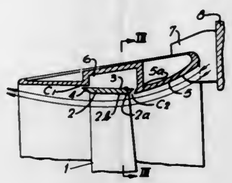
Also disclosed is novel casing structure for withdrawing gases from suction fluid, withdrawn back flow fluid and fluid leakage from the wearing rings.

3,677,660

PROPELLER WITH KORT NOZZLE

Kaname Taniguchi; Fujio Furukawa; Tomiro Hisatome, and Yoshito Kimura, all of Nagasaki, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed March 31, 1970, Ser. No. 24,313
Claims priority, application Japan, April 8, 1969, 44/26586; June 30, 1969, 44/51085
Int. Cl. B63h *1/16*
U.S. Cl. 415—172 **3 Claims**



A propeller assembly including a Kort nozzle is formed of a plurality of propeller blades mounted for rotation on a shaft. The Kort nozzle circumferentially encloses the outer edge of the propeller blades and has an outwardly extending annular groove formed in its inner surface arranged opposite the outer edges of the blades. Secured to the outer edges of the blades for rotation therewith, is an annular member which forms a closure for the opening to the annular groove in the nozzle. The annular member is positioned in combination with the inner surface of the Kort nozzle to form a pair of narrow openings to the annular groove spaced apart in the propulsion direction of the propeller assembly.

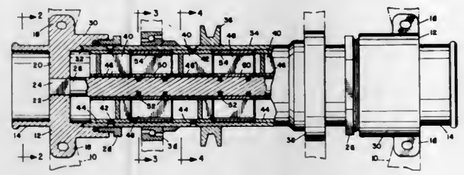
3,677,661

PUMP

Paul D. Pickens, 5746 Dolphin Place, La Jolla, Calif.

Filed Dec. 14, 1970, Ser. No. 97,806
Int. Cl. F04d *1/4, 3/02*
U.S. Cl. 415—199 **2 Claims**

A multiple stage, axial flow, reversible pump for fluids and featured by a rotary barrel, driven externally and carrying multiple stage impeller vanes which rotate in relation to stator vanes fixed to an axial shaft which is itself fixed against rotation. The alternating rotating vanes and stator vanes are also



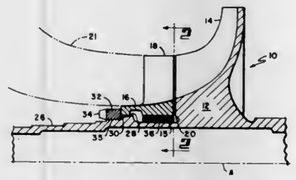
alternately as well as removably secured to the barrel and shaft so that assembly and repair are facilitated.

3,677,662

MULTILAYER RING DAMPED TURBOMACHINE ROTOR ASSEMBLY

Val Cronstedt, Williamsport, Pa., assignor to Avco Corporation, Williamsport, Pa.

Filed Oct. 9, 1970, Ser. No. 79,550
Int. Cl. F01d *5/26*
U.S. Cl. 416—183 **4 Claims**



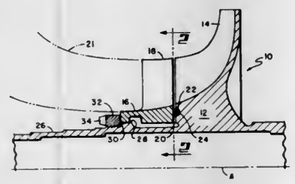
The disclosure illustrates a centrifugal compressor comprising an inducer hub telescoped over an adjacent shoulder of an impeller hub. The inducer hub has an inner annular surface which receives a plurality of stacked annular relatively thin split ring elements. When the compressor rotates at high r.p.m.'s the split rings frictionally engage one another and the inner annular surface of the inducer hub to provide a highly effective means for damping vibrations in the inducer.

3,677,663

DAMPED TURBOMACHINE ROTOR ASSEMBLY

Val Cronstedt, Williamsport, Pa., assignor to Avco Corporation, Williamsport, Pa.

Filed Oct. 1, 1970, Ser. No. 77,146
Int. Cl. F01d *5/26*
U.S. Cl. 416—183 **4 Claims**



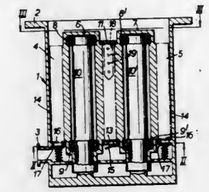
The disclosure illustrates a centrifugal compressor comprising an inducer hub telescoped over an adjacent shoulder of an impeller hub. A nut threaded on the impeller hub maintains the inducer hub, an intermediate annular resilient ring and the impeller hub in abutment with sufficient pressure to damp vibrations in the rotor assembly.

3,677,664

ROTARY MECHANICAL PUMPS OF THE SCREW TYPE

Henryk Wycliffe, Crawley, and Basil Dixon Power, Horsham, both of England, assignors to Edwards High Vacuum International Limited, Crawley, Sussex, England

Continuation of Ser. No. 759,952, Sept. 16, 1968, abandoned. This application June 29, 1970, Ser. No. 50,049
Claims priority, application Great Britain, Sept. 21, 1967, 42965/67
Int. Cl. F04b *49/00*; F01c *1/16*; F04c *17/12*
U.S. Cl. 417—310 **6 Claims**



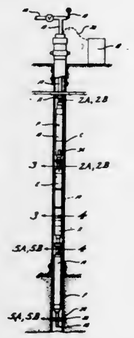
An oil-sealed screw rotor mechanical vacuum pump which may be used as a backing pump, together with a rotary dry-running fine pump, in a high vacuum pumping unit. The screw rotor pump has one or more non-return valves between the chambers being limited by the screw rotor action and the atmosphere. The sealing oil also acts as a "liquid piston" to sweep pumped medium out of the chambers via the non-return valve(s).

3,677,665

SUBMERSIBLE PUMP ASSEMBLY

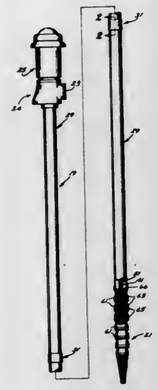
John L. Corkill, Calgary, Alberta, Canada, assignor to Husky Oil Ltd., Calgary, Canada

Filed May 7, 1971, Ser. No. 141,107
Int. Cl. F04b *17/00, 35/04*; F01c *1/10, 5/00*
U.S. Cl. 417—410 **6 Claims**



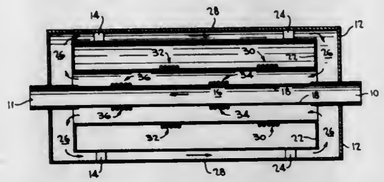
A submersible pump assembly is disclosed which may be readily lowered into and raised out of casing and operated downhole in well fluid in the very confined space of casing of an oil well. The submersible pump assembly includes a progressive cavity pump of the Moineau type with a helical stator and a helical rotor. A submersible electric motor filled with a lubricating fluid is located below the pump and drives the pump through a speed reducer. A pressure equalizer is included which provides a pressure equalizer lubricating fluid reservoir for the electric motor and the speed reducer and allows for expansion and contraction in the volume of lubricating fluid. Several embodiments of the submersible pump assembly are disclosed.

3,677,666
CLOSE TOLERANCE PIPE APPARATUS
Frank W. Tybus, 9060 Rosecrans Ave., Bellflower, Calif.
Filed June 25, 1970, Ser. No. 49,776
Int. Cl. F04b *17/00, 35/04;* F03b *13/02*
U.S. Cl. 417—424 9 Claims



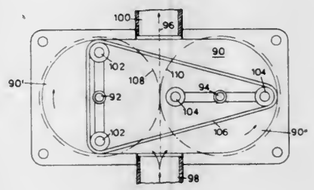
A close tolerance pipe apparatus including a column of pipe lengths formed on their respective opposite extremities with male and female extremities which connect together to form joints. The female extremities are integral with the respective pipe lengths and are expanded to telescope over the respective male extremities. Stop means is secured in the female extremities of the respective pipe lengths and are disposed at a selected distance from the male end of such respective pipe lengths. The male extremities are externally threaded and the female extremities internally threaded whereby the male extremities may be screwed into the female extremities sufficiently far to abut the ends of the male extremities against the respective stop means to thereby provide an overall length for the total pipe column which is the cumulative distance between the stop means and male ends of the respective pipe lengths.

3,677,667
PERISTALTIC FLUID PUMP
Clyde A. Morrison, 4205 Dahill Road, Wheaton, Md.
Filed Aug. 28, 1970, Ser. No. 67,816
Int. Cl. F64b *43/12*
U.S. Cl. 417—474 2 Claims



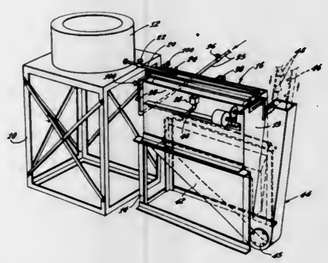
A peristaltic pump embodying a tube formed of flexible material surrounded by a chamber that contains a ferromagnetic fluid. A plurality of electrically conducting loops are placed circumferentially around the flexible tube in the vicinity of the ferromagnetic fluid. The conducting loops are sequentially energized along the length of the flexible tube in such a manner that the resultant force on the ferromagnetic fluid causes the portion of the flexible tube in the vicinity of the energized loops to flex in a predetermined manner. This action provides a motive force that advances fluid through the tube in any selected manner.

3,677,668
ROTARY PUMPS
Peretz Rosenberg, Moshay Beit Sherim, Israel
Filed Aug. 17, 1970, Ser. No. 64,449
Claims priority, application Israel, Sept. 9, 1969, 32970
Int. Cl. F04b *43/08;* F04c *17/00*
U.S. Cl. 418—45 2 Claims



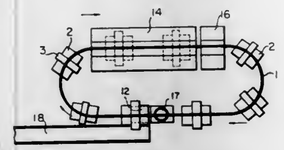
A rotary pump comprises a chamber having an inlet port and an outlet port, a rotor within the chamber, one or more rollers carried by the rotor to rotate therewith, and a closed-loop belt tightly enclosing under tension the rotor and rollers. As the rotor is rotated, the rollers move along the belt and continuously press it against the chamber wall as each roller moves from inlet port to outlet port, the belt tension maintaining intermediate free runs of the belt in substantially straight lines spaced from the chamber wall.

3,677,669
APPARATUS FOR PRODUCING METAL SHOT
Louis W. Bliemeister, 5410 W. 99th St., Los Angeles, Calif.
Continuation-in-part of Ser. No. 773,230, Nov. 4, 1968, abandoned. This application May 5, 1969, Ser. No. 825,115
Int. Cl. B22c *23/00*
U.S. Cl. 425—6 29 Claims



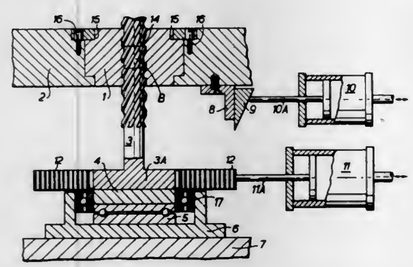
In an apparatus of the character disclosed in the Bliemeister U.S. Pat. No. 2,978,742, a trough for molten metal is heated on both sides and has two rows of orifices to release drops of metal into a body of quenching solution onto submerged interrupter means. The orifices are formed by a stack of orifice plates that are individually slidable for individual thermal expansion. The trough is vibrated by means operating on the principle of a tuning fork.

3,677,670
ROTATIONAL MOLDING APPARATUS
Hisayuki Mori, and Yoji Noguchi, both of Nara, Japan, assignors to Sekisui Kegaku Ogyo Kabushiki Kaisha, Osaka, Japan
Filed June 2, 1970, Ser. No. 42,721
Claims priority, application Japan, Aug. 13, 1969, 44/77226
Int. Cl. B29c *5/04*
U.S. Cl. 425—62 8 Claims



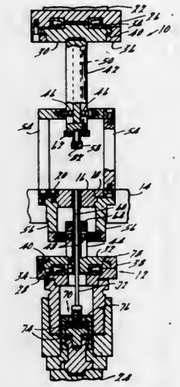
A rotational molding apparatus comprising one or more annular tracks, a plurality of drive carriages traveling along said tracks, rotary molds each of which being supported by supporting means are coupled to said several carriages through the intermediary of said supporting means, rotatory mechanisms each of which transmits a rotational motion to a rotating shaft of each of said several molds from a drive source disposed in each of said carriages, a heating tunnel for each of said annular tracks, said tunnel housing a part of said annular track and permiting the passage therethrough of said carriages and molds, and a cooling tank for each said annular tracks, said cooling tank being provided in the course of the molds emerging from the heating tunnel after passage therethrough, said cooling tank being adapted to cool said molds as they pass therethrough. The apparatus is suitable for the mass production of synthetic resin molded articles of good quality with improved productive efficiency and ease of controlling production and heating temperature.

3,677,671
APPARATUS FOR FORMING HELICAL GEAR WHEEL BODIES FROM POWDER
Anthony Michael Martin, Elm Gables, Beechwood Ave., Little Chalfont, Buckinghamshire, England
Filed Feb. 2, 1970, Ser. No. 7,864
Claims priority, application Great Britain, Feb. 1, 1969, 5,559/69
Int. Cl. B30b *3/06, 11/14*
U.S. Cl. 425—78 3 Claims



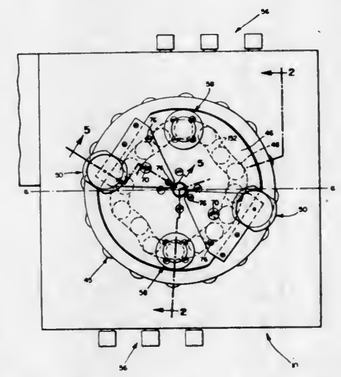
The disclosure is of an apparatus for forming helical gear wheel bodies by compacting initially powdery materials in dies by pressure between punches, the dies having mould cavities with helical grooves and there being positive controlled rotation of the dies and punches in relation to one another during the compaction and ejection operations by hydraulic or pneumatic systems including sensing means and drive means.

3,677,672
APPARATUS FOR THE MANUFACTURE OF POWDER METAL HELICAL GEARS
Jerry E. Harrington, Center Line, Mich., assignor to Chrysler Corporation, Highland Park, Mich.
Filed March 12, 1970, Ser. No. 18,948
Int. Cl. B30b *3/00, 11/02*
U.S. Cl. 425—78 6 Claims



Apparatus for pressing powder metal helical gears and similar articles of manufacture wherein the powder is pressed with a twisting motion of the punches. A cam arrangement is described for a pressing apparatus which rotates the punches during pressing.

3,677,673
ROTARY PRESS
Leonard Shapiro, Upper Darby, Pa., assignor to Pennwalt Corporation, Philadelphia, Pa.
Filed Aug. 25, 1970, Ser. No. 66,774
Int. Cl. B29c *3/04*
U.S. Cl. 425—78 27 Claims



A press has a table which rotates about a vertical axis. Within the table is mounted a plurality of molds which are symmetrically distributed about the vertical axis, each mold having a cavity extending therethrough, the axis of each cavity being parallel to the vertical axis. A plurality of anvils are mounted for radial sliding movement across the upper surface of the table, and a plurality of punches are mounted below the

table, there being one anvil and one punch associated with each mold. As the table, anvils, and punches rotate as a unit, stationary cams effect movement of each anvil and punch in a coordinated manner: (1) the punch enters the cavity from below and presses powdered material against the anvil; (2) the anvil moves radially inwardly from over the cavity; (3) the punch moves further upwardly to eject the manufactured article onto the table; (4) the punch moves downwardly; and (5) the anvil moves radially outwardly to clear the table of excess powder, and move the article into a receptacle mounted to the table, there being a separate receptable associated with each mold. Also, a core rod extends through the punch and into the cavity, the punch being mounted for lateral movement so that it is centered upon entering a counterbore at the lower end of the cavity.

3,677,674

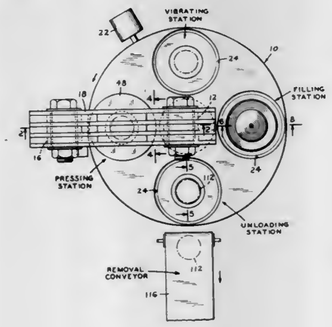
HIGH PRODUCTION ISOSTATIC MOLDING DEVICE

Arnold Gordon Bowles, Warren, Pa., assignor to National Forge Company, Irvine, Pa.

Filed March 9, 1971, Ser. No. 122,379

Int. Cl. B30b 5/02, 11/02; B28b 3/00; B29c 6/02

U.S. Cl. 425—78 **9 Claims**



A high production isostatic molding device comprising an upright, yoke type isostatic press and a turntable for rotating a plurality of elastomeric molds, hung beneath the table, sequentially through various processing stages including filling, pressing, and unloading. At one position a given mold is filled with compactible material from a hopper while being simultaneously vibrated. At another position the mold is positioned over a pressure vessel cylinder which is lifted up around the mold to engage a pressure end-block thereby forming a sealed pressure vessel. At still another stage the compacted material is lifted free of the mold and placed on a conveyor belt by a hydraulicly operated arm having a vacuum pad at its end and mounted on a wheeled carriage over the turntable.

3,677,675

PLASTICS THERMOFORMING MACHINE

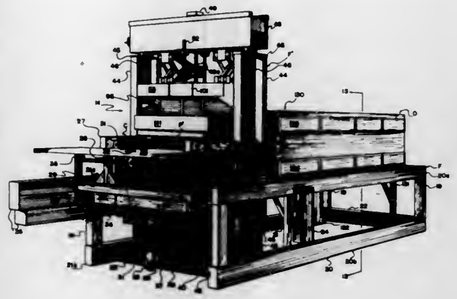
Gaylord W. Brown, Beaverton, Mich., assignor to Koehring Company, Milwaukee, Wis.

Filed Jan. 27, 1970, Ser. No. 6,067

Int. Cl. B29c 17/04

U.S. Cl. 425—107 **28 Claims**

A synthetic plastics thermoforming machine including relatively axially separable and closeable mold mechanism with platens and molds releasably supported thereon and advancing sheet assemblies for supporting a plastic sheet to be formed in position to be molded upon closing movement of the mold mechanism. A fluid pressure operated ram for moving one of the molds toward the other is mounted on a frame member which is movable relative to the platen and mold. Half bearing members carried by the platen and supporting it for movement on frame structure guide rods is also included and mechanism is provided for moving the bearing members



outwardly from the platen. A plastic sheet preheating oven is incorporated and is movable to a position in which operating shocks are prevented from being transferred to it.

3,677,676

APPARATUS FOR FORMING PLASTIC TUBING HAVING A SMOOTH INNER WALL AND A CORRUGATED OUTER WALL

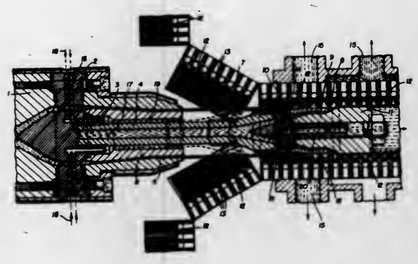
Wilhelm Hegler, Goethestrasse 2, Bad Kissingen, Germany

Division of Ser. No. 676,430, Oct. 19, 1967, Pat. No. 3,538,209. This application May 11, 1970, Ser. No. 1,933

Claims priority, application Austria, Feb. 27, 1967, A 1880/67

Int. Cl. B29d 23/04

U.S. Cl. 425—109 **2 Claims**



Apparatus for producing a plastic pipe or tubing having concentric juxtaposed bonded internal smooth wall tubing and external transversely corrugated wall tubing which may additionally have a further concentric more external smooth wall tubing, which apparatus comprises extrusion means for extruding at least two separate streams of thermoplastic material; means for imparting transverse corrugations to the external of these two extruded streams; and means for juxtaposing and bonding the internally extruded smooth walled tubing to the innermost surfaces of the externally disposed transversely corrugated tubing. The molding means are recirculating bipartite molds which travel in the direction of extrusion of the tubing. The internal smooth-walled tubing is juxtaposed to external tubing after such has been molded into a transversely corrugated shape.

3,677,677

DEVICE FOR THE AUTOMATIC MOLDING OF PASTE-LIKE, SOLIDIFIABLE PRODUCTS, SUCH AS, FOR INSTANCE, COSMETICS AND THE LIKE

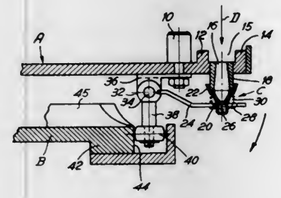
Mario Coppola, Milan, Italy

Filed May 1, 1970, Ser. No. 33,553

Claims priority, application Italy, June 26, 1969, 18763 A/69

Int. Cl. B29c 3/02, 7/00

U.S. Cl. 425—109 **13 Claims**



The device comprises a rotating table for molds whereby at least part of the elements of said molds are movable to permit the removal of the molten and solidified material.

Said molds are combined with members by means of which the solidified material, after removal thereof from the mold is neatly arranged in a retaining and supporting member.

3,677,678

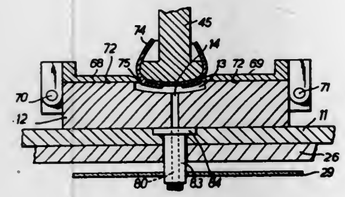
MOULDING MACHINE WITH PIVOTED WELT PLATES

Gerald Anthony Christie, Bath, and Brian Reginald Doble, Keynsham, both of England, assignors to G. B. Britton & Sons Limited, Bristol, England

Filed May 5, 1970, Ser. No. 34,761

Int. Cl. B29c 1/00

U.S. Cl. 425—119 **7 Claims**



An injection moulding apparatus for forming footwear with moulded soles, of plastics materials, e.g. of polyvinylchloride or polyurethane foam, in which the injection apparatus is positioned below a support for an upwardly facing mould and is connected directly to an injection passage passing upwardly through the mould support and into the mould. A last is supported above the mould and means are provided for raising and lowering the last support and for pressing it down on to the top of the mould during the moulding operation. The injection passage is preferably positioned centrally adjacent the waist of the shoe. The mould may have movable welt plates around its periphery, which rise to allow removal of the footwear from the mould.

3,677,679

MOULDS FOR FORMING FOOTWEAR

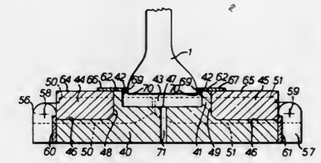
Gerald Anthony Christie, Bath; Brian Reginald Doble, Keynsham, and Alec Roy Bromfield, Kingswood, all of England, assignors to G. B. Britton & Sons Limited, Bristol, England

Filed May 5, 1970, Ser. No. 34,760

Claims priority, application Great Britain, Nov. 5, 1969, 54,119/69

Int. Cl. B29c 1/00

U.S. Cl. 425—119 **8 Claims**



A mould assembly for for forming footwear with molded soles, e.g. by injection moulding, in which movable welt plates are mounted adjacent the sole mould, e.g. on pivots or on a parallel-motion linkage on the mould itself, and are movable between a closed position in which they define the welt surface and an open position in which they permit the moulded sole to be withdrawn from the mould. They are arranged to be automatically returned to the closed position before the commencement of each moulding operation. The automatic return to the closed position may be effected by gravity, with or without the assistance of springs or bobweights, or by cam means associated with a moving last assembly. The opening movement may be effected simply by the withdrawal of the last from the mould. A unitary mould may be used, with the welt plates mounted on light supporting blocks pivotally mounted outside the side wall of the mould.

3,677,680

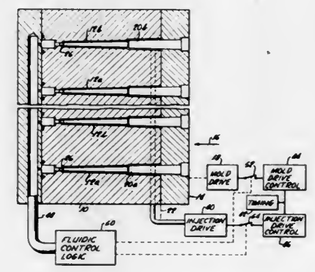
FLUIDIC SENSING FOR MOLDING SYSTEM

Roger F. Etherington, Newport Beach, Calif., assignor to California Injection Molding Co., Inc., Costa Mesa, Calif.

Filed Oct. 8, 1970, Ser. No. 79,174

Int. Cl. B29f 1/00

U.S. Cl. 425—129 **17 Claims**



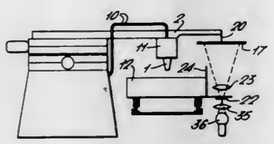
An injection molding system for forming elongated thermometer covers having a metal tip employs fluidic sensing and fluidic control logic to provide alarm signals that prevent loading of molding compound into the mold cavity when the insert in one or more of a group of mold cavities is not properly

seated and also prevent closing of the mold and insertion of an insert bearing mandrel when all inserts of a previous operation have not been withdrawn from the cavities. A vacuum drawn upon the hollow mandrels retains the insert in place upon the end of the mandrel, cools the mandrels, and cooperates with the fluid sensing devices to indicate the presence or absence of the inserts.

3,677,681
MOULD FILLING APPARATUS

Bernd Zippel, Langenhain, and Alfred Schleckmann, Eschwege, both of Germany, assignors to Richard Zippel & Co., KG., Eschwege, Germany

Filed Feb. 20, 1970, Ser. No. 13,079
Claims priority, application Germany, March 29, 1969, P 19 16 330.5
Int. Cl. B29f *1/04*
U.S. Cl. 425—145 **4 Claims**

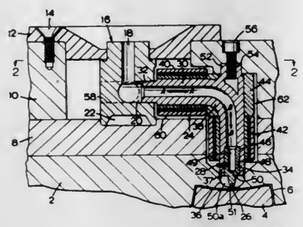


Mould filling apparatus is disclosed. The apparatus comprises a nozzle for injection mould filling material, means for mounting a mould to be filled under the nozzle, displacement means for displacing the nozzle relative to the mould to be filled during a filling operation in accordance with a predetermined program dependent on the geometry of the mould to be filled. The pre-determined program for each mould to be filled is represented by a mechanical or optical pattern, which is sensed by sensing means associated with the nozzle. The sensing means is arranged to control the displacement means to cause the nozzle to follow, for example, a meandering path corresponding to the pattern sensed.

3,677,682
HOT RUNNER SYSTEM

Ladislao (Wladyslaw) Putkowski, 21 Limarick Ave., Weston, Ontario, Canada

Filed March 9, 1970, Ser. No. 17,846
Int. Cl. B29f *1/00*
U.S. Cl. 425—192 **31 Claims**



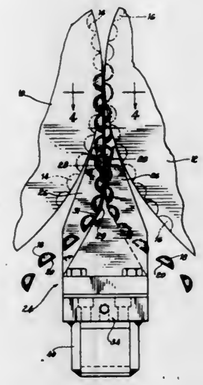
An L-shaped hot runner tube for plastic injection molds. The tube inlet and outlet slide snugly in bores in a sprue bushing and cavity plate respectively, so that as the runner expands and contracts, its ends can move. The tube ends can be sealed by a sleeve seal having a portion overlying the tube and of less diameter than the bore, and having a projecting portion of diameter slightly greater than that of the bore, enabling a good seal while reducing heat flow from the hot runner. Semi cylindrical heaters can be clamped to the sides of the tube and are removable without disassembling the ends of the tube.

A stem member is slidably fitted into the tube discharge end with its tip projecting into a gate in the cavity plate, to control flow. The stem member can be externally driven as a valve, or it can be biased to closed position and forced open by plastic pressure when the pressure becomes sufficiently high.

3,677,683
SHEAR AND BREAKER MEANS FOR BRIQUETTING APPARATUS

LeRoy S. Harris, Rolling Meadows, Ill., assignor to K-G Industries, Inc., Rosemont, Ill.

Filed Jan. 4, 1971, Ser. No. 103,612
Int. Cl. B29c *3/02*
U.S. Cl. 425—314 **9 Claims**



A shear and breaker structure for use with a briquet forming construction comprising opposed briquetting means adapted to produce a sheet consisting of at least two rows of briquets. The shear means operate to divide the sheet into strips with each strip consisting of at least one row of briquets. The shear means consist of opposed, stationary members, positioned in side-by-side relationship with each having a bearing surface for engaging the sheet. The stationary members define an open mouth with the bearing surfaces tapering towards each other to form a throat or juncture. The tapering surfaces thereby divert the briquet strips in different directions upon separation of the sheet at the juncture of the stationary members. Knife edges are formed in the stationary members to facilitate the separation. The bearing surfaces define a pronounced outwardly extending portion beyond the juncture which serves to produce longitudinal stress in the briquet strips thereby creating fracture between the individual briquets to divide the strips into individual briquet portions.

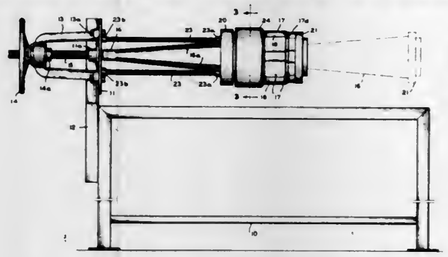
3,677,684
APPARATUS FOR ENLARGING AN EXTREMITY OF A PLASTIC PIPE

Gerald M. Platz, Champaign, Ill., assignor to National Distillers and Chemical Corporation, New York, N.Y.

Filed Dec. 15, 1969, Ser. No. 884,901
Int. Cl. B29c *17/00*
U.S. Cl. 425—393 **6 Claims**

This invention is directed to apparatus for enlarging or belling an extremity of a plastic pipe so that the extremity of

an adjacent length of pipe may be received and retained therein. An expanding mandrel is provided, and this mandrel includes expander jaws, expander wedges, and expander

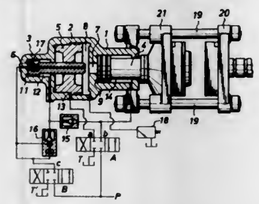


wedge guides which engage a tapered spindle. A continuous steel sheath surrounds the mandrel components and longitudinal movement of the tapered spindle provides progressive enlargement or reduction of the mandrel diameter.

3,677,685
MOLD CLAMPING MECHANISM OF INJECTION MOLDING MACHINE

Katashi Aoki, 6037, Oaza Minamijo, Hanishina-gun, Nagano-ken, Sakaki-machi, Japan

Filed April 15, 1971, Ser. No. 134,382
Claims priority, application Japan, April 22, 1970, 45/33998
Int. Cl. B29f *1/06*; B30b *1/32*
U.S. Cl. 425—450 **5 Claims**



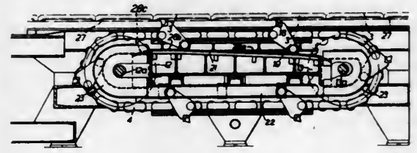
A mold clamping mechanism of injection molding machine in which a high pressure mold clamping cylinder, a low pressure high speed mold closing cylinder and a high pressure switching cylinder are arranged in a series relation, said mold clamping cylinder and mold closing cylinder are interconnected with each other by way of an opening to pass the pressure oil, the forward portion of a high pressure switching piston in said switching cylinder is inserted through said opening to close said opening, a mold clamping ram in said clamping cylinder is forced ahead to close the mold by advancing a high speed mold closing piston in said mold closing cylinder, and said mold clamping ram is pushed by the supply of pressure oil through a passage in said switching piston to clamp the mold tightly.

3,677,686
APPARATUS FOR ADVANCING PALLETS FOR MAKING TILES

William Sydney Powel, Leatherhead, Surrey, England, assignor to Redland Tiles Limited, Reigate, Surrey, England

Filed June 16, 1969, Ser. No. 833,632
Claims priority, application Great Britain, Oct. 10, 1968, 48,104/68
Int. Cl. B28b *5/04*
U.S. Cl. 425—452 **7 Claims**

Apparatus for feeding relative to a molding machine a continuous stream of pallets arranged end-to-end, characterized by the provision of pallet drive means including endless conveyor means upon which are pivotally connected a series of spaced driving elements each of which includes a nose portion for engaging an appropriate rearwardly directed face on the pallets, and a follower portion adapted for engagement by stationary cam track means. The cam track means includes an inclined first portion that converges at an acute angle toward the horizontal axis of the upper run of the conveyor means, and a second portion that is generally parallel with said axis. When the follower portion of a given drive element engages

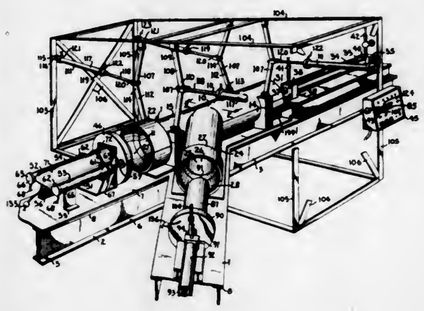


the first track portion, the drive member is pivoted from a retracted position forwardly relative to the conveyor means to drive the pallets at a speed greater than that of said conveyor means. When the follower portion engages the second track portion, the drive element travels at the speed of the conveyor means, and consequently the faster travelling pallets—which are now driven by a subsequent drive element whose follower portion is in engagement with the first track portion—progress out of engagement with the nose portion of said given drive element.

3,677,687
APPARATUS FOR RAM FORMING MONOLITHIC PLASTIC ARTICLES

Edward C. Siegfried; Conner J. Harwell, both of Meridian, Miss., and Shields L. Murphy, deceased, late of Meridan, Miss. (by Ransdell H. Murphy and Carolyn M. Beaner, heirs), assignors to W. S. Dickey Clay Manufacturing Company, Kansas City, Mo.

Division of Ser. No. 721,306, April 15, 1968, Pat. No. 3,557,290. This application March 23, 1970, Ser. No. 21,890
Int. Cl. B28b *21/50*
U.S. Cl. 425—457 **4 Claims**

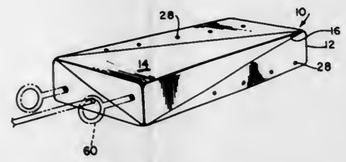


Apparatus for ram forming monolithic plastic articles, which produces articles, such as clay pipe and fittings, without

stress lines and without knit or bond lines. The apparatus includes a mold having an elongate cavity having an inside surface configuration corresponding to an outside surface of the article to be formed therein. Bore forming mandrels or rams are movable into the elongate cavity for forcing a compression formed mass of plastic clay to flow around the mandrels and fill the cavity and form the article with bores therein, the mandrels being removable from the cavity and the mold opened for removal of the article.

3,677,688
CORED SLAB WALL PANELS
Burton D. Morgan, 302 Aurora, Stow, Ohio
Filed Sept. 4, 1970, Ser. No. 69,541
Int. Cl. B29c 1/12; B28b 7/28
U.S. Cl. 425—468 **6 Claims**

Apparatus and method for forming cored concrete panels including providing a two-piece core having the core pieces of complementary wedge shape with one section tapering to a point on the end adapted to be positioned within a panel, a plastic envelope encloses the core pieces, and means connect to the core for inflating the envelope under pressure casting conditions. Additionally, the invention comprises pouring fresh concrete around the envelope enclosed core when it is positioned in a mold, closing the mold and inflating the envelope to force the concrete to fill the mold. After the concrete is set, the core can be removed piece by piece to provide a cored concrete panel with a plastic envelope outlining the core opening.



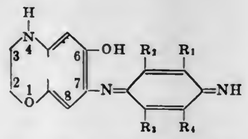
CHEMICAL

3,677,689
PROCESS FOR DYEING MANUFACTURED ARTICLES OF POLYAMIDIC RESINS
Quintino Ottaviani, Senago, Italy, assignor to Montecatini Edison S.p.A., Milan, Italy
No Drawing. Filed May 23, 1969, Ser. No. 827,140
Claims priority, application Italy, May 27, 1968, 16,956/68
Int. Cl. D06p 1/18, 1/20, 3/24
U.S. Cl. 8—4 **6 Claims**

A process is disclosed for obtaining colorings with discontinuous or shaded color effects of the fake-tortoise type or of the marbled type on formed articles of polyamidic resins, such as spectacle frames, hair clips, bag handles, combs, etc., wherein to a slightly acidulated aqueous dyeing bath containing at least one dispersed dye, a small quantity of oil sufficient to cover at most ¾ of the free surface of the dyeing bath is added, the object of polyamidic resin being then dipped into said dyeing bath. The dyeing bath, before the object is dipped into it, may be slowly stirred so that the oil will be spread over the surface of the bath in irregular spots or patterns. The object may be slowly turned about itself in such a way that it will accomplish a complete rotation at least once every 2–3 minutes.

3,677,690
DYEING HUMAN HAIR WITH AQUEOUS SOLUTION OF INDAMINES
Gregoire Kalopissis, Paris, Andreé Bugaut, Boulogne-sur-Seine, and Françoise Estradier, Paris, France, assignors to Societe Anonyme dite: L'Oreal, Paris, France
No Drawing. Filed July 6, 1970, Ser. No. 52,739
Claims priority, application Luxembourg, July 17, 1969, 59,119
Int. Cl. D06p 3/04
U.S. Cl. 8—10 **7 Claims**

Indamines having the formula



wherein R_1, R_2, R_3 and R_4 can be hydrogen, halogen, lower alkyl or lower alkoxy and are usefully employed in a dye composition for coloring keratinous fibers. Such compositions are aqueous solutions of the indamines and can be formulated with lower alkanols and film-forming cosmetic resins to produce hair setting lotions.

3,677,691
NONTOXIC DYES IN POLYGLYCEROL FATTY ACID ESTER AND GLYCOL OR GLYCERINE AND ITS MIXTURE THEREIN
Louis Koch, Yonkers, N.Y., assignor to H. Kohnstamm & Co., Inc., New York, N.Y.
No Drawing. Filed Sept. 24, 1968, Ser. No. 762,150
Int. Cl. D06p 3/10
U.S. Cl. 8—41 **13 Claims**

A method for the conversion of water soluble color additives to oil soluble color compositions. The method comprises:

(a) dissolving a water soluble color additive to be converted in a solution of a polyhydric alcohol to form a first color solution;

(b) admixing this first color solution with a solution of glycerol fatty acid ester while heating the mixture to a maximum temperature of 150 C.; and

(c) maintaining the ingredients at this temperature for at least 5 minutes with constant agitation of the mixture and cooling to obtain a stable lypophilic color additive composition.

3,677,692
HIGH ENERGY RADIATION STABILIZATION OF CELLULOSE OBTAINED BY ESTERIFYING WITH FUROYL CHLORIDE
Jett C. Arthur, Jr., Metairie, La., Sujan Singh, Banaras, Uttar Pradesh, India, and Oscar Hinojosa, Metairie, La., assignors to the United States of America as represented by the Secretary of Agriculture
No Drawing. Filed Apr. 30, 1971, Ser. No. 139,137
Int. Cl. D06m 13/20
U.S. Cl. 8—120 **9 Claims**

This invention relates to a method for stabilizing organic materials that contain the glycosidic bond to the effects of high energy radiation. Stabilization is achieved by the introduction of furoate groups as substituents into the said organic material. The method of this invention has as its objective the modification of the chemical structure of organic materials which contain the glycosidic bond to allow preferential transfer of high energy from one part of the organic material to the furoate substituent group within which group radiation energy is dissipated without damage to the glycosidic bond of the organic material.

3,677,693
METHOD OF MILLING AND RESIN TREATING KERATINOUS FIBERS
Brian Robinson, Menston, near Ilkley, and Stephen Harvey Fillingham, Shipley, England, assignors to I.W.S. Nominee Company Limited, London, England, and Ciba Limited, Basel, Switzerland
No Drawing. Filed Nov. 16, 1970, Ser. No. 90,106
Claims priority, application Great Britain, Nov. 18, 1969, 56,474/69
Int. Cl. D06m 3/02
U.S. Cl. 8—127.5 **14 Claims**

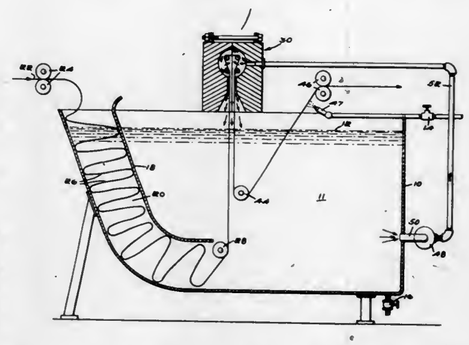
The invention relates to the finishing of textile fabrics consisting wholly or partially of keratinous fibres such as wool. The fabric is milled and simultaneously treated with a resin imparting shrink-resistance to it by agitating it in an organic liquid containing the dissolved resin and emulsified water, separating excess liquor from the fabric and curing the resin remaining on the fabric. The resins are preferably such as will cross-link in the reactive centres on the fibres, with a co-reactant or with itself, and especially polythiol resins containing at least two thiol groups per molecule, and cross-linking catalysts may be added to the milling liquor. The process is particularly useful for knitted fabrics and garments, although it is also applicable to woven fabrics.

3,677,694
IMPARTING CREASE RESISTANCE TO FIBROUS SILK STRUCTURES THROUGH TREATMENT WITH GASEOUS FORMALDEHYDE
Yoshitaka Sugimoto and Isao Sannomiya, Hyogo-ken, and Kazunobu Noumi, Osaka, Japan, assignors to Kanegafuchi Boseki Kabushiki Kaisha, Tokyo, Japan
Filed Nov. 10, 1970, Ser. No. 88,361
Claims priority, application Japan, Nov. 10, 1969, 44/90,369; July 21, 1970, 45/63,834; July 30, 1970, 45/67,085
Int. Cl. D06m 3/02
U.S. Cl. 8—127.6 **6 Claims**

A method of finishing silk fibrous structure which comprises treating the silk fibrous structure with a solution containing at least one compound selected from the following group: (a) urea of thiourea; (b) a mixture of formaldehyde-containing low grade condensation resin and urea or thiourea; (c) aliphatic, alicyclic or aromatic compounds having at least two hydroxyl groups and having molecular weight of no more than 400; (d) aliphatic amines having at least two groups selected from hydroxyl and amino and having molecular weight of no more than 400; drying the treated fibrous structure until the moisture content of said fibrous structure reaches no more than 10% and then, treating said fibrous structure with gaseous formaldehyde at a temperature of no less than 100° C. Durable and high crease-resistance is obtained without adversely affecting excellent properties peculiar to silk fibrous structure.

3,677,695
WET PROCESS FOR A CONTINUOUS LENGTH OF MOVING MATERIAL
Fritz Peter, 124 Howe Ave., Shrewsbury, Mass. 01545
Application June 19, 1968, Ser. No. 747,409, which is a continuation-in-part of application Ser. No. 657,632, Aug. 1, 1967. Divided and this application Apr. 23, 1970, Ser. No. 43,287
Int. Cl. B05c 3/05, 3/52, 3/176
U.S. Cl. 8—152 **4 Claims**

A process for subjecting a continuous length of moving material to a liquid treatment. The material is initially soaked in a bath of processing liquid while in a substantially tensionless condition. Immediately thereafter, the material is guided through a treatment chamber where it is exposed to a high velocity flow of the same processing liquid.



3,677,696
PROCESS FOR REMOVAL AND RECOVERY OF MERCURY FROM GASES
Petri Bryk, Helsinki, Martti Haani, Kokkola, Jorma B. Honkasalo, Westend, Jorma Kinnunen and Olle Lindsjo, Pori, Erik Nyholm, Kokkola, Jaakko Poijarvi and Jussi Rastas, Pori, and Juhani Kangas, Helsinki, Finland, assignors to Outokumpu Oy, Outokumpu, Finland
Filed May 7, 1971, Ser. No. 141,239
Claims priority, application Finland, July 3, 1970, 1,901
Int. Cl. B01d 47/06
U.S. Cl. 23—2 **2 Claims**

The concentration of circulating sulphuric acid is adjusted to 80–98% by weight and used to wash hot gases containing mercury. The temperature of the acid is maintained between 70–250° C. and the solid material separating from the circulating wash solution is recovered.

3,677,697
METHOD OF PRODUCING SODIUM PERCARBONATE
Appolinaria Vasillevna Yanush, Kharkov, U.S.S.R., assignor to Gosudarstvenny naucho-issledovatelsky i proektny Institut Osnovnoi Khimii, Kharkov, U.S.S.R.
No Drawing. Continuation of application Ser. No. 736,595, June 13, 1968. This application Oct. 7, 1970, Ser. No. 78,957
Int. Cl. C01b 15/10
U.S. Cl. 23—62 **3 Claims**

A method of producing sodium percarbonate by reacting sodium carbonate with hydrogen peroxide in the pres-

ence of a stabilizer wherein sodium percarbonate stabilization is effected by using benzoic acid in combination with a known stabilizing agent, e.g. a silica-containing inorganic compound.

3,677,698

LOW TEMPERATURE-HIGH TEMPERATURE TWO-STAGE ION EXCHANGE OF ZEOLITES

Howard S. Sherry, Trenton, N.J., and Albert B. Schwartz, Philadelphia, Pa., assignors to Mobil Oil Corporation

Filed Apr. 16, 1970, Ser. No. 29,210

Int. Cl. C01b *33/28*; B01j *11/40*

U.S. Cl. 23—112 **8 Claims**

A method for reducing the original metal content of a crystalline aluminosilicate zeolite to an exceptionally low level which comprises the steps of:

(a) contacting said crystalline aluminosilicate with a solution of a cation of a metal selected from Groups I to VIII of the Periodic Table, ammonium and hydrogen at a temperature between 50° F. and 215° F. under atmospheric pressure;

(b) contacting said crystalline aluminosilicate with a solution of a metal of Groups I to VIII of the Periodic Table at a temperature between 300° F. and 600° F. under sufficient pressure to maintain the solution in the liquid phase; and

(c) withdrawing a cation exchanged zeolite having at least 80 percent of its initial cations exchanged with the cations of said solutions.

3,677,699

METHOD OF STABILIZING ANHYDROUS SODIUM DITHIONITE

Ryozo Fujiwara, Eiji Ohara, and Kazuo Maeda, Ohmuta, Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

No Drawing. Filed June 22, 1970, Ser. No. 48,447

Claims priority, application Japan, June 26, 1969, 44/50,033

Int. Cl. C01b *17/66*

U.S. Cl. 23—116 **10 Claims**

A method of stabilizing anhydrous sodium dithionite which comprises coating particles of anhydrous sodium dithionite with a thin film of oxypropylated cellulose or oxypropylated starch.

3,677,700

PROCESS FOR PRODUCING BATTERY-GRADE MANGANESE DIOXIDE

Alan R. Fraser, Michigan City, Ind., assignor to Gray-Tim, Inc., Gary, Ind.

No Drawing. Filed Sept. 29, 1970, Ser. No. 76,613

Int. Cl. C01g *45/02*

U.S. Cl. 23—145 **11 Claims**

Battery grade manganese dioxide is prepared from impure manganese dioxide containing iron oxide, alumina, silica, lime, and other contaminants by roasting the impure feed under reducing conditions to form manganous oxide and magnetic iron oxide, thereafter slowly acidifying the roasted material with nitric acid to convert the manganous oxide to manganous nitrate and then adjusting the pH to a higher value to precipitate hydrated alumina. The resulting extracted solution is separated from the precipitate, concentrated to about 55–70% solid, heated as an agitated compact mass to decompose the manganous nitrate to manganese dioxide without decomposing the alkali nitrates, and water extracting soluble nitrates from the heated concentrate, leaving a purified manganese dioxide. This may, where desired, be further purified to produce a battery grade manganese dioxide product.

3,677,701

SULFURIC ACID DEFLUORINATION

Clinton A. Hollingsworth, 2010 Reaney Road; and John Harold Snyder, 546 Carole St., both of Lakeland, Fla. 33803; and Ernest Andrew Gudath, 413 S. Bryan Circle, Brandon, Fla. 33511

No Drawing. Filed June 1, 1970, Ser. No. 41,648

Int. Cl. C01b *17/90, 9/08*

U.S. Cl. 23—172 **9 Claims**

Concentration of fluorine compounds in spent sulfuric acid can be reduced by at least 96% by mixing the acid with diatomaceous earth in excess of the stoichiometric amount.

3,677,702

NITROGEN FIXATION

Leroy H. Wullstein, Salt Lake City, Utah, assignor to University of Utah

No Drawing. Filed July 30, 1969, Ser. No. 846,278

Int. Cl. C01c *1/00, 21/00*

U.S. Cl. 23—193 **10 Claims**

A method of nitrogen fixation by purely chemical means rather than biochemical means, wherein a gaseous phase comprising molecular nitrogen is contacted with an aqueous system comprising ferrous iron and a nitrite to form ammonium radical (NH_4) and molecular nitrogen. The reaction takes place either at room temperature and pressure, or at greater temperatures and pressures, and can utilize air as the source of gaseous nitrogen.

3,677,703

METHOD OF PURIFYING HYDRATES OF CALCINED DOLOMITE AND MAGNESITE

Leonard John Minnick, Cheltenham, Pa., assignor to G. & W. H. Corson Inc., Plymouth Meeting, Pa.

Filed July 14, 1970, Ser. No. 54,686

Int. Cl. C08f *11/02*

U.S. Cl. 23—186 **5 Claims**

Dry, dihydrated calcined dolomite or dry hydrated calcined magnesite, having a particle size distribution such that at least the major portion and up to about 95% thereof, is −325 mesh and the remainder is larger than 325 mesh, is dispersed into an upwardly moving stream of air, in a confined zone, adapted in conjunction with centrifugal force acting primarily on the larger particles selectively to carry a fine fraction of the hydrate upwardly and outwardly to a zone separate and distinct from that to which the remainder is directed, and the fine fraction, which has a lower silica content than that of the original hydrate is separately recovered.

3,677,704

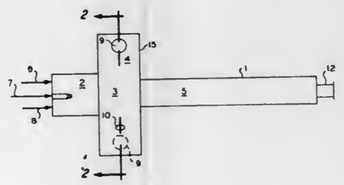
PRODUCTION OF CARBON BLACK

John W. Byron, Toledo, Ohio, assignor to Phillips Petroleum Company

Original application Feb. 6, 1969, Ser. No. 797,212. Divided and this application June 3, 1971, Ser. No. 149,564

Int. Cl. C09c *1/50*

U.S. Cl. 23—209.4 **3 Claims**



Grit is removed from the gaseous mass in a carbon black furnace by passing the gaseous mass over a radial

port or depression in the wall of the lower periphery of the furnace thereby entrapping the grit which is removed by means of a draw-off conduit.

3,677,705

PROCESS FOR THE CARBONIZATION OF A STABILIZED ACRYLIC FIBROUS MATERIAL

Michael J. Ram, West Orange, and John P. Riggs, Berkley Heights, N.J., and Charles M. Clarke, Texas City, Tex., assignors to Celanese Corporation, New York, N.Y.

Filed Mar. 9, 1970, Ser. No. 17,780

Int. Cl. C01b *31/07*

U.S. Cl. 23—209.1 **24 Claims**

A process is provided for the rapid conversion of a continuous length of an inherently hygroscopic stabilized acrylonitrile homopolymer or copolymer to a carbonized form exhibiting improved physical properties. The stabilized starting material is supplied in an essentially anhydrous form immediately prior to its passage through a heating zone containing an inert atmosphere in which its temperature is relatively rapidly elevated to produce a carbonized fibrous material. The resulting continuous length of carbonized fibrous material may be subsequently converted to a continuous length of fibrous graphitic carbon possessing superior properties.

3,677,706

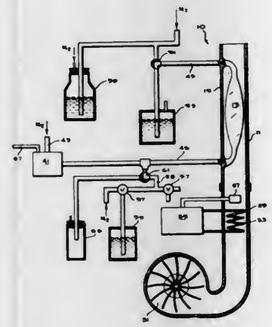
REACTOR

Jack Graff, Santa Clara, and Ralph A. Dora, Santa Barbara, Calif., assignors to Packard Instrument Company, Inc., Downers Grove, Ill.

Filed Feb. 24, 1970, Ser. No. 13,663

Int. Cl. B01l *3/00*; G01n *31/00*

U.S. Cl. 23—230 R **10 Claims**



A reactor for carrying out laboratory scale chemical reactions in the liquid phase comprises a vertically elongated vessel of circular cross-section having steep side walls gradually widening from the top and the bottom, and openings at the top and bottom. An exterior heater is used to regulate the liquid temperature. A passageway for supplying fluid to the lower opening has a portion of restricted sides whereby the constant introduction of gas at low pressure to the passageway prevents liquid outflow while the valveless passageway remains physically open to permit the sequential injection of reagents. A similar passageway for the upper opening permits droplets of solvent to be introduced at the conclusion of reaction; these wash the interior surface of the reactor to afford quantitative recovery of the reaction product.

3,677,707

METHOD OF DETERMINING HAEMOGLOBIN

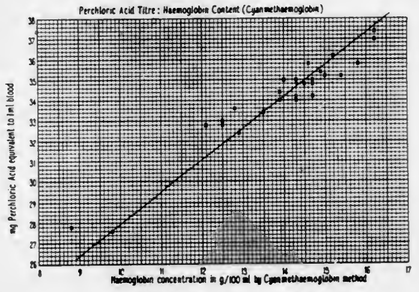
Emanuel Pride and Brian Warren, Minster-in-Sheppey, England, assignors to Abbott Laboratories, North Chicago, Ill.

Filed Oct. 27, 1969, Ser. No. 869,713

Claims priority, application Great Britain, Oct. 28, 1968, 50,946/68

Int. Cl. G01n *21/24, 31/22, 33/16*

U.S. Cl. 23—230 B **2 Claims**



Method for the determination of the haemoglobin content in blood. A blood sample is mixed with a solution of perchoric acid in acetic acid and the mixture is checked for complete neutralization of the perchloric acid added. The amount of perchloric acid used is selected in such a way that an arbitrary pre-selected amount of haemoglobin is neutralized. To determine completeness of the neutralization, a colour indication may be used advantageously.

3,677,708

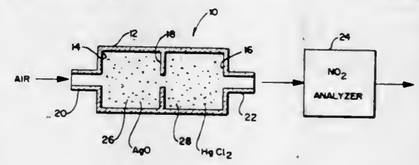
NO_2 ANALYSIS AND SCRUBBER THEREFOR

John N. Harman III, Placentia, and Radhakrishna M. Neti, Brea, Calif., assignors to Beckman Instruments, Inc.

Filed Dec. 15, 1969, Ser. No. 885,006

Int. Cl. B01j *11/06*; G01n *31/06, 31/10*

U.S. Cl. 23—232 R **7 Claims**

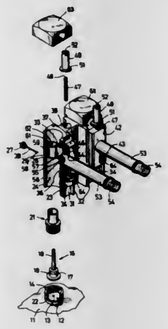


Method and apparatus for determining NO_2 in a sample gas stream containing interferents utilizing a scrubber and an analytical instrument which is sensitive both to NO_2 and the interferents. The scrubber contains argentic oxide (AgO) which effectively removes both positive and negative interferents from the sample gas stream, but does not affect the NO_2 content of the stream. The invention is particularly applicable to the monitoring of the NO_2 content of polluted air.

3,677,709
FLAME IONIZATION DETECTION APPARATUS AND METHOD

Manfred Riedmann, Boblingen, and Martin Eichner, Aidlingen, Wurttemberg, Germany, assignors to Hewlett-Packard G.m.b.H., Boblingen, Germany

Filed July 2, 1970, Ser. No. 51,749
Claims priority, application Germany, July 14, 1969, P 19 35 624.2
Int. Cl. G01n *31/12*
U.S. Cl. 23—254 E 10 Claims

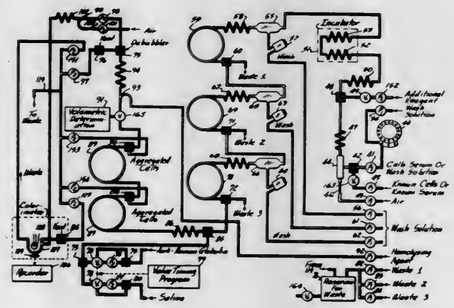


A flame ionization detector for use in gas chromatography includes a collector ring which is positionally adjustable with respect to a flame nozzle. The collector ring supports one or more pieces of salt in an interchangeable manner, each salt being operable to amplify ionic current in a different substance. Pesticide components such as phosphorus and nitrogen are distinguished from hydrocarbons and chlorinated substances by the differences in magnitude and polarity of the corresponding peaks obtained on a chromatogram. This is achieved by optimizing the collector ionic current and gradually increasing the quantity of combustible gas supplied to the detector.

3,677,710
APPARATUS FOR WASHING BLOOD CELLS

Nathan M. Hirsch, Wallington, N.J.
(33 Pond Ave., B–820, Brookline, Mass. 02146)

Filed June 2, 1969, Ser. No. 829,385
Int. Cl. A61m *1/03*
U.S. Cl. 23—258.5 5 Claims

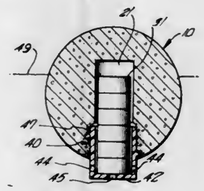


A method and apparatus for automatically performing the Coombs anti-human globulin test in a continuous flow system. Central to both the method and the apparatus is a new cell washing technique which permits continuous washing of the cells that are to be reacted with the Coombs serum. This technique involves gravitational settling and separation of aggregated cells from a supernatant material. The gravitational separation step is also used to separate the agglutinated cells from the dissociated cells after a Coombs reaction has taken place.

3,677,711
PLURAL CAVITY TOROIDAL FLOAT POOL CHEMICAL PACKAGE

William D. Bond, Arcadia, Calif., assignor to World Industries, Inc., Azusa, Calif.

Filed Mar. 25, 1970, Ser. No. 22,556
Int. Cl. B01f *1/00*
U.S. Cl. 23—267 A 2 Claims

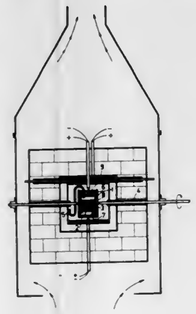


A float ring contains cavities each filled with a soluble pool chemical such as chlorine tablets or granules. A tube cap protrudes an adjustable amount from each cavity of the float ring and an aperture of each tube is in the protruded portion. Each tube cap is adjustable in its float ring cavity to change the area of the tube cap aperture effectively open to pool water so as to alter the rate at which the chemical dissolves into the pool.

3,677,712
DEVICE FOR A METHOD OF GROWING MONOCRYSTALS

Wolfgang Tolksdorf, Tornesch, Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed July 9, 1969, Ser. No. 840,331
Int. Cl. B01j *17/20*
U.S. Cl. 23—273 2 Claims

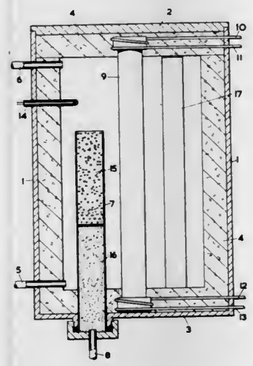


A device for growing monocrystals from a melt in which the melt is contained in a closed vessel rotatable within an oven, the vessel being provided with an S-shaped deaeration tube which extends into the vessel through its upper end and has an effective length for removing gases from the melt without withdrawing melt when the vessel is rotated.

3,677,713
FURNACE FOR THE MANUFACTURE OF CERAMIC WHISKERS

Christopher Charles Evans, Saffron Walden, England, assignor to the Secretary of State for Defence in the Government of the United Kingdom

Continuation of application Ser. No. 729,081, May 14, 1968, which is a continuation-in-part of application Ser. No. 406,127, Oct. 23, 1964, now Patent No. 3,394,991, dated July 30, 1968. This application Nov. 27, 1970, Ser. No. 93,428
Claims priority, application Great Britain, Oct. 28, 1963, 42,439/63
Int. Cl. B01j *17/28*
U.S. Cl. 23—277 R 11 Claims



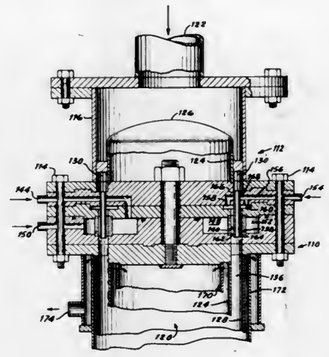
A furnace particularly suitable for the manufacture of ceramic materials in whisker form comprises a hollow casing lined internally with thermally insulating material and enclosing a reaction space, a carbon electrode disposed within the casing and capable of heating said reaction space to a high temperature, at least one container for containing a solid chemical reactant provided within the casing and having an opening into said reaction space, means for passing gas from a source outside the casing through the said container and into said reaction space, means for passing gas directly into said reaction space and means for removing gas from said reaction space.

3,677,714
POROUS RING FEED HEAD

Lowell Ashton Ledgett, Ridgewood, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

Continuation of abandoned application Ser. No. 766,255, Oct. 9, 1968. This application Mar. 17, 1971, Ser. No. 125,416
Int. Cl. B01f *3/02*; B01d *47/00*; C07f *141/00*
U.S. Cl. 23—285 6 Claims

A reactor for continuously sulfonating or sulfating organic compounds with sulfur trioxide wherein the organic compound is fed through a porous wall having a moderate pressure drop thereacross. The organic compound is then directed to flow in a circumferentially uniform thin film down the inner cylindrical wall or walls of a cooled reaction zone. Low pressure sulfur trioxide contacts the organic compound on the inner surface of the cooled walls and forms a thin film of reaction mixture,

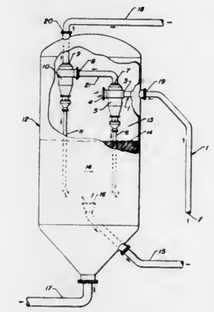


and the emerging product is treated by conventional methods.

3,677,715
CATALYTIC CRACKING APPARATUS

William F. Morrison, Purley, and Henry A. Hauser, Sevenoaks, England, assignors to Universal Oil Products Company, Des Plaines, Ill., and Ambuco Limited, London, England, fractional part interest to each

Filed Apr. 13, 1970, Ser. No. 27,944
Int. Cl. B01d *45/12*; B01j *9/20*; C10g *13/18*
U.S. Cl. 23—288 S 2 Claims



Catalytic cracking apparatus comprising an elongated transfer line conduit connected to a reception vessel said transfer line conduit being connected to a series of cyclone separation means which are within said reception vessel. The transfer line conduit is connected to the inlet of a first cyclone separation means which is located within the reception vessel. The first cyclone separation means contains an inlet which is in communication with the internal portion of said reception vessel. The first cyclone separation means is connected to a second cyclone separation means which accepts material from the outlet of said first cyclone separation means and passes a portion of those materials out of the second cyclone separation means through an outlet which passes out of the reception vessel.

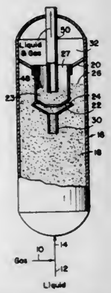
3,677,716
PHASE SEPARATION OF A GAS-LIQUID-SOLID MIXTURE

Carl L. Weber, Washington Crossing, Pa., and Ronald H. Wolk, Lawrence Township, Mercer County, and Michael C. Chervenak, Pennington, N.J., assignors to Hydrocarbon Research, Inc., New York, N.Y.

Original application June 14, 1968, Ser. No. 737,156. Divided and this application Nov. 18, 1970, Ser. No. 90,761

Int. Cl. C01g *1/00, 13/18, 23/06*

U.S. Cl. 23—288 E **16 Claims**



Apparatus for improved separation of liquids, gases and particulate solid materials in a liquid-gas contacting process wherein a liquid feed and gas usually hydrogen are passed upwardly through a bed composed of a particulate contact agent, the velocity of the gas and the liquid being such that the particles are put in a state of random motion and the volume of the bed is expanded over its static volume and wherein an area of high liquid gas and liquid turbulence and mixing is created and wherein liquid effluent and gaseous effluents are removed from the contact zone. The method consists of effecting essentially complete disengagement of the gas from the mixture of particulate solids and liquid. The gas-free liquid-solid mixture is then introduced to a zone of relatively low turbulence and liquid is then removed from this zone at a rate whose linear velocity is less than the settling velocity of the solid, thereby allowing substantial settling of the solid and resulting in the removal of a clarified liquid. The disengaged gaseous effluent may then be removed separately or recombined and removed with the liquid effluent. Apparatus for efficiently carrying out this process are described.

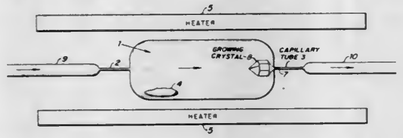
3,677,717
APPARATUS AND METHOD FOR PRODUCING II–VI CRYSTALS

Paul Vohl, Lexington, Mass., assignor to Itek Corporation, Lexington, Mass.

Filed Mar. 6, 1969, Ser. No. 804,895

Int. Cl. B01j *17/30*

U.S. Cl. 23—294 **13 Claims**



Apparatus is disclosed for nucleating and growing II–VI crystals such as zinc selenide. The apparatus comprises a hollow reaction vessel having walls constructed of an inert, high-temperature resistant material and having an outlet passageway with a much smaller cross-sectional area than that of the reaction vessel, the reduction in area occurring immediately adjacent to the point of crystal nucleation. This apparatus also contains a means for heating the reaction vessel to temperatures of at least about 400° C.

A process for nucleating and growing II–VI crystals using a throttling technique is also disclosed.

The apparatus and process disclosed are useful for producing single, pure, defect-free II–VI crystals which are in turn useful in electro-optic applications.

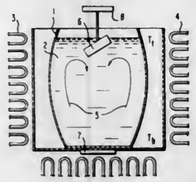
3,677,718
TECHNIQUE FOR FLUX GROWTH OF BARIUM TITANATE SINGLE CRYSTALS

William N. Lawless, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed May 5, 1969, Ser. No. 821,907

Int. Cl. C01f *11/00;* **B01j** *17/04*

U.S. Cl. 23—301 R **8 Claims**



Process for the growth of large, thick barium titanate single crystals by heating a flux containing barium titanate, inserting therein barium titanate seed crystals, cooling the mixture to crystallize barium titanate single crystals, while maintaining a temperature gradient across the mixture and removing the grown barium titanate single crystals. The crystals formed by the above process find particular usage in optical devices.

3,677,719
METHOD FOR REPROCESSING MOLTEN FLUORIDE SALT REACTOR FUELS

Marvin E. Whatley, Oak Ridge, Tenn., assignor to the United States of America as represented by the United States Atomic Energy Commission

Filed Mar. 9, 1971, Ser. No. 122,402

Int. Cl. C22b *61/04*

U.S. Cl. 23—325 **4 Claims**

An improved method for reprocessing molten fluoride salt reactor fuels containing protactinium is provided comprising a dual temperature reductive extraction process using as an extractant molten bismuth containing a metal reductant. In the improved process the fuel values and the metal reductant are the only extractables.

3,677,720
PURIFICATION OF PHOSPHONITRILIC CHLORIDE POLYMERS

John Keith Maund, Birmingham, and Clifford Henry George Hands, Stourbridge, England, assignors to Hooker Chemical Corporation, Niagara Falls, N.Y.

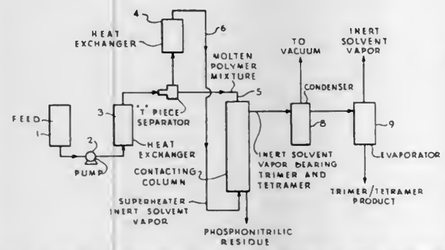
Filed Mar. 14, 1969, Ser. No. 807,197

Int. Cl. C01b *21/00, 25/00*

U.S. Cl. 23—357 **16 Claims**

A mixture of phosphonitrilic chloride polymers is purified by contacting a molten phosphonitrilic chloride mixture with an inert solvent vapor so as to selectively vaporize the cyclic trimeric polymer, separating a solvent vapor phase laden with trimer and some tetramer from the molten polymer residue, condensing it to form a solution of trimer and tetramer in the solvent, and subsequently recovering trimer together with some tetramer from the solution. During the process the molten phosphonitrilic chloride mixture is preferably maintained at a temperature below 140 degrees centigrade. The phosphonitrilic

chloride polymer feed stock can be pretreated by dissolving it in an inert solvent, followed by heating the resulting solution under reflux in the presence of an absorbent me-



dium, and subsequently cooling the solution and filtering it free from absorbent medium. The process provides a very efficient and economic method for the recovery and purification of phosphonitrilic chloride trimer.

3,677,721
POROUS METAL BODIES OF UNIFORM POROSITY

Raymond J. Elbert, Middleburg Heights, and Ernest G. Farrier, Parma, Ohio, assignors to Union Carbide Corporation, New York, N.Y.

No Drawing. Division of application Ser. No. 798,142, Feb. 10, 1969, now Patent No. 3,577,226, which is a division of application Ser. No. 650,250, June 30, 1967, now Patent No. 3,433,632, which in turn is a continuation-in-part of application Ser. No. 484,123, Aug. 31, 1965. This application Dec. 7, 1970, Ser. No. 95,976

Int. Cl. B22f *3/10*

U.S. Cl. 29—182.2 **8 Claims**

Sintered porous metal sheets supported or unsupported by a backing sheet and having not more than about one pore per twenty-five (25) square feet of sheet with a size larger than three times the average pore size of said sheet.

3,677,722
CEMENTED CARBIDE COMPOSITION AND METHOD OF PREPARATION

Frank Rymas, Sterling Township, Macomb County, Mich., assignor to The Walmet Corporation, Pleasant Ridge, Mich.

No Drawing. Continuation-in-part of application Ser. No. 738,401, June 20, 1968. This application Nov. 24, 1969, Ser. No. 879,603

Int. Cl. C22c *11/29*

U.S. Cl. 29—182.8 **11 Claims**

This invention relates generally to improved cemented carbide compositions and more particularly to modified tungsten carbide-cobalt compositions which in a single cemented alloy possess improved strength and hardness characteristics that make them particularly useful in applications requiring resistance to wear and impact. This invention also concerns the method of making the improved compositions of this invention.

3,677,723
COMPOSITE MATERIAL OF VANADIUM ALLOYS AND IRON OR NICKEL ALLOYS

Hans-Ulrich Borgstedt, Karlsruhe-Waldstadt, Manfred Ruhle, Frankfurt am Main, and Peter Wincierz, Oberursel, Taunus, Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Germany

No Drawing. Filed Mar. 11, 1969, Ser. No. 806,317

Claims priority, application Germany, Mar. 16, 1968, P 16 08 157.5

Int. Cl. B32b *15/00*

U.S. Cl. 29—194 **7 Claims**

A composite material for cladding nuclear fuel elements is composed of vanadium alloy base material joined to a metallic outer material composed of iron or nickel and being resistant to corrosion by reactor coolants.

3,677,724
LIQUID HYDROCARBON COMPOSITIONS CONTAINING REACTION PRODUCTS OF AMINE DERIVATIVES OF 1-OLEFIN/MALEIC ANHYDRIDE COPOLYMERS AND METHYL VINYL ETHER-MALEIC ANHYDRIDE COPOLYMERS AS ANTI-STATIC AGENTS

Harry J. Andress, Jr., Pitman, N.J., assignor to Mobil Oil Corporation

No Drawing. Continuation-in-part of application Ser. No. 885,268, Dec. 15, 1969, which is a continuation-in-part of application Ser. No. 797,701, Feb. 7, 1969. This application Jan. 19, 1970, Ser. No. 4,024

Int. Cl. C10l *1/18, 1/22*

U.S. Cl. 44—62 **13 Claims**

Liquid hydrocarbon compositions are provided containing, in an amount sufficient to impart anti-static properties, the reaction product of an amine derivative of an olefin/maleic anhydride copolymer and an alkyl vinyl ether-maleic anhydride copolymer.

3,677,725
LIQUID HYDROCARBON COMPOSITIONS CONTAINING ANTISTATIC AGENTS

Harry J. Andress, Jr., Pitman, N.J., assignor to Mobil Oil Corporation

No Drawing. Filed Feb. 4, 1970, Ser. No. 8,702

Int. Cl. C10l *1/18, 1/22*

U.S. Cl. 44—62 **6 Claims**

Compositions are provided containing, in an amount sufficient to impart antistatic properties, copolymers of maleic anhydride and a 1-olefin or an alkylvinylether or their alkyl esters, carboxymethyl esters or carboxymethyl amides.

3,677,726
MONOSUBSTITUTED UREAS AS FUEL ADDITIVES

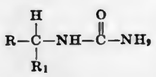
Aubert Y. Coran, Akron, Ohio, and Billy D. Vineyard, St. Louis, Mo., assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Aug. 3, 1970, Ser. No. 60,639

Int. Cl. C10l *1/18, 1/22*

U.S. Cl. 44—71 **8 Claims**

Varnish-removing additives for liquid hydrocarbon fuels comprising monosubstituted ureas having the formula



where R is hydrogen, alkyl or alkenyl and R_1 is alkyl or alkenyl, and the sum of the carbon atoms in R and R_1 is from about 5 to about 25.

3,677,727
PROCESS OF ACTIVATION AND GASIFICATION OF FLUIDISED CARBONACEOUS MATERIALS

Albert Godel, Paris, France, assignor to Societe Anonyme Activit, Paris, France

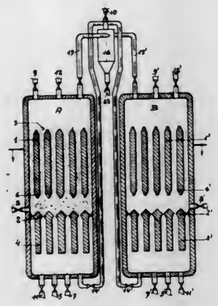
Filed Aug. 14, 1970, Ser. No. 63,845

Int. Cl. C10j *3/00, 3/04*

U.S. Cl. 48—206 **7 Claims**

A process for activation and gasification of granulated carbonaceous material by an activating gas, at high temperature, wherein the reaction is operated in fluidised bed

within a reactor and in contact with fixed hot refractory masses capable of accumulating sufficient calories to compensate the heat losses, from the reacting medium, due



to the endothermicity of the chemical activation-gasification reaction, these fixed refractory masses contained in a reactor being subjected to cyclic reheating before each activation-gasification phase.

3,677,728

METHOD OF MANUFACTURING CRYSTALLINE-GLASS ARTICLES

Isaak Iljich Kitaigorodsky, deceased, late of Moscow, U.S.S.R., by Evgenya Antonovna Kitaigorodskaya, administrator, Petrovsky buljvar 4/6, Apt. 4, Moscow, U.S.S.R.

No Drawing. Continuation-in-part of application Ser. No. 816,139, Feb. 27, 1969, which is a continuation of application Ser. No. 644,762, June 6, 1967, which in turn is a continuation-in-part of application Ser. No. 302,456, Aug. 15, 1963. This application Mar. 23, 1970, Ser. No. 22,051

Int. Cl. C03c *3/22*

U.S. Cl. 65—19 **4 Claims**

In a method for manufacturing crystalline-glass articles non-metallic additives containing SiO_2 are dissolved together with a selected nucleating agent in a molten slag obtained directly from a metallurgical furnace. The glass melt is then homogenized, clarified, molded into the shape of the desired article, and then heat-treated to crystallize the article. The melt contains from 45 to 75 weight percent of slag. The nucleating agents used are iron and manganese sulfides, fluorine, and chromium, phosphorous, magnesium and titanium oxides.

3,677,729

CHEMICAL TEMPERING PROCESS FOR GLASS BY SPRAYING

Emile Plumat, Gilly, Belgium, assignor to Glaverbel S.A., Watermael-Boitsfort, Belgium

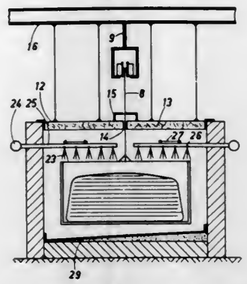
Filed Sept. 9, 1969, Ser. No. 856,299

Claims priority, application Luxembourg, Sept. 12, 1968, 56,873

Int. Cl. C03c *21/00*

U.S. Cl. 65—30 **17 Claims**

A process and apparatus for chemically tempering a body of a material amendable to such treatment by disposing the body in a non-liquid environment, and projecting against the body a continuous supply of a liquid tempering medium at a flow rate sufficient to cause a con-



tinuous stream of the medium to flow across the surfaces to be tempered.

3,677,730

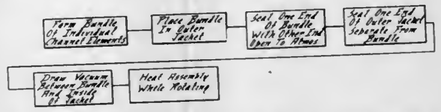
METHOD OF FABRICATING AN ARRAY OF CHANNEL MULTIPLIERS

Bagdasar Deradoorian, Detroit, and George W. Goodrich, Bloomfield Hills, Mich., and Dimitri G. Theodorou, Chicago, Ill., assignors to The Bendix Corporation

Filed Dec. 18, 1968, Ser. No. 784,855

Int. Cl. C03c *27/06*

U.S. Cl. 65—36 **2 Claims**



A method of forming an array from a bundle of individual channel multipliers, the individual channels being fabricated of a lower temperature softening glass tube to permit the walls of the individual channels to be spiralled and also expanded to fill the interstices within a higher softening temperature outer tube. Also, the invention could be practiced utilizing glass tubes of the same temperature softening charatceristic. The expanding and spiralling operation is performed simultaneously by drawing the bundle of individual channels through a furnace while rotating the feed or pull assemblies of the drawing apparatus to spiral the channel bundle and exhausting the area between the individual tubes and the equal or higher temperature softening glass tube to expand the individual channels.

3,677,731

METHOD FOR VERTICAL SUSPENSION OF GLASS SHEETS DURING THERMAL TREATMENT

Michel Martin, Soisy-sous-Montmorency, France, assignor to Compagnie de Saint Gobain, Neuilly-sur-Seine, France

Filed Mar. 24, 1969, Ser. No. 827,436

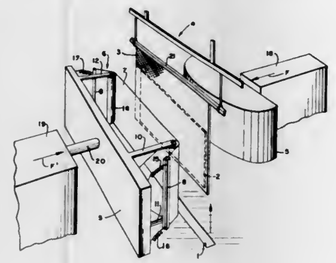
Claims priority, application France, Mar. 26, 1968, 145,470

Int. Cl. C03b *21/00*

U.S. Cl. 65—102 **16 Claims**

Method of, and article produced by suspending a sheet or lamina of glass vertically, by placing the sheet within a flat sack of refractory fabric, suspending the sheet by supporting the sack at or along its upper edge while

heating it to a desired or softening temperature. After heating, the sheet suspended by its sack is transported to a position between opposing press platens, which are then forced together to temper the sheet and/or to conform it to the shape of the platens. Both platens may be rigid and complementally curved. Or one platen may be of rigid convexly curved form and the other a vertically disposed hammock of refractory fabric yieldingly stretched and operable to force the heated sheet into



conformity with the rigid platen. The invention is of particularly utility in the production of laminated glass sheets as for automobile windshields, wherein the rigid platen may be a first lamina previously shaped and tempered, and the second untempered lamina, originally flat, heated and suspended within its sack, is pressed against the rigid platen and is shaped thereby, then removed from the sack and adhesively secured to the first lamina, to complete the laminated sheet.

3,677,732

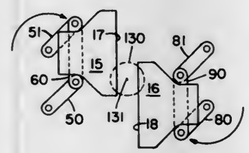
MOLTEN GLASS SHEARS

John R. Dornan, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Feb. 1, 1971, Ser. No. 111,327

Int. Cl. C03b *5/38*

U.S. Cl. 65—133 **25 Claims**



Molten glass shears for separating, cutting or severing gobs or mold charges of molten glass from a stream thereof issuing from an outlet orifice of a glass tank, feeder, forehearth or other type of container. The shears comprise first and second blades preferably having straight or linear cutting edges which are disposed on opposite sides of the molten glass stream preferably at right angles to the longitudinal axis thereof, and are preferably so disposed with the cutting edges in a facing and parallel coplanar relationship or orientation with each other. The output shaft of a motor means is coupled with the shear blades to move the cutting edges through curved paths of movement, and into and out of at least near wiping or sliding contact with each other while imparting a slicing motion to each cutting edge during continued maintenance of said preferred relationship therebetween. The slicing motions of the cutting edges are preferably, but need not necessarily be, in directions opposite to each other during each respective glass severance operation, and the slicing motions of each respective blade are preferably, but need not necessarily be, in opposite directions during alternate succeeding ones of a succession of glass severance or shearing operations.

3,677,733

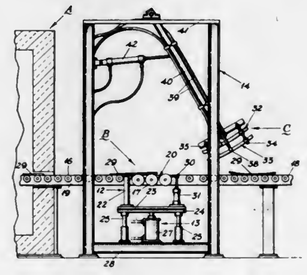
GLASS SHEET BENDING AND TEMPERING APPARATUS

George F. Ritter, Jr., Toledo, Ohio, assignor to Libbey-Owens-Ford Company, Toledo, Ohio

Filed Sept. 5, 1969, Ser. No. 855,559

Int. Cl. C03b *23/02*

U.S. Cl. 65—268 **3 Claims**



A bending and tampering apparatus particularly adapted for treating thin glass sheets. The bending apparatus is of the inertia-gravity type and utilizes a cantilever mounted shaping rail. Upper and lower cooling blastheads are swung over the unsupported end of the shaping rail to apply tempering air immediately after bending, before excessive heat is lost by the thin glass.

3,677,734

PRODUCTION OF FERTILIZER FROM WET PHOSPHORIC ACID

Robert L. Carroll and Charles R. Hayward, Richmond, Va., assignors to Swift Agricultural Chemicals Corporation, Chicago, Ill.

Filed Aug. 25, 1969, Ser. No. 852,632

Int. Cl. C05b *7/00*; C01b *25/28*

U.S. Cl. 71—34 **6 Claims**

Ammonium polyphosphates having a major portion of the P_2O_5 content thereof in the form of condensed phosphates, are prepared by ammoniating wet-process phosphoric acid with ammonia in a multi-stage operation under specified conditions.

3,677,735

METHOD FOR THE CONTROL OF AQUATIC PLANT LIFE

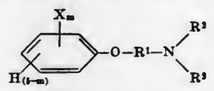
Sidney B. Richter, Chicago, and Alfred A. Levin, Skokie, Ill., assignors to Velsicol Chemical Corporation, Chicago, Ill.

No Drawing. Filed Aug. 20, 1969, Ser. No. 851,728

Int. Cl. A01n *9/00*

U.S. Cl. 71—66 **8 Claims**

This invention discloses a method for the control of aquatic plant life which comprises contacting said plant life with a phytotoxic amount of a composition which comprises a compound of the formula



wherein R^1 is an alkylene group of from 2 to 4 carbon atoms; R^2 and R^3 are independently selected from the group consisting of hydrogen, alkyl and alkenyl; X is selected from the group consistingof alkyl, alkenyl, alkoxy, halogen, nitro and dialkylamino; and *m* is an integer from 0 to 5.

3,677,736

LIQUID FERTILIZER SUSPENSION CONTAINING UREAFORM

Richard E. Formaini, Hopewell, Va., assignor to Allied Chemical Corporation, New York, N.Y.

No Drawing. Continuation of application Ser. No. 56,689, July 20, 1970, which is a continuation-in-part of application Ser. No. 827,033, May 22, 1969, which in turn is a continuation of application Ser. No. 643,845, June 6, 1967. This application June 8, 1971, Ser. No. 150,931

Int. Cl. C05c *9/00*

U.S. Cl. 71—28 **3 Claims**

A liquid fertilizer suspension containing ureaform having a water insoluble nitrogen content of at least 1.5% and an activity index in excess of 60. The process for producing said suspension is concerned with diluting a urea-formaldehyde reaction product containing urea and formaldehyde having a mole ratio between 1:1 to 2:1 with water to form a 35–65% urea-formaldehyde solution, lowering the pH to below 5, heating said solution at a temperature ranging from 30–80° to form a suspension and adding an alkaline material to said suspension to raise the pH to above 5.

3,677,737

COMBATING UNWANTED VEGETATION WITH 2-(2',5' - DIMETHYLPYRROLIDINYL) - 5 - ARYL-1,3,4-THIADIAZOLES

Norman A. Dahle, Mission, Kans., assignor to Gulf Research & Development Company, Pittsburgh, Pa.

No Drawing. Filed Oct. 24, 1969, Ser. No. 869,328

Int. Cl. A01n *9/12*

U.S. Cl. 71—90 **4 Claims**

A small group of 2-(2',5'-dimethylpyrrolidinyl)-5-phenyl-1,3,4-thiadiazoles, in which the phenyl ring may have chloro or methyl substituents, possess herbicidal properties superior to compounds of similar structural formulas. Various compounds of the group are useful for controlling unwanted vegetation in soybeans, cotton and small grains.

3,677,738

METHOD FOR THE CONTROL OF PESTS WITH TRIORGANOTIN (SUBSTITUTED PHENOXIDES)

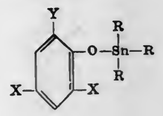
Pasquale P. Minieri, Woodside, N.Y., assignor to Tenneco Chemicals, Inc.

No Drawing. Original application Feb. 28, 1968, Ser. No. 708,802, now Patent No. 3,524,869, dated Aug. 11, 1970. Divided and this appplication Nov. 6, 1969, Ser. No. 871,262

Int. Cl. A01n *9/00*

U.S. Cl. 71—97 **19 Claims**

Organotin compounds that have the structural formula



wherein each R represents an alkyl group having from 4 to 8 carbon atoms or a phenyl group; one of the X substituents represents an alkyl group having from 4 to 8 carbon atoms, phenyl, or methyl; the other X substituent represents hydrogen, halogen, nitro, or an alkyl group having from 1 to 4 carbon atoms; and Y represents hydrogen, halogen, or nitro are useful in the control of the growth of undesirable organisms.

3,677,739

HERBICIDAL 3,4,5-TRISUBSTITUTED BENZAMIDES

Bruce W. Horrom, Waukegan, and Aldo J. Crovetti, Lake Forest, Ill., and Kenneth L. Viste, Warminster, Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

No Drawing. Continuation-in-part of application Ser. No. 671,946, Oct. 2, 1967, which is a continuation-in-part of application Ser. No. 608,271, Jan. 10, 1967. This application Mar. 5, 1969, Ser. No. 804,678

Int. Cl. A01n *9/20*

The portion of the term of the patent subsequent to Oct. 13, 1987, has been disclaimed

U.S. Cl. 71—118 **3 Claims**

Herbicidal compositions containing as the active ingredient a novel compound belonging to the class of N-(1,1-dimethylpropynyl)-3,4,5-trisubstituted benzamides.

3,677,740

PROCESS OF BENEFICIATING TITANIFEROUS BEACH SAND

Frank Ronald Williams, Yarm, Jack Whitehead, Acklam, Jefferson Marshall, Stockton-on-Tees, Alan Conners, Balcombe, and Derek Vernon Gosden, Horsham, England, assignors to British Titan Products Company Limited, Billingham, Teesside, England

No Drawing. Filed July 31, 1970, Ser. No. 60,128

Claims priority, application Great Britain, July 31, 1964, 38,476/64

Int. Cl. C21b *1/00*; C22b *1/00*

U.S. Cl. 75—1 **16 Claims**

A process for the beneficiation of iron-containing titaniferous material suitable for attack by sulphuric acid in which a beach sand ilmenite is oxidised at a temperature in the range 700° C. to 800° C. and the iron content is thereafter reduced at an elevated temperature to a ferrous state before leaching the material with aqueous hydrochloric acid to produce a material, when dry, containing between 75% and 90% of titanium, expressed as TiO_2.

3,677,741

METHOD OF PROCESSING FERROPHOSPHORUS

Jurgen A. Stenzel, Brentwood, Mo., assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Aug. 24, 1970, Ser. No. 66,649

Int. Cl. C21c *7/02*; C22b *5/00*

U.S. Cl. 75—28 **9 Claims**

Phosphorus is substantially completely removed from ferrophosphorus by heating the ferrophosphorus in admixture with an oxidizing agent and a neutralizing agent to at least sintering temperature in a container having oxide refractory walls and leaching with an alkaline solution. The residual phosphorus free metal values have recognized utility in the metallurgical industry and the phosphates are useful in fertilizer, feed and detergent technology.

3,677,742

PROCESS FOR INCREASING THE PERCENTAGE OF ALUMINUM IN ALUMINUM-MANGANESE ALLOYS

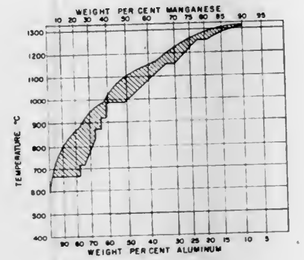
Charles Toth, Westwego, La., assignor to Applied Aluminum Research Corporation, Westwego, La.

Filed Dec. 31, 1969, Ser. No. 889,402

Int. Cl. C22b *21/02, 21/06*

U.S. Cl. 75—68 B **12 Claims**

Process for increasing the percentage of aluminum in an aluminum-manganese alloy comprising bringing a liquid solution of said alloy to a temperature sufficient to effect phase separation into a solid phase rich in manganese



and a liquid phase rich in aluminum and isolating these phases from each other.

3,677,743

MIXING AND SETTLING SEPARATION PROCESS FOR URANIUM OR PLUTONIUM

William J. Walsh and Robert Dean Pierce, Naperville, Ill., assignors to the United States of America as represented by the United States Atomic Energy Commission

Filed June 3, 1969, Ser. No. 830,080

Int. Cl. C22b *61/04*

U.S. Cl. 75—84.1 **5 Claims**

A process and apparatus for separating fission products from uranium and/or plutonium employing liquid metals and liquid salts as solvents is disclosed. A solution of uranium and/or plutonium in a liquid metal is flowed sequentially into and through a plurality of mixer-settlers containing a liquid salt which remove certain fission products from the feed solution as well as a small proportion of the uranium and/or plutonium. The uranium and/or plutonium is removed from the feed solution in another mixer-settler and the liquid metal solvent is recycled to the first mixer-settler where it washes all of the uranium and/or plutonium from the liquid salt present therein. The liquid salt in the first mixer-settler is discarded, the liquid salt in subsequent mixer-settlers is transferred between stages and fresh liquid salt is added to the last mixer-settler. Also disclosed is a system including a plurality of mixer-settlers which include an L-shaped baffle in the settling chamber.

3,677,744

AGE HARDENING STAINLESS STEEL

Katsumi Yamamura, Hiroshi Harigaya, and Kazutomo Kasai, Suwa-shi, and Michio Asahina, Okaya-shi, Japan, assignors to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

No Drawing. Filed Dec. 9, 1968, Ser. No. 782,431

Claims priority, application Japan, Mar. 7, 1968, 43/14,498; Mar. 19, 1968, 43/17,689

Int. Cl. C22c *13/20*

U.S. Cl. 75—128 T **6 Claims**

Corrosion and heat resistance, workability and toughness of age-hardenable Fe-Mo alloys are improved by the addition of Cr, Ni and Co. The age hardenability is reinforced by the addition of W, Be, Ti and Si. Resistance to non-oxidizing acids is improved by addition of Cu.

3,677,745

COPPER BASE COMPOSITION

Walter L. Finlay, New York, N.Y., and Henry J. Fisher, Wellesley Hills, and Donald A. Hay, Medfield, Mass., assignors to Cooper Range Company, New York, N.Y.

Filed Feb. 24, 1969, Ser. No. 802,330

Int. Cl. C22c *9/00*

U.S. Cl. 75—153 **10 Claims**

A copper-magnesium-phosphorus alloy (optionally containing silver and/or cadmium) wherein the magnesium is present in amounts from 0.01 to 5.0 weight percent, the phosphorus from 0.002 to 4.25 weight percent with copper making up the remainder. When silver or cadmium are employed, they are employed in amounts of from 0.02 to 0.2 weight percent and from 0.01 to 2.0 weight percent, respectively. These alloys have unexpectedly good combinations of mechanical heat resistance and conductivity properties.

3,677,746

HEAT TREATABLE ALLOY

Carl H. Lund, Arlington Heights, John Hockin, Palatine, and Michael J. Woulds, Schaumburg, Ill., assignors to Martin Marietta Corporation, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 841,602, July 14, 1969. This application Jan. 19, 1970, Ser. No. 4,044

Int. Cl. C22c *19/00*

U.S. Cl. 75—171 **3 Claims**

An alloy and castings made therefrom containing in percent by weight about 0.08% carbon, about 15% chromium, about 18.5% cobalt, about 5.2% molybdenum, about 3.5% titanium, about 4.3% aluminum, about 0.03% boron, up to about 0.3% zirconium, about 0.8% to about 2% hafnium with the balance being essentially nickel.

3,677,747

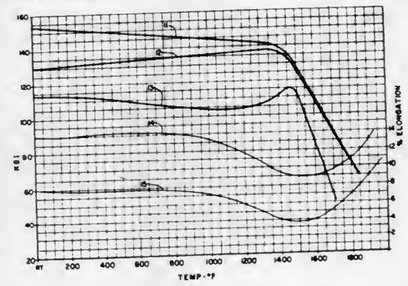
HIGH TEMPERATURE CASTABLE ALLOYS AND CASTINGS

Carl H. Lund and John Hockin, Arlington Heights, and Michael J. Woulds, Schaumburg, Ill., assignors to Martin Marietta Corporation, New York, N.Y.

Continuation-in-part of applications Ser. No. 725,674, Apr. 29, 1968, Ser. No. 841,408, Ser. No. 841,504, and Ser. No. 841,505, all July 14, 1969. This application June 28, 1971, Ser. No. 157,335

Int. Cl. C22c *19/00*

U.S. Cl. 75—171 **49 Claims**



Nickel-base alloys useful in the form of castings as gas turbine engine hardware and processes with respect to such nickel-base alloys wherein special amounts of hafnium are employed to enhance ductility of virgin alloy, to overcome ductility deficiencies in alloys containing revert and to constitute an integral part of the process of making cast objects such as gas turbine blades which are subjected in use to the combined effects of high stress at high temperatures.

3,677,748
ALLOY
John Hockin, Arlington Heights, Ill., assignor to Martin Marietta Corporation, New York, N.Y.
No Drawing. Filed Nov. 19, 1969, Ser. No. 878,233
Int. Cl. C22c *19/00*
U.S. Cl. 75—171 **5 Claims**

A nickel-base alloy useful at elevated temperatures under stress which contains in percent by weight about 8% chromium, about 10% cobalt, about 0.1% carbon, about 4% molybdenum, about 4.25% tantalum, about 6% aluminum, about 1% titanium, about 2% tungsten, about 1.5% hafnium, about 0.08% zirconium, about 0.015% boron with the balance being essentially nickel.

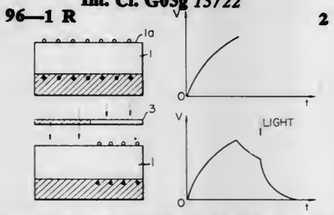
3,677,749
METHOD OF MAKING HIGH-DENSITY SINTERED CHROMIUM-BEARING IRON ALLOYS
Hugh R. McCurdy, Doyle W. Rausch, and Hoy O. McIntire, Columbus, Ohio, assignors to The Battelle Development Corporation, Columbus, Ohio
No Drawing. Filed Oct. 15, 1969, Ser. No. 866,740
Int. Cl. B22f *1/00*
U.S. Cl. 75—211 **15 Claims**

Chromium-bearing iron articles and particularly chromium-bearing steel articles such as stainless steel objects are produced by compacting, reducing, and sintering mixtures of metal compound powders and ferrochromium powders. At least 35 percent, by weight, of the powder is of a particle size less than 10 microns.

3,677,750
PHOTOELECTROSOLOGRAPHIC IMAGING PROCESS
Joseph Mammino, Penfield, N.Y., and Gail D. Jvirblis, Mountain View, Calif., assignors to Xerox Corporation, Rochester, N.Y.
Continuation-in-part of application Ser. No. 553,836, May 31, 1966, now abandoned. This application Sept. 12, 1969, Ser. No. 857,429
Int. Cl. G03g *13/00*
U.S. Cl. 96—1 **8 Claims**

A photoelectrosolographic imaging system utilizing a plate overcoated with a soluble layer. An image is formed on the plate by forming an electrostatic latent image on the surface and treating the surface with a solvent for the soluble layer whereby the layer dissolves away selectively in the uncharged areas.

3,677,751
POLARITY REVERSAL ELECTROPHOTOGRAPHY
Wasaburo Ohta, Yokohama-shi, and Katsuo Sakai, Ebina-machi, Japan, assignors to Kabushiki Kaisha Ricoh, Tokyo, Japan
Filed Nov. 14, 1969, Ser. No. 876,952
Claims priority, application Japan, Nov. 30, 1968, 43/87,891
Int. Cl. G03g *13/22*
U.S. Cl. 96—1 R **2 Claims**



An electrophotography method wherein a photosensitive layer is charged up in the dark, the photosensitive layer being overcoated by an insulator layer, and a charge of the polarity opposite to that of the initial charge is applied on the insulator layer in a quantity less than that of the initial charge, and thereafter, the electric polarity at the spots corresponding to the light and dark spots of an original is reversed by an image light projection.

3,677,752
BIS(DIALKYLAMINOARYL)ETHYLENE PHOTOCONDUCTORS
Jerome J. Looker and Charles J. Fox, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
No Drawing. Filed Sept. 2, 1969, Ser. No. 854,718
Int. Cl. G03g *5/06*
U.S. Cl. 96—1.6 **2 Claims**

1,1-bis(dialkylaminoaryl)ethylenes are useful as organic photoconductors in electrophotographic systems.

3,677,753
NOVEL PHOTOGRAPHIC PROCESSES
Donald R. Francis, Dedham, and Richard J. Haberlin, Weston, Mass., assignors to Polaroid Corporation, Cambridge, Mass.
Filed July 13, 1970, Ser. No. 54,488
Int. Cl. G03c *5/54*
U.S. Cl. 96—29 **16 Claims**

A composite film structure comprising a laminate including a common support carrying on one surface a layer containing silver precipitating nuclei and a layer containing photosensitive silver halide crystals, wherein said layer containing photosensitive silver halide crystals is located distal to said support; is exposed to actinic radiation and processed by contacting with a processing composition whereby a transfer image is formed in said layer containing silver precipitating nuclei, and, subsequent to said image formation, the layer containing photosensitive silver halide is removed by contacting said layer with a rotating roller having coated thereon a material having a greater adhesion for said layer than adjacent layers on said film structure has for said layer. The film unit preferably contains an additive color screen. The described film structure is particularly suitable for use as motion picture film.

3,677,754
PHOTOSENSITIVE ELEMENT COMPRISING LIGHT-SENSITIVE POLYMERS AND PROCESS OF USING
John A. Ford, Jr., Robert C. McConkey, and Thomas M. Laakso, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
No Drawing. Original application Aug. 1, 1969, Ser. No. 846,952, now Patent No. 3,627,732. Divided and this application Feb. 16, 1971, Ser. No. 115,689
Int. Cl. G03c *1/68*
U.S. Cl. 96—35.1 **6 Claims**

There is described a novel class of light-sensitive polyesters containing a 1-arylmethylidyne-3-indenecarboxylate group or a 5-arylmethylidyne - 3 - furanonecarboxylate group as an integral part of the polymer backbone. The polymers are insolubilized upon exposure to actinic radiation and are useful in the preparation of photomechanical images.

3,677,755
RELIEF LITHOGRAPHIC PLATES AND PHOTOSENSITIZING SOLUTIONS
Hisaaki Fukui and Taketoshi Araki, Tokyo, and Yoshikane Fuchi, Iruma-gun, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan
No Drawing. Filed Aug. 28, 1969, Ser. No. 853,948
The portion of the term of the patent subsequent to Feb. 22, 1989, has been disclaimed
Int. Cl. G03c *5/00*
U.S. Cl. 96—35.1 **13 Claims**

A photosensitizing solution having a viscosity of about 5 to 150 centipoises at 20° C. comprising:

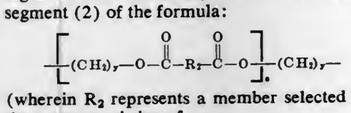
(I) a photopolymerizable component comprising

(A) an unsaturated polyester having a fusing point above 100° C. containing in the molecule

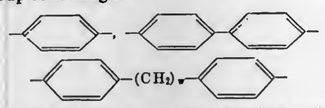
at least one segment (a) selected from the group consisting of the segment (1) of the formula:

$$\left(-R_1-O-\right)_x$$

(wherein R_1 represents an alkylene group having 2 to 4 carbon atoms; x is 2 to 100) and the segment (2) of the formula:



(wherein R_2 represents a member selected from the group consisting of



and naphthylene group; y is 2 to 4; z is 1 to 10; and w is 1 to 4) and the segment (b) corresponding to the residue of an unsaturated dicarboxylic acid;

(B) about 10 to 150 parts by weight, based upon 100 parts by weight of said unsaturated polyester (A), of at least one ethylenically unsaturated monomer, different from the unsaturated polyester polymer (A); and

(C) about 0.01 to 5 parts by weight, based upon 100 parts by weight of said unsaturated polyester, of a photopolymerization initiator;

(II) at least one solvent selected from the group consisting of chlorinated aliphatic hydrocarbons, brominated aliphatic hydrocarbons, ketones, cyclic ethers and pyridine, said solvent having a relative drying velocity of 500 to 10,000.

This photosensitizing solution is coated in a thickness between 10 to 200μ on a support and exposed to actinic light through an image transparency. Then, the non-exposed area is removed and the surface is treated with a desensitizing agent to give a relief lithographic plate.

3,677,756
METHOD OF DRY POWDER ETCHING
Thomas F. Protzman, Worthington, Ohio, assignor to A. E. Staley Manufacturing Company, Decatur, Ill.
No Drawing. Filed Sept. 21, 1970, Ser. No. 74,122
Int. Cl. G03c *5/00*
U.S. Cl. 96—36 **14 Claims**

The process for etching an etchable layer without a resist comprising the steps of exposing an etchable layer bearing a light-sensitive layer capable of receiving a powder in image-wise configuration to actinic radiation to form a latent powder-receptive image; developing said latent image with superficially dry etchant particles to form a layer of etchant particles in image-wise configuration; removing etchant particles from the non-image areas of said light-sensitive layer, and carrying out said etching reaction in a predetermined configuration conforming to the image-wise configuration of the superficially dry etchant particles.

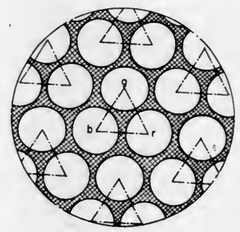
3,677,757
METHOD OF MAKING PHOSPHOR SCREEN FOR COLOR CATHODE RAY TUBE
Masahiro Nishizawa, Kawasaki, Japan, assignor to Nippon Columbia Kabushikikaisha (Nippon Columbia Co. Ltd.), Tokyo, Japan
Filed June 22, 1970, Ser. No. 48,027
Claims priority, application Japan, June 28, 1969, 44/51,122
Int. Cl. H01j *1/54, 9/22*
U.S. Cl. 96—36.1 **9 Claims**

A method of making a phosphor screen of a multicolor cathode ray tube which comprises the steps of coating the inner face of the faceplate of the cathode ray tube with a photosensitive adhesive binder depositing a positive photosensitive layer over the entire area of the coated photosensitive adhesive binder, drying the deposited photoresist, exposing the photoresist layer to irradiation by light through a mask having a predetermined pattern to expose the underlying photosensitive adhesive binder layer at predetermined areas, developing the exposed inner face of



the faceplate to remove the photoresist layer from the photosensitive adhesive binder layer to expose it at those areas exposed to light, rinsing the developed inner face of the faceplate with water, and dusting phosphor of a desired color on the exposed areas of the photosensitive adhesive binder layer. The photosensitive adhesive binder is insoluble in water and in a developer after being exposed to light and becomes sticky due to absorption of water.

3,677,758
SCREENING A BLACK-SURROUND COLOR CATHODE-RAY TUBE
Sam H. Kaplan, Chicago, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.
Filed Dec. 21, 1970, Ser. No. 99,949
Int. Cl. G03c *5/00*
U.S. Cl. 96—36.1 **10 Claims**



The screen is covered with sensitized PVA and exposed from each of three positions simulating the three beams of the tube in process but with the exposure positions displaced inward toward the tube axis in the plane of deflection. The latent image thus produced on the screen is then developed and light-absorbing material is deposited in the portions of the screen from which unexposed PVA has been removed in the developing step. The screen is then stripped of the remnant PVA layer and again coated with PVA. Thereafter, a similar exposure is undertaken but now with the exposure positions displaced outwardly from the tube axis in the plane of deflection. Following the this there is a further development step and again the deposition of light-absorbing material on the portions of the screen from which PVA has been removed. The three exposure positions in each of these two sequences of process steps cause the matrix, which is made in two segments, to exhibit approximately circular holes properly located to receive phosphor and form the customary phosphor dot triads on the screen of the tube.

3,677,759
PHOTOGRAPHICALLY PRODUCING MOLECULARLY DISPERSED DYE IMAGES

Rexford W. Jones and William B. Thompson, Columbus, Ohio, assignors to A. E. Staley Manufacturing Company, Decatur, Ill.

No Drawing. Continuation-in-part of application Ser. No. 796,897, Feb. 5, 1969. This application June 16, 1969, Ser. No. 833,771

Int. Cl. G03c *1/68, 5/24*

U.S. Cl. 96—48 **8 Claims**

Process of molecularly dispersing particulate dye images wherein powder particles comprising a carrier and a dye, held in imagewise configuration in particulate form in or on a substrate, are contacted with vapors of a material, which is a solvent for said dye, capable of swelling said carrier and incapable of swelling the surface of said substrate, molecularly dispersing said dye in said carrier. Line, continuous-tone or half-tone images are preferably produced by exposing to actinic radiation in image-receiving manner a substrate bearing a positive-acting or negative-acting light-sensitive organic layer having a thickness of at least 0.1 micron, said layer being capable of developing a R_d of 0.2 to 2.2; continuing the exposure to either clear the background of positive-acting light-sensitive layers or to establish a potential R_d of 0.2 to 2.2 with negative-acting light-sensitive organic layer; applying to said layer of organic material, free flowing powder particles having a diameter, along at least one axis of at least about 0.3 micron but less than 25 times the thickness of said organic layer wherein said powder particles comprise a solid carrier and dye; while the layer is at a temperature below the melting points of the powder and of the organic layer, physically embedding said powder particles as a monolayer in a stratum at the surface of said light-sensitive layer to yield images having portions varying in density in proportion to the light exposure of each portion, removing non-embedded particles from said organic layer to develop an image; and molecularly dispersing dye into said carrier by contacting the particles embedded in said organic layer with vapors of a material which is a solvent for said dye, capable of swelling said carrier and incapable of swelling the surface of said substrate.

3,677,760
HARDENING PROCESS FOR PHOTOGRAPHIC LIGHT-SENSITIVE ELEMENTS

Haruhiko Iwano and Isao Shimamura, Minami-Ashigara-machi, Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-Ashigara-machi, Kanagawa, Japan

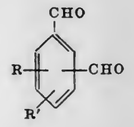
No Drawing. Filed Apr. 21, 1969, Ser. No. 818,101

Claims priority, application Japan, Apr. 19, 1968, 43/26,341

Int. Cl. G03c *1/30, 5/26, 5/30*

U.S. Cl. 96—50 PT **6 Claims**

A process for hardening a silver halide photographic light-sensitive element, which comprises processing the light-sensitive element in a processing bath containing formaldehyde and aromatic dialdehyde represented by the general formula:



wherein R and R' each represents one member selected from the group consisting of a hydrogen atom, a lower alkyl group having 1–5 carbon atoms, and a group capable of increasing water solubility, said group being a member selected from the group consisting of SO_3H, COOH, OH and the Na K or NH_4 salt thereof.

3,677,761
DEVELOPMENT PROCESS

John Colin Brown and Roy Anthony Cheer, Ilford, England, assignors to Ilford Limited, Ilford, England

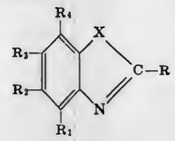
No Drawing. Filed June 26, 1970, Ser. No. 50,314

Claims priority, application Great Britain, June 26, 1969, 32,426/69

Int. Cl. G03c *1/06, 1/34, 5/30*

U.S. Cl. 96—66.5 **5 Claims**

This invention describes a process for the production of a photographic record which comprises developing photographic material having a gelatino silver halide emulsion containing a developable silver image in a silver halide developing solution, the process being characterised in that it is carried out in the presence of a compound of the formula:



where X represents an oxygen, sulphur or selenium atom, R represents a hydrogen atom or an alkyl or substituted alkyl group, an aralkyl group, an aryl group or a group SR_5 where R_5 represents a hydrogen atom or an alkyl or substituted alkyl group, at least one of R_1, R_2, R_3 or R_4 is a nitro group and the remainder are each selected from a hydrogen or a halogen atom, or an alkyl, aralkyl, alkoxy, mono- or di-alkylamino, acylamino or a nitro group.

3,677,762
COLOR ELEMENTS CONTAINING BRIGHTENING AGENTS AND ULTRAVIOLET ABSORBERS

Hiroyuki Amano, Nobuo Tsuji, and Kazuo Shirasu, Minami-Ashigara-machi, Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-Ashigara-machi, Kanagawa, Japan

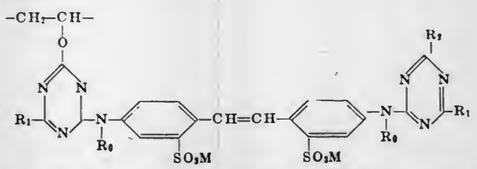
No Drawing. Filed Jan. 8, 1970, Ser. No. 1,564

Claims priority, application Japan, Jan. 8, 1969, 44/1,554

Int. Cl. G03c *1/76*

U.S. Cl. 96—74 **12 Claims**

Color printing papers comprising multiple photographic layers, wherein at least one of the layers contains an ultraviolet absorber, with one of the layers containing a fluorescent brightening agent having the repeating formula



are disclosed. The color printing papers have increased whiteness.

3,677,763
PIGMENTED PHOTOSENSITIVE POLYMER SYSTEM

Charles D. De Boer and George W. Luckey, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Apr. 17, 1970, Ser. No. 29,663

Int. Cl. G03c *1/68*

U.S. Cl. 96—82 **14 Claims**

Photosensitive polymeric elements provide high relief images of good resolution when subjected to imagewise exposure to X-ray radiation and solvent development. Fluorescent pigments or phosphors which are dispersed in a light-sensitive polymer having unsaturated cyclic

groups appended to the polymer backbone absorb the X-ray energy and transfer it to the polymer as actinic radiation thereby causing in-depth insolubilization of the polymer.

3,677,764
SILVER HALIDE EMULSION CONTAINING PURPLE COUPLER FOR COLOR PHOTOGRAPHY AND PROCESS OF MAKING THE SAME

Hans Glockner, Pullach, Ernst Meier, Munich, and Walter Puschel, Leverkusen, Germany, assignor to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

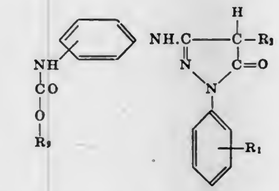
No Drawing. Filed Aug. 12, 1969, Ser. No. 849,498

Claims priority, application Germany, Aug. 14, 1968, P 17 97 083.1

Int. Cl. G03c *1/40*

U.S. Cl. 96—100 **13 Claims**

A purple color coupler has the formula



wherein R_1 is hydrogen or one of the substituents usually employed with 1-phenyl-pyrazolones; R_2 is alkyl, cycloalkyl, aryl or aryloxyalkyl or one of these groups which is substituted as customary in pyrazolone couplers; R_3 is hydrogen or a substituent as customary in pyrazolone couplers which, upon color development, is split off; and wherein at least one of R_1 and R_2 is or includes an anti-fusion straight-chain or branched hydrocarbon group having from 8 to 20 carbon atoms.

3,677,765
SILVER HALIDE SUPERSENSITIZED PHOTOGRAPHIC EMULSION

Yoshiyuki Nadazawa, Yashuharu Nakamura, Haruo Takei, Akira Sato, and Tadashi Ikeda, Minami-Ashigara-machi, Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-Ashigara-machi, Kanagawa, Japan

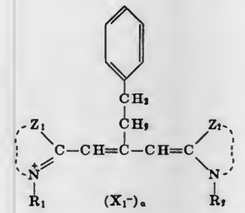
No Drawing. Filed Feb. 10, 1971, Ser. No. 114,338

Claims priority, application Japan, Feb. 10, 1970, 45/11,586

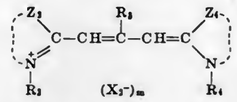
Int. Cl. G03c *1/14*

U.S. Cl. 96—124 **7 Claims**

A silver halide light-sensitive photographic emulsion containing a combination of at least one sensitizing dye represented by the following Formula I and at least one sensitizing dye represented by the following Formula II:



wherein R_1 and R_2 each represents a lower alkyl group or a substituted lower alkyl group, Z_1 and Z_2 each represents an atomic group necessary to complete a benzothiazole nucleus, a benzoselenazole nucleus or a naphthothiazole nucleus, X_1 represents an anion, and n represents 0 or 1, n=0 when an intra-molecular salt is formed;



wherein R_5 represents a lower alkyl group and R_3, R_4, Z_3, Z_4, X_2 and m each has the same meaning as R_1, R_2, Z_1, Z_2, X_1 and n respectively.

3,677,766
METHOD OF FORMING GELATIN IMAGE

Yasui Tamai, Sadao Osawa, and Seiichi Taguchi, Saitama, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-Ashigara-machi, Kanagawa, Japan

No Drawing. Filed Feb. 20, 1970, Ser. No. 13,238

Claims priority, application Japan, Feb. 21, 1969, 44/13,019

Int. Cl. G03g *13/10, 13/20, 13/22*

U.S. Cl. 96—1 LY **6 Claims**

A method of preparing a gelatin image, which comprises forming an electrostatic latent image on an electrophotographic light-sensitive layer; converting said latent image into a gelatin image using an electrophotographic developer containing gelatin fine grains; applying small droplets of water to the surface of said light-sensitive layer carrying said gelatin image; said water being in an amount sufficient to adhere the gelatin fine grains forming said gelatin image to the surface of said light-sensitive layer; and, hardening said gelatin image, is disclosed.

3,677,767
MOLASSES-UREA REACTION MIXTURES

Larry Cecil McNeff, Wayzata, Minn., assignor to Cargill, Incorporated, Minneapolis, Minn.

No Drawing. Filed Mar. 9, 1970, Ser. No. 17,946

Int. Cl. A23k *1/02, 1/22*

U.S. Cl. 99—6 **14 Claims**

An animal feed supplement is provided which comprises a reaction mixture of urea and molasses. The feed supplement provides improved nutrition for ruminant animals.

3,677,768
PROCESS FOR PRODUCING AN INSTANT CEREAL

Stanley Martin Mokrzycki, Avenel, Edwin Leon Sexton, Middletown, Thomas George Powers, Bayonne, and Daniel Melnick, West Englewood, N.J., assignors to CPC International Inc.

No Drawing. Filed Aug. 19, 1969, Ser. No. 851,441

Int. Cl. A23l *1/10*

U.S. Cl. 99—83 **13 Claims**

A process for producing an instant cereal product by moistening cereal granules, tempering the moistened granules, partially pregelatinizing and drying them, and recovering an instant cereal product. The instant cereal produced in this manner hydrates substantially instantaneously.

3,677,769
MULTITEXTURED AND PATTERNED DOUGHS

Charles W. King, Minneapolis, Minn., assignor to General Mills, Inc.

Filed May 28, 1970, Ser. No. 41,339

Int. Cl. A21d *8/02*

U.S. Cl. 99—86 **5 Claims**

A process for registering patterns on yeast leavened dough. In selected areas of the dough, the yeast is inactivated by heat thus impairing rising and forming depressed areas in the final baked product.

3,677,770
CARBONATED CANDY
Frank Witzel, Spring Valley, N.Y., assignor to Beech-Nut, Inc., New York, N.Y.
No Drawing. Filed Oct. 7, 1970, Ser. No. 78,910
Int. Cl. A23g 3/00
U.S. Cl. 99—134 R 2 Claims

The off-taste present in effervescent hard candy due to unreacted food acidulant as well as salt formed by the reaction of the efferverscent factors, i.e., leavening agent and acidulant, is overcome by incorporating a small amount of a saccharin into the candy.

3,677,771
PROCESS FOR THE MANUFACTURE OF CARAMELS
Charles Wesley Kolar, Jr., St. Louis, Mo., assignor to Ralston Purina Company, St. Louis, Mo.
No Drawing. Filed Sept. 21, 1970, Ser. No. 74,176
Int. Cl. A23g 3/00
U.S. Cl. 99—134 R 30 Claims

Production of a caramel-type confectionary product from a reconstitutable dried condensed milk product made by mixing concentrated fluid dairy whey with a proteinaceous source such as casein adding a partially hydrogenated fat to said mixture; drying the condensed milk product, and incorporating therewith a sequestering agent to sequester any calcium ions present in the milk product upon reconstitution and to prevent undesired calcium induced coagulation of the protein during subsequent heating to produce the caramel confection.

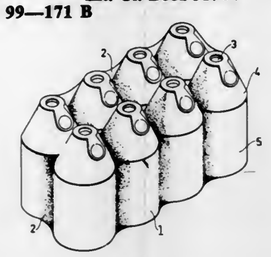
3,677,772
CYCLOALKYL MERCAPTAN COMPOSITIONS AND PROCESSES THEREFOR
Cynthia Mussinan, Bricktown, Christopher Giacino, Califon, and Ira Katz, Elberon, N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.
No Drawing. Filed May 14, 1970, Ser. No. 37,305
Int. Cl. A23l 1/26
U.S. Cl. 99—140 R 22 Claims

Foodstuff, flavor augmenting and flavor imparting compositions containing a quantity of cycloalkyl mercaptan sufficient to alter the organoleptic characteristics of said composition.

3,677,773
METHOD FOR THE PRODUCTION OF A FLAVOR ENHANCING CRYSTAL
Jinshichi Naka, Toyonaka, Yasunori Tokuda, Takasago, Takehiko Koono, Kobe, and Jun Utsugi, Kakogawa, Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan
Continuation-in-part of application Ser. No. 383,506, July 17, 1964. This application Sept. 2, 1965, Ser. No. 484,693
Claims priority, application Japan, Mar. 29, 1965, 40/18,216
Int. Cl. A23l 1/22
U.S. Cl. 99—140 N 4 Claims

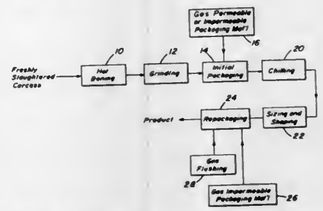
1. A method for preparing flavor-enhancing crystals, each of which homogeneously consists of substantially from 2 to 10% by weight on anhydrous basis of disodium salt of flavorous 5'-nucleotide and monosodium glutamate, said crystals being effectively convertible as a unitary entity into the liquid phase in aqueous aluminum salt solution at about pH 6 without perceptible formation of precipitate, even when viewed under the microscope, which method comprises the steps of preparing a hot aqueous solution of alkali salt of flavorous 5'-nucleotide and monosodium glutamate in an amount of 20 to 62% by weight in which the ratio by weight of alkali salt of flavorous 5'-nucleotide to monosodium glutamate is 2 to 12:100 and at a temperature higher than 40° C., adding gradually from 10 to 75% by volume of a freely water-miscible organic solvent to the hot aqueous solution under gentle stirring while avoiding rapid drop of the local temperature of the hot solution, gradually lowering the temperature of the aqueous mixture at a rate of about 1 to 3 degrees centigrade per hour, and collecting the resulting crystalline material from the aqueous mixture.

3,677,774
COMBINED PACKAGE CONTAINING AN ENCLOSED GASEOUS ATMOSPHERE FOR PRESERVATION
Anders Ruben Rausing, Rome, Italy, assignor to Sobrefina S.A., Fribourg, Switzerland
Filed Feb. 9, 1970, Ser. No. 9,730
Claims priority, application Sweden, Feb. 25, 1969, 2,539/69
Int. Cl. B65f 31/04
U.S. Cl. 99—171 B 2 Claims



A combined package having extended shelf-life for a plurality of plastic containers for beer or carbonated beverages in which the plastic containers have an unacceptable permeability for carbon dioxide gas which includes a heat-shrunk, sealed envelope enclosing the containers and composed of a plastic material having a low permeability for the carbon dioxide gas, said envelope containing pressurized carbon dioxide gas so that the difference in partial pressures of the gas in the containers and the envelope is less than the difference in partial pressures of the carbon dioxide in the container and the atmosphere.

3,677,775
METHOD OF PREPARING AND PACKAGING PORTION SHAPED MEAT PRODUCTS
Paul W. Vogel, Pekin, Ill., assignor to Bird Provision Co.
Continuation of abandoned application Ser. No. 798,421, Feb. 11, 1969. This application June 2, 1971, Ser. No. 149,388
Int. Cl. A22c 18/00; B65b 25/06
U.S. Cl. 99—174 23 Claims



Meat that is shaped and sized into individual consumer portions after initial packaging, is sealed for prolonged storage in a gas-impermeable re-packaging material. Prior to initial packaging, the meat is ground while in a warm and fluent state shortly after slaughter of the animal. After shaping and sizing the meat into consumer portions, it is gas flushed during repackaging to reduce the amount of entrapped oxygen.

3,677,776
ELECTROLESS PLATING SOLUTIONS FOR CADMIUM AND CADMIUM COPPER ALLOYS
Charles Raymond Shipley and Michael Gulla, Newton, and Oleh Borys Dutkewych, Medfield, Mass., assignors to Shipley Company, Inc., Newton, Mass.
No Drawing. Filed Mar. 12, 1971, Ser. No. 123,840
Int. Cl. C23c 3/02
U.S. Cl. 106—1 40 Claims

This invention relates to electroless deposition of cadmium and alloys of cadmium and copper. The invention is based upon two discoveries, the first being that up to about 25% by weight cadmium can be codeposited with copper by the simple substitution of a cadmium salt for a copper salt in an electroless copper depositing formulation. The second discovery is that if the electroless copper solution also contains a trace quantity of mercury, any portion of the copper salt in the electroless depositing solution can be replaced by the cadmium salt provided that a trace of copper is retained to initiate the reaction and provided further, that the solution also contains a chelating agent for the cadmium which may be the same as the chelating agent for the copper. In accordance with the invention, deposits can be obtained that are essentially pure electroless cadmium rich cadmium-copper alloys or copper rich copper-cadmium alloys.

3,677,777
ANTIFOULING PAINT
Keiichiro Ishii and Michio Ueyama, Tokyo, Koshin Miyazaki, Takaoka-shi, and Tetsuo Noto, Takarazuka-shi, Japan, assignors to Nippon Soda Co., Ltd., Tokyo, Japan
No Drawing. Filed Aug. 26, 1968, Ser. No. 755,421
Claims priority, application Japan, Aug. 29, 1967, 42/54,961
Int. Cl. C09d 5/14
U.S. Cl. 106—15 AF 4 Claims

The present invention relates to antifouling paints containing 2 - (N,N-dimethylthiocarbamoylthio) - 5-nitrothiazol and/or 2-(N,N-diethylthiocarbamoylthio)-5-nitrothiazol as antifouling agent.

3,677,778
ZINC-LANTHANUM BORATE GLASS COMPOSITION
Mir Akbar Ali, Evanston, and Murray A. Schwartz, Glencoe, Ill., and Pei Ching Li, Hopewell Junction, N.Y., assignors to IIT Research Institute, Chicago, Ill.
Filed Sept. 16, 1969, Ser. No. 858,450
Int. Cl. C03c 3/00, 13/00
U.S. Cl. 106—47 Q 2 Claims

A glass suitable for the transmission of radiation in the near ultraviolet region. The glass is composed of B_2O_3, La_2O_3 and ZnO and is substantially free of ultraviolet absorbers.

3,677,779
PROCESS FOR IMPROVING THE HYDRATION RESISTANCE OF DEAD-BURNED MAGNESIA
Vaughn V. Hughey, Tiffin, Ohio, assignor to Basic Incorporated
No Drawing. Continuation-in-part of application Ser. No. 749,275, Aug. 1, 1968. This application Feb. 16, 1971, Ser. No. 115,712
Int. Cl. C04b 35/04
U.S. Cl. 106—58 8 Claims

A process of improving the hydration resistance of dead-burned magnesia refractory products in which such a dead-burned magnesia product is treated with a B_2O_3 containing compound. The magnesia is preferably heated to a temperature of at least approximately 300° F., and the B_2O_3 compound is preferably in the form of a solution or suspension heated to a temperature within the range of about 140 to about 212° F. The addition of B_2O_3 compound should be sufficient to add about 0.1 to about 1% by weight of B_2O_3 to the dead-burned magnesia.

3,677,780
METHOD OF PRODUCING HIGH STRENGTH MORTAR OR CONCRETE
Seiya Nishi, Akira Oshio, and Eto Kiyomitsu, Tokyo, Japan, assignors to Onoda Cement Company Limited, Oaza Onoda, Onoda-shi, Yamaguchi, Japan
Filed Aug. 27, 1970, Ser. No. 67,314
Claims priority, application Japan, Aug. 29, 1969, 44/68,004
Int. Cl. C04b 13/28
U.S. Cl. 106—90 6 Claims

This invention relates to a method of producing high strength mortars or concretes. The process is characterized by curing mortars or concretes incorporated with a salt of β-naphthalenesulphonic acid-formaldehyde condensate in an autoclave.

3,677,781
METHOD OF MAKING CEMENT CLINKERS
Hubert O. Nickelsen, Saratoga, Calif., and Joseph E. Kopanda, Crown Point, and Felix J. Piasecki, Whiting, Ind., assignors to United States Steel Corporation
Continuation-in-part of application Ser. No. 677,991, Oct. 25, 1967. This application July 24, 1970, Ser. No. 58,188
Int. Cl. C04b 7/48
U.S. Cl. 106—100 10 Claims

The method of making cement clinkers which includes preheating a calcium aluminate or calcium silicate raw mix in granular form to remove surface water and water of crystallization therefrom, and then rapidly heating the preheated raw mix to a temperature below the melting point of the raw mix but not more than 500° F. below the melting point of calcium silicate raw mixes nor more than 250° F. below the melting point of calcium aluminate raw mixes. $CaSO_4$ is added to ferruginous calcium aluminate raw mixes to broaden the sintering range. Also, improved cements made according to this method.

3,677,782
PIGMENTARY FORM OF AN AZOMETHINE
Ian Alexander Macpherson, Paisley, Renfrewshire, Eric Richard Inman, Bridge of Weir, Renfrewshire, John Andrew Stirling, Glasgow, and Alexander McHugh Irvine, Paisley, Renfrewshire, Scotland, assignors to Ciba-Geigy AG, Basel, Switzerland
No Drawing. Filed May 20, 1970, Ser. No. 39,162
Claims priority, application Great Britain, May 23, 1969, 26,502/69
Int. Cl. C09c; C07f 1/08
U.S. Cl. 106—288 Q 16 Claims

The pigmentary form of a metallised o,o'-dihydroxyphenyl-naphthyl azomethine is produced by comminuting it to a mean particle size not exceeding 2.0 microns.

3,677,783
CALCINED MOLYBDATED ZINC OXIDE PIGMENTS AND METHOD OF PREPARATION THEREOF
Truman Kirkpatrick, Lombard, and James Jacob Nilles, Oak Forest, Ill., assignors to The Sherwin-Williams Company, Cleveland, Ohio
Filed Sept. 18, 1969, Ser. No. 859,106
Int. Cl. C09c 1/04
U.S. Cl. 106—292 7 Claims

This invention provides a method for the manufacture of a novel composition of matter corresponding to

$$2ZnO:MoO_3$$

and corrosion inhibiting pigmentary particles containing the same by reaction in aqueous slurry of pigmentary zinc oxide and molybdenum trioxide with calcination following particle recovery at elevated but less than sintering temperatures (preferably at about 600° C.).

3,677,784

METHOD FOR PREPARING HYDROPHOBIC SILICA

Siegfried Nitzsche, Wolfgang Kaiser, Ernst Wohlfarth, and Paul Hittmair, Burghausen, Upper Bavaria, Germany, assignors to Wacker-Chemie G.m.b.H., Munich, Germany

No Drawing. Filed Jan. 21, 1970, Ser. No. 4,764

Claims priority, application Germany, Jan. 27, 1969, P 19 03 904.4

Int. Cl. C09c *3/00*

U.S. Cl. 106—309 **5 Claims**

Hydrophobic silica filler for silicone rubber stocks can be prepared by reacting organohalogenosilanes with finely divided silica in an aqueous silicasol at a pH in the range from 8.0 to 10.8.

3,677,785

TRANSPARENT CRYSTALLIZED GLASS

Susumu Horikawa, Tokyo, and Kenshi Nakagawa, Tokorozawa-shi, Japan, assignors to Haya Glass Works Limited, Tokyo, Japan

No Drawing. Continuation of application Ser. No. 722,219, Apr. 18, 1968. This application Sept. 24, 1970, Ser. No. 75,288

Claims priority, application Japan, Apr. 25, 1967, 42/26,449

Int. Cl. C04b *33/00*; C03c *3/04*

U.S. Cl. 106—39 DV **4 Claims**

Transparent crystallized glass having a low liquidus temperature, a low thermal expansion and a high bending strength obtained by heating parent glass composed of SiO_2 65 to 75 weight percent, Li_2O 2.5 to 4.5 weight percent, Al_2O_3 15 to 25 weight percent, BaO 1.3 to 4.0 weight percent, MgO 1.3 to 2.0 weight percent, BaO+MgO 2.6 to 5.0 weight percent, ZrO_2 1 to 2 weight percent and TiO_2 1 to 2 weight percent, said parent glass being very stable for devitrification in forming.

3,677,786

LINE DRAWING AND MARKING SYSTEM

Walter G. Hollmann, Lake Forest, and Frederick M. Lozo III, Niles, Ill., assignors to Teledyne, Inc., Los Angeles, Calif.

No Drawing. Filed Oct. 10, 1969, Ser. No. 865,502

Int. Cl. B44f *1/10*; G03c *11/22*

U.S. Cl. 117—1.7 **20 Claims**

Line drawing and marking system characterized by high speed operation which adapts it to computer-controlled recording and plotting. Lines or other markings are formed on a surface or substrate bearing a color-forming iodine reactive substance and an agent for releasing free iodine from alkali metal iodide or ammonium iodide solution by applying such a solution to each area of the surface where a line or other mark is desired. The surface on which the lines or other markings are formed may be any, suitable web such as paper or film and the alkali metal iodide solution may be applied manually or by an electronically controlled pen.

3,677,787

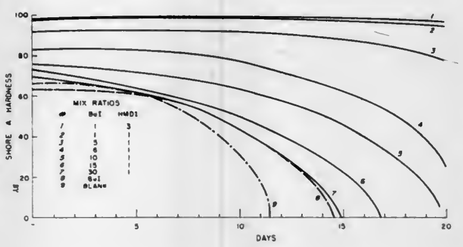
METHOD OF REHARDENING ENCAPSULATING COMPOSITIONS

Joseph M. Augl, Sterling Park, Va., and William J. Bailey, University Park, and Porter W. Erickson, Silver Spring, Md., assignors to the United States of America as represented by the Secretary of the Navy

Filed Oct. 21, 1970, Ser. No. 82,671

Int. Cl. B23p *7/00*; B32b *35/00*

U.S. Cl. 117—2 R **10 Claims**



A method of hardening encapsulating (potting) compositions containing a linkage that is susceptible to hydrolytic cleavage i.e., polyamides, polyester and polyester base type polyurethanes, which are either in the virgin state or which have deteriorated due to exposure to a hot, moist environment by contacting with a chemical hardening agent selected from the group consisting of multifunctional isocyanates, multifunctional epoxides, multifunctional isothiocyanates, carbodiimides and mixtures thereof which may also contain a constituent selected from the group consisting of monoisocyanates, monoepoxides, monoisothiocyanates and mixture thereof.

3,677,788

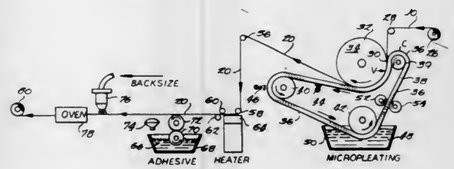
ADHESIVE TAPE

Richard N. Zirnite, Somerset, N.J., assignor to Johnson & Johnson

Filed Feb. 3, 1970, Ser. No. 8,202

Int. Cl. B05c *9/04*; C09j *7/04*

U.S. Cl. 117—11 **10 Claims**



The invention relates to an adhesive tape and features a web comprising a blend of short-fibered wood pulp, hemp and rayon and a flexible binder for the web, the web being micropleated without creping so as to effect linear compaction and impart substantial extensibility thereto. One surface of the compacted web is coated with a pressure-sensitive porous adhesive and, preferably, the opposite surface has a release coating applied thereto. The tape is useful as a flexible and conformable surgical tape.

3,677,789

PROTECTIVE DIFFUSION LAYER ON NICKEL AND/OR COBALT-BASED ALLOYS

Karl Bungardt, Gunter Lehnert, and Helmut W. Meinhardt, Krefeld, Germany, assignors to Deutsche Edelstahlwerke Aktiengesellschaft, Krefeld, Germany

Filed Sept. 10, 1969, Ser. No. 856,539

Claims priority, application Germany, Sept. 14, 1968, P 17 96 175.0

Int. Cl. C23c *9/02*; C23f *17/00*

U.S. Cl. 117—22 **4 Claims**

Nickel and/or cobalt-based alloys are given a protective coating by diffusing into the surface of the alloy metallic aluminum and one or more metals of the platinum group.

3,677,790

READILY REMOVABLE OPAQUE PROTECTIVE LAYERS AND ARTICLES CONTAINING THEM

John F. Bishop, Webster, and Walker F. Hunter, Jr., and Martin E. Rowley, Hilton, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Application Oct. 28, 1968, Ser. No. 788,109, now Patent No. 3,598,591, dated Aug. 10, 1971, which is a continuation-in-part of application Ser. No. 645,032, June 9, 1967. Divided and this application Aug. 12, 1970, Ser. No. 63,292

Int. Cl. G03c *1/84*

U.S. Cl. 117—33.3 **5 Claims**

Readily removable opaque coatings over one or both sides of a photographic or radiographic film, which coatings can be removed in a single piece, can be manufactured by applying over the film a multilayer coating composition comprising

(a) a first "barrier" layer containing one or more water soluble polymers that are compatible with gelatin and that adhere tenaciously to the "opaque" layer (b) and

(b) an "opaque" layer (over the "barrier layer") composed of a blend of finely divided carbon and at least one water-insoluble polymer.

The "opaque" layer must be fairly permeable to water, so that when it is desired to remove the "opaque" coating, the film can simply be immersed in water. Within a very short time the "opaque" layer falls away from the film in a single piece, rather than in small troublesome flakes.

3,677,791

METHOD OF DEPOSITING VITREOUS MATERIAL ON A FACEPLATE PANEL

Kazimir Palac, Carpentersville, Ill., assignor to Motorola, Inc., Franklin Park, Ill.

Filed July 6, 1970, Ser. No. 52,324

Int. Cl. B44d *5/06*

U.S. Cl. 117—33.5 CM **4 Claims**



A faceplate panel for a cathode ray tube is positioned so that its natural curvature forms a shallow container for a wet solution. A wet solution of photosensitive vitreous slurry is poured onto the internal surface of the faceplate panel and assumes a stable fluid level. The photosensitive vitreous slurry is then exposed to an even dispersion of ultraviolet light from the opposite side of the faceplate panel to photodeposit the suspended vitreous material therein on the internal surface, firstly immediately adjacent the internal surface and then successively inward therefrom until the desired thickness is obtained. The deposited vitreous material then constitutes a dark surround for a color image screen and can be suitably etched to contain apertures therein to allow phosphor dots to be positioned adjacent the internal surface of the panel. After etching the apertures in a predetermined pattern, the panel is then flooded with a photosensitive phosphor slurry of a selected color and exposed to the ultraviolet light source to deposit the suspended phosphor in the apertures.

3,677,792

METHOD OF PRODUCING COATED VACUUM METALLIZED ARTICLES

William J. Best, Union Lake, Mich., assignor to Michael Ladney, Jr., Grosse Pointe Shores, Mich.

No Drawing. Continuation-in-part of application Ser. No. 452,849, May 3, 1965. This application June 8, 1970, Ser. No. 44,663

Int. Cl. G02b *17/00*

U.S. Cl. 117—35 V **10 Claims**

A method of vacuum metallizing an article for decorative purposes involving the conventional steps of applying to the article a base coat, a vacuum metallized film over the base coat and a first top coat over the vacuum metallized film and also including the additional step of applying over the first top coat a second top coat of a film-forming, liquid organic material having greater durability than the first top coat and adapted to adhere to the first top coat and be compatible therewith.

3,677,793

METHOD FOR PRODUCING DIALS

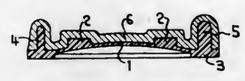
Walter Blösch, Grenchen, Switzerland, assignor to Liss S.A., Grenchen, Switzerland

Filed Feb. 6, 1970, Ser. No. 9,326

Claims priority, application Switzerland, Feb. 17, 1969, 2,340/69

Int. Cl. B44d *3/30*; B32b *31/00*

U.S. Cl. 117—38 **10 Claims**



A method for producing dials having hour symbols coated with a metal other than the metal coating the dial ground or plate, wherein masks are formed on master dials and applied to dials to be produced whereafter said metal is vapour deposited on said hour symbols.

3,677,794

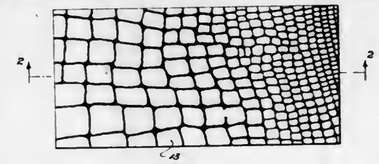
TEXTURED ARTICLES AND PROCESS FOR PREPARING SAME

William C. Jeff, Basking Ridge, and Thomas Luyster, Jr., Saddle Brook, N.J., James F. Lynch, Jr., Schaumberg, Ill., and Frank A. Moroll, Clark, N.J., assignors to John L. Armitage and Co., Newark, N.J.

Continuation of application Ser. No. 460,216, June 1, 1965. This application Apr. 23, 1970, Ser. No. 31,339

Int. Cl. B44d *1/14, 1/16*

U.S. Cl. 117—45 **24 Claims**



A novel method for forming textured coatings and the resulting novel textured articles are taught. The method involves forming a discontinuous patterned, ink layer either directly on the surface of a form-retaining member such as plastic, metal, etc., or on a base layer applied to said surface, and then applying a top layer of resinous, film-forming material thereover.

3,677,795
METHOD OF MAKING A PROSTHETIC DEVICE
Jack C. Bokros, San Diego, and Willard H. Ellis, Leucadia, Calif., assignors to Gulf Oil Corporation, San Diego, Calif.
No Drawing. Continuation-in-part of application Ser. No. 649,811, June 29, 1967. This application May 1, 1969, Ser. No. 821,080
Int. Cl. C01b *31/00*; C23c *11/00*
U.S. Cl. 117—46 CG 14 Claims

This is a method for making a prosthetic device for implantation in a living body. The method comprises the steps of forming a substrate of a material stable at temperature of at least about 1350° C., heating said substrate together with particulate material to provide additional deposition surface area to a temperature of between about 1350° C. and about 1600° C. in a reaction chamber, flowing a mixture of propane or butane and an inert gas through said reaction chamber at atmospheric pressure, said propane or butane constituting between about 15 volume percent and about 40 volume percent of said mixture, so that said substrate becomes coated with isotropic pyrolytic carbon having a BAF between 1.0 and 2.0, having an apparent crystallite size of about 50 A. or less and having a density of at least about 1.5 grams per $cm.^3$, and continuing said gas flow until the thickness of said isotropic carbon deposit is at least about 50 microns, whereby a device is produced which has excellent compatibility with body tissue and is nonthrombogenic. If desired, the hydrocarbon gas mixture may contain a carbide-forming element selected from the group consisting of silicon, zirconium, titanium, tantalum, boron, tungsten, niobium, vanadium, molybdenum, aluminum, or hafnium.

3,677,796
PROTECTIVE COATING TO INHIBIT OXIDATION AND/OR CARBURIZATION OF METALLIC SURFACES
Roland T. Girard, Scotia, and George A. Rice, Schenectady, N.Y., assignors to General Electric Company
No Drawing. Continuation of application Ser. No. 663,966, Aug. 29, 1967. This application May 27, 1970, Ser. No. 41,118
Int. Cl. B44d *1/16*
U.S. Cl. 117—70 A 5 Claims

Oxidation and carburization of steel surfaces heated to elevated temperatures above 600° C. are inhibited by a protective coating containing at least 10% fusible materials to shield, upon softening, the steel surface from deteriorating agents and at least 20% sacrificial metal particles to react with carbonaceous materials penetrating the protective shield formed by the softened fusible materials. The protective coating preferably is applied in dual layers with the base coat for a machined steel surface generally comprising a suspension of iron particles and a soluble silicate binder to adhere a spray application of the base coat to the machined steel surface. After the base coat has partially dried, a sealer coat containing suspensions of nepheline syenite and glass particles in water and a sodium silicate binder is sprayed atop the base coat to serve, upon softening of either the nepheline syenite or glass particles, as a barrier layer to shield the steel surface from oxygen and carbon-bearing materials. When the protected surface is to be worked in a damp environment, a waterproofing coat of 25% SiO_2 content hydrolyzed ethyl silicate solution is applied atop the sealer coat. A mixture of the base coat and the sealer coat provides protection against pitting of a steel surface located in a dry environment with a single application of the protective coating while the incorporation of a suitable carbonate, hydroxide, oxide or fluoride into either the sealer coat or the mixture of the base coat and the sealer coat eliminates the need for a separate waterproofing coat when the alloy is heat worked in a damp environment.

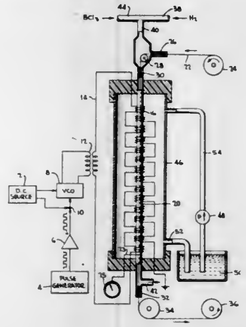
3,677,797
METHOD OF FORMING CORROSION RESISTANT FILMS ON STEEL PLATES
Hidejiro Asano and Yashichi Ouyagi, Kitakyushu, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan
No Drawing. Filed Apr. 27, 1970, Ser. No. 32,439
Int. Cl. C23c *3/04*; C23f *17/00*
U.S. Cl. 117—71 M 15 Claims

A process for producing a surface-treated steel plate high in the anticorrosiveness, particularly adapted as a material for making cans, on the principle of the thermodecomposing plating, wherein the steel plate is coated with an aqueous solution containing nitrate and/or acetate of Ni as the main component thereof and of other metals such as Cr, Mn, Zn and Al as selective components and then heated at a certain range of temperature so as to cause the thermodecomposing reaction to cause thereby a strong film containing metallic nickel and at least one metal oxide to form on the surface of the steel plate.

3,677,798
POLYMERIC CHROMIUM SULFATOZIRCONATE COMPOSITIONS, THEIR PREPARATION AND USE
Warren B. Blumenthal, North Tonawanda, N.Y., assignor to N L Industries, Inc., New York, N.Y.
No Drawing. Original application Apr. 19, 1967, Ser. No. 631,906, now Patent No. 3,540,839. Divided and this application Nov. 12, 1970, Ser. No. 89,148
Int. Cl. B44d *1/14*
U.S. Cl. 117—62.1 9 Claims

Polymeric chromium sulfatozirconates are produced by reduction of chromium compounds such as alkali metal dichromates in sulfuric acid to form chromic sulfate, reacting said sulfate with an acid soluble zirconium compound, and heating the reaction product to at least about 80° C. Organic fibrous webs and glass surfaces are rendered water-repellent by forming thereon adsorbates by reaction of the sulfatozirconates with alkali metal soaps of fatty acids.

3,677,799
VAPOR PHASE BORON DEPOSITION BY PULSE DISCHARGE
Kenneth C. Hou, Whippany, N.J., assignor to Celanese Corporation, New York, N.Y.
Filed Nov. 10, 1970, Ser. No. 88,358
Int. Cl. C23c *13/00*
U.S. Cl. 117—93.1 R 17 Claims

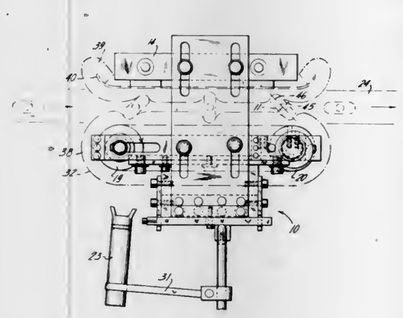


A process is provided for the low temperature deposition of a boron coating upon a substrate comprising providing a gaseous mixture of hydrogen and a boron compound in a coating zone containing the substrate and applying sufficient high frequency electrical energy to the zone in pulsed form to establish a boron-hydrogen excited gas species therein capable of imparting the desired boron coating to the substrate.

3,677,800
ANTI-THROMBOGENIC COATINGS AND PRODUCTS
Archibald N. Wright, Schenectady, N.Y., assignor to General Electric Company
No Drawing. Filed Mar. 18, 1970, Ser. No. 20,816
Int. Cl. B44d *1/50*
U.S. Cl. 117—93.31 6 Claims

A thin, continuous adherent coating is formed on a substrate by ultraviolet surface photopolymerization of sodium heparin in the gaseous phase. The resulting coated article exhibits anti-thrombogenic behavior and is suitable for prosthetic use.

3,677,801
METHOD OF COATING IRREGULAR OBJECTS
Donald F. Hardy, Horseheads, N.Y., assignor to Dart Industries, Inc., Los Angeles, Calif.
Continuation-in-part of application Ser. No. 820,529, Apr. 30, 1969. This application July 28, 1970, Ser. No. 62,217
Int. Cl. B44d *1/20*
U.S. Cl. 117—94 3 Claims



A process and apparatus for coating an article having an irregular cross section. The apparatus comprises at least one belt having a polyurethane foam layer having a coating surface and a second foam layer having a second coating surface said surfaces facing each other and being spaced at a distance sufficient to permit both surfaces to coat the article, the combined thickness of said foam layers being thick enough to deform and cause said surfaces to conform to at least a portion of the surface of the article. In the process the article is conveyed to the coating surfaces of the apparatus. The belt then engages the surface of the article and transports it through the apparatus. The foam surface of the belt is supplied with coating material and the belt transfers the coating material to the article being coated.

3,677,802
PROCESS FOR STRONG, DURABLE PRESS FABRICS
Richard N. Knowles, Hockessin, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
No Drawing. Filed Mar. 23, 1970, Ser. No. 22,029
Int. Cl. B44d *1/092*
U.S. Cl. 117—56 12 Claims

Durable press cellulosic fabrics with good tensile strength and abrasion resistance are prepared by treating the fabric with a solution of a polyisocyanate such as bis - (4 - isocyanatocyclohexyl)methane in an organic swelling solvent such as dimethyl sulfoxide and curing the fabric prior to the pad-dry-cure durable press treatment.

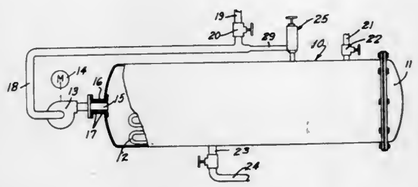
3,677,803
ANTISEIZE THREAD COMPOSITION
Frank W. Bennett and Loren S. Van Delinder, Charleston, W. Va., assignors to Union Carbide Corporation, New York, N.Y.
No Drawing. Original application Aug. 30, 1968, Ser. No. 756,355. Divided and this application Mar. 5, 1971, Ser. No. 121,534
Int. Cl. B44d *5/00*, *5/08*
U.S. Cl. 117—94 11 Claims

An antiseize composition comprising finely divided pulverized chrysotile asbestos and a carrier therefor. There is also provided a process for treating metallic securing assemblies of the type wherein a metallic securing member such as a stainless steel bolt threadably engages a fastening element such as a stainless steel nut to prevent seizure of the fastening element to the securing member at the site of threadable engagement which comprises applying the novel antiseize material to the portions to be in threadable engagement.

3,677,804
MOLDABLE NEEDLE-LIKE ASSEMBLIES
Ilmar L. Kalnin, Millington, and George J. Breckenridge, Roselle, N.J., assignors to Celanese Corporation, New York, N.Y.
No Drawing. Filed Sept. 19, 1969, Ser. No. 859,458
Int. Cl. B44d *1/20*
U.S. Cl. 117—100 A 13 Claims

Moldable epoxy resin impregnated fibrous needle-like assemblies are provided which may be utilized in the production of fiber reinforced composites. The needle-like assemblies are formed by agitating at an elevated temperature a minor quantity of discontinuous fibers with an emulsion comprising a minor quantity of an A-stage epoxy resin and a curing agent for said epoxy resin within a major quantity of a continuous phase comprising a mixture of glycerol, water, and a water-soluble nonionic surface-active agent. The product of the present invention is recovered from the system in which is formed and is suitable for use as a granular moldable material which consists of essentially unidirectionally aligned fibers impregnated with a B-stage epoxy resin.

3,677,805
METHOD FOR IMPREGNATING WOOD
Jackson Herman Barnett, Jr., 84 N. Crest Road, Chattanooga, Tenn. 37405
Filed Mar. 4, 1970, Ser. No. 16,277
Int. Cl. B44d *1/26*; B05c *3/05*
U.S. Cl. 117—102 A 4 Claims



Method for impregnating wood with a treating liquid such as a preservative, a fire retardant or the like, wherein

the wood is immersed in the treating liquid inside a pressure vessel. The pressure in the vessel is brought up to operating pressure within a short time, on the order of ten minutes or less, and the contents of the vessel are then subjected to the action of a pulsating pump which provides sinusodial pressure pulses within the vessel having a positive peak to negative peak amplitude of from 1 to 1500 pounds per square inch. These pressure pulses are modulated by the action of a pressure relief means associated with the pressure vessel, whereby the resultant pressure acting on the wood being impregnated consists of a series of pressure pulses modulated in amplitude at a relatively slow rate. The treating liquid which is discharged through the pressure relief means in a pulsating fashion is then recycled back to the pulsating pump so that there is a substantially continuous flow of treating liquid from the pump, through the pressure vessel, through the pressure relief means, and finally back into the inlet end of the pump.

3,677,806

PROCESS FOR MAKING TOBACCO SMOKE FILTERS

Joachim Raban, Borgfelde 26b, D2000 Hamburg-Schenefeld, Germany; Ewald Erxleben, Hegholt 79f, D2000 Hamburg-Bramfeld, Germany; and Wolfgang Wildenau, Georg-Bonne-Str. 33, D2000 Hamburg, Germany

Continuation-in-part of application Ser. No. 798,637, Feb. 12, 1969. This application May 6, 1970, Ser. No. 35,172

Claims priority, application Germany, May 6, 1969, P 19 23 113.1

Int. Cl. B44d *1/30, 1/08*

U.S. Cl. 117—104 R **11 Claims**

The quantity of plasticizer added to cellulose acetate filter fibers is controlled by adding an indicator substance to the plasticizer, the indicator substance having different infrared absorption characteristics to those of the cellulose acetate, and measuring the infrared reflexion of the plasticizer-indicator mixture.

3,677,807

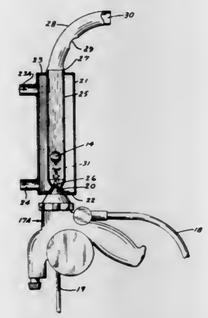
METHOD OF MAKING BEARING BALLS

Richard S. Curtis, 7887 Jackson Road, Ann Arbor, Mich. 48104, and Rodger E. Allen, 4203 W. 111th St., Inglewood, Calif. 90301

Filed Sept. 29, 1969, Ser. No. 870,314

Int. Cl. B44d *1/08;* **C23c** *7/00*

U.S. Cl. 117—105 **1 Claim**



This application discloses a ball, having a core of one material and a cover of another material deposited thereon, and the method of making it. The invention resides in the particular combination and arrangement of the components of the ball and in the process of manufacturing it.

3,677,808

METHOD OF MANUFACTURING CONSOLIDATED ARTICLES BY THE USE OF STEAM ATOMIZED WAX

John L. Sheridan, Longview, Wash., assignor to Weyerhaeuser Company, Tacoma, Wash.

No Drawing. Filed Oct. 21, 1970, Ser. No. 82,865

Int. Cl. B44d *1/09*

U.S. Cl. 117—105.3 **17 Claims**

Steam is employed to atomize molten wax used as a waterproofing agent in the manufacture of composite, consolidated articles from particulate materials such as particulate wood and gypsum.

3,677,809

PROCESS FOR THE COATING OF FILAMENT BODIES WITH AN ADHESIVE FOR METAL AND RUBBER

Günter Klement, Dusseldorf-Holthausen, Germany, assignor to Henkel & Cie GmbH, Dusseldorf, Germany

No Drawing. Filed Nov. 12, 1969, Ser. No. 876,085

Claims priority, application Germany, Nov. 28, 1968, P 18 11 467.5

Int. Cl. B44d *1/42, 1/48;* **C03c** *25/02*

U.S. Cl. 117—119.6 **8 Claims**

A process for the coating of filament bodies with organic adhesives for metal and rubber which consists essentially of the steps of applying a coating of an organic adhesive for metal and rubber in dissolved or dispersed form in an organic solvent to a filament body of small diameter, passing said coated filament body through a heated zone having a temperature of from 225° to 500° C. for a period of from 1 to 60 seconds, and recovering said coated filament body adapted to bond to elastomer stock mixtures.

3,677,810

SILICONE-ACRYLATE SOIL RELEASE TREATMENT FOR ORGANIC TEXTILES

James K. Campbell, Midland, and Kenneth M. Lee, Bay City, Mich., assignors to Dow Corning Corporation, Midland, Mich.

No Drawing. Continuation-in-part of application Ser. No. 69,467, Sept. 3, 1970. This application Oct. 30, 1970, Ser. No. 85,702

Int. Cl. C08j *1/40*

U.S. Cl. 117—138.8 F **8 Claims**

Removal of stains during laundering of organic textiles is facilitated and superior hand is imparted to the fabric by applying thereto a combination of from 10 to 99% by weight of a polymethylsiloxane and from 1 to 90% by weight of a polymeric, unsaturated, water-soluble carboxylic acid. This combination works especially well in combination with aminoplast crease resistance textile resins. A typical formulation is 45% by weight of dihydroxyl dimethylolethylene urea resin, 27.5% by weight of a polydimethylsiloxane of 50,000 cs. viscosity and 27.5% by weight of polymethacrylic acid.

3,677,811

ANTISTATIC THERMOPLASTIC POLYMER FILM

John Alan Elliott Kall, Welwyn Garden City, England, assignor to Imperial Chemical Industries Limited, London, England

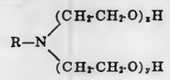
No Drawing. Filed Sept. 22, 1969, Ser. No. 860,031

Claims priority, application Great Britain, Oct. 1, 1968, 46,530/68

Int. Cl. C08f *3/08, 45/00*

U.S. Cl. 117—138.8 E **7 Claims**

Antistatic composition comprising a mixture of a compound of the formula



wherein the sum of x and y has a value from 2 to 5 inclusive and R is a monovalent aliphatic radical having from 12 to 22 carbon atoms and one or more glycerides, and the use of these compositions for rendering films antistatic either by incorporating in the film or coating onto the film.

3,677,812

OIL REPELLANT FIBROUS MATERIALS AND PREPARATION THEREOF

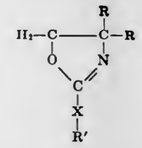
Domenick Donald Gagliardi, East Greenwich, R.I., assignor to Commercial Solvents Corporation, New York, N.Y.

No Drawing. Original application Dec. 12, 1966, Ser. No. 600,713. Divided and this application Feb. 12, 1969, Ser. No. 871,150

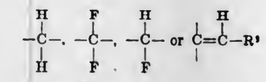
Int. Cl. C08j *1/44;* **D06m** *15/16*

U.S. Cl. 117—139.5 A **9 Claims**

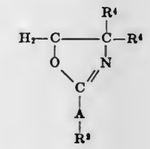
The present invention is directed to the use of compositions of matter having the formula



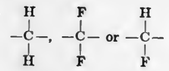
wherein R is $-CH_2OH$, lower alkyl having 1 up to about 3 carbon atoms or $-CH_2OOCR^2$, R^2 is an alkyl having 1 up to about 22 carbon atoms or fluoroalkyl having 1 up to about 22 carbon atoms; R′ is an alkyl having 1 up to about 21 carbon atoms or fluoroalkyl having 1 up to about 21 carbon atoms wherein not less than 75% of the hydrogen atoms have been replaced by fluorine atoms, and wherein at least 2 of the hydrogen atoms on at least one terminal carbon atom have been replaced by fluorine atoms with the proviso that when R′ is an alkyl radical at least one of the substituents designated R is the radical $-CH_2OOCR^2$ and the substituent R^2 is a fluoroalkyl radical having 1 up to about 22 carbon atoms wherein not less than 75% of the hydrogen atoms have been replaced by fluorine atoms, and wherein at least 2 of the hydrogen atoms on at least one terminal carbon atom have been replaced by fluorine atoms; and X is a divalent radical such as



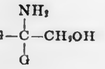
wherein R^9 is hydrogen, alkyl or aryl, to provide oil-repellent fibrous materials. It is also directed to a method for the preparation of oil-repellent fibrous materials from compositions of the formula



wherein R^3 is a fluoroalkyl radical having 1 up to about 21 carbon atoms wherein not less than 75% of the hydrogen atoms have been replaced by fluorine atoms and wherein at least 2 of the hydrogen atoms on at least one terminal carbon atom have been replaced by fluorine atoms; R^4 is $-CH_2OH$, lower alkyl having 1 up to about 3 carbon atoms or $-CH_2OOCR^5$; R^5 is a fluoroalkyl radical having from about 2 to about 22 carbon atoms wherein not less than 75% of the hydrogen atoms have been replaced by fluorine atoms, and wherein at least 2 of the hydrogen atoms on at least one terminal carbon atom have been replaced by fluorine atoms; and A is



by reacting an amino alcohol of the formula



wherein G is lower alkyl having 1 up to about 3 carbon atoms or $-CH_2OH$ with a fluoroalkylmonocarboxylic acid having from about 3 to about 23 carbon atoms wherein not less than 75% of the hydrogen atoms have been replaced by fluorine atoms and wherein at least 2 of the hydrogen atoms on at least one terminal carbon atom have been replaced by fluorine atoms.

3,677,813

PROCESS FOR DRESSING LEATHER AND THE DRESSED LEATHER

Guenter Eckert, Limburgerhof, Matthias Marx, Bad Duerkheim, Heinrich Hartmann, Limburgerhof, and Lothar Wuertele, Ludwigshafen, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Filed Dec. 17, 1969, Ser. No. 886,043

Int. Cl. B44d *1/32;* **C14c** *9/00*

U.S. Cl. 117—142 **12 Claims**

Process for dressing leather and synthetic leather substitutes by applying to the leather a composition comprising

(a) a copolymer carrying acetyl acetate groups or cyano acetate groups, in the form of a solution or dispersion in an organic liquid, and

(b) one or more aldehydes or a compound capable of dissociating to give an aldehyde,

and drying the coating. The resulting dressing is waterproof and resitsant to solvents.

3,677,814

PROCESS FOR FORMING ELECTROCONDUCTIVE TIN OXIDE FILMS BY PYROLYZATION OF ALKYL AND ARYL TIN FLUORIDES

Frank H. Gillery, Allison Park, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

No Drawing. Continuation of application Ser. No. 701,098, Jan. 29, 1968. This application Oct. 26, 1970, Ser. No. 84,240

Int. Cl. H05b *3/14*

U.S. Cl. 117—211 **11 Claims**

This invention resulted from the discovery that prior electroconductive tin oxide films on a refractory substrate. It particularly relates to the formation of transparent electroconductive tin oxide films by pyrolysis of a tin organic compound which has a direct tin-fluoride bond. More particularly, this invention pertains to a process for forming transparent electroconductive tin oxide films on a glass substrate by pyrolyzation of a solution containing organic tin fluorides which have a direct tin-fluoride bond, especially solutions of alkyl tin polyfluorides such as dialkyl tin difluorides.

3,677,815
METHOD OF MAKING AN ELECTROLYTIC ANODE

Carl D. Keith, Summit, Alfred J. Haley, Jr., Florham Park, and Robert M. Kero, Cranford, N.J., assignors to Engelhard Minerals & Chemicals Corporation

No Drawing. Application Nov. 28, 1969, Ser. No. 880,932, which is a continuation-in-part of application Ser. No. 786,438, Dec. 23, 1968. Divided and this application May 20, 1971, Ser. No. 145,539

Int. Cl. B44d *1/18*

U.S. Cl. 117—215 **4 Claims**

An improved anode for the electrolysis of brines, comprised of a corrosion resistant valve metal substrate, a thin porous adherent exterior coating of silica, and between the substrate and exterior coating a thin layer of ruthenium oxide, is preferably prepared by applying a hydrophilic colloidal solution of silica on the ruthenium oxide and firing the coating.

3,677,816
METHOD FOR MAKING ELECTRICALLY CONDUCTIVE LAYER OF COPPER IODIDE

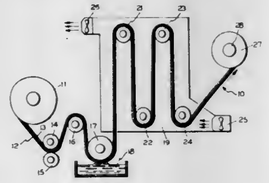
Yoshiki Hayashi, Hiromi Sasaki, and Toichi Matsumura, Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Oct. 22, 1968, Ser. No. 769,680

Claims priority, application Japan, Oct. 26, 1967, 42/70,048

Int. Cl. B44d *1/18*

U.S. Cl. 117—217 **5 Claims**



A transparent and electrically conducting coating is provided on a surface of a solid inert insulating substrate by exposing said surface to an atmosphere of copper metal vapor so as to form a thin layer of copper metal thereon and then contacting the said thin layer of copper metal with an iodine-containing solution so as to convert the thin layer of copper metal into a thin layer of copper iodide. Means for carrying out the method above described are set forth.

3,677,817
NOVEL PRESSURE-SENSITIVE TRANSFER SHEET

Richard L. Muri, Ashland, and Thomas D. Vere, Newton, Mass., assignors to Ludlow Corporation, Needham Heights, Mass.

No Drawing. Filed Feb. 24, 1970, Ser. No. 13,866

Int. Cl. H01f *10/02*

U.S. Cl. 117—235 **10 Claims**

A novel transfer sheet which is especially valuable for use in transferring images onto bank checks and like forms which are intended to be identified by automatic reading equipment. The sheet has a single coating layer comprising particles of a sensible pigment and a slightly-plasticized wax. These particles are held in a relatively weak, primarily cellulosic binder system. The wax particles are advantageously below about 2 microns in average diameter.

3,677,818
PROCESSES FOR PREPARING MANNOSE AND MANNOSE DERIVATIVES

Ronald L. Casebier, Franklin W. Herrick, and Kenneth R. Gray, Shelton, and Frederic A. Johnston, Aberdeen, Wash., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

No Drawing. Filed Apr. 2, 1970, Ser. No. 25,257

Int. Cl. C13k *9/00*

U.S. Cl. 127—46 R **60 Claims**

Methods for preferentially crystallizing mannose bisulfite adducts from aqueous mannose-containing solutions. These mannose adducts can be recovered in pure form. Also methods for regenerating substantially pure mannose from the mannose bisulfite adducts.

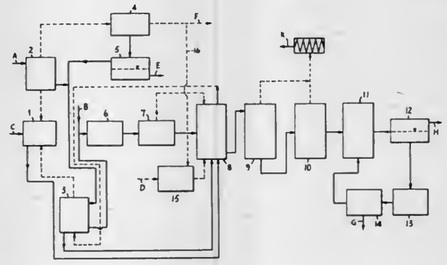
3,677,819
PROCESS FOR THE CLEANING OF PLANTS WHICH ARE USED FOR THE OXIDATION OF SATURATED HYDROCARBONS IN THE PRESENCE OF BORON COMPOUNDS

Reinhard Thiel and Gunther Ellendt, Krefeld-Bockum, Germany, assignors to Halcon International, Inc.

Filed Mar. 17, 1970, Ser. No. 20,379

Int. Cl. B08b *9/00*

U.S. Cl. 134—2 **3 Claims**



Process for the cleaning of plants which are used for the oxidation of saturated hydrocarbons in the presence of boron compounds by rinsing, which is characterized by treating equipment and lines of the plant with alcohol-containing solutions at elevated temperature under exclusion of oxygen from the air and if necessary at elevated pressure and/or by passing inert gas through.

3,677,820
METHOD TO PREVENT GLASSWARE ETCHING IN A DISHWASHER

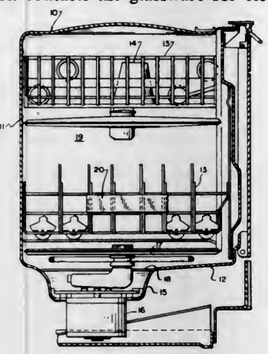
Beverly J. Rutkowski, Benton Harbor, Mich., assignor to Whirlpool Corporation

Filed May 28, 1970, Ser. No. 41,186

Int. Cl. A47l *15/00*; **B08b** *3/02*

U.S. Cl. 134—25 A **8 Claims**

A method of and apparatus for substantially preventing corrosion of glassware during washing thereof with a corrosion producing detergent solution in a mechanical dishwasher of the household type in which an alkaline detergent solution contacts the glassware for cleaning thereof



while simultaneously contacting a piece of metal comprising either zinc or magnesium or a mixture thereof.

3,677,821
METHOD FOR RECONDITIONING THE SURFACE OF PLASTICS

Ryohei Tanaka, Chiba-shi, Japan, assignor to Lion Fat & Oil Co., Ltd., Tokyo, Japan

No Drawing. Continuation-in-part of abandoned application Ser. No. 785,784, Dec. 20, 1968. This application Nov. 12, 1970, Ser. No. 89,085

Claims priority, application Japan, Dec. 29, 1967, 43/84,926

Int. Cl. B08b *7/00*

U.S. Cl. 134—42 **9 Claims**

A method for reconditioning the stained or discolored surfaces of plastic objects to substantially restore them to their original condition which comprises the steps of treating the surface of a plastic object with an aqueous solution of chlorine-containing bleaching agent having a pH or more than 5, then treating the surface thereof with an aqueous solution of sulfur-containing bleaching agent having a pH of more than 5, and thereafter rinsing the surface with water.

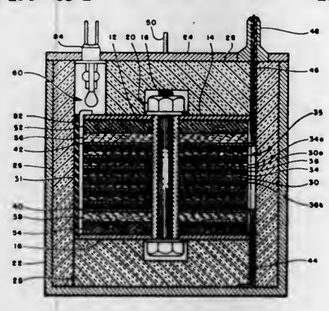
3,677,822
THERMAL BATTERY HAVING A THERMAL RESERVOIR PELLET

Donald M. Bush, Tijeras, N. Mex., assignor to the United States of America as represented by the United States Atomic Energy Commission

Filed Oct. 23, 1970, Ser. No. 83,582

Int. Cl. H01m *21/00*

U.S. Cl. 136—83 T **10 Claims**



A thermal battery having heat generating means forming a part of stacked cells of the battery and acting to fuze an electrolyte to activate the battery and including a thermal reservoir means near the ends of the cell stack for absorbing heat from the heat generating means during combustion thereof and for thereafter releasing heat to the cell stack. Elements of the battery cell stack are formed as pellets or discs which retain shape during operation and are stacked in an assembly which reduces battery variations during operation.

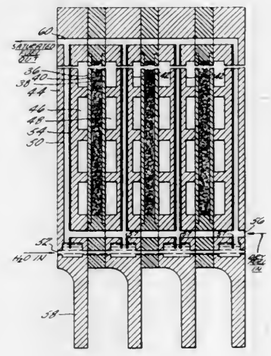
3,677,823
FUEL SATURATOR FOR LOW TEMPERATURE FUEL CELLS

John C. Trocciola, Glastonbury, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.

Filed Oct. 6, 1969, Ser. No. 863,944

Int. Cl. H01m *27/14*

U.S. Cl. 136—86 C **8 Claims**



Fuel cell waste heat supplies the energy to saturate a dry fuel gas supply stream with water vapor. The fuel saturator may be featured as an integral component of the fuel cell stack. The mixture is directed to a reformer where the fuel is steam reformed to produce a hydrogen rich stream which is utilized as the fuel for the electrochemical reactions occurring within the fuel stack.

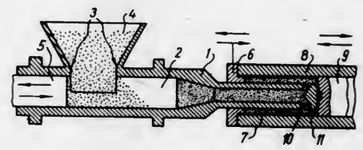
3,677,824
ARRANGEMENT FOR MANUFACTURE OF A PRIMARY CELL ELECTRODE

Faat Khatovich Nabiullin, 3 Mytischinskaya ul. 14–a, kv. 90; Zoya Mikhailovna Buzova, Suschevsky val. 23, kv. 116; Efim Mikhailovich Gertsik, 3 Mytischinskaya ul. 14–a, kv. 98; and Sergei Alexeevich Zjuzin, Veeslavinskaya ul. 8, kv. 76, all of Moscow, U.S.S.R.

Continuation of abandoned application Ser. No. 806,476, Mar. 12, 1969. This application Mar. 1, 1971, Ser. No. 119,935

Int. Cl. H01m *21/06*

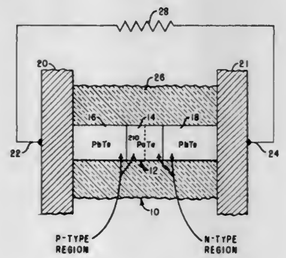
U.S. Cl. 136—175 **5 Claims**



A device for the manufacture of a primary cell electrode wherein a primary cell casing its placed in a female die

whose bottom is constituted by an ejector, and said casing in conjunction with a retaining washer, which defines the position and shape of the top end of the electrodes, and a stem having a central duct and introduced into said primary cell casing, form a closed tubular chamber, provision being made in the portion of said stem within said tubular chamber for channels, which channels originate in the central duct of said stem, pass through the walls of said stem, and terminate in said tubular chamber.

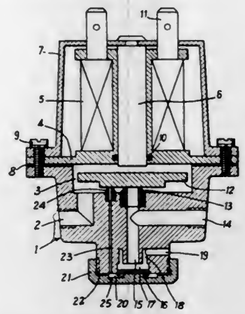
3,677,825
THERMOELECTRIC GENERATOR
Le Conte Cathey, Columbia, S.C., assignor to the United States of America as represented by the United States Atomic Energy Commission
Filed Oct. 30, 1968, Ser. No. 772,074
Int. Cl. G21d 7/00
U.S. Cl. 136—202 **6 Claims**



A thermoelectric generator having an integral radioisotope heat source-thermoelectric converter element. The heat source is disposed in intimate contact between thermoelectric converter legs and is fabricated from a compound that on radioactive decay is converted to the same compound as the thermoelectric converter material. A suitable heat source material is polonium-210, in the form of PoTe, that converts on decay to lead-206, in the form of PbTe, so that the thermoelectric converter legs are fabricated from compatible PbTe. The latter compound is suitably doped to provide the desired semiconductor characteristics.

3,677,826
THREE-WAY SOLENOID-OPERATED VALVES
Rene Poimtout, 37 Rue Saint Jean; and Jacques Rouvet, 9 Rue des Plantes, both of Montlucon, France; and Adolphe Jollot, 43 Rue de Lisbonne, Paris, France
Filed Dec. 28, 1970, Ser. No. 101,463
Int. Cl. F16k 31/06
U.S. Cl. 137—596.16 **10 Claims**

A three-way solenoid-operated valve for distributing a fluid under pressure, simple in construction, requiring no adjustment and being highly reliable, comprising independent distributing valve and exhaust valve members, said distributing valve member closing a distributing passage under the inlet fluid pressure and opening it upon energization of said electromagnet, and said exhaust valve being adapted to be fluid-operated to closure through a control fluid passage, which is independent of said distributing passage and that said distributing valve member is adapted to open upon energization of said electromagnet, said control fluid passage communicating with a leakage passage leading to the atmosphere and permitting the opening of said exhaust valve member when said electromagnetic is de-energized, as a consequence of the closing of said control fluid passage by said distributing valve member. Said leakage passage may be formed in the magnetic circuit of the electromagnet so as to be closed by a



valve plunger when said electromagnet is energized to feed a load apparatus.

3,677,827
COMPOSITION AND METHOD FOR BLACKENING METAL ARTICLES
Roger Weaver, Decatur, and Eugene Schaffstall, Chamblee, Ga., assignors to Oxford Chemicals
No Drawing. Filed Sept. 9, 1969, Ser. No. 856,481
Int. Cl. C23f 7/04
U.S. Cl. 148—6.14 R **11 Claims**

A composition for producing black oxide coatings on ferrous metals comprising a liquid mixture of sodium hydroxide, sodium nitrate, sodium nitrite, and water is improved by the addition of triethanolamine or other iron sequestrants.

3,677,828
TARNISH RESISTANT COPPER AND COPPER ALLOYS
Elmer J. Caule, New Haven, Conn., assignor to Olin Corporation
No Drawing. Filed July 30, 1970, Ser. No. 59,684
Int. Cl. C23f 7/08
U.S. Cl. 148—6.15 R **14 Claims**

A method of producing a laminate having high bond strength and excellent resistance to acid undercutting comprising oxidizing copper or its alloys to form an oxide film, applying a phosphoric acid solution to the oxide film, rinsing, drying, and adhesively laminating to a plastic film. The instant case also teaches a method of producing high tarnish resistance on copper and its alloys by so oxidizing and phosphating and further teaches a flexible printed circuit wherein the unwanted copper portion of the formed laminate is etched away, characterized by high peel strength and substantially no acid undercutting of the formed circuitry.

3,677,829
PROCESS FOR THE BLUING OF STEEL SURFACES
David Stefanye, 12005 Gregerscroft Road, Potomac, Md. 20854
No Drawing. Filed Sept. 18, 1970, Ser. No. 73,581
Int. Cl. C23f 7/04
U.S. Cl. 148—6.35 **7 Claims**

Steel surfaces can be colored to any desired hue between a light violet-blue and a deep blue-black by suspending the part in the effluent vapors obtained by boiling any organic compound selected from the group in which the boiling temperature thereof lies between 305° C. and 360° C., the coloring attained varying from the lighter to the darker hues in accordance with the extent to which the boiling point temperature of the selected organic compound exceeds the minimum.

3,677,830
PROCESSING OF THE PRECIPITATION HARDENING NICKEL-BASE SUPERALLOYS
Arthur R. Cox, Lake Park, and Marvin M. Allen, North Palm Beach, Fla., assignors to United Aircraft Corporation, East Hartford, Conn.
No Drawing. Filed Feb. 26, 1970, Ser. No. 14,678
Int. Cl. C22f 1/18
U.S. Cl. 148—12.7 **3 Claims**

After working and prior to aging, the precipitation hardening nickel-base superalloys are subjected to a duplex heat treatment comprising a first heat treatment at a temperature of 25°–100° F. below the secondary phase solvus and a second heat treatment in the temperature range of 0–25° F. below the secondary phase solvus.

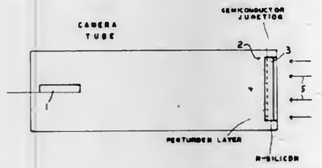
3,677,831
STRESS RELIEF IN SOLID MATERIALS
Constantine Demetrius Pezaris, Nahant, and Theophanes G. Pantazelos, Somerville, Mass., assignors to Lodding Engineering Corporation, Auburn, Mass.
Filed May 14, 1970, Ser. No. 37,127
Int. Cl. C21d 1/04
U.S. Cl. 148—12.9 **6 Claims**

A method and apparatus are disclosed for relieving stress in solid materials. Vibrations are applied to a workpiece, which are varied through a given frequency range in a specific time interval according to a reproducible pattern, and signals which sample a reaction of the workpiece to the vibrations are recorded along the path or paths of a point or points being displaced with respect to time in synchronism with the reproducible pattern.

3,677,832
NITRIDED TITANIUM ALLOYS
Ray J. Van Thyne, Oak Lawn, and John J. Rausch, Antioch, Ill., assignors to Surface Technology Corporation, Stone Park, Ill.
No Drawing. Filed Mar. 4, 1970, Ser. No. 16,572
Int. Cl. C22c 27/00; C23c 11/14
U.S. Cl. 148—31.5 **7 Claims**

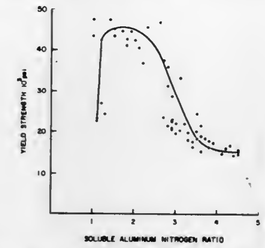
A novel group of nitrided alloys having excellent wear and abrasion resistance and utility as cutting tool materials containing (a) titanium, (b) one or more metals of the group vanadium, columbium, or tantalum, and (c) molybdenum or tungsten. The alloys can be readily fabricated to shape and then hardened by nitriding to produce high surface hardness.

3,677,833
CAMERA TUBE TARGETS
Daniel Le Coq, Ruell-Malmaison, France, assignor to North American Philips Company Inc., New York, N.Y.
Continuation of application Ser. No. 647,959, June 22, 1967. This application Dec. 9, 1969, Ser. No. 880,473
Int. Cl. H01j 29/45, 31/38
U.S. Cl. 148—33.2 **5 Claims**



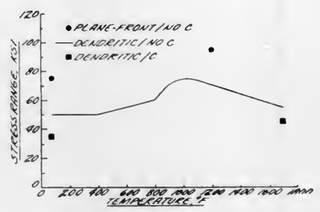
A photosensitive target for a camera tube comprising a slice of n-type silicon having adjacent one face a shallow junction produced by creating voids in the crystal lattice. This may be accomplished by polishing with a fine abrasive, or by bombardment with subatomic particles.

3,677,834
NITRIDE STRENGTHENED STEEL
Edward H. Mayer and Evan M. Oliver, Bethlehem, Pa., assignors to Bethlehem Steel Corporation
Continuation-in-part of application Ser. No. 732,448, May 27, 1968, which is a continuation-in-part of application Ser. No. 538,872, Mar. 30, 1966, both now abandoned. This application Aug. 13, 1970, Ser. No. 63,454
Int. Cl. C21d 9/48; C22c 39/02
U.S. Cl. 148—36 **4 Claims**



Aluminum and nitrogen improve the load-carrying ability of decarburized steel sheets after straining up to about 20% and annealing by exposure to enamel firing temperatures.

3,677,835
HOMOGENEOUS NICKEL-BASE SUPERALLOY CASTINGS
John K. Tien, Rocky Hill, and Robert P. Gamble, Killingworth, Conn., assignors to United Aircraft Corporation, East Hartford, Conn.
Filed Oct. 16, 1970, Ser. No. 81,229
Int. Cl. C22c 19/00
U.S. Cl. 148—32.5 **4 Claims**

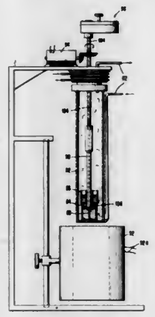


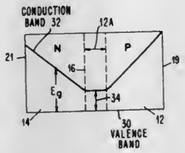
Homogeneous castings are achieved in the nickel-base superalloy systems by the suppression of dendritic segregation in controlled unidirectional solidification, the castings being characterized by cellular and plane front microstructures.

3,677,836
LIQUID EPITAXY METHOD OF FABRICATING CONTROLLED BAND GAP GaAl AS ELECTROLUMINESCENT DEVICES
Max R. Lorenz, Mahopac, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Sept. 23, 1969, Ser. No. 860,355
Int. Cl. H02l 7/38; H05b 33/00; H01s 3/18
U.S. Cl. 148—171 **6 Claims**

The electroluminescent diodes are fabricated of gallium aluminum arsenide in which the band gap is controlled during the growth to provide improved efficiency devices. The bodies are grown by liquid phase epitaxy so that there is a centrally located region of constant band gap adjacent the junction in which the recombination radiation takes place. In the regions extending from this recombination radiation region in both directions to the opposite surfaces

of the diode, the band gap is larger. The variation in band gap is achieved by controlling the temperature during the





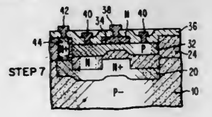
growth as well as by adding aluminum to the melt and a portion of the device is grown isothermally.

3,677,837

METHOD OF MAKING PEDESTAL TRANSISTOR HAVING MINIMAL SIDE INJECTION

Kanu G. Ashar, Wappingers Falls, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 6, 1969, Ser. No. 847,857
Int. Cl. H01l 7/36, 11/00; B01j 17/00
U.S. Cl. 148—175 **4 Claims**



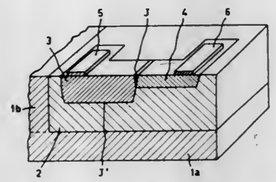
A high performance transistor formed in a monolithic semiconductor body with a projecting pedestal portion, an emitter region in the upper portion of the pedestal with the emitter base junction terminating at the periphery of the pedestal.

3,677,838

METHOD OF MANUFACTURING A ZENER DIODE

Michel de Brebisson, Caen, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed June 18, 1969, Ser. No. 834,403
Claims priority, application France, June 27, 1968, 156,892
Int. Cl. H01l 7/44
U.S. Cl. 148—187 **5 Claims**



A method of manufacturing an improved Zener diode is described. An epitaxial layer is grown on a substrate and two adjacent surface portions of the epitaxial layer are selected with the surface portions being spaced in the vicinity of the Zener diode p-n junction to be formed. Then, donor and acceptors are diffused into the surface portions in directions parallel to the surface and toward each other until the diffused fronts meet to form the desired p-n junction which extends normal to the surface.

3,677,839

COMPOSITE PROPELLANT CONTAINING BALLISTIC MODIFIERS DERIVED FROM METAL CHELATES

David C. Sayles, Huntsville, Ala., assignor to the United States of America as represented by the Secretary of the Army

No Drawing. Filed Feb. 23, 1967, Ser. No. 619,118
Int. Cl. C08d 5/06
U.S. Cl. 149—19 **3 Claims**

A novel ballistic modifier for use in composite propellant compositions. The ballistic modifier contains a metal salt of a bis(salicyl)aldimine. Metals with atomic numbers from twenty-four to thirty may be used.

3,677,840

PYROTECHNICS COMPRISING OXIDE OF SILVER FOR WEATHER MODIFICATION USE

Graham C. Shaw, Garland, and Russell Reed, Jr., Brigham City, Utah, assignors to Thiokol Chemical Corporation, Bristol, Pa.

No Drawing. Filed Sept. 18, 1969, Ser. No. 859,165
Int. Cl. C06d 3/00
U.S. Cl. 149—19 **5 Claims**

A pyrotechnic composition which upon combustion produces mixed silver halide nuclei for use in influencing weather comprises a composition made by curing a mixture comprising silver oxide, an alkali iodate, an alkali perchlorate and a curable oxygenated or fluorinated organic liquid polymer binder. The composition burns smoothly to provide by metathesis a mixture of silver halides as substantially the only solid or condensed phase reaction products, and leaves substantially no residue. The reaction products form nuclei for causing nucleation of water in clouds.

3,677,841

GAS GENERATOR COMPOSITION CONTAINING A NITROGEN-RICH COMPOUND AND A CATALYST

William M. Ayres, Ridgecrest, and Ronald A. Henry, China Lake, Calif., assignors to the United States of America as represented by the Secretary of the Navy

No Drawing. Filed Apr. 17, 1969, Ser. No. 817,623
Int. Cl. C06b 15/02
U.S. Cl. 149—92 **10 Claims**

Gas generator formulations which decompose exothermically at low pressures and low flame temperature suitable for disseminating solid agents with high efficiency. A representative formulation comprises the nitrogen-rich fuel, triaminoguanidinium 5-nitroaminotetrazole intimately mixed with the catalyst, vanadyl acetylacetonate.

ERRATUM

For Class 149—109 see:
Patent No. 3,678,140

3,677,842

LOW LIGHT LEVEL TRACER MIX

Thomas A. Doris, Jr., Palmyra, N.J., assignor to the United States of America as represented by the Secretary of the Army

No Drawing. Filed Mar. 10, 1970, Ser. No. 18,320
Int. Cl. C06b 15/00
U.S. Cl. 149—109 **4 Claims**

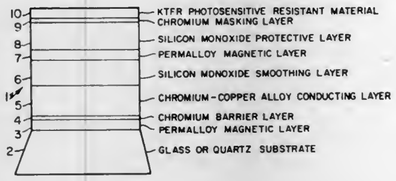
A low light-level, long-burning, small arms tracer pyrotechnic mixture for use with night vision equipment comprising, by weight percent: strontium peroxide, 10–90; barium perioxide, 0–65; calcium resinate, 5–15; and magnesium carbonate, 10–15.

3,677,843

METHOD FOR FABRICATING MULTILAYER MAGNETIC DEVICES

Stefan E. Reiss, Watertown, Mass., assignor to Sylvania Electric Products Inc.

Filed Feb. 2, 1970, Ser. No. 7,575
Int. Cl. C23f 17/00; H01f 41/14; H05k 3/06
U.S. Cl. 156—3 **5 Claims**



Method for fabricating multilayer magnetostatically-coupled thin-film magnetic memory devices. A plurality of layers are deposited in succession on a glass or quartz substrate. The layers include a first Permalloy magnetic film, a chromium barrier layer, a chromium-copper alloy conducting layer, a silicon monoxide smoothing layer, a second Permalloy magnetic film, a silicon monoxide protective layer, a chromium masking layer, and a photosensitive resistant material masking layer.

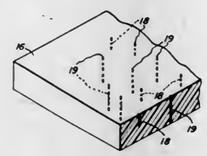
Openings delineating the boundaries of the desired magnetic memory devices are then formed in the masking layer of photosensitive resistant material. Selective etching materials are then used, in four successive etching operations, to initially form an opening in the chromium masking layer (first etching operation), followed by openings in the silicon monoxide protective layer, the second Permalloy magnetic film, the silicon monoxide smoothing layer, and the chromium-copper alloy conducting layer (second etching operation), an opening in the chromium barrier layer (third etching operation), and an opening in the first Permalloy magnetic film (fourth etching operation).

3,677,844

PROCESS FOR MAKING AN ELASTIC STRETCHY SHEET CONTAINING APERTURES HAVING A DIAMETER OF AT LEAST FIVE ANGSTROMS AND BEING SUITABLE AS A MOLECULAR SIEVE

Robert L. Fleischer and Paul B. Price, Schenectady, N.Y., assignors to General Electric Company

Continuation of abandoned application Ser. No. 702,366, Feb. 1, 1968. This application Nov. 19, 1970, Ser. No. 91,140
Int. Cl. B29d 7/20
U.S. Cl. 156—2 **7 Claims**



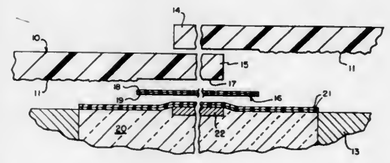
A shaped copolymer comprised of etchable polymer and unetchable polymer contributing desired properties to the copolymer is bombarded with charged particles. As the particles pass through the shaped copolymer, they form substantially straight tracks of damaged copolymer. The bombardment of the copolymer with the individual charged particles is so highly localized that it damages only the track defining portions of the copolymer, leaving the remainder of the copolymer substantially unaffected. The copolymer is then contacted with an agent to etch, i.e. extract, the tracks of damaged copolymer, and any additional desired portion of adjacent undamaged copolymer, leaving a substantial number of recesses or apertures depending upon the particular bombarding procedure and the thickness of the copolymer. The aperture-containing copolymer product of the present invention includes properties usually associated with non-etchable polymer. It is useful as a filter.

3,677,845

METHOD FOR THE IN SITU COVERING OF LARGE DIAMETER PROCESS ROLLS WITH HEAT SHRINKABLE FILMS OF FLUORINATED ETHYLENE POLYMERS AND THE LIKE

Robert Roberts, Wilmington, Del., assignor to Fluorodynamics, Inc., Newark, Del.

Filed July 24, 1970, Ser. No. 57,997
Int. Cl. B29c 27/00; C09j 5/02, 5/06
U.S. Cl. 156—3 **10 Claims**



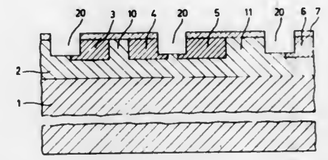
A method of covering large diameter rolls with a heat shrinkable covering material, particularly high molecular weight, high viscosity, thermoplastic materials, such as Teflon FEP film, is disclosed, which includes in situ heat seal joining of an oriented film to form a heat shrinkable tube. The new method provides for a complete circumferential adhesive bond between the roll surface and the relatively non-adherent covering material, specifically including the region of the heat seal joint, by utilizing a narrow sealing strip along the longitudinal joint of the covering material. The sealing strip is heat sealable on one side to the covering material and adhesively joinable to the roll surface of its other side.

3,677,846

MANUFACTURING SEMICONDUCTOR DEVICES

Matthias Johannes Joseph Theunissen and Wilhelmus Henricus Cornelis Gerardus Verkuijlen, Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed May 4, 1970, Ser. No. 34,488
Claims priority, application Netherlands, May 7, 1969, 6907023
Int. Cl. H01l 7/50, 7/52
U.S. Cl. 156—8 **1 Claim**



A method of manufacturing a plurality of semiconductor devices from one plate-shaped semiconductor body in which one side of a plate-shaped semiconductor substrate is covered with a zone of semiconductor material said zone consisting, at least at the boundary with the underlying substrate of a semiconductor material differing from

the adjoining substrate material in its composition and/or conductivity properties, the substrate being then removed by means of a selective electrolytic etching process while maintaining said zone, the zone being furthermore divided into separate, individual wafers of semiconductor material, characterized in that prior to the electrolytic etching process grooves are provided in the zone, the depth of said grooves being smaller than the thickness of the zone, so that after the electrolytic etching process the semiconductor material of the zone remains coherent and the division into the separate wafers is obtained by a chemical etching process from the side of the substrate.

3,677,847

PHOTOLITHOGRAPHIC ETCHING METHOD FOR NICKEL OXIDE

Alfred E. Feuersanger, Franklin Square, and Lawrence M. Harris, Brooklyn, N.Y., assignors to the United States of America as represented by the Secretary of the Army

No Drawing. Filed Mar. 15, 1971, Ser. No. 124,607
Int. Cl. H05k 1/00; H01l 7/50
U.S. Cl. 156—8 **1 Claim**

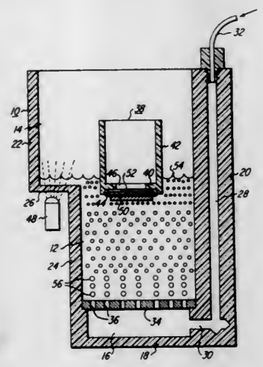
A photolithographic etching method is provided for patterning a nickel oxide film on a passivated silicon substrate. The method involves applying a photoresist over the nickel oxide film, defining the desired nickel oxide pattern by a suitable masking technique, removing the photoresist from those areas not subject to the masking technique, etching away the nickel oxide film with 80 percent by volume 96 percent sulfuric acid solution at about 80 degrees C., and stripping away the remaining photoresist to expose the desired nickel oxide pattern.

3,677,848

METHOD AND MATERIAL FOR ETCHING SEMICONDUCTOR BODIES

Arthur Irwin Stoller, North Brunswick, and Stephen Thomas Opresko, Hightstown, N.J., assignor to RCA Corporation

Filed July 15, 1970, Ser. No. 55,067
Int. Cl. H01l 7/00
U.S. Cl. 156—17 **6 Claims**



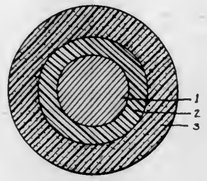
An etchant for uniformly etching bodies of silicon or germanium which provides an etched surface which is free from pits and peaks. The body is etched by immersing a surface of the body in a mixture of hydrofluoric acid, nitric acid, acetic acid and either sodium chlorite or sodium nitrite and bubbling a gas into the etchant so that at least some of the gas bubbles impinge on the surface of the body.

3,677,849

MEDIUM VOLTAGE CABLES

Luigi Lombardi, Milan, Italy, assignor to Pirelli Società per Azioni, Milan, Italy

Original application May 20, 1968, Ser. No. 730,657, now Patent No. 3,541,228, dated Nov. 17, 1970. Divided and this application Oct. 6, 1969, Ser. No. 870,906
Claims priority, application Italy, May 23, 1967, 16,392/67
Int. Cl. H01b 13/08, 13/19
U.S. Cl. 156—53 **5 Claims**



Describes a medium voltage cable including an insulating layer and a semiconductive layer in contiguous but not adhesive relationship. The insulating layer is an amorphous olefine copolymer, saturated or unsaturated, and the semiconductive layer is a composition containing carbon particles dispersed in chlorosulfonated polyethylene.

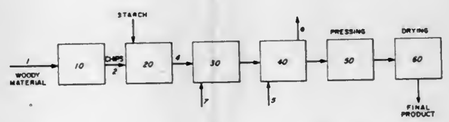
Product is prepared by heat treatment of the superimposed layers on a conductor.

3,677,850

METHOD OF PRODUCING FIBROUS PRODUCTS

Thomas E. Holt, Hudson, Quebec, and Edward B. Taylor, Montreal, Quebec, Canada, assignors to Esso Research and Engineering Company, Linden, N.J.

Filed June 25, 1969, Ser. No. 836,258
Int. Cl. B29j 5/02
U.S. Cl. 156—62.2 **5 Claims**



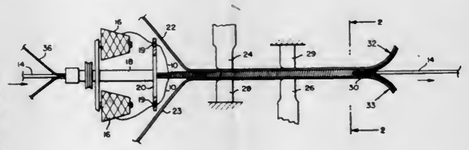
In the method of manufacturing woodfiber board products, starch binder is cooked and dispersed over the woodfiber surfaces coincidental with the preparation of the woodfibers.

3,677,851

METHOD OF MAKING PILE WEATHERSTRIPPING

Emil J. Kayser, 1763 Empire Blvd., Webster, N.Y. 14580

Filed July 6, 1970, Ser. No. 52,359
Int. Cl. B32b 3/18, 3/20
U.S. Cl. 156—73 **6 Claims**



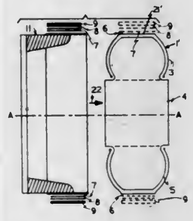
Pile type weatherstripping is made by winding yarn on a traveling mandrel, bonding strips of backing material to the yarn along opposite sides of the mandrel, and then parting the yarn at points between the backing strips. Two weatherstrips are produced simultaneously. An insert such as a longitudinal fin may be fed between the yarn and the mandrel to produce a combination strip including both pile and an auxiliary sealing member.

3,677,852

PROCESS FOR MANUFACTURING BELTED TIRES

Louis Fleuret and Jean Trepaez, Compiegne, France, assignors to Uniroyal Engelbert France S.A., Neuillyl Seine, France

Filed June 10, 1969, Ser. No. 831,863
Claims priority, application France, June 12, 1968, 154,777
Int. Cl. B29h 17/26
U.S. Cl. 156—127 **5 Claims**



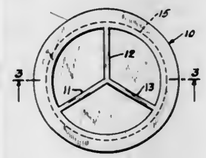
In the manufacture of radial ply tires having an annular multi-ply belt between the carcass crown and tread, a cylindrical casing is first prepared and a first belt ply is placed annularly about the casing while it is still in cylindrical form, i.e., prior to toroidal shaping. An incomplete belt assembly with one less ply is prepared, and annularly surrounded by a tread member. Subsequently the tread and incomplete belt assembly are placed annularly about the casing and first belt ply, after which the assembled casing and first belt ply is expanded to force the first belt ply radially outward into contact with the remainder of the belt and tread assembly to complete the shaped raw tire. Finally, the completed assembly is cured by conventional methods to mold the components into a unitary belted tire structure.

3,677,853

WAFER MOUNTING

Thomas A. Anzelone, Jr., Fort Lauderdale, Harold A. Larson, University Park, and Alfred A. Stricker, Pompano Beach, Fla., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 30, 1969, Ser. No. 889,112
Int. Cl. B32b 31/00
U.S. Cl. 156—160 **5 Claims**



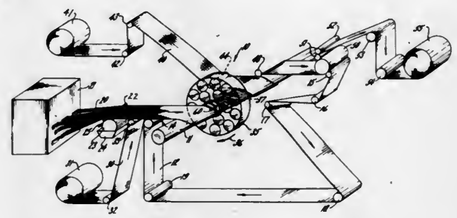
Wafers are bonded to a carrier surface which tends to bulge in reaction to the bonding process, particularly heating, but to return to a flat configuration after bond curing. Void-free bonding is obtained by shaping the bonding material to the carrier bulge and introducing the wafer to the high point of the bulge relative to the flat surface of the carrier. Closure pressure between wafer and carrier and the reaction of the carrier in cooling to a substantially flat surface configuration coperate to complete the bonding.

3,677,854

METHOD FOR APPLYING ADHESIVE TO CROSS THREADS WHILE CROSSLAYING

Karl E. Sager, Appleton, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Filed May 21, 1969, Ser. No. 826,390
Int. Cl. B65h 81/02
U.S. Cl. 156—173 **7 Claims**



A method for applying adhesive to the cross threads in a thread crosslaying apparatus is disclosed. The cross threads served by a carrier rotating around an elongated medium moving helically around a mandrel are drawn over the face of an adhesive applicator located between the mandrel and the carrier. The spacing and continuity of adhesive applied to the cross threads is governed by the number, size and shape of the openings in the adhesive applicator and the relative speed and direction of rotation of the applicator relative to the carrier.

3,677,855

PROCESS AND APPARATUS FOR THE PRODUCTION OF SYNTHETIC TEXTILE STUFFING MATERIAL

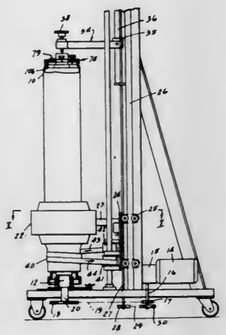
Robert Bolliand and Claude Saligny, Lyon, France, assignors to Societe Rhodiaceta, D.A.P.I.D., Paris, France

Filed June 24, 1970, Ser. No. 49,487
Claims priority, application France, June 27, 1969, 6921813
Int. Cl. D04h 3/12
U.S. Cl. 156—181 **1 Claim**



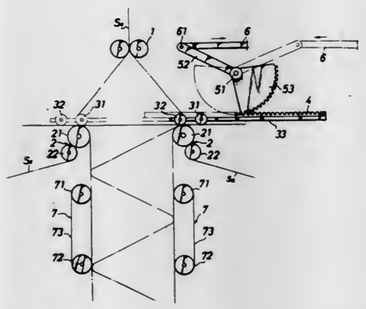
A process and apparatus for producing synthetic textile stuffing material from a cable of continuous synthetic filaments, which may or may not be crimped, for use in stuffing articles such as sleeping bags, anoraks, quilts, etc. This process consists in passing a cable of continuous synthetic filaments between two smooth rollers turning at different peripheral speeds and having an alternate relative transverse movement, receiving the thus flattened cable of continuous synthetic filaments on a conveyor belt, spraying this flattened cable with a binding material, and causing the binding material to harden.

3,677,856
METHOD FOR COVERING A PRINTING ROLLER
James A. MacCallum, Danville, Ill., Velmar E. Howard, Veedersburg, Ind., and Daniel A. Coberley, Danville, Ill., assignors to Hurletron Incorporated, Danville, Ill.
Filed Aug. 25, 1969, Ser. No. 852,784
Int. Cl. B65h *81/00*
U.S. Cl. 156—187 **4 Claims**



A printing roller having an extruded covering sleeve, in one form having electrical characteristics for optimum electrically assisted printing; and in another form having optimum solvent resistance. A method and apparatus for applying such sleeves including a belt wrapped at least 360° about the sleeve and driven by rotation of the roller and moved progressively along the sleeve to apply the sleeve to the roller and to remove gaseous entrapment, and preferably also to disperse a reservoir of adhesive over the interface between the roller and sleeve.

3,677,857
METHOD FOR MANUFACTURE OF CORRUGATED BOARDS
Rinnosuke Susuki, Tokyo, Hiroshi Hoshi, Chiba-ken, and Jiro Saito and Masao Suzuki, Tokyo, Japan, assignors to Raion Yushi Kabushiki Kaisha, Tokyo, Japan
Filed Feb. 16, 1970, Ser. No. 11,767
Claims priority, application Japan, Feb. 19, 1969, 44/12,750
Int. Cl. B31f *1/22*
U.S. Cl. 156—210 **10 Claims**



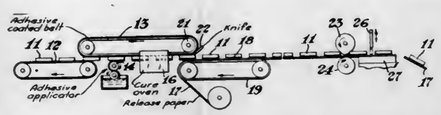
A method and apparatus suited for manufacture of corrugated boards whose pitches, heights and profiles of corrugations may be varied in a simple manner during the course of manufacture. Opposed to the conventional method and apparatus wherein a flat sheet or sheets are adhered to one or both sides of a corrugated sheet which is formed by corrugating rolls or the like, a sheet is reciprocated between a pair of spaced apart flat sheets while they are advanced, thereby adhering the corrugated sheet alternately to the flat sheets. By varying the amplitude or stroke of the reciprocal movement of the sheet, the heights of corrugations may be varied while the pitches of corrugations can be varied by varying the feed of both flat sheets during the time when the sheet to be corrugated moves from one flat sheet to the other, that is the line of adhesion of one flat sheet to the other. Profiles of corrugations may be varied by varying the widths (in the direction of advancement of the sheet to be corrugated) of adhesion between the corrugated sheet and the flat sheets, thereby varying the cross sections of corrugations into rectangular, trapezoid, etc. The invention may use not only paper board but also synthetic resin sheets.

3,677,858
HIGH TEMPERATURE AND PRESSURE BONDING OF URETHANE FOAM
Robert C. Sokolowski, Menasha, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.
Filed Apr. 27, 1970, Ser. No. 32,080
Int. Cl. B32b *31/20*
U.S. Cl. 156—219 **4 Claims**



The surface characteristics of a polyurethane foam are modified by laminating the foam to a cellulosic web. Lamination is accomplished by placing the cellulosic web in contact with the foam and thereafter bonding the web-foam structure at intermittent points by the application of heat and pressure in particular amounts.

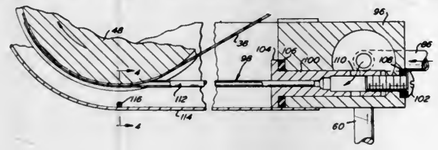
3,677,859
METHOD FOR APPLICATION OF PRESSURE-SENSITIVE ADHESIVES
Harold A. Clark, 4107 Cruz St., Midland, Mich. 48640
Filed Aug. 13, 1970, Ser. No. 63,536
Int. Cl. B32b *31/00*
U.S. Cl. 156—250 **4 Claims**



A pressure-sensitive adhesive backing is applied to articles by adhering the face of the articles to a belt coated with a pressure-sensitive adhesive. The belt passes through a curing oven and a backing sheet coated with a release coating is applied over the cured adhesive before release from the belt.

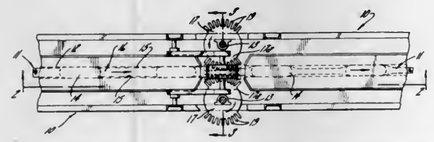
3,677,860
METHOD AND APPARATUS FOR TRANSFERRING A MAGNETIC SOUND TRACK TO MOVIE FILM
Edward Zychal, Cornwell Heights, Pa., assignor to Zyco Manufacturing, Inc., Cornwell Heights, Pa.
Filed Feb. 19, 1969, Ser. No. 800,653
Int. Cl. B32b *31/08, 31/12*
U.S. Cl. 156—299 **15 Claims**

A magnetic sound track is transferred onto movie film by a machine which simultaneously feeds film and magnetic tape to a laminating zone where the film passes over a laminating wheel, an open channel curved capillary tube applies a bonding agent to an elongated area, and the magnetic sound track is laminated to the film. The machine



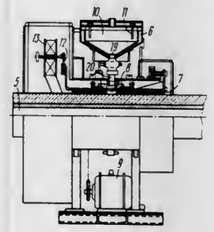
is provided with fail-safe mechanisms to shut down the process in case of a break in the film or tape, or the absence of the bonding agent.

3,677,861
APPARATUS FOR PLEATING AND ULTRASONICALLY SEALING SANITARY NAPKIN TAB ENDS
Nicholas T. Knauf, Neenah, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.
Filed Dec. 8, 1969, Ser. No. 882,813
Int. Cl. B32b *31/10, 31/20*
U.S. Cl. 156—380 **4 Claims**



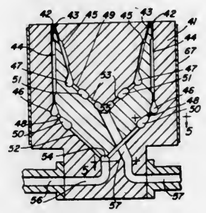
An apparatus for simultaneously tuck-inpleating and heat sealing the tab ends of sanitary napkins using rotatably driven tucking fingers, an ultrasonic sealing horn and associated anvil which mesh with the tucking fingers.

3,677,862
DEVICE FOR APPLYING ONTO PIPES COATINGS OF VISCOUS INSULATING SUBSTANCES
Vladimir Alexeevich Gusev, ulitsa Malaya Podvalnaya 14, kv. 9, and Nikolai Nikolaevich Rudenko, ulitsa Kikvidze 13–a, kv. 10, both of Kiev, U.S.S.R.
Filed Dec. 27, 1968, Ser. No. 787,407
Int. Cl. B65h *81/00*
U.S. Cl. 156—392 **4 Claims**



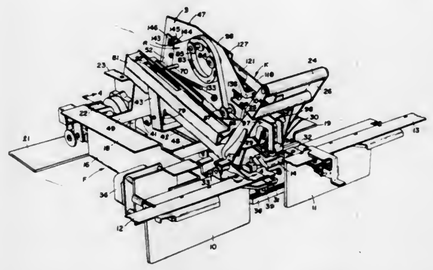
A device for applying successive layers of a viscous substance and tape to a pipe includes a hollow cylinder surrounding the pipe. The pipe is displaceable axially while the cylinder is rotatably driven. The cylinder includes circumferentially spaced openings through which the viscous substance is passed to the pipe surface. A tape spool is connected to the end of the cylinder and rotates together with the cylinder to apply tape about the pipe.

3,677,863
DIES FOR PRODUCING MULTI-LAYER TUBES OR FILMS
Heinz Schippers, Walter Geil, and Gerd Albrecht, Remscheid-Lennep, and Reinhold Jung, Wermelskirchen, Germany, assignors to Barmag Barmer Maschinenfabrik Aktiengesellschaft, Wuppertal, Germany
Original application Feb. 28, 1969, Ser. No. 803,207. Divided and this application Nov. 4, 1971, Ser. No. 195,587
Claims priority, application Germany, Aug. 8, 1968, P 17 79 410.4; Nov. 14, 1968, P 18 08 883.0
Int. Cl. B29d *23/04*
U.S. Cl. 156—500 **10 Claims**



Improved extrusion dies for production of multi-layer tubes or films wherein the feed lines or passages for the plastic composition to be extruded terminate at points situated one behind the other in the axial center portion of the die. The plastic composition is fed through a plurality of radially connecting lines from said points to annular passages and ultimately to annular nozzle means in the die. The annular passages are located in the die body in axially spaced transverse planes through the die body.

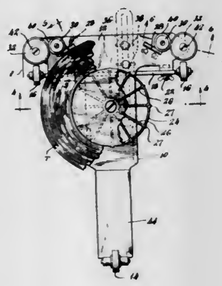
3,677,864
TAPE DISPENSER AND APPLICATOR
John E. Morse and Norman J. Rosenburgh, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Continuation of application Ser. No. 662,686, Aug. 23, 1967. This application Sept. 4, 1970, Ser. No. 69,940
Int. Cl. B31f *5/06*; G03d *15/04*
U.S. Cl. 156—505 **7 Claims**



A device having a tape applicator mounted on a reciprocal knife carriage is adapted to press an adhesive-coated tape across abutting end of two strips to form a splice. Another reciprocal carriage carries a roll of the tape fed through a tape-folding device and a cutter on the knife carriage. At the beginning of a cycle, the tape-roll carriage moves forward to feed a piece of tape, previously stripped from the roll, so that the leading edge is

positioned over the abutting ends of the strips. The knife carriage also moves forward to a position over the leading edge of the tape and presses the tape against the strips to form a splice. While the applicator is holding the end of the tape, the tape-roll carriage moves away from the splice pulling a length of tape from the roll for the next splice and through the tape-rolling device to make it more rigid for feeding. The tape is then cut; the trailing edge is affixed to the splice; and the applicator and cutter are recocked for the next cycle.

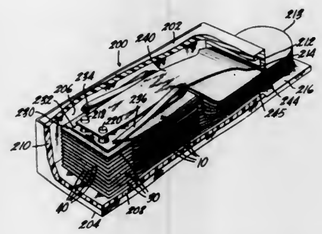
3,677,865
SIDE DELIVERY TAPE APPLICATOR
Walter Wagner, Dumont, N.J. 07628
Filed May 1, 1970, Ser. No. 33,546
Int. Cl. B32b *31/18, 31/20*
U.S. Cl. 156—577 **5 Claims**



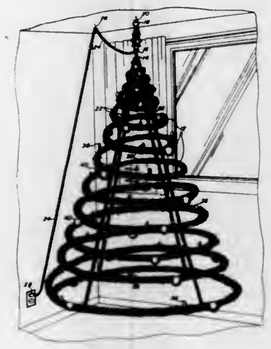
A roll of tape is mounted on a carriage and tape is drawn off and applied laterally of the carriage to one surface by moving the carriage over an adjoining angularly related surface, and, where possible, with the carriage wheels riding on the said adjoining surface. The roll of tape is mounted on the carriage in a plane parallel with the surface over which the carriage is moved, and means are provided for adjusting the position of the roll of tape toward and away from the wall over which the carriage is moved to compensate for differences in the width of rolls of tape and to bring a side surface of the tape roll close to the wall so that the tape will be applied with an edge close to that wall. Cut off means is disposed relative to guide and applicator means so that the tape may be drawn back against the cut off means and cut off where desired, as by stopping rotation of the tape roll while the carriage is moving. The guide is provided with means to limit lateral movement of the tape even if the tape roll wobbles on its mount. The applicator is positioned relative to the tape roll so that pressure is exerted chiefly along the inner edge of a length of tape being applied.

3,677,866
DISPENSER FOR DISPOSABLE TYPE THERMOMETERS
Charles G. Pickett, Andover, Robert A. Lang, East Hanover, and Robert C. Comers, Rockaway, N.J., assignors to Bio-Medical Sciences, Inc., Fairfield, N.J.
Filed Mar. 4, 1971, Ser. No. 120,996
Int. Cl. B65d *83/08;* **B65h** *3/58*
U.S. Cl. 156—584 **11 Claims**

A dispenser is provided for use with thermometers of the type having a thermally sensitive substance on a thermally conductive sheet and an overlying transparent film carrying indicator means which are superpositionably registrable with the thermally responsive substance to denote temperature change upon change of state in the substance, which thermometer normally is provided with a removable shield interposed between the substance and the indicator means to prevent communication between the two until the thermometer is ready for use. The dispenser provides a housing in which one or more thermometers can be received with a tab part of the shield of each thermometer secured to an anchorage within the dispenser. The dispenser also includes an opening through which a portion of each thermometer can be extended for grasping the latter for removal or dispensing of each thermometer, the pulling action of removing the thermometer initiating peeling away of the shield from the thermometer within the dispenser. The dispenser also includes means at or adjacent the opening thereto which applies during dispensing, a wiping or pressing force to the transparent film on which is carried the indicator means to press the transparent film into contact with the carrier sheet positioning the indicator means in proper overlying communicating registration with the temperature responsive substance on the carrier sheet.

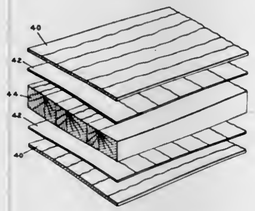


3,677,867
COLLAPSIBLE ARTIFICIAL CHRISTMAS TREE
Linda K. Westlund, 6879 E. Cholla St., Scottsdale, Ariz. 85254
Filed Mar. 24, 1971, Ser. No. 127,586
Int. Cl. A47g *33/08, 33/16*
U.S. Cl. 161—14 **5 Claims**



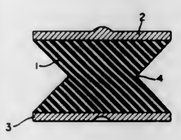
A collapsible Christmas tree comprising a resilient spring-like conically-shaped spiral frame member, having an electrical conductor means and ornamentation means connected thereto, said frame member having a plurality of convolutions adapted to be concentrically collapsed into a generally flat spiral configuration; suspension means interconnecting said convolutions to support them in vertically spaced relation to each other when said frame is in a conically-shaped spiral configuration, said electrical conductor means and said ornamentation means permanently connected to said frame member and including electric lights, tinsel and other decorations; a clamping support means secured to an apex area of said frame for holding said suspension means either for suspension of said collapsible Christmas tree from above or for supporting said Christmas tree on a stand from a floor area.

3,677,868
LAMINATED BOARD STRUCTURE AND METHOD OF MAKING SAME
Charles L. Boggs, Statesville, N.C., assignor to International Paper Company, New York, N.Y.
Filed Nov. 24, 1969, Ser. No. 884,454
Int. Cl. B32b *21/10*
U.S. Cl. 161—37 **8 Claims**



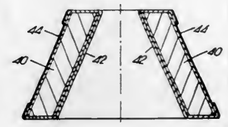
A resin impregnated, resin curable fiber mat, and a method for using the mat as a dimensional stabilizing element in a laminate structure, which is partially cured prior to use in the laminate structure and is fully polymerized by the addition of suitable resin when the mat is to be used.

3,677,869
POLYUREAURETHANE SHOCK ABSORBING COMPOSITIONS
Daniel A. Chung, Stow, and Charles J. Pearson, Akron, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Nov. 27, 1970, Ser. No. 93,326
Int. Cl. B32b *3/30;* **C08g** *41/04;* **F16f** *7/12*
U.S. Cl. 161—42 **19 Claims**



A resilient shock absorbing polyureaurethane composition and shock absorbing units prepared therefrom, such as railroad draft gears. The shock absorbing composition may be characterized by deflecting from about 0.3 to about 0.6 inch at 25° C. upon the application of 1800 pounds per square inch to the end surfaces of the composition when it is generally disc-shaped of required dimensions with a V-shaped groove sidewall connecting its end surfaces. The polyureaurethane composition is prepared by reacting specific diamines with the reaction product of specific aromatic diisocyanates with a mixture of specific polyether polyols and polyester polyols of required amounts and required molecular weight ranges.

3,677,870
HEAT SHIELDS
Kenneth John McGuire, Bedfordshire, England, assignor to Delaney Gallay Limited, Biggleswade, Bedfordshire, England
Filed Aug. 22, 1969, Ser. No. 852,401
Claims priority, application Great Britain, Mar. 28, 1968, 14,996/68; Sept. 13, 1968, 43,759/68
Int. Cl. B32b *3/04*
U.S. Cl. 161—43 **5 Claims**



A heat shield, primarily intended for aerospace applications, comprising a mass of thermo-insulating material which is covered on one side by a thin metal skin and on the other side by a moulded sheath which extends round the edges of the shield and is bonded to the metal skin totally to enclose the insulating material. The heat shield can be fabricated or formed in any desired shape.

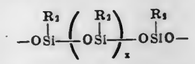
3,677,871
MULTI-LAYERED ARTIFICIAL LEATHER MATERIAL
Saburo Oohara, Kyoto, Koitsuro Amemiya, Osaka, Yasushi Nishijima, Hirakata, and Mitsuyoshi Fukushima and Kunio Shimizu, Osaka, Japan, assignors to Kanegafuchi Boseki Kabushiki Kaisha, Tokyo, Japan
Filed Aug. 11, 1970, Ser. No. 62,947
Claims priority, application Japan, Aug. 14, 1969, 44/64,283; Mar. 12, 1970, 45/21,069
Int. Cl. B32b *5/18*
U.S. Cl. 161—84 **4 Claims**

Natural leather-like sheet materials of homogeneous microporous structure having high bending strength and excellent moisture-permeability and abrasion resistance, which are composed of four layers: a substrate layer of non-woven fabric finished with a synthetic butadienic rubber; a woven fabric layer; a microporous adhesive layer consisting of a specific polyurethane and conjoining the above mentioned two layers and; a microporous grain layer consisting of another specific polyurethane which has a dynamic modulus of elasticity higher than that of the adhesive layer and covers uniformly the top surface of the woven fabric layer. An improved process for manufacturing such sheet materials, which comprises setting a woven fabric superimposed on a substrate, simultaneously with coagulating a grain layer polyurethane resin laid on the woven fabric, and an apparatus employed therefor are also proposed.

3,677,872
HYDROXYLATED COPOLYMERS COMPOSED OF MONOMETHYLSILOXANE UNITS AND DIPHENYLSILOXANE UNITS
Robert C. Antonen, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.
No Drawing. Original application Feb. 25, 1969, Ser. No. 802,217, now Patent No. 3,632,794. Divided and this application Oct. 27, 1970, Ser. No. 84,488
Int. Cl. B32b *17/04*
U.S. Cl. 161—93 **1 Claim**

Hydroxylated copolymers of $(C_6H_5)_2SiO$ units and $CH_3SiO_{1.5}$ units are disclosed. The diphenylsiloxane units are present in an amount of 20 to 50 mol percent and are bonded to monomethylsiloxane units which contain the

hydroxyl groups. Also disclosed are the above hydroxylated copolymers modified by linking segments of



where x is at least 2 and R is methyl, phenyl or 3,3,3-trifluoropropyl and the segments are present in amounts of 1 to 50 weight percent. The hydroxylated copolymers and the modified hydroxylated copolymers are resins useful in protective coatings, laminates, release coatings and molding resins.

3,677,873
EXTRUDED SHEET MATERIAL
Ole-Bendt Rasmussen, Topstykket 7, Birkerod, Denmark
Filed Dec. 27, 1968, Ser. No. 787,387
Claims priority, application Great Britain, Dec. 29, 1967, 59,141/67
The portion of the term of the patent subsequent to May 12, 1987, has been disclaimed
Int. Cl. B32b *3/10, 5/02, 31/30*
U.S. Cl. 161—109 **10 Claims**



An extruded sheet material having disrupted surface layers and a continuous core comprising thin lamellae laying one upon the other in flat overlapping sandwich-like arrangement, said lamellae being bonded together in the core zone and being disconnected or connected through disrupted connections in the surface layers.

A method of extruding two extrudable materials to form a sheet structure consisting of alternating lamellae of said materials, one of said materials being extruded only in the surface layers, transversely smearing out said sheet structure and subsequently disrupting the continuous structure of the surface layers.

3,677,874
INSULATION PRODUCT AND METHOD
Robert W. Sterrett, Wayland, Mass., and Francis J. Jacob, New Castle, Pa., assignors to W. R. Grace & Co., New York, N.Y.
Original application Jan. 20, 1967, Ser. No. 610,524. Divided and this application Mar. 24, 1970, Ser. No. 22,197
Int. Cl. B32b *3/00, 3/26, 5/14*
U.S. Cl. 161—116 **4 Claims**

An insulation board is made by laminating to the surface of a body of foamed plastic resin, such as foamed polystyrene, a film of higher density foamed plastic resin such as foamed polystyrene.

3,677,875
METHOD AND MEANS OF DIE MATRIX EXPANSION
Victor E. Althouse, Los Altos, Calif., assignor to Raychem Corporation, Menlo Park, Calif.
Filed Aug. 19, 1970, Ser. No. 65,188
Int. Cl. B32b *3/00*
U.S. Cl. 161—117 **15 Claims**

A method and means of handling and separating small, fragile objects such as "dice" bearing miniaturized electronic circuitry, one from the other. Such dice or other objects rest upon and preferably are transiently adhered to the surface of a foam expansible plastic article which is subsequently expanded to enlarge the interstices between individual dice so that the dice can be conveniently picked up by, e.g., vacuum or tweezer techniques. A wafer having fault lines therein defining dice can be applied to the surface and cracked along the fault lines to form interstices between the dice. Alternatively, the wafer can be first cracked along the fault lines to form an assembly of dice having interstices therebetween, which assembly can then be transferred to the foam expansible surface for expansive enlargement of the interstices or conversely the wafer may be placed on the surface before the fault lines are formed. Preferably the foam expansible plastic is a cross-linked polymer, most preferably one which is tacky during the expansion process so as transiently to adhere the dice to the expansible plastic article. Alternatively, that transient adhesion can be secured where desired by the use of a light adhesive.

3,677,876
DECORATIVE LAMINATE SURFACED WITH A TRANSPARENT FILM OF POLYVINYL FLUORIDE WHICH FILM IS TEMPORARILY COVERED WITH A TRANSPARENT FILM OF NYLON
Jay Thomas Oliver, Fort Mitchell, Ky., assignor to Formica Corporation, Cincinnati, Ohio
No Drawing. Filed Feb. 18, 1970, Ser. No. 12,425
Int. Cl. B32b *7/06, 27/34*
U.S. Cl. 161—165 **6 Claims**

A decorative laminate comprising a heat and pressure consolidated assembly of

(1) a plurality of kraft paper core sheets,
(2) an alpha-cellulose paper decorative sheet,
(3) a film of a homogeneous blend of polyvinyl fluoride containing uniformly dispersed therein from about 0.1% to about 10% by weight of a ploymer of a polymerizable 2-hydroxy-benzophenone, and
(4) a removable film of nylon,

wherein said kraft paper sheets had been pre-impregnated with a thermosetting phenolic resin and said alpha-cellulose sheet had been pre-impregnated with a thermosetting melamine-formaldehyde resin, all of said thermosetting resins having been converted to the thermoset state during the heat and pressure consolidation step.

3,677,877
ARTICLE OF SILICONE RUBBER HAVING SURFACES RESISTANT TO DIRT PICK-UP
Virgil L. Metevia and Raymond M. Narlock, Bay City, and Milfred E. Mast, Williams Township, Bay County, Mich., assignors to Dow Corning Corporation, Midland, Mich.
No Drawing. Filed Oct. 30, 1970, Ser. No. 85,703
Int. Cl. B32b *25/20;* **D06n** *7/04*
U.S. Cl. 161—164 **2 Claims**

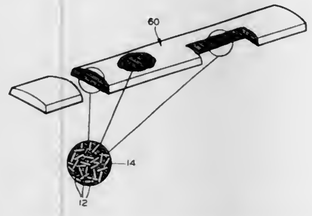
Articles of optically clear filled silicone rubber and filled silicone rubber articles having aesthetic value have surfaces resistant to dirt pick-up when treated with cold plasma.

3,677,878
INTEGRATED INSULATED AND WEATHERPROOF ROOF SYSTEM
John David Carlson, Bradford Woods, Pa., assignor to Koppers Company, Inc.
Filed Feb. 2, 1971, Ser. No. 111,950
Int. Cl. B32b *3/26, 11/04, 13/02*
U.S. Cl. 161—160 **12 Claims**

An integrated, insulated and weatherproof roof system has a base, a first monolithic mass, supported by the base composed of a low-density concrete composition and a second monolithic mass on a surface of the first mass composed of a bituminous material that is mechanically bonded to the surface of the first mass.

The roof system is formed from initially flowable materials by forming on a base a slurry cement, expanded beads of a thermoplastic material and water, curing the slurry to a solid monolithic mass and forming a layer of a hot bituminous material on a surface of the solid mass.

3,677,879
THERMALLY CONDUCTIVE BEARING MATERIAL
Giuliano D'Andrea, Elnora, N.Y., assignor to the United States of America as represented by the Secretary of the Army
Filed Apr. 28, 1970, Ser. No. 32,666
Int. Cl. B32b *15/20, 19/02*
U.S. Cl. 161—170 **3 Claims**



A light weight composite material consisting essentially of geometrically identical metal fibers uniformly distributed in a randomly oriented fashion throughout a matrix of an epoxy resin mixed with an amine curing agent has been found to be particularly useful as a material for bearings with large surface areas in frictional contact with steel surfaces. The material can be tailored to provide a predetermined thermal conductivity with isotropic or anisotropic characteristics by the proper control of such factors as the thermal conductivity of the matrix, the ratio of fiber volume to that of the matrix, and the geometry of the individual fibers.

3,677,880
SYNTHETIC CONJUGATE FILAMENT FIBERS AND A PROCESS FOR THE MANUFACTURE OF THE SAME
Noboru Fukuma, Nobeoka-shi, Hidehiko Kobayashi, Tokyo, and Kenichi Matsui, Masahira Sakashita, and Hiroshi Henmi, Nobeoka-shi, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan
Filed Apr. 16, 1968, Ser. No. 721,690
Int. Cl. D02g *3/02*
U.S. Cl. 161—173 **14 Claims**

A synthetic conjugated composite filament fiber, consisting of two conjugated polyester filamentary components, one of said components being polyethylene terephthalate and the other of said components being polyethylene diphenoxyethane-4,4'-dicarboxylate, said polyethylene terephthalate being the load-bearing component.

3,677,881
OPEN CELLED POLYPROPYLENE FILAMENT OF IMPROVED UNIFORMITY
Peter R. Riordon, Hudson, Quebec, Canada, assignor to Chemcell Limited, Drummondville, Quebec, Canada
No Drawing. Original application May 15, 1967, Ser. No. 638,419, now Patent No. 3,549,743, dated Dec. 22, 1970. Divided and this application Aug. 19, 1970, Ser. No. 65,355
Int. Cl. D01d *5/00*
U.S. Cl. 161—178 **2 Claims**

The invention relates to filamentary materials having a low apparent density and improved longitudinal uniformity (evenness). The filaments are produced by drawing an elastic fiber of polymeric material having a crystallinity of at least 20% and an elastic recovery from a 25% extension of at least 60% at some temperature below the melting point of the polymer making up said filament. The improvement comprises subjecting the filament to a multi-stage drawing consisting of from 3 to 6 stages wherein the total draw ratio of said multi-stage drawing is from 1.5:1 to 8:1.

3,677,882
INDUSTRIAL LAMINATE SURFACED ON ONE SIDE WITH A COPPER FOIL AND ON THE OTHER SIDE WITH A WHITE PIGMENTED FILM OF ADHERABLE POLYVINYL FLUORIDE
Frederick William Jahns, Jr., Cincinnati, Ohio, assignor to General Electric Company, New York, N.Y.
No Drawing. Filed Feb. 19, 1970, Ser. No. 12,832
Int. Cl. B32b *15/08, 27/30;* **H05k** *1/00*
U.S. Cl. 161—189 **7 Claims**

An industrial laminate surfaced on one side with a copper foil and on the other side with a white pigmented film of adherable polyvinyl fluoride between which layers there are a plurality of paper layers and glass scrim cloth layers each of which have been impregnated with a punching stock thermosetting phenolic resin.

3,677,883
POLYVINYL ACETATE ADHESIVES CONTAINING INORGANIC ZIRCONIUM SALTS
Stanley R. Sandler, Springfield, Pa., assignor to The Borden Company, New York, N.Y.
No Drawing. Filed Nov. 20, 1967, Ser. No. 684,539
The portion of the term of the patent subsequent to Dec. 15, 1987, has been disclaimed
Int. Cl. B32b *23/04, 27/30*
U.S. Cl. 161—251 **9 Claims**

This invention relates to adhesive compositions which form water resistant bonds when cured and more particularly to ambient temperature curing aqueous adhesive compositions which form indistinguishable glue lines comprising a vinyl acetate polymer and a curing agent selected from the group consisting of water-soluble zirconium and zirconyl salts.

3,677,884
VENEER CROSSBINDER AND LAMINATES PREPARED THEREFROM
Leopold F. Bornstein, Wilmington, Mass., assignor to Georgia-Pacific Corporation, Paoli, Pa.
No Drawing. Continuation of application Ser. No. 872,457, Nov. 24, 1969, which is a continuation of application Ser. No. 596,465, Nov. 23, 1966, which in turn is a continuation-in-part of application Ser. No. 327,124, Nov. 29, 1963. This application Feb. 3, 1971, Ser. No. 112,416
Int. Cl. C08g *37/38*
U.S. Cl. 161—262 **14 Claims**

A liquid resin composition comprising an alcohol solution of certain phenol-formaldehyde resins and a lignosulfonate acid salt has been found to be particularly suitable for use in the application of veneers to a base material such as particle board. Ammonium salts, such as ammonium chloride, are advantageously included in the composition. The liquid composition can be utilized for impregnating dry fibrous sheet materials such as cellulosic paper and dried. The resulting, dried, impregnated paper is used as an intermediate layer between, for example, a veneer and particle board, and minimizes telegraphing of surface imperfections from the particle board through the veneer or surfacing layer.

3,677,885
PROCESS FOR THE PREPARATION OF SULFATE PULP DIGESTION WHITE LIQUOR
Katsuo Watanabe, 219 Hama, Okayama-shi, Japan
Filed Nov. 26, 1969, Ser. No. 880,113
The portion of the term of the patent subsequent to May 26, 1987, has been disclaimed
Int. Cl. D21c *11/00*
U.S. Cl. 162—45 4 Claims

A process for regenerating a spent digestion liquor from a sulfate pulp making process by adding a supplemental liquor, and particularly to a process for easily controlling the liquid composition at any desired level by using a supplementary liquor containing as the main ingredient NaSH in place of Na_2SO_4.

3,677,886
METHOD OF PRODUCING HIGHLY ABSORBENT CELLULOSE
Lars-Henrik Forsblad, Iggesund, and Per Jerkeman, Gavle, Sweden, assignors to Korsnas-Marma Aktiebolag, Gavle, Sweden
No Drawing. Filed Dec. 9, 1969, Ser. No. 883,609
Claims priority, application Sweden, Dec. 27, 1968, 17,816/68
Int. Cl. D21h *3/02*
U.S. Cl. 162—72 4 Claims

Highly absorbent cellulose is produced by adding to the pulp an organic anionic or nonionic agent and a cationic retention agent while regulating the amount of the cationic substance in such a way that the Z-potential of the pulp approaches zero.

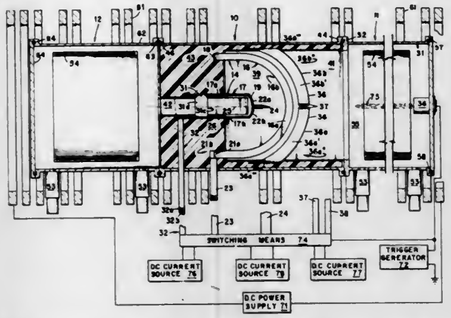
3,677,887
ANTICOUNTERFEIT TICKET
Kenneth P. Rowsam, Monroe, and De Witt M. Yost, Middletown, Ohio, assignors to The Sorg Paper Company, Middletown, Ohio
Continuation-in-part of abandoned application Ser. No. 776,626, Nov. 18, 1968. This application Mar. 31, 1971, Ser. No. 129,910
Int. Cl. D21h *5/10*
U.S. Cl. 162—140 6 Claims

An anticounterfeit ticket formed from a paper sheet which permits the ink used to print the indicia on the ticket at the time it is issued to penetrate completely through the sheet so that the indicia will be readily visible from either side. The sheet is formed from a furnish of 40–75% of a high alpha (92% or more alpha cellulose) pulp and the remainder a chemical wood pulp. The finished sheet has a basis weight of 45–102 lbs. per ream and a caliper of .007 to .012 inch. The sheet contains a size of 5% wax, 73% starch and 22% thermosetting formaldehyde condensation resin which provides an open sheet in which the fibers are interlocked.

3,677,888
MANUFACTURE OF PAPER USING AMPHOTERIC STRENGTHENING AGENTS
Peter Economou, Bedford, Mass., assignor to American Cyanamid Company, Stamford, Conn.
No Drawing. Continuation-in-part of application Ser. No. 546,214, Apr. 29, 1966. This application July 22, 1969, Ser. No. 843,782
Int. Cl. D21h *3/36*
U.S. Cl. 162—164 10 Claims

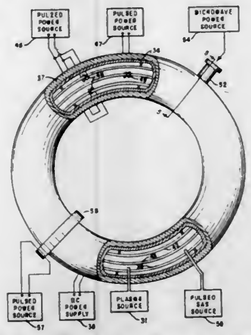
Paper of improved dry strength is obtained when a normally liquid and water-insoluble polysalt coacervate (wherein one of the polymer components is weakly ionic) which has been rendered water-soluble by addition of an ionization suppressor is added to a papermaking fibrous suspension under conditions such that the coacervate is precipitated as colloidal droplets. The droplets are deposited on the fibers, and the fibers are processed into paper in usual manner.

3,677,889
MAGNETIC COMPRESSION CONTROLLED THERMONUCLEAR REACTOR
Frederic H. Coensgen, Pleasanton, and William E. Nexsen, Jr., Danville, Calif., assignors to the United States of America as represented by the United States Atomic Energy Commission
Filed July 8, 1970, Ser. No. 53,056
Int. Cl. G21b *1/00*
U.S. Cl. 176—3 9 Claims



Thermonuclear reactor utilizing a magnetic coil structure including a pair of intermeshed C-shaped electromagnetic coils (Yin-Yang configuration) to produce a magnetic confinement zone. Plasma is produced in a pulsed plasma source and is directed by magnetic fields into the region of said containment zone. A trapping field is produced by means of a second pair of C-shaped electromagnet coils encompassing the first set to trap plasma in said region. The first set of coils is then energized to contain and compress the trapped plasma thereby densifying and heating the plasma to a high temperature.

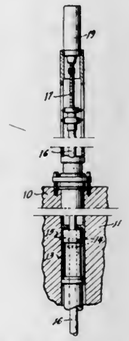
3,677,890
PLASMA HEATING AND DENSIFICATION IN AXISYMMETRIC TOROIDAL PLASMA CONFINEMENT DEVICES
Charles W. Hartman, Alamo, Calif., assignor to the United States of America as represented by the United States Atomic Energy Commission
Filed Apr. 23, 1971, Ser. No. 136,927
Int. Cl. G21b *1/02*
U.S. Cl. 176—5 8 Claims



A two-stage process and apparatus for generating and confining a hot, dense plasma for achieving controlled thermonuclear fusion in an axisymmetric toroidal confinement device by first trapping an electron plasma in a closed minimum-|B| magnetic mirror confining field region of the device and raising some to relativistic temperatures by electron-cyclotron resonance microwave heating,

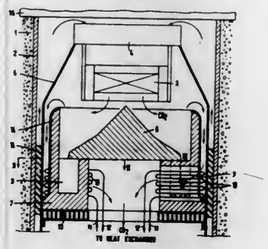
and thereafter injecting a cold dense pulse of neutral gaseous thermonuclear fuel into the confining field region for interaction with the hot electrons therein in a collisional heat transfer mode productive of ion heating to multikev. temperature with a very high plasma density of the order of 10^{13}/cm.^{3} to 10^{14}/cm.^{3}.

3,677,891
ANTIJAM SLIDING SEAL STRUCTURE
Pierre M. Tschamper, Lisle, Ill., assignor to the United States of America as represented by the United States Atomic Energy Commission
Filed June 16, 1971, Ser. No. 153,655
Int. Cl. G21c *7/00*
U.S. Cl. 176—36 R 4 Claims



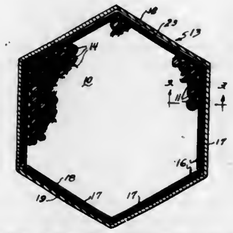
The dynamic seals of a reactor control rod are supported by a collapsible seal tube. If the control rod is frozen to the seals, the force exerted on the control rod by the drive motor is sufficient to cause collapse of the seal tube. As the seal tube collapses, the structure supporting the seals is driven against a striking surface. The impact force developed when the seal support structure hits the striking surface is sufficient to break the control rod loose from the dynamic seals.

3,677,892
COLLECTING DEVICE FOR COOLING REACTOR CORE FRAGMENTS IN A FAST BREEDER REACTOR
Hans-Peter Schabert, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany
Filed May 12, 1969, Ser. No. 823,551
Claims priority, application Germany, May 14, 1968, P 17 64 306.0
Int. Cl. G21c *1/02, 19/32*
U.S. Cl. 176—40 8 Claims



In a fast breeder reactor provided with a substantially downwardly flowing primary gas coolant and having a reactor core and, located therebelow, a device for separating and a device for collecting reactor core fragments dropped from the reactor core, the cooling of nuclear fission fragments by passing the primary coolant of the reactor through the collecting device for cooling the reactor core fragments collected therein.

3,677,893
FUEL ASSEMBLY FOR A LIQUID-METAL-COOLED FAST BREEDER REACTOR
Paul R. Huebotter, Downers Grove, and Thomas R. Bump, Western Springs, Ill., assignors to the United States of America as represented by the United States Atomic Energy Commission
Filed Oct. 29, 1971, Ser. No. 193,952
Int. Cl. G21c *3/32*
U.S. Cl. 176—78 5 Claims



A fuel assembly for a liquid-metal-cooled fast breeder reactor includes a bundle of stainless-steel-clad fuel pins enclosed within a stainless-steel coolant duct with a flow separator being disposed in the annulus between the bundle of fuel pins and the coolant duct. The flow separator is spaced away from the coolant duct to provide a coolant channel adjacent to the coolant duct and includes an inner and an outer wall enclosing a chamber filled with liquid-metal coolant. Imperforate springs extending across the chamber between the inner and outer wall yield when the fuel bundle swells and prevent vertical flow of coolant within the chamber. Flow vents are provided in the outer panel to equalize pressure between the interior of the flow separator and the coolant channel and evacuated insulating spaces containing a single layer of screen wire each are provided in the inner wall of the flow separator.

3,677,894
INTERNALLY PRESSURIZED FUEL ELEMENT
Harry M. Ferrari, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Continuation-in-part of application Ser. No. 706,291, Feb. 19, 1968, which is a continuation-in-part of application Ser. No. 615,542, Feb. 13, 1967. This application Aug. 14, 1969, Ser. No. 850,198
Int. Cl. G21c *3/18*
U.S. Cl. 176—68 10 Claims



A fuel element for a pressurized nuclear reactor comprising a sealed cladding case, nuclear fuel therein and

means for producing an internally pressurized atmosphere so that the fuel element is free standing, and characterized by metal wall cladding having a reduced thickness for conditions of reactor use.

3,677,895
ALKANE UTILIZATION IN FOAM SYSTEM
Saburo Hashimoto, Yorba Linda, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.
Filed Jan. 22, 1970, Ser. No. 5,004
Int. Cl. C12d *13/06*
U.S. Cl. 195—28 R **20 Claims**

A method is described for the culture of microbial cells on hydrocarbons utilizing paraffinic hydrocarbons as the raw material to achieve a highly economic process for the production of protein from hydrocarbons. The culture medium comprises an aqueous foam composition which contains, as the discontinuous gaseous phase, one or both of oxygen and a gaseous hydrocarbon reactant. The culture medium is contained in the continuous aqueous interface surrounding the gaseous reactant in the discontinuous phase. In a typical application, an aqueous medium containing inorganic nutrients, microorganisms, and a foam stabilizer is foamed with methane to provide a foam composition containing approximately 20 volumes methane per liquid volume of the aqueous medium. This foam composition is placed in a fermentation vessel and contacted therein with a vapor stream containing oxygen, e.g., air, for a period of about 1.5 to 5 hours, sufficient to permit the microorganism content of the aqueous medium to approximately double in weight. Alternatively, a similar foam with air in the discontinuous phase is also formed and the two foams are intimately mixed. The foam composition is removed from the fermentation vessel and the bacterial cells are concentrated by various solid-liquid separators and finally dried to recover cellular matter containing approximately 60 percent protein.

3,677,896
PROCESS FOR PREPARING CRYSTALLINE MALTOSE
Masashi Kurimoto, Kaname Sugimoto, and Mamoru Hirao, Okayama, Japan, assignors to Hayashibara Company, Okayama, Japan
No Drawing. Filed Nov. 13, 1969, Ser. No. 876,608
Claims priority, application Japan, Nov. 18, 1968, 43/84,261
Int. Cl. C12b *1/00*
U.S. Cl. 195—31 R **4 Claims**

Process which comprises preparing a high-purity maltose solution by the use of β-amylase for the amylolysis and also α-1,6-glucosidase which can eliminate from starch the α-1,6-glucoside bond that hampers the amylolysis by the action of β-amylase, concentrating the resulting solution to a massecuite containing maltose crystals, and then spraying the massecuite in a drying column to obtain the final product.

3,677,897
LIVE LACTIC ACID BACTERIA CULTURES AND PROCESS OF PRODUCING SAME
George A. Jeffreys, 219 Valleydale Ave., Salem, Va. 24153
No Drawing. Filed Aug. 31, 1970, Ser. No. 68,520
Int. Cl. C12k *3/00*; **A21d** *8/04*
U.S. Cl. 195—55 **22 Claims**

Lactic acid bacteria cultures each comprising a lactic acid bacteria cultured in a nutrient medium, an acetylated monoglyceride coating on said cultured bacteria, and a carrier blended with said coated bacteria, said carrier selected from a group consisting of glucose, modified cellulose, and modified starches.

3,677,898
ACID PROTEASE AND METHOD OF PREPARING THE SAME
Koji Mitsugi, Takashi Nakase, and Yoshisuke Hasegawa, Kanagawa-ken, Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan
No Drawing. Filed Jan. 27, 1970, Ser. No. 6,276
Claims priority, application Japan, Jan. 31, 1969, 44/7,175
Int. Cl. C12d *13/10*
U.S. Cl. 195—62 **7 Claims**

An acid protease which is not inactivated by sodium lauryl sulfate and is stable at 50° C. at pH 1.5 to 6.0 for two hours can be recovered from media on which certain yeasts of the genus Rhodotorula weer cultured. It is useful in the hydrolysis of soybean protein and of other proteins.

3,677,899
PROCESS FOR PRODUCING CELLULASE
Masanobu Kawai, Tokyo-to, Japan, assignor to Kyowa Hakko Kogyo Kabushiki Kaisha, Tokyo-to, Japan
No Drawing. Filed Jan. 21, 1970, Ser. No. 4,733
Claims priority, application Japan, Feb. 3, 1969, 44/7,275
Int. Cl. C12d *13/10*
U.S. Cl. 195—66 R **4 Claims**

A novel cellulase is prepared by cultivating a wood decaying microorganism of the genera Lampteromyces or Formitopsis in a nutrient medium and recovering the cellulase from the medium. The cellulase so produced has high C_1 and CMC-ase activity at a low optimum pH.

3,677,900
METHOD OF PRODUCING COLLAGENASE WITH A SPECIES OF VIBRIO
Joseph R. Merkel, Emmaus, Pa., assignor to Lehigh University, Bethlehem, Pa.
Filed May 4, 1970, Ser. No. 34,178
Int. Cl. C12d *13/10*; **A61k** *19/00*
U.S. Cl. 195—66 R **23 Claims**

Collagenases or collagenolytic enzymes active against several preparations of Achilles tendon collagen, calfskin collagen and synthetic peptides which are normally attacked by *Clostridium histolyticum* collagenase are prepared by culturing certain marine bacteria, particularly species of Vibrio, Aeromonas and Pseudomonas.

3,677,901
PROCESS FOR THE PRODUCTION OF GLYCEROKINASE
Hans Ulrich Bergmeyer and Gotthilf Naher, Tutzing, Waldemar Thum, Tutzing-Unterzeismering, and Albert Lauerer and Rudolf Emmer, Tutzing, Germany, assignors to Boehringer Mannheim GmbH, Mannheim-Waldhof, Germany
No Drawing. Filed Sept. 9, 1970, Ser. No. 70,927
Claims priority, application Germany, Sept. 11, 1969, P 19 46 137.1
Int. Cl. C07g *7/028*
U.S. Cl. 195—66 R **17 Claims**

Glycerokinase is obtained in high yield and in stable form from micro-organisms by digesting dried micro-organisms by high pressure dispersion, subsequently subjecting same to a protamine precipitation, separating the precipitate formed and working up the filtrate in known manner with the use of an anion exchanger based on cellulose or dextran.

3,677,902
PREPARATION OF AMYLOGLUCOSIDASE
Knud Aunstrup, Hvidovre, Denmark, assignor to Novo Terapeutisk Laboratorium A/S, Copenhagen, Denmark
No Drawing. Filed June 21, 1966, Ser. No. 559,085
Claims priority, application Great Britain, July 7, 1965, 28,903/65
Int. Cl. C12d *13/10*
U.S. Cl. 195—66 R **4 Claims**

A process of producing amyloglucosidase free of any detectable amounts of transglucosidase wherein a strain of *Aspergillus niger* v. Tieghem selected from the group CBS No. 262.65, CBS No. 263.65 and CBS No. 103.66 or a natural or artificial mutant or variant thereof is subjected to submerged growth in a nutrient medium.

3,677,903
DETERMINATION OF URICASE ACTIVITY
Donald L. Bittner, P.O. Box 18007, San Francisco, Calif. 94118
Filed May 19, 1969, Ser. No. 825,678
Int. Cl. G01n *31/14*
U.S. Cl. 195—103.5 R **6 Claims**

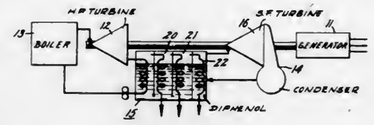
A method for determining the extent of oxidative activity of the enzyme uricase on human serum and other biological fluids, useful for analyzing the presence and amount of uric acid. Uricase is added to the serum or other fluid in quantities and in a buffer system suitable for digestion of substantially all uric acid present. At the same time, the enzyme catalase is added to destroy any hydrogen peroxide generated as a by-product in the urate oxidation by uricase. A color indicator sensitive to the presence and amount of oxidizing and reducing substances is added before and after the uricase digestion, and the colorimetric differential between the samples provides a measure of the uricase activity.

3,677,904
PETRI DISH INCLUDING A CHAMBER FOR A STERILIZED SPECIMEN-SPREADING ELEMENT AND PROCESS FOR USING THE PETRI DISH
James E. Fitzgerald, Hawthorne, Calif., assignor to North American Rockwell Corporation
Filed Nov. 20, 1969, Ser. No. 878,479
Int. Cl. C12k *1/00*
U.S. Cl. 195—103.5 R **12 Claims**

A petri dish is provided with a separate chamber for a sterilized ball. Prior to use, an agar layer is deposited in the dish and a specimen sample, to be spread on the layer, is placed in the chamber with the ball. A magnet is positioned over the chamber for pulling the ball covered by a film of the specimen from the chamber. The magnet places the ball and specimen at a predetermined location on the agar layer. The dish is rotated relative to the ball for spreading the specimen in a non-overlapping pattern on the agar surface. Afterwards, the ball is returned to the chamber and the agar layer is processed to incubate the micro-organisms of the specimen.

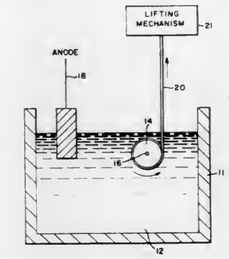
3,677,905
COMBINED STEAM POWER PLANT AND WATER DISTILLATION SYSTEM
Dale H. Brown, Scotia, N.Y., assignor to General Electric Company
Filed May 6, 1970, Ser. No. 35,208
Int. Cl. B01d *3/02*
U.S. Cl. 202—172 **2 Claims**

A combined steam power plant and water distillation system is disclosed wherein the distillation system is located between the first and last stages of the steam turbine used in the power plant. The distillation system does not fully cool the steam; rather, the steam is returned to the last turbine stage where it does work and produces power as it expands to the conventional turbine condenser pressure. In an alternate embodiment, the last stage of the turbine is a secondary fluid turbine. In this embodiment, the secondary fluid, which has a greater vapor density



than steam at the relatively low temperature of the last stage, is vaporized by the last condensation stage of the distillation system.

3,677,906
METHOD AND APPARATUS FOR PRODUCING THIN COPPER FOIL
Chih-Chung Wang, Lexington, Mass., assignor to Kennecott Copper Corporation, New York, N.Y.
Filed Dec. 17, 1970, Ser. No. 99,035
Int. Cl. C23b *7/02*; **B01k** *1/00*
U.S. Cl. 204—13 **7 Claims**



A process and apparatus for producing thin copper foils by electroplating the copper onto a rotating drum which is connected as a cathode. The surface of the rotating drum is rhenium.

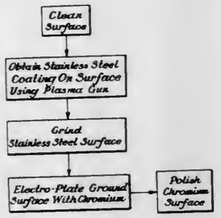
3,677,907
CODEPOSITION OF A METAL AND FLUOROCARBON RESIN PARTICLES
Henry Brown, Huntington Woods, and Thaddeus W. Tomaszewski, Dearborn, Mich., assignors to The Udylite Corporation, Warren, Mich.
No Drawing. Filed June 19, 1969, Ser. No. 834,908
Int. Cl. C23b *5/48, 5/20*
U.S. Cl. 204—16 **18 Claims**

Fine particles of fluorocarbon resins such as Teflon particles can be readily codeposited with metals when they are dispersed in aqueous plating baths, when there is also precent in the baths a fluorocarbon surfactant such as perfluoro n-octanoic acid, perfluoro n-octyl sulfonic acid, perfluoro p-ethyl cyclohexyl sulfonic acid, or their salts. Such 2-phase composite plates have good anti-seizing and anti-friction properties.

3,677,908
METAL PLATING PRODUCT AND PROCESS
Robert J. Sperl, 2319 Pennsylvania Ave., Wilmington, Del. 19806
Filed Nov. 12, 1970, Ser. No. 88,936
Int. Cl. C23b *5/06, 5/48*; **C23c** *11/00*
U.S. Cl. 204—38 B **6 Claims**

An aluminum article may be provided using electroplating with a continuous, hard, abrasive resistant surface

by first cleaning the article and roughening its surface and then plasma-plating the roughened surface with a metal compatible to electroplating, such as stainless steel, and coating the final steel surface with chromium using the conventional electroplating techniques to produce the



finished product. The product thus created can be used in dynamic systems using far less motive power and lower bearing loads than would otherwise be required when using articles made from conventional, heavier ferrous or non-ferrous materials.

3,677,909

PALLADIUM-NICKEL ALLOY PLATING BATH

Katsumi Yamamura, 28 Fukushima-Danchi, Suwa-shi, Nagano-ken, Japan; Tsugumitsu Miyasaka, 5892 Takei, Shimosuwa-machi, Suwa-gun, Nagano-ken, Japan; Shinichi Hayashi, 17–10, 5-chome, Forikiri, Katsushika-ku, Nagano-ken, Tokyo, Japan; Masao Yamamoto, 1148 Osato, Koshigaya-shi, Saitama-ken, Japan; and Yukio Matsubara, 6 Sekiya-cho, Senju, Adachi-ku, Tokyo, Japan

No Drawing. Continuation-in-part of application Ser. No. 695,576, Jan. 4, 1968, now Patent No. 3,580,820. This application Apr. 22, 1971, Ser. No. 136,588
Claims priority, application Japan, Jan. 11, 1967, 42/1,868
Int. Cl. C23b 5/32, 5/46
U.S. Cl. 204—43 3 Claims

A palladium-nickel alloy plating bath is formed of a solution of a palladium salt and a nickel salt in ammonia, and a brightener in the nature of a sulfonamide is added to the bath in which a metal is plated for approximately 30 minutes at a pH between 7 and 10, temperature between 15° C. and 40° C., and a cathode current density of 0.5 to 1.5 a./dm.² without agitation.

3,677,910

TIN-PLATING METHOD AND ELECTROLYTE

Wilfred Pickles, Hazel Grove, Stockport, England, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Filed Mar. 6, 1969, Ser. No. 804,982
Claims priority, application Great Britain, Mar. 9, 1968, 11,614/68
Int. Cl. C23b 5/14, 5/46
U.S. Cl. 204—54 R 12 Claims

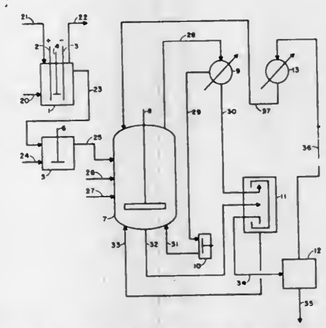
A method of tin-plating is disclosed which comprises electrodepositing, on a surface to be plated, tin from an acid plating bath containing a condensation product of phenol and aliphatic polyol containing from 2 to 8 hydroxyl groups, at least one of which hydroxy groups pertains preferably to a divalent hydroxy methylene group, the number of carbon atoms of the polyol varying preferably from 3 to 12 carbon atoms. Use of ethylene oxide addition products of said condensation products and sulfated derivatives of said condensation products and said ethylene oxide addition products is also disclosed.

3,677,911

CATALYST FOR POLYMERIZATION OF OLEFINIC COMPOUNDS

Edward H. Mottus, Ballwin, and Morris R. Ort, Kirkwood, Mo., assignors to Monsanto Company, St. Louis, Mo.

Application Mar. 2, 1967, Ser. No. 621,036, which is a continuation-in-part of application Ser. No. 539,662, Apr. 4, 1966. Divided and this application Mar. 10, 1970, Ser. No. 23,110
Int. Cl. B01k 3/00
U.S. Cl. 204—59 QM 17 Claims



An electrolytic process is described for making certain bis-(halometal)methanes such as bis(dichloroaluminum) methane, $Cl_2AlCH_2AlCl_2$, which is a new compound, and these compounds can be combined with transition metal compounds such as $VOCl_3$ to make very active catalysts for polymerizing olefinic compounds such as ethylene. In the electrolytic process boron, a Group II, Group III–A or Group IV–A metal, e.g., aluminum, is used as an anode with an electrolyte such as $HOAlCl_2$ in the presence of a methylene dihalide such as CH_2Cl_2 or a gem dihalide which does not readily dehydrohalogenate or alkylate. It is preferred to carry out the electrolysis in the presence of ethylene or another olefinic compound to promote conductivity. Also, it is preferred that all reactants be substantially free of water, except for small known amounts of water which may be added to promote electrolysis. Also, it is preferred to blanket the electrolysis with ethylene which also serves to promote conductivity, or an inert gas to exclude moisture, oxygen and other undesirable materials. The catalysts polymerize olefinic compounds to liquid or solid polymers depending on the particular catalyst used and the olefin being polymerized. The catalysts are promoted or modified by small amounts of water or other electron donor compounds.

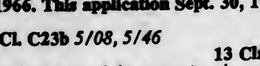
3,677,912

NICKEL ELECTROPLATING AND ELECTROLYTES THEREFOR

Frank Passal, Detroit, Mich., assignor to M & T Chemicals Inc., Greenwich, Conn.

No Drawing. Continuation-in-part of application Ser. No. 587,393, Oct. 18, 1966. This application Sept. 30, 1970, Ser. No. 76,987
Int. Cl. C23b 5/08, 5/46
U.S. Cl. 204—49 13 Claims

In accordance with certain of its aspects, the novel process of this invention for electroplating nickel may comprise electrodepositing nickel from an aqueous nickel electroplating bath containing (a) as a first primary brightener an effective amount of a water-soluble acetylenic compound, and (b) as a second primary brightener, an effective amount of a compound having as cation:



(I)

wherein

is a pyridine, quinoline, or isoquinoline nucleus; *a* is 0–5; A is —CX=CHX or —C≡CH; X is an active halide; and R* is a substituent selected from the group consisting of alkyl, preferably having 1–4 carbon atoms, hydroxy-alkyl preferably having 1–4 carbon atoms, halogen, alkoxy, carboxyl, carbalkoxy, acetyl, benzyl, sulfo, carboxamido, and cyano.

3,677,913

NICKEL PLATING

Frank Passal, Detroit, Mich., assignor to M & T Chemicals, Inc., Greenwich, Conn.

No Drawing. Filed Apr. 1, 1971, Ser. No. 130,479
Int. Cl. C23b 5/08, 5/46
U.S. Cl. 204—49 12 Claims

The novel process of this invention for electroplating a semi-bright sulfur-free, nickel plate onto a basis metal comprising passing current from an anode to a basis metal cathode through an aqueous acidic nickel plating solution containing at least one nickel compound providing nickel ions for electroplating of nickel, and including as cooperating semi-bright additives: (a) the aliphatic acetylenic compound 3-hexyne-2,5-diol, and (b) a compound containing an oxyomegasulfohydrocarbon-di-yl coumarin anion wherein the hydrocarbon - di - yl moiety contains at least two carbon atoms and wherein the oxyomegasulfohydrocarbon-di-yl group is substituted on the carbocyclic nucleus of the coumarin group.

3,677,914

PROCESS FOR THE MANUFACTURE OF BUTADIENE DERIVATIVES

Hans Schaefer, Eddigehausen, Germany, assignor to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Filed Aug. 24, 1970, Ser. No. 66,573
Claims priority, application Germany, Sept. 1, 1969, P 19 44 278.5
Int. Cl. C09b 29/06
U.S. Cl. 204—59 R 8 Claims

Process for the manufacture of butadiene derivatives by the electrolysis of olefinically unsaturated compounds of the general formula:



where R stands for an aromatic radical and R^1 for an aliphatic radical, in the presence of lower aliphatic alcohols and an electrolyte salt, graphite electrodes being used for effecting the electrolysis.

3,677,915

PRODUCTION OF OCTADIENE AND DODECATRIENES

Hans Schaefer, Eddigehausen, Germany, assignor to Badische Anilin- & Soda-Fabrik, Aktiengeselischaft, Ludwigshafen am Rhine, Germany

No Drawing. Filed Aug. 26, 1970, Ser. No. 67,225
Claims priority, application Germany, Sept. 1, 1969, P 19 44 279.6
Int. Cl. C07b 29/06
U.S. Cl. 204—59 R 8 Claims

Production of octadienes and dodecatrienes by electrolysis of a butadiene in the presence of a lower aliphatic alcohol and an electrolyte salt using graphite electrodes.

3,677,916

ELECTROLYTIC REDUCTION OF 1,2,3,4-TETRACHLOROBENZENE TO OBTAIN 1,2,4-TRICHLOROBENZENE

James N. Seiber, Davis, and Robert R. Stringham, Concord, Calif., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Mar. 11, 1971, Ser. No. 123,464
Int. Cl. C07b 29/06; C07c 17/00, 25/10
U.S. Cl. 204—59 R 6 Claims

1,2,3,4 - tetrachlorobenzene is electrolytically reduced to obtain 1,2,4-trichlorobenzene.

3,677,917

ELECTRODE COATINGS

Aleksandrs Martinson, Wadsworth, Ohio, assignor to PPG Industries, Inc., Pittsburgh, Pa.

No Drawing. Filed Sept. 8, 1970, Ser. No. 70,507
Int. Cl. B01r 3/04; C01d 1/08
U.S. Cl. 204—99 7 Claims

Electrocatalytic surfaces suitable for use as anodes in the electrolysis of aqueous alkali metal chlorides are prepared by coating a substrate with a palladium oxide surface containing a film-forming metal oxide, small quantities of an oxide of a second platinum group metal, and an oxide of an iron group metal. The resulting electrodes have a low overvoltage and are long lived in the electrolytic cell environment.

3,677,918

METHOD FOR DIRECTLY ELECTROCHEMICALLY EXTRACTING GALLIUM FROM A CIRCULATING ALUMINATE SOLUTION IN THE BAYER PROCESS BY ELIMINATING IMPURITIES

Shigenobu Miyake, Tokyo, Japan, assignor to Chuo Tatemono Co., Ltd., Tokyo, Japan

No Drawing. Filed Sept. 18, 1969, Ser. No. 859,202
Claims priority, application Japan, Oct. 21, 1968, 43/76,661; Jan. 21, 1969, 44/4,313
Int. Cl. C22d 1/00
U.S. Cl. 204—105 R 7 Claims

Gallium is electrochemically recovered from a circulating aluminate solution in the Bayer process for producing alumina directly without any precipitate formation, filtration and redissolution for the purpose of changing the concentration of major component. Gallium is electro-deposited at cathode surface when the solution is used as an electrolyte.

3,677,919

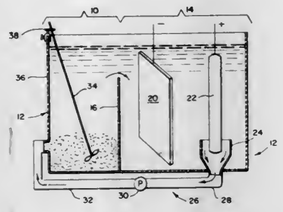
ELECTROLYTIC PROCESS AND APPARATUS FOR RECOVERING NICKEL FROM ASBESTOS ORE

Richard Payson Fowler, Somerville, N.J., assignor to Johns-Manville Corporation, New York, N.Y.

Filed Nov. 23, 1970, Ser. No. 91,835
Int. Cl. C22d 1/14; C23b 5/08
U.S. Cl. 204—113 5 Claims

Nickel is leached from asbestos ore material by a solution of iodine in a liquid solvent for iodine, such as methyl alcohol. Direct current is applied to the resulting nickel containing solution to deposit a nickel compound onto the cathode of an electrolytic cell where it can be collected, and to deposit iodine molecules at the anode. The deposited iodine molecules redissolve in the solvent solution to form a heavy fraction which can be withdrawn from the electrolytic cell and reused in the leaching step. Apparatus is provided for recovering nickel from a finely divided asbestos ore material feed in accordance with the invention. The apparatus includes a leaching vessel containing a solution of iodine in a solvent, an electrolytic cell, conduit means connecting the electrolytic cell and the leaching vessel, collection means posi-

tioned below the anode of the electrolytic cell for recovering an iodine-rich solution from the electrolytic cell



and recycle conduit means for recycling the iodine-rich solution to the leaching vessel.

3,677,920

PHOTOPOLYMERIZABLE DIISOCYANATE MODIFIED UNSATURATED POLYESTER CONTAINING ACRYLIC MONOMERS

Tsunetoshi Kai and Takeaki Hagihara, Asaka-shi, Saitama-ken, and Teruhisa Ishido, Tokyo, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

No Drawing. Filed June 23, 1969, Ser. No. 835,726
Claims priority, application Japan, July 6, 1968, 43/46,991
Int. Cl. C08d 1/10; C08f 1/10
U.S. Cl. 204—159.15 14 Claims

A photopolymerizable composition comprising:

(I) A diisocyanate modified unsaturated polyester prepared by reacting a diisocyanate with an unsaturated polyester at a mol ratio of 1:2 to 1:1, said unsaturated polyester having terminal groups selected from carboxyl and hydroxy groups, having an average molecular weight of about 2,000 to 50,000, and containing about 1×10^{-4} to 2×10^{-3} mole of ethylenic unsaturation per gram of the unsaturated polyester,

(II) About 10 to 80 weight percent, based upon the total weight of the composition, of at least one ethylenically unsaturated monomer, different from the unsaturated polyester, which is addition-copolymerizable with the diisocyanate modified unsaturated polyester (I); and

(III) About 0.001 to 10 weight percent, based upon the total weight of the composition, of a photopolymerization initiator. This photopolymerizable composition is especially effective for the production of a variety of laminated articles and flexographic printing plates among a variety of image-making articles.

3,677,921

POLY(1,12 - DODECAMETHYLENE PYROMELLITIMIDE) AND POLY(1,13-TRIDECAMETHYLENE PROMELLITIMIDE) AND RADIATION-CROSSLINKED PRODUCTS THEREOF

Edward C. Stivers, Atherton, Calif., assignor to Raychem Corporation, Menlo Park, Calif.

No Drawing. Continuation-in-part of application Ser. No. 760,659, Sept. 18, 1968. This application Oct. 29, 1970, Ser. No. 85,272
Int. Cl. C08g 20/32
U.S. Cl. 204—159.19 15 Claims

Thermoplastic polyimides derived from straight chain alkylene diamines and pyromellitic anhydride are prepared and fabricated into useful articles, e.g., wire insulation and film for use as a base for printed circuits. The polyimides can be crosslinked to improve their high temperature properties.

3,677,922

POLYMERIZATION OF TETRAOXANE IN THE PRESENCE OF AN ACETAL AND A SULFUR INITIATOR

Akihiko Ito and Yoshiaki Nakase, Takasaki, Katsumi Kojima, Oimachi, Masaru Yoshida, Takasaki, Tadashi Iwai, Kanagawa-ken, Koichiro Hayashi, Sapporo, and Seizo Okamura, Kyoto, Japan, assignors to Japan Atomic Energy Research Institute, Tokyo, Japan

No Drawing. Filed June 19, 1970, Ser. No. 47,866
Claims priority, application Japan, June 20, 1969, 44/48,285
Int. Cl. C08d 1/00; C08f 1/16, 3/40
U.S. Cl. 204—159.21 21 Claims

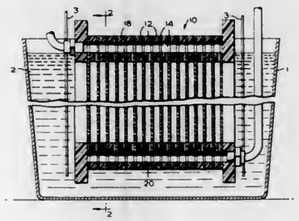
A thermally stabilized oxymethylene polymer is obtained by polymerizing tetraoxane in the presence of an acetal and a polymerization initiator selected from the group consisting of sulfur and an organic sulfur compound. Irradiation by an ionizing radiation or an actinic light can advantageously be employed in the polymerization. Said thermal stability is further improved, when tetraoxane is polymerized by using a specific combination of an acetal such as methylal, ethylal, 1,3-dioxolane, 1,3-dioxane, etc. and an initiator such as thiiranes, thiocyanates, isothiocyanates, ethylenethiourea, trithianoxides, etc.

3,677,923

ELECTROOSMOTIC AND ELECTRODIALYSIS CONCENTRATION, PURIFICATION, AND DESALTING

Milan Bier, 5341 E. 7th St., Tucson, Ariz. 85711

Filed Apr. 15, 1968, Ser. No. 721,296
Int. Cl. B01d 13/02; B01k 5/00
U.S. Cl. 204—180 P 15 Claims



Hog cholera serum and its fractions, and generally aqueous colloidal solutions and suspensions are concentrated, purified, and/or desalted by subjecting them to electroosmosis against an aqueous suspension containing a polyionic substance.

3,677,924

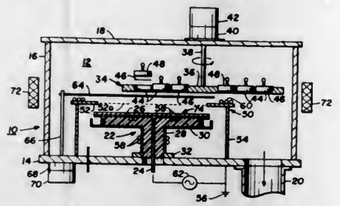
RF SPUTTERING METHOD

John H. Cash, Jr., Richardson, and James A. Cunningham, Dallas, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Original application June 5, 1967, Ser. No. 643,613, now Patent No. 3,528,906, dated Sept. 15, 1970. Divided and this application Mar. 13, 1970, Ser. No. 24,410
Int. Cl. C23c 15/00
U.S. Cl. 204—192 5 Claims

A method and system for RF sputtering thin conducting and thin insulating films on a semiconductor substrate using a first electrode for supporting a source material and an apertured second electrode. The RF voltage is applied across the first and second electrodes. The substrate is supported by a third electrode and exposed to atoms sputtered from the source which pass through the apertured second electrode. The third electrode may be at the same potential as the second electrode, or at a different potential to carry out bias sputtering. The system includes multiple pairs of first and second electrodes for multiple film deposition without breaking vacuum and a rotating

third electrode which moves the substrates past the apertures in the second electrodes during sputtering to eliminate shadowing and to further enhance cooling. A shutter is provided to prevent crosscontamination of the idle sources and the film being deposited on the substrate.

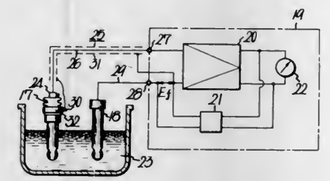


3,677,925

APPARATUS FOR MEASURING pH

Tokutaro Tamate, Eiichi Yagi, and Hisayuki Ikeda, Tokyo, Japan, assignors to Kabushikikaisha Yokogawa Denki Seisakusho, Tokyo, Japan

Filed July 22, 1970, Ser. No. 57,163
Int. Cl. G01n 27/36
U.S. Cl. 204—195 R 3 Claims



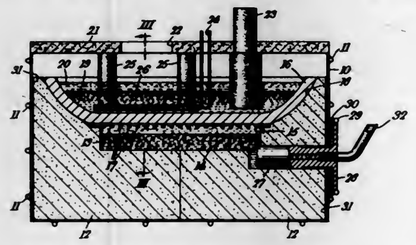
A glass electrode having support tube means, an inner electrode disposed therein, a cap formed of an insulating material and fixed on the top of the support tube means, a glass electrode terminal provided on the cap and connected with the inner electrode, a guard ring fixed on the periphery of the cap and a guard ring terminal, in which a negative feedback voltage from a negative feedback amplifier is impressed to the guard terminal, the negative feedback amplifier amplifying a signal derived at the glass electrode terminal.

3,677,926

CELL FOR ELECTROLYTIC REFINING OF METALS

Walter Dennis Davis, Uxbridge, England, assignor to Associated Lead Manufacturers Limited, London, England

Filed June 16, 1970, Ser. No. 46,659
Int. Cl. C22d 3/02, 3/20
U.S. Cl. 204—243 R 6 Claims



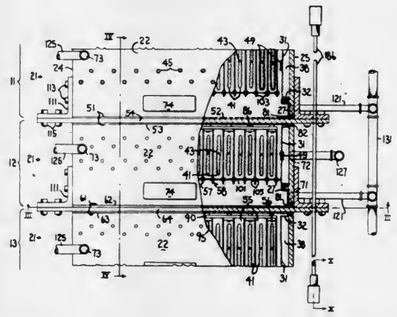
A fused salt cell for the electrolytic refining of metals, having a lower molten metal cathode, an upper molten metal anode, a flux-impregnated porous diaphragm disposed beneath and in contact with the anode and a layer of molten flux on top of the anode.

3,677,927

ELECTROLYZER

Carl W. Raetzsch and Hugh Cunningham, Corpus Christi, Tex., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Nov. 23, 1970, Ser. No. 91,911
Int. Cl. B01k 3/10
U.S. Cl. 204—258 8 Claims



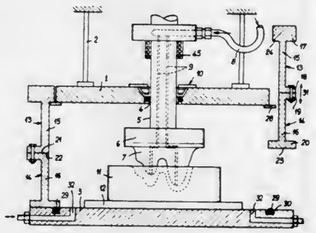
An electrolyzer for the electrolysis of brine is disclosed. The electrolyzer comprises a plurality of electrolytic cells mechanically and electrically connected in series. The cathodes of any individual cell in the electrolyzer are fingers connected to opposite interior surfaces of the cell. The anodes are blades mechanically connected to the back wall of the cell and electrically connected to the cathodes of the prior cell in the circuit.

3,677,928

MACHINE FOR ELECTROCHEMICALLY MACHINING WORKPIECES

Jean Fleury, Billancourt, France, assignor to Regie Nationale des Usines Renault, Billancourt, France

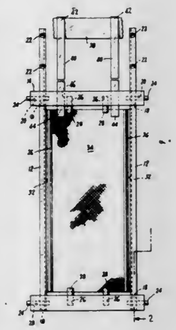
Filed July 20, 1970, Ser. No. 56,473
Claims priority, application France, Aug. 19, 1969, 6928435
Int. Cl. B23p 1/04, 1/12
U.S. Cl. 204—224 10 Claims



A machine for electrochemically shaping workpieces, of the type comprising a vertical tool-electrode and a pressure chamber comprising a base member carrying the workpiece and a tool holder having formed therein at least one axial electrolyte passage duct, characterized in that the pressure chamber comprises a fixed roof formed with a central opening provided with a seal for the fluid-tight passage of a tool-holder sliding column and a vertically movable lateral wall surrounding said roof, said

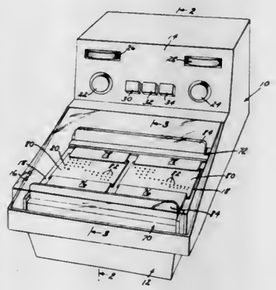
tool-electrode and said workpiece, means for sealing the joints on the one hand between the upper portion of said lateral wall and the outer edge of said roof, and on the other hand between the lower portion of said lateral wall and said base member.

3,677,929
ADJUSTABLE FRAME FOR THIN SHEET ELECTRODES
George Ralph Young, Jr., Woodbury, Conn., assignor to American Chemical & Refining Company Incorporated, Waterbury, Conn.
Filed Aug. 19, 1970, Ser. No. 65,117
Int. Cl. B01r *3/04; C23b 5/74*
U.S. Cl. 204—286 **12 Claims**



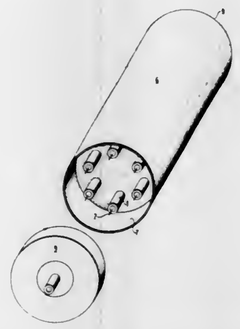
An electrode assembly includes an adjustable frame having a thin sheet electrode mounted therewithin. The frame comprises parallel side bars and end members extending therebetween, with at least one of the end members being slidably engageable with the side bars to vary the area defined within the frame. An electrically conductive connector is provided on the electrode for connection to a current source, and means is included to support the assembly within a plating tank.

3,677,930
ELECTROPHORESIS TESTING APPARATUS
Alex Meshbane, Syosset, and Frank Vilardi, Nesconset, N.Y., assignors to Savant Instruments, Inc., Hicksville, N.Y.
Filed Nov. 5, 1970, Ser. No. 87,169
Int. Cl. B01k *5/00*
U.S. Cl. 204—299 **12 Claims**



A high voltage thermoelectrically cooled electrophoresis testing apparatus utilizing flat plate electrophoresis. The apparatus is an integrated unit including a high voltage supply, flat plate electrophoresis system and a thermoelectric cooler. These elements are combined in a single housing and may be used for immunoelectrophoresis and gel, paper, and thin layer electrophoresis.

3,677,931
CORONA CELL FOR NITROGEN AND OTHER REACTIONS
Louis Richard O'Hare, 2700 Indiana NE., Albuquerque, N. Mex. 87110
Filed Mar. 30, 1970, Ser. No. 33,831
Int. Cl. B01k *1/00*
U.S. Cl. 204—312 **3 Claims**



A concentric-electrode type of electric chemical reactor cell using high voltages of A.C. current between a central wire and an outer insulated metallic cylinder, such as in an ozone generator, is adapted for achieving higher energy gas state chemical reactions by the use of higher voltages and fields thereby producing chemically reactive ionized species which are unattainable and undesirable from the standard ozone generator. The A.C. voltage between the electrodes is provided with a D.C. bias of such amplitude as to insure periods of time when there is a greater number of ions in the cell having a charge that is of the same electric sign as the sign on the central ionizing wire for the chemical advantage of reacting that ionized species when the reacting species is more chemically reactive in its ionized form than in its electrically neutral form, and finally the capacitive reactance of the cell is made part of a resonant circuit with the secondary of the current supply transformer to insure a favorable power factor and efficient operation.

3,677,932
MOLTEN SALT HYDROCONVERSION PROCESS
Donald E. Hardesty and Thomas A. Rodgers, La Porte, Tex., assignors to Shell Oil Company, New York, N.Y.
No Drawing. Continuation-in-part of application Ser. No. 764,917, Oct. 3, 1968. This application Mar. 12, 1971, Ser. No. 123,827
Int. Cl. C10g *13/08, 23/02, 29/12*
U.S. Cl. 208—108 **5 Claims**

A new hydroconversion catalyst system comprising molten zinc halide in admixture with a modifying molten salt, such as an alkali metal halide, which markedly reduces the solubility of hydrocarbons in the salt melt, lowers salt viscosity and reduces tendency to foaming, all these changes in salt property being especially advantageous for practical applications in continuous hydrocarbon conversion processes.

3,677,933
MOLYBDENUM-ANTIMONY CATALYSTS FOR HYDROCARBON TREATING
Marvin M. Johnson and Donald C. Tabler, Bartlesville, Okla., assignors to Phillips Petroleum Company
No Drawing. Filed Sept. 8, 1970, Ser. No. 70,503
Int. Cl. C10g *13/02, 13/04*
U.S. Cl. 208—109 **9 Claims**

Hydrocarbons are hydrocracked and desulfurized by contacting with supported molybdenum-antimony catalysts.

3,677,934
PROCESS FOR PREPARING PURIFIED LINEAR ALKYLATE BOTTOM
Kanji Majima and Goro Morita, Wakayama-shi, Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan
No Drawing. Filed Mar. 6, 1969, Ser. No. 804,999
Int. Cl. C10g *21/02*
U.S. Cl. 208—323 **2 Claims**

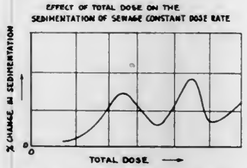
An oil soluble alkylarylsulfonate is prepared by sulfonating a linear alkylate bottom with either

(a) 1.2—2 moles of SO_3, or
(b) 3—10 moles of fuming sulfuric acid

per one mole of the linear alkylate bottom based on the average molecular weight thereof. The reaction mixture is then dissolved in a mineral oil, is washed with sulfuric acid and then is neutralized.

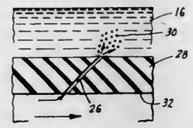
A linear alkylate bottom is treated to remove highly unsaturated hydrocarbons by dissolving the linear alkylate bottom in a nonpolar solvent and then subjecting the resulting solution to countercurrent extraction using a polar solvent.

3,677,935
TREATMENT OF SEWAGE
Hal R. Spragg, Phoenix, Ariz., assignor to the United States Atomic Energy Commission
Filed May 4, 1964, Ser. No. 364,376
Int. Cl. C02c *1/02*
U.S. Cl. 210—3 **5 Claims**



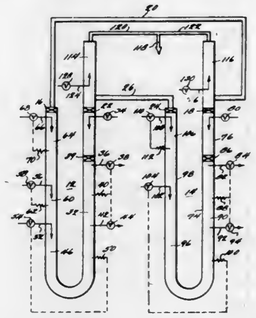
A method of treating sewage by irradiationg it with 10^3 to 10^6 rad of ionizing radiation from X-ray or gamma ray sources, thereby increasing the sedimentation rate of the sewage and degrading organic sewage components, especially synthetic detergents. Radioactive isotopes are the preferred sources of the ionizing radiation.

3,677,936
LIQUID TREATMENT METHOD
Abraham G. Bastiaanse, 162 Main St., Unionville, Conn. 06085
Filed Mar. 10, 1971, Ser. No. 122,749
Int. Cl. C02c *1/02*
U.S. Cl. 210—15 **3 Claims**



A system for treating liquid bodies with a gas employs a diffusion member that comprises a hose of relatively resilient material having formed therein a multiplicity of minute, normally closed perforations. The perforations extend through the wall of the hose at an angle that is at least 25 degrees from normal to the surface thereof, and they are produced with the removal of substantially no material.

3,677,937
SPLIT LOOP CONTACTOR
Irwin R. Higgins and Jack D. Ferner, Oak Ridge, Tenn., assignors to Chemical Separations Corporation, Oak Ridge, Tenn.
Filed Feb. 10, 1970, Ser. No. 10,208
Int. Cl. B01d *15/02*
U.S. Cl. 210—19 **3 Claims**



A continuous cyclic process for contacting ion exchange resin with two or more liquids in a plurality of serially connected U-shaped columns includes introducing a first liquid into a first U-shaped column loop whereupon a component thereof is absorbed on the ion exchange resin therein. A second liquid is introduced into a second column which contains a portion of the ion exchange resin previously contained in the first column loop serially connected therewith, said portion of the ion exchange resin having absorbed thereon the component from said first liquid. The second liquid has a first component exchangeable with the component from the first liquid on the ion exchange resin and a second component combinable with the component from the first liquid which is released from the ion exchange resin during the exchange. A product which is the combination of the second component of the second liquid and the released component of the first liquid is then removed from the second column loop.

3,677,938
CHROMATOGRAPHIC SEPARATION WITH POROUS SILICA
Madeleine A. Le Page, Paris, and Albert J. de Vries, Chevilly-la-Rue, France, assignors to Produits Chimiques Pechiney-Saint-Gobain, Chateau Neuilly-sur-Seine, France
No Drawing. Continuation-in-part of application Ser. No. 616,463, Feb. 16, 1967. This application Mar. 18, 1970, Ser. No. 20,849
Claims priority, application France, Feb. 24, 1966, 50,950
Int. Cl. B01d *15/08*
U.S. Cl. 210—31 **13 Claims**

This invention is addressed to the chromatographic separation process using columns filled with porous silica particles in which the porous silica particles are formed by calcination of silica gel at temperatures within the range of 400–1000° C. with the silica gel containing foreign atoms such as alkali metal cations and acidic anions such as sulfur, etc.

3,677,939
PROCESS FOR THE USE OF VERMICULITE IN WASTE WATER RENOVATION

Arvind S. Patil, 710 Roeder Road, Silver Spring, Md. 20910; John W. Icraus, 3715 Prosperity Ave., Fairfax, Va. 22030; and Jacob Block, 14112 Parkvale Road, Rockville, Md. 20852

No Drawing. Original application Mar. 26, 1968, Ser. No. 715,951. Divided and this application Oct. 30, 1970, Ser. No. 85,719
Int. Cl. B01d *15/00*
U.S. Cl. 210—36 5 Claims

Vermiculite, after having been chemically treated, has enhanced absorptive and coagulative properties, and can be used to remove contaminants occurring in waste waters by removing phosphates from the waste water. The treatment consists of (1) expanding the vermiculite and (2) treating the expanded vermiculite with an aqueous solution of an inorganic salt, the cation of which is in a +2 or higher valence state.

3,677,940
METHOD OF TREATING SCOURING AND DYEING WASTE WATER

Hiroshi Fujimoto, Hirakata-shi, and Mitsugu Fukuda, Takatsuki-shi, Japan, assignors to Kurita Water Industries Ltd., Osaka-shi, and Unitika Ltd., Hyogo-ken, Japan

No Drawing. Filed Feb. 16, 1971, Ser. No. 115,688
Claims priority, application Japan, Feb. 18, 1970, 45/14,345
Int. Cl. C02c *5/02*
U.S. Cl. 210—44 10 Claims

A method of treating a wool scouring waste water and a dyeing waste water which comprises the steps: mixing the scouring waste water and dyeing waste water; adding to the mixed liquid thus prepared a coagulant consisting of an inorganic metallic salt and adjusting the pH to thereby give rise to flocs of metallic hydroxide; further adding an anionic organic coagulant to thereby give rise to aggregation of said flocs; and separating the resulting sludge.

3,677,941
OIL FRACTURING PROPPING AGENTS

Vincent B. Mazzara, Galveston, and Jerome M. Fesperman, Texas City, Tex., assignors to Standard Oil Company, Chicago, Ill.

No Drawing. Continuation of abandoned application Ser. No. 778,012, Nov. 19, 1968, which is a continuation of application Ser. No. 337,719, Jan. 15, 1964. This application Oct. 29, 1969, Ser. No. 872,426
Int. Cl. C21b *43/25*
U.S. Cl. 252—8.55 R 5 Claims

Substantially spherical oil-soluble propping particles for use in fracturing underground oil or gas formations comprise polymerized alicyclic olefinic hydrocarbons containing anti-oxidants which inhibit the formation of oil-insoluble residue in such particles.

3,677,942
FLAME RETARDANT COMPOSITION COMPRISING AN ORGANIC BROMINE COMPOUND, AN ORGANIC PHOSPHATE AND A LEAD SALT

Maria Feiner, Henin Lietard, Michel Gubler, Paris, and Joseph Guillon, Meurchin, France, assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Sept. 10, 1970, Ser. No. 71,238
Claims priority, application France, Sept. 12, 1969, 6931182
Int. Cl. B09k *3/28*
U.S. Cl. 252—8.1 17 Claims

Self-extinguishing plastic materials are prepared by incorporating in the plastic a composition of an organic bromine compound, an organic phosphate and a lead salt.

3,677,943
NOVEL PHOSPHORUS-CONTAINING PYRIMIDINES AND LUBRICANTS CONTAINING SAME

John C. Nnadi, Deptford, N.J., assignor to Mobil Oil Corporation

No Drawing. Filed Dec. 24, 1970, Ser. No. 101,424
Int. Cl. C10m *1/46, 1/48*
U.S. Cl. 252—46.7 9 Claims

The invention provides novel phosphorus-containing aminopyrimidines. Also provided are lubricant compositions containing these products which have improved anti-oxidant and extreme pressure properties.

3,677,944
POLYPHENYL THIOETHER LUBRICATING COMPOSITIONS

Frank S. Clark, St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Dec. 28, 1970, Ser. No. 102,154
Int. Cl. C10m *1/38, 1/30*
U.S. Cl. 252—48.4 5 Claims

Lubricating compositions comprising polyphenyl thioethers, polyphenyl ethers-thioethers or mixtures thereof and containing small amounts of a perfluoro aliphatic dibasic acid have improved lubricating properties. These compositions are useful as lubricants over wide temperature ranges.

3,677,945
STABILIZATION OF LUBRICANTS

Allen K. Sparks, Des Plaines, Ill., assignor to Universal Products Company, Des Plaines, Ill.

No Drawing. Continuation-in-part of application Ser. No. 843,852, July 22, 1969, now Patent No. 3,629,190, which is a continuation-in-part of application Ser. No. 623,805, Mar. 17, 1967, now Patent No. 3,481,978. This application Mar. 12, 1971, Ser. No. 123,820
Int. Cl. C10m *1/54*
U.S. Cl. 252—49.6 6 Claims

Stabilizing lubricants against deterioration during transportation, storage and/or use by incorporating therein a 2-hydrocarbyl-1,3-di-sec-alkyl or di-cycloalkyl-2H-1,3,2-benzodiazoborole.

3,677,946
EXTREME PRESSURE LUBRICATION THROUGH ADDITIVES

Josef Gansheimer, Munich-Obermenzing, and Oswald Schanzer, Munich, Germany, assignors to Dow Corning Corporation, Midland, Mich.

No Drawing. Filed Jan. 2, 1970, Ser. No. 438
Claims priority, application Germany, Jan. 7, 1969, P 19 00 634.9
Int. Cl. C10m *1/36*
U.S. Cl. 252—51.5 A 1 Claim

Water insoluble organic compounds which liberate gaseous nitrogen at high temperatures and have at least one N—N single or double bond in each molecule are added to lubricants to improve lubricity and decrease corrosion while remaining readily removable from the surfaces to which they have been applied.

3,677,947
PERMANENT MAGNET

Alden E. Ray, Dayton, and Karl Strnat, Fairborn, Ohio, assignors to Th. Goldschmidt AG, Essen, Germany

No Drawing. Filed Aug. 31, 1970, Ser. No. 68,119
Claims priority, application Germany, Sept. 2, 1969, P 19 44 432.7
Int. Cl. C01f *1/06, 7/02*
U.S. Cl. 252—62.54 8 Claims

A permanent magnet comprising magnetically anisotropic particles which are preferably oriented and then bonded. The powders are composed of at least two particle fractions of different average grain size, to wit

(a) a first fraction having an average grain size in the range of about 50–250 μm.,

(b) a second fraction having an average grain size in the range of about 5–50 μm., and

(c) said magnet also containing either a third fraction of such particles having an average grain size of about <15μm. or an inorganic or organic binder, the weight ratio of *a*:*b*:*c* being about 7:3:1.

3,677,948
TRIARYL PHOSPHATE FUNCTIONAL FLUIDS

Silvio L. Giolito, Whitestone, N.Y., and Stanley B. Mirviss, Stamford, Conn., assignors to Stauffer Chemical Company, New York, N.Y.

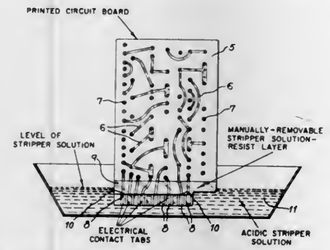
No Drawing. Filed Aug. 17, 1970, Ser. No. 64,655
Int. Cl. C09k *3/00*
U.S. Cl. 252—78 7 Claims

The present invention relates to a process and composition for transmission of pressure in a hydraulic system comprising a mixture of a styrenated triaryl phosphate and an alkylphenyl phenyl phosphate.

3,677,949
SELECTIVELY STRIPPING TIN AND/OR LEAD FROM COPPER SUBSTRATES

Frank A. Brindisi, Jr., Madison, Joseph S. Nagy, Watertown, and Eugene F. Yarkosky, Milford, Conn., assignors to Enthone, Incorporated, New Haven County, Conn.

Filed Sept. 4, 1970, Ser. No. 69,769
Int. Cl. C23g *1/06;* H05k *3/06*
U.S. Cl. 252—79.4 15 Claims



Acidic solutions for selectively stripping tin and/or lead from copper substrates or surfaces, comprising an aqueous solution of (1) at least one nitro-substituted aromatic compound; (2) an inorganic acid capable of readily reacting with tin and lead to form water-soluble salts thereof and incapable of reacting with tin and lead to form a water-insoluble compound film on the tin, lead or tin-lead alloy surface, preferably fluoboric acid; and (3) a thiourea.

3,677,950
CHEMICAL ETCHING SOLUTION FOR PRINTED WIRING BOARDS

Carmelo Leon Alderuccio, Tolland, Conn., assignor to Lee Alderuccio & Associates, Inc., Tolland, Conn.

No Drawing. Filed Apr. 30, 1969, Ser. No. 820,674
Int. Cl. C23g *1/14;* H05k *1/00*
U.S. Cl. 252—79.5 7 Claims

A chemical etching solution particularly adapted to selectively dissolve copper from laminated printed wiring boards in the presence of metals selected from the group consisting of tin, lead, nickel, gold and alloys thereof without causing attack of such metals consists of an aqueous ammoniacal solution of a normally acidic oxidizer, the solution having an alkaline pH up to about 11.

3,677,951
SELF-ANCHORABLE COMPOSITE ITEM AND METHOD OF MAKING SAME

Hirtus E. Alles, P.O. Box 71 (719 Williams St.), Williamston, Mich. 48895

Filed Feb. 27, 1970, Ser. No. 15,059
Int. Cl. C11d *17/04*
U.S. Cl. 252—92 9 Claims

An article of manufacture and method of making same comprising an integral combination of an article of use commonly referred to as a scrubbing material such as a bar of soap, a scouring pad, a brush, a sponge, et cetera, with a resilient sheet-form member substantially permanently affixed at one of its surfaces to the article of use, and having at its other surface a plurality of suction cups integrally molded therewith so as to be adapted to readily engage a smooth nonporous surface and to support the article of manufacture with respect to said surface.

3,677,952
METHOD OF BLEACHING SULFONATE SURFACTANTS

Lowell B. Lindy, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Oct. 2, 1970, Ser. No. 77,745
Int. Cl. C11d *7/54*
U.S. Cl. 252—94 7 Claims

Alkylaryl sulfonate surfactants are bleached by reacting their aqueous solutions with an inorganic hypohalite and an inorganic permanganate, sequentially or in combination. The process is particularly adaptable to decolorizing higher alkyl diphenyl ether disulfonates using sodium hypochlorite and potassium permanganate as the bleaching agents.

3,677,953
PERMANGANATE SILICATE CLEANER

Robert George Harris, Geigertown, Pa., assignor to Amchem Products, Inc., Township of Lower Gwynedd, Pa.

No Drawing. Filed Mar. 11, 1971, Ser. No. 123,444
Int. Cl. C11d *7/54*
U.S. Cl. 252—103 3 Claims

Compositions consisting of an alkali metal permanganate and alkali metal silicate which, when dissolved in aqueous solution, provide improved solutions for treating ferrous metal surfaces to remove scale deposits and other contaminants in the form of smut formed thereon; particularly for the removal of oxide incrustations and smut from ferrous metal surfaces which have been previously heat treated.

3,677,954
LIQUID ABRASIVE CLEANSER COMPOSITION

Meiken Nakajima, Ichikawa, and Yunosuke Nakagawa, Koshigaya, Japan, assignors to Kao Soap Co. Ltd., Tokyo, Japan

No Drawing. Filed July 24, 1970, Ser. No. 58,171
Claims priority, application Japan, July 28, 1969, 44/59,812; Dec. 27, 1969, 45/1,912
Int. Cl. C11d *3/14, 9/20, 13/00*
U.S. Cl. 252—121 4 Claims

A stable liquid scouring cleanser composition is comprised of 30–70% by weight of abrasive particles, from 15–60% by weight of water, from 1–10% by weight of a nonionic surfactant having an HLB lower than about 10 and from 1–10% by weight of an anionic surfactant. The composition may also contain from 0.1–10% by weight of a solubilizing agent to prevent separation of the constituents upon repeated freezing and thawings. The composition is prepared by homogeneously dispersing the constituents at a temperature of 50 to 100° C. with stirring.

3,677,955
TREATMENT OF DRY CLEANING BATHS
Harry M. Castrantas, Trenton, and Robert E. Keay, Hightstown, N.J., and Donald G. MacKellar, Yardley, Pa., assignors to FMC Corporation, New York, N.Y.
No Drawing. Filed July 23, 1970, Ser. No. 57,781
Int. Cl. C11d 7/50
U.S. Cl. 252—162 2 Claims

Hydrogen peroxide is used in the treatment of dirty dry cleaning baths based on aliphatic hydrocarbon or chlorinated solvents, to permit longer operation between distillations.

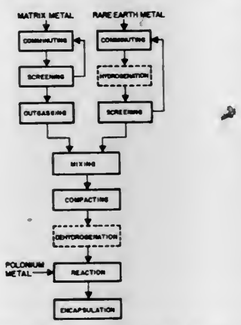
3,677,956
SYNERGISTIC METAL SEQUESTRANT
Ronald H. Carlson, Lewiston, N.Y., assignor to Hooker Chemical Corporation, Niagara Falls, N.Y.
No Drawing. Continuation-in-part of application Ser. No. 680,011, Nov. 2, 1967. This application July 13, 1970, Ser. No. 54,661
Int. Cl. C02b 5/06; C11d 7/32, 7/36
U.S. Cl. 252—180 5 Claims

Mixtures of tris(hydroxymethyl)phosphine oxide, and iminodiacetic acid as well as the alkali metal salts thereof, exhibit marked synergism as sequestrant compositions over a broad pH range. The sequestrant compositions are useful as additives for detergents, metal cleaning baths, peroxide compositions and dyes. The chelate products are useful in the field of agriculture for the introduction of trace elements into plant life and especially in the treatment of iron chlorosis in plants.

3,677,957
CHEMILUMINESCENT REACTION OF CHLORINATED ETHYLENE CARBONATE WITH HYDROGEN PEROXIDE IN THE PRESENCE OF A FLUORESCER
Donald Roy Maulding, Stamford, Conn., assignor to American Cyanamid Company, Stamford, Conn.
No Drawing. Filed Dec. 17, 1969, Ser. No. 886,042
Int. Cl. C09k 3/00
U.S. Cl. 252—188.3 6 Claims

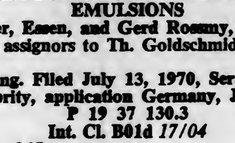
Disclosed is a chemiluminescent composition for reaction with a peroxide compound to produce chemiluminescent light, said composition containing a halogenated ethylene carbonate and an organic fluorescent compound in an organic solvent.

3,677,958
RADIOACTIVE HEAT SOURCE
Frank D. Lonadier, Miamisburg, and Carl J. Kershner, Centerville, Ohio, assignors to the United States of America as represented by the United States Atomic Energy Commission
Filed Nov. 6, 1968, Ser. No. 774,597
Int. Cl. C09k 3/02
U.S. Cl. 252—301.1 R 9 Claims



A radioactive heat source comprising a porous element formed by compacting intermixed ratios of matrix and rare earth type particles, and impregnating with polonium radioisotope, with pores or interstices of the element providing for escape of helium which may result from radioisotope decay.

3,677,959
LIQUID LASER CONTAINING CYCLOHEPTATRIENE
Charles Brecher, Little Neck, Romano Pappalardo, Westbury, and Harold Samelson, Sea Cliff, N.Y., assignors to GTE Laboratories Incorporated
Filed Oct. 29, 1970, Ser. No. 85,196
Int. Cl. F21k 2/02; H01s 3/00
U.S. Cl. 252—301.2 R 9 Claims



A dye laser utilizing an active material comprising the dye Rhodamine 6G in solution with the triplet state quencher cycloheptatriene. The resultant solution provides a dye laser having relatively long high energy output pulses.

3,677,960
GLASS LASER MATERIALS
Masahiko Ishiyama, Yokohama, Japan, assignor to Asahi Glass Co., Ltd., Tokyo, Japan
Filed June 29, 1970, Ser. No. 50,525
Claims priority, application Japan, July 3, 1969, 44/52,186
Int. Cl. C09k 1/04, 1/54; C03c 3/04
U.S. Cl. 252—301.4 F 6 Claims

A silicate glass for use as a glass laser material doped with trivalent neodymium contains Sb_2O_3 as well as TiO_2, MoO_3, Nb_2O_5, WO_3, Bi_2O_3 and/or Ta_2O_5. The combination of these components prevents deterioration in laser performance due to solarization.

3,677,961
GALACTOMANNAN COMPOSITION AND TREATMENT FOR THE PREVENTION OF THIXOTROPHY DESTRUCTION OF SAME BY LIGANDS
William C. Browning, Alphonse C. Perricone, and Katherine Anne C. Elting, Houston, Tex., assignors to Milchem Incorporated, Houston, Tex.
No Drawing. Filed Dec. 28, 1970, Ser. No. 102,270
Int. Cl. B01j 13/00
U.S. Cl. 252—316 23 Claims

The present invention relates to a method and composition for the prevention of the destruction of thixotropic structure in metal ion cross-linked galactomannan solutions when said solutions are exposed to an organic polyelectrolyte ligand as hereafter defined by introducing into the cross-linked galactomannan structure a bacterially modified carbohydrate in an amount sufficient to maintain the desired cross-linked structure in the presence of the ligand.

3,677,962
PROCESS FOR BREAKING PETROLEUM EMULSIONS
Gotz Koerner, Essen, and Gerd Rossmy, Essen-Werden, Germany, assignors to Th. Goldschmidt A.-G., Essen, Germany
No Drawing. Filed July 13, 1970, Ser. No. 54,592
Claims priority, application Germany, July 22, 1969, P 19 37 130.3
Int. Cl. B01d 17/04
U.S. Cl. 252—345 20 Claims

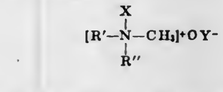
Process for breaking petroleum emulsions with polyoxyalkylene-polysiloxane-mixed blockcopolymers. The polyoxylalkylene blocks of the polyoxyalkylene-polysiloxane-mixed blockcopolymers have a mole weight of between 500 to 4000 and consist of polyoxyethylene and polyoxypropylene units in a weight ratio of between about 40:60 to 100:0. The polysiloxane blocks contain 3 to 50 silicon atoms per block.

3,677,963
DEFOAMER COMPOSITION AND METHOD OF PREPARATION
Irwin A. Lichtman, Oradell, and Abraham M. Rosengart, Newark, N.J., assignors to Diamond Shamrock Corporation, Cleveland, Ohio
No Drawing. Filed Sept. 30, 1970, Ser. No. 77,009
Int. Cl. B01d 17/00, 19/04; C09k 3/00
U.S. Cl. 252—358 10 Claims

Defoamer compositions are prepared using substituted amides, oil soluble organic polymers, and hydrocarbon oil, by means of a novel quick-chilling process. Optionally, fats and silicone oil may be present. The compositions may be used for defoaming and/or preventing foam buildup.

3,677,964
SOLVENT COMPOSITION FOR LIQUID SCINTILLATION COUNTING
Richard V. Webb, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
No Drawing. Filed Dec. 31, 1970, Ser. No. 103,349
Int. Cl. B01f 1/00, 3/00
U.S. Cl. 252—364 4 Claims

A solvent composition for dissolving samples for liquid scintillation counting consisting essentially of (a) a solvent suitable for use in liquid scintillation counting, (b) at least one quaternary ammonium base selected from the group of the formula:



wherein R′ and R″ are alkyl radicals of from 4 to 18 carbon atoms, X is selected from the group consisting of methyl and benzyl radicals, and Y is selected from the group consisting of hydrogen and lower alkyl radicals, the predominant class of quaternary ammonium consisting of the group wherein R′ and R″ contain from 4 to 14 carbon atoms, (c) methanol, and (d) an alcohol selected from the group consisting of t-pentyl alcohol and 2-methoxy ethanol. The quaternary ammonium base preferably is didodecyldimethylammonium hydroxide or methoxide, and is present in at least 0.25 molar concentration. The solvent advantageously is toluene, benzene, xylene, or dioxane, and is present in 60–70% by volume. The t-pentyl alcohol or 2-methoxy ethanol preferably are present in 4–10% by volume.

3,677,965
ALKYLHYDROXYPHENYL POLYAMIDES AS ANTIOXIDANTS
Martin Dexter, Briarcliff Manor, John Denon Spivack, Spring Valley, and David Herbert Steinberg, Bronx, N.Y., assignors to Geigy Chemical Corporation, Ardsley, N.Y.
No Drawing. Original application Dec. 29, 1967, Ser. No. 694,370, now Patent No. 3,584,047. Divided and this application June 5, 1970, Ser. No. 57,397
Int. Cl. C07c 103/30; B01j 1/16
U.S. Cl. 252—403 9 Claims

Polyamides of alkylhydroxyphenylalkanoic acids and polyamines prepared by amidation procedures, are stabilizers of organic material otherwise subject to oxidative deterioration.

3,677,966
TEMPERATURE INDICATING DISPERSION FILTER
Jan Bol, Kelkheim, Taunus, Hildegard Buttner, Oberursel, Taunus, and Peter Kuhn, Ruppertshain, Taunus, Germany, assignors to The Battelle Development Corporation, Columbus, Ohio
No Drawing. Filed Nov. 16, 1970, Ser. No. 90,150
Int. Cl. G01k 11/16, 11/18
U.S. Cl. 252—408 1 Claim

A dispersion filter made primarily of glass with the addition of a solid plastic material having "an index of refraction (n_D) at 20° C. of about 1.560 to 1.568, a dispersion ($n_F - n_C$) of about 0.014 to 0.016 and a temperature coefficient (dn/dT) of the index of refraction of about 1×10^{-4} to 4×10^{-4} per degree C."

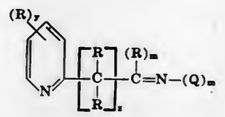
3,677,967
DOSE INDICATOR PAINT OF AN AQUEOUS EMULSION OF VINYL CHLORIDE COPOLYMER AND METHANYL YELLOW
Janos Dobo, Agnes Somogyi, and Endre Lakner, Budapest, Hungary, assignors to Medimpex Gyogyszerkulkereskedelmi Vallalat
No Drawing. Filed Jan. 15, 1969, Ser. No. 791,488
Claims priority, application Hungary, Jan. 18, 1968, MU-398
Int. Cl. G01n 23/06, 31/22
U.S. Cl. 252—408 3 Claims

A dose indicator paint for controlling the irradiation of polyethylene and other non-hydrophilic target materials, comprising an aqueous emulsion of a vinyl chloride copolymer, 0.5 to 10% by weight of methanyl yellow and, if desired, additives.

3,677,968
COORDINATION POLYMERIZATION CATALYST
John E. Bozik, Pittsburgh, Harold E. Swift, Gibsonia, and Ching-Yong Wu, Pittsburgh, Pa., assignors to Ameripol, Inc., Cleveland, Ohio
No Drawing. Original application Mar. 10, 1969, Ser. No. 812,536, now Patent No. 3,565,875, dated Feb. 23, 1971. Divided and this application July 9, 1970, Ser. No. 61,012
Int. Cl. C08d 3/06, 3/08
U.S. Cl. 252—431 N 13 Claims

A coordination catalyst for polymerizing olefins, diolefins and alkylene oxides, consisting essentially of

(a) an iron complex comprising a ligand containing oxygen donor atoms and selected from the group consisting of iron acetylacetonate, iron octoate and iron naphthenate;
(b) a trialkyl aluminum compound; and
(c) a bidentate ligand capable of both pi and sigma bonding to form a five- or six-membered chelate ring, said ligand being characterized by the structural formula



wherein m is a number from 0 to 1, x is a number from 0 to 1, y is a number from 0 to about 4, R is a radical selected from the group consisting of hydrogen, alkyl, aryl, halogen, hydroxyl, and acetoxy, and Q is a radical selected from the group consisting of hydrogen, alkyl, halogen, hydroxyl and acetoxy, the major portion of said sigma bonding being attributable to the ring nitrogen, wherein the molar ratio of trialkyl aluminum compound to iron complex is from about 1/1 to 4/1 and the molar ratio of bidentate ligand to the iron complex is from about 0.1/1 to about 2.5/1.

3,677,969
HYDROGENATION OF ORGANIC COMPOUNDS
Joseph K. Mertzweiller and Horace M. Tenney, Baton Rouge, La., assignors to Esso Research and Engineering Company
No Drawing. Continuation-in-part of application Ser. No. 761,793, Sept. 23, 1968, which is a continuation-in-part of applications Ser. No. 674,097, Oct. 10, 1967, and Ser. No. 761,792, Sept. 23, 1968. This application Jan. 7, 1970, Ser. No. 1,281
Int. Cl. C07c *5/02*
U.S. Cl. 252—431 27 Claims

Novel sulfided hydrogenation catalysts are formed by impregnating a suitable support material with an aqueous solution of a salt of a transition metal; heat-treating the impregnated support at a temperature above 500° F. to form chemical complexes on the surface of the support and to drive off moisture and absorbed oxygen; contacting the supported metal complex with hydrogen sulfide; activating the surface complex by contacting the supported metal sulfide complex with a soluble organometallic compound wherein the metal constituent is selected from Groups I, II and III of the Periodic Chart of the Elements, and thereafter treating the activated support material in the presence of a gaseous stream containing hydrogen at a temperature of at least 300° F. to form a highly stable heterogeneous sulfided catalyst. The novel supported catalysts of the instant invention have been found to be highly active for the hydrogenation of organic feedstocks containing sulfur under extremely mild conditions.

3,677,970
HYDROGENATION OF ORGANIC COMPOUNDS
Joseph K. Mertzweiller and Horace M. Tenney, Baton Rouge, La., assignors to Esso Research and Engineering Company
No Drawing. Continuation-in-part of application Ser. No. 674,097, Oct. 10, 1967. This application Jan. 7, 1970, Ser. No. 1,282
Int. Cl. C07c *5/02*
U.S. Cl. 252—431 21 Claims

Novel hydrogenation catalyst are formed by impregnating a suitable support material with an aqueous solution of a salt of a transition metal; heat-treating the impregnated support at a temperature above 500° F. to form chemical complexes on the surface of the support and to drive off moisture and absorbed oxygen; activating the surface complex by contacting the impregnated support with a soluble organometallic compound wherein the metal constituent is selected from Groups I, II and III of the Periodic Chart of the Elements; treating the activated support material in the presence of hydrogen at a temperature of at least 300° F., and thereafter reacting the hydrogen treated activated support material with hydrogen sulfide. The so-formed novel supported sulfided catalysts are highly active for the hydrogenation of organic feedstocks containing relatively high concentration of sulfur in the feedstocks.

3,677,971
HYDROTREATING CATALYST
Robert J. White, Pinole, Calif., assignor to Chevron Research Company, San Francisco, Calif.
Filed Mar. 9, 1970, Ser. No. 17,626
Int. Cl. B01j *11/40*
U.S. Cl. 252—455 R 9 Claims

A catalyst comprising a layered synthetic crystalline aluminosilicate cracking component, preferably substantially free of any catalytic metal or metals, dispersed in a gel matrix comprising alumina, a Group VI hydrogenating component and a Group VIII hydrogenating component, and processes using said catalyst.

3,677,972
HYDROCRACKING CATALYST
Louis C. Gutberlet, Crown Point, and Ralph J. Bertolacini, Chesterton, Ind., assignors to Standard Oil Company, Chicago, Ill.
No Drawing. Filed Apr. 7, 1969, Ser. No. 814,155
Int. Cl. B01j *11/40*
U.S. Cl. 252—455 Z 11 Claims

Disclosed is a hydrocracking catalyst consisting essentially of an ultrastable, large pore, crystalline aluminosilicate material containing less than about 1% alkali metal and having deposited thereon a hydrogenation component selected from the metals, oxides, or sulfides of the Group VIII elements of the Periodic Table. The catalyst may additionally contain a metal, oxide or sulfide of a Group VI–B element.

3,677,973
TRANSALKYLATION OF ALKLAROMATIC HYDROCARBONS IN CONTACT WITH A ZEOLITE CATALYST COMPOSITION
Roy T. Mitsche, Island Lake, and Edward Michalko, Lombard, Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.
No Drawing. Filed Mar. 16, 1970, Ser. No. 20,024
Int. Cl. B01j *11/40*
U.S. Cl. 252—455 Z 11 Claims

A catalyst composition which is particularly effective as a catalyst with respect to the transalkylation or disproportionation of toluene to form benzene and polymethylbenzene products. The catalyst comprises a zeolite with a mordenite crystal structure containing alumina fixed in combination therewith. The catalyst is characterized by a method of preparation.

3,677,974
MULTI-PURPOSE CONDUCTIVE ADHESIVE
Timothy J. Kilduff, Greenbelt, Md., assignor to the United States of America as represented by the Secretary of the Army
No Drawing. Continuation of abandoned application Ser. No. 739,632, June 25, 1968. This application Sept. 18, 1970, Ser. No. 73,666
Int. Cl. H01b *1/02*; B01f *17/42*
U.S. Cl. 252—514 6 Claims

A multi-purpose electrically conductive adhesive consisting of a novolak-epoxy resin, particulate silver and an imidazole cures at moderate temperatures to form an adhesive bond resistant to temperatures in the range 150–200° C.

3,677,975
PREPARATION OF SOLID SOLUTIONS OF METALLIC OXIDE MIXTURES BY FLAME-SPRAYING
John E. Bennett, Painesville, and Kevin J. O'Leary, Cleveland Heights, Ohio, assignors to Diamond Shamrock Corporation, Cleveland, Ohio
No Drawing. Filed Oct. 26, 1970, Ser. No. 84,111
Int. Cl. H01b *1/06*; B05b *7/20*; C22b *11/00*
U.S. Cl. 252—518 8 Claims

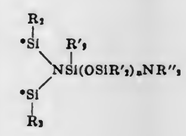
A solid solution of a valve metal dioxide and a precious metal dioxide is prepared in bulk form independent of a substrate by passing, in finely-divided atomized form, an organic solution of a salt or ester of the valve metal and a salt of the precious metal through an oxidizing flame.

3,677,976
COMMERCIALLY USEFUL POLYPHENYLENE POLYMERS AND METHOD OF PRODUCTION THEREOF
Leroy J. Miller, Canoga Park, and Norman Bilow, Los Angeles, Calif., assignors to Hughes Aircraft Company, Culver City, Calif.
No Drawing. Continuation-in-part of application Ser. No. 349,770, Mar. 5, 1964. This application Apr. 9, 1970, Ser. No. 27,178
The portion of the term of the patent subsequent to Feb. 23, 1988, has been disclaimed
Int. Cl. C08g *33/00*
U.S. Cl. 260—2 H 11 Claims

Commercially useful, fusible and tractable polyphenylene polymers and method of preparing the same from monomers of biphenyl, terphenyls, quaterphenyls, and mixtures thereof, and mixtures of same with other aromatic material as aromatic monomers, oligomers and polymers with 5 or less aromatic rings, prepared with a Lewis acid catalvst and oxidant combination.

3,677,977
ORGANOSILICON COMPOUNDS CONTAINING SILAZANE AND SILOXANE LINKAGES
Richard Paul Bush, Penarth, and Bryan Thomas, Thomastown, Wales, assignors to Dow Corning Limited, London, England
No Drawing. Filed Oct. 22, 1970, Ser. No. 83,180
Claims priority, application Great Britain, Oct. 31, 1969, 53,571/69
Int. Cl. C08g *33/10*
U.S. Cl. 260—47 R 10 Claims

Organosilicon compounds having both silazane (Si-N-Si) and siloxane (Si-O-Si) linkages are prepared by reacting (1) a hydroxyl containing organic or organosilicon material with (2) a cyclic silazane or cyclic siloxazane having from 6 to 12 members in the cyclic structure and 1, 2 or 3 groups of the general formula



where the free valence bond on each of the Si* atoms is attached to another member of the cyclic silazane or siloxazane structure, R is any monovalent hydrocarbon radical of less than 7 carbon atoms, R′ is a monovalent hydrocarbon or halogenohydrocarbon radical of 1 to 18 carbon atoms, R″ is H or an alkyl radical of 1 to 5 carbon atoms and *n* is 0 or 1.

3,677,978
METAL SALT COMPLEXES OF IMIDAZOLES AS CURING AGENTS FOR ONE-PART EPOXY RESINS
Rostyslaw Dowbenko, Wen-Hsuan Chang, and Carl C. Anderson, Gibsonia, Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.
No Drawing. Continuation-in-part of application Ser. No. 702,531, Feb. 2, 1968. This application Aug. 23, 1971, Ser. No. 174,244
Int. Cl. C08g *23/14*, *30/14*
U.S. Cl. 260—2 EP 12 Claims

Epoxy resins are blended with metal salt complexes of imidazoles to form compositions which remain in the uncured state for long periods of time at room temperature and cure conveniently at elevated temperatures. These epoxy resin compositions may be used as coatings, adhesives, potting compounds, castings and laminates.

3,677,979
SULFONATED PHENOL-ALDEHYDE RESINS
Raymond D. Beaulieu, North Wilbraham, Mass., assignor to Monsanto Company, St. Louis, Mo.
No Drawing. Continuation-in-part of application Ser. No. 769,368, Oct. 21, 1968, and a continuation-in-part of application Ser. No. 29,688, Apr. 17, 1970. This application Jan. 21, 1971, Ser. No. 108,594
Int. Cl. C08g *37/18*
U.S. Cl. 260—2.2 C 11 Claims

Thermosettable water-soluble phenolic two-component mixed resin compositions having sulfonic acid groups chemically combined thereinto especially useful in the manufacture of porous ion-exchange media. These compositions are preferably prepared as aqueous solutions having a pH ranging from about 6.5 to 8.0. Methods for manufacture are described.

3,677,980
FOAMED POLYOLEFIN FILMS
Anthony Graham Marshall Last, Welwyn Garden City, England, assignor to Imperial Chemical Industries Limited, London, England
No Drawing. Filed May 14, 1970, Ser. No. 37,316
Claims priority, application Great Britain, May 21, 1969, 25,864/69
Int. Cl. C08f *47/10*, *29/04*, *45/04*
U.S. Cl. 260—2.5 HA 6 Claims

Foamed film containing a mixture of titanium dioxide and coarsely divided metallic aluminum.

3,677,981
SILICONE ELASTOMERIC COMPOSITIONS AND A METHOD FOR PREPARING SILICONE SPONGE RUBBERS THEREFROM
Tadashi Wada, Kunio Itoh, and Naoyoshi Kuga, Annaka, Japan, assignors to Shinetsu Chemical Company
No Drawing. Filed May 25, 1970, Ser. No. 40,428
Claims priority, application Japan, June 25, 1969, 44/50,184
Int. Cl. C08j *1/20*
U.S. Cl. 260—2.5 S 15 Claims

The silicone elastomeric compositions comprise:

(a) from 80 to 99 parts by weight of a diorganopolysiloxane gum having a viscosity of at least 1,000,000 cs. at 25° C., and containing from 0.025 to 0.25 mole percent of vinyl-group containing siloxane units in its molecule;
(b) from 1 to 20 parts by weight of a diorganopolysiloxane having a viscosity of at least 10 cs. at 25° C., and containing at least 10 times as many mole percent of vinyl-group containing siloxane units in its molecule as is contained in one molecule of component (a);
(c) an organohydrogen polysiloxane in an amount such that its Si—H linkages are from 50 to 200 mole percent of the total amount of vinyl groups contained in the above-given components (a) and (b), and containing at least three Si—H linkages in its molecule;
(d) from 20 to 100 parts by weight of a silica filler having a surface area of at least 150 m.²/g.;
(e) from 1 to 10 parts by weight of a blowing agent; and
(f) a catalytic amount of a platinum compound.

When cured at elevated temperature, such elastomeric compositions give silicone sponge rubbers having high tensile strength and an internal structure of continuous foam. The cured products contain no residue of the curing agent. Thus they possess excellent compression set, resilient elasticity, resistance to heat, cold, and steam, electrical properties and flame retardant prop-

erty. They are therefore useful as insulating materials, soft packing materials, gasket cushion materials, toilet sponge puffs and sponge filters.

3,677,982
CELLULOSE SPONGE FOR REMOVING OIL SLICKS
John W. Marx, Bartlesville, Okla., assignor to Phillips Petroleum Company
No Drawing. Filed Aug. 5, 1970, Ser. No. 61,501
Int. Cl. C08b *29/38, 29/10;* C08f *47/08*
U.S. Cl. 260—2.5 R 5 Claims

Petroleum oil floating on the surface of water is removed therefrom by adsorbing the oil on a treated cellulose sponge and then burning the adsorbed oil from the sponge while it remains in contact with the water. During the combustion, the treated cellulose sponge continues to adsorb oil and deliver it to the combustion zone.

3,677,983
POLYURETHANE PRODUCTS
Thomas K. Brotherton and John W. Lynn, Charleston, and Robert J. Knopf, St. Albans, W. Va., assignors to Union Carbide Corporation
No Drawing. Division of application Ser. No. 478,400, Aug. 9, 1965, now Patent No. 3,553,249, which is a continuation-in-part of applications Ser. No. 256,495, Jan. 25, 1963, now Patent No. 3,275,679, and Ser. No. 265,367, Mar. 15, 1963. This application Aug. 7, 1969, Ser. No. 849,299
Int. Cl. C08g *22/24, 22/26, 22/44*
U.S. Cl. 260—2.5 AT 1 Claim

Polyurethane products are obtained by reacting organic polyisocyanates which are characterized by a common structural unit, with active hydrogen containing compounds as determined according to the Zerewitinoff method. These products have a high degree of utility in fields such as cast and thermoplastic polyurethanes, reinforced plastics, elastic fibers and films, coatings, urethane foams especially rigid urethane foam products, etc.

3,677,984
ELECTRODEPOSITION COATINGS FROM AMINE SALTS OF VINYL MODIFIED FATTY ACIDS
Herbert Aschkenasy and John Joseph Schuler, Jr., Louisville, and Jerry Efton Bower, Jeffersontown, Ky., assignors to Celanese Coatings Company, New York, N.Y.
No Drawing. Filed Apr. 17, 1969, Ser. No. 817,139
Int. Cl. C08f *3/44, 15/26;* C09d *5/02*
U.S. Cl. 260—21 10 Claims

The amine salt of an interpolymer of (a) an unsaturated fatty acid, (b) acrylic or methacrylic acid, (c) a vinyl aromatic monomer and (d) a monomer differing from (a), (b), and (c) is solubilized in an aqueous solution and applied to an electrically conductive substrate by electrodeposition.

3,677,985
PRESSURE SENSITIVE ADHESIVE COMPOSITIONS
Julius Sirota, South Plainfield, David J. Bentley, Jr., Westfield, and Benjamin D. Jubilee, Jr., Millington, N.J., assignors to National Starch and Chemical Corporation, New York, N.Y.
No Drawing. Filed Oct. 6, 1970, Ser. No. 78,558
Int. Cl. C08d *9/12*
U.S. Cl. 260—27 R 5 Claims

Pressure sensitive adhesives characterized by their excellent properties of tack, peel adhesion, and cohesive strength, and the substrates coated therewith are described.

3,677,986
PRODUCTION OF PARA-SUBSTITUTED PHENOL/FORMALDEHYDE RESINS
Alan D. Buchanan, Rosanna, Victoria, Australia, assignor to Monsanto Australia Limited, Melbourne, Victoria, Australia
No Drawing. Filed Feb. 26, 1970, Ser. No. 14,664
Claims priority, application Australia, Feb. 27, 1969, 51,144/69
Int. Cl. C08g *51/24*
U.S. Cl. 260—29.3 4 Claims

Process for the production of alkyl or aryl p-substituted phenol/formaldehyde resins in which a phenolic component such as an alkyl p-substituted phenol or an aryl p-substituted phenol is first reacted with formaldehyde in the presence of an inorganic alkaline catalyst in a heterogeneous multi-phase reaction medium after which the reaction product is etherified to produce the desired resin product.

3,677,987
ORGANO POLYMER CEMENTS WITH EXTENDED WORKING TIME
Samuel A. Pence, Jr., Tulsa, Okla., assignor to The Dow Chemical Company, Midland, Mich.
No Drawing. Filed Jan. 26, 1970, Ser. No. 5,919
Int. Cl. C08f *29/00*
U.S. Cl. 260—29.6 M 6 Claims

A small amount of cupric ions has been discovered to produce an induction period in the setting of an organo-gel cement modified with a soluble chromium compound, thereby giving the precursor liquid slurries of such cements more working time. These cements are prepared by slurrying a solid, water-soluble, organo-polymer in an organo-solvent for the polymer and incorporating small amounts of a hexavalent chromium compound and cupric ions. The slurry sets into a gel, which is generally stronger with increases in polymer concentration. The set-time, i.e., period during which the formulation can be readily worked as by pumping, may be extended several fold in the practice of the instant invention.

3,677,988
TEXTURE COATING COMPOSITION OF POLYVINYL ACETATE EMULSION, ASBESTOS AND PORTLAND CEMENT
Albert L. Kimmel, Kansas City, Mo., assignor to Butler Manufacturing Company, Kansas City, Mo.
No Drawing. Filed Feb. 20, 1970, Ser. No. 13,209
Int. Cl. C08f *45/24*
U.S. Cl. 260—29.6 S 8 Claims

A new textured coating having a random stucco-like appearance formed from asbestos and portland cement dispersed in a polyvinyl acetate or ethylene modified polyvinyl acetate emulsion. The above coating composition can also contain other mineral fillers, such as perlite, sand and vermiculite.

3,677,989
ETHYLENE/ACRYLIC ACID COPOLYMER EMULSIONS
Richard D. Jenkinson, St. Albans, W. Va., assignor to Union Carbide Corporation
No Drawing. Continuation of application Ser. No. 676,730, Oct. 20, 1967, which is a continuation of application Ser. No. 331,922, Dec. 19, 1963. This application June 16, 1970, Ser. No. 48,906
Int. Cl. C08f *3/42*
U.S. Cl. 260—29.6 H 2 Claims

The present invention relates to the process for producing an aqueous ethylene/acrylic acid emulsion comprising mixing a random interpolymer of ethylene and acrylic acid, said interpolymer containing from 2 to 30 weight percent polymerized acrylic acid and having a

melt index of from 1 to 1000 decigrams per minute with an emulsifying amount of an alkali metal hydroxide and from 5 to 25 weight percent, based on the weight of said copolymer, of water, heating said mixture with agitation to a temperature of about 150 to 200° C. and adding sufficient water to provide an emulsion containing no greater than about 50 weight percent of said copolymer.

Emulsions containing the aforementioned ethylene copolymers are also disclosed.

3,677,990
STABLE AQUEOUS EMULSIONS CONTAINING A TERPOLYMER OF VINYL ALCOHOL, A VINYL ESTER AND AN N-VINYLLACTAM
Eugene S. Barabas, Watchung, Frederick Grosser, Midland Park, and Louis Schneider, Elizabeth, N.J., assignors to GAF Corporation, New York, N.Y.
No Drawing. Filed Aug. 12, 1970, Ser. No. 63,306
Int. Cl. C08f *1/13, 19/00, 45/34*
U.S. Cl. 260—29.6 WB 5 Claims

A stable emulsion is disclosed of a graft terpolymer of an N-vinyllactam, vinyl alcohol and a vinyl ester with water as the external phase. Among the vinyllactams is N-vinyl pyrrolidone. Vinyl esters include vinyl acetate. The vinyllactam and vinyl alcohol copolymer forms the main chain of the terpolymer.

3,677,991
ANIONIC ACRYLATE LATEXES THAT POSSESS SENSITIVITY TO ALKALINITY
Carl Moore, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.
No Drawing. Filed Aug. 14, 1968, Ser. No. 752,723
Int. Cl. C08f *1/92*
U.S. Cl. 260—29.6 H 12 Claims

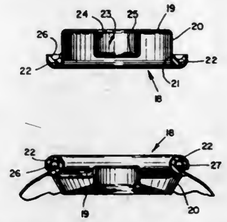
Anionic latexes of copolymers comprising a lower alkyl acrylate such as butyl acrylate and an α,β-ethylenically unsaturated carboxylic monomer such as methacrylic acid and maleic anhydride capable of being coagulated by adjusting the pH of the latex to a value ranging from about 8.8 to about 10.1.

3,677,992
POLYAMIDE-IMIDE COMPOSITIONS CONTAINING COATABILITY AIDS
Edwin F. Morello, Whiting, Ind., assignor to Standard Oil Company, Chicago, Ill.
No Drawing. Filed Apr. 7, 1971, Ser. No. 132,164
Int. Cl. C08g *51/34*
U.S. Cl. 260—32.8 N 6 Claims

The coatability of an amide-imide polymeric coating on a magnet wire is substantially improved by the addition of aromatic ketones having a boiling range of about 200° C. to 310° C. or monohydric alcohols boiling in the range of about 75° C. to 150° C. or utilizing a mixture of both.

3,677,993
COMPOSITIONS FOR GASKETS HAVING IMPROVED RESISTANCE TO WATER-BASED AEROSOL PRODUCTS
Robert P. Edmonston, Billerica, Joel A. Gribens, Framingham, and Charles W. Simons, Bedford, Mass., assignors to W. R. Grace & Co., Cambridge, Mass.
Filed Mar. 10, 1970, Ser. No. 18,262
Int. Cl. C08c *11/56, 11/50;* C08d *9/00*
U.S. Cl. 260—33.6 A 1 Claim

Compositions for use as sealing gaskets in aerosol mounting cups, which contain a peptized polychloroprene rubber dissolved in a volatile organic solvent and a ternary curing system consisting of di-o-tolylguanidine, 2-mercaptoimidazoline and dipentamethylenethiuram hexasulfide. Additional ingredients such as fillers, plasticizers, antioxidants and pigments may be incorporated to modify



certain properties of the compositions and of the gaskets made from them.

3,677,994
CEMENT-FILLED POLY(ARYLENE SULFIDE) RESINS
Harold V. Wood and Terry D. Brown, Bartlesville, Okla., assignors to Phillips Petroleum Company
No Drawing. Filed Apr. 28, 1970, Ser. No. 32,737
Int. Cl. C08g *51/04*
U.S. Cl. 260—37 R 4 Claims

Moldable compositions which are suitable for forming into various finished products are prepared by adding up to 50 weight percent based on the total weight of the composition of a hydraulic cement to a poly(arylene sulfide) resin. In a preferred method of preparing the moldable compositions a slurry of a poly(arylene sulfide) resin and a hydraulic cement are formed, the liquid is allowed to evaporate, and the resulting granular mixture is heated, cured and then subjected to molding, yielding molded articles having good values in modulus, tensile and impact.

3,677,995
EPOXY RESIN CEMENT
Mason H. Earing, Danville, Ill., assignor to General Electric Company
Continuation-in-part of application Ser. No. 29,765, Apr. 27, 1970, which is a continuation of application Ser. No. 699,252, Sept. 20, 1967. This application July 7, 1970, Ser. No. 52,953
Int. Cl. C08g *51/04*
U.S. Cl. 260—37 EP 20 Claims

A thermosetting epoxy compound is provided comprising a first mix of glycidyl ether of polyhydric phenols and a cycloaliphatic polyepoxy resin in the ratio of about 1:4 to 3:2 and a suitable thixotropic agent. A suitable filler to improve the physical properties of the compound may be incorporated into the first mix. To this is admixed a second mix comprising a curing agent of a boron trifluoride amine complex dissolved in a polyfunctional hydroxylic solvent in sufficient quantity so that the gelation time is substantially independent of the quantity of curing agent. The resulting admixed compound is thixotropic and exhibits a relatively rapid gelation time which occurs at room temperature.

3,677,996
ROOM TEMPERATURE VULCANIZABLE SILICONE RUBBER CONTAINING POLYGLYCOL DERIVATIVE
Wolfgang Kaiser, Adrian, Mich., and Siegfried Nitzsche, Ernst Wohlfarth, and Paul Hittmair, Burghausen, Upper Bavaria, Germany, assignor to Wacker-Chemie G.m.b.H., Munich, Bavaria, Germany
No Drawing. Filed Mar. 3, 1971, Ser. No. 120,679
Int. Cl. C08g *31/02*
U.S. Cl. 260—46.5 G 3 Claims

This invention relates to room-temperature vulcanizing siloxane elastomers characterized in that, besides a known

crosslinking agent which contains a nitrogen atom and three hydrolyzable groups, the siloxane is mixed with a polyglycol which imparts a low modulus elasticity to the cured polymer and allows for stable polymers in the uncured state.

3,677,997
BOUNCING PUTTIES
Wolfgang Kaiser, Adrian, Mich., and Siegfried Nitzsche, Ernst Wohlfarth, Alois Strasser, and Paul Hittmair, Burghausen, Upper Bavaria, Germany, assignors to Wacker-Chemie G.m.b.H., Munich, Germany
No Drawing. Filed Feb. 5, 1971, Ser. No. 113,104
Claims priority, application Germany, Feb. 6, 1970, P 20 05 530.5
Int. Cl. C08g *51/34*
U.S. Cl. 260—332 SB **5 Claims**

Bouncing putty based on organosiloxane-boron compound mixtures and reaction products are improved by the addition of polyglycols. The improved bouncing putty does not become tacky upon extended kneading or use.

3,677,998
PRIMER FOR ADHESION OF SILICONE RUBBER TO METAL
Donald G. Young, Glendale, Ky., assignor to Dow Corning Corporation, Midland, Mich.
No Drawing. Filed Apr. 9, 1970, Ser. No. 27,112
Int. Cl. C08g *51/28*
U.S. Cl. 260—33.6 SB **4 Claims**

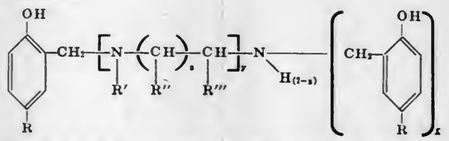
A mixture of an organotitanate, tetra(methoxyethoxy) silane, a methylsiloxane resin, acetic acid or an organotriacetoxysilane and a hydrocarbon solvent is useful as a primer in adhering a silicone rubber to a metal surface such as titanium.

3,677,999
FLAME-RESISTANT CAST RESIN MOLDING MATERIALS, PARTICULARLY FOR THE PRODUCTION OF NONCOMBUSTIBLE ELECTRICAL COMPONENTS
Hans Denk and Reiner Habrich, Munich, Germany, assignors to Siemens Aktiengesellschaft, Erlangen, Berlin and Munich, Germany
No Drawing. Filed Nov. 3, 1970, Ser. No. 86,589
Claims priority, application Germany, Nov. 5, 1969, P 19 55 524.9
Int. Cl. C08g *51/04*
U.S. Cl. 260—38 **4 Claims**

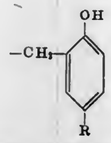
Flame resistant cast resin molding materials, particularly for manufacture of noncombustible electrical components based on aluminum oxide containing epoxy, polyester, phenol, polyurethane or silicone resin masses. The cast resin molding material contains, for 100 parts by weight of unfille! cast resin mass, 80 to 160 parts by weight of a mixture of $Al_2O_3 \cdot 3H_2O$ and a fine structured fossil. The amount of the fossil is between 6 and 12% by weight of the total amount of filler.

3,678,000
POLYPROPYLENE STABILIZED WITH METAL SALTS OF N - HYDROXYALKYLBENZYL ALKYLENEPOLYAMINES
John Howard Adams, San Rafael, Calif., assignor to Chevron Research Company, San Francisco, Calif.
No Drawing. Application Dec. 6, 1968, Ser. No. 781,996, which is a continuation-in-part of application Ser. No. 714,773, Mar. 21, 1968. Divided and this application Sept. 25, 1970, Ser. No. 75,686
Int. Cl. C08f *45/62*
U.S. Cl. 260—45.75 N **5 Claims**

Polypropylene compositions stabilized against photodegradation by divalent metal salts of polyamines having the formula:



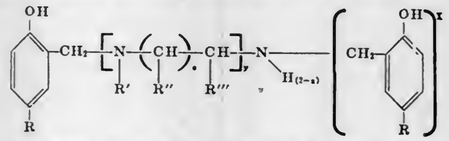
wherein R is an alkyl group of about 5 to about 15 carbon atoms; R′ is H or



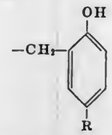
R″ and R‴ which may be alike or different are H or alkyl groups having less than 5 carbon atoms each; z is an integer in the range of 1 to 12; y is an integer in the range of 1 to 4; x is 0, 1 or 2 and the number of mols of divalent metal per mol of salt is in the range of about 0.5 to 3.5, inclusive.

3,678,001
POLYPROPYLENE STABILIZED BY NICKEL SALTS OF N-(HYDROXYALKYLBENZYL) ALKYLENEPOLYAMINES
John Howard Adams, San Rafael, Calif., assignor to Chevron Research Company, San Francisco, Calif.
No Drawing. Continuation-in-part of abandoned application Ser. No. 781,996, Dec. 6, 1968, which is a continuation-in-part of abandoned application Ser. No. 714,773, Mar. 21, 1968. This application Dec. 28, 1970, Ser. No. 102,163
Int. Cl. C08f *45/62*
U.S. Cl. 260—45.75 N **5 Claims**

Substantially crystalline polypropylene stabilized by nickel salts of alkylenepolyamines of the formula:



wherein R is an alkyl group of about 5 to about 15 carbon atoms; R′ is H or

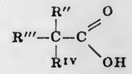


R″ and R‴ which may be alike or different are H or alkyl groups having less than 5 carbon atoms; each z is an integer in the range of 1 to 12; y is an integer in the range 1 to 4; and x is 0, 1 or 2.

3,678,002
AMBIENT TEMPERATURE CURABLE SILICONE RUBBER COMPOSITIONS
Siegfried Nitzsche and Ernst Wohlfarth, Burghausen, Upper Bavaria, Germany, assignors to Wacker-Chemie G.m.b.H., Munich, Germany
No Drawing. Filed Oct. 19, 1970, Ser. No. 82,199
Int. Cl. C08f *21/01*
U.S. Cl. 260—18 S **9 Claims**

Room temperature curable silicone rubber stocks exhibiting improved reversion resistance after curing are

prepared from mixtures of hydroxyl endblocked diorganopolysiloxanes, polyfunctional organosilicon compounds having at least three hydrocarbonoxy groups per molecule and metal salts of carboxylic acids wherein the salts are prepared from monocarboxylic acids containing 8 to 28 carbon atoms per molecule wherein the carboxyl group is bonded directly to a tertiary or quaternary carbon atom. The metal salts employed as catalysts are thus salts of acids of the general formula



where R″ and R‴ are alkyl, aryl, alkenyl or aralkyl groups and R^{IV} is hydrogen or an alkyl, aryl, alkenyl or aralkyl group, not more than 50% of the R^3 groups being hydrogen.

3,678,003
ROOM TEMPERATURE VULCANIZABLE SILICONE ELASTOMER STOCKS
Wolfgang Kaiser, Adrian, Mich., and Siegfried Nitzsche, Ernst Wohlfarth, and Paul Hittmair, Burghausen, Upper Bavaria, Germany, assignors to Wacker-Chemie G.m.b.H., Munich, Germany
No Drawing. Filed Dec. 17, 1970, Ser. No. 99,256
Claims priority, application Germany, Dec. 23, 1969, P 19 64 502.4
Int. Cl. C08f *11/04*
U.S. Cl. 260—46.5 G **11 Claims**

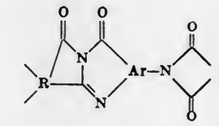
A room temperature vulcanizable silicone rubber stock is prepared by admixing and storing in the substantial absence of moisture (1) an essentially linear oganosiloxane polymer having chemically reactive end groups with (2) a crosslinking organosilicon compound containing at least three hydrolyzable groups per molecule, at least some of the hydrolyzable groups being amino groups bonded to silicon through Si—N linkage and any remaining hydrolyzable groups are oxime groups, and (3) a silane containing at least one amino substituent bonded to silicon over one or more carbon atoms and at least one monovalent hydrocarbonoxy radical or substituted hydrocarbonoxy radical bonded to silicon over an Si—O—C linkage, any substituents in said radical being amino or alkoxy groups. Fillers and curing catalysts are optionally present. The products exhibit greatly improved adhesion to a wide variety of substrates when compared to previously known RTV silicone rubber stocks.

3,678,004
ACID-STABILIZED EPOXIDE RESIN COATING COMPOSITIONS AND METHOD OF PREPARING SAME
Raymond E. Meyers, Westchester, Ill., and Edgar W. Eubanks, Westview Village, Ohio, assignors to SCM Corporation, Cleveland, Ohio
No Drawing. Filed Jan. 7, 1970, Ser. No. 1,325
Int. Cl. C08g *30/10*
U.S. Cl. 260—47 EC **10 Claims**

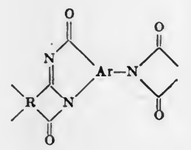
Disclosed are acid-stabilized epoxide resin coating compositions and processes for curing same. The compositions are one-component mixtures containing an epoxide resin, chelates of aluminum alcoholates as the curing or crosslinking agent and sufficient acid (e.g., at least about 0.1% by weight of the overall coating composition) to maintain low viscosity in the coating composition upon storage.

3,678,005
MIXED IMIDE-ISOINDOLOQUINAZOLINEDIONES HETEROCYCLIC POLYMERS
Guy Rabilloud, Bernard Sillion, and Gabriel de Gaudemaris, Grenoble, France, assignors to Institut Francais du Petrole des Carburants et Lubrifiants, Rueil-Malmaison, France
No Drawing. Filed Apr. 14, 1970, Ser. No. 28,526
Claims priority, application France, Apr. 18, 1969, 12,375
Int. Cl. C08g *20/32*
U.S. Cl. 260—47 CP **18 Claims**

Heat-resistant, as well as tough polymers are provided consisting essentially of recurring units of at least one of the following formulae:



and



wherein Ar is selected from homocyclic and heterocyclic trivalent aromatic radicals, the three valences of which are linked to different carbon atoms, two of said valencies being linked to adjacent carbon atoms, and R is a tetravalent organic radical containing at least two carbon atoms. Precursors and processes to porduce these polymers are also described.

3,678,006
CURABLE POLYPHENYLENE COPOLYMERS AND RESIN COMPOSITIONS
Norman Bilow, Los Angeles, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.
No Drawing. Continuation-in-part of application Ser. No. 782,002, Dec. 6, 1968. This application Jan. 7, 1971, Ser. No. 104,777
Int. Cl. C08g *33/00, 33/10*
U.S. Cl. 260—47 R **9 Claims**

An improved new class of polyphenylene copolymers, terpolymers and quaterpolymers modified with an alkyl and/or aryl phenolic compound and/or aromatic amine curable to useful coating, bonding and molded resins with curing agents generally applicable to phenolic resins.

3,678,007
METAL SALT COMPLEXES OF IMIDAZOLIUM SALTS AS CURING AGENTS FOR ONE PART EPOXY RESINS
Rostyslaw Dowbenko and Carl C. Anderson, Gibsonia, Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.
No Drawing. Continuation-in-part of application Ser. No. 887,784, Dec. 23, 1969. This application Aug. 23, 1971, Ser. No. 174,218
Int. Cl. C08g *30/14*
U.S. Cl. 260—47 EN **10 Claims**

Storage-stable, curable epoxy resin compositions comprise a mixture of an epoxy resin and a metal salt complex of an imidazolium salt. Preferably, the composition

includes a nitrogenous compound, such as urea, dicyandiamide, melamines or thioureas. These compositions are storage-stable in the uncured state for long periods of time at room temperature, but can be easily cured at elevated temperatures to provide products having excellent sheer strength, peel strength and other properties. These epoxy resin composions can be used as coatings, adhesives, potting compounds, in casting and laminates, and for similar purposes.

3,678,008

THERMOSETTABLE AROMATIC AMINE FORMALDEHYDE RESIN COMPOSITIONS MODIFIED WITH AN AROMATIC POLYCARBOXYLIC COMPOUND

Rodney M. Huck, Longmeadow, and John R. Le Blanc, Wilbraham, Mass., assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Continuation-in-part of application Ser. No. 792,790, Jan. 21, 1969. This application Sept. 23, 1970, Ser. No. 74,874

Int. Cl. C08g *9/06, 15/00*

U.S. Cl. 260—65 **7 Claims**

Thermosettable polymeric compositions incorporating an aromatic amine formaldehyde resin and an aromatic polycarboxylic compound. When thermoset by heat, these compositions display improved thermal stability. Because of their solvent solubility characteristics, these compositions are useful for preparing varnishes. They are also useful in molding powders.

3,678,009

THERMOCURABLE CRYSTALLINE POLYURETHANES BASED ON BRANCHED POLYESTERS

Friedrich Lohse, Allschwil, Rolf Schmid, Reinach, Basel-land, Willy Fisch, Binningen, and Hans Batzer, Arlesheim, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

No Drawing. Filed Dec. 9, 1969, Ser. No. 883,628

Claims priority, application Switzerland, Dec. 16, 1968, 18,755/68

Int. Cl. C08g *22/12, 22/18*

U.S. Cl. 260—75 NP **16 Claims**

Thermocurable composition which comprises (a) slightly branched polyesters possessing terminal hydroxyl groups having an average molecular weight of about 1200 to about 10,000, and (b) a diisocyanate with 0.9 to 1.1 equivalents of isocyanate groups being employed in each case per 1 equivalent of hydroxyl group. The compositions are useful as dipping resins, casting resins, laminating resins, impregnating resins, coating agents, sealing compositions, potting and insulating compositions for the electrical industry, or as adhesives.

3,678,010

VULCANIZED SILICON TERMINATED POLYMERS

George L. Brode, Bridgewater, N.J., assignor to Union Carbide Corporation, New York, N.Y.

No Drawing. Filed Dec. 22, 1969, Ser. No. 887,337

Int. Cl. C08g *17/14, 47/06*

U.S. Cl. 260—75 T **8 Claims**

A silicon terminated organic polymer comprising a carbonyl chloride terminated polyester prepolymer wherein the carbonyl chloride terminal groups have been reacted with an organosilicon compound to terminate, that is cap or endblock said polymers with organosilicon groups.

3,678,011

NOVEL POLYURETHANE-UREA COATING COMPOSITION AND CAST FILM

John Bernhard Hino, Cheektowaga, and Bernard Taub, Williamsville, N.Y., assignors to Allied Chemical Corporation, New York, N.Y.

No Drawing. Filed Jan. 13, 1970, Ser. No. 2,652

Int. Cl. C08g *17/00, 22/00;* **B32b** *27/40*

U.S. Cl. 260—75 NH **14 Claims**

Production of a novel polyurethane-urea composition of low substantially constant viscosity by (1) reacting a hydroxy-terminated polymer and an excess of aromatic diisocyanate to produce an isocyanate-terminated prepolymer and (2) reacting said prepolymer with a 5-amino-1-methyl-3,3-bis(lower alkyl) cyclohexane methyl amine, and bis(lower alkyl) monoamine in a polar organic solvent. This composition applied as a coating provides a thermoplastic film of excellent mechanical properties on evaporation of the solvent.

3,678,012

METHOD OF PRODUCING PHOSPHORUS-CONTAINING CURABLE MATERIAL

Hideaki Matsuda, Marugame, Hisakazu Mori, Kagawa-ken, and Fujio Yamauchi, Kanongi, Japan, assignors to Okura Kogyo Kabushiki Kaisha, Takamatsu-shi, Kagawa-ken, Japan

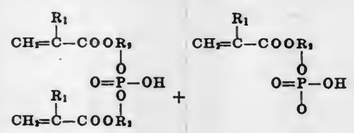
No Drawing. Filed Oct. 15, 1970, Ser. No. 81,188

Claims priority, application Japan, Dec. 23, 1969, 44/104,001

Int. Cl. C08g *22/16*

U.S. Cl. 260—77.5 AR **14 Claims**

Phosphorus-containing curable products useful for the production of flame-resistant materials are provided herein, said products prepared by the addition reaction of an oxirane compound with polymerizable mixed phosphates represented by the following general formula:



wherein R_1 represents a hydrogen or a methyl group, and R_2 represents a lower alkylene group or a halogenated lower alkylene group, mixing the produced reaction products with polymerizable monomers to dissolve thereof, optionally adding polyhydric alcohols thereto, and reacting thereof with a polyisocyanate.

3,678,013

PROCESS OF REACTING CARBOXY-TERMINATED POLYALKYLENE POLYMER WITH AN IMINE AND RESULTANT PRODUCT

Leon Sherwood Minckler, Jr., Watchung, N.J., assignor to Esso Research and Engineering Company

No Drawing. Filed Apr. 7, 1970, Ser. No. 26,421

Int. Cl. C08d *3/04, 5/02*

U.S. Cl. 260—77.5 R **20 Claims**

This invention is directed to polymers formed by the reaction of aziridines with carboxy-terminated polyalkylene polymers to produce reactive polymers having substantially the same molecular weight as the charge polymer.

3,678,014

LOW TEMPERATURE PEROXIDE CURABLE THERMOSETTING POLYURETHANE RESIN HAVING TERMINAL UNSATURATION

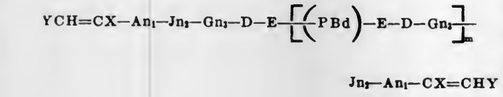
Hisao Suzuki, Fujisawa-shi; Akira Musashi, Kanagawa-ken; Makoto Hiruta, Kanagawa-ken, and Hiroo Muramoto, Kanagawa-ken, all of Japan, assignors to Nippon Soda Co., Ltd., Tokyo, Japan

Filed Aug. 7, 1969, Ser. No. 849,298

Int. Cl. C08g *22/00*

U.S. Cl. 260—77.5 CR **20 Claims**

A thermosetting resin having the formula:



wherein X is hydrogen, or an alkyl radical containing up to four carbon atoms; Y is selected from the group consisting of hydrogen, phenyl, and alkoxycarbonyl; A is a carboxyl, or a carbonyl group; J is an alkylene group containing less than five carbon atoms and G is selected from the group consisting of urethane, carboimino and ureylene group; E is urethane or carboimino, and can be the same or different from G; D is selected from the group consisting of alkylene, cycloalkylene, phenylene, naphthylene, pyrene, bis(phenylene)-methylene and a tris(phenylene)methylidyne radical (in which the radical may be substituted by a lower alkyl radical); PBd is a polybutadiene or copolybutadiene chain having a polymerization degree of from 4 to 370 and from about 50 percent to about 100 percent of 1,2-configuration; n_1, n_2, and n_3 express 0 or 1 respectively, wherein a combination of (1) n_1=1, n_2=1, and n_3=0, and (2) n_1=1, n_2=0 and n_3=0 does not occur; and m expresses an integer of 1 to 3.

3,678,015

PROCESS FOR MAKING POLYIMIDE PREPOLYMER WITH MIXTURE OF PHENOLIC AND HYDROCARBON SOLVENTS

Fred F. Holub, and John T. Hoback, both of Schenectady, N.Y., assignors to General Electric Company

Filed April 6, 1970, Ser. No. 26,079

Int. Cl. C08g *20/32*

U.S. Cl. 260—78 UA **6 Claims**

A method is provided for making a curable polymeric reaction product of an organic diamine and an aliphatically unsaturated dicarbonyl compound such as an organic anhydride or organic dicarboxylic acid. The curable polymeric reaction product can be heat softened to allow incorporation of filler and is convertible to the infusible state by heat or by the employment of a free radical initiator. Reaction of the organic diamine and the aliphatically unsaturated dicarbonyl compound is effected in a phenolic-liquid hydrocarbon solvent medium. The hydrocarbon can serve as an azeotroping agent to effect removal of water of reaction prior to the recovery of the reaction product of the organic diamine and the aliphatically unsaturated dicarbonyl compound. The polymeric reaction product can be molded to produce high temperature resistant polyimide films and structures.

3,678,016

FABRICATION OF SHAPED ARTICLES CROSS-LINKED BY CHEMICAL ADDITION REACTIONS

Robert L. Zimmerman; Kent S. Dennis, and Eugene R. Moore, all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 342,812, Feb. 5, 1964, abandoned. This application Feb. 27, 1967, Ser. No. 618,998

Int. Cl. C08f *27/00*

U.S. Cl. 260—78.4 D **10 Claims**

"Cross-linking of a reactive polymer and a curing agent which occurs by a chemical addition reaction has been found to be reversible at elevated temperatures. The reversible nature of the cross-linking reaction makes it possible to prepare more uniformly crosslinked articles by separately heating a polymer such as styrene-maleic anhydride and a polyol, combining them at elevated temperatures and then by cooling form uniform cross-links. Another feature of the invention provides for heating a cross-linked article to reverse the cross-links, fluidize the composition, reform it and then cool to recross-link the composition. Useful coreactive functional groups include a polymer with a hydroxyl group and a curing agent with anhydride groups or a polymer with carboxylic acid groups and a curing agent with vinyl ether groups.

3,678,017

INHIBITING PREMATURE VULCANIZATION OF RUBBERS

James R. Shelton, East Cleveland, and Roger J. Hopper, Akron, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed April 7, 1970, Ser. No. 26,431

Int. Cl. C08f *27/06;* **C08c** *11/60, 11/54*

U.S. Cl. 260—79.5 B **16 Claims**

Retarders of premature vulcanization of rubber, said retarders including N-alkylthio or N-arylthio sulfonamides and N-alkylthio or N-arylthio sulfamides, e.g., N-(n-butyl thio)-N-methyl-methanesulfonamide.

3,678,018

SULFUR-CURABLE OLEFINIC COPOLYMERS AND METHOD FOR PRODUCING THE SAME

Seimei Yasui, Takatsuki-shi; Masaaki Hirooka, Ibaragi-shi, and Teruo Oshima, Nishinomiya-shi, all of Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan

Filed Feb. 10, 1969, Ser. No. 798,121

Claims priority, application Japan, Feb. 20, 1968, 43/10961

Int. Cl. C08f *15/40*

U.S. Cl. 260—80.78 **13 Claims**

A sulfur-curable olefinic copolymer consisting essentially of

1. at least one 2-norbornene compound having at the fifth position of the norbornene nucleus a hydrocarbon group containing at least 3 to 200 acyclic and non-conjugated carbon-carbon double bonds, and
2. at least one member selected from the group consisting of ethylene and α-olefin having three to 20 carbon atoms.

This sulfur-curable olefinic copolymer has excellent cocurability with a diene rubber and produced by contacting said 2-norbornene component and ethylene and/or said αolefin with a catalyst consisting essentially of an organoaluminum compound and a member selected from the group consisting of a vanadium compound having at least trivalencies and a titanium compound having at least trivalencies.

3,678,019

NOVEL PROCESS FOR OLEFIN POLYMERIZATION

Joseph Wagensommer, Westfield, N.J., assignor to Esso Research and Engineering Company

Filed March 16, 1970, Ser. No. 20,121

Int. Cl. C08f *15/40*

U.S. Cl. 260—80.78 **9 Claims**

This invention is directed to a novel process for preparing copolymers of ethylene and certain alpha olefins (including

terpolymers with dienes) by reaction in the presence of vanadium and titanium catalysts together with aluminum cocatalysts.

3,678,020

STRIPPABLE UNSATURATED INTERPOLYMER COMPOSITIONS

Karl F. Schimmel, Verona, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed May 23, 1969, Ser. No. 827,177
Int. Cl. C08f 15/40, 19/00, 29/08
U.S. Cl. 260—80.78 12 Claims

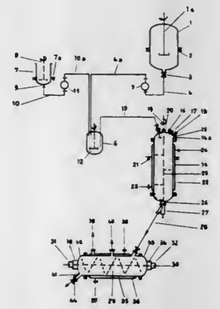
This invention relates to a method of forming strippable films of certain unsaturated hydrocarbon polymers which are non-rubbery interpolymers of a cyclic polyene and at least one monoolefin, said interpolymer having an essentially saturated carbon chain containing a substantial proportion of the total carbon atoms in the polymer molecule and containing sufficient ethylenically unsaturated groups in the polymer molecule to permit substantial curing of films thereof by an oxidative mechanism, said interpolymers having an intrinsic viscosity of 0.6 or less. The strippable films are prepared by incorporating into the interpolymer composition an effective amount of a complex organic polyphosphoric ester acid anhydride.

3,678,021

PROCESS FOR PREPARING VINYL BASED POLYMERS AND COPOLYMERS INSOLUBLE IN THEIR MONOMERS

Jean Chatelain, Lyon, and Salomon Soussan, Saint-Fons, both of France, assignors to Produits Chimiques Pechiney-Saint-Gobain, Neuilly-sur-Seine, France

Filed Jan. 19, 1970, Ser. No. 3,890
Claims priority, application France, Jan. 21, 1969, 6901008; Oct. 30, 1969, 6937326; Oct. 30, 1969, 6937327
Int. Cl. G08f 1/04, 3/30
U.S. Cl. 260—80.81 2 Claims



Process for preparing vinyl based polymers and copolymers which are insoluble in their monomeric compositions comprising dispersing a small amount of a suspension of an aqueous solution of at least a portion of a catalytic system in a finely divided manner in a composition of the monomer or comonomer and then polymerizing the composition to form polymer.

3,678,022

POLYMERIZING UNSATURATED MONOMERS WITH A CATALYST OF AN IRON COMPLEX, A DIALKYL ALUMINUM COMPOUND AND A BIDENTATE LIGAND

John E. Bozik, Pittsburgh; Harold E. Swift, Gibsonia, and Ching Yong Wu, Pittsburgh, all of Pa., assignors to Ameripol, Inc.

Division of Ser. No. 812,536, March 10, 1969, Pat. No. 3,565,875. This application July 9, 1970, Ser. No. 61,011
Int. Cl. C08f 3/22, 3/74
U.S. Cl. 260—88.7 9 Claims

Process for polymerizing olefins, diolefins and alkylene oxides in the presence of a catalyst system comprised of an iron complex, a trialkyl aluminum compound and a bidentate ligand capable of both p i ($\pi$and sigma (σ) banding to form a five or six-membered ring.

3,678,023

PROCESS FOR THE PRODUCTION OF FREE-FLOWING, GRANULAR, ATACTIC POLYBUTENE-1

Albert Frese, Marl, Germany, assignor to Chemische Werke Huels Aktiengesellschaft Patentabteilung, Marl, Germany

Filed Sept. 25, 1970, Ser. No. 75,735
Claims priority, application Germany, Sept. 26, 1969, P 19 48 623.8
Int. Cl. C08f 1/42, 1/92, 3/12
U.S. Cl. 260—93.7 10 Claims

Free-flowing, granular atactic polybutene-1 is produced by low-pressure polymerizing butene-1 with a mixed titanium or vanadium halide and alkylaluminum catalyst to a solids content of up to 200 g./l. using a liquefied gas as diluent; and thereafter adding an alkanol of one to four carbon atoms to the polymerization mixture in an amount at least 4 times the weight of the polymer under high agitation.

3,678,024

CROSSLINKING OF ETHYLENE POLYMERS WITHOUT A CROSSLINKING AGENT

Gordon Y. T. Liu, and Carl P. Strange, both of Baton Rouge, La., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jan. 5, 1970, Ser. No. 785
Int. Cl. C08f 3/02, 3/04, 27/00
U.S. Cl. 260—94.9 GA 8 Claims

Ethylene polymers are crosslinked in the absence of crosslinking agents by working the normally solid olefin polymer, e.g., polyethylene, at temperatures just above the melting point of the polymer and at higher than normal shear rates, e.g., greater than 3,000 sec^{-1}.

3,678,025

PREPARATION OF LINEAR ALPHA OLEFIN POLYMERS HAVING BROAD MOLECULAR WEIGHT DISTRIBUTIONS

George B. Birrell, Eugene, Oreg., assignor to The Dow Chemical Company, Midland, Mich.

Filed May 22, 1970, Ser. No. 39,890
Int. Cl. C08f 1/56, 3/06
U.S. Cl. 260—94.9 E 14 Claims

Linear alpha olefin polymers having controlled broad molecular weight distributions are prepared by an improved process in which a zirconium catalyst composition, e.g., the reaction product of zirconium tetrachloride and aluminum triethyl, and another transition metal catalyst composition, e.g., the reaction product of vanadium oxytrichloride and aluminum triethyl, are introduced into a polymerization zone containing an alpha olefin in an inert organic solvent and the alpha olefin is subsequently polymerized at temperatures sufficient to maintain the resulting alpha olefin polymer in solution. Such alpha olefin polymers are found to have a wider variety of uses, e.g., from cable jacketing to bottle blowing applications, than alpha olefin polymers produced by conventional low pressure polymerization.

3,678,026

METHOD OF PURIFYING LOWER ALKYL ESTERS OF α-L-ASPARTYL-L-PHENYLALANINE

Yasuo Ariyoshi; Tetsuo Yamatani; Noboru Uchiyama, all of Kanagawa-ken, and Sato Naotake, Tokyo, all of Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Filed Dec. 28, 1970, Ser. No. 102,184
Claims priority, application Japan, Dec. 30, 1969, 44/1753
Int. Cl. C07c 103/52; C07g 7/100
U.S. Cl. 260—112.5 3 Claims

The lower alkyl esters of α-L-aspartyl-L-phenylalanine, known artificial sweeteners, are separated from the bitter tasting β-isomers and other impurities by the low solubility of their adducts with certain aromatic carboxylic acids and phenols in water.

3,678,027

ADSORPTION COMPLEXES OF PEPTIDES HAVING ADRENOCORTICOTROPIC HORMONE ACTIVITY

Evert De Jager, and Jan Daniel Herman Homan, both of Oss, Netherlands, assignors to Organon Inc., West Orange, N.J.

Continuation-in-part of Ser. No. 341,128, Jan. 29, 1964, abandoned. This application June 30, 1967, Ser. No. 650,192
Claims priority, application Netherlands, Feb. 15, 1963, 289,055
Int. Cl. A61k 17/16; C07c 103/52
U.S. Cl. 260—112.5 5 Claims

An injectable preparation suitable for hormone therapy is provided by a suspension in an aqueous injectable vehicle of an adsorption complex of a salt, hydroxide or oxide of zinc, nickel, cobalt, copper or iron and a peptide having ACTH activity with an amino acid sequence of at least that of the first 19 and not more than that of the first 31 amino acid residues of the ACTH molecule, the amount of metal being between about 1 and 20 mg. per 100 U.S.P. units of peptide.

3,678,028

PREPARATION OF WATER-INSOLUBLE MONO-AND DIS-AZO DYES

John Blackwell, Kennett Square, Pa., and Alfred Tropea, Gibbstown, N.J., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed June 1, 1970, Ser. No. 42,559
Int. Cl. C09b 31/04
U.S. Cl. 260—186 8 Claims

In an improved process for preparing water-insoluble azo dyes by diazotizing a first aromatic amine with sodium nitrite and coupling the diazonium salt thus produced to a second aromatic amine or active methylene coupling component, the improvement consisting of carrying out at least the diazotization reaction in a mixture of acetic acid and trichloroethylene and, optionally, a mineral acid, the weight ratio of acetic acid to trichloroethylene being within the range of 4:1 to 1:7.

3,678,029

ESTROGEN GLUCOSAMINIDES OF 2-AMINOGLUCOSE

Joseph Peter Joseph, Cliffside, N.J.; John Paul Dusza, Nanuet, and Seymour Bernstein, New City, both of N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Filed Jan. 15, 1970, Ser. No. 3,219
Int. Cl. C07c 173/00
U.S. Cl. 260—210.5 9 Claims

The preparation of steroidal-glucopyranosides by the reaction of an estradiol or substituted estradiol with a glucopyranose and subsequent transformations is described. These compounds are useful for their antifungal properties.

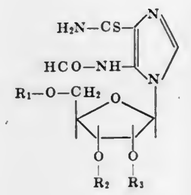
3,678,030

IMIDAZOLE DERIVATIVES INHIBITING NF SARCOMA

Akihiro Yamazaki; Teruo Furukawa, and Izumi Kumashiro, all of Kanagawa, Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Filed Feb. 27, 1970, Ser. No. 15,245
Int. Cl. C07d 51/50
U.S. Cl. 260—211.5 R 4 Claims

Imidazole derivatives of the formula (I)



(I)

wherein R_1 is lower alkanoyl, and R_2 and R_3 are each lower alkanoyl or jointly lower alkylidene are readily prepared by reaction of formic acid with corresponding starting compounds having an amino group in position 5 of the imidazole ring, and hydrogen or lower alkanoyl groups instead of each of R_1, R_2, R_3 or alkylidene in R_2 and R_3. They inhibit the growth of NF sarcoma in mice.

3,678,031

SLURRY PROCESS FOR THE PRODUCTION OF ABSORPTIVE CARBOXY METHYL CELLULOSE FIBERS

Howard L. Schoggen, Memphis, Tenn., assignor to The Buckeye Cellulose Corporation, Cincinnati, Ohio

Filed Oct. 21, 1970, Ser. No. 82,797
Int. Cl. C08b 11/00
U.S. Cl. 260—231 CM 6 Claims

Alkali metal salts of carboxymethyl cellulose are prepared by producing and then etherifying alkali cellulose under conditions selected to result in a molar excess of neutralized acidic etherifying reagent to moles of unreacted neutralizing reagent together with extended etherifying time and temperature conditions, i.e., about 3 to about 24 hours at about 60°C. to about 80°C. to yield substantially insoluble acidic products, which products are white in color, have a reflectance brightness of about 70 to about 80, have a normally soluble degree of substitution range of about 0.4 to 1.2 and are absorptive and retentive of up to about 70 times their weight of aqueous solutions.

3,678,032

α,α-DIALKANOYLOXYACETYL PENICILLANIC ACID DERIVATIVES

Ronald J. McCaully, Malvern, Pa., assignor to American Home Products Corporation, New York, N.Y.

Filed May 15, 1970, Ser. No. 37,910
Int. Cl. C07d 99/16
U.S. Cl. 260—239.1 3 Claims

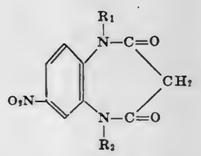
Novel penicillin type compounds are prepared by the α,α-dialkanoyloxyacetylation of amino substituted penicillanic acid derivatives. The compounds are useful as antibacterial agents.

3,678,033
7-NITRO-1H-1, 5-BENZODIAZEPINE-2,4-(3H,5H)-DIONES

Karl-Heinz Weber, Gau-Algesheim; Adolf Bauer; Herbert Merz, both of Ingelheim, Rhine, and Klaus Minck, Gau-Algesheim, all of Germany, assignors to Boehringer Ingelheim GmbH, Ingelheim, Rhine, Germany

Filed Feb. 2, 1971, Ser. No. 112,070
Claims priority, application Germany, Feb. 13, 1970, P 20 06 601.7
Int. Cl. C07d 53/04
U.S. Cl. 260—239.3 B 10 Claims

Compounds of the formula



wherein

R_1 is hydrogen, straight or branched alkyl of one to four carbon atoms, hydroxy-(alkyl of one to four carbon atoms), methoxy-(alkyl of one to four carbon atoms), acetoxy-(alkyl of one to four carbon atoms), cyclopropyl-methyl, cyclohexyl or allyl, and

R_2 is hydrogen, phenyl, o-halo-phenyl, o-trifluoromethyl-phenyl, o-nitro-phenyl, o-cyano-phenyl or pyridyl,

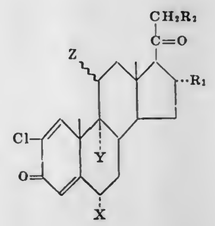
provided, however, that R_1 and R_2 are other than both hydrogen at the same time; the compounds are useful as psychosedatives and anticonvulsives.

3,678,034
2-CHLORO-Δ1,4-STEROIDS

Henry Laurent; Karl Heinz Kolb, and Rudolf Wiechert, all of Berlin, Germany, assignors to Schering Aktiengesellschaft, Berlin and Berg Kamen, Germany

Filed April 22, 1970, Ser. No. 30,934
Claims priority, application Germany, April 23, 1969, P 19 21 397.9; April 23, 1969, P 19 21 398.0; June 19, 1969, P 19 31 508.3
Int. Cl. C07c 169/32
U.S. Cl. 260—239.55 37 Claims

Novel 2-chloro-Δ1,4-steroids having the formula



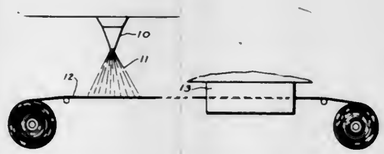
(I)

wherein R_1 is hydrogen or methyl, R_2 is hydrogen, hydroxyl or esterified hydroxyl, X is fluorine, chlorine or methyl, Y is hydrogen or halogen, and Z is halogen having the same or a smaller atomic weight then Y, a β-position hydroxyl and in the case where Y is hydrogen, an α-position hydroxyl.

3,678,035
CARBOXAMIDO-AZIRIDINE COMPOUNDS

Dilip K. Ray-Chaudhuri, Somerset, and Hans H. Stockmann, Plainfield, both of N.J., assignors to National Starch and Chemical Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 690,838, Dec. 15, 1967, abandoned. This application July 15, 1970, Ser. No. 55,137
Int. Cl. C07d 23/08
U.S. Cl. 260—239 E 1 Claim



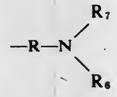
Carboxamido-aziridine compounds comprising the products resulting from the reaction of an alkylenimine such as ethylenimine with an intermediate adduct comprising the reaction product of an non-florinated alcohol reagent such as lauryl alcohol and a polyisocyanate reagent such as tobylene diisocyanate. The resulting carboxamido compounds impart water repellency to a wide variety of substrates.

3,678,036
2-SUBSTITUTED AMINO-1,4-BENZODIAZEPINE

Giles Allan Archer, Essex Fells, and Leo Henryk Sternbach, Upper Montclair, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Continuation-in-part of Ser. Nos. 208,951, Sept. 10, 1962, Pat. No. 3,422,091, and Ser. No. 323,884, Nov. 15, 1963, abandoned. This application Sept. 20, 1968, Ser. No. 761,307
Int. Cl. C07d 53/06, 57/00, 99/02
U.S. Cl. 260—239 BD 15 Claims

1,4-Benzodiazepines bearing in position-2, either a disubstituted amino group or an



group wherein R is lower alkylene and R_6 and R_7 are either lower alkyl or together with the nitrogen atom form a heterocyclic moiety or an NH-R-phenyl grouping wherein R is as above and certain 4-oxides thereof. Such compounds are useful as muscle relaxants, sedatives and anticonvulsants.

3,678,037
PROCESS FOR PRODUCING α-AMINO PENICILLIN INTERMEDIATES

Charles A. Robinson, West Chester, Pa., assignor to American Home Products Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 4,161, Jan. 14, 1970, abandoned, Continuation of Ser. No. 671,938, Oct. 2, 1967, abandoned. This application Aug. 10, 1970, Ser. No. 62,682
Int. Cl. C07d 99/16
U.S. Cl. 260—239.1 17 Claims

A method for preparing organosilane derivatives of α-amino penicillins comprising preparation of an amine base salt of 6-aminopenicillanic acid by reacting the latter with a strong amine in an organic solvent devoid of hydroxyl groups; adding to the resulting mixture of the amine base salt of 6-aminopenicillanic acid, which has had added thereto a weak amine base, a mono- or multi-functional halosilane; incorporating a mineral acid salt of a weak amine in the mixture; and then adding to the last resulting mixture the chloride hydrochloride of a suitable α-amino acid to form by acylation

the organosilane derivatives of the hydrochloride of the desired α-amino penicillin. The resulting silylated and silenated penicillin hydrochlorides are useful for conversion into the corresponding α-amino penicillin having potent antibiotic activity, by simple hydrolysis or alcoholysis, followed either by transformation of the resulting penicillin hydrochloride into an aryl sulfonic acid salt thereof which may be neutralized to the penicillin per se by addition of a suitable base, or by the raising of the pH of the reaction mixture to the iso-electric point to cause precipitation of the desired penicillin.

3,678,038
1,4-BENZODIAZEPIN-5-ONES AND METHODS FOR THE PREPARATION THEREOF

George Francis Field, Arlesheim, Switzerland; Leo Henryk Sternbach, Upper Montclair, and William Joseph Zally, Union City, both of N.J., assignors to Hoffman-La Roche Inc., Nutley, N.J.

Continuation of Ser. No. 718,259, April 2, 1968, Pat. No. 3,624,073, which is a continuation-in-part of Ser. No. 665,716, Sept. 6, 1967, abandoned. This application April 1, 1971, Ser. No. 130,445
Int. Cl. C07d 53/06
U.S. Cl. 260—239.3 D 7 Claims

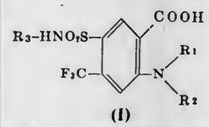
1,4-Benzodiazepin-5-ones and methods for their preparation are disclosed. These compounds are useful as intermediates in the preparation of known and pharmacologically valuable 5-substituted-1,4-benzodiazepines.

3,678,039
4-TRIFLUOROMETHYL-ANTHRANILIC ACIDS

Lincoln Harvey Werner, 94 Larned Road, and George De Stevens, 2 Warwick Road, Woodland Park, both of Summit, N.J.

Continuation-in-part of Ser. No. 606,599, Jan. 3, 1967, which is a continuation-in-part of Ser. No. 553,703, May 31, 1966, abandoned, which is a continuation-in-part of Ser. No. 508,556, Nov. 18, 1965. This application April 27, 1967, Ser. No. 634,101
Int. Cl. C07d 5/14
U.S. Cl. 260—239.6 9 Claims

5-Sulfamyl-4-trifluoromethyl-anthranilic acids of the formula I



(I)

R_1 = aliphatic or araliphatic hydrocarbon radical or aryl

$R_{2,3}$ = H, aliphatic or araliphatic hydrocarbon or acyl radical or aryl

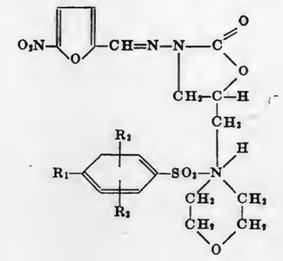
esters and salts thereof, particularly the N-furfuryl-4-trifluoromethyl-5-sulfamyl-anthranilic acid, exhibit diuretic effects.

3,678,040
PROCESS FOR THE PREPARATION OF HYDROXYBENZENE SULFONATES OF MORPHOLINOMETHYL AMINOOXAZOLIDONES

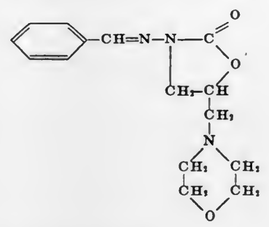
Antonio Esteve, and Jose M. Espinos, both of Barcelona, Spain, assignors to Laboratorios del Dr. Esteve, S.A., Barcelona and Laboratorios Espinos y Bofill S.A., Cornella, Spain

Filed July 25, 1967, Ser. No. 655,772
Int. Cl. C07d 87/46
U.S. Cl. 260—240 A 6 Claims

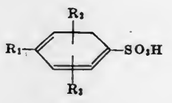
Anti-microbial and anti-haemmorhagic hydroxybenzene sulfonates of morpholinomethyl 3-amino-2-oxazolidones having the general formula:



in which R_1, R_2 and R_3 represent members selected from the group consisting of hydrogen, hydroxyl and sulfonic acid are obtained by reacting a compound of the formula:



with a sulfonic acid of the formula:



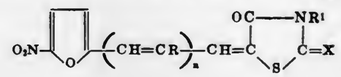
and reacting the product with 5-nitrofurfural.

3,678,041
SUBSTITUTED THIAZOLIDINE-4-ONES

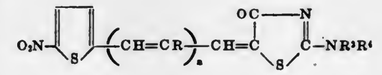
Max J. Mousseron, Montpellier, Herault, France, assignor to Etablissements Clin-Byla, Paris, France

Filed June 3, 1968, Ser. No. 733,808
Claims priority, application France, June 6, 1972, 72109263
Int. Cl. C07d 91/14
U.S. Cl. 260—240 A 4 Claims

Highly active antibacterials are described which are 5-substituted thiazolidine-4-ones having one of the formulas



and



in which n is 0 or 1, R is a hydrogen atom or a bromine atom, R^1 is a hydrogen atom, an alkyl, or alkenyl group which may

be substituted by a halogen atom, or a hydroxyl, a carboxylic acid, carboxamide, substituted carboxhydrazide or carboxylic acid ester group or a primary, secondary or tertiary amino group, or R^1 is a carbalkoxy group, an alkynyl group, an azomethine group or a cycloalkyl, aryl or aralkyl group, which cycloalkyl, aryl or aralkyl group may be substituted by one or more halogen atoms or hydroxyl, sulphonamido, nitro or carboxylic acid groups, X is an oxygen or sulphur atom or an amino group having the formula



in which R^2 is a hydrogen atom or an alkyl, alkenyl, cycloalkyl, aryl, aralkyl or arylsulphonyl group, which groups may be substituted, or a carbamido or amidinomethyl group and each of R^3 and R^4 is a hydrogen atom, or an alkyl, alkenyl, cycloalkyl, aryl or aralkyl group, which group may be substituted, or R^3 and R^4 together with the nitrogen atom to which they are attached form a heterocyclic ring. Tests are described in which activity against a large number of gram positive and gram negative bacteria are reported.

3,678,042

PROCESS FOR THE MANUFACTURE OF ARYLOXAZOLES

Erich Matter, Basel, Switzerland, assignor to Ciba Limited, Basel, Switzerland

Filed Sept. 30, 1969, Ser. No. 862,442

Claims priority, application Switzerland, Oct. 7, 1968, 14932/68

Int. Cl. C07d *85/48*

U.S. Cl. 260—240 CA 9 Claims

The invention provides a new process for preparation of aryloxazoles by ring closure reaction between an o-hydroxy-amino benzene and a carboxylic acid. The improvement over known processes consists in performing the reaction in a two-step heating procedure and in the presence of small amounts of specific amines, preferably non-aromatic cyclic nitrogen bases, having a P_K-value of at least 7. The reaction products are valuable optical whitening agents.

3,678,043

2,3-DIHYDRO-2-OXO-1H-1,4-BENZODIAZEPINE-3-CARBOXYLIC ACID ESTERS AND RELATED COMPOUNDS

Ronald J. McCaully, Malvern, Chester, Pa., assignor to American Home Products Corporation, New York, N.Y.

Filed March 14, 1966, Ser. No. 533,854

Int. Cl. C07d *41/00*

U.S. Cl. 260—239.3 D 13 Claims

The disclosure is directed to 2,3-dihydro-2-oxo-1H-1,4-benzodiazepine-3-carboxylic acid esters; 2,3-dihydro-3-hydroxy-2-oxo-1H-1,4-benzodiazepine-3-carboxylic acid esters and 3-alkoxy-2,3-dihydro-2-oxo-1H-1,4-benzodiazepine-3-carboxylic acid esters and to novel methods for their preparation. The compounds have therapeutic activity as central nervous system depressants and as intermediates in the production of 3-alkoxy-1,3-dihydro-2H-1,4-benzodiazepin-2-ones, and 1,3-dihydro-3-hydroxy-2H-1,4-benzodiazepin-2-ones.

3,678,044

SUBSTITUTED FLAVANONES

John Howard Adams, San Rafael, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 779,626, Nov. 27, 1968. This application Oct. 22, 1970, Ser. No. 83,209

Int. Cl. C07d *7/34*

U.S. Cl. 260—240 F 6 Claims

Substituted arylidene flavanones are provided which are useful as oxidation inhibitors for hydrocarbon compositions.

3,678,045

METHINE DYES FOR USE IN PHOTOGRAPHY

Earl J. Van Lare, and Leslie G. S. Brooker, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 680,974, Nov. 6, 1967, Pat. No. 3,576,640. This application June 1, 1970, Ser. No. 54,070

Int. Cl. C07d *57/40*

U.S. Cl. 260—240.4 8 Claims

Methine dyes derived from 1-alkyl-3-alkyl-8-alkyl-9-alkylxanthine are advantageously used in photographic hydrophilic colloid layers as spectral sensitizers for silver halide and in hydrophilic colloid light filtering layers.

3,678,046

N-ACYL-3,4-DIHYDRO-OXAZINE-(1,3) COMPOUNDS FOR CONTROLLING PHYTOPATHOGENIC FUNGI

Helmut Huber-Emden, Basel, Switzerland, assignor to Ciba Limited, Basel, Switzerland

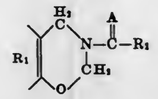
Filed April 27, 1970, Ser. No. 32,415

Claims priority, application Switzerland, April 29, 1969, 6559/69

Int. Cl. C07d *87/14*

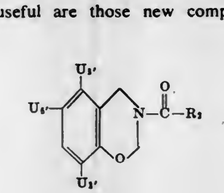
U.S. Cl. 260—244 R 3 Claims

N-acyl-3,4-dihydro-oxazine-(1,3)-derivatives of the formula



in which A represents a sulphur or an oxygen atom, R_1 indicates a six-membered ring condensed with the dihydro-oxazine ring and R_2 represents an aliphatic or aromatic residue are very effective compounds for controlling plantpathogenic fungi.

Particularly useful are those new compounds of the formula



3,678,047

ALKYLHYDROXYPHENYLCARBOALKOXY-SUBSTITUTED ISOCYANURATES

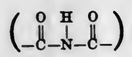
George Kletecka, Lakewood, and Peter D. Smith, Cleveland, both of Ohio, assignors to The B. F. Goodrich Company, New York, N.Y.

Filed April 27, 1970, Ser. No. 32,435

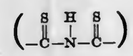
Int. Cl. C07d *55/38*

U.S. Cl. 260—248 NS 7 Claims

Compounds containing one or more alkylhydroxyphenyl groups bonded through carboalkoxy linkages to a nitrogen atom of a heterocyclic nucleus containing an imidodicarbonyl



group or an imidodithiocarbonyl



group have been prepared and are extremely effective stabilizers against the deleterious effects of oxygen, heat and light for organic materials. The stability of polymeric compositions such as α-olefin polymers and copolymers, acetal polymers, polyamides, polyesters and polyurethanes is markedly increased by the addition of small amounts of the present compounds thereto.

3,678,048

PREPARATION OF TERTIARY AMINOALKYL DERIVATIVES OF SUBSTITUTED ACETOHYDROXAMIC ACID ESTERS

Joseph Levy, Paramus, N.J., and James Palhas, New York, N.Y., assignors to Universal Oil Products Company, Des Plaines, Ill.

Filed March 23, 1970, Ser. No. 21,998

Int. Cl. C07d *87/42*

U.S. Cl. 260—247.2 B 12 Claims

Tertiary aminoalkyl derivatives of substituted acetohydroxamic acid esters are prepared by reacting an alkyl ester of a substituted acetohydroxamic acid with an acid salt of a tertiary aminoalkyl halide in a dipolar aprotic solvent medium in the presence of an acid acceptor compound.

3,678,049

POLYMERIZATION OF AROMATIC NITRILES IN 2-PYRROLIDINONE AS SOLVENT AND CATALYST AT ELEVATED TEMPERATURES

Klaus H. Gump, Gillette, N.J., assignor to Celanese Corporation, New York, N.Y.

Filed Dec. 8, 1970, Ser. No. 96,232

Int. Cl. C07d *55/12*

U.S. Cl. 260—248 CS 13 Claims

Aromatic nitriles, such as benzonitrile, are temperature-selectively polymerized in 2-pyrrolidinone at temperatures above 200°C. At temperatures between about 200° to 350°C. trimerization to a cyclic substituted 1,3,5-triazine occurs. At temperatures above 300°C., imidization occurs, producing a black, non-melting linear poly-(aryl)-carbimide which is soluble only in strong acids and is thermogravimetrically stable up to 600°C. At 300°–350°C., mixtures of trimers and polymeric imides are produced and are separable by sublimation or extraction with aromatic hydrocarbons.

3,678,050

PREPARATION OF O,O-DIMETHYL-THIONOPHOSPHORIC ACID [O-QUINOXALYL-(2)] ESTER

Pierre Gagnaux, Bottmingen, Switzerland, assignor to Sandoz Ltd., (also known as Sandoz AG), Basel, Switzerland

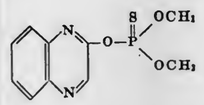
Filed Jan. 20, 1970, Ser. No. 4,423

Claims priority, application Switzerland, Jan. 28, 1969, 1250/69

Int. Cl. C07d *51/78*

U.S. Cl. 260—250 R 3 Claims

The invention concerns a novel process for the production of O,O-dimethyl-thionophosphoric acid [O-quinoxalyl-(2)] ester of the formula:



I

The compound is an insecticide and acaricide.

3,678,051

DERIVATIVES OF 1,6-PHENAZINEDIOL 5,10-DIOXIDE

Willy Leimgruber, Montclair, and Manfred Weigele, North Caldwell, both of N.J., assignors to Hoffman-La Roche Inc., Nutley, N.J.

Filed April 2, 1970, Ser. No. 25,297

Int. Cl. C07d *51/80*

U.S. Cl. 260—267 9 Claims

6-Substituted derivatives of 1-phenazinol 5,10-dioxide which possess broad spectrum anti-microbial activity are disclosed.

3,678,052

BENZAMIDE DERIVATIVES

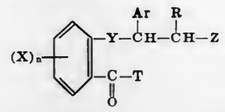
John Krapcho, Somerset, N.J., assignor to E. R. Squibb & Sons, Inc., New York, N.Y.

Continuation of Ser. No. 802,650, Feb. 26, 1969, abandoned, which is a continuation-in-part of Ser. No. 546,179, April 29, 1966, abandoned. This application June 11, 1970, Ser. No. 48,841

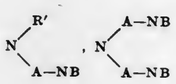
Int. Cl. C07d *51/70*

U.S. Cl. 260—268 R 7 Claims

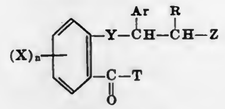
Compounds having the formula:



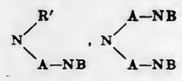
wherein T is selected from the group consisting of



and NB; Ar is phenyl: R is hydrogen or alkyl of from one to three carbons; R′ is selected from the group consisting of hydrogen, lower alkyl, monohalo-lower alkyl and butoxybenzyl; X is identically selected from the group consisting of hydrogen, alkoxy, halo, or trifluoromethyl; *n* is one to four; Y is selected from the group consisting of thia, sulfone, sulfoxide and oxa; Z is selected from the group consisting of nitro, amino and diloweralkylamino; A is ethylene or propylene and mono NB is an N containing, saturated heterocyclic, dilower alkylamino or N methyl N phene ethyl, bis NB is dilower alkylamino and non-toxic mono acid-addition salts, and methyl quaternary salts thereof are disclosed as having CNS modifying activity. The compounds have the formula



wherein X may be hydrogen, alkoxy of from one to seven carbons, trifluoromethyl or halo; *n* may be 1 or 2; Ar may be phenyl; Z may be nitro, amino or diloweralkylamino; T may be



or NB; R′ may be hydrogen, alkyl or monohalolower alkyl of from one to seven carbons or butoxybenzyl; A may be

ethylene or propylene and mono NB may be pyrrolidino, N-lower alkyl piperazino wherein the alkyl radical has less than eight carbons and diloweralkylamino wherein the alkyl radical has less than eight carbons, bis NB may be dilower alkylamino wherein the alkyl has less than eight carbons, and non-toxic mono acid-addition salts, and methyl quaternary salts thereof.

3,678,053
6,15 DIALKOXY 5,14 DIAZO ISO VIOLANTHRONES

Gioacchino Boffa, Novara; Argento Crotti, Cogliate; Giampiero Pieri, Saronno; Angelo Mangini, and Antonio Tundo, both of Bologna, all of Italy, assignors to Montecatini Edison S.p.A., Milan, Italy

Filed Aug. 5, 1970, Ser. No. 69,519

Claims priority, application Italy, Aug. 5, 1969, 20581A/69; June 10, 1970, 25757A/70

Int. Cl. C07d *39/00*

U.S. Cl. 260—272 **8 Claims**

A novel class of compounds are provided which are 6,15-dialkoxy-5,14-diaza-isoviolanthrones. The compounds are synthesized from 1-aza-2-hydroxy-benzanthrone via a novel process comprising bromination of the starting material to form 1-aza-2-hydroxy-3-bromo-benzanthrone; the hydroxy group is then alkylated, followed by treatment with sodium sulfide to produce novel intermediates of the invention, 3,3-thio-bis(1-aza-2-alkoxy-benzanthrones).

The 6,15-dialkoxy-5,14-diaza-isoviolanthrones of this invention are excellent blue vat dyes, which yield bright blue shades on cellulosic fibers. The dyeings have been found to possess excellent fastness properties.

3,678,054
PROCESS FOR THE MANUFACTURE OF 6-NITRO-9-AMINO-2-ETHOXY-ACRIDINE

Rudolf Neeb, Oberishausen, Germany, assignor to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt Main, Germany

Filed Oct. 9, 1970, Ser. No. 90,176

Claims priority, application Germany, Oct. 16, 1969, 19 52 0866

Int. Cl. C07d *37/24*

U.S. Cl. 260—279 R **2 Claims**

Process for the manufacture of 6-nitro-9-amino-2-ethoxy-acridine, wherein 6-nitro-9-chloro-2-ethoxyacridine is reacted with urea in a polar organic solvent in the presence of salts of weak bases with strong acids and, if desired or required, in the presence of catalytic amounts of an aromatic mono- or polyhydroxy compound.

3,678,055
N-2,3-DIBROMOPROPENYL PYRIDINIUM, QUINOLINIUM AND ISOQUINOLINIUM DERIVATIVES

Frank Passal, Detroit, and Arthur J. Tomson, Novi, both of Mich., assignors to M & T Chemicals Inc., New York, N.Y.

Division of Ser. No. 387,799, Aug. 5, 1964, abandoned. This application June 12, 1969, Ser. No. 870,954

Int. Cl. C07d *31/26, 33/36*

U.S. Cl. 260—290 R **7 Claims**

This invention is directed to N-2,3-dibromopropenyl pyridinium salts which find use in nickel electroplating baths and processes.

The present invention relates to novel compositions of matter and to improved nickel electroplating baths and processes.

3,678,056
PROCESS FOR THE PREPARATION OF 1,2,3,4,5,6-HEXAHYDRO-2,6-METHANO-3-BENZAZOCINES

Noel F. Albertson, East Greenbush, and William F. Wetterau, Albany, both of N.Y., assignors to Sterling Drug Inc., New York, N.Y.

Division of Ser. No. 670,391, Sept. 25, 1967, Pat. No. 3,585,203. This application July 2, 1970, Ser. No. 52,092

Int. Cl. C07d *39/00*

U.S. Cl. 260—293.52 **4 Claims**

Process, and intermediates useful therein, for obtaining certain 1,2,3,4,5,6-hexahydro-8-(H or OH)-2,6-methano-3-benzazocines valuable as pharmaceutical intermediates by catalytic hydrogenolysis of the corresponding N-benzyl compounds, the latter being produced by Grignard reaction of a benzylmagnesium halide with an N-benzyl-pyridinium halide to yield an N-benzyl-2-benzyl-1,2-dihydropyridine, reducing this to the corresponding tetrahydropyridine, and cyclizing this product by heating with a strong mineral acid to obtain the 1,2,3,4,5,6-hexahydro-3-benzyl-8-(H or OH)-2,6-methano-3-benzazocine.

3,678,057
1,3,4,4A,5,9B-HEXAHYDRO-5-PHENYL-2H-INDENO[1,2-C]-PYRIDINES

Anton Ebnother, Ariesheim; Jean-Michel Bastian, and Fulvio Gadient, both of Birsfelden, all of Switzerland, assignors to Sandoz Ltd. also known as Sandoz AG, Basel, Switzerland

Filed March 26, 1970, Ser. No. 23,076

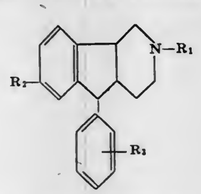
Claims priority, application Switzerland, April 8, 1969, 5258/69; May 6, 1969, 6911/69; June 11, 1969, 8891/69; June 16, 1969, 9145/69; Sept. 9, 1969, 13610/69; Dec. 10, 1969, 18379/69; Dec. 11, 1969, 18422/69

Int. Cl. C07d *39/00*

U.S. Cl. 260—293.54 **27 Claims**

0000

The invention concerns novel (4aRS,5SR,9bSR)- and (4aRS,5SR,9bRS)-1,3,4,4a,5,9b-hexahydro-5-phenyl-2H-indeno[1,2-c]-pyridine compounds of formula:



in which either R_1, R_2 and R_3 are hydrogen, or R_1 is hydrogen, lower alkyl, alkenyl or alkinyl, R_2 is chlorine, bromine, fluorine or lower alkyl, and R_3 is hydrogen, chlorine, bromine, fluorine, lower alkyl, alkylthio or alkoxy, or trifluoromethyl, and acid addition salts thereof.

The compounds exhibit a serotonin-antagonistic effect. Compounds wherein R_1 is hydrogen also exhibit an antiphlogistic effect. Compounds wherein R_1 is lower alkyl, alkenyl or alkinyl also exhibit analgesic properties.

3,678,058
1,3,4,9B-TETRAHYDRO-2(2H)-INDENO-[1,2-C]PYRIDINES

Anton Ebnother, Ariesheim; Jean-Michel Bastian, Birsfelden, and Erwin Rissi, Basle, all of Switzerland, assignors to Sandoz Ltd., (a/k/a Sandoz AG), Basle, Switzerland

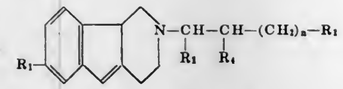
Filed April 30, 1970, Ser. No. 33,498

Claims priority, application Switzerland, May 7, 1969, 6967/69; Dec. 11, 1969, 18424/69; Feb. 5, 1970, 1651/70

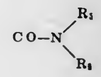
Int. Cl. C07d *39/00*

U.S. Cl. 260—293.54 **16 Claims**

The invention concerns acid addition salts of novel indenopyridine derivatives of the formula:



wherein R_1 is hydrogen, lower alkyl, fluorine, bromine or chlorine, R_4 is cyano, $COOR_5$ wherein R_5 is hydrogen or lower alkyl, or



wherein R_5 is as above and R_6 is hydrogen or lower alkyl, or R_5 and R_6 together with the nitrogen atom form a heterocyclic ring system with a total of 5 to 7 ring members, R_3 and R_4 are hydrogen or lower alkyl, and n is 0 to 3.

Processes for the production of the said compounds as well as intermediates therefor are described.

The compounds exhibit antiphlogistic, ulcer-protective, hypotensive and anorexigenic effects.

3,678,059
3-AMINOALKYLIDENE-INDAZOLES

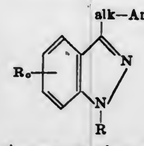
Heinz Werner Gschwend, Millburn, and George De Stevens, Summit, both of N.J., assignors to Ciba-Geigy Corporation, Summit, N.J.

Filed Oct. 7, 1969, Ser. No. 864,525

Int. Cl. C07d *49/18*

U.S. Cl. 260—295.5 B **6 Claims**

3-Aminoalkylidene-indazoles, e.g. those of the formula



Am=an amino group
alk=lower alkylidene
R=araliphatic or aromatic radical
R_o=H, OH, SH, alkyl, alkoxy, alkylmercapto, halogeno, CF_3, NO_2 or amino

acyl derivatives, quaternaries and salts thereof are antidepressants.

3,678,060
PROCESS FOR SEPARATING AN ACID FROM AN AMIDE

Ehud Finkelstein, Edison, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Aug. 3, 1970, Ser. No. 60,657

Int. Cl. C07d *31/44*

U.S. Cl. 260—295.5 A **7 Claims**

Process for obtaining an amide from a mixture containing an acid and said amide via an anion exchange resin mechanism.

3,678,061
2,6-BIS(PICRYLAMINO)-3,5-DINITROPYRIDINE AND A METHOD FOR ITS PREPARATION

Michael D. Coburn, Los Alamos, N. Mex., assignor to The United States of America as represented by the United States Atomic Energy Commission

Filed March 26, 1971, Ser. No. 128,521

Int. Cl. C07d *31/42*

U.S. Cl. 260—297 R **3 Claims**

The heat resistant high explosive 2,6-bis(picrylamino)-3,5-dinitropyridine is readily prepared in good yield by first reacting 2,6-diaminopyridine with picryl chloride in a polar, aprotic solvent such as N,N-dimethylformamide, in the presence of sodium fluoride and then nitrating the resultant intermediate 2,6-bis-(picrylamino)pyridine.

3,678,062
CERTAIN 4-/(INDAZOL-3-YL)-PYRIDINIUM/COMPOUNDS

Victor John Bauer, Montvale, N.J.; William Joseph Fanshawe, and Gretchen Ellen Wiegand, both of Pearl River, N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Filed Sept. 8, 1970, Ser. No. 70,573

Int. Cl. C07d *31/42*

U.S. Cl. 260—296 B **3 Claims**

Quaternary pyridinium salts are prepared by quaternizing the corresponding pyridine compounds which in turn are prepared by various methods. The quaternary salts are useful for lowering blood glucose in warm-blooded animals.

3,678,063
3-(4-PYRIDYL)-4-(2-HYDROXYPHENYL) PYRAZOLE DERIVATIVES

Fernand Binon, Brabant, Belgium, and Jay Morton Beiler, Philadelphia, Pa., assignors to Richardson-Merrell, Inc., New York, N.Y.

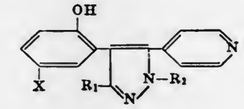
Filed Sept. 24, 1969, Ser. No. 860,789

Claims priority, application Great Britain, Oct. 4, 1968, 47,297/68

Int. Cl. C07d *31/42*

U.S. Cl. 260—296 R **10 Claims**

Pyrazole derivatives of the general formula:



wherein R_1 and R_4 are each hydrogen, methyl, ethyl, n-propyl, isopropyl, or n-butyl and X is hydrogen, hydroxy, methyl, methoxy, chlorine, or bromine, and their acid addition salts, have anti-viral activity against both RNA and DNA viruses such as myxoviruses, adenoviruses, rhinoviruses, and various viruses of the Herpes group based on known testing procedures on experimental animals and human embryonic lung cultures. The compounds are active when administered orally or topically. They may be prepared by heating hydrazine hydrate or an alkyl hydrazine with a 3-benzofuryl ketone.

3,678,064
CERTAIN 2-ACYL-2-THIAZOLINES

Harald Copier, Velp, and Christiaan Herman Theodoor Tensbeek, Zevenaar, both of Netherlands, assignors to Lever Brothers Company, New York, N.Y.

Filed Jan. 7, 1970, Ser. No. 1,284

Int. Cl. C07j *91/24*

U.S. Cl. 260—306.7 **4 Claims**

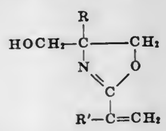
The fried, roast or baked flavor of foodstuffs is improved by adding 2-acyl-2-thiazolines.

3,678,065
PRODUCTION OF HYDROXYMETHYL VINYL OXAZOLINE

John A. Frump, Terre Haute, Ind., assignor to Commercial Solvents Corporation

Filed Dec. 9, 1970, Ser. No. 96,613
Int. Cl. C07d 85/36
U.S. Cl. 260—307 F 11 Claims

A process for the production of hydroxymethyl vinyl oxazolines corresponding to the formula:



where R is methyl, ethyl, or hydroxymethyl and R′ is hydrogen or methyl, comprising reacting an alkanolamine, in which to the carbon atom adjacent to the amino group there are bonded three hydroxyalkyl groups, or two hydroxyalkyl groups and an alkyl group, with an ester of acrylic acid or methacrylic acid in the presence of a catalyst and a polymerization inhibitor, thereby forming an amide, and heating said amide rapidly and briefly to within about 165°–210° C in the presence of additional polymerization inhibitor, thereby forming said hydroxymethyl vinyl oxazoline.

3,678,066
THIOCYANIC ACID ESTERS

Rudiger D. Haugwitz, Highland Park, and Venkatachala Lakshmi, North Brunswick, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed March 6, 1970, Ser. No. 17,320
Int. Cl. C07d 49/38
U.S. Cl. 260—309.2 5 Claims

Disclosed herein are thiocyanic acid esters of benzimidazoles which have utility as parasiticides and anti-inflammatory agents.

3,678,067
METHOD FOR PREPARING SELENO-DERIVATIVES OF γ-AMINO ACIDS

Glenn D. Grummon, Maplewood, and Philip E. Wiegert, St. Louis, both of Mo., assignors to Mallinckrodt Chemical Works, St. Louis, Mo.

Filed Oct. 1, 1969, Ser. No. 862,916
Int. Cl. C07c 101/18, 101/44
U.S. Cl. 260—482 R 5 Claims

Good yields of selenomethionine are obtained by reacting sodium methaneselenol with α-amino-γ-bromobutyric acid or one of its esters. The method is particularly suitable for preparing such compounds containing radioactive selenium. Also, optical isomers of the α-amino acid may be employed without racemization of the product. The sodium methaneselenol may conveniently by prepared in the same reaction vessel by reacting dimethyl diselenide with sodium in liquid ammonia. The method is applicable to preparing seleno derivatives of other α-amino acids.

3,678,068
FLUOROCARBON ACIDS

Louis G. Anello, Basking Ridge, and Richard F. Sweeney, Randolph Township, Dover, both of N.J., assignors to Allied Chemical Corporation, New York, N.Y.

Filed Nov. 1, 1968, Ser. No. 772,844
Int. Cl. C07c 59/22, 69/66, 53/36
U.S. Cl. 260—484 R 7 Claims

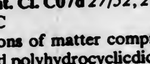
Propionic and butyric acids substituted in the 3- or 4-position, respectively, with a fluorinated alkoxy group, said alkoxy group terminated with a highly fluorinated branched chain or cyclic fluoroalkoxy group, their nitrile precursors and their esters, salt, amide, N-substituted amide and acid halide derivatives. These compounds are useful as surface-active agents and as oil and water repellency agents.

3,678,069
LACTONE POLYMERIZATION WITH A DICARBOXYLIC ACID-WATER INITIATOR

William R. Busler, Bartlesville, Okla., assignor to Phillips Petroleum Company

Filed Dec. 4, 1968, Ser. No. 781,264
Int. Cl. C07c 69/66
U.S. Cl. 260—484 A 9 Claims

Lactones having the formula:



wherein *n* is an integer from 4 to 6 and the R's are of the group consisting of hydrogen, alkyl, cycloalkyl, alkoxy, and single ring aromatic hydrocarbon radicals are polymerized with an initiator consisting of an organic dicarboxylic acid hydrate or anhydrous dicarboxylic acid and water to produce a product having at least two substantially linear units of the formula:



wherein the variables *n* and R have the aforesaid meanings.

3,678,070
4-OXOPERHYDROBENZO[B]THIOPHENES AND THEIR PREPARATION

Jerry G. Strong, Westfield, and Harold A. Kaufman, Piscataway, both of N.J., assignors to Mobil Oil Corporation

Filed April 28, 1969, Ser. No. 819,982
Int. Cl. C07d 63/04, 63/08
U.S. Cl. 260—332.3 P 6 Claims

Alkyl-substituted 4-oxoperhydrobenzo[b]thiophenes are produced by reacting 2-allyl-2-cyclohexen-1-one, or a derivative having an alkyl substituent on the side chain, with hydrogen sulfide at ambient temperatures. The products can be dehydrogenated to produce 4-hydroxybenzo[b]-thiophene derivatives and converted to carbamate insecticides.

3,678,071
N-HALOIMIDES OF POLYHALO SUBSTITUTED POLYHYDROCYCLICDICARBOXYLIC ACIDS

Irving Touval, Fords, N.J., and Elmar R. Altwicker, Elnora, N.Y., assignors to Universal Oil Products Company, Des Plaines, Ill.

Filed May 28, 1969, Ser. No. 828,721
Int. Cl. C07d 27/52, 27/28
U.S. Cl. 260—326 C 6 Claims

Novel compositions of matter comprising N-haloimides of polyhalo substituted polyhydrocyclicdicarboxylic acids, as exemplified by the N-chloroimide of 5,6,7,8,9,9-hexachloro-1,2,3,4,4a,5,8,8a-octahydro-5,8-methano-2,3-naphthalenedicarboxylic acid, are useful as additives to polymeric compositions of matter whereby fire-resistant and flame-retardant properties are added thereto.

3,678,072
9,10-BRIDGED ANTHRACENE COMPOUNDS

Bruce H. Klanderman, Rochester, and Jan W. H. Faber, Hilton, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 811,655, March 28, 1969, which is a division of Ser. No. 616,789, Feb. 17, 1967, Pat. No. 3,457,235, Continuation-in-part of Ser. No. 530,381, Feb. 28, 1966, abandoned. This application Nov. 30, 1970, Ser. No. 93,814
Int. Cl. C07d 27/28
U.S. Cl. 260—326.5 B 4 Claims

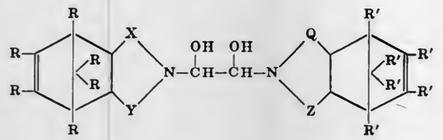
New 9,10-bridged anthracene compounds, such as 9,10-dihydro-9,10-bis(hydroxymethyl)-N-phenyl-9,10-ethanoanthracene-11,12-dicarboximide, for example, improve certain properties of polyesters prepared by polymerization of a dicarboxylic acid, such as terephthalic acid, and an alkylene glycol, such as ethylene glycol, when incorporated in the polymerization mixture.

3,678,073
N,N′-(DIHYDROXY)ETHYLENEBISNORBORNENES

George W. Borden, Charleston, and David J. Trecker, South Charleston, both of W. Va., assignors to Union Carbide Corporation, New York, N.Y.

Filed April 9, 1970, Ser. No. 27,142
Int. Cl. C07d 27/52
U.S. Cl. 260—326 C 1 Claim

Novel compounds having the formula:



wherein R and R′ may be alike or different and are selected from the group consisting of hydrogen and chlorine; and where X, Y, Z and Q may be alike or different and are selected from the group consisting of keto, and alkylene containing one to six carbon atoms.

3,678,074
PROCESS FOR THE MANUFACTURE OF OXIMINO-DITHIOLANES

Erwin Nikles, Liestal, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland

Filed Feb. 24, 1970, Ser. No. 13,764
Claims priority, application Switzerland, Feb. 27, 1969, 2966/69
Int. Cl. C07d 71/00
U.S. Cl. 260—327 M 8 Claims

The invention provides a new cyclization reaction to obtain 4-alkenyl-2-oximino-1,3-dithiolanes by reacting a trans-or cis-1,4-dihalogeno-2-butene with a salt of a dithiocarbamic acid and further reacting the resulting intermediate product 4-alkenyl-2-imino-1,3-dithiolane in the usual way with hydroxylamine.

3,678,075
CARBAMOYLOXIMINO-ALKENYL-DITHIOLANES

Erwin Nikles, Liestal, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland

Filed Feb. 24, 1970, Ser. No. 13,765
Claims priority, application Switzerland, Feb. 27, 1969, 2966/69
Int. Cl. C07d 71/00
U.S. Cl. 260—327 M 4 Claims

A new group of 2-carbamoyloximino-4-alkenyl-1,3-dithiolanes is disclosed, which are effective pesticidal compounds particularly for controlling soil pests. The compounds are manufactured by reacting a trans- or cis-1,4-dihalogeno-2-butene with a salt of a dithiocarbamic acid to form a 4-alkenyl-2-imino-1,3-dithiolane which is further reacted with hydroxylamine to give the 4-alkenyl-2-oximino-1,3-dithiolane which after reacting with an isocyanate or a carbamic acid chloride yields the desired carbamate.

3,678,076
TETRAHYDRODIBENZOTHIOPHENES

Ronnie R. Crenshaw, Dewitt, N.Y., assignor to Bristol-Myers Company, New York, N.Y.

Continuation-in-part of Ser. No. 825,923, May 19, 1969, abandoned. This application Dec. 21, 1970, Ser. No. 100,422
Int. Cl. A61k 27/00; C07d 63/24
U.S. Cl. 260—330.5 9 Claims

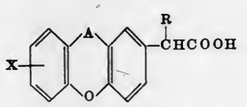
d1-cis-4-Methyl-1,2,3,4-tetrahydrodibenzothiophene-3-carboxylic acids and derivatives thereof are compounds which exhibit antifertility activity and which are useful as oral antifertility agents in mammals. An example of a compound of the disclosure is sodium d1-cis-1,2,3,4-tetrahydro-7-methoxy-4-methyldibenzothiophene-3-carboxylate.

3,678,077
9-OXOXANTHEN-2-YL-ALKANOIC ACIDS

Michio Nakanishi, 756 Shinborimachi, Nakatsu, Oita; Takanori Oe, 1336, Oaza-Hirotsu, Yoshitomimachi, Chikujogun, Fukuoka, and Yutaka Maruyama, 3-12-3, Wada, Suginami-ku, Tokyo, all of Japan

Filed March 27, 1970, Ser. No. 23,458
Claims priority, application Japan, March 29, 1969, 44/24050
Int. Cl. C07d 7/44
U.S. Cl. 260—335 4 Claims

2-arylalkanoic acids of the formula



wherein A id CO or CH_2, R is H or lower alkyl and X is H, lower alkyl or halogen are analgesics, antirheumatics and anti-inflammatory agents.

3,678,078
METHOD FOR THE PREPARATION OF (CIS-1,2-EPOXYPROPYL) PHOSPHONIC ACID PRODUCTS

Raymond A. Firestone, Fanwood, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Jan. 29, 1969, Ser. No. 795,042
Int. Cl. C07f 9/40, 9/42
U.S. Cl. 260—348 R 9 Claims

A method for the preparation of (cis-1,2-epoxypropyl)-phosphonic dihalide and esters of (cis-1,2-epoxypropyl)-phosphonic acid, which comprises treating 2-hydroxypropionaldehyde with phosphorous trihalide or an ester of phosphorohalidous acid to afford, respectively, (1-formylethyl)-phosphorodihalidite or (1-formylethyl)phosphite, followed by the rearrangement of the said intermediates to yield (cis-1,2-epoxypropyl)phosphonic dihalide or (cis-1,2-epoxypropyl)phosphonate. The dihalide and esterified products thus obtained have utility as intermediates inasmuch as they may be converted by conventional means to (cis-1,2-epoxypropyl)phosphonic acid or to the salts thereof, which products are antibiotics useful in inhibiting the growth of gram-negative and gram-positive pathogenic bacteria.

3,678,079
FIBROUS GLASS FILLED POLYCARBONATE RESINS

Edward J. Carty, Pittsfield, Mass., and Francis C. McDowell, Delmar, N.Y., assignors to General Electric Company

Continuation-in-part of Ser. No. 75,709, Sept. 25, 1970, abandoned. This application Jan. 4, 1972, Ser. No. 215,424
Int. Cl. C08g 51/10
U.S. Cl. 260—37 PC 6 Claims

An aromatic carbonate polymer having uniformly dispersed therein finely divided fibrous glass filaments. The glass filaments employed herein are those that have been treated or coated with a particular binding agent, namely a styrene-ethyl acrylate copolymer.

3,678,080
OXIDATION OF HYDROXYLATED AROMATIC COMPOSITIONS

James V. Crivello, Mechanicville, N.Y., assignor to General Electric Company

Filed Oct. 23, 1969, Ser. No. 868,919
Int. Cl. C07c 41/10, 49/64
U.S. Cl. 260—396 R 10 Claims

Hydroxylated aromatic organic compositions are readily converted to the oxidized state by treatment with a mixture comprising a perchloro saturated aliphatic acid anhydride of from four to eight carbon atoms and an oxidizing agent selected from the class of metal nitrates or ammonium nitrate.

3,678,081
OXIDATION OF HYDROXYLATED AROMATIC COMPOSITIONS

James V. Crivello, Mechanicville, N.Y., assignor to General Electric Company

Filed Oct. 23, 1969, Ser. No. 868,918
Int. Cl. C07c 41/10, 43/22, 49/64
U.S. Cl. 260—396 R 11 Claims

Hydroxylated aromatic organic compositions are readily converted to the oxidized state by treatment with a mixture comprising a perfluoro saturated aliphatic acid anhydride of from four to eight carbon atoms and an oxidizing agent of either metal nitrates or ammonium nitrate.

3,678,082
ESTERIFICATION OF 17-HYDROXY STEROIDS

Hugh L. Dryden, Jr., Deerfield, Ill., assignor to G. D. Searle & Co., Chicago, Ill.

Filed July 30, 1970, Ser. No. 64,904
Int. Cl. C07c 167/28
U.S. Cl. 260—397.5 5 Claims

17-Hydroxy steroids can be esterified in nearly quantitative yields using the appropriate anhydride with 4-dimethylaminopyridine.

3,678,083
PREPARATION OF CARBOXYLIC ACIDS

Michael Dubeck, Birmingham, and Ronald L. Shubkin, Oak Park, both of Mich., assignors to Ethyl Corporation, New York, N.Y.

Filed Dec. 8, 1969, Ser. No. 883,306
Int. Cl. C08h 17/36
U.S. Cl. 260—413 10 Claims

A process for preparing carboxylic acids from about C_{10} and higher olefins, carbon monoxide, and water using a cobalt catalyst in the presence of a pyridine promoter; such that the pyridine:cobalt molar ratio is from 1:1 to 10:1 is disclosed. The process is carried out in the substantial absence of a ketone or ether solvent.

3,678,084
DEODORIZATION OF FATS

Adolph Renold, Somerset, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

Continuation of Ser. No. 566,493, July 20, 1966. This application Oct. 27, 1969, Ser. No. 869,953
Int. Cl. C11b 3/04
U.S. Cl. 260—424 8 Claims

A composition and process for the purification of fats and oils employing a mixture of fat soluble strong acid, an acidic clay, and a carbohydrate.

3,678,085
PROCESS FOR MAKING GROUP VIII METAL CYANIDES AND GROUP VIII METAL CYANIDE COMPLEXES

Edward A. Rick, Charleston, W. Va.; James E. McKeon, Thornwood, N.Y.; Peter Fitton, and Benny J. Argento, both of South Charleston, W. Va., assignors to Union Carbide Corporation, New York, N.Y.

Filed Aug. 8, 1969, Ser. No. 848,684
Int. Cl. C07f 15/00, 15/04; C01c 3/08
U.S. Cl. 260—429 R 7 Claims

A process for the manufacture of Group VIII metal cyanides or metal cyanide complexes wherein cyanogen is reacted with a Group VIII metal or metal complex.

3,678,086
COMPLEXES OF HEAVY METAL SALTS OF ACID PHOSPHATE ESTERS

Charles Andrew Lynch, Jr., Severna Park, and Edward Francis Orwoll, Baltimore, both of Md., assignors to FMC Corporation, New York, N.Y.

Filed March 27, 1970, Ser. No. 23,479
Int. Cl. C07f 3/06
U.S. Cl. 260—429.9 5 Claims

Compositions which are water-soluble ammonia complexes of heavy metal salts of acid phosphate organic esters, the organic groups containing an average of at least three carbon atoms, are used in water solutions to produce weather-resistant flame-retarding treatments for wood and other cellulosic bodies. The organic moieties are preferably chlorinated or brominated to improve their flame retardance.

3,678,087
METAL SALTS OF HALO-SUBSTITUTED POLYHYDROPOLY-CYCLICDICARBOXYLIC ACIDS

Louis Schmerling, Riverside, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Aug. 22, 1969, Ser. No. 852,462
Int. Cl. G07f 3/10; C07f 1/08, 15/02
U.S. Cl. 260—435 R 8 Claims

Novel compounds of matter comprising metal salts of halo-substituted polyhydromethanonaphthalene acids as exemplified by the mercury salt of 5,6,7,8,9,9-hexachloro-1,2,3,4,4a,5,8,8a-octahydro-5,8-methano-2,3-naphthalenedicarboxylic acid are useful as fungicidal or other biocidal agents.

3,678,088
POLYCHLORINATED METALLOCENES AND THEIR SYNTHESIS

Frederick L. Hedberg, Tucson, Ariz., and Harold Rosenberg, Dayton, Ohio, assignors to The United States of America as represented by the Air Force

Filed Feb. 24, 1971, Ser. No. 118,495
Int. Cl. C07f 15/02, 15/00
U.S. Cl. 260—429 CY 22 Claims

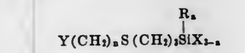
Novel polychlorinated metallocenes are provided that have the following formulas: $C_5H_{5-m}Cl_mMC_5H_5$ and $(C_5H_{5-n}Cl_n)_2M$, wherein M is iron, ruthenium or osmium, m is an integer from 3 to 5, inclusive, and n is an integer from 2 to 5, inclusive. The products are prepared by (1) reacting a monochlorometallocene or a 1,1'-dichlorometallocene with an organolithium compound in the presence of a solvent, (2) recovering a 1-chloro-2-lithiometallocene or a 1,1'-dichloro-2,2'-dilithiometallocene depending upon the starting material used, and (3) then reacting one of the latter compounds with a chlorination agent to obtain 1,2-dichlorometallocene or 1,1',2,2'-tetrachlorometallocene. The lithiation step and the chlorination step can then be repeated one, two, 3 or more times, using in each reaction as the starting material the isolated chlorinated product from the prior reaction. The polychlorinated metallocenes are useful in preparing metallocene-containing polymers that are particularly suitable as ablative plastics for heat shields and structural laminates for light weight radiation shields. They also can be used to synthesize high temperature and/or high density fluids as well as for additives for lubricants and as flame retardant additives. The decachlorometallocenes are particularly useful because of their high resistance to oxidation.

3,678,089
FUNCTIONAL GROUP CONTAINING THIOETHER SILANES

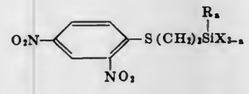
Abe Berger, Schenectady, N.Y., assignor to General Electric Company

Division of Ser. No. 650,632, July 3, 1967, Pat. No. 3,506,674. This application Feb. 3, 1970, Ser. No. 8,405
Int. Cl. C07f 7/02, 7/04
U.S. Cl. 260—448.2 N 5 Claims

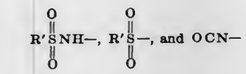
The disclosure relates to compounds within the scope of the following formulas:



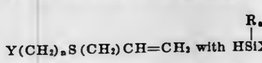
and



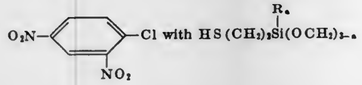
where X is a hydrolyzable radical, R is an organic radical, R' is a lower alkyl radical, Y is selected from the group consisting of



n is equal to 2 or 3 and a is equal to 0 to 2 inclusive. Compounds within the scope of the above formulas can be made by reacting an olefinic thioether of the formula:



in the presence of a platinum compound catalyst and by reacting



in the presence of a basic catalyst. The compounds are useful as glass sizing agents.

3,678,090
AMMOXIDATION OF SATURATED HYDROCARBONS

Keith M. Taylor, Ballwin, Mo., assignor to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 801,764, Feb. 24, 1969, abandoned, and a continuation-in-part of Ser. No. 787,571, Dec. 27, 1968, abandoned. This application Dec. 17, 1970, Ser. No. 99,298
Int. Cl. C07c 121/02, 121/32
U.S. Cl. 260—465.3 4 Claims

Method for the production of acrylonitrile or methacrylonitrile from propane or isobutane employing a catalyst containing antimony and tin or indium.

3,678,091
PROCESS FOR THE PREPARATION OF UNSATURATED ALPHATIC NITRILES BY THE OXIDATION OF OLEFINS

Philippe Reulet, Mourenx; Alain Pfister, Pau; Jacques Tellier, Pau; Jean-Henry Blanc, Pau, all of France; Kirsten Borre Jorgensen, Holte, and Hans Bohlbro, Lyngby, both of Denmark, assignors to Societe Anonyme dite: Societe Nationale Des Petroles D'Aquitaine, Courbevoie, France

Filed June 16, 1969, Ser. No. 833,670
Claims priority, application France, June 19, 1969, 69155509
Int. Cl. C07c 121/02
U.S. Cl. 260—465.3 11 Claims

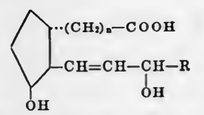
A process for the preparation of unsaturated aliphatic nitriles by the oxidation of olefins in the presence of ammonia, consists in reacting the hydrocarbon or hydrocarbons with oxygen and ammonia in the presence of a catalyst system containing the elements phosphorus, vanadium and molybdenum in the form of a phosphovanadomolyboic heteropolyanion; a part or the whole of said elements may be combined with tellurium or antimony.

3,678,092
3-HYDROXYCYCLOPENTYL-ALKANOIC ACIDS

Neville Finch, West Orange, N.J., assignor to Ciba-Geigy Corporation, Summit, N.J.

Filed Feb. 24, 1969, Ser. No. 801,797
Int. Cl. C07c 61/32
U.S. Cl. 260—468 R 4 Claims

2β-Hydroxyalkenyl-3β-hydroxycyclopentyl-alkanoic acids, e.g. such as those of the formula



R=aliphatic, cycloaliphatic, araliphatic or aromatic radical
n=5-7

and functional derivatives thereof are hypotensives.

3,678,093
PROCESS FOR THE PREPARATION OF 2-(HYDROXYHYDROCARBYL)ACRYLATES

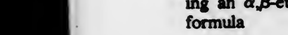
Ken-Ichi Morita; Zennosuke Suzuki, and Hiromitsu Hirose, all of Kamakura-shi, Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Division of Ser. No. 602,495, Dec. 19, 1966, Pat. No. 3,499,024. This application Oct. 22, 1969, Ser. No. 868,981
Claims priority, application Japan, Dec. 24, 1965, 40/79319; Dec. 25, 1965, 40/79595; March 29, 1966, 41/18933
Int. Cl. C07c 69/66, 69/76; C08f 9/74
U.S. Cl. 260—468 R 1 Claim

A process for preparing α,β-ethylenically unsaturated compounds of the formula



wherein R is a hydrocarbon radical which comprises reacting an α,β-ethylenically unsaturated compound of the formula



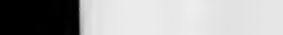
wherein R is as defined above with an aldehyde of the formula



wherein R is as defined above in the process of a catalyst selected from compounds of the formula



wherein R^1, R^2 and R^3 each are hydrocarbyl groups having up to 12 carbon atoms selected from the group consisting of alkyl groups, cycloalkyl groups and aryl groups with the proviso that at least one of the R^1, R^2 and R^3 is an alkyl or cycloalkyl group, and compounds having the formula



wherein R^4 is a hydrocarbyl group having up to 12 carbon atoms selected from the group consisting of alkyl groups and cycloalkyl groups and R^5 is a divalent hydrocarbyl group selected from the group consisting of alkylene and alkenylene groups.

3,678,094

SUBSTITUTED ANILINO CARBOXYLIC ACIDS

Tsung-Ying Shen; Bruce E. Witzel, and Gordon L. Walford, all of Westfield, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 836,631, June 25, 1969. This application April 20, 1970, Ser. No. 30,321

Int. Cl. C07c *101/54*

U.S. Cl. 260—471 R **4 Claims**

New substituted anilino carboxylic acids and non-toxic pharmaceutically acceptable salts, esters, amides, and various derivatives thereof are claimed. The substituted anilino-carboxylic acids described herein have anti-inflammatory, antipyretic, and analgesic activity. Also included is a method of preparing said anilino carboxylic acids and method of treatment using certain of these substituted anilino carboxylic acids.

3,678,095

SUBSTITUTED DERIVATIVES OF MALONIC ACID USEFUL AS STABILIZERS

Martin Dexter, Briarcliff Manor, and John Denon Spivack, Spring Valley, both of N.Y., assignors to Geigy Chemical Corporation, Greenburgh, N.Y.

Continuation-in-part of Ser. No. 616,801, Feb. 17, 1967. This application July 17, 1970, Ser. No. 55,938

Int. Cl. C07c *69/76*

U.S. Cl. 260—473 S **8 Claims**

Derivatives of malonic acid substituted with groups containing a hindered phenol are disclosed. The compounds are stabilizers suitable for stabilizing numerous substrates of organic material subject to oxidative deterioration, in particular polypropylene. Synergistic combinations of these compounds and dialkyl thiodipropionates are disclosed.

3,678,096

OXIDATION PROCESS FOR THE SYNTHESIS OF α-HYDROXY ESTERS

David J. Trecker, South Charleston, W. Va., and James E. McKeon, Thornwood, N.Y., assignors to Union Carbide Corporation, New York, N.Y.

Filed Aug. 12, 1969, Ser. No. 849,515

Int. Cl. C07c *69/66*

U.S. Cl. 260—484 R **8 Claims**

A process for the synthesis of α-hydroxy esters of carboxylic acids by reacting a carboxylic acid ester with a hydroperoxide in the presence of a metal ion catalyst. The reaction is characterized by mild reaction conditions and good efficiency. The α-hydroxy esters are useful intermediates in the production of acrylates.

3,678,097

SOLUBLE ALKALI METAL SALT REMOVAL FROM SUBSTANTIALLY NON-POLAR LIQUIDS

Heino Puhk, North Olmsted, Ohio, assignor to SCM Corporation, Cleveland, Ohio

Continuation-in-part of Ser. No. 709,214, Feb. 29, 1968, abandoned. This application Nov. 25, 1970, Ser. No. 92,842

Int. Cl. C07c *69/54*

U.S. Cl. 260—486 R **6 Claims**

A process for removing soluble alkali metals from substantially non-polar organic liquid esters is described. The process comprises adding a hydroxy-substituted lower aliphatic saturated dicarboxylic acid to substantially non-polar liquid esters containing alkali metals in salt form, particularly lithium salts, in solution. The hydroxy-substituted saturated dicarboxylic acids form solid insoluble crystalline alkali metal salts in such liquids permitting the separation of the alkali metal moieties from the medium by conventional methods. The presence of dissolved alkali metal salts is undesirable in that it interferes with the end use of such liquid esters.

3,678,098

UNSATURATED QUATERNARY MONOMERS AND POLYMERS

Sheldon N. Lewis, Willow Grove; Richard F. Merritt, Fort Washington, and William D. Emmons, Huntington Valley, all of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Filed April 4, 1969, Ser. No. 813,724

Int. Cl. C08f *3/64, 3/66, 15/26*

U.S. Cl. 260—89.5 N **9 Claims**

This invention is concerned with monoethylenically unsaturated acid ester monomers, such as those of acrylic or methacrylic acid, containing a quaternary ammonium halide group having a substituent on the quaternary nitrogen atom of the formula $-CH_2CH(OH)CH_2X$ wherein X is chlorine, bromine or iodine. It is also concerned with addition polymers of such monomers, and methods of producing the monomers and polymers. The monomers and polymers are stable at acid pH values, although capable of reacting with other reactants for the hydroxyl and/or halide group. At alkaline pH values, they become self-reactive and the polymers crosslink themselves by slow reaction at room temperature. However, the reaction becomes quite rapid on heating.

3,678,099

PROCESS FOR THE ESTERIFICATION OF ISOBUTENE

Jacob D. Kemp, El Cerrito, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed June 26, 1970, Ser. No. 50,291

Int. Cl. C07c *67/04*

U.S. Cl. 260—497 R **7 Claims**

A process for the esterification of isobutene with reduced polymerization of the isobutene which comprises contacting the isobutene with a lower carboxylic acid and an acidic resin catalyst containing a sulfonate group, which catalyst has

between about 0.2 and 2.4 meq. of H+ per gram of catalyst. Preferred carboxylic acids include formic acid and acetic acid and the preferred type catalyst is a resinous sulfonated polystyrene divinyl benzene copolymer.

3,678,100

2-HALOPERFLUORO-1-CYCLOALKEN-1-YL PHOSPHORYL COMPOUNDS AND PROCESS FOR THE PREPARATION THEREOF

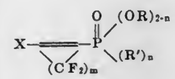
Arlen W. Frank, Grand Island, N.Y., and Charles F. Baranauckas, Memphis, Tenn., assignors to Borg-Warner Corporation, Chicago, Ill.

Division of Ser. No. 438,106, March 8, 1965, Pat. No. 3,505,433. This application Sept. 5, 1969, Ser. No. 870,801

Int. Cl. C07f *9/38*; C11d *1/34*

U.S. Cl. 260—502.4 R **3 Claims**

A process for the preparation of a compound selected from the group consisting of 2-haloperfluoro-1-cycloalken-1-ylphosphonic acid and 2-haloperfluoro-1-cycloalken-1-yl phosphinic acid, which comprises hydrolyzing the corresponding compound of the formula



wherein X is selected from the group consisting of chlorine and bromine, R and R′ are organic radicals, m is from 2 to 4, and n is from 0 to 1.

3,678,101

PROCESS FOR MAKING METHYLOLATED PHENOL-SULFONIC ACID

Raymond D. Beaulieu, North Wilbraham, Mass., assignor to Monsanto Company, St. Louis, Mo.

Filed April 17, 1970, Ser. No. 29,646

Int. Cl. C07c *143/42*

U.S. Cl. 260—512 R **9 Claims**

Process for making aqueous solutions of methylolated phenol sulfonic acid which are substantially free from excess alkali. The process uses hydroxides of Group IIA metals as basic condensation catalysts for CH_2O and phenol-sulfonic acid, and CO_2 to precipitate insoluble carbonate salts at conclusion of condensation.

3,678,102

$\alpha,\alpha,\alpha',\alpha'$-TETRASUBSTITUTED CARBOXYLIC DIACIDS AND PROCESS FOR THEIR PREPARATION

Arsene Isard, Saint-Genis-Laval, and Francis Weiss, Pierre-Benite, both of France, assignors to Ugine Kuhlmann, Paris, France

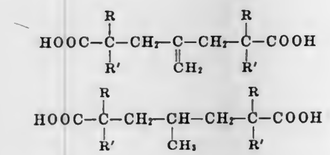
Continuation of Ser. No. 591,135, Nov. 1, 1966, abandoned. This application Sept. 11, 1970, Ser. No. 71,377

Claims priority, application France, Nov. 5, 1965, 6537347; May 3, 1966, 6659972

Int. Cl. C07c *57/02, 61/16, 63/60*

U.S. Cl. 260—514 R **4 Claims**

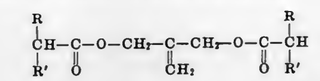
An $\alpha,\alpha,\alpha',\alpha'$-tetrasubstituted γ-methylene (and γ-methyl) pimelic acid of the general formulas:



(I)

(II)

And a process for preparing diacid (I) by reacting in an anhydrous medium a diester of the general formula:



with a Grignard reagent R″MgX or with an alkaline metal hydride, amide or alcoholate and then neutralizing and separating. Diacid II being prepared by reduction of diacid (I) such as by catalytic hydrogenation.

3,678,103

AROMATIC AMINE-MODIFIED RESOLE RESINS IN COMBINATION WITH AROMATIC POLYCARBOXYLIC COMPOUNDS

Rodney M. Huck, Longmeadow, Mass., assignor to Monsanto Company, St. Louis, Mo.

Filed March 12, 1971, Ser. No. 123,883

Int. Cl. C08g *5/18*

U.S. Cl. 260—51.5 **11 Claims**

Thermosettable compositions of an amine-modified resole resin and an aromatic polycarboxylic compound. These compositions can be thermoset by heat with temperatures and times approaching those used for thermosetting ordinary resole resins along and the product thermoset articles display improved thermal stability.

3,678,104

HYDROXYLATION OF AROMATIC ACIDS

Jerome A. Vesely, Park Ridge, and Louis Schmerling, Riverside, both of Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.

Filed Sept. 29, 1969, Ser. No. 862,007

Int. Cl. C07c *65/02*

U.S. Cl. 260—521 R **6 Claims**

The nuclear hydroxylation of a nuclearly substituted aromatic acid is accomplished by treating the acid with hydrogen peroxide in the presence of substantially anhydrous hydrogen fluoride at a temperature in the range of from about −10° to about 100° C.

3,678,105

PROMOTION OF LIQUID PHASE OXIDATION CATALYSTS

Louis J. Croce, Seabrook, and Bruno J. Barone, Houston, both of Tex., assignors to Petro-Tex Chemical Corporation, Houston, Tex.

Filed Aug. 28, 1968, Ser. No. 755,775

Int. Cl. C07c *63/02*

U.S. Cl. 260—524 R **6 Claims**

A process for the oxidation of mononuclear aromatic compounds having at least one oxidizable group selected from methyl, hydroxymethyl, and aldehyde, at moderate temperatures, and in the presence of oxygen, cobaltous or cobaltic ions, and an effective amount of a specified substituted acid function.

3,678,106

OXIDATION OF P-XYLENE AND P-TOLUIC ACID TO TEREPHTHALIC ACID IN AQUEOUS MEDIUM

John W. Ager, Princeton, N.J., assignor to FMC Corporation, New York, N.Y.

Filed April 2, 1970, Ser. No. 25,251

Int. Cl. C07c *63/02*

U.S. Cl. 260—524 R **5 Claims**

Terephthalic acid (TPA) is produced by the oxidation of p-xylene and/or p-toluic acid (PTA) with elemental oxygen in aqueous medium at elevated temperatures and pressures and in the absence of a conventional metal catalyst, using instead

hydrogen bromide as catalyst, preferably together with small amounts of nitric acid. With p-xylene, active charcoal is additionally needed to insure adequate reaction.

3,678,107
PROCESS FOR THE PRODUCTION OF OXALIC ACID
Eiichi Yonemitsu, Kashiwa; Tomiya Ishiki, Tokyo; Tsuyoshi Suzuki, Yokkaichi, and Yukio Yashima, Soka, all of Japan, assignors to Mitsubishi Edogawa Kagaku Kabushiki Kaisha, Tokyo, Japan
Filed March 12, 1970, Ser. No. 19,104
Claims priority, application Japan, Feb. 28, 1970, 45/16694; March 15, 1969, 44.19240
Int. Cl. C07c *51/26*
U.S. Cl. 260—531 R 18 Claims

A process for the production of oxalic acid wherein ethylene glycol and/or glycolic acid are oxidized in the presence of nitric acid with introduction of oxygen.

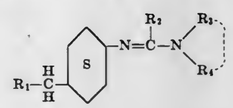
Nitrogen oxides gases generated in the process are oxidized to nitric acid with oxygen during the reaction. The process is substantially an oxidation of ethylene glycol and/or glycolic acid by oxygen in an acid medium comprising nitric acid and eliminates the use of the nitric acid regeneration system required in usual nitric acid oxidation.

3,678,108
HYDROGENATION OF NITROBENZENE
Joseph T. Arrigo, Westbury, N.Y., and Nils J. Christensen, Palatine, Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.
Filed May 13, 1970, Ser. No. 37,022
Int. Cl. C07c *85/10*
U.S. Cl. 260—563 D 10 Claims

Hydrogenating nitrobenzene to cyclohexylamine using a rhodium catalyst and minimizing the formation of dicyclohexylamine by effecting said hydrogenation in a secondary or tertiary alcohol solvent.

3,678,109
CERTAIN CYCLOHEXYLFORMAMIDINES
Richard N. Knowles, Hockessin, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed April 20, 1967, Ser. No. 634,037
Int. Cl. C07c *123/00*
U.S. Cl. 260—564 R 8 Claims

Cyclohexylformamidines of the formula:



wherein
R_1 is alkyl, cycloalkyl, bicycloalkyl, or tricycloalkyl,
R_2 is hydrogen or alkyl,
R_3 is alkyl, and
R_4 is alkyl and can be joined with R_3 to form a saturated ring.

Typical is N,N-dimethyl-N'-(4-cyclohexylmethylcyclohexyl)-formamidine useful for repelling animals.

3,678,110
FLUOROCARBON CONTAINING DIALLYLAMINES
Jerry E. Boothe, Pittsburgh; Merwin F. Hoover, Bethel Park, and Dallas L. Schlegg, Pittsburgh, all of Pa., assignors to Calgon Corporation, Pittsburgh, Pa.
Division of Ser. No. 786,747, Dec. 24, 1968, abandoned. This application Nov. 20, 1969, Ser. No. 877,556
Int. Cl. C07c *83/00*
U.S. Cl. 260—567.6 M 3 Claims

Diallyl quaternary ammonium compounds containing a terminal perfluoroisopropoxide group are disclosed. These compounds are useful in monomeric form and especially in polymeric form as oil and water repellents.

3,678,111
DIALKYLAMINOMETHYLPHENYL BENZYL ALCOHOLS
William J. Houlihan, Mountain Lakes, N.J., assignor to Sandoz-Wander, Inc., Hanover, N.J.
Division of Ser. No. 581,152, Sept. 22, 1966, Pat. No. 3,497,508. This application Nov. 17, 1969, Ser. No. 877,454
Int. Cl. C07c *87/28*
U.S. Cl. 260—570 2 Claims

Benzyl alcohols substituted by a diakylaminomethylphenyl moiety in the α-position useful as anti-inflammatories and anti-diabetics are obtained by reduction of corresponding benzophenones.

3,678,112
PROCESS FOR PREPARING NUCLEAR ALKYLATED ANILINES AND RECOVERY OF ALUMINA
John C. Wollensak, Bloomfield Hills, and John P. Napolitano, Royal Oak, both of Mich., assignors to Ethyl Corporation, New York, N.Y.
Filed Feb. 4, 1970, Ser. No. 8,686
Int. Cl. C07c *85/00*
U.S. Cl. 264—578 10 Claims

In a process for orthoalkylating an aromatic amine such as aniline by reaction of the aromatic amine with an olefin and a catalytic amount of an alkyl aluminum halide, the improvement whereby the catalyst is removed after the alkylation by adding to the reaction mixture aqueous caustic in an amount sufficient to provide from about 1.2–6 equivalents of caustic per equivalent of halogen, aging the caustic treated mixture at about 75°–175° C. for a period of from 15 minutes to 3 hours, separating the aqueous phase and adding to the aqueous phase at a temperature of about 20°–50° C. an amount of a weakly acidic material sufficient to reduce the pH to less than about 9.5, and then filtering off the precipitated alumina. This improved aluminum extraction process allows removal of the aluminum content of the alkylation in a readily recoverable, useful form.

3,678,113
NUCLEARLY ALKYLATED ANILINE RECOVERY PROCESS
Oskar E. H. Klopfer, Baton Rouge, La., assignor to Ethyl Corporation, New York, N.Y.
Continuation-in-part of Ser. No. 782,706, Dec. 10, 1968. This application Feb. 4, 1970, Ser. No. 8,734
Int. Cl. C07c *87/00*
U.S. Cl. 260—578 11 Claims

An improvement in the nuclear orthoalkylation of aromatic amines by reaction of an aromatic amine having a hydrogen atom or a nuclear carbon atom ortho to an amino group (e.g., aniline) with an olefin and a catalytic amount of an alkyl aluminum halide whereby the catalyst is removed from the reaction mixture after completion of the alkylation by washing the reaction mixture with water. The water wash phase separates readily without the necessity of adding caustic.

3,678,114
PROCESS FOR THE PREPARATION OF TRIAMINOBENZENE
John Miller, Mapperley, and Martin Searle, Loughborough, both of England, assignors to Fisons Limited, Felixstowe, Suffolk, England
Filed Feb. 3, 1970, Ser. No. 8,430
Claims priority, application Great Britain, Feb. 18, 1969, 8,821/69
Int. Cl. C07c *85/10*
U.S. Cl. 260—580 10 Claims

Triaminobenzene is prepared by the hydrogenation of an aqueous solution of an alkali metal or ammonium salt of trinitrobenzoic acid. The reaction is carried out in the presence of a noble metal catalyst, and the product is suitable for conversion in situ to phloroglucinol.

ERRATUM

For Class 260—603 see:
Patent No. 3,678,139

3,678,115
PROCESS FOR PRODUCTION OF SULFUR-CONTAINING PHENOLS
Tamotsu Fujisawa; Mizuo Yamamoto, and Genichi Tsuchihashi, all of Sagamihara, Japan, assignors to Sagami Chemical Research Center, Tokyo, Japan
Filed April 24, 1970, Ser. No. 31,769
Claims priority, application Japan, April 30, 1969, 44/32756
Int. Cl. C07c *149/38*
U.S. Cl. 260—609 F 9 Claims

A new process for the preparation of 4,4'-thiobis(2,6-di-t-butylphenol) is disclosed. Hindered phenol, 2,6-di-t-butylphenol, is reacted with a sulfur chloride in the absence or presence of a catalytic amount of iron powder or a Lewis acid and the reaction product is then heated with caustic alkali in a solvent. The process yields 4,4'-thiobis(2,6-di-t-butylphenol) economically and in a high yield.

3,678,116
PROCESS FOR PREPARING A METHANO-POLY-CYCLIC HYDROQUINONE
Arthur W. Carlson, Crystal Lake, Ill., assignor to Velsicol Chemical Corporation, Chicago, Ill.
Filed March 18, 1968, Ser. No. 714,023
Int. Cl. C07c *37/00*
U.S. Cl. 260—619 F 9 Claims

A process for preparing a methano-polycyclic hydroquinone which comprises rearranging a corresponding methano-polycyclic quinone under isomerization conditions in the presence of an inert solvent and water and thereafter recovering the desired hydroquinone product.

3,678,117
1,1-BIS(TRIFLUOROMETHYL)-2,2-DIPHENYLETHYLENES HAVING SELECTED SUBSTITUENTS ON PHENYL
William J. Middleton, Chatham, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed Oct. 31, 1969, Ser. No. 873,124
Int. Cl. C07c *39/12*
U.S. Cl. 260—619 R 2 Claims

Described are certain 1,1-bis(trifluoromethyl)-2,2-diphenylethylenes, which carry an oxy group in the para position of at least one benzene ring. These new compounds, as well as their parent compound, 1,1-bis-(trifluoromethyl)-2,2-diphenylethylene, are effective in preventing pregnancy in warm-blooded animals and can be administered after coitus.

3,678,118
IMPROVED PROCESS FOR PREPARING ETHANOL
Orville D. Frampton, Wyoming, and Julian Feldman, Cincinnati, both of Ohio, assignors to National Distillers and Chemical Corporation, New York, N.Y.
Filed Nov. 24, 1967, Ser. No. 685,272
Int. Cl. C07c *29/04*; B01J *11/34*
U.S. Cl. 260—641 8 Claims

Ethanol is prepared by contacting ethylene and liquid water or an aqueous solution of an inert solvent with a catalytic amount of a prereduced catalyst consisting of a blue tungsten oxide on a zirconia support at 250°–350° C., 750–5,000 psi, and a mole ratio of water to ethylene of 5:1 to 25:1.

3,678,119
ACID ISOMERIZATION OF CHAMIGRENES
Garry C. Kitchens, Wayne; Alan R. Hochstetler, Bloomfield, and Kent Kaiser, Pequannock, all of N.J., assignors to Givaudan Corporation, Clifton, N.J.
Filed Jan. 18, 1971, Ser. No. 107,471
Int. Cl. C07c *13/30*, *13/48*
U.S. Cl. 260—666 PY 4 Claims

α- and β-chamigrenes treated with substantially anhydrous strong acids, suitably in the presence of an alkanoic acid are isomerized to give a mixture of novel tricyclic $C_{15}H_{24}$ olefinic hydrocarbons rich in 6,8a-ethano-1,1,6-trimethyl-1,2,3,5,6,7,8,8a-octahydronaphthalene. The aforementioned compound is useful as an intermediate in the preparation of compounds in perfume compounding.

3,678,120
HYDROCARBON CONVERSION CATALYST AND PROCESS
Herman S. Bloch, Skokie, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.
Filed Jan. 29, 1970, Ser. No. 6,954
Int. Cl. C07c *15/02*
U.S. Cl. 260—668 A 14 Claims

A hydrocarbon conversion catalyst comprising an inert support combined with an active catalytic complex comprising either SbF_5—HF or SbF_5—HSO_3F. The catalyst is particularly suitable for isomerization, alkylation and polymerization processes.

3,678,121
PREPARATION OF TELOMERIC LIQUID POLYBUTADIENE OILS
Bobby Joe McElroy, York, S.C., and Joseph Herbert Merkley, Gastonia, N.C., assignors to Lithium Corporation of America, New York, N.Y.
Filed Jan. 22, 1971, Ser. No. 109,002
Int. Cl. C07c *15/02*
U.S. Cl. 260—668 B 24 Claims

Preparation of telomeric liquid polybutadiene oils by the telomerization of 1,3-butadiene with toluene in the presence of a complex of a polylithio hydrocarbon with tetramethylethylenediamine, at a temperature of about 40°–110° C at atmospheric pressure.

3,678,122
ALLYLATION OR BENZYLATION OF AROMATIC COMPOUNDS
Louis Schmerling, Riverside, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.
Filed Oct. 5, 1970, Ser. No. 78,279
Int. Cl. C07c *3/56*
U.S. Cl. 260—671 A 10 Claims

Aromatic compounds may be allylated or benzylated by treatment with an allylic halide or a benzylic halide in the presence of a copper halide catalyst to form allylated substituted aromatic compounds. The reaction is exemplified by the treatment of benzene with allyl chloride in the presence of copper chloride to form allylbenzene.

3,678,123
TERTIARY ALKYLATION UTILIZING AN ADMIXTURE OF OLEFINS AND TERTIARY ALKYL CHLORIDES

Jesse K. Beggs, Houston, Tex., assignor to Esso Research and Engineering Company

Filed Dec. 28, 1970, Ser. No. 102,093
Int. Cl. C07c 3/56
U.S. Cl. 260—671 R 10 Claims

Benzene or naphthalene is selectively tertiary alkylated by reaction with C_7 to C_{44} tertiary alkyl chlorides in admixture with tertiary olefins similar to those from which the tertiary alkyl chlorides are derived, in the presence of a Friedel-Crafts catalyst and under reaction conditions including a temperature from −20° C. to 30° C., a pressure of from 5 to 400 mm Hg. absolute and in the presence of a rapidly boiling liquid.

3,678,124
PROCESS FOR THE PRODUCTION OF MONO- AND DIOLEFIN HYDROCARBONS

Gennady Arkadievich Stepanov, ulitsa Pervomaiskaya, 9, kv. 3; Anatoly Lvovich Tsulingold, Schitovoi poselok, 4-a sektsia, 3, kv. 20; Fedor Semenovich Pilipenko, Volzhskaya naberezhnaya, 25/2, kv. 7, all of Yaroslavl; Valerian Mikhailovich Sobolev, Naberezhnaya M. Gorkogo, 25/2, kv. 7, Moscow; Georgy Konstantinovich Boreskov, ulitsa Zolotodolinskaya, 85, Novosibirsk; Roman Alexeevich Buyanov, ulitsa Zhemchuzhnaya, 8, kv. 27, Novosibirsk, and Sergei Alexeevich Venyaminov, ulitsa Zhemchuzhnaya, 4, kv. 15, Novosibirsk, all of U.S.S.R.

Filed Oct. 24, 1968, Ser. No. 770,409
Int. Cl. C07c 11/22, 5/18, 3/28
U.S. Cl. 260—680 E 6 Claims

A process for the production of mono- and diolefin hydrocarbons by the catalytic oxidative dehydrogenation of paraffin hydrocarbons at 400°–700°C in the presence of catalysts comprising mixed oxide systems and consisting of oxides of molybdenum and/or tungsten and oxides of at least one of the following metals: chromium, manganese, iron, nickel and cadmium.

3,678,125
SILOXANE CONTAINING THERMOPLASTIC

John C. Saam, and Frederick W. G. Fearon, both of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Aug. 25, 1970, Ser. No. 66,892
Int. Cl. C08g 47/10; C08f 33/08
U.S. Cl. 260—827 6 Claims

Block copolymers of polydiorganosiloxane blocks and polystyrene blocks are thermoplastics useful as coating materials and film formers with excellent weathering.

3,678,126
SILOXANE CONTAINING THERMOPLASTIC ELASTOMERS

John C. Saam, and Frederick W. G. Fearon, both of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Aug. 25, 1970, Ser. No. 66,893
Int. Cl. C08g 47/10; C08f 33/08
U.S. Cl. 260—827 7 Claims

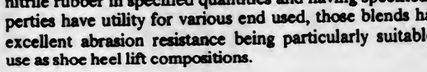
Block copolymers of polydiorganosiloxane blocks and polystyrene blocks are thermoplastic elastomers useful as coating materials and film formers with gas permeability.

3,678,127
CARBOXY TERMINATED POLYAMIDES AND DIEPOXIDES

Rolf Schmid, Gelterkinden; Friedrich Lohse, Oberwil Basselland, and Hans Batzer, Arlesheim, all of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

Continuation-in-part of Ser. No. 756,354, Aug. 30, 1968, Pat. No. 3,558,742. This application Oct. 19, 1970, Ser. No. 82,073
Claims priority, application Switzerland, Sept. 11, 1967, 12701/67
Int. Cl. C08g 45/12
U.S. Cl. 260—830 P 9 Claims

A curable composition which can be converted into crystalline plastics at an elevated temperature, characterized in that it contains long-chain polyamide-dicarboxylic acids of the formula



in which R_1 and R_2 each are members selected from the group consisting of branched alkylene, linear alkylene, branched alkenylene and linear alkenylene residue, and a is an integer of at least 2, preferably 2 – 10, as well as diepoxy compounds and, if desired, also antioxidants, and in which for every epoxide group equivalent 0.7 to 1.2, preferably 0.9 to 1.1 equivalent of carboxyl groups is present.

3,678,128
COATING COMPOSITIONS COMPRISING A MIXTURE OF A POLYESTER AND AN AMINOPLAST

Franz Riemhofer; Walter Dittman; Uwe Biethan; Karl-Heinz Hornung, and Ernst-Christian Schultze, all of Marl, Germany, assignors to Chemische Werke Huls Aktiengesellschaft, Marl, Germany

Filed Oct. 23, 1969, Ser. No. 868,895
Claims priority, application Germany, Oct. 25, 1968, P 18 05 186.0; Oct. 25, 1968, P 18 05 185.9; Oct. 25, 1968, P 18 05 182.6
Int. Cl. C08g 37/34
U.S. Cl. 260—850 8 Claims

Coating compositions resistant to yellowing, solvents, acids and alkalies and having the combination of high elasticity and good hardness are produced by using a mixture of

a. an aminoplast and
b. a polyester having an average molecular weight of 400–4,000 of (I) a diol mixture which includes one or both of ethylene glycol and 1,2-propanediol, and (II) an acid mixture which consists essentially of 91–33 percent of a cyclic dicarboxylic acid and 9–67 percent of an acyclic dicarboxylic acid.

3,678,129
THERMOPLASTIC POLYMER BLENDS CONTAINING POLYVINYL CHLORIDE, POLYETHER URETHANE AND BUTADIENE-ACRYLONITRILE COPOLYMERS

William K. Fischer, Woodbury, Conn., assignor to Uniroyal, Inc., New York, N.Y.

Filed June 22, 1970, Ser. No. 48,163
Int. Cl. C08g 41/04
U.S. Cl. 260—859 PV 12 Claims

Thermoplastic blends comprising a polyvinyl halide resin, a polyether polyurethane elastoplastic and an uncured diene-nitrile rubber in specified quantities and having specified properties have utility for various end used, those blends having excellent abrasion resistance being particularly suitable for use as shoe heel lift compositions.

3,678,130
ADHESIVE COMPOSITIONS CONTAINING EPOXY RESIN, CARBOXY CONTAINING COPOLYMER AND 1,5-DIHYDROZYNAPHTHALENE

David K. Klapprott, and Daniel L. Paradis, both of Concord, Calif., assignors to The Dexter Corporation, Pittsburg, Calif.

Filed Sept. 10, 1970, Ser. No. 71,270
Int. Cl. C08g 45/04
U.S. Cl. 260—837 R 15 Claims

The disclosure describes new adhesive compositions having improved toughness and excellent high temperature shear strength comprising the reaction product of a major amount of a polyepoxide with a minor amount of a reactive carboxyl group containing polymer and 1,5-dihydroxynaphthalene.

3,678,131
ADHESIVE COMPOSITIONS CONTAINING EPOXY RESIN, CARBOXYL CONTAINING COPOLYMER AND 2,2,-BIS-(4-HYDROXYPHENYL) SULFONE

David K. Klapprott, and Daniel L. Paradis, both of Concord, Calif., assignors to The Dexter Corporation, Pittsburg, Calif.

Filed Sept. 10, 1970, Ser. No. 71,269
Int. Cl. C08g 45/04
U.S. Cl. 260—837 R 15 Claims

The disclosure describes new adhesive compositions having improved toughness and excellent high temperature shear strength comprising the reaction product of a major amount of a polyepoxide with a minor amount of a reactive carboxyl group containing polymer and 2,2-bis(4-hydroxyphenyl)sulfone.

3,678,132
VINYL CHLORIDE RESIN BLENDS

Masataka Isogawa, Osaka; Shoichi Minato, and Zenjiro Ando, both of Kobe, all of Japan, assignors to Kanegafuchi Kogaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Feb. 25, 1970, Ser. No. 14,181
Claims priority, application Japan, March 4, 1969, 44/16344
Int. Cl. C08f 29/24, 37/18
U.S. Cl. 260—876 R 8 Claims

Thermoplastic resinous compositions comprising a blend of (1) 20 to 60 percent by weight of vinyl chloride resin and (2) 80 to 40 percent by weight of (A) 40 to 80 percent by weight of a resin prepared by copolymerizing 30 to 80 percent by weight of alpha methylstyrene, 5 to 50 percent by weight of methyl methacrylate, and 3 to 30 percent by weight of acrylonitrile; and (B) 60 to 20 percent by weight of a graft copolymer prepared by graft copolymerization of 65 to 35 percent by weight butadienic polymer and 35 to 65 percent by weight of a monomer mixture of 50 to 80 percent by weight of styrene, 20 to 50 percent by weight of methyl methacrylate, and 0 to 30 percent by weight of acrylonitrile.

3,678,133
MODIFIED VINYL HALIDE POLYMERS

Charles Francis Ryan, Warminster, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Filed April 24, 1970, Ser. No. 31,754
Int. Cl. C08f 37/18, 41/12
U.S. Cl. 260—876 R 24 Claims

Superior impact modified vinyl halide polymers with exceptional low die swell characteristics are attained by a modifier composition which does not contribute to the instability of the vinyl halide polymers. The modified polymers are readily extrudable, even into complex and delicate shapes, at moderate conditions and in simple equipment. The modifier composition is a multiphase acrylic composite interpolymer having a first cross-linked acrylic elastomer phase, and a second, acrylic ridig thermoplastic phase polymerized onto the elastomer, having a molecular weight in the range of from about 50,000 to 600,000.

3,678,134
BLEND OF ETHYLENE-BUTENE COPOLYMER WITH BUTADIENE-STYRENE RADIAL BLOCK COPOLYMER

Terence C. Middlebrook, Bartlesville, Okla., assignor to Phillips Petroleum Company

Filed March 8, 1971, Ser. No. 122,238
Int. Cl. C08f 29/12
U.S. Cl. 260—876 B 4 Claims

Cured blends of ethylene, 1-butene copolymer with a radial block copolymer of butadiene and styrene in critical amounts have a higher tensile strength than either the ethylene, 1-butene copolymer or the radial block copolymer. A process is provided for producing such blends.

3,678,135
CO-CURE OF BLEND OF RUBBER OF LOW UNSATURATION AND HIGHLY UNSATURATED RUBBER USING LONG CHAIN HYDROCARBON DITHIOCARBAMATE ACCELERATORS

Richard Mastromatteo, Woodbury, and Thomas J. Brett, Jr., Cheshire, both of Conn., assignors to Uniroyal, Inc., New York, N.Y.

Filed Sept. 9, 1970, Ser. No. 70,936
Int. Cl. C08f 29/12
U.S. Cl. 260—889 23 Claims

Use of such long chain hydrocarbon dithiocarbamate accelerators as zinc N-dodecyl, N-isopropyl dithiocarbamate in the sulfur cure of blends of rubber of low unsaturation, particularly EPDM, with highly unsaturated rubbers such as SBR, NBR, etc., produces vulcanizates having high tensile strength.

3,678,136
FLAME RETARDANT POLYOLEFINS

Edwin J. Vandenberg, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

Filed June 24, 1970, Ser. No. 49,560
Int. Cl. C08f 29/12
U.S. Cl. 260—897 C 4 Claims

Polyolefins are rendered flame retardant by the addition of a small amount of a polymer of epibromohydrin having an RSV of at least about 0.08. Preferably, the flame retardant polyolefins contain at least about 10% of the polymer of epibromohydrin when it is the sole flame retardant or at least about 4% of the polymer combined with from about 1 to 15% of an antimony compound.

3,678,137
ADAMANTYL-SUBSTITUTED-ALKYL 2-AMINOETHYL PHOSPHATES AND PHOSPHONATES

Francis R. Pfeiffer, Cinnaminson, and Jerry A. Weisbach, Cherry Hill, both of N.J., assignors to Smith Kline & French Laboratories, Philadelphia, Pa.

Filed Oct. 15, 1970, Ser. No. 81,109
Int. Cl. C07f 9/08, 9/28; A61k 27/00
U.S. Cl. 260—944 9 Claims

Adamantoyl, adamantyl or adamantylalkyl-oxyalkyl 2-aminoethyl phosphates and phosphonates having renin inhibitory activity.

3,678,138
SOLID PROPELLANT CHARGE MAKING IN MOLD HAVING PERFORATED SEPARATOR MEANS

Stuart Gordon, Cleobury Mortimer; Geoffrey Ian Evans, Bewdley, and Alwyn Cunliffe, Kidderminster, all of England, assignors to Imperial Metal Industries (Kynoch) Limited, Birmingham, England

Filed March 30, 1970, Ser. No. 23,724
Claims priority, application Great Britain, April 3, 1969, 17,482/69
Int. Cl. C06b 21/02
U.S. Cl. 264—3 R 10 Claims

A method of casting a plurality of solid propellant charges

comprising locating in a mould cavity a plurality of quantities of casting powder spaced apart by separator members, compressing the casting powder, displacing air from the casting powder by a casting liquid and curing the propellant charges formed from the quantities of casting powder.

3,678,139
CONVERSION OF METHANOL TO FORMALDEHYDE USING A BISMUTH MOLYBDATE ON SILICA CATALYST

William R. McClellan, Kennett Square, Pa., and Alvin B. Stiles, Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 707,909, Feb. 2, 1968, which is a continuation-in-part of Ser. No. 614,485, Feb. 7, 1967, abandoned. This application Nov. 24, 1969, Ser. No. 879,554

Int. Cl. C07c *45/16*

U.S. Cl. 260—603 HF **1 Claim**

A two-step process for the vapor phase conversion of methanol with oxygen to formaldehyde uses a conventional silver catalyst in the first step and an improved bismuth molybdate on silica catalyst in the second at temperatures between 450° and 600° C. The improved catalyst is made by mixing compounds to produce bismuth oxide, molybdenum oxide and, optionally, phosphorus oxide, in an aqueous slurry in the desired proportions, adding the slurry to an aqueous silica sol and then adding to the slurry ammonium carbonate or ammonium bicarbonate until the pH is in the range of 5 to 7.5, subsequently drying and calcining at 400° to 550° C. to produce the desired catalyst.

3,678,140
PROCESS FOR FOAMING AQUEOUS PROTEIN-CONTAINING BLASTING AGENTS

Philip E. Adams, Falling Waters, W. Va., and Philip W. Fearnow, Hagerstown, Md., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 3, 1969, Ser. No. 881,771

Int. Cl. C06b *21/02*

U.S. Cl. 149—109 **6 Claims**

Passing a thickened protein-containing water-bearing blasting agent through a plurality of orifices at a pressure of about 40 to 160 psi to create a vacuum in the area where the blasting agent exits from the orifice, incorporating air or other gas in the blasting agent and, thereafter, reducing the velocity of the blasting agent to provide a foamed product.

3,678,141
PROCESS FOR COLORING EPOXY PLASTIC EYEGLASS FRAMES AND PARTS THEREOF

Richard T. Metcalfe, Sturbridge, Mass., and Harry D. Crandon, Woodstock, Conn., assignors to American Optical Corporation, Southbridge, Mass.

Filed April 16, 1969, Ser. No. 816,822

Int. Cl. B29c *9/00*, *25/00*; C08g *51/04*

U.S. Cl. 264—22 **1 Claim**

A process for coloring epoxy plastic resins for eyeglass frames and parts thereof adds dyes or pigments to one or more of the liquid resin precursors or the liquid hardeners immediately prior to casting. Variegated patterns and other color effects may be made by metering two or more colors together with the resin precursors at the casting operation. Translucent colors are made by using solvent soluble dyes added to the resin precursors, opaque colors may be made by adding pigments to the precursors, and demi-shades are made by bleaching the dye cured resin at certain areas of the frames by exposure by heat or ultraviolet radiation.

3,678,142
PROCESS FOR PERMANENTLY CRIMPING YARN AND THE LIKE

Paul Dubach, Hochhaus II, Wattwil, Switzerland

Continuation of Ser. No. 714,746, March 20, 1968, abandoned. This application June 25, 1970, Ser. No. 56,058

Claims priority, application Switzerland, March 28, 1967, 4319/67

Int. Cl. D02g *1/00*

U.S. Cl. 264—25 **12 Claims**



The beam from a laser is caused to traverse either continuously or periodically along the length of a filament, thread, yarn, ribbon, or the like, while the same is under tension. The arrangement is such as to develop a temperature gradient through the element in a transverse direction relative to its longitudinal axis, wherever the laser beam impinges, for developing differential relaxation of stresses therein and to impart a crimp thereto.

3,678,143
USE OF REFRACTORY PARTING LAYER TO AID SKULL REMOVAL FROM FURNACE LININGS

Mark E. Harnish, and Merrit A. Peters, both of Plymouth Meeting, Pa., assignors to International Minerals & Chemical Corporation

Filed Nov. 25, 1970, Ser. No. 92,870

Int. Cl. F27d *1/16*; C04b *35/12*

U.S. Cl. 264—30 **12 Claims**

Refractory linings of metallurgical vessels, such as a tundish lined with alumina brick, are protected from the destructive effects of molten metal, skull, and skull removal by applying a coating of special refractory parting composition to the metal-contacting interior surfaces of the refractory lining. The coating is applied after skull removal and prior to returning the vessel to service. The special refractory parting composition consisting of a mixture of chrome ore, periclase, and a magnesium salt, and the particle size distribution are compounded to adhere to the solidified metal of the skull, to be non-adherent to the refractory lining, and to crumble on skull removal to the extent necessary to prevent injury to the refractory lining.

3,678,144
SILICATE BODIES CONTAINING COPRECIPITATED OXIDES

Robert D. Shoup, Painted Post, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed June 12, 1970, Ser. No. 45,906

Int. Cl. B29h *7/20*

U.S. Cl. 264—42 **7 Claims**

This invention relates to the discovery of a method for incorporating various oxides into silica-containing porous and nonporous glass materials by dissolving soluble compounds of the additive oxides, characterized as M_xO_y, into solutions, colloidal solutions, or suspensions of soluble silicates, reacting the mixture with an organic compound, and then firing the thus-formed body at temperatures below the softening point of the particular glass composition for a sufficient length of time to produce the porous body or non-porous glass body containing the added oxides intimately bonded to the silica network.

3,678,145
METHOD FOR PREPARING METAL MATRIX COMPOSITES CONTAINING MODIFIED POLYTETRAFLUOROETHYLENE

David J. Boes, Monroeville, Pa., assignor to The United States of America as represented by the Secretary of the Air Force

Filed Dec. 23, 1969, Ser. No. 887,730

Int. Cl. C08f *3/24*; C10m *5/10*; F16d *69/00*

U.S. Cl. 264—115 **2 Claims**

Polytetrafluoroethylene, sold under the trademark Teflon, is modified before being blended with metal powder and formed into a composite. Modification is accomplished by heating the Teflon for 1 to 2 hours at 1,000°–1,100°F and then for 3 to 3.5 hours at 650° to 750°F. Metal matrix composites containing modified Teflon as a filler are useful as retainer materials for bearings which are subjected to high temperature operating conditions.

3,678,146
PROCESS FOR MAKING PIPE BENDS OF THERMOPLASTIC MATERIAL

Emil Rottner; Franz Bock; Willi Muth, and Gunter Wenzel, all of c/o Farbwerke Hoechst AG, Frankfurt am Main, Germany

Division of Ser. No. 775,443, Nov. 13, 1968, Pat. No. 3,562,860. This application April 30, 1970, Ser. No. 43,633

Claims priority, application Germany, Nov. 29, 1967, P 17 04 661.6

Int. Cl. B29c *1/12*; B29d *23/10*

U.S. Cl. 264—313 **2 Claims**

Pipe bends of thermoplastic material are manufactured by thermoforming by shoving a sleeve-shaped pipe section which is closed at one end into a pipe bend mold which is symmetrically split in the longitudinal direction. The introduction is carried out with the help of a flexible core which is several times split longitudinally and which is pressed against the bottom of the pipe section. After cooling, the mold is opened and the core or its individual parts are pulled out of the pipe bend and the ends of the latter are trimmed.

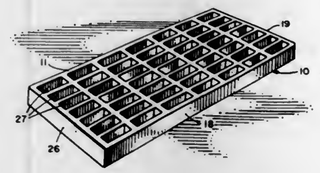
3,678,147
METHOD FOR MAKING REINFORCED GRATING

Lee H. Patchen, Drawer G, Knoxville, Ark.

Filed April 13, 1970, Ser. No. 27,725

Int. Cl. B29c *11/00*

U.S. Cl. 264—325 **6 Claims**



A method of forming a plastic grating reinforced with longitudinally and transversely extending rows of strands or filaments, each of the rows of filaments comprising a plurality of spaced-apart generally aligned filaments. The openings of the grating are provided through the areas defined by intersecting rows of filaments. The grating is formed by introducing a predetermined amount of resin material into a pan mold, and then lowering a lattice of intersecting rows of filaments into the mold. Thereafter, a mold core which includes vertically extending fingers shaped to be received by the vertically extending openings in the lattice is lowered into the mold to raise the level of the resin material to cover the filaments. After the resin material is hardened, the mold core is raised and the grating is removed from the pan mold.

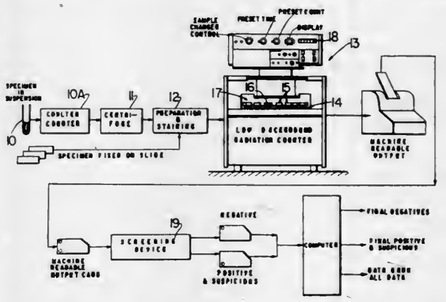
3,678,148
RADIOACTIVE SLIDE SPECIMEN ANALYSIS OF AND METHOD OF PREPARATION

Leonard Caiola, Ridgewood, N.J., assignor to Information Utilization Corporation, New York, N.Y.

Filed June 26, 1969, Ser. No. 836,768

Int. Cl. A61k *27/04*; G21h *5/02*

U.S. Cl. 424—1 **9 Claims**



A slide specimen of exfoliated cells is prepared in the usual manner for microscopic optical examination of a Papanicolaou Test, up to the point of staining. At this stage, instead of the ordinary stains, a stain containing a radioisotope is used. The slide with the radioisotope-bearing stain is thereupon passed through a radiation counter which gives an indication of the amount of radiation the slide emits, which indicates the amount of radioactive stain absorbed by the specimen. This relative absorption amount indicates the differential staining of the cellular material and forms the equivalent electronic differentiation of the specimens to the standard Papanicolaou optical differentiation as viewed through the microscope. In this way, the automatic radiation counter is used to substitute for the human element in the microscopic evaluation of the specimens.

3,678,149
METHOD OF ENHANCING THE ACTION OF A MEDICAMENT

Samuel J. Prigal, 225 West 106th St., New York, N.Y.

Continuation-in-part of Ser. No. 490,642, Sept. 27, 1965, Pat. No. 3,492,399, which is a continuation-in-part of Ser. Nos. 170,242, Jan. 31, 1962, abandoned, and Ser. No. 401,669, Oct. 6, 1964, abandoned, which is a continuation-in-part of Ser. No. 47,364, Aug. 4, 1960, abandoned, and Ser. No. 28,011, May 10, 1960, Pat. No. 3,096,249. This application Jan. 26, 1970, Ser. No. 5,950

Int. Cl. A61k *27/12*

U.S. Cl. 424—8 **6 Claims**

This invention is concerned with a method of prolonging the action of a medicament in a mammal by administering parenterally thereto an emulsion comprising an aqueous phase dispersed substantially uniformly throughout a metabolizable vegetable, animal or hydrocarbon oil containing one or more hydrocarbons of about 12 to 18 carbon atoms, the aqueous phase having an average particle size of about 0.1 to 10 microns and including an effective dose of a medicament. The medicament may be therapeutic or prophylactic in nature, and more specifically, may include live or killed microorganisms, pollen extract and a host of other materials.

In another aspect of the invention non-specific resistance of the mammal is induced by administering parenterally the aforedescribed emulsion in which the medicament is a lipopolysaccharide and such an emulsion induces in the mammal resistance to radiation, shock and infection when subjected thereto. In a specific sense the fetus of a mammal may derive higher resistance to infection or radiation by administration to the female mammal the aforedescribed emulsion.

The oil phase of the emulsion decreases the LD_{50} of a toxic medicament.

The mammals in which such responses can be achieved are mice, rabbits, monkeys, rats, guinea pigs, pigs, dogs, and the like.

3,678,150
PROCESS FOR IMPROVING THE STABILITY OF PPD, QT AND HISTOPLASMIN ON TINE APPLICATORS

Stephen Aloysius Szumski, and Donald Walter McCoy, both of Pearl River, N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 686,331, Nov. 28, 1969, abandoned, which is a continuation-in-part of Ser. No. 793,611, Jan. 23, 1969, abandoned. This application July 27, 1971, Ser. No. 166,578
Int. Cl. A61k *27/12*
U.S. Cl. 424—12 4 Claims

In accordance with this invention, the stability of Old Tuberculin, Tuberculin Purified Protein Derivative (PPD) or histoplasmin coated on the tines of injectors by way of a single dip technique is greatly improved by combining said biologicals with acacia and a material selected from the group consisting of lactose, glucose and mixtures thereof.

3,678,151
BIOLOGICAL STAINING METHOD

Andrew Horowick, and Andre V. Munachy, both of Bronx, N.Y., assignors to Gegel-Clini-Tex, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 562,487, July 5, 1966, abandoned. This application July 25, 1969, Ser. No. 845,089
Int. Cl. G01n *1/30, 33/16*
U.S. Cl. 424—3 2 Claims

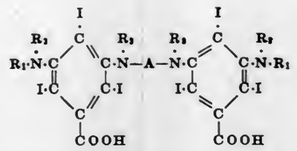
The invention relates to preparation of precise micro and other values of volumetric concentrations of chemicals, standards, reagents, pharmaceuticals and biologicals in solvents therefor and utilizes dry segments from an inert, integrally divisible and absorbent carrier uniformly impregnated with said substances, each of the segments carrying a computed quantity of the impregnation based on the proportionate size with respect to the carrier. One of the objects of the invention is in the preparation and utilization of segments as dry stain or dye strips for formation of liquid stains applicable to biological materials such as blood smears and bacteria for staining and microscopic examination purposes.

3,678,152
METHOD FOR THE X-RAY VISUALIZATION OF BODY CAVITIES AND A PREPARATION FOR CARRYING OUT THE METHOD

Lars Bjork, Dobelnagatan 22D; Uno Eugen Erikson, Robertsuagen 8, and Bjorn Gustov-Adolf Ingelman, Ovre Slottsgatan 1D, all of Uppsala, Sweden

Division of Ser. No. 689,724, Dec. 11, 1967, abandoned. This application Oct. 6, 1969, Ser. No. 864,167
Claims priority, application Sweden, Dec. 13, 1966, 17053/66
Int. Cl. A61k *27/08*
U.S. Cl. 424—5 24 Claims

Compositions which comprise at least one iodine compound of the formula:



wherein R_1 is a lower alkyl group having no more than five carbon atoms and R_2 and R_3 are each a lower acyl group having no more than five carbon atoms and wherein A is an alkylene group substituted by at least one substituent of the formula $—OR_4$ wherein R_4 is a member selected from the group consisting of hydrogen, lower alkyl and lower acyl, said alkyl and acyl having each no more than five carbon atoms; said alkylene containing from three to 15 inclusive carbon atoms and optionally being broken by one or more oxygen bridges or a physiologically acceptable salt thereof. Such compositions are useful as X-ray contrast compositions and are administered to the body of the test object for the X-ray visualization of body cavities.

3,678,153
DIFLUOROXALATOSTANNATE(II) COMPLEXES

Simon Katz, Indianapolis, Ind., assignor to Indiana University Foundation, Bloomington, Ind.

Filed Jan. 20, 1971, Ser. No. 108,227
Int. Cl. A61k *7/16*
U.S. Cl. 424—52 19 Claims

A new genus of compositions of matter, namely, difluoroxalatostannate(II) complexes has been discovered. These compounds when incorporated into oral compositions for dental caries prophylaxis (e.g., as a constituent of a dentifrice, prophylaxis paste, or mouthwash), have demonstrated substantial utility as an anticariogenic agent.

3,678,154
ORAL COMPOSITIONS FOR CALCULUS RETARDATION

James S. Widder, and William W. Briner, both of Springfield Township, Hamilton County, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed July 1, 1968, Ser. No. 741,264
Int. Cl. A61r *7/16*
U.S. Cl. 424—52 13 Claims

Oral compositions, such as toothpaste, mouthwash, and the like, containing certain polyphosphonates as anticalculus agents, and a water-soluble source of fluoride ions to counteract the adverse effects of such polyphosphonates on post eruptive maturation of dental enamel.

3,678,155
TOOTHPASTES

John Walter Clippingdale, Egham, and Charles Andrew Watson, Ruislip, both of England, assignors to Lever Brothers Company, New York, N.Y.

Filed Oct. 15, 1969, Ser. No. 866,721
Claims priority, application Great Britain, Oct. 29, 1968, 51286
Int. Cl. A61k *7/16*
U.S. Cl. 424—52 8 Claims

Using milled alpha-alumina trihydrate as a toothpaste abrasive can sometimes give rise to corrosion of unlacquered aluminum tubes accompanied by the production of hydrogen gas. This can be prevented by including in the toothpaste a source of monofluorophosphate ions.

3,678,156
COMPOSITIONS FOR TOPICAL APPLICATION TO ANIMAL TISSUE AND METHOD OF ENHANCING PENETRATION THEREOF

Francis S. Kilmer MacMillan, and Warren I. Lyness, both of Cincinnati, Ohio, assignors to The Proctor & Gamble Company, Cincinnati, Ohio

Division of Ser. No. 595,437, Nov. 18, 1966, Pat. No. 3,527,864, which is a continuation-in-part of Ser. No. 344,195, Feb. 12, 1964, abandoned. This application May 15, 1970, Ser. No. 48,655
Int. Cl. A61k *7/00, 27/10*
U.S. Cl. 424—68 3 Claims

Antiperspirant composition for topical application to animal tissue comprising an astringent metal salt and from 0.1 to 10 percent by weight of a higher ($C_8 - C_{12}$) aliphatic sulfoxide, said composition having enhanced penetration of the antiperspirant through keratinized epiphelial tissue.

3,678,157
HAIR TREATMENT COMPOSITIONS CONTAINING POLYCONDENSABLE COMPOUNDS

Gregoire Kaloplasis, Paris; Jean-Louis Abegg, Le Perreux; Guiliana Ghilardi, and Henri Philippe De Beaulieu, both of Paris, all of France, assignors to Societe anonyme dite: L'Oreal

Filed Oct. 23, 1968, Ser. No. 770,074
Int. Cl. A61k *7/10*
U.S. Cl. 424—71 4 Claims

A composition for treating hair containing a cosmetically effective amount of a polycondensable compound having the formula:

(I)

in which:

Y is selected from the group consisting of H, hydrocarbon chains comprising one to 30 carbon atoms, groups consisting of cosmetic constituents which have —S—S, —SH, —COOH, basic quaternary ammonium, and fatty chain groups,

X is selected from the group consisting of O, S and NH,

R_1 and R_2 are selected from the group consisting of lower alkyl and together may form a heterocyclic group, comprising nitrogen and/or oxygen atoms,

R_3 is selected from the group consisting of H, alkyl, and the two R_3 groups may form a heterocyclic group, comprising nitrogen and/or oxygen atoms.

3,678,158
TREATMENT OF HERNIATED INTERVERTEBRAL DISCS OF MAMMALS

Bernard J. Sussman, Washington, D.C., assignor to Worthington Biochemical Corporation, Freehold, N.J.

Continuation-in-part of Ser. No. 729,436, May 15, 1968, abandoned. This application May 11, 1971, Ser. No. 142,333
Int. Cl. A61k *19/00*
U.S. Cl. 424—94 2 Claims

Herniated intervertebral discs of mammals are treated to effect the selective in situ dissolution in vivo of nucleus pulposus and fibrocartilaginous tissue by the use of a sterile solution of purified collagenase injected into the intervertebral disc space.

3,678,159
ANTIBIOTICS OBTAINED FROM STREPTOMYCES MIHARAENSIS

Taro Nilda; Hiroshi Yumoto; Takashi Tsuruoka, all of Kanagawa-ken; Kazuko Hamamoto, Tokyo; Jakashi Shomura, Kanagawa-ken, and Takawo Ohashi, Tokyo, all of Japan, assignors to Meiji Seika Kaisha Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 626,470, March 28, 1967. This application Dec. 24, 1968, Ser. No. 791,856
Claims priority, application Japan, March 28, 1966, 41/18691
Int. Cl. A61k *21/00;* C12b *1/00*
U.S. Cl. 424—116 5 Claims

Miharamycin A and miharamycin B, obtained by cultivating selected strains of actinomyces (*Streptomyces miharaensis*), have a strong inhibition activity against microbes of rice blight and those of Pseudomonas and exhibit an effective activity against plant virus.

3,678,160
HYDROXYETHANE SULFONIC ACID DERIVATIVE OF ENDURACIDIN REDUCTION PRODUCT

Akira Miyake, Nishinomiya; Stoshi Horii, Takatsuki, and Jisaburo Ueyanagi, Nishinomiya, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Jan. 14, 1969, Ser. No. 791,127
Claims priority, application Japan, Jan. 22, 1968, 43/3639
Int. Cl. A61k *21/00*
U.S. Cl. 424—117 1 Claim

Enduracidin derivatives of the formula

wherein En is Enduracidin residue, r is 0. 1 or 2, p is 1, 2 or 3 and r plus p is 3, X is a member selected from the group consisting of hydroxyl, amino radical and a radical represented by the formula: $—SO_3M$, wherein M is hydrogen or alkali metal, n is 1, 2 or 3, m is 1 or 2, and l is 0 or 1, and when n is 1, m represents 1, l represents 0 and X represents hydroxyl radical, and when n is 2 or 3, m represents 2 and l represents 1, have improved stability and therapeutic activity of Enduracidin itself.

3,678,161
GANGTOKMYCIN AND PRODUCTION THEREOF BY STREPTOMYCES GANGTOKENSIS

Motoo Shibata, Toyonaka; Hiroichi Yamamoto, Kobe; Eiji Higashide, Takarazuka; Kozui Mizuno, Osaka; Mashiko Imanishi, Takarazuka, and Akira Miyake, Nishinomiya, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Oct. 20, 1964, Ser. No. 405,134
Claims priority, application Japan, Oct. 24, 1963, 38/56946
Int. Cl. A61k *21/00*
U.S. Cl. 424—122 2 Claims

Gangtokmycin, produced by culturing *Streptomyces gangtokensis* No. 69249 (ATCC-15665) under aerobic conditions, shows antimicrobial activity against gram-positive bacteria and antifungal activity against phytopathogenic fungi. It is useful in treating candidosis, Cryptococcus diseases, athlete's foot, etc. and also as an agricultural chemical for Helminthosporium leaf spot, late blight, smut, etc. without phytotoxicity.

3,678,162
INHIBITING OR PREVENTING THROMBUS FORMATION WITH 2-METHYLTHIOADENOSINE-5'-MONOPHOSPHATE

Mary H. Maguire; Geoffrey R. Gough, both of Mosman, and Frank Michal, Lane Cove, New South Wales, all of Australia, assignors to The University of Sydney, Sydney, New South Wales, Australia

Filed Dec. 8, 1969, Ser. No. 883,354
Claims priority, application Australia, Dec. 13, 1968, 47789
Int. Cl. A61k 27/00
U.S. Cl. 424—180 4 Claims

2-Methylthioadenosine-5'-monophosphate and the ammonium, sodium and potassium salts thereof and pharmaceutical compositions and methods of inhibiting or preventing thrombus formation with these compounds.

3,678,163
STABILIZED AQUEOUS SUSPENSION OF CALCIUM (-) (CIS-1,2-EPOXYPROPYL)-PHOSPHONATE

Donald J. Allen, Gwynedd, and Joseph L. O'Neill, Lafayette Hill, both of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Filed June 2, 1969, Ser. No. 829,785
Int. Cl. A61n 27/00
U.S. Cl. 424—203 1 Claim

Stabilized aqueous suspensions of calcium (-) (cis-1,2-epoxypropyl)-phosphonate.

3,678,164
COMPOSITIONS FOR INHIBITING ANOMALOUS DEPOSITION AND MOBILIZATION OF CALCIUM PHOSPHATE IN ANIMAL TISSUE

Marion D. Francis, Springfield Township, Hamilton County, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 709,871, March 4, 1968, abandoned. This application Feb. 12, 1969, Ser. No. 798,807
Int. Cl. A61k 27/00
U.S. Cl. 424—204 12 Claims

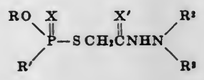
Compositions for inhibiting anomalous deposition and mobilization of calcium phosphates in animal tissue, comprising an effective amount of certain tris(phosphonoalkyl)amines as herein defined, and a pharmaceutical carrier; and a method for treating or preventing conditions involving pathological calcification and hard tissue demineralization in an animal comprising administering to such animal said compositions.

3,678,165
PESTICIDAL PHOSPHORO AND PHOSPHONO ACETYLHYDRAZIDES

Ralph B. Fearing, Bardonia, N.Y., assignor to Stauffer Chemical Company, New York, N.Y.

Division of Ser. No. 629,401, April 10, 1967, Pat. No. 3,518,327, which is a continuation-in-part of Ser. No. 423,356 Jan. 4, 1965. This application March 19, 1970, Ser. No. 24,976
Int. Cl. A01n 9/36
U.S. Cl. 424—211 5 Claims

This invention is for novel pesticides having the general formula



wherein R is lower alkyl; R' is lower alkyl or lower alkoxy; the radicals represented by X are independently selected from the group consisting of oxygen and sulfur; R^2 and R^3 are independently selected from the group consisting of hydrogen, methyl, ethyl, formyl, acetyl, and in combination can be selected from the group consisting of ethylidene and methylene. The lower alkyl radicals suitable for R and R' are the straight and branched chain aliphatic radicals having from one to eight carbons, and include for example, methyl, ethyl, n-propyl, isopropyl, amyl, octyl, and the like. Similarly the lower alkoxy radicals suitable for R' are the straight and branched chain radicals having from one to eight carbons and include methoxy, ethoxy, n-propoxy, isopropoxy, amoxy, octoxy and the like. Particularly effective as pesticides in the control of insects such as *M. domestica*, *B. germanica*, and *O. fasciatus*. They are also effective in the control of acarids, such as *Tetranychus telarius*, both contact and systemic.

3,678,166
THE TREATMENT OF INFLAMMATION WITH 1,2,3-BENZOTRIAZIN-4(3H)-ONES

Faizulla G. Kathawala, West Orange, N.J., assignor to Sandoz-Wander, Inc., Hanover, N.J.

Filed March 15, 1971, Ser. No. 124,488
Int. Cl. A61k 27/00
U.S. Cl. 424—246 6 Claims

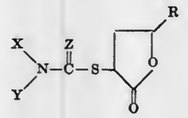
The disclosure relates to compounds of the class of 1,2,3-benzotriazin-4(3H)-ones which may be unsubstituted or substituted at the 6,7 and/or 8- positions, e.g. 6-chloro-1,2,3-benzotriazin-4(3H)-one, and their use as anti-inflammatory agents. The compounds may be prepared by reaction of an anthranil amide with sodium nitrite and a strong inorganic acid, e.g. sulfuric acid.

3,678,167
FUNGICIDAL COMPOSITION CONTAINING THIOCARBAMYL-V-LACTONES

Ranjit Ghosh, and Nigel Douglas Bishop, both of Bracknell, England, assignors to Imperial Chemical Industries Limited, London, England

Division of Ser. No. 526,380, Feb. 10, 1966, Pat. No. 3,464,986. This application March 28, 1969, Ser. No. 832,526
Claims priority, application Great Britain, Feb. 18, 1965, 7,085/65
Int. Cl. A01n 9/12, 9/22, 9/28
U.S. Cl. 424—248 2 Claims

A fungicidal composition comprising a fungicidally effective amount of a compound having the formula:



wherein R stands for hydrogen or lower alkyl, Z stands for oxygen or sulphur, X and Y each stand for hydrogen or alkyl of up to 12 carbon atoms or together with the adjacent nitrogen atom represent a hexamethylenimino, morpholino, or piperidino ring or wherein X stands for a hydrogen atom and Y stands for allyl, chlorophenyl, phenyl-substituted alkyl containing one to two carbon atoms, phenyl, morpholino, dialkylamino containing up to 3 carbon atoms in each alkyl group,

ethoxycarbonylmethyl, tetrahydropyran-2-yl methyl, or 5-methyl-2-oxo-3-thiocarbamylthio-tetrahydrofuran-ethylene, R being alkyl when Y is alkyl, in admixture with a diluent for said compound. These compositions are useful for the control of blast on rice (Piricularia oryzae), rust on wheat (Puccinia triticina) and sore skin on cotton (Rhizoctonia solani).

3,678,168
NITROALKYL-PIPERAZINES FOR INHIBITING BACTERIA FUNGI AND NEMATODES

Nathaniel Grier, Englewood, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 457,802, May 21, 1965, Pat. No. 3,399,199. This application June 21, 1968, Ser. No. 738,843
Int. Cl. A01n 9/22
U.S. Cl. 424—250 4 Claims

Antimicrobial compositions containing piperazine nitroalkanes useful as soil sterilants and algicides, etc., for agricultural and industrial application.

3,678,169
PYRIDYL-2-IMIDAZOLONES AS ANTI-INFLAMMATORY AGENTS

Norbert Gruenfeld, Bronx, and Enos C. Pesterfield, Jr., Briarcliff Manor, both of N.Y., assignors to Ciba-Geigy Corporation

Division of Ser. No. 803,458, Feb. 28, 1969, Pat. No. 3,538,104. This application Jan. 19, 1970, Ser. No. 8,142
Int. Cl. A61k 27/00
U.S. Cl. 424—263 5 Claims

Substituted pyridyl-2-imidazolones and their acid addition salts which are analgesic, anti-inflammatory, and antipyretic agents. An illustrative embodiment is 1-methyl-5-(2-pyridyl)-2-imidazolone.

3,678,170
PHARMACEUTICAL METHOD AND COMPOSITIONS EMPLOYING SUBSTITUTED CHROMANONE OXIMES AND CHROMANONE OXIME ETHERS

Robert D. Irsay, Cambridge, Mass., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 786,443, Dec. 23, 1968, Pat. No. 3,510,497, which is a continuation-in-part of Ser. No. 734,549, June 5, 1968, abandoned, which is a continuation-in-part of Ser. No. 580,606, Sept. 20, 1966, abandoned. This application March 26, 1970, Ser. No. 23,016
Int. Cl. A61k 27/00
U.S. Cl. 424—283 18 Claims

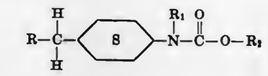
This disclosure teaches the preparation of chromanone oximes, such as, 7,8-dichloro-4-chormanone oxime and their use as diuretics in warm-blooded mammals.

3,678,171
IRRITANT COMPOSITION COMPRISING CERTAIN CYCLOHEXYLCARBAMATES

Richard N. Knowles, Hockessin, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 635,302, April 20, 1967, which is a continuation-in-part of Ser. No. 574,495, Aug. 18, 1966. This application Oct. 24, 1968, Ser. No. 770,449
Int. Cl. A01n 9/20
U.S. Cl. 424—300 9 Claims

Repelling animals with alkyl-4-(4-higher alkyl substituted cyclohexyl)carbamates of the formula:



wherein
R is alkyl, cycloalkyl, cycloalkylalkyl, bicycloalkyl or tricycloalkyl;
R_1 is hydrogen, or alkyl; and
R_2 is alkyl.
Typical is methyl-N-(cis-4-cyclohexylmethylcyclohexyl)carbamate useful as an animal repellant.

3,678,172
ALLETHRONYL ESTERS OF CERTAIN CYCLOPROPANE-CARBOXYLIC ACIDS AS INSECTICIDES

Ira D. Hill, Middlesex; Barid B. Mukherjee, Piscataway, and Dale G. Brown, Middlesex, all of N.J., assignors to Tenneco Chemicals, Inc.

Filed Feb. 3, 1970, Ser. No. 8,387
Int. Cl. A01n 9/24
U.S. Cl. 424—306 10 Claims

Insecticidal compositions contain as their active ingredient allethronyl esters of 2,2-dichloro-3,3-dimethylcyclopropanecarboxylic acid and certain other cyclopropanecarboxylic acids.

3,678,173
BACTERICIDAL QUATERNARY AMMONIUM DERIVATIVES OF INDENE

Edward Griffin Shay, Belle Mead, and Edward A. Tavss, Jersey City, both of N.J., assignors to Millmaster Onyx Corporation, New York, N.Y.

Division of Ser. No. 857,573, Sept. 12, 1969, Pat. No. 3,636,115. This application April 9, 1971, Ser. No. 132,910
Int. Cl. A01n 9/20
U.S. Cl. 424—329 2 Claims

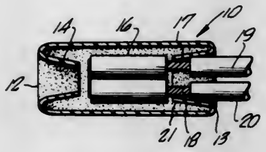
A method of microbiocidally treating a surface or treating hard water which comprises applying to the surface or admixing with the water microbiocidal quaternary ammonium derivatives of indene, at least some of which retain a high degree of their microbiocidal activity in hard water, the quaternary nitrogen having a long chain alkyl of eight to 18 carbon atoms, but preferably 12 to 14 carbon atoms and two lower alkyl chains of 1 to 4 carbon atoms attached thereto.

ELECTRICAL

3,678,174
SELF-LOCKING HEAT SHRINKABLE INSULATING SLEEVE

Harry E. Ganzhorn, Mountain View, Calif., assignor to Raychem Corporation, Menlo Park, Calif.

Filed Jan. 15, 1971, Ser. No. 106,848
Int. Cl. H02g *15/08*
U.S. Cl. 174—84 R 18 Claims

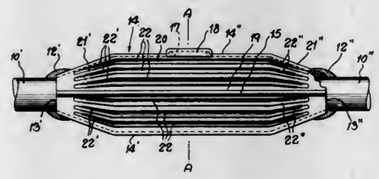


An insulation sleeve of the type used to provide electrical insulation around an electrical connection is disclosed. This sleeve has at least one end which has a re-entrant configuration projecting back into the interior of the sleeve such that at least a portion of the re-entrant is held away from the inside surface of the sleeve. This provides a self-locking feature when an object of an appropriate size is inserted through this end. The sleeve may then be heat shrunk around the connection or can serve as an insulator without further recovery. The sleeve may also be provided with a solder insert. A process for fabricating such a sleeve is also disclosed. Such sleeves are particularly useful for insulating an electrical connection made by a ferrule which has been crimped over the stripped ends of insulated conductors.

3,678,175
DEFORMABLE CASING JOINING CABLE ENDS

Edoardo Appiani, Milan, and Alberto Felici, Monza, both of Italy, assignors to Pirelli Societa Per Azioni Centro Pirelli, Milan, Italy

Filed Oct. 30, 1970, Ser. No. 85,469
Claims priority, application Italy, Dec. 9, 1969, 25501 A/69
Int. Cl. H02g *15/08*
U.S. Cl. 174—92 10 Claims

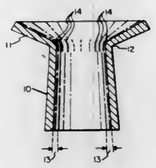


Casing for protecting joined cable ends surrounded by variable volume insulation which is of maximum cross-section at its center and tapers to a smaller size at its ends and which has longitudinally extending corrugations to permit it to expand and contract and thereby follow the volume variations of the insulation.

3,678,176
WIRE CLAMP TERMINAL CLIP OF THE FLANGED TUBULAR TYPE

William A. Reimer, Wheaton, Ill., assignor to GTE Automatic Electric Laboratories, Inc., Northlake, Ill.

Filed Aug. 26, 1970, Ser. No. 66,933
Int. Cl. H02g *15/08*
U.S. Cl. 174—94 R 5 Claims

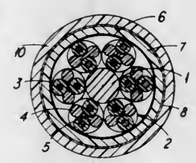


A terminal clip for the solderless connecting of electrical conductors to terminal posts, wherein the clip comprises a tubular body section having a flanged section formed on at least one end, and wherein the connection relies on a compressive metallic deformation in the tubular section against the conductor for clamping the conductor to the post. The clamping force provided by the clip is determined in accordance with the configuration and/or the hardness of the flange edge in combination with the configuration and/or the hardness of the strain relief point, or knee, where the flange section joins the tubular section. In response to a compressive force being applied to the clip in a direction parallel to the axis of the tubular section, the material at the knee yields before that of the flange edge, thereby reducing the internal diameter of the tube at the knee for providing the clamping connection.

3,678,177
TELECOMMUNICATION CABLES

Thomas Lawrenson, Helsby, England, assignor to British Insulated Callender's Cables Limited, London, England

Filed March 29, 1971, Ser. No. 128,830
Int. Cl. H01b *11/02*
U.S. Cl. 174—113 C 17 Claims

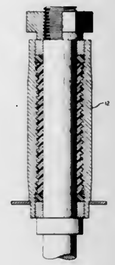


In a telecommunication cable comprising a plurality of pairs of twisted together insulated conductors in which one or each of the interstitial spaces present within the circumscribing cylinder of each of some or all of the pairs of insulated conductors is occupied by an elongate member of electrically insulating material, which elongate members serve to prevent displacement of one pair with respect to an adjacent pair, each elongate member is integral with or secured to one of the insulated conductors of the pair with which it is associated or is integral with or secure to the elongate member, when present, occupying the other interstitial space of the pair.

3,678,178
HIGH TEMPERATURE COMPRESSION SEAL TERMINAL

Philip Hubbauer, Clark, and Edwin John McHenry, Millington, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 18, 1971, Ser. No. 200,098
Int. Cl. H01b *17/30*; H01m *1/02*
U.S. Cl. 174—152 R 6 Claims

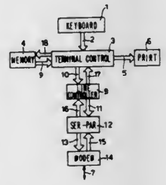


A battery seal terminal capable of withstanding high pressures, thermal and mechanical shocks and temperatures in excess of 135° C. includes a plastic sealant bushing radially compressed against the battery lead post by an outer metal sleeve, and two pairs of retainer rings, the first ring of each pair having sufficient elasticity to be press-fitted between the lead post and the sleeve to abut against an end of the bushing, and the second ring of each pair being of a rigid material and abutting against the first ring. The lead post extends through the sleeve at either end thereof. A hub is located on the lead post near one end of the sleeve and a portion of the lead post which extends beyond the sleeve at the other end is threaded. The bushing is then axially compressed between the ring pairs by drawing down a nut on the threaded end of the lead post.

3,678,179
TERMINAL APPARATUS

Francesco Serracchioli, and Francesco Restivo, both of Torino, Italy, assignors to Ing. C. Olivetti & Co., S.p.A., (Torino), Italy

Filed June 2, 1970, Ser. No. 42,716
Claims priority, application Italy, June 3, 1969, 52094 A/69
Int. Cl. H04l *15/34*, *21/00*, *15/12*
U.S. Cl. 178—4.1 11 Claims

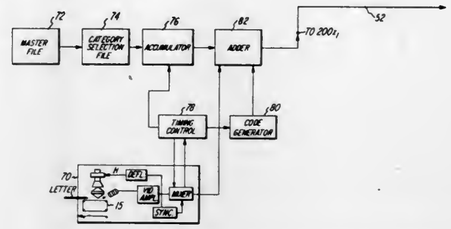


A printing terminal apparatus for data transmission is adapted to transmit at the beginning of each message sent to a central computer, a code combination indicative of the terminal operator and to print characters corresponding to said code combination in a predetermined position on the paper at the printing terminal. The code combination is automatically generated at the start of the message by inserting a lock-key into a corresponding lock and by depressing a key associated with the inserted lock-key.

3,678,180
RADIO FACSIMILE POSTAL SYSTEM FOR MULTIPLE ADDRESSEES

Donald Spencer Bond, Princeton, N.J., assignor to RCA Corporation

Filed Oct. 9, 1970, Ser. No. 79,574
Int. Cl. H04n *7/16*
U.S. Cl. 178—5 6 Claims

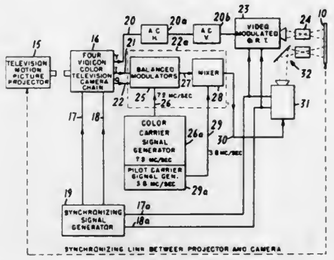


A radio facsimile postal system in which a plurality of code signals uniquely identifying the addressees to receive a "third class" mailing are sequentially transmitted prior to the transmission of image signals representative of the written message. In this manner, system subscribing addressees to receive such mailing will have the radio facsimile recorders of their receivers conditioned to respond to the particular message information subsequently transmitted.

3,678,181
COLOR FILM RECORDING AND REPRODUCING APPARATUS

Peter C. Goldmark, Stamford, and John M. Hollywood, Greenwich, both of Conn., assignors to Columbia Broadcasting System, Inc., New York, N.Y.

Continuation of Ser. No. 862,564, July 25, 1969, abandoned, which is a continuation of Ser. No. 519,106, Jan. 6, 1966, abandoned. This application Aug. 5, 1970, Ser. No. 61,424
Int. Cl. H04n *9/02*, *5/84*
U.S. Cl. 178—5.2 38 Claims



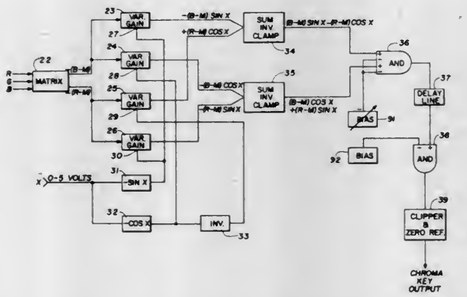
Apparatus and method for recording color picture information on a record medium, in which luminance information is recorded in one frame portion on the record medium and coded color information is recorded in a separate frame portion. Such luminance information may be in pictorial form and recorded either optically or electronically by a recording beam. The color information takes the form of a record including a first, carrier signal component modulated in amplitude and phase according to the color saturation and hue in the original scene and a superimposed reference carrier signal component bearing a fixed frequency relation to the color carrier signal, so that the recorded cycles of the respective carriers tend to be aligned in a common direction in the color frame. Recording may be carried out by scanning laser, elec-

tron or optical beam. as desired. The record medium may be reproduced by directing an image of a respective one of the frame portions to separate television cameras for producing a luminance signal and signals at the color and reference carrier frequencies.

3,678,182
CHROMA KEY CIRCUIT

Peter Boxman, Clifton, and Frederik Johannes Van Roessel, Mahwah, both of N.J., assignors to Philips Broadcast Equipment Corporation, Mortvale, N.J.

Filed March 12, 1971, Ser. No. 123,690
Int. Cl. H04n 9/02
U.S. Cl. 178—5.4 R **11 Claims**



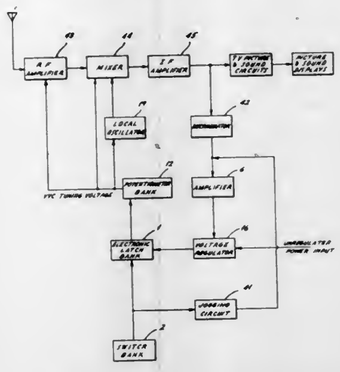
A circuit for generating an output pulse upon the occurrence of a selected color in color television signals features a matrix to form two chrominance difference signals. Four variable gain amplifiers multiply the difference signals by the sine and cosine of a control voltage which is a course color control. Two circuits each comprising a summer, inverter, and clamp circuit each add the outputs of two of the multiplied signals. An AND gate combines the output of the summer circuits and also is coupled to a variable bias supply, which is a fine color control. A delay line, a second AND gate, and a clipper and zero reference then shape the output pulse.

3,678,183
AUTOMATIC FREQUENCY CONTROL OF VOLTAGE VARIABLE REACTANCE TUNED RECEIVERS

Andrew P. Montgomery, deceased, late of Glenside, Pa. (by Ann P. Montgomery, executrix), assignor to Philco-Ford Corporation, Philadelphia, Pa.

Filed April 26, 1971, Ser. No. 137,484
Int. Cl. H04b 1/16; H03j 5/00
U.S. Cl. 178—5.8 AF **5 Claims**

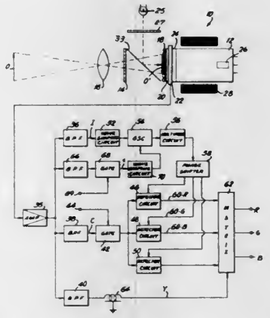
A jogging circuit is incorporated into the automatic frequency control system associated with touch-button tuning of television receivers that contain voltage variable reactance tuning elements. Each time a touch button is operated, the voltage applied to the tuning system is made to change first to a predetermined value and then return to its preset value. Thus the receiver tuning will be varied, each time a new channel is selected, so that the preset tuning is always approached from the same direction. This avoids the possibility of spurious automatic frequency control locking to the wrong signal carrier. In a television receiver, the television picture carrier is the desired reference. If the local oscillator is operated above the picture carrier, the local oscillator signal is jogged to a lower than normal frequency each time a touch-button is operated, and the preset tuning point is always approached from the low frequency side. Since the sound carrier is at the high frequency end of the television channel, spurious sound carrier locking is avoided.



3,678,184
INDEX SIGNAL GENERATING APPARATUS FOR SINGLE TUBE CAMERA

Hiromichi Kurokawa, Atsugi, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Sept. 21, 1970, Ser. No. 73,892
Int. Cl. H04a 9/06
U.S. Cl. 178—5.4 ST **11 Claims**

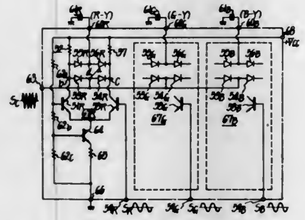


In a color video signal generating apparatus employing a single image pickup tube photoelectrically converting light projected onto the pickup tube into an electrical output, a screen of parallel cylindrical lenses cooperates with a filter constituted by a simple pattern of different colored filter elements so that light from the object passes through the filter elements and is separated into a plurality of color components whereby a portion of such image corresponding to each cylindrical lens is projected by the lens as separate color components on an effective area of the pickup tube to obtain from the latter a dot sequential chrominance signal, and means including a single light source are provided for projecting a first pattern of alternating light and dark images on the effective area of the pickup tube containing the projected color components and also projecting a second pattern of alternating light and dark images, of different pitch or width from the first pattern, on an area of the pickup tube means adjacent the aforementioned effective area so that the first and second patterns of images establish first and second frequency signals in the electrical output, which signals are utilized to derive a standard signal synchronized in phase with the sub-carrier of the chrominance signal to extract high resolution color video signals having the same sub-carrier frequency from the chrominance signal. Further, an arrangement is provided to control the horizontal scanning velocity of the pickup tube.

3,678,185
SEMICONDUCTOR CIRCUIT FOR PHASE COMPARISON

Takashi Okada, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed March 12, 1971, Ser. No. 123,540
Claims priority, application Japan, Oct. 13, 1970, 45/89877
Int. Cl. H04n 9/50
U.S. Cl. 178—5.4 SD **11 Claims**

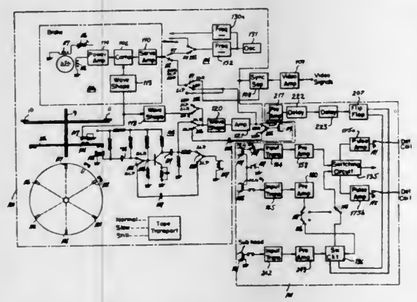


A semiconductor circuit for phase comparison which is devoid of capacitors and hence is suitable for use in an integrated circuit network, comprises a pair of transistors of the same conductivity type connected in the form of a differential amplifier and first and second bridging circuits including groups of series connected diodes and extending between one electrode of one of the transistors and the same electrode of the other transistor. The two input signals which are to be phase compared with each other are respectively supplied to one of the transistors and to the first bridging circuit, and a compared output signal is picked up from the second bridging circuit.

3,678,186
VIDEO TAPE RECORDER WITH SLOW MOTION REPRODUCING APPARATUS

Fujiaki Narita, Amagasaki, Japan, assignor to Sanyo Electric Co., Ltd., Moriguchi-shi, Japan

Filed Sept. 12, 1969, Ser. No. 857,504
Claims priority, application Japan, Sept. 14, 1968, 43/66284
Int. Cl. G11b 5/52, 15/52; H04n 5/78
U.S. Cl. 178—6.6 FS **13 Claims**



Video tape recorder with slow motion reproducing apparatus comprising rotating main and sub-heads scanning slant-wise over a tape which is transported in a longitudinal direction.

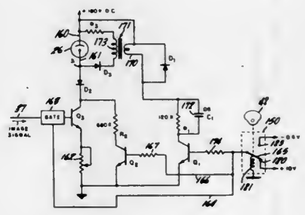
During normal speed reproduction, output signals reproduced by two of the heads tracing the recorded tracks are used to compose full or false field video signals.

During slow motion reproduction, output signals are produced by the main heads retracing on the same track of the tape n times while the tape is transported at a speed of (1/n) that of recording and output signals are produced by the subheads which are switched into operation to replace the main heads while the main heads retrace on the guard band between adjacent tracks of the recorded video signals. The subheads are so disposed at the periphery of a rotary member in relation to the main heads so that they retrace a track completely while the main heads retrace the guard band. Apparatus is also provided to shift the tape upward or downward across its width to compensate for the head tracking error which occurs when the tape reproduction speed is slowed down from normal speed to that for slow motion reproduction.

3,678,187
MECHANISMS AND CIRCUITS FOR FACSIMILE REPRODUCING SYSTEMS

Byron L. Barkman, Milford; William West Mee, Stratford, and Austin Ross, Monroe, all of Conn., assignors to Printing Developments, Inc., New York, N.Y.

Division of Ser. No. 698,255, Jan. 16, 1968, Pat. No. 3,558,813. This application Aug. 31, 1970, Ser. No. 68,169
Int. Cl. G11b 7/08; H04n 1/24
U.S. Cl. 178—6.7 R **4 Claims**



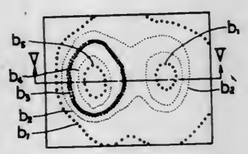
A cylindrically shaped copy sheet is rocked forward and back during and synchronously with the first and second, respectively, of two consecutive revolutions of a drum carrying film sheets. During the forward rocking, the copy sheet is line scanned and tone values detected by such scanning are converted into intensity modulations of light beams produced by glow lamps and scanning the film sheets to expose color separations thereon of the original. During the second revolution, the glow lamps are extinguished by transistorized circuits providing a firing voltage pulse for re-starting the lamps. Also during the second revolution, the copy sheet and film sheet are each moved an axial step to permit generation of congruent raster scanning patterns over all sheets. Means are provided to adjust the enlargement ratio.

The copy sheet is bent into cylindrical shape by pressing it against a template surface such that part of the sheet is backed by the surface and part projects into the scanning light beam therefor. The sheet is axially displaced relative to such beam by sliding the sheet over such surface.

3,678,188
METHOD FOR RECORDING A PHOTOGRAPHIC DENSITY

Minoru Okumura, Tokyo, Japan, assignor to Konishiroku Photo Industry Co., Ltd.

Filed Sept. 22, 1970, Ser. No. 74,426
Claims priority, application Japan, Oct. 4, 1969, 44/78967
Int. Cl. G01d 9/32; G01n 21/22; H04n 1/38
U.S. Cl. 178—6.6 R 1 Claim

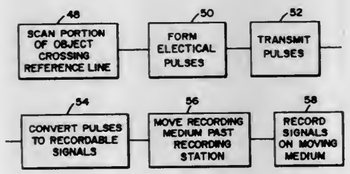


A method for recording a photographic density in the form of equi-density curves on a plane is described, in which alternate equi-density curves are depicted with different kinds of lines, and in which an equi-density curve corresponding to one particular density value serving as a reference is depicted with a line distinguishable from the other curves.

3,678,189
METHOD OF PRODUCING TIME-POSITION RECORDS OF OBJECTS

Robert A. Oswald, P.O. Box 458, Gardnerville, Nev.

Filed Dec. 11, 1969, Ser. No. 884,091
Int. Cl. H04n 3/34, 5/86, 7/10
U.S. Cl. 178—6.7 R 2 Claims



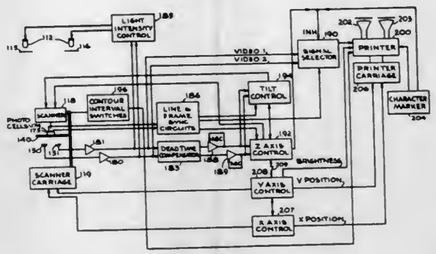
A time-position record of objects moving with respect to a reference line obtained by scanning those portions of the objects passing past the reference line with an electron beam to form output signals which are transmitted to a recording station. A recording medium is transported past the station at a speed proportional to the relative speeds between the object and the reference line. The output signals are converted into recordable signals which scan over the recording medium in a plane substantially perpendicular to the direction of movement of the recording medium to thereby form a record of the object as the object passes the reference line.

3,678,190
AUTOMATIC PHOTO COMPARISION SYSTEM

William H. Cook, Los Angeles, Calif., assignor to The Bunker-Ramo Corporation, Canoga Park, Calif.

Continuation of Ser. No. 274,452, April 22, 1963, abandoned.
This application Dec. 21, 1966, Ser. No. 605,951
Int. Cl. H04n 3/02
U.S. Cl. 178—6.8 16 Claims

Apparatus for automatically scanning sets of stereoscopic photographs, some of which represent particular terrain at other times than do the other photographs, and providing output representations of the terrain involved which may be compared automatically to show cultural changes in the terrain

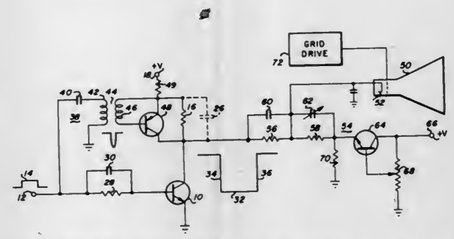


which may have taken place or to provide an indication that such cultural changes have taken place.

3,678,191
CRT BLANKING AND BRIGHTNESS CONTROL CIRCUIT

Robert L. Peters, Sunnyvale, and Kenneth F. Koch, San Jose, both of Calif., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration

Filed Nov. 12, 1968, Ser. No. 774,691
Int. Cl. H04n 5/14
U.S. Cl. 178—7.5 E 2 Claims



The disclosed embodiment of the present invention is a CRT blanking and brightness control circuit which employs an amplifier stage responsive to a square wave input signal and having an output connected to the cathode of a CRT, a wave shaping circuit connected to the load impedance of the amplifier stage, and a level control circuit connected to the output of the amplifier stage. The wave shaping circuit is responsive to the trailing edge of the input signal for discharging the stray capacitance associated with the load impedance to effect a fast rise time of the signal at the output of the amplifier stage. The level control circuit is operable to vary the amplitude of the amplifier stage output which is applied to the cathode of the CRT.

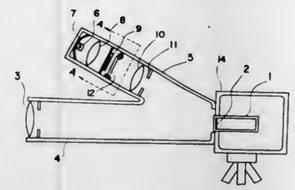
3,678,192
METHOD AND APPARATUS FOR DIGITAL MEASUREMENT WITH AN INDUSTRIAL TELEVISION

Tomohiko Akuta; Yoshi Honsyo; Sinya Hashirizaki; Teruo Hiruma, all of Kitakyushu, and Kazuo Kurasawa, Hamamatsu, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Aug. 13, 1969, Ser. No. 849,651
Int. Cl. H04n 7/18; G10b 7/02
U.S. Cl. 178—7.83 2 Claims

A method and apparatus for measuring at high precision dimensions of an object to be measured from a remote position by using an image pickup apparatus, wherein a scale graduated at a fixed spacing in the direction of the horizontal scanning line is projected on the photoelectric surface of the

image pickup apparatus, the image of the said scale is focused as superposed on the image of the object on the image pickup tube and video signal output of said projected scale lines cor-

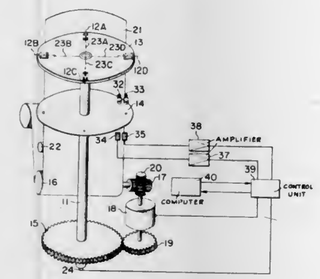


responding to the length of the optical image of the dimension to be measured is taken out as voltage pulses, the number of which is counted.

3,678,193
ELECTRONIC PRINTER

Hideo Yamamoto, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed July 7, 1970, Ser. No. 52,927
Claims priority, application Japan, July 12, 1969, 44/55233
Int. Cl. H04n 1/00
U.S. Cl. 178—18 10 Claims



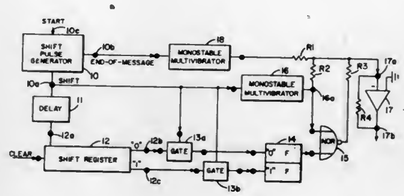
The electronic printer which records the characters or indicia including alphanumerics, symbols and any other representations comprises a plurality of recording needles each of which moved with respect to a recording medium which is advanced at the right angle to the direction of movement of the recording needles and recording position detecting means associated with a movable member which moves in synchronism with the recording needles. In response to the detection of the recording position, signals are transmitted from the recording position detection means to a control unit. The control unit generates recording signals and transmits the signals to the recording needles to synthesize the characters or indicia to record them on the recording medium.

3,678,194
DIGITAL DATA TRANSMISSION AND DETECTION SYSTEM

Irving F. Orrell, Jr., Whittinsville, Mass., assignor to The United States of America as represented by the Secretary of the Army

Filed Jan. 26, 1971, Ser. No. 109,875
Int. Cl. H04l 15/00
U.S. Cl. 178—68 4 Claims

Information stored in a shift register in the form of data bits is serially read out to a logical circuit including gates, pulse stretchers, a storage flip-flop, a NOR gate, and a resistor summer. The output of the summer is connected to an operational amplifier feeding signals to a wire transmission line or a radio transmitter. The logical circuit is connected such that "0" data bits appear as zero voltage levels on the transmission line, and "1" bits appear as +V levels on the line. Space pulses are additionally provided between the data bits as +2V levels on the line, and an end-of-message level of +3V is provided

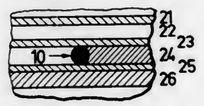


when the last bit is read from the shift register. The voltage levels are maintained during transmission by suitable amplifiers or may be restored at the receiver. The receiver inverts the incoming signals and adds +V. Voltage comparators are fed the resulting signal, and provide outputs for data bits, shift pulses, and end-of-message pulses.

3,678,195
SMEARING EFFECT ATTENUATION

Wolfgang Dillenburger, Darmstadt, Germany, assignor to Fernseh GmbH, Darmstadt, Germany

Continuation of Ser. No. 812,228, April 1, 1969, abandoned.
This application June 18, 1971, Ser. No. 154,635
Int. Cl. H04n 5/34
U.S. Cl. 178—7.2 12 Claims



When sweeping lines in a first field of interlaced fields on a television camera photosensitive storage layer adjacent portions of lines in a second field also are swept. Smearing effect or image carryover is reduced by reducing migration or leakage of charge between unswept lines of the second field and swept lines of the first field. Preferably horizontal lines are narrowed by anamorphically projecting images on the coating, thus shrinking images vertically, while maintaining their horizontal dimensions. Alternatively beams may be oscillated vertically while sweeping horizontally, or vertical cross sectional dimensions of beams may be increased.

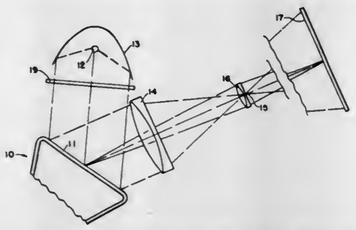
3,678,196
MEANS FOR PROJECTING AN ENLARGED TELEVISION IMAGE

Solo S. Roth, 1 Sherwood Terrace, Yonkers, N.Y.

Filed Oct. 20, 1970, Ser. No. 82,388
Int. Cl. H04n 3/16
U.S. Cl. 178—7.5 D 8 Claims

A projection means which includes the usual television receiving tube and its circuitry together with a plurality of bendable flaps secured to the outside surface of the tube. Conducting pins in the tube face transmit the electric charge received from the cathode ray to the flaps which then bend away from the pin ends due to the electrostatic repulsion. A source of light is directed towards the flaps which have a reflective coating on their outer surface. When the flaps are

not moved, all the reflected light is cut off by a series of metal masks, but when a flap is moved, the reflected light is directed

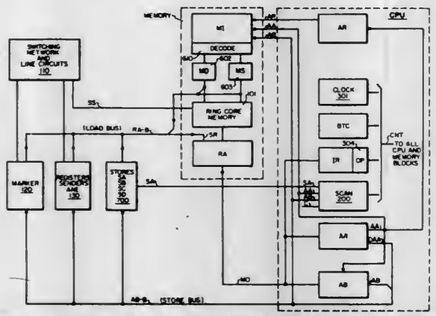


to the space between masks and may be focussed on a projection screen to create a picture.

3,678,197
DIAL PULSE INCOMING TRUNK AND REGISTER ARRANGEMENT

Robert B. Panter; John Peter Dufton; Robert W. Duthie, and George Verbaas, all of Brockville, Ontario, Canada, assignors to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed March 9, 1971, Ser. No. 122,492
Int. Cl. H04m 7/00
U.S. Cl. 179—18 EB **10 Claims**



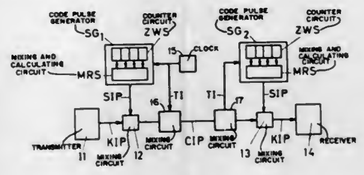
A common control telephone exchange with a central processor has a pool of dialing registers for connection to calling lines and trunks. Incoming dial pulse trunks without "stop dial" are connected to registers using the regular links and marker. To increase the time for connection, the first dial pulse is detected in the trunk and forwarded as a resistance ground on one conductor via the network. The register has a polar relay to detect this potential, which is also used for party detection or coin detection on other calls. The central processor finds the calling line class of service, and for dial pulse trunks initiates the register so that "1" is added to the first digit, and the interdigital timer is started upon operation of the polar relay, so that even if the first digit is a "1" it is registered properly.

3,678,198
CIRCUIT FOR GENERATING A SERIES OF CIPHER PULSES

Kurt Ehrat, Scheuchzerstrasse 28, Zurich, Switzerland

Filed Jan. 8, 1963, Ser. No. 250,119
Claims priority, application Switzerland, Jan. 10, 1962, 246/62
Int. Cl. H04l 9/00
U.S. Cl. 178—22 **15 Claims**

15. A message transmission installation comprising at least two stations each capable of acting as a transmitter and receiver, each station comprising apparatus capable of acting as a transmitter and receiver of information, a mixer, and a circuit for generating reproducible series of code pulses having a long period, said circuit comprising a binary counting chain having at least 20 members, connections connecting each of said members to a respective mixer, a plurality of shift register elements constituting a shift register chain, connections connecting each mixer to a respective shift register element, to a previous shift register element in the chain and to a switching distributor the state of which is determined by a

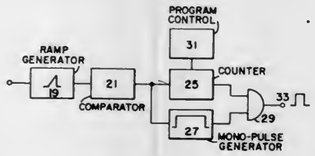


switching criterion, the arrangement being such that the mixers mix the information content of one counting member of the counting chain with the information of one shift register element and this mixed information is delivered to the next shift register element if the state of the switching distributor is in accordance with the switching state of the corresponding member of the counting chain, and that the information of one shift register element is delivered to the next shift register element unchanged if the state of the switching distributor differs from the switching state of the corresponding member of the counting chain.

3,678,199
VERTICAL LOCKING CIRCUIT

Buck C. Brown, Rockville, Md., assignor to Control Concepts Corporation, Rockville, Md.

Filed March 18, 1971, Ser. No. 125,769
Int. Cl. H04n 5/04
U.S. Cl. 178—69.5 TV **6 Claims**



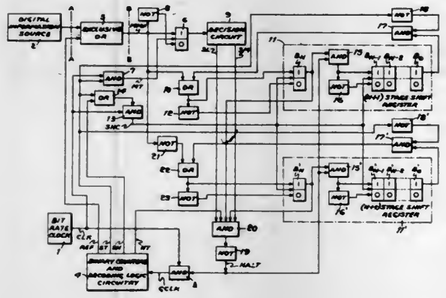
A circuit for deriving accurate vertical time reference signals for locking or driving television apparatus, e.g., synchronization generators, to a composite video signal. The circuit also reduces errors due to noise, and permits vertical timing advances of up to two horizontal timing increments. The pulses of a synchronized pulse train each initiates the generation of a continuous ramp function which returns to its initial potential when the initiating pulse ends. If the sync pulse has a sufficient duration such as is characteristic of the vertical sync pulses, the ramp function will reach a threshold level. A comparator in response to the ramp function reaching a threshold level initiates a pulse and, when the ramp function returns to its initial potential, terminates the pulse. This threshold derived pulse is delivered to a flip-flop which changes state at the termination time. The flip-flop produces a pulse having a leading edge coincident with the trailing edge of the ramp function, the threshold pulse, and consequently with the trailing edge of the vertical sync pulses. The threshold pulse is also fed to a mono-pulse generator which produces a signal having a duration equal to or greater than the vertical sync interval or three horizontal time increments. A counter

consisting of the aforementioned flip-flop and two additional flip-flops counts six pulses fed thereto by the comparator after which it generates an output pulse. The pulses from the counter and the mono-pulse are fed to an "and" circuit which gates the pulse only if both the mono-pulse and the counter output are simultaneously inputs. The leading edge of the pulse from the "and" gate is coincident with the trailing edge of the last vertical sync pulse. Thus, this edge defines an accurate time to which the television apparatus may be locked or driven.

3,678,200
FRAME SYNCHRONIZATION SYSTEM

James M. Clark, Cedar Grove, N.J., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed Aug. 24, 1970, Ser. No. 66,396
Int. Cl. H04n 1/36
U.S. Cl. 178—69.5 R **10 Claims**

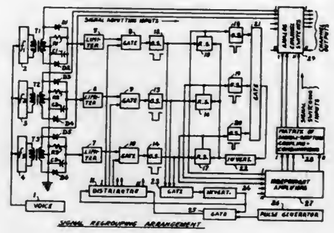


A binary information signal having a given bit rate and a local binary synchronization reference signal are applied to a digital comparator, the output signal thereof indicating a match or a mismatch between the binary condition of successive adjacent bits of the information signal and the reference signal. A flip flop samples the output signal of the comparator. A decision circuit responds to the samples to produce a first signal having binary "O" when the decision level is exceeded and a binary "1" when the decision level is not exceeded and a second signal having a binary "1" condition when the system is in a search mode and a binary "O" condition when the system is in a sense mode. The comparator output signal is also coupled through a first OR to a first (N+1) bit shift register which is triggered by a burst of pulses at the bit rate. The previous inputs to the first shift register are stored therein and the output thereof is also coupled through the first OR. The comparator output signal is inverted to provide a complement of this output signal and is coupled through a second OR to a second (N+1) bit shift register which is also triggered by a burst of pulses at the bit rate. The previous inputs to the second shift register are stored therein and the output thereof is also coupled through the second OR. An AND is coupled to the output of the first stage of both the first and second shift register and the decision circuit and produces an output signal therefrom only when simultaneously the first stage of both the shift registers indicates a mismatch and both the first and second signal from the decision circuit are in a binary "1" condition during halt time. This output signal is coupled to an inhibit arrangement disposed between a bit rate clock and binary counters to change the counting of the counters to achieve synchronization in less time than required by prior art frame synchronization systems.

3,678,201
BANDWIDTH COMPRESSION SYSTEM IN PHONETIC SOUND SPECTRUM

Meguer V. Kalfaian, 962 Hyperion Ave., Los Angeles, Calif.

Filed Dec. 14, 1970, Ser. No. 97,893
Int. Cl. G10l 1/00
U.S. Cl. 179—1 SA **1 Claim**

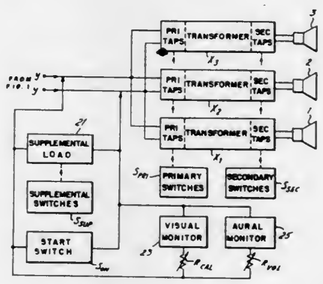


In sub-band divisions of speech sound waves the detected signals derived from the sub-bands are continually regrouped at the outputs of a numerically arranged bank of channels in an order that, the signal derived from the lowest frequency (pitch) in the sub-bands is continually shifted to the output of the first channel, while the other signals are shifted to the numerically positioned channel outputs by the same factors of multiplication from the first channel as the other sub-bands differ from said lowest frequency.

3,678,202
LOUDSPEAKER BALANCING SYSTEM

Nelson J. Rose, 419 E. Willow Grove Ave., Philadelphia, Pa.

Filed Nov. 24, 1969, Ser. No. 879,151
Int. Cl. H04r 27/00
U.S. Cl. 179—1 AT **10 Claims**



A system is provided for setting up a multiple-speaker assembly, such as in a public address system or the like, to equalize loudspeaker output while total load remains matched to amplifier output and with a minimum of adjustment or readjustment.

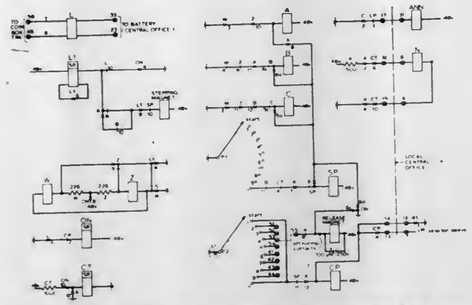
3,678,203
COIN OPERATED TELEPHONE NETWORK ALLOWING LIMITED FREE CALLS

Jean G. Lorange, Greenfield Park, Canada, assignor to The Bell Telephone Company of Canada, Montreal, Quebec, Canada

Filed Feb. 24, 1971, Ser. No. 118,385
Int. Cl. H04m 17/02
U.S. Cl. 179—6.3 R **14 Claims**

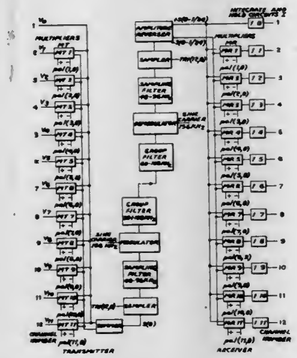
Free calling from a coin operated subset is provided by the circuitry which allows contingent counting of dialled digits up

to a certain number and if said counting is completed preventing the dialling of further digits. If a coin has been deposited the completion of the counting is prevented and optional



completion of the counting is prevented on the dialling of certain digits indicative of otherwise free calls such as service calls.

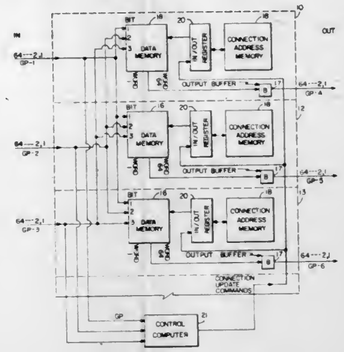
3,678,204
SIGNAL PROCESSING AND TRANSMISSION BY MEANS OF WALSH FUNCTIONS
Henning Friedolf Harmuth, Bethesda, Md., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.
Filed Oct. 26, 1970, Ser. No. 84,025
Int. Cl. H04J *3/04*
U.S. Cl. 179—15 BC **4 Claims**



In the transmission by carrier waves a plurality of signals are produced and each multiplied by one of 12 Paley functions derived from a Hadamard matrix of rank 12. The resulting signals are added to form a multiplexed signal. The multiplexed signal is frequency limited by sampling it with a trigger function and passing the samples through a bandpass filter. Reconversion of the multiplex signal is accomplished at the receiver.

3,678,205
MODULAR SWITCHING NETWORK
Gerald Cohen, and Maurice I. Crystal, both of Brookline, Mass.
Filed Jan. 4, 1971, Ser. No. 103,494
Int. Cl. H04q *3/60;* **H04J** *3/16*
U.S. Cl. 179—15 AQ **8 Claims**

A switching network employs a plurality of input trunk groups each having a predetermined number of input channels associated therewith. Each of a plurality of switching modules, the number of which corresponds to the number of incoming trunk groups, has a separate input connection from each of the plurality of input trunk groups and an output connection

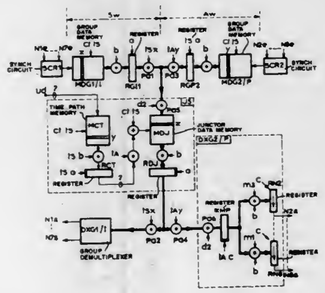


coupled to a different one of a plurality of output trunk groups. Incoming information on a single channel of any input trunk group is directed to all switching modules and switched by the particular module associated with the output trunk group over which the information is to pass.

ERRATUM

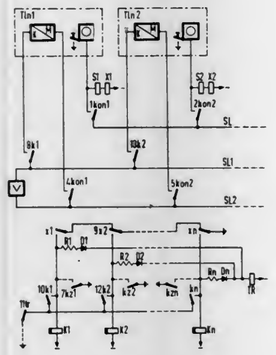
For Class 179—18 see:
Patent No. 3,678,197

3,678,206
TDM SWITCHING NETWORK USING TIME SPACED CONTROL SIGNALS
Jacques Georges Dupieux, Issy-les-Moulineaux; Jean-Claude Gadre, Boulogne-Brillancourt, both of France; Jean-Pierre Le Corre, deceased, late of Sainte-Genevieve-Des-Bois, France (by Yvette Marie Laurence Le Corre, administratrix), and Jean Francois Pierre Julien Loisel, Versailles, France, assignors to International Standard Electric Corporation, New York, N.Y.
Filed Feb. 2, 1970, Ser. No. 7,477
Int. Cl. H04q *11/00*
U.S. Cl. 179—18 J **1 Claim**



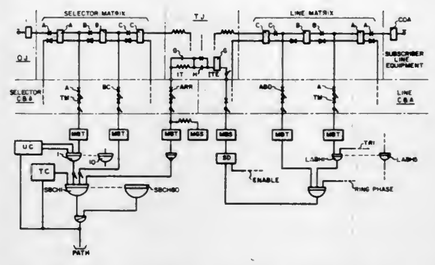
The description covers the general organization of a switching network for a TDM exchange using PCM principles. The network comprises two selection stages and there is a particular grouping of the space, time and junctor memories which simplifies their access and which allows for a ready extension of the capacity of the network. The switching network may establish a special connection for the supervision of a traffic connection between a calling channel and an outgoing channel by using a junctor different from that used for the traffic connection. Thus in order to supervise the messages sent from the calling channel to the outgoing channel, there is established a first partial connection from the calling channel to the intermediate junctor on a first synchronous signal and using one address connection and a second partial connection from the junctor to the outgoing channel on an asynchronous signal spaced in time from said first signal, the channel having a second address. The two partial connections complete the connection through the switching network to complete the connection.

3,678,207
CIRCUIT ARRANGEMENT FOR TELEPHONE PRIVATE BRANCH EXCHANGES PERMITTING CONFERENCE CALLS BETWEEN SUBSCRIBER SETS HAVING VIDEO TRANSMISSION CAPABILITIES
Siegfried Schon, Starnberg, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany
Filed June 18, 1970, Ser. No. 47,321
Claims priority, application Germany, June 19, 1969, P 19 30 925.2
Int. Cl. H04m *3/56*
U.S. Cl. 179—18 BC **3 Claims**



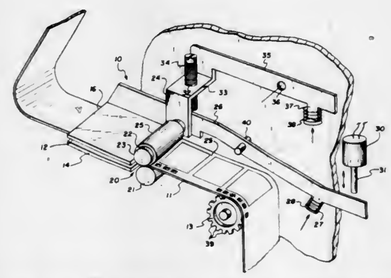
A circuit arrangement is described for permitting conference calls between subscriber stations in a telephone private branch exchange wherein said subscriber stations, or at least a portion of them are equipped to transmit and receive video signals. When the conference call is initiated, the video receivers of the calling subscriber and the called subscribers are connected to a transmission line. At the initiation of the call, only the video transmitting means of the calling subscriber is connected to a second transmission line. The latter two transmission lines are electrically connected by means of an amplifier. Each of the called subscribers are connected to said first transmission line only by their video receiving means. Each of the called subscriber sets is equipped with a means by which the subscriber transmitting video can be disconnected from the line, and the subscriber actuating said means can connect his video transmitting means to the line. The switching means utilized will permit only one video transmitter to be connected to the line at any given time.

3,678,208
MARKER PATH FINDING ARRANGEMENT INCLUDING IMMEDIATE RING
John W. Eddy, Villa Park, Ill., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.
Filed April 12, 1971, Ser. No. 133,114
Int. Cl. H04q *3/42*
U.S. Cl. 179—18 GE **8 Claims**



The disclosure relates to an arrangement in a marker pathfinding scheme for providing immediate ringing of the called subscriber terminal. The terminating junctors available to a called terminal are divided into groups with each group receiving the ringing current in a different time period. Each ringing period is preceded by an enabling pulse such that the marker in its pathfinding operation tests first those terminating junctors corresponding to the then occurring enabling pulse.

3,678,209
STRIP MATERIAL HANDLING MECHANISM FOR SOUND SYSTEMS
Robert S. Vukosic, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Aug. 27, 1970, Ser. No. 67,325
Int. Cl. G11b *15/29, 15/34, 21/16*
U.S. Cl. 179—100.1 A **5 Claims**

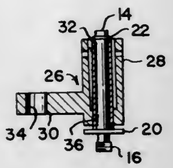


A strip material handling mechanism comprises a rotatable sprocket wheel for moving strip material along a threading path in either of two directions through an openable sound gate having opposed pressure pads, a capstan drive assembly including a capstan and a pressure roller, and a single control element for enabling independent opening of the sound gate and capstan drive assembly during reverse projection. Utilizing a single control element, the pressure roller and one of the pressure pads are independently disengaged from the strip material during such operational mode, thereby permitting the rotatable sprocket wheel to move strip material substantially free of restraint that might otherwise be imposed by such pressure roller and pad.

3,678,210
MAGNETIC BELT RECORDER HEAD ADJUSTMENT

William D. Richards, Medway, Mass., assignor to American Optical Corporation, Southbridge, Mass.

Filed May 17, 1971, Ser. No. 144,013
Int. Cl. G11b 5/56, 21/24
U.S. Cl. 179—100.2 CA 1 Claim

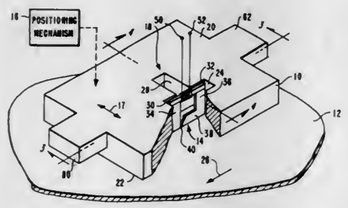


A mounting device for a magnetic belt recorder head which is adjustable on the X, Y, and Z axes for proper alignment of the head relative to the belt. This universal adjustibility is provided by opposing locking screws which permit arcuate displacement about X and Z axes and a spindle mount which permits arcuate movement about a Y axis.

3,678,211
AIR BEARING MAGNETIC HEAD WITH GLASS SLIDER BODY

Helen M. Hoogendorn; Bernt Narken, both of Poughkeepsie, N.Y.; Paul J. Roeder, Carmel, Ind., and Brian Sunners, Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 18, 1969, Ser. No. 850,764
Int. Cl. G11b 5/60, 5/10, 5/42
U.S. Cl. 179—100.2 P 6 Claims



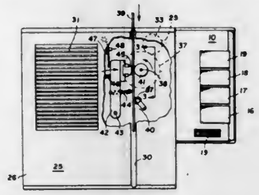
An air bearing slider assembly includes a U-shaped magnetic head and a monolithic glass body which is formed in the glassy state so as to chemically as well as physically bond the head thereto, a nonmagnetic gap in the base of the head being disposed at an air bearing surface of the glass body to facilitate noncontact magnetic recording. The slider assembly is fabricated using a mold having a central cavity which defines the desired configuration of the glass body and which positions the magnetic head at a selected location relative to the glass body to be formed. The mold cavity is filled with a fluid glass composition which solidifies as a monolithic body in bonded relation to the head.

3,678,212
PLANAR DRIVE ADAPTER FOR CASSETTE TAPE RECORDER

Albert F. Wild, Rochester, N.Y., assignor to Tapecon, Inc., Rochester, N.Y.

Filed April 22, 1970, Ser. No. 30,653
Int. Cl. G11b 5/80, 25/04
U.S. Cl. 179—100.2 Z 27 Claims

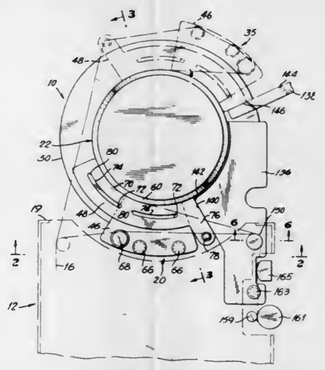
A planar drive adapter converts a cassette tape recorder for playing flat cards having magnetic strips. The adapter housing fits into the cassette slot of the recorder and the adapter carries its own magnetic head and card drive wheel, but uses the electronic circuitry and drive power of the recorder.



3,678,213
MAGNETIC RECORDING AND/OR REPRODUCING SYSTEM HAVING GUIDE PINS MOUNTED ON INDEPENDENTLY ROTATING PLATES FOR WITHDRAWING TAPE FROM CASSETTE

Seizi Sato, Kanagawa, Japan, assignor to Sony Corporation, Toyko, Japan

Filed Sept. 18, 1970, Ser. No. 73,561
Claims priority, application Japan, Sept. 19, 1969, 44/74870
Int. Cl. G11b 15/66, 23/04
U.S. Cl. 179—100.2 Z 14 Claims

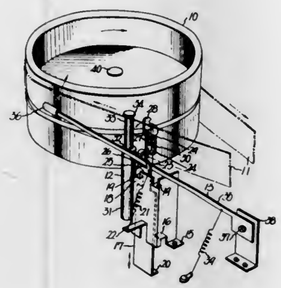


In a tape recording and reproducing device adapted for use with magnetic tape cassettes and having a rotary magnetic head for recording and reproducing signals on the tape while the latter is wrapped about a guide drum, an apparatus is provided for withdrawing the tape from the cassette and guiding the tape into contact with the guide drum for skewed scanning by the head or heads. The tape guiding apparatus includes first and second tape guide members mounted for movement on the device along a generally arcuate path about the periphery of the drum from a first station adjacent the cassette to a second station remote from the cassette, and each of the guide members includes a guide pin or pins for engaging the tape within the cassette and guiding the tape about the guide drum. The guide pin on the first guide member, when located at the second station, holds the tape in wrapped engagement with the guide drum, and the guide pin, on the second guide member guides the tape along a return path remote from the drum back to the cassette. The first and second guide members are operably connected for relative movement therebetween during movement from the first to the second station.

3,678,214
MAGNETIC TAPE UNLOADING MECHANISM FOR USE WITH A TAPE RECORD PLAYBACK MECHANISM

Yotaro Miura, Toyko, and Makoto Ito, Chiba-ken, both of Japan, assignors to Sony Corporation, Toyko, Japan

Filed Aug. 21, 1970, Ser. No. 65,811
Claims priority, application Japan, Jan. 24, 1970, 45/6486
Int. Cl. G11b 5/76
U.S. Cl. 179—100.2 T 8 Claims

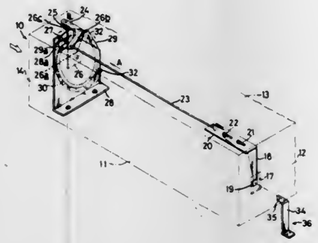


A mechanism for automatically removing a magnetic tape from around a drum having magnetic heads therein for recording and playing back signals on the magnetic tape. An arm which is pivoted has one end which bears against the tape. A slide member moves the arm upwardly and away from the tape to eject the tape up and away from the rotating drum. The rotary movement of the drum facilitates the ejection of the tape.

3,678,215
COUNTER FOR A TAPE RECORDER/PLAYBACK MECHANISM

Nobutoshi Kihara, Toyko, Japan, assignor to Sony Corporation, Toyko, Japan

Filed Aug. 5, 1970, Ser. No. 61,221
Claims priority, application Japan, Oct. 25, 1969, 44/10375
Int. Cl. G11b 23/04, 27/20; G06m 1/08
U.S. Cl. 179—100.2 Z 5 Claims

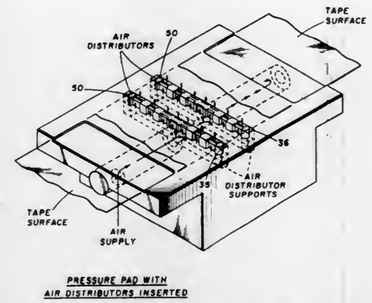


A tape cassette for use with a video tape recorder having a counter mounted in the cassette to indicate to the user, or other concerned parties, the amount of time the material which is recorded on the magnetic tape within the cassette has been used. The counter can only operate when it is properly mated with a member on the VTR chassis and a ratchet and pawl mechanism in which indicia is printed on the ratchet.

3,678,216
AIR DISTRIBUTOR FOR OBTAINING UNIFORM HEAD-TAPE CONTACT IN MAGNETIC TAPE TRANSPORT

Jack J. Rousso, Jr., and George N. Willman, both of Dallas, Tex., assignors to Mobil Oil Corporation

Filed July 14, 1970, Ser. No. 54,717
Int. Cl. G11b 5/60; B65h 17/28
U.S. Cl. 179—100.2 P 5 Claims



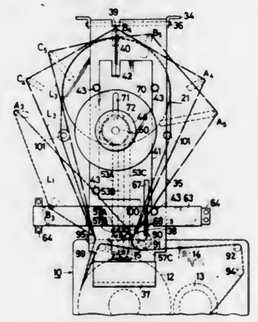
PRESSURE PAD WITH AIR DISTRIBUTORS INSERTED

The specification discloses an air distributor for evenly distributing the flow of air against the width of a magnetic tape to maintain the tape along its entire width adjacent a read/write headstack of a tape transport to enhance the read/write reliability of the transport. The air distributor comprises structure having a plurality of passageways arranged in at least one array along a given dimension of the structure. The passageways increase in size outward from the center of the array. In the embodiment disclosed, the distributor has two arrays of passageways formed in opposite edges of the structure. The distributor is supported in the transport in a manner to locate the arrays substantially perpendicular to the direction of travel of the tape and the passageways perpendicular to the plane of the tape.

3,678,217
WITHDRAWING A MAGNETIC RECORDING TAPE FROM A CASSETTE AND ENGAGING A LOOP FORMED IN THE TAPE WITH THE GUIDE DRUM OF A MAGNETIC RECORDING AND/OR REPRODUCING APPARATUS

Nobutoshi Kihara, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed May 15, 1970, Ser. No. 37,623
Claims priority, application Japan, Sept. 22, 1969, 44/75721; Sept. 22, 1969, 44/75720; Sept. 22, 1969, 44/90629
Int. Cl. G11b 15/66, 23/04
U.S. Cl. 179—100.2 T 14 Claims



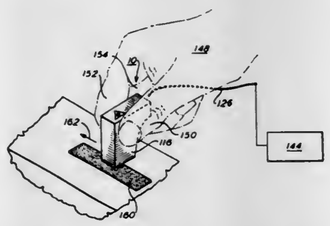
A plurality of fingers which are movable longitudinally and

rotatably are mounted on a video tape recorder housing. The fingers grasp the portion of magnetic tape which is between the ends of supply and take-up reels and form this portion of the tape into a loop. The loop is automatically drawn over the circumference of a record/playback head and is automatically removed therefrom without the operator touching the tape. Provision is also made to preclude the inadvertent removal of the tape during a play or record cycle.

3,678,218
HANDHELD TRANSDUCER OPERATIONAL STATE AND DIRECTIONAL INDICATOR

Melvin Kamenir, West Orange, and Robert E. Burridge, Montclair, both of N.J., assignors to Litton Business Systems, Inc., New York, N.Y.

Filed Sept. 4, 1969, Ser. No. 855,340
Int. Cl. G11b *5/10, 21/02, 23/38*
U.S. Cl. 179—100.2 C **4 Claims**



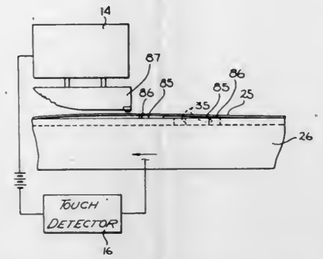
A handheld magnetic transducer comprises a gun-shaped housing having a directional arrow on one surface. The arrow is illuminated by a light within the housing indicating the operating state of the transducer as determined by a signal device. The housing has dimples in opposed side walls for ease of grasping. The armature is in two parts. Each part has a T-shaped portion the crossbars of which overlap. The armature is inserted within the bobbin and is resiliently held at the crossbars to lock into position with a shim. The bobbin front wall in combination with the armature and shim form the muzzle or reading end of the transducer and has a substantially frustro pyramidal shape. The armature-bobbin structure is held in place by fingers which form a part of the transducer housing. The wires from the coil are secured to clips. The clips or terminal are U-shaped members spring retained on arms of the bobbin. The clips each have a flange portion for engaging an aperture in the arm. The reading portion of the transducer is hemispherical in shape with the gap defining an arc thereon such that the transducer is capable of rotation or positioning about one of three axes while moving relative to a record.

3,678,219
FLYING MAGNETIC HEAD TESTING APPARATUS

Willard Dennis, Los Angeles, Calif., assignor to Willard Laboratories, Inc., Los Angeles, Calif.

Filed Sept. 25, 1970, Ser. No. 75,539
Int. Cl. G11b *5/46, 5/60*
U.S. Cl. 179—100.2 CA **30 Claims**

An apparatus to test the flying capability of flying magnetic heads employed by rotating, magnetic memory systems. A rotatable chuck is coupled to a vacuum system, the top surface of the chuck having apertures therein to make contact with and secure thereto a testing disk via the vacuum system. Magnetic heads aerodynamically designed to be employed over a rotating disk or drum are suspended over the surface of the testing disk. A touch detector is connected between the magnetic head and the testing disk to determine whether or not the flying magnetic head is within the designed

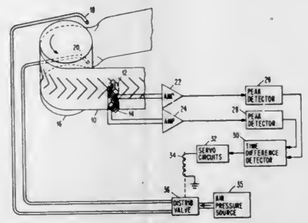


aerodynamic specifications to operate with a given disk runout or rate of change of runout.

3,678,220
ANGULATED POSITIONING MARKS FOR MOVING WEB

Otto R. Luhrs, Boulder, Colo., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed May 26, 1971, Ser. No. 147,004
Int. Cl. G11b *5/56, 21/10*
U.S. Cl. 179—100.2 S **8 Claims**



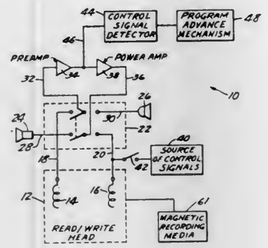
Lateral position of a moving web is detected to an accuracy of tenths of a mil. In particular, a moving magnetic tape is monitored for shifts in lateral position by detecting "V" shaped marks on the tape. Each arm of the "V" is monitored by a separate transducer. The transducers are positioned relative to the "V" mark so that, for a predetermined lateral position of the moving tape, there is no time difference between each transducer reading its corresponding arm of the "V" mark. Shifts in lateral position from the predetermined position are then detected by the time difference between pulses from each transducer. The lateral position detector may be used in a servo loop to guide the web so that it always remains at the predetermined lateral position. In addition, by inserting an artificial time difference in the servo loop, the lateral position of the web may be indexed to any given position relative to the predetermined position.

3,678,221
DETECTION OF RECORDED CONTROL SIGNALS UPON REPRODUCTION FROM RECORDING MEDIUM

Charles W. Miller, Inver Grove Heights, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Sept. 11, 1969, Ser. No. 857,097
Int. Cl. G11b *23/36*
U.S. Cl. 179—100.2 S **2 Claims**

An apparatus for detecting a reproduced sinusoidal control signal which is recorded on a recording medium with an informational signal and within the frequency band of the informational signal, wherein the recorded amplitude of the informational signal is lower than the recorded amplitude of the control signal at and below the frequency of the control signal. A bistable circuit including a Schmitt trigger is used to detect when a signal reproduced from a recording medium includes a component of at least a minimum amplitude correlated to the

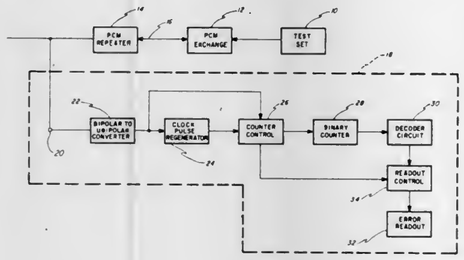


recorded amplitude of the control signal. When the bistable circuit detects that the reproduced signal includes a component of at least such minimum amplitude, an integrating circuit is then enabled to determine whether this component also has a one-half cyclic period which is at least the duration of one-half the cyclic period of the control signal.

3,678,222
TEST APPARATUS FOR DIGITAL REPEATERS

Michael A. Boehly, Rochester, N.Y., assignor to Stromberg-Carlson Corporation, Rochester, N.Y.

Filed Nov. 25, 1970, Ser. No. 92,589
Int. Cl. H04b *1/60*
U.S. Cl. 179—175.31 R **6 Claims**



Apparatus is disclosed that determines whether a digital repeater circuit correctly reproduces an input signal comprised of sequential groups of digital signals wherein each group includes a preset number of digital signals. A counter circuit receives a count corresponding to the number of digital signals in a group, and an error signal is produced in the event that the count at the end of a group of signals does not correspond to the preset number.

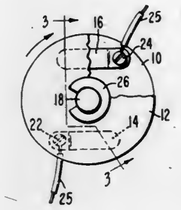
ERRATUM

For Class 191—1 see:
Patent No. 3,678,226

3,678,223
DIAL TYPE SWITCH WITH IMPROVED LEAF SPRING BIASED ROTATABLE CONTACT PLATE

Thomas E. Zopff, Grand Rapids, Mich., assignor to Burroughs Corporation, Detroit, Mich.

Filed April 13, 1970, Ser. No. 27,787
Int. Cl. H01h *1/12, 19/58*
U.S. Cl. 200—11 G **5 Claims**

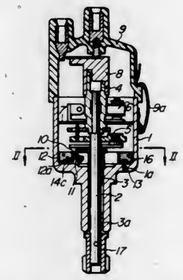


The disclosure embodies an electrical switching device wherein elongated, resilient contacts are electrically bridged by an electrically conductive plate affixed to an actuatable shaft and rotate the plate upon its release such that the respective points of contact between the resilient contacts and the plate will differ on subsequent operative cycles.

3,678,224
CONTACT BREAKER INCORPORATING FUEL INJECTION TIMING SWITCHES

Yoshiki Takeda, Nagoya, Japan, assignor to Nippondenso Kabushiki Kaisha, Kariya-shi, Aichi-ken, Japan

Filed Aug. 20, 1970, Ser. No. 65,587
Claims priority, application Japan, Sept. 10, 1969, 44/71838; April 3, 1970, 45/32388; April 2, 1970, 45/31714; April 2, 1970, 45/31718; April 2, 1970, 45/31719
Int. Cl. H01h *51/28;* **F02p** *5/08*
U.S. Cl. 200—19 M **6 Claims**



A contact breaker unit for a fuel injection type internal combustion engine, which includes a switch mechanism having reed switches and a magnet for generating the fuel injection timing signal.

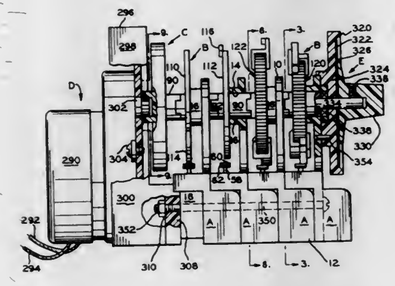
3,678,225
REPEAT CYCLE TIMER OF MODULAR CONSTRUCTION WITH IMPROVED ADJUSTABLE CAM

Harold D. Hulterstrum, Baraboo, Wis., assignor to Gulf & Western Industries, Inc., New York, N.Y.

Filed April 1, 1971, Ser. No. 130,100
Int. Cl. H01h *43/10*
U.S. Cl. 200—38 BA **24 Claims**

A repeat cycle timer of the type wherein a plurality of cams are coaxially rotated through a timed cycle to effect sequential

energization of a plurality of switches adapted to control electrical elements remote therefrom. The timer is comprised of a plurality of identical interchangeable cam modules each including a cam hub and at least one switch associated



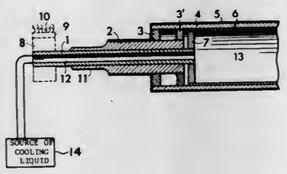
therewith. The adjacent modules and cam hubs are rotatably driven by drive means. Certain of the cam hubs include adjustable cam surfaces thereon to permit variable switch programs to be presented.

3,678,226

HOLLOW CONDUCTOR ROLL

Hiroyuki Hatagi; Kenichi Kanamaru, and Yasuo Funasaki, all of Fukuyama shi, Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 14, 1968, Ser. No. 767,419
Int. Cl. B01k 3/00
U.S. Cl. 191—1 A 10 Claims



A hollow conductor roll is used in electrical zinc plating, the outer surface of which is made of middle carbon steel and hard metal plating, and the inner surface of which is made of pure metal with low hardness and good electric conductivity. The hard outer metal plating renders the roll less susceptible to damage thereby reducing production cost and the hollow roll is relatively easy to cool by passing cooling liquid therethrough.

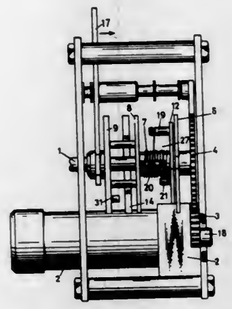
3,678,227

CAM OPERATED PROGRAM MECHANISM WITH MECHANICAL VIBRATORY ACTUATING MEANS

Eckhart Graf, Oberbaldingen, Germany, assignor to Firma Fried. Ernst Benzing, Schwenningen/N. Karlstr., Kontrolluhrenfabrik, Germany

Filed July 8, 1971, Ser. No. 160,709
Claims priority, application Switzerland, July 22, 1970, 11098/70
Int. Cl. H01h 7/08, 43/10
U.S. Cl. 200—38 R 10 Claims

A tripping mechanism for a power unit for the drive of time-related rotating contactors requiring a powerful torque for



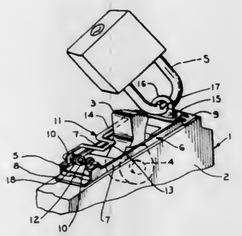
their drive. A drive motor is triggered periodically, thus driving the contactor.

3,678,228

HANDLE LOCKING ATTACHMENT FOR ELECTRICAL CONTROL DEVICES

Wayne G. Adamson, Fairfax, Iowa, assignor to Square D Company, Park Ridge, Ill.

Filed Oct. 23, 1970, Ser. No. 83,263
Int. Cl. H01h 27/00
U.S. Cl. 200—42 T 4 Claims



The handle locking attachment is for locking a pivotal external operating handle of an electrical control device in the OFF position. A frame mounted on the enclosing case of the device supports a bail which, when the operating handle is in the OFF position, can be swung to an obstructing position wherein it prevents movement out of OFF position, and can be locked in the obstructing position by a padlock shackle passed through an eye on the frame. The bail is biased by a torsion spring away from the obstructing position to an unobstructing position in which it is juxtaposed against the front face of the case so as not to interfere with the closure of the door of a load center cabinet in which the control device is mounted.

3,678,229

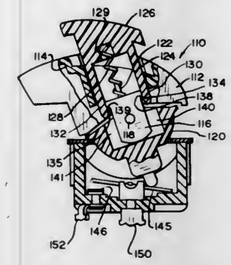
SPRING MOUNTED KEY FOR ELECTRICAL SWITCH

Thomas F. Osika, Gary, Ind., assignor to McGill Manufacturing Company, Inc., Valparaiso, Ind.

Continuation-in-part of Ser. No. 101,934, Dec. 28, 1970. This application Oct. 13, 1971, Ser. No. 188,720
Int. Cl. H01h 27/00
U.S. Cl. 200—42 T 6 Claims

A key operated electrical switch includes rocker and carrier members connected to the switch casing with a common axle. The rocker and the carrier members are free to rotate relative to one another about the axle with the carrier member moving into a cavity in the rocker. A key is connected by a spring

device to the rocker which spring biases the key out of the carrier member. Pressure on the key by the operator moves the



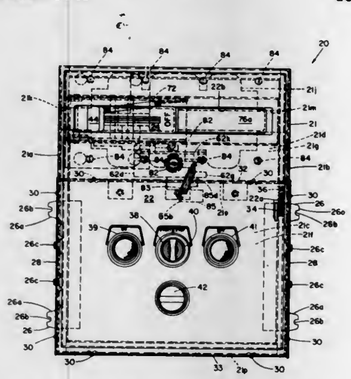
same into the carrier member so operation of the rocker will move the carrier member and the key in unison to operate the switch.

3,678,230

MOTOR STARTER UNIT WITH INTERLOCK MEANS FOR SELECTIVELY MOUNTABLE CIRCUIT BREAKER OPERATING MECHANISM

Tadeusz J. Rys, Lexington, Ky., assignor to Square D Company, Park Ridge, Ill.

Filed April 28, 1971, Ser. No. 138,137
Int. Cl. H01h 9/22
U.S. Cl. 200—50 A 10 Claims



A motor starter unit is mountable selectively on opposite sides of a stack of bus bars of an electrical panelboard and includes a reversibly positionable circuit breaker operating mechanism. Interlocks are provided to prevent opening of a cover of the motor starter unit when a handle of the operating mechanism is in ON position, unless an interlock-defeating screw is first turned, and to prevent movement of the handle to ON position when the cover is open.

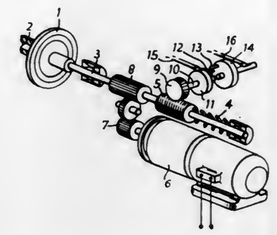
3,678,231

APPARATUS FOR DETECTING RAPID CHANGE OF FLUID PRESSURE

Michael John Underwood, Croydon, England, assignor to Negretti & Zambra (Aviation) Limited, Croydon, England

Filed July 26, 1971, Ser. No. 166,215
Claims priority, application Great Britain, July 28, 1970, 36,533/70
Int. Cl. H01h 35/24, 35/32
U.S. Cl. 200—81 R 13 Claims

An apparatus for detecting a rapid change in fluid pressure such as occurs in aircraft engine failure, comprises means such as a capsule for transforming pressure change into a velocity and means such as an electric motor for producing a reference



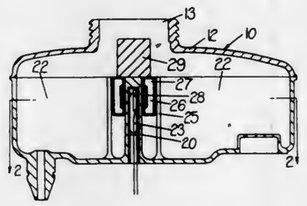
velocity. The two velocities so produced are compared or differentiated and a signal is produced when the velocities differ by more than a predetermined amount. The signal can be adapted to actuate automatically a re-light sequence for an aircraft engine.

3,678,232

LIQUID RESERVOIRS

Peter Kinson Hodges, Solihull, England, assignor to Girling Limited, Birmingham, England

Filed Dec. 23, 1970, Ser. No. 101,081
Claims priority, application Great Britain, Jan. 10, 1970, 1,319/70; March 10, 1970, 11,409/70
Int. Cl. H01h 35/18
U.S. Cl. 200—84 C 7 Claims



A liquid reservoir for use with a tandem master cylinder of a vehicle hydraulic system includes a dividing wall which serves to define a pair of chembers, the diving wall also defines in the chambers respectively guideways which guide the vertical movement of float assemblies. Each float assembly includes a magnet operable to close a pair of contacts in a switch housed in the dividing wall when the liquid level in the respective chamber falls below a predetermined level.

3,678,233

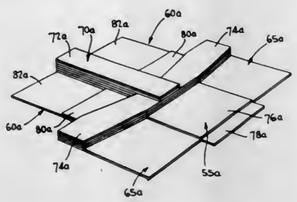
STANDARDIZED SET OF COMPENSATING FILTERS FOR MANTLE-FIELD RADIATION THERAPY

Frederick L. Faw, Vienna, Va.; Ralph E. Johnson, Rockville, Md.; Constance A. Warren, Ithaca, N.Y., and Dwight W. Glenn, Adelphi, Md., assignors to The United States of America as represented by the Secretary of Health, Education and Welfare

Filed April 2, 1970, Ser. No. 25,075
Int. Cl. H05g 3/00
U.S. Cl. 250—86 5 Claims

A standardized set of compensating filters for "mantle-field" radiotherapy. The set of compensating filters is supported in a filter-holder interposed between the radiation

source and the patient and includes a plurality of individual filter elements which are selectively combined to provide the

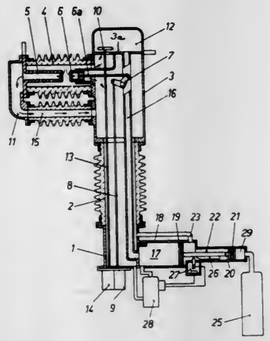


various portions of the mantle-field of the patient with a predetermined, reproducible radiation dosage.

3,678,234
COMPRESSED GAS SWITCH HAVING COLUMNAR CONSTRUCTION

Dieter Floessel, Fislisbach, Switzerland, assignor to Aktiengesellschaft Brown, Boveri & Cie, Baden, Switzerland

Filed June 8, 1970, Ser. No. 44,517
Claims priority, application Switzerland, June 18, 1969, 9275/69
Int. Cl. H01h *33/57*
U.S. Cl. 200—148 B **7 Claims**



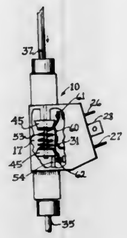
An electrical circuit breaker in which a pressurized gas such as SF_6 operating on a closed gas circuit is utilized to extinguish the arc drawn between the switching contacts and perhaps also to actuate the contacts themselves includes an upstanding hollow insulator column at the top of which is supported a switch contact chamber and an adjacently located readiness tank containing the pressurized gas ready for delivery to the contact chamber as soon as a switching-out sequence is initiated.

To assure rapid replenishment of the gas in the readiness tank so that a second switching-out operation can take place immediately, and at the same gas pressure as the first one should this be necessary, for example, due to the persistence of a short circuit on the line to which the breaker is connected, replenishment gas is stored in a cylinder at the lower end of the insulator column and this cylinder contains a piston which is driven in a direction to expell the gas stored in the cylinder and deliver it to the readiness tank through an interconnecting pipe line as soon as the gas pressure drops in the readiness tank as a result of delivery of the pressurized gas from the latter into the switch contact chamber. Thus the drop in gas pressure in the readiness tank resulting from the first disconnection of the switching contacts is compensated for and restored immediately by the re-pressurizing action resulting from the displacement of the piston.

3,678,235
AXIALLY RECIPROCAL ACTUATOR FOR A SEALED SWITCH

Fred N. Anderson, Waukegan, Ill., assignor to Cherry Electrical Products Corporation, Waukegan, Ill.

Filed Dec. 2, 1970, Ser. No. 94,500
Int. Cl. H01h *1/66*
U.S. Cl. 200—168 G **5 Claims**

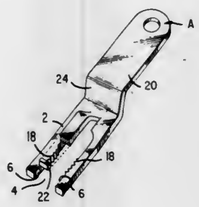


A sealed case housing, a switch blade and associated fixed contact terminals, an actuator end within the case, and a stationary rod providing a support for the case. The stationary rod extends parallel to the normal plane of the switch blade and coplanar to the actuator, which in turn is axially movable through the case relative to the support rod and longitudinally of the switch blade for actuation thereof upon movement in either direction.

3,678,236
SWITCH HOLDER AND GUARD

Hugh S. Hughes, 6 Balanced Rock Terrace, Sparta, N.J.

Filed April 23, 1971, Ser. No. 136,894
Int. Cl. H01h *9/20*
U.S. Cl. 200—169 PB **10 Claims**

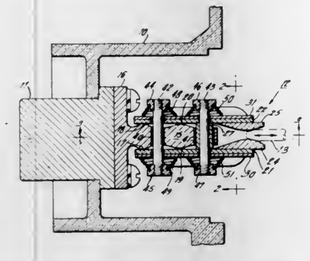


A hold down and guard device for a push button switch, secured to a support by mounting means through which the push button projects. The hold down and guard device has a body presenting surfaces engageable with complementary surfaces on the mounting means for the switch to hold the device in a fixed position with respect to the push button and switch and has a further portion which is fixed with respect to the body and projects over the push button to hold the button depressed or to prevent it from being unintentionally or accidentally depressed. The device may consist of a single unitary element such as a metal stamping or may be provided with means on the further portion thereof movable with respect to the body into a position to actuate the switch.

3,678,237
SELF-ALIGNING JAW CONTACT

Frank J. Rickert, Philadelphia, and Frank J. Pokorny, Hatboro, both of Pa., assignors to I-T-E Imperial Corporation, Philadelphia, Pa.

Filed Jan. 18, 1971, Ser. No. 107,057
Int. Cl. H01n *1/48, 1/50*
U.S. Cl. 200—166 E **6 Claims**

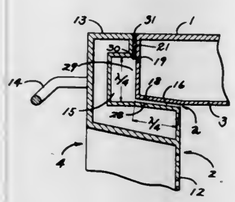


A jaw contact for receiving a relatively movable contact blade. The jaw contact consists of two elongated contact members supported on the opposite sides of a stationary support and are connected to the stationary support through two spaced pivots and contact points which are spaced from one another in the direction of elongation of the contact members. Biasing forces are applied to the side members at two axially spaced locations; one between the spaced pivot points; and the second being on the opposite side of the pivot point adjacent the jaw contact opening.

3,678,238
HIGH FREQUENCY HEATING APPARATUS

Yoshio Yasuoka, Osaka, and Yoshiaki Shirakami, Otsu, both of Japan, assignors to Sanyo Electric Co., Ltd., Moriguchi-shi, Osaka-fu, Japan

Filed Jan. 27, 1971, Ser. No. 110,009
Claims priority, application Japan, April 23, 1970, 45/35211
Int. Cl. H05b *9/06*
U.S. Cl. 219—10.55 **13 Claims**

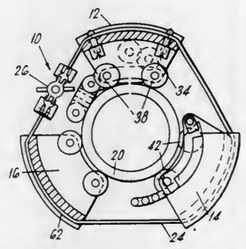


A high frequency heating apparatus, such as an oven, using microwave energy having an enclosure with an opening into the heating cavity which is to be sealed by the door. Peripheral metallic surfaces of the enclosure surrounding the opening and the door are spaced apart to leave a gap when the door is closed, the surfaces defining a parallel plate transmission line. The gap includes a first narrow portion of a quarter wavelength of the frequency of the energy from the heating source originating from an origin, which is the closest point to the entry into the heating cavity, which origin point serves as the input to the transmission line. A wide gap portion of a quarter wavelength has one end located adjacent the first narrow gap and a second narrow gap portion is located adjacent the other end of the wide gap portion. The second narrow gap portion is of a length less than a quarter wavelength long and is the output point of the transmission line. Due to the step down ratio of the transmission line the input point at the first narrow gap portion has a relatively low impedance which prevents energy from leaking out of the cavity.

3,678,239
INERT GAS SHIELDED ARC WELDING TORCHES

William G. Hill, London, England, assignor to Foster Wheeler Corporation, Livingston, N.J.

Filed April 20, 1970, Ser. No. 29,907
Claims priority, application Great Britain, April 21, 1969, 20,310/69
Int. Cl. B23k *9/02*
U.S. Cl. 219—60 A **3 Claims**

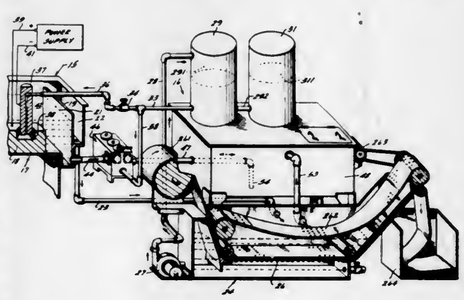


This invention describes an inert gas shielded electric arc welding torch for butt-welding tubes or tubular members of a wide range of outside diameters. The torch comprises a number of trolleys which are linked together and are spaced around the periphery of one tube. At least one trolley is provided with drive means and at least one trolley is produced with a welding head for making the butt-weld. All trolleys are constrained to follow a desired path by engagement with a track fitted around at least one tube. The torch is adjustable to suit differing sizes of tube or tubular member by altering the number of trolleys and/or by adjusting the spacing between them.

3,678,240
FLUID HANDLING SYSTEM FOR ELECTRICAL DISCHARGE MACHINING EQUIPMENT

Gerald P. Dietrick, 523 Ridgeview Drive, Florence, Ky.

Filed Feb. 24, 1971, Ser. No. 118,316
Int. Cl. B23p *1/08*
U.S. Cl. 219—69 D **5 Claims**



Electrical discharge machining equipment including a worktable reservoir tank, a fluid storage and settling tank and a source of clean fluid under pressure. Clean fluid under pressure is directed to a gap between an electrode and a workpiece in the reservoir tank during machining. Fluid is pumped

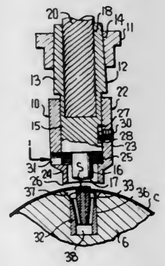
between the tanks by a jet pump. Clean fluid under pressure powers the jet pump. A side arm of the jet pump can be connected to each of the tanks alternately to draw fluid therefrom. The discharge of the jet pump is connected to the other tank to discharge into the other tank.

3,678,241

INERT ATMOSPHERE TACK WELDER

Paul M. Erlandson, Palos Park; Anton A. Aschberger, Oak Lawn, and John T. Cary, Markham, all of Ill., assignors to Continental Can Company, Inc., New York, N.Y.

Filed July 31, 1970, Ser. No. 59,932
Int. Cl. B23k *9/16, 35/38*
U.S. Cl. 219—72 **14 Claims**



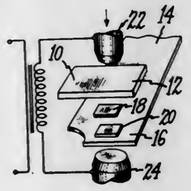
This disclosure relates to spot resistance welding or tack welding of edge portions of sheet material, particularly the welding of seams of containers. Means are provided for effecting gaseous flow around each of a pair of opposed electrodes with the flowing gas being preferably an inert gas and the flow being selectively one of pressure to one electrode and vacuum or partial vacuum to the other or pressure flow to both electrodes. Inert gas flow between the sheet portions being welded is also obtained.

3,678,242

METALLURGICAL BONDING OF DISSIMILAR METALS

Moreland P. Bennett, Pittsfield, Mass., assignor to General Electric Company

Division of Ser. No. 681,458, Nov. 8, 1967, Pat. No. 3,551,998. This application April 27, 1970, Ser. No. 43,279
Int. Cl. B23k *9/00*
U.S. Cl. 219—118 **3 Claims**



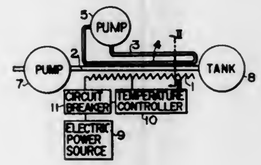
A metallurgical bond between dissimilar metals is obtained by using compatible shims between the metal members which will form a metallurgical bond to each other and to the dissimilar metals. Where copper and aluminum are the metals, a copper-silver-phosphorus shim and silver shim are used. A tin shim may be used between the copper-silver-phosphorus shim and the silver shim to improve their bonding characteristics. Heat and pressure are used to form the bond.

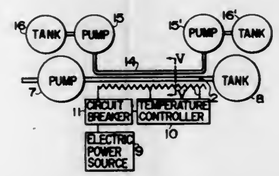
3,678,243

METHOD FOR LEVELLING THE TEMPERATURE OF AN ELECTRICALLY HEATED PIPELINE

Masao Ando, Yokohamashi, and Masao Hori, Toyko, both of Japan, assignors to Chiyoo Corporation, Osaka, Japan

Filed Dec. 16, 1970, Ser. No. 98,713
Claims priority, application Japan, Dec. 27, 1969, 45/1565; Nov. 18, 1970, 45/101714
Int. Cl. H05b *1/00;* **F17d** *1/18;* **F28d** *15/00*
U.S. Cl. 219—301 **4 Claims**





A method for minimizing temperature gradients in a fluid being transported through an elongated electrically heated pipeline comprises the independent circulation of a heat transfer fluid through at least one tracing tube arranged either internally or externally along the length of the pipeline simultaneously with the application of electrical energy to the pipeline to heat the transported fluid. The heat transfer fluid has a high heat transfer coefficient. The quantity of heat transfer fluid circulated through the tracing tubes is small (about 1 percent in the case where both the transported fluid and the heat transfer fluid are liquids) in comparison to the amount of transported fluid passing through the pipeline on a volume per unit length basis. In one arrangement a single pump circulates the heat transfer fluid through serially connected tracing tubes arranged along the length of the pipeline. In another arrangement, the heat transfer fluid is reciprocated alternately through a single tube extending longitudinally of the pipeline by pumps and associated holding tanks arranged at both ends of the tube.

3,678,244

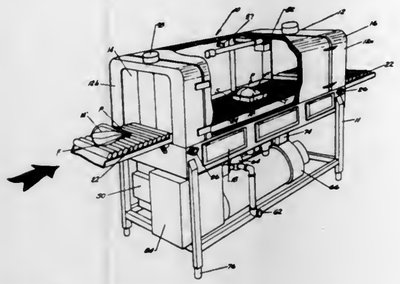
FILM SHRINKING TUNNEL UTILIZING HOT AIR AND WATER AS HEAT TRANSFER MEDIUM

Paul W. Worline, 125 Midway Road, Oak Ridge, Tenn.

Continuation-in-part of Ser. No. 24,499, April 1, 1970, abandoned. This application June 18, 1971, Ser. No. 154,412
Int. Cl. F27b *9/06;* **F27d** *11/02*
U.S. Cl. 219—388 **11 Claims**

An apparatus for shrinking the film around packaged food products such as meats, cheeses and the like, which utilizes a combination of hot oven air and water as a heat transfer medium to the packaged food products by completely surrounding

the products with a hot wet mist cloud, at a carefully controlled temperature, so as to produce an ideal condition for effecting a shrink rate near the maximum capability of the film and best suited for individual products.

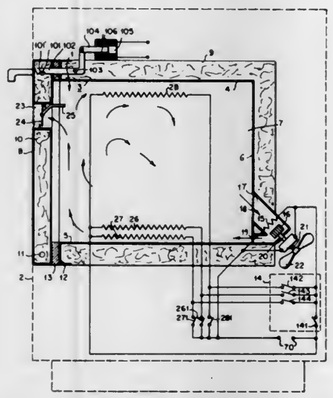


3,678,245

DEVICE FOR CLEANING THE WALLS OF THE MUFFLE CHAMBER OF BAKING AND ROASTING OVENS

Joseph Ackermann, Traunreut, Germany, assignor to Siemens Elektrogeräte GmbH, Berlin and Munich, Germany

Continuation-in-part of Ser. No. 843,947, June 20, 1969, abandoned. This application Nov. 27, 1970, Ser. No. 93,364
Claims priority, application Germany, July 21, 1968, P 17 78 938.7
Int. Cl. F27d *11/02;* **A21b** *1/22*
U.S. Cl. 219—396 **2 Claims**



Device for cleaning the walls of the muffle chamber of an oven with heated atmosphere circulating in a closed system includes means for passing heated atmosphere into the muffle chamber through an outlet located in a side wall of the muffle chamber adjacent the bottom wall of the same.

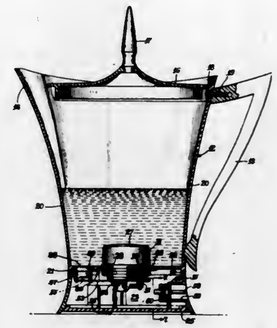
3,678,246

LIQUID HEATING VESSEL

Donald L. Blachly, Glendale, and Jack E. Weidner, Fox Point, both of Wis., assignors to John Oster Manufacturing Co., Milwaukee, Wis.

Filed June 24, 1970, Ser. No. 48,978
Int. Cl. F27d *11/02*
U.S. Cl. 219—437 **15 Claims**

An appliance for heating a quantity of liquid in a molded plastic vessel with a heating element cast into a lug which extends upwardly into the water containing portion of the vessel.



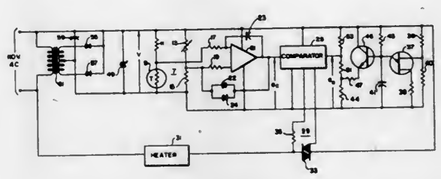
The energization of the heating element is controlled by a thermostat positioned at the bottom of the vessel in good heat transfer relation with the vessel contents.

3,678,247

TEMPERATURE CONTROL CIRCUIT WITH ZERO AVERAGE TEMPERATURE OFFSET ERROR

Kenneth B. Sawa, Yorba Linda, and Thomas M. Bleak, Whittier, both of Calif., assignors to Beckman Instruments, Inc.

Filed April 19, 1971, Ser. No. 135,043
Int. Cl. H05b *1/02*
U.S. Cl. 219—501 **2 Claims**



A temperature sensing circuit generates a voltage proportional to the difference between a controlled temperature and a predetermined reference temperature. The voltage is integrated in an integrating amplifier whereby average temperature offset error is reduced to zero. The integrated voltage is compared to a reference potential in a comparator to generate a control signal when the integrated voltage exceeds the reference potential. The control signal operates a switching device through which electrical power is conducted to a heater whereby the controlled temperature is established.

3,678,248

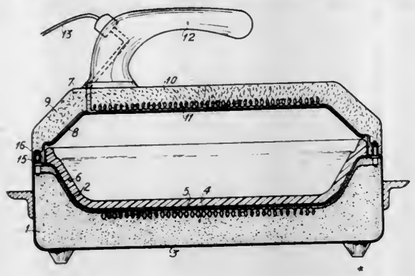
HOUSEHOLD DISH-HEATING APPLIANCE

Yves P. Tricault, 23 Boulevard Montmorency, Paris, and Gerard J. Tricault, 90 Avenue Andre Morizet, Boulogne-Billancourt, both of France

Filed March 15, 1971, Ser. No. 124,064
Int. Cl. H05b *3/06*
U.S. Cl. 219—525 **7 Claims**

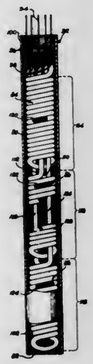
A food heating appliance comprising a base in bowl form and a lid fitting the shape of one or several dishes to be heated. The base consists of a body of refractory material in which a first heating electrical resistance is embedded; this body is bounded by two metal plates; the lid, fitting over the base and

dish or dishes, is also made of a body of refractory material in which a second heating electrical resistance is embedded and



is bounded by an upper and a lower metal plate. The lower plate is polished and reflective. The resistances are preferably series-connected.

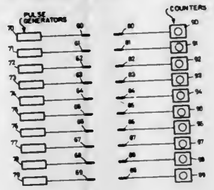
3,678,249
HEATER ELEMENT
Thomas H. Lennox, Topak, Ariz., assignor to Arc-O-Vec, Inc., Stanton, Calif.
Filed Oct. 21, 1970, Ser. No. 82,654
Int. Cl. H05b *3/44, 3/50*
U.S. Cl. 219—544 **11 Claims**



An electrical resistance heater is disclosed in an elongated tubular form wherein at least one resistance heating unit is coiled within a tubular housing. The resistance heating units include a coiled metallic sheath containing an internally coiled resistance wire that is fixed in the sheath by a mass of magnesium oxide. The heating units are similarly fixed in the tubular housing. Heating units coiled with a variable pitch and plural heating units of different characteristics are disclosed to accomplish different heat zones within the apparatus.

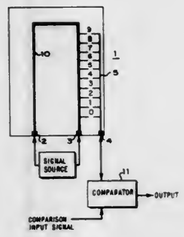
3,678,250
IDENTIFICATION SWITCH
Jurgen Dethloff, Hamburg, and Helmut Grottrup, Munich, both of Germany, assignors to Interlectron Patentverwaltung GmbH, Munich, Germany
Filed Sept. 15, 1969, Ser. No. 857,957
Claims priority, application Austria, Sept. 13, 1968, 8917/68
Int. Cl. G06k *7/04*; **G07f** *7/00*; **H04q** *1/02*
U.S. Cl. 235—61.11 R **4 Claims**

An identificant is insertable into an identificator, and carries a number of input points and a number of output points, certain of the input points being connected with certain of the output points in accordance with a predetermined code. The code does not use binary logic but rather a translation logic. The identificator comprises a number of input pins and a number of output pins, the input pins being engageable with the input points of the identificant, and the output pins being engageable with the output points of the identificant, more specifically with strip conductors connecting respective input points to respective output points. The input pins are con-



nected to respective pulse generators, and the output pins are connected to respective counters. The pulse generators supply a pulse sequence in which the number of pulses in a group increases by one during the sequence of checking the input points and the output points, whereby each of the counters will contain only one respective number. The identificant may be provided with a monolithic semiconductor circuit, preferably on a head at its inner end, and capable of checking with respect to counterfeiting of the identificant.

3,678,251
ANALOG ENTRY DATA CARD FOR GAME SCORING, OR THE LIKE, AND METHOD OF USING THE SAME
Frank H. Delpino, 11020 Stelling Road, Cupertino, Calif.
Filed March 4, 1971, Ser. No. 120,984
Int. Cl. G06k *7/06, 19/00*
U.S. Cl. 235—61.11 A **5 Claims**

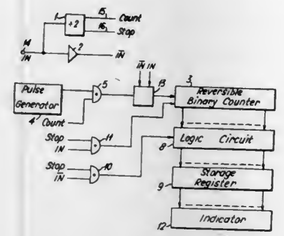


A data-entry card includes a resistive circuit divider formed thereon in conductive ink, or the like, and also includes several conductive tap connections to the resistive divider circuit which can be selected and completed by manually underlining with ordinary pencil the data entry printed on the card. A card-receiving device including comparator circuits may be used to determine signal levels and hence representative data being entered by way of underlined entries on the data card.

3,678,252
PULSE ANALYZER
Roy David Payne, London, England, assignor to International Standard Electric Corporation, New York, N.Y.
Filed July 28, 1970, Ser. No. 58,832
Claims priority, application Great Britain, Aug. 1, 1969, 38,734/69
Int. Cl. H03k *21/02*
U.S. Cl. 235—92 EV **6 Claims**

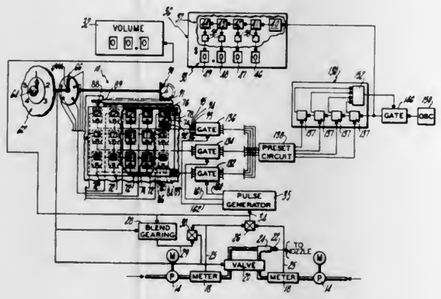
A system for taking the difference between the duration of a pulse, and the time between pulses including a reversible bi-

nary counter to count up during one interval and to count down during a succeeding interval. The count at the end of the



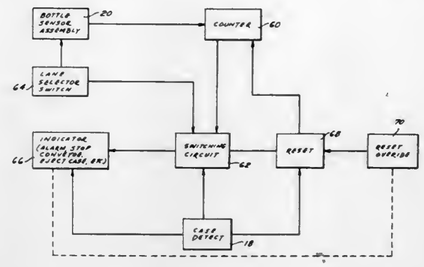
succeeding interval is transferred to a binary digital storage register by a set of gates. The output of the storage register is then impressed upon an indicator.

3,678,253
COMPUTING DEVICE
Reed H. Johnston, Wellesley, Mass., assignor to Veeder Industries, Inc., Hartford, Conn.
Filed Aug. 17, 1970, Ser. No. 64,337
Int. Cl. H03k *21/36*
U.S. Cl. 235—92 FL **19 Claims**



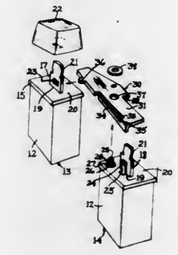
A five product gasoline dispensing system having a cost counter for accumulating the cost of gasoline dispensed, five banks of price switches for the five gasoline products respectively settable for pre-establishing the amount of each place of the unit volume price for the respective product within a three place price range, a selector for selectively conditioning the system for dispensing each of the gasoline products and for activating the corresponding switch bank for establishing the unit volume price, and a pulse generating device adapted to generate pulse trains for the three places of the unit volume price having 5, 50, and 500 pulses respectively for each unit volume of a gasoline dispensed. A control circuit is operated by each pulse to preset a binary predetermining counter at the binary complement of the setting of the respective price switch and an oscillator is gated to index the predetermining counter from its preset count to a maximum count and simultaneously index the cost counter such that for each unit volume of gasoline dispensed the amounts of the three places of the established price are added to the cost counter 5, 50, and 500 times.

3,678,254
MISSING CONTAINER DETECTOR
William R. Graff, Lynchburg, Va., assignor to Simplimatic Engineering Co., Lynchburg, Va.
Filed Nov. 18, 1970, Ser. No. 90,620
Int. Cl. G06m *7/00*
U.S. Cl. 235—92 PK **30 Claims**



A control apparatus for a missing container detector comprises a photoelectric cell mounted on a suitable frame at a control station along a conveyor belt for sensing the presence of a case at said control station, a plurality of container sensing heads, one for each lane, mounted above the conveyor belt and adapted to sense individual containers as they pass thereunder, and a control circuit for indicating when a case is missing one or more containers. The control circuit comprises a binary counter responsive to proximity switches associated with said sensing heads and effective to register a count for each full row of containers which passes under said sensing heads and means operatively connected to said photoelectric cell and effective upon the movement of a case past said control station to produce an output signal if the count registered in said counter is less than a predetermined number. The output signal may be used to sound an alarm, eject a case, and/or stop the conveyor. Means are provided for adapting the circuit for cases of different shapes and sizes.

3,678,255
MECHANICAL KEY LOCK-IN
Eric L. Long, Waukegan, Ill., assignor to Cherry Electrical Products Corporation, Waukegan, Ill.
Filed June 18, 1971, Ser. No. 154,459
Int. Cl. G06c *7/04*
U.S. Cl. 235—145 R **6 Claims**

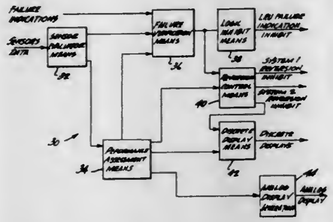


A mechanical lock-in for a depressed key of a keyboard including an automatic release of the locked depressed key through successive actuation of associated key members.

3,678,256
PERFORMANCE AND FAILURE ASSESSMENT MONITOR

Harold L. Harenberg, Jr., Long Beach, Calif., assignor to McDonnell Douglas Corporation

Filed Oct. 5, 1970, Ser. No. 78,073
Int. Cl. G06g 7/78
U.S. Cl. 235—150.2 30 Claims

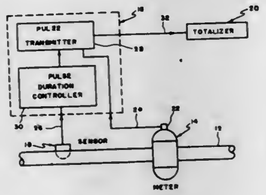


A performance and failure assessment monitor which assesses overall performance of the operation of the automatic landing mode of a flight control system for an aircraft. The monitor is connected to various sensors throughout the aircraft so that it can compare what the flight control system of the aircraft is accomplishing during a landing maneuver against an independent model generated within the monitor of what the flight control system should be accomplishing. The resultant comparison is displayed to the pilot as a measure of relative confidence that the landing will be accomplished properly. The monitor also includes failure verification and failure reversion control for making immediate and accurate assessments of the consequence of a failure of any component in the aircraft which in anyway affects the ability of the flight control and flight guidance instrument systems to operate properly, for correcting the failure when possible and for displaying only the critical failure information to the pilot of the aircraft.

3,678,257
METHOD AND APPARATUS FOR DETERMINING THE VOLUMETRIC AVERAGE OF A PARAMETER

G. C. Lilley, Houston, and Robert Herrick Kolb, Cypress, both of Tex., assignors to Shell Oil Company, New York, N.Y.

Filed June 17, 1970, Ser. No. 47,060
Int. Cl. G01f 1/00; G06f 7/38
U.S. Cl. 235—151.34 9 Claims

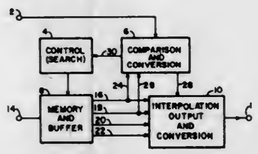


The volumetric average of a parameter is determined by measuring volumetric increments of fluid passing through a conduit and producing a signal indicative of the value of the parameter only upon completion of a volume increment. The signal is summed. The summed signal is proportional to volume times the parameter. The summed signal is divided by the number of volume increments to provide the volumetric average of the parameter.

3,678,258
DIGITALLY CONTROLLED ELECTRONIC FUNCTION GENERATOR UTILIZING A BREAKPOINT INTERPOLATION TECHNIQUE

James R. Patmore, Neptune; Walter Frank Bozenhard, Eatontown, and Gavino Anthony Spampanato, Bricktown, all of N.J., assignors to Electronic Associates, Inc., Long Branch, N.J.

Filed Sept. 29, 1970, Ser. No. 76,387
Int. Cl. G06j 1/00
U.S. Cl. 235—150.53 6 Claims



The specification discloses a digitally controlled function generator wherein breakpoint information for a given function is developed by a digital computer. A search function is employed by comparing the value of the analog input with the values of two adjacent breakpoints to ascertain whether the analog input is between the X coordinates of the breakpoints. If the comparison indicates that the value of the analog input is within the breakpoints, the corresponding Y coordinate values are removed from a memory and the interpolation equation

$$fx = Y_n + \frac{\Delta Y}{\Delta X}(X - X_n)$$

is solved to produce the desired output. If the comparators indicate that the analog input signal lies outside the X coordinates of the breakpoints, new values X coordinates are searched until the analog signal is bracketed.

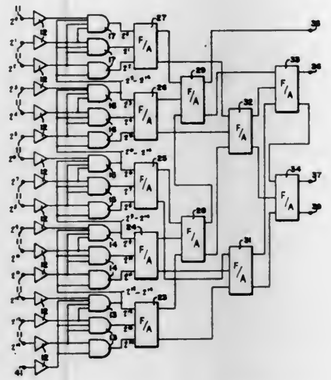
A floating point technique is utilized in control of digitalanalog multipliers to thereby select the smallest possible valued resistors in the multiplier to enhance the dynamic response of the system.

3,678,259
ASYNCHRONOUS LOGIC FOR DETERMINING NUMBER OF LEADING ZEROS IN A DIGITAL WORD

Leslie T. Kyser, Binghamton, N.Y., assignor to The Singer Company, New York, N.Y.

Filed July 28, 1970, Ser. No. 58,862
Int. Cl. G06f 7/38
U.S. Cl. 235—156 4 Claims

This invention relates to an asynchronous device for counting the number of consecutive leading zeros, starting with the most significant digit, in a digital word. Such a device is useful in generating shift and exponent modification information in floating-point digital computers and in generating information for overflow detection in fixed-point digital computers. The device comprises a plurality of gates, one for each digit in the binary word, which are so interconnected that they pass information only when the particular digit signal applied thereto is a zero and only when all of the higher order (more significant) digits are also zeros. The outputs of the gates are applied to a plurality of adders where they are counted, and the total is presented at the output. The total can than be used to control a shifter for properly locating the binary point in the word, and

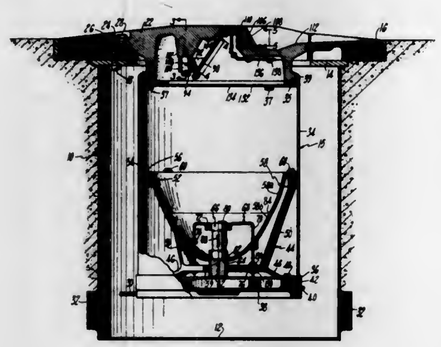


to provide information for exponent modification, or to provide information for overflow detection.

3,678,260
OPTICAL SYSTEM FOR AIRCRAFT GUIDANCE LIGHT

Edward W. Beal, Wethersfield, Conn., assignor to Connecticut International Corporation, Windsor Locks, Conn.

Filed Feb. 6, 1970, Ser. No. 9,309
Int. Cl. B64f 1/18; F21q 3/02
U.S. Cl. 240—1.2 22 Claims

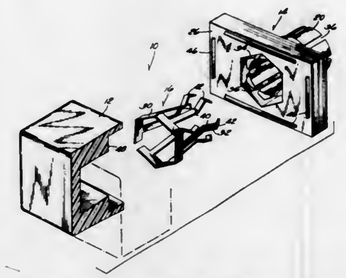


An aircraft guidance light having a reflector formed of a plurality of elliptical surfaces of revolution of different eccentricities about a common major axis are joined together at their common diameters in planes perpendicular to the axis and are displaced axially relative to each other to reflect light in the same general direction. The elliptical surfaces have a common focus and the elliptical surface of least eccentricity is nearest the common focus. A mirror is disposed at an acute angle to the common axis between the conjugate foci of the elliptical surfaces to capture and reflect the light through a side exit window in the hermetic housing of the light which contains a non-oxidizing gas at a positive pressure.

3,678,261
LENS ASSEMBLY FOR INDICATOR LIGHTS

Daniel E. McNeil, Broomall, Pa., assignor to Controls Switch, Inc., Folcroft, Pa.

Filed March 22, 1971, Ser. No. 126,505
Int. Cl. F21v 17/00
U.S. Cl. 240—151 4 Claims

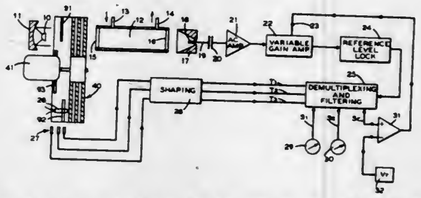


The lamp holder includes a collar which is captured in a groove provided in the reflector section of a lamp housing by a cup-shaped lens overlying and bonded, preferably ultrasonically, to the reflector section. Spring fingers extending from the collar of the lamp holder fit into slots provided in a barrel section of the lamp housing. The spring fingers have multiple bends forming two knee-like portions, one adapted to hold an indicator lamp and the other extending through slots provided in the barrel section, when an indicator lamp is installed. The latter knee-like portion engages the inside surface of the casing into which the lens assembly is installed and establishes electrical contact between the lamp and the casing.

3,678,262
INFRARED GAS ANALYZER

Pierre Herrmann, Hauts de Seine, France, assignor to Compteurs Schlumberger, Montrouge, France

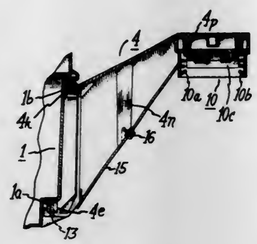
Filed April 30, 1971, Ser. No. 138,876
Claims priority, application France, July 21, 1970, 7026755
Int. Cl. G01n 21/26
U.S. Cl. 250—43.5 R 18 Claims



The analyzer comprises, in succession, an infrared ray source, a modulator, an analysis chamber containing the mixture of gasses, and a detector together with associated electronic circuits for processing the electric signals delivered by the detector. The modulator periodically interposes in the path of the radiation of gaseous reference filter which absorbs the characteristic lines of the particular gas to be analyzed, and a measurement filter which does not absorb these lines. The filters are separated from each other by two identical base filters comprising an element permitting grey transmission slightly lower than the average transmission of the reference filter so that the detector delivers successively a measurement signal and a reference signal respectively defined with respect to a common level determined by the base filters. The electronic processing circuits comprise means for amplifying and

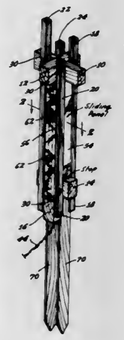
demultiplexing the signals and means for establishing and reading out the quotient of the measurement signal and the reference signal. This quotient is representative of only the concentration sought.

3,678,263
LIGHTING ASSEMBLY DEVICE
Mitchell M. Osteen, Zirconia, and James L. Grindle, Hendersonville, both of N.C., assignors to General Electric Company
Filed Dec. 8, 1969, Ser. No. 882,885
Int. Cl. F21v *21/00*
U.S. Cl. 240—52 **2 Claims**



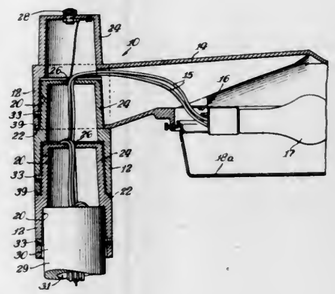
Industrial luminaire has a single ballast housing and a plurality of detachable lateral mounting arms for mounting a desired number of optical assemblies on the ballast housing. Each mounting arm is formed at one end for selective attachment to any of the ballast housing sides and has a support device at the other end for detachably hanging an optical assembly.

3,678,264
ELECTRIC LAMP
Jon F. Myhre, 3500 Anette Street, Los Angeles, Calif.
Filed Nov. 16, 1970, Ser. No. 89,545
Int. Cl. F21s *1/10*
U.S. Cl. 240—84 **5 Claims**



An improved electric lamp assembly is provided which is particularly suited for outdoor use as an outdoor lantern. The electric lamp has a unique configuration, being composed in one embodiment of transverse members forming the top and bottom for the lamp and four side posts extending between the top and bottom, with translucent plastic panels mounted in the side posts. At least one of the plastic panels is slidable in the side posts to an open position so as to permit access to the interior of the lamp assembly for inserting and replacing an electric light bulb within the assembly.

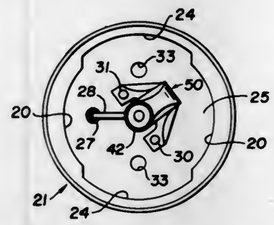
3,678,265
LIGHTING FIXTURE SUPPORT
David H. Porter, and Thomas S. Biscoe, both of Fort Atkinson, Wis., assignors to Thomas Industries Inc., Fort Atkinson, Wis.
Filed Dec. 22, 1970, Ser. No. 100,651
Int. Cl. F21s *1/10, 3/10, 13/10*
U.S. Cl. 240—84 **13 Claims**



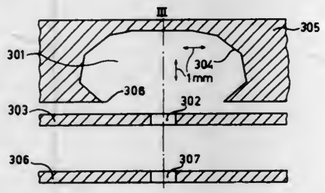
The lighting fixture is adapted to be supported on a pole, or post top or the like and has a generally cylindrical body portion or hub portion from which extends laterally one or more arms. The arms carry the necessary lamp supporting means and wires thereto. The body portion in the preferred form has a downwardly opening tapered socket, preferably conical, which may be nested with and supported on a mating stud. There is a stop to limit the nesting of the body portion with a supporting stud and, preferably, each body portion has an upwardly extending stud with an external configuration which conforms to the internal configuration of the socket of a lighting fixture whereby the fixtures may be nested to supply more than one lighting fixture supported on a pole, post, or the like. The conical socket is, in each case, provided with one or more set screws. Three set screws permit free lateral as well as vertical adjustment of the unit. The conical socket may be telescoped with and joined to a cylindrical support such as a pole top as well as to the conical stud portion of an associated fixture unit. The studs are preferably hollow and conductors for the associated lamp or lamps and may be extended vertically through an opening in the top wall of the stud to enter a cooperating fixture unit. Hollow laterally extending lamp fixture supporting arms are extended from the body portions and communicate with the interior of the body portion.

3,678,266
APPARATUS FOR INCANDESCENT FILAMENT MOUNTING
Joseph J. Fradette, Cleveland, Ohio, assignor to White Motor Corporation
Division of Ser. No. 639,124, May 17, 1967, Pat. No. 3,484,600. This application Nov. 21, 1969, Ser. No. 878,690. The portion of the term of this patent subsequent to Dec. 16, 1986, has been disclaimed.
Int. Cl. F21v *15/04*
U.S. Cl. 240—90 **5 Claims**

Automotive vehicle equipped with incandescent lamp filament mounting which isolates the filament from vibrations at the resonant frequency of the filament, thereby extending the life of the filament. The frequency isolation is accomplished with an exponential spring. The spring is secured to a lamp body and a socket is mounted at the node of frequencies which are the resonant frequency of the filament.



3,678,267
ION SOURCE COMPRISING A CONCAVE-SHAPED REPELLER
Helmut Wilhelm Werner Werner, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Sept. 17, 1969, Ser. No. 858,772
Claims priority, application Netherlands, Sept. 26, 1968, 6813748
Int. Cl. H01j *39/36*
U.S. Cl. 250—41.9 SB **2 Claims**



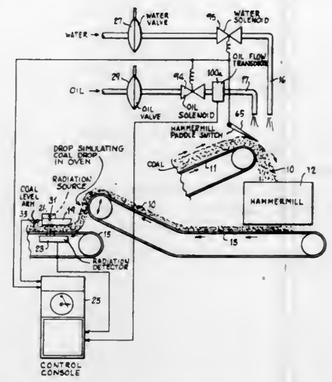
An ion source in which gas is ionized by an electron beam in an ionizing space between a narrow extraction gap in an extraction electrode and an inner wall of a repeller electrode; the wall extending substantially parallel to the extraction gap with the open side of the wall facing the gap. The ions are drawn out of the ionizing space through an extraction electrode along electric fields produced by an acclerating electrode. The repeller electrode has a concave-shaped form for making the effective electric field of the ionizing space substantially independent of the accelerating voltage, thereby resulting in high extraction efficiencies.

ERRATUM

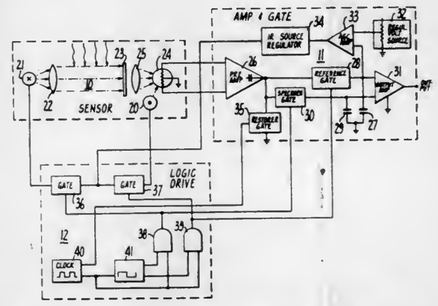
For Class 250—43 see:
Patent No. 3,678,262

3,678,268
BULK DENSITY GAGE AND BULK DENSITY CONTROL SYSTEM
Thomas E. Reim, Willowick; Jerry J. Pollack, Brookpark, and Robert A. Kemmerling, Cleveland, all of Ohio, assignors to Republic Steel Corporation, Cleveland, Ohio
Continuation of Ser. No. 720,057, April 10, 1968, abandoned. This application Nov. 5, 1970, Ser. No. 87,360
Int. Cl. G01t *1/17*; G01n *23/14*
U.S. Cl. 250—43.5 D **15 Claims**

The output of a radioactive source is directed through a moving stream of granular material, e.g., coal on a conveyor, and the radiation passing through is sensed by a detector. The detector generates a pulse signal of which the pulse repetition rate varies with the radiation sensed. The pulses generated are counted in a binary counter, and a timer periodically initiates a read-out of and resets the counter to effect successive counting cycles, whereupon the digital count in each cycle is converted to an analog voltage, the magnitude of which is recorded in terms of bulk density of the coal. The recorder controls the addition of water or oil to the coal to, respectively, lower or increase the bulk density of the coal. Controls are included which guard the system from misperforming when a supply of coal has failed, when the depth of coal on the conveyor belt has been lost, and when the coal is so dense that an application of water is required.



3,678,269
METHOD AND APPARATUS FOR MEASURING RADIATION ABSORPTION IN A FLUID SPECIMEN
Fritz J. Malek, Santa Barbara, Calif., assignor to Metrophysics, Inc.
Filed Nov. 23, 1970, Ser. No. 91,952
Int. Cl. G01n *21/34*
U.S. Cl. 250—43.5 R **6 Claims**



Method and apparatus for measuring the radiation absorption of a fluid specimen and more particularly wherein an electrical signal proportional to the radiant energy received through the fluid specimen is stored and compared with an electrical signal derived from a known reference source, the difference between the signals producing an output signal that is a measure of radiant energy absorbed by the fluid specimen. A pair of capacitors store the electrical signals for comparison and are connected alternately and intermittently to a radiation

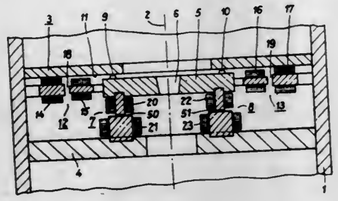
sensing means by a first pair of gates. A second pair of gates alternately and intermittently energize a pair of radiant energy sources, one source being used as a reference and the other source emitting radiant energy that is transmitted through a specimen fluid undergoing measurement. Both pairs of gates are operated synchronously by a gating circuit that is controlled by a clock and a flip-flop circuit.

3,678,270

PARTICLE-BEAM DEVICE EQUIPPED WITH MAGNETIC MEANS FOR TRANSVERSELY DISPLACING PARTS THEREOF

Dieter Braun, Berlin, Germany, and Klaus Heinemann, Palo Alto, Calif., assignors to Siemens Aktiengesellschaft, Berlin, Germany

Filed Sept. 8, 1970, Ser. No. 70,014
Claims priority, application Germany, Sept. 30, 1969, P 19 50 327.6; Sept. 30, 1969, P 19 50 320.9
Int. Cl. H01J *37/20*
U.S. Cl. 250—49.5 B **21 Claims**



A particle-beam device has a beam axis and a housing surrounding the axis wherein a moveable structure is disposed. An apparatus for moving the structure transverse to the beam axis has first magnet pairs disposed at opposite sides of the structure and positioned so that their respective magnetic forces act in a direction transverse to the beam axis. The two magnets of each pair of the first magnet pairs are mutually adjacent, one of the two adjacent magnets being arranged on the outer periphery of the structure and the other of two the adjacent magnets being fixedly mounted with respect to the housing. Second magnet pairs are positioned relative to the beam axis so that their respective magnetic forces act in a direction parallel to the beam axis, the magnets of each pair of the second magnet pairs being mutually adjacent. One magnet of each pair of the second magnet pairs is arranged on a surface of the structure, the surface being transverse to the beam axis. The other magnet of each pair of the second magnet pairs is fixedly mounted with respect to the housing.

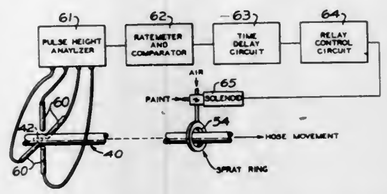
3,678,271

MARKING AND DETECTION OF SUBSURFACE DEFECTS IN MULTI-LAYER HOSE STRUCTURES

John J. Groezinger, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Oct. 9, 1969, Ser. No. 865,020
Int. Cl. G01t *1/20*
U.S. Cl. 250—71.5 R **7 Claims**

Subsurface defects in multi-layer hose structures are marked as to location and extent with a tape having an axial stripe of radioactive salts thereon which is subsequently detected with scintillation counters that are connected to circuits and controls which mark or remove the faulty section of the hose structure after completion of the hose. The radioactivity of the salt is capable of being detected through the subsequent layers of the hose structure which cover the tape as the manufacture of the hose continues after the defect is coded with the tape.

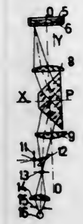


3,678,272

SPECTROPHOSPHORIMETER

Jan Jasny, Baleya, Poland, assignor to Polska Akademia Nauk Instytut Chemii Fizycznej, Warszawa, Poland

Filed March 18, 1971, Ser. No. 125,525
Int. Cl. G01j *3/42*
U.S. Cl. 250—71 R **10 Claims**



A spectrophosphorimeter is disclosed for defining the spectrum and the dephosphorescence function of solids and liquids wherein the matter to be tested is subjected to a zonal excitation and analysis. The spectrophosphorimeter comprises a prismatic or mirror system by which a transverse translation is obtained between the beam of excitation and the beam of received radiation to define an interval between the time of excitation and the time of analysis: The prismatic or mirror system is rotatable so that the beams travel along a circular path, the angular interval between the beams being regulated by adjusting the relative angular positions of the excitation system and the analyzing system with respect to the axis of rotation of the prismatic or mirror system.

3,678,273

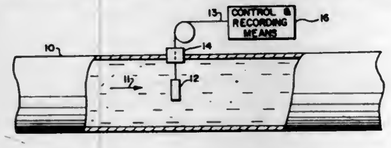
METHOD OF MEASURING THE ABRASIVENESS OF AN ABRASIVE FLUID

Donald R. Lewis, Houston, Tex., assignor to Shell Oil Company, New York, N.Y.

Filed Feb. 11, 1970, Ser. No. 10,545
Int. Cl. G01t *1/16*
U.S. Cl. 250—83 R **4 Claims**

A method of measuring the abrasiveness of an abrasive fluid by exposing a radioactive abradable material to a flow of the abrasive fluid, and measuring the rate at which radiation is being emitted from the fluid-contacted radioactive abradable material. The decrease due to an abrading away of the

radioactive abradable material that occurs in the rate at which the radiation is emitted from the fluid-contacted radioactive abradable material is measured. The amount of abrasion of the abradable material is then used to measure the abrasiveness of the abrasive fluid.

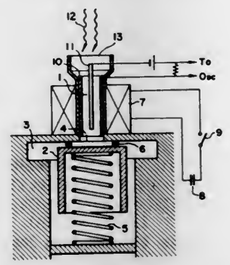


3,678,274

DIAPHRAGM-LESS RADIOACTIVE RADIATION COUNTER

Nobuki Kawashima, Tokyo, Japan, assignor to President of Tokyo University, Tokyo, Japan

Filed March 20, 1970, Ser. No. 21,380
Claims priority, application Japan, Oct. 29, 1969, 44/86061
Int. Cl. G01t *1/18*; H01J *39/26*
U.S. Cl. 250—83.6 R **5 Claims**



A radio-active radiation counter is provided with a counter chamber having a diaphragm-less open window, and two collecting electodes are disposed in said chamber and separated from each other. A gas to be ionized is injected in a pulse into the chamber intermittently to create a gas cloud for a short duration in the space where the electrodes are disposed, and a voltage pulse is applied across the electrodes during the presence of said gas cloud between the electrodes to operate the counter in order to measure the radiation coming into the chamber during the voltage being applied to the electrodes. Because of the absence of a diaphragm in the ray entrance window of the counter chamber, the absorption of radiation energy in a diaphragm is avoided and thereby it is possible to measure radiations of energy less than 1 Kev.

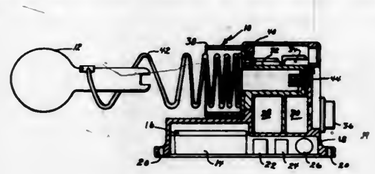
3,678,275

DOSIMETRY SYSTEM FOR MEASURING INSTANTANEOUS DOSE AND LINEAR ENERGY TRANSFER SPECTRUM OF SPACE RADIATIONS

Marion F. Schneider, and Edward L. Breen, both of Albuquerque, N. Mex., assignors to The United States of America as represented by the Secretary of the Air Force

Filed April 15, 1971, Ser. No. 134,280
Int. Cl. G01t *1/02, 1/18*
U.S. Cl. 250—83.6 R **2 Claims**

A space radiation dosimetry system utilizing a portable ionization chamber mountable in a housing containing associated electronics and a linear energy transfer (LET) spectrometer with associated electronics. The LET spectrometer utilizes a pair of solid state detectors in combination with amplifiers, a discretionary number of discriminator channels, logic circuits and counters to measure the linear energy transfer spectrum of high energy ionizing radiations.

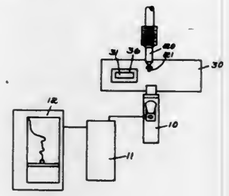


3,678,276

INFRARED RADIOMETRIC DETECTION OF SEAL DEFECTS

Rauno A. Lampi, Westborough; Kweh H. Hu, Wayland, both of Mass., and Richard F. Osborne, Mauldin, S.C., assignors to The United States of America as represented by the Secretary of the Army

Continuation of Ser. No. 880,263, Nov. 26, 1969, abandoned. This application July 1, 1971, Ser. No. 159,068
Int. Cl. G01t *1/16*
U.S. Cl. 250—83.3 H **7 Claims**



A rapid, non-destructive test for discovering seal defects in flexible packages wherein the package seal is passed between a narrow beam heat source and a detector sensitive to infrared energy, which detector senses variations in the radiant energy emitted from the seal, such variations resulting from a change in thermal conductivity due to the presence of voids, wrinkles, irregularities or occluded matter in the seal.

3,678,277

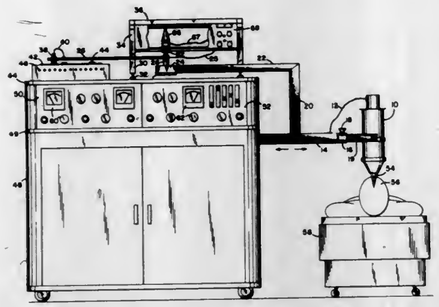
APPARATUS FOR PROVIDING RECORDED CHROMATIC DATA DISPLAYS OF VARYING SENSOR SIGNALS

Gilbert Greenspan, 2027 Willow Street; Lawrence R. Curtis, 2727 De Anza Road, both of San Diego, Calif.; Elmer E. Cunningham, 8051 Sterling Drive, El Cajon, Calif., and James G. Tabler, 2060 Chicago, San Diego, Calif.

Filed June 27, 1968, Ser. No. 740,640
Int. Cl. G01t *1/16*
U.S. Cl. 250—83.3 R **5 Claims**

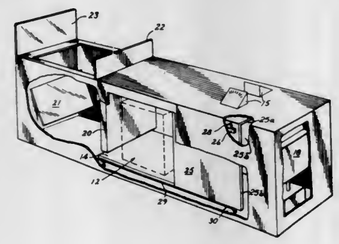
A chromatic data display system for recording signals from any source on color paper, and particularly for recording varying pulse rate information on color paper that is representative of the distribution of radioactive material in, for example, a part of a human body, which pulse rate information is in

response to rectilinear scanning of that part of the human body or from the rescan of an image from a black and white



photoscan on X-ray or other film, and which image represents pulse rate information obtained from prior rectilinear scannings.

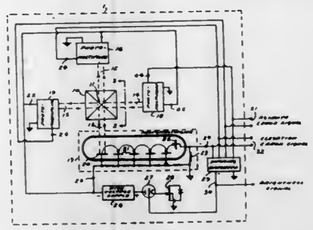
3,678,278
APPARATUS FOR BAGGAGE INSPECTION
Le Roy E. Peil, 1113 East Adams, Riverton, Wyo.
Filed Jan. 26, 1970, Ser. No. 5,538
Int. Cl. G21f 7/00
U.S. Cl. 250—108 R **1 Claim**



An inspection apparatus for use with an airline ticket and check-in counter includes an X-ray and fluoroscopic examination unit and a frequency modulation monitor, all positioned on a frame adjacent a baggage weighing platform. A sliding X-ray impervious shield is supported on the frame and is positioned over the weighing platform and baggage thereon during the X-ray inspection.

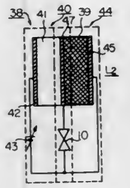
3,678,279
AUTOMATIC VARIABLE GAIN OPTICAL TRACKER FOR SPACE VEHICLES COMPRISING D-C SYSTEM FOR ERROR SIGNAL GENERATION
Louis S. Macknik, and Kenneth E. Kissell, both of Dayton, Ohio, assignors to The United States of America as represented by the Secretary of the Air Force
Filed June 2, 1970, Ser. No. 42,648
Int. Cl. G01j 1/20; H01j 39/12
U.S. Cl. 250—203 **1 Claim**

A tracker for optical targets that vary in brightness and size over a wide range and at a relatively high rate, such as may be presented, for example, by a tumbling body in space. A tracking telescope is provided with an optical device such as a pyramidal reflector or refractor having its apex at the focus of the telescope for splitting the target image into four beams 90 degrees apart. When the optical axis of the telescope is on the target the image is centered on the apex of the pyramid and the oppositely extending beams are equal. When there is a tracking error, the image is not centered on the apex and the differences in the light fluxes of the oppositely extending beams are directly related to the azimuthal and elevational components of the tracking error. These differences are converted into proportionate error signals for the elevation and azimuth servomechanisms of the telescope by means of four photomultipliers which convert the four beams into electrical signals, the differences in the outputs of associated pairs of



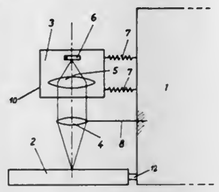
photomultipliers constituting the error signals. In addition, the outputs of the four photomultipliers are added to produce an instantaneously acting automatic gain control voltage for the photomultipliers that is proportional to target brightness and independent of tracking error. The instantaneous adjustment of photomultiplier gain in inverse relation to target brightness holds the multiplier outputs within a narrow range over a wide range of target brightness variation, thereby permitting satisfactory tracking of such targets.

3,678,280
ELECTRO-OPTICAL CONVERTER USING A PULSE GENERATING DIODE TO GENERATE SIGNAL HAVING PULSE REPETITION FREQUENCY ACCORDING TO LIGHT SIGNAL
Sadahiko Yamashita, Kadoma City, Japan, assignor to Matsushita Electric Industrial Company, Limited, Kadoma City, Osaka, Japan
Filed Sept. 17, 1970, Ser. No. 73,051
Claims priority, application Japan, Sept. 20, 1969, 44/74822; Sept. 20, 1969, 44/75557
Int. Cl. H01j 31/50, 39/12
U.S. Cl. 250—213 A **5 Claims**



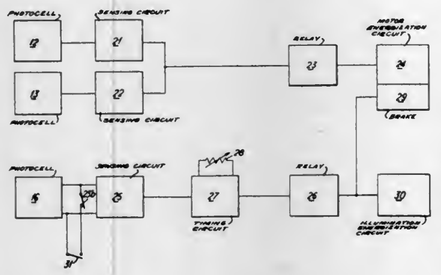
An electro-optical converter comprising a first loop including in series a photoconductive element having a photoconductive body and a light permeable electrode mounted at one end of the body, a DC power source and a pulse generating diode, and a second loop including in series the pulse generating diode as a common element and an electroluminescent material having a light permeable electrode at one end thereof. The other ends of the photoconductive body and the electroluminescent material are made in electrical contact with each other. When the first loop oscillates with an input light signal being incident on the photoconductive body, the second loop is energized to emit an output light signal. The intensity of this light signal depends upon that of the incident light and upon the bias voltage applied to the pulse generating diode by the DC power source. The pulse generating diode employed in this converter is a novel one having a p-N structure.

3,678,281
PHOTOELECTRIC SENSING DEVICE
Franz Gleixner, Munich-Pasing, Germany, assignor to Firma Erwin Sick, Waldkirch i. Br., Germany
Filed March 31, 1970, Ser. No. 24,161
Claims priority, application Germany, April 2, 1969, P 19 17 139.2
Int. Cl. H01j 5/16
U.S. Cl. 250—216 **4 Claims**



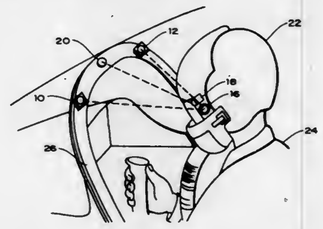
In a photoelectric sensing device a first lens is affixed to a machine at a distance equal to its focal length from an object under observation. A detector unit, including a second lens and a photoelectric detector in the focal point thereof is resiliently mounted on a machine, the second lens being aligned with the first lens. Thereby the object is imaged on the detector regardless of vibrations of the machine and, on the other hand, the detector unit is protected from such vibrations.

3,678,282
DISPLAY UNIT WITH RADIATION SENSITIVE CONTROL
Harold Hector Johnson, Ringwood; Derek Bye South, London, and Charles Victor Burdett White, Eastcote, all of England, assignors to Rotaslgn Limited
Filed June 15, 1970, Ser. No. 46,441
Int. Cl. G09f 11/00
U.S. Cl. 250—219 FR **9 Claims**



A display unit comprises a box housing two spools between which a strip of film frames is wound past a window first in one direction and then in the other direction. Reversal of the direction of film drive is initiated by two photo-electric cell arrangements adapted to detect the approach of the end of the strip in each direction. As each individual frame registers with the window, the strip is stopped to display the frame for a predetermined period. The registering of a frame with the window is detected by a photo-electric cell arrangement detecting marks suitably distributed along an edge of the strip to correspond to the individual frames. The three photocells are connected in electrical control circuitry, each photocell being connected to the input of a respective Schmitt trigger circuit. The outputs of the Schmitt triggers associated with the direction reversing photo-cells are fed to a first relay operative to effect reversal of a motor driving the spools. The output of the other Schmitt trigger is fed via a timing circuit to a second relay operative to initiate rear illumination of a frame registered with the window and to cause the application of a brake to the motor. To ensure that the film strip is tensioned during its movement in either direction, in one embodiment of the invention each spool is driven through a retarder providing resistance to rotation in the direction applying when the strip is being unwound from that spool.

3,678,283
RADIATION SENSITIVE OPTICAL TRACKER
Kenneth B. LaBaw, China Lake, Calif., assignor to The United States of America as represented by the Secretary of the Navy
Filed Oct. 22, 1970, Ser. No. 82,880
Int. Cl. H01j 3/14
U.S. Cl. 250—216 **10 Claims**

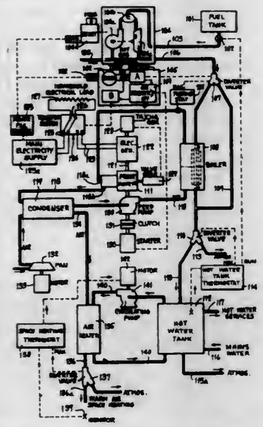


An optical tracker system for determining the sight-line of a pilot within a cockpit. The system has at least two light sources and one photodetector mounted in the cockpit, and one light source and one photodetector mounted on the pilot's helmet. Electrical signals from the photodetectors uniquely establish the position and orientation of the pilot's helmet. When a helmet attached sight is included in the system the signals indicate the pilot's line-of-sight.

3,678,284
ENERGY SUPPLY APPARATUS AND METHOD FOR A BUILDING
Charles Michael Denney Peters, 5 William Orchard Close, Old Headington, Oxford OX3 9DR, England
Continuation-in-part of Ser. No. 851,373, Aug. 19, 1969, abandoned. This application Sept. 15, 1970, Ser. No. 72,301
Claims priority, application Great Britain, Aug. 27, 1968, 40,969/68
Int. Cl. B60l 11/02
U.S. Cl. 290—1 **9 Claims**

For supplying the electrical and thermal energy utilization systems of a residential or other building, means are provided for deriving energy from fuel, and an electrical generator driven by a prime mover that is energized by such fuel and that has provision for exhaust heat recovery is employed and arranged in association with electrical power from a conventional external source so that under coordinated control, e.g., automatically at certain times or conditions, the electrical generator is operated to supplant power from the external

source for at least a part of the electrical utilization system while heat recovered from the prime mover supplants heat



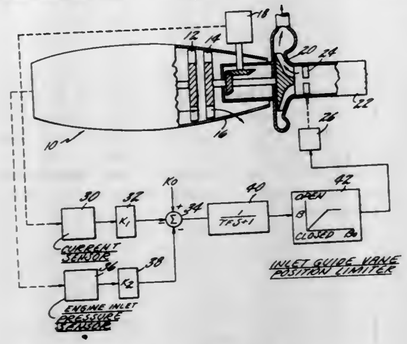
separately derived from the fuel energy means, for part or all of the required thermal energy, as for space heating and hot water.

3,678,285

LOAD ANTICIPATION CONTROL FOR A FREE TURBINE TYPE OF POWER PLANT

James J. Griffith, East Granby, Conn., assignor to United Aircraft Corporation, E. Hartford, Conn.

Filed Sept. 23, 1970, Ser. No. 74,726
Int. Cl. H02p 9/04
U.S. Cl. 290—40 7 Claims



The inlet guide vanes that adjust the pneumatic load of a compressor driven by the free turbine of a free turbine type power plant are positioned as a linear function of electrical load and inlet pressure.

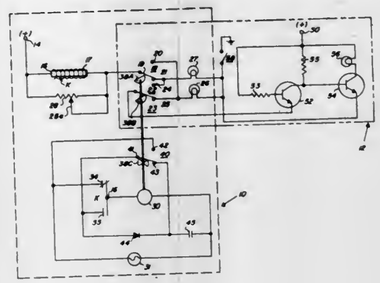
3,678,286

AUTOMATIC LAMP CHANGER AND SPARE LAMP INDICATOR CIRCUIT

Roger L. Willis, Spencerport, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed March 22, 1971, Ser. No. 126,734
Int. Cl. H02j 1/00
U.S. Cl. 307—38 4 Claims

A circuit for automatically energizing a spare or standby lamp in response to the burning out of the primary lamp and for continuously monitoring the spare lamp to verify operability thereof up to the time the burned-out lamp is replaced includes a source of electrical power, a relay and a two-position control switch connected such that the switch in one position connects one of the lamps in series with the power source and the relay and, in the other position connects the other of the lamps in series with the power source and the relay. A motor is



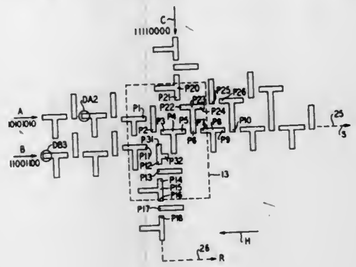
actuated in response to the burning out of the primary lamp to position the control switch so that the spare lamp replaces the burned out lamp in the series circuit. The spare lamp is continuously monitored by connecting a transistorized switching network from the spare lamp to a warning or indicator lamp. The output stage of the network is switched on, thereby energizing the warning lamp, if the spare lamp is or becomes defective.

3,678,287

MAGNETIC DOMAIN LOGIC ARRANGEMENT

Woo Foung Chow, Berkeley Heights, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed May 28, 1971, Ser. No. 147,854
Int. Cl. G11c 11/14, 19/00; H03k 19/168
U.S. Cl. 307—88 LC 5 Claims



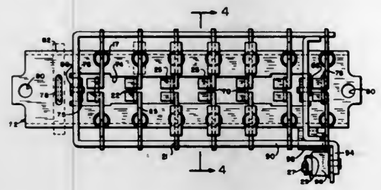
An overlay of magnetically soft material juxtaposed with a slice of a magnetic material in which single wall domains can be moved is of a geometry to define an intersection between two input and two output channels such that one of the output channels provides a logical OR function or a logical AND function depending on the presence or absence of a domain in a control channel while the other of the output channels simultaneously exhibits a logical AND function or a logical OR function, respectively.

3,678,288

MULTIPLE PUSH BUTTON SWITCH SPEED CONTROL SYSTEM

Roy L. Swanke, Newington, and Gordon H. Raymond, Southington, both of Conn., assignors to Dynamics Corporation of America, New York, N.Y.

Continuation-in-part of Ser. No. 766,280, Oct. 9, 1968, abandoned. This application Aug. 13, 1970, Ser. No. 63,511
Int. Cl. H01h 15/00
U.S. Cl. 307—113 44 Claims



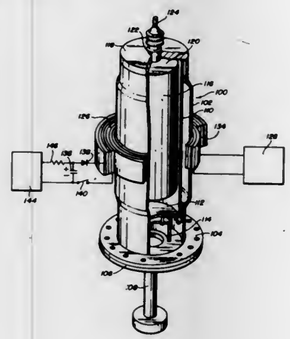
A multiple switch in which a plurality of individually operated actuators arranged in groups or pairs permute three switches in four patterns which are identical for the actuators of each pair. A two position switch serially connected therewith is oppositely actuated by the individual actuators of each pair to either an open or closed position and thereby provides two modes for each of the four permutations. Preferably, a serially connected switch actuated each time the switches are permuted is rated to make and break a high wattage current and the others are rated to handle a substantially lesser wattage, said permuted switches being timed sequentially to be either open or closed during the moment that the serially connected switch is being opened or closed.

3,678,289

MAGNETIC FIELD CONTROL CIRCUIT FOR CROSSED FIELD SWITCHING DEVICES

Michael A. Lutz, and Gunter A. G. Hofmann, both of Los Angeles, Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Aug. 18, 1971, Ser. No. 172,719
Int. Cl. H01h 35/00
U.S. Cl. 307—149 9 Claims



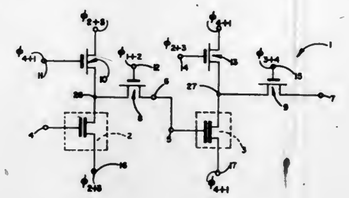
A conducting crossed-field switching device in a high voltage circuit can be offswitched by temporarily reducing the magnetic field to non-conductive conditions. While high voltage rises across the offswitching crossed-field device, the magnetic field strength-reducing pulse dissipates, but the conditions in the interelectrode space remain non-conductive.

3,678,290

RATIOLESS AND NON-INVERTING LOGIC CIRCUIT USING FIELD EFFECT BOOSTING DEVICES

Robert X. Booher, Mission Viejo, Calif., assignor to North American Rockwell Corporation

Filed May 23, 1969, Ser. No. 827,269
Int. Cl. H03k 19/08
U.S. Cl. 307—205 5 Claims



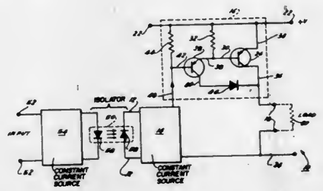
A non-inverting logic gate using a field effect device which includes a boosting capacitor having a fixed plate connected to an input terminal and its other plate comprising an inverted layer in the substrate region under the fixed plate. The inverted layer is formed in response to an input signal. A clocked terminal is connected to the inverted layer. As a result, the voltage on the fixed plate is boosted by the voltage level on the electrode. The fixed plate is connected to the gate electrode of a field effect transistor having its source electrode connected to the clocked terminal and its drain electrode connected to an output terminal. An isolation field effect transistor is connected between the output terminal and the field effect transistor for isolating the output terminal after it has been set to the voltage level equivalent to the input voltage level. Initially, the output is set to one voltage level which is changed as a function of the input voltage.

3,678,291

SOLID STATE RELAY

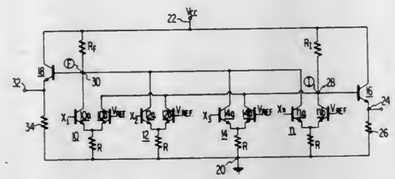
Ronald J. Coe, Huntsville, Ala., assignor to SCI Systems, Inc., Huntsville, Ala.

Filed May 18, 1970, Ser. No. 38,471
Int. Cl. H02h 7/20; H03k 3/26
U.S. Cl. 307—202 11 Claims



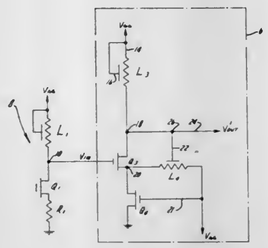
A solid-state switching device capable of replacing mechanical relays. When the relay is conducting rated load current, a single saturated transistor carries the current with a very low voltage drop. When the load current rises above a pre-determined level, the load-carrying circuit automatically becomes a modified Darlington circuit, which is capable of carrying substantial overloads without being damaged, and with voltage drops within a desirable range. Optionally, means are provided for disabling the load circuit and, in effect, opening the relay, when a certain level of overload current is reached, thereby turning the device into a circuit-breaker.

3,678,292
MULTI-FUNCTION LOGIC GATE CIRCUITS
Daniel Hampel, Westfield, N.J., assignor to RCA Corporation
Filed Aug. 6, 1970, Ser. No. 61,678
Int. Cl. H03k *19/08*
U.S. Cl. 307—207 16 Claims



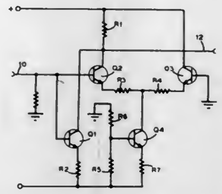
A pair of load impedances, and a plurality of signal controlled means, each such means supplying a current to one or the other of the load impedances depending upon the binary value represented by the signal controlling that means. By judicious choice of the respective values of the load impedances, the respective voltages developed across them is made to represent different logic functions, which may be completely unrelated to one another, of the input signals. The signal controlling a means may be an external signal or may be a feedback signal produced internally of the circuit.

3,678,293
SELF-BIASING INVERTER
Jay D. Popper, Queens, N.Y., assignor to General Instrument Corporation, Newark, N.J.
Filed Jan. 8, 1971, Ser. No. 104,988
Int. Cl. H03k *19/40*
U.S. Cl. 307—214 17 Claims



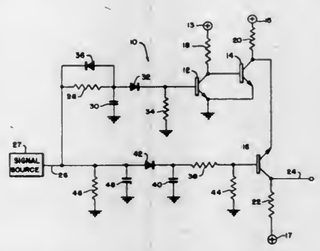
A self-biasing inverter circuit comprises a load device and a semiconductor driving field effect transistor connected in series with a low-impedance device across a voltage source. The input is impressed on the gate terminal of the driving FET and the output is taken off the junction between the driving FET and the load device. A second field effect transistor having a high output impedance is connected between the source of the driving FET and the negative side of the voltage source and has its gate terminal connected to the inverter output. In this manner the source of the driving FET is biased to a negative voltage level sufficient to maintain said driving FET in the nonconductive state even for logic "O" signal more negative than threshold. In addition the bias signal is automatically diminished as a logic "1" input is impressed on the gate of the driving FET to aid in rendering the driving FET conductive.

3,678,294
AMPLIFIER STAGE CIRCUIT FOR A LOGARITHMIC AMPLIFIER
Wolfgang Glathe, Munich, Germany, assignor to Schlumberger Overseas Messgeratebau und Vertrieb GmbH, Munich, Germany
Filed Nov. 10, 1970, Ser. No. 88,447
Claims priority, application Germany, Nov. 11, 1969, P 19 56 692.8
Int. Cl. H03k *17/00*
U.S. Cl. 307—230 1 Claim



An amplifier stage for a logarithmic amplifier having a plurality of such stages connected in cascade. Each stage comprises a linear amplifier and a differential amplifier having a common load resistance, a common input terminal and a common output terminal at one end of the load resistance; these two terminals are also the input and output terminals of the stage. The linear amplifier delivers an output which is a linear function of its input over the entire range of permissible input values. The differential amplifier delivers an output which is a linear function of its input for input values below a predetermined limit, and delivers a constant output for input values above this limit. The output of the stage is the sum of the output from the linear amplifier and the output from the differential amplifier. Below the predetermined limit the output of the stage is thus the sum of two linear outputs; above this limit it is the sum of a linear output and a constant output. The gain of the stage is therefore constant below the limit, but falls off above the limit.

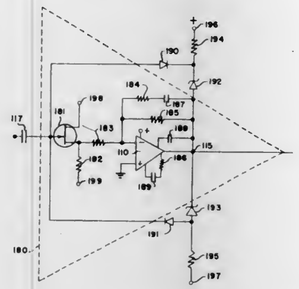
3,678,295
TRANSISTION SENSING CIRCUIT
Patrick J. Heneghan, Chicago, Ill., assignor to Teletype Corporation, Skokie, Ill.
Filed Dec. 29, 1969, Ser. No. 888,731
Int. Cl. H03k *5/13, 17/28*
U.S. Cl. 307—235 20 Claims



A transition sensing circuit, which normally provides a first output, provides a second output for a predetermined duration whenever the input to the circuit changes from an input of a first type to an input of a second type, or vice versa. When the input to the circuit changes from an input of the first type to an input of the second type, the second output is obtained from the circuit for the time required to charge a first capacitor to a voltage sufficient to overcome the forward breakdown

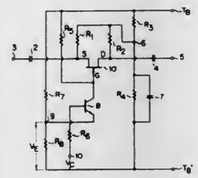
voltage of a diode. When the input to the circuit changes from an input of the second type to an input of the first type, the second output is obtained from the output of the circuit for the time required to discharge a second capacitor to a predetermined voltage.

3,678,296
ELECTRICAL SIGNAL SLOPE POLARITY CHANGE DETECTOR
Christopher C. Day, Newtonville, Mass., assignor to American Optical Corporation, Southbridge, Mass.
Filed April 14, 1970, Ser. No. 28,442
Int. Cl. H03k *5/20*
U.S. Cl. 307—231 4 Claims



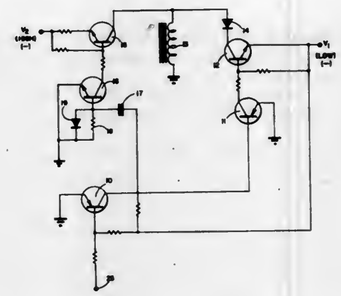
An electrical signal slope polarity change detector. A circuit for detecting changes in slope polarity of an electrical input signal and for providing an output indication of each slope polarity change. The circuit utilizes an amplifier with negative feedback which changes substantially its value of feedback impedance during a change in slope polarity of the input signal. The input signal is capacitively coupled to the amplifier input. The circuit is, within limits, insensitive to input signal variations in amplitude, frequency, and offset level.

3,678,297
SWITCHING CIRCUIT
Susumu Takahashi, Tokyo, Japan, assignor to Sansui Electric Co., Ltd., Tokyo, Japan
Filed Feb. 17, 1971, Ser. No. 116,155
Claims priority, application Japan, Feb. 20, 1970, 45/14451
Int. Cl. H03k *17/60*
U.S. Cl. 307—251 4 Claims



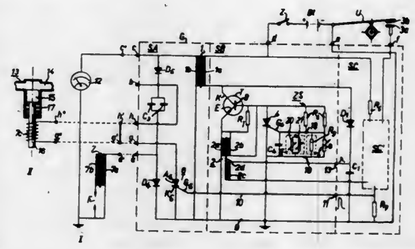
A switching circuit using a single field effect transistor for switching AC signals includes a junction type field effect transistor coupled in series with an AC signal circuit for selectively passing the AC signals from the source to the drain of said transistor. Circuit means supplies a constant gate voltage to the field effect transistor during the conductive period thereof, a voltage which is predetermined in accordance with the maximum magnitudes of the AC signals for forcing diode current to flow through at least one of the diode junctions of the field effect transistor such that the gate voltage follows the AC voltage applied to the source. A control circuit selectively renders the field effect transistor conductive or non-conductive as a function of the value of control signals, thereby switching the AC signals.

3,678,298
TWO-STEP MAGNETIC DRIVER
George A. Dyer, San Juan Capistrano, Calif., assignor to North American Rockwell Corporation
Filed April 28, 1971, Ser. No. 138,043
Int. Cl. H03k *5/12*
U.S. Cl. 307—270 4 Claims



A drive circuit for pulse modulated excitation of an inductive load impedance and having both a fast turn-on/turn-off capability and minimum power consumption. A first transistorized power amplifier having a rapid turn-off response provides a sustaining excitation subsequent to the drive circuit delay transients, while a compensatory trigger circuit provides a compensatory output trigger wave form for compensating for the drive circuit turn-on delay transients.

3,678,299
TRANSISTOR CIRCUIT ARRANGEMENT FOR SUPPLYING A LOAD WITH WORK PULSES OF CONSTANT CURRENT INTENSITY
Rudolf Diener, Zurich, Switzerland, assignor to Autoelektronik A'G, Chur, Graubunden, Switzerland
Filed Nov. 17, 1970, Ser. No. 90,299
Claims priority, application Switzerland, Oct. 13, 1970, 15140/70; Nov. 20, 1969, 17307/69
Int. Cl. H03k *17/00, 3/30*
U.S. Cl. 307—275 22 Claims



A transistor circuit arrangement for supplying a load with work pulses of constant current intensity, comprising a load, a switching transistor having a collector-emitter path and a main winding of a feedback element connected in series with a direct-current voltage source. A control pulse generator for each work pulse gates the switching transistor via a control

winding of the feedback element coupled with the base of the switching transistor, and means serve to block the switching transistor each time when a current flowing through said series circuit has risen to a certain current intensity. More specifically, there is provided a control thyristor coupled with the base current circuit of the switching transistor and an ignition circuit for the control thyristor which contains a passive semiconductor component as a temperature-dependent resistor. The control thyristor is turned-on each time by the collector current of the transistor, the intensity of which is determined by the resistance value of the ignition circuit, and the switching transistor is completely blocked by the feedback element.

3,678,300

MONOLITHIC INTEGRABLE FLIP FLOP CIRCUIT

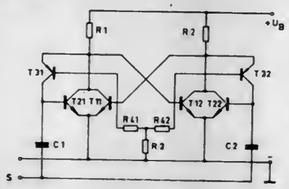
Hans Keller, Freiburg, Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed Oct. 19, 1970, Ser. No. 81,710

Claims priority, application Germany, Dec. 17, 1969, P 19 63 225.8

Int. Cl. H03k *3/286*

U.S. Cl. 307—288 **12 Claims**



A monolithic integrable flip-flop circuit provides for information storage and reliable switchover by inserting a transistor between the base and collector of the control transistor of the flip-flop.

3,678,301

LOGIC MODULE CONNECTED TO ACT AS FLIPFLOP

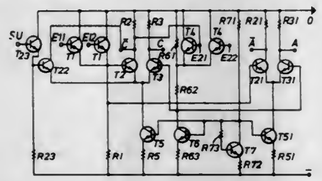
Gerd Fischer; Dieter Straub, and Heinz Eberhard Voigt, all of Constance, Germany, assignors to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Germany

Filed Feb. 19, 1971, Ser. No. 117,034

Claims priority, application Germany, Feb. 20, 1970, P 20 07 912.3

Int. Cl. H03k *3/26, 3/286*

U.S. Cl. 307—289 **3 Claims**



A flipflop circuit having a first pair of transistors having their bases connected to receive input signals and their collectors arranged to produce output signals, the transistors assuming respectively opposite switching states depending on the relative levels of the inputs thereto, a conductor connecting the collector of one transistor to one of the inputs of the other transistor for causing the transistors to remain in their existing switching states after the removal of input signals, and a second pair of transistors each having its base connected to the base of a respective transistor of the first pair and providing at their collectors the direct and complement output signals for the circuit. Means are provided to selectively place a conductive path across the emitter-collector of one transistor of the first pair, thereby to suppress the storage capability of the circuit.

3,678,302

SOLID STATE ELECTRONIC DEVICE UTILIZING DIFFERENCE IN EFFECTIVE MASS

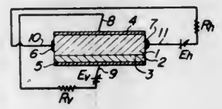
Hiroyuki Kasano, Akishima, and Masao Kawamura, Kokubunji, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed March 10, 1971, Ser. No. 122,916

Claims priority, application Japan, March 13, 1970, 45/20883

Int. Cl. H01l *3/00, 5/00*

U.S. Cl. 307—299 **15 Claims**



A solid state electronic device comprising an element including two semiconductor crystal regions of different effective mass of carriers forming a junction therebetween, and electrodes for forming two orthogonal electric fields in said element, in which carriers may be totally reflected at the junction by controlling one of the two fields to cause an abrupt change in the current flowing through the element.

3,678,303

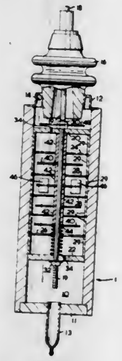
NUCLEAR POWER SOURCE

Kenneth J. Round, Ottawa, Ontario, Canada, assignor to Atomic Energy of Canada Limited, Ottawa, Ontario, Canada

Filed Jan. 28, 1970, Ser. No. 6,373

Int. Cl. G21d *7/00*

U.S. Cl. 310—3 R **5 Claims**



There is provided means for utilizing radioactive emission from a radioisotope to generate relatively high voltages at small current densities.

3,678,304

ACOUSTIC WAVE DEVICE FOR CONVERTING BULK MODE WAVES TO SURFACE WAVES AND VICE VERSA

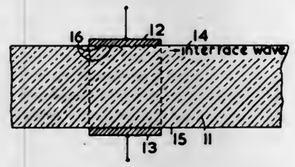
Reginald Frederick Humphryes, 5 Mygrove Close, Rainham, and Iain McLaren Mason, Chequers, Kiddington, near Woodstock, both of England

Filed Jan. 12, 1971, Ser. No. 105,935

Claims priority, application Great Britain, Jan. 15, 1970, 2,127/70

Int. Cl. H01v *7/00*

U.S. Cl. 310—8 **9 Claims**



An acoustic wave device comprising a body of material having two generally plane, parallel surfaces facing each other, means for launching a bulk acoustic standing wave system in the body between the two surfaces or for detecting such a standing wave system, at least one of the two surfaces having a shaped profile arranged to launch a wave having a component consisting of an interface wave on the boundary of the body and being derived from energy trapped in the said bulk standing wave system or to receive an interface wave developed on the boundary of the body and to convert at least part of it into a bulk standing wave.

3,678,305

ACOUSTIC SURFACE WAVE DEVICES

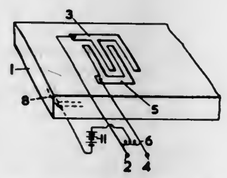
Edward George Sydney Paige, Malvern, England, assignor to Minister of Aviation Supply in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed Feb. 5, 1971, Ser. No. 113,010

Claims priority, application Great Britain, Feb. 6, 1970, 5,732/70

Int. Cl. H01v *7/00*

U.S. Cl. 310—8.1 **11 Claims**



An acoustic surface wave device relies on its effectiveness not on the piezoelectric effect but on the electrostrictive effect whereby the effectiveness of the device is electric field dependent.

3,678,306

JET PROPULSION POWER PLANT

Michel Robert Garnier, Sceaux, and Christian Paul Gilbert Rioux, Antony, both of France, assignors to Societe Nationale D'Etude Et de Construction de Moteurs D'Aviation, Paris, France

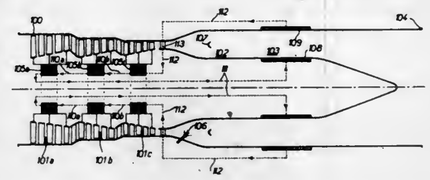
Filed Jan. 14, 1971, Ser. No. 106,378

Claims priority, application France, Jan. 15, 1970, 7001440

Int. Cl. H02n *4/02*

U.S. Cl. 310—11 **14 Claims**

A jet propulsion power plant comprising in succession a compressor, a supplemental heating means, an expansion gas turbine, a main heating means, and a magnetoplasmadynamic generator adapted to supply at least a part of the energy necessary for driving the compressor. The compressor is driven by an electrical motor means electrically connected to the magnetoplasmadynamic generator and to a supplemental generator rotated by the expansion gas turbine.



3,678,307

ELECTROMECHANICAL OSCILLATOR WITH ISOCHRONOUS COMPENSATION AND/OR FREQUENCY REGULATION

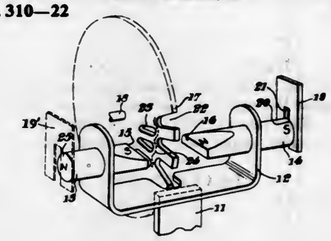
Cecil Frank Clifford, Newbridge Works, Bath, England

Filed July 7, 1970, Ser. No. 52,846

Claims priority, application Great Britain, July 23, 1969, 37,076/69; Jan. 8, 1970, 978/70; March 17, 1970, 12,723/70; May 7, 1970, 22,113/70

Int. Cl. H02k *7/06*

U.S. Cl. 310—22 **17 Claims**



An electromechanical oscillator having an oscillating member which is electrically maintained in mechanical oscillation, in which a pair of magnets with opposite poles defining a gap is carried by a single oscillating member or by one or both tines of a tuning fork, and the rotor is so mounted that the wavy magnetic tracks pass through the gap or gaps between the pair(s) of magnets. There may be a magnetic member adjacent the free pole of one magnet to provide isochronous compensation or frequency regulation, or a member to provide isochronous compensation adjacent the free pole of one magnet of a pair and a member to provide frequency regulation adjacent the free pole of the other magnet of the pair.

3,678,308

SCANNING DEVICE

Spencer D. Howe, Los Angeles, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

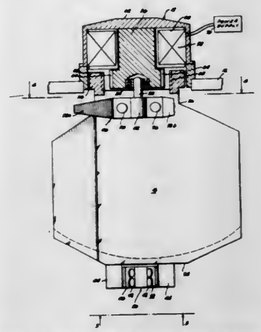
Filed May 27, 1970, Ser. No. 40,837

Int. Cl. B61f *17/00*; F16c *1/24*

U.S. Cl. 310—36 **10 Claims**

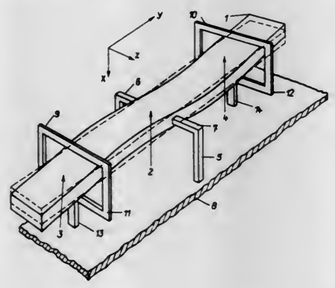
A mirror is oscillated through an angular arc defined by arc terminal points. Springs absorb the kinetic energy of halt at the terminal points, the springs returning the energy to the mirror thereby reversing the direction of oscillation thereof. Magnetic means coupled to the mirror provides a source of force to induce oscillation of the mirror and to bias the mirror to a position off the center point of the arc of oscillation when

operative. The magnetic means is so driven by a square wave signal, having twice the frequency of oscillation, to create an intermittent force on the mirror that one portion of the square wave force aids movement of the mirror from its center point of oscillation towards one of the terminal points and another



portion of the square wave force acts against movement (and spring energy) of the mirror from the terminal point towards the center point. Too slow or too fast movement of the mirror is compensated for by the square wave force. The mirror therefore moves at a substantially constant angular velocity between the terminal points.

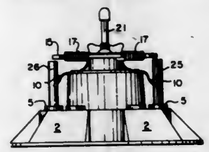
3,678,309
PIEZOELECTRIC RESONATOR
Hubert Choffat, Saint-Blaise, Switzerland, assignor to Centre Electronique Horloger SA, Neuchatel, Switzerland
Filed Jan. 11, 1971, Ser. No. 105,302
Claims priority, application Switzerland, Jan. 14, 1970, 471/70
Int. Cl. H01v 7/00
U.S. Cl. 310—8.5 **4 Claims**



A piezoelectric resonator comprises a crystal blade working by flexion and having at least two nodal points, suspension means supporting the blade at one nodal point, and means for limiting movement of the blade located adjacent to at least one further nodal point.

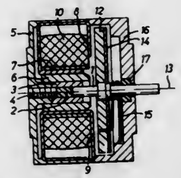
3,678,310
INSTRUCTIONAL ELECTRIC MOTOR
David E. Munn, Framingham, and Robert Maddestra, Hyde Park, both of Mass., assignors to Damon Corporation, Needham, Mass.
Filed June 30, 1971, Ser. No. 158,295
Int. Cl. H02k
U.S. Cl. 310—40 MM **4 Claims**

An electric motor that can be assembled by hand. The motor comprises a base having a plurality of holes in its periphery for housing bar magnets and a central elevated por-



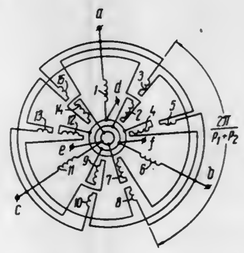
tion having metal contact means that can be attached to a power source. An armature is rotatably mounted on the central portion of the base and has a continuous coil thereon, with each end of said coil contacting the metal contact means.

3,678,311
ELECTRIC MOTOR
Frederick William Mattingly, Middlesex, England, assignor to Toolmasters Limited, Hillingdon Heath, Middlesex, England
Filed Jan. 25, 1971, Ser. No. 109,436
Int. Cl. H02k 21/12
U.S. Cl. 310—156 **9 Claims**



An electric motor comprising a rotor magnet of magnetically anisotropic material which has a plurality of regions each of which is magnetized in a preferred direction parallel to the axis of rotation of the rotor, alternate regions being magnetized in opposite directions so as to form north and south poles associated with a side of the rotor which faces pole pieces of a stator.

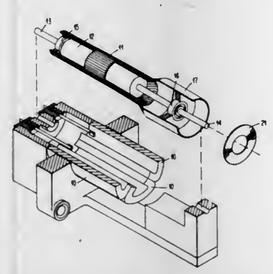
3,678,312
WINDING OF ALTERNATING CURRENT ELECTRIC MACHINE
Anatoly Ivanovich Antonenko, Kiev, U.S.S.R., assignor to Institut Elektrodinamiki Akademii Nauk Ukrainskoi SSR, Kiev, U.S.S.R.
Filed Feb. 24, 1971, Ser. No. 118,305
Int. Cl. H02k 3/00
U.S. Cl. 310—185 **4 Claims**



The invention relates to a winding of an alternating current electric machine combining the functions of two windings

having a different number of poles which comprises coils forming branches and distributed on a magnetic core. Some ends of these coils are connected to the terminals corresponding to one number of poles P_1 and the other ends thereof are connected to the terminals corresponding to the other number of poles P_2. At least one of said branches is made of at least two coils, the angle between the axis of which is approximately multiple to $2\pi/(P_1+P_2)$ radians, while the number of turns of one coil of the branch is proportional to the sine of the angle between the axis of the other coil and the axis of the same branch in electrical degrees.

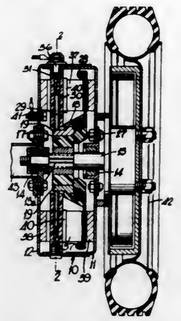
3,678,313
MOTOR ARMATURE HAVING AN INTEGRAL DRIVING SURFACE
John E. Parker, Longmont, Colo., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Feb. 19, 1971, Ser. No. 116,774
Int. Cl. H02k 13/04
U.S. Cl. 310—236 **7 Claims**



An integral capstan and tubular printed circuit armature for use in an electrodynamic machine, wherein individual printed circuit armature winding conductors are formed on both the inside and the outside surface of an epoxy-fiberglass tube. The inner and outer conductors are electrically interconnected at the ends of the tube. The annular band of the metallic interconnected tabs at one end of the tube extend beyond the area of interconnection and physically attach to and mount a second fiberglass tube which is the mounting portion of the capstan.

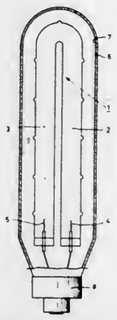
3,678,314
DISCOIDAL ELECTRIC MOTOR
Alastair Howroyd Carter, Two Willows, The Crescent, Hampton-in-Arden, England
Continuation-in-part of Ser. No. 727,208, May, 1968, abandoned. This application June 17, 1970, Ser. No. 47,099
Int. Cl. H02k 1/22
U.S. Cl. 310—268 **9 Claims**

An electric motor has a disc-shaped armature consisting of a plurality of overlapping coils lying in the general plane of the disc, each coil having a plurality of turns. Each coil has radial runs of wire lying side by side in the plane of the disc and interconnecting ends lying side by side in a tangential plane. The coils nest together in an annular array with one radial run of each coil lying directly over and closely adjacent a radial run of another coil spaced by several intervening coils in the array. The whole armature is encapsulated in a mass of a synthetic resin material with the outer ends of the coils lying in an outer ring of the mass, the inner ends of the coils lying in an inner ring of the mass and a thin disc portion of the mass enclosing the radial runs of the coils. There is a commutator connected



to the coils and co-acting with brushes and a fixed pole structure having pole faces closely adjacent the thin disc portion of the encapsulating mass.

3,678,315
LOW-PRESSURE SODIUM VAPOR DISCHARGE LAMP
Gustaaf Adolf Wesselink; Thomas Helmes; Arie Jan Rudolf De Kock, and Jan Goorissen, all of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Dec. 7, 1970, Ser. No. 95,435
Claims priority, application Netherlands, Dec. 13, 1969, 6918745
Int. Cl. H01J 61/18
U.S. Cl. 313—27 **1 Claim**

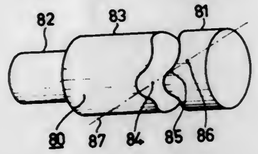


A low-pressure sodium vapor discharge lamp subject to high current load employs a predetermined quantity of indium in addition to the sodium. This enables operation of the lamp under high current conditions without the need of an appendix.

3,678,316
PLURAL BEAM CATHODE RAY TUBE HAVING BOUNDARY-SHAPED CYLINDRICAL ELECTRODES CORRECTING BEAM ABERRATION
Piet Gerard Joseph Barton, Emmasingel, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Feb. 5, 1970, Ser. No. 8,871
Claims priority, application Netherlands, Feb. 8, 1969, 6902025
Int. Cl. H01J 29/50, 31/20, 29/02
U.S. Cl. 313—69 C **2 Claims**

A cathode ray tube comprising an electron gun for produc-

ing a plurality of beams located in a flat plane passing through the axis of the electron gun. The electron gun system comprises at least two cylindrical electrodes arranged in consecu-

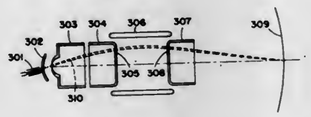


tive order and surrounding the beams. The ends of the two electrodes confronting each other are shaped to provide an aberration reducing electrostatic field for those electron beams that do not coincide with the axes of the two electrodes.

3,678,317
ELECTRON LENS FOR CONVERGENCE OF PLURALITY OF BEAMS

Yoshizumi Terazawa, and Kazuo Ayaki, both of Tokyo, Japan, assignors to Nippon Electric Company, Limited, Tokyo, Japan

Filed July 23, 1970, Ser. No. 57,481
Claims priority, application Japan, July 25, 1969, 44/59150
Int. Cl. H01j 29/00, 29/50, 31/00
U.S. Cl. 313—69 R 4 Claims



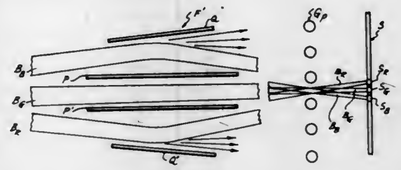
An electron lens transmitting a plurality of electron beams from a source thereof to converge at different points on a screen whereby aberrations are caused to occur thereat, and each of two electrodes included in the lens are formed with spaced elongated openings of preselected configurations and predetermined dimensions in electrode sections adjacent to spaced peripheries of the electron lens for transmitting the respective beams through the peripheral openings in the respective electrodes to converge at a common point on the screen to minimize aberrations thereat.

3,678,318
CATHODE RAY TUBE HAVING DIVERGENT DEFLECTION PLATES FOR CONVERGING THREE BEAMS

Susumu Yoshida; Akio Ohgushi, both of Tokyo; Senri Miyaoka, Kanagawa-ken, and Yoshiharu Katagiri, Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 697,414, Jan. 12, 1968, Pat. No. 3,448,316. This application June 2, 1969, Ser. No. 829,423. The portion of the term of this patent subsequent to June 3, 1986, has been disclaimed.
Int. Cl. H01j 29/50, 31/20, 29/70
U.S. Cl. 313—70 C 3 Claims

In a cathode ray tube in which a plurality of electron beams are focused on a screen by a focusing lens from which at least certain of the beams emerge along paths divergent with respect to the tube axis, and each of the beams emerging along a divergent path is deflected to cause convergence of the beams at a common area of the screen; such deflection of each diverging beam is effected by a pair of plates at different electrical potentials disposed at opposite sides of the respective divergent path to electrostatically deflect the beam therefrom, and the plate which is at the side of the respective divergent path away from which the beam is deflected is also divergent

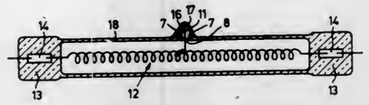


from the tube axis in the direction toward the screen so as to avoid impingement on such plate of electrons from the respective beam.

3,678,319
FILAMENT SUPPORT FOR TUBULAR LAMP

Victor Rosalie Noteiteirs, and Eduard Josef Philomena Janssen, both of Emmasingle, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 30, 1971, Ser. No. 175,866
Claim priority, application Netherlands, Sept. 3, 1970, 7013031
Int. Cl. H01j 1/88
U.S. Cl. 313—271 3 Claims

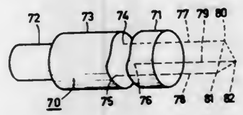


The invention relates to an electric filament lamp having a tubular envelope, in which a coiled coil filament is stretched. The filament is supported by a wire support a coiled part of which encloses a part of one turn of the filament, the inner diameter of said coiled part being maximum 1.5 times the outer diameter of the turn, and the length being minimum 1.5 times said outer diameter.

3,678,320
CATHODE RAY TUBE HAVING TRIANGULAR GUN ARRAY AND CURVILINEAR SPACING BETWEEN THE FOURTH AND FIFTH GRIDS

Piet Gerard Joseph Barten, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 769,612, Oct. 22, 1968, abandoned. This application Aug. 21, 1970, Ser. No. 66,072
Claims priority, application Netherlands, Nov. 11, 1967, 6715341
Int. Cl. H01j 29/50, 31/20, 29/02
U.S. Cl. 313—70 C 1 Claim

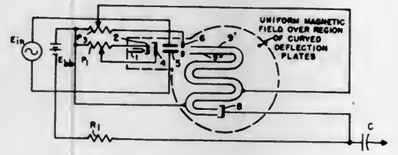


A single gun cathode ray tube for the display of colored television images including a separate cathode for each electron beam and common first, second, third, fourth and fifth grids, each having apertures for each beam. The ends of the fourth and fifth grids facing each other define a boundary having a sinusoidal shape.

3,678,321
SIGNAL AND NOISE SEPARATION UTILIZING ZERO CROSSING ELECTRON TUBE AND CIRCUIT

Mortimer H. Zinn, West Long Branch, N.J., assignor to The United States of America as represented by the Secretary of the Army

Division of Ser. No. 144,799, Oct. 12, 1961. This application Aug. 26, 1964, Ser. No. 398,139
Int. Cl. H01j 29/74
U.S. Cl. 313—78 1 Claim

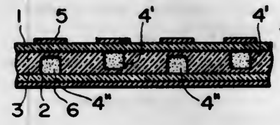


The invention consist of an electron tube and circuitry which operate to determine whether a zero crossing of a wave consisting of signal mixed with noise is followed by a second zero crossing at a time not less than a predetermined interval. Accordingly, an output signal is produced whenever a true signal is present at the input; thereby, separating signals from noise.

3,678,322
MULTI-COLOR PLASMA DISPLAY PANEL

Hiroshi Souri, Tokyo, Japan, assignor to Iwatsu Electric Company, Ltd., Kugayama, Suginamiku, Tokyo, Japan

Filed Nov. 27, 1970, Ser. No. 93,025
Claims priority, application Japan, Nov. 29, 1969, 44/95381
Int. Cl. H01j 11/02, 61/30, 65/00
U.S. Cl. 313—201 3 Claims



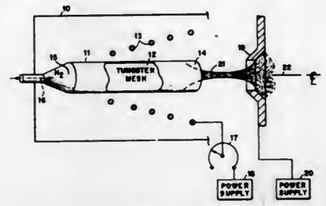
In a plasma display panel comprising a center glass plate having plurality of openings each containing luminous gas, a pair of outer glass walls on the opposite sides of the center glass plate for sealing the gas and a plurality of electrodes on the outer surfaces of the outer glass walls for exciting the luminous gas, the openings are in the form of blind openings opened on the opposite surfaces of the center glass plates and are sealed with gasses of different discharge colors, thus providing a multi-color display panel.

3,678,323
HYDROGEN ION BEAM GENERATING ELECTRODE

John E. Osher; John D. Kinney, both of Alamo, and James F. Steinhaus, Livermore, all of Calif., assignors to The United States of America as represented by the United States Atomic Energy Commission

Filed Dec. 8, 1970, Ser. No. 96,145
Int. Cl. H01j 17/26
U.S. Cl. 313—231 7 Claims

A hollow metallic electrode having a metallic mesh in the central portion thereof and a variable temperature heater for generating a hydrogen ion beam. By controlling the temperature of the electrode, its output is selectable from molecular hydrogen at temperatures below 1,500° K. to essentially pure monoatomic hydrogen for temperatures near or above 2,800° K. The combination of the electrode output and the source arc then allows a range of selection in ion source output composi-

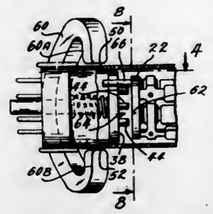


tion of H^+, H^+_2 and H^+_3. Above 2,800° K., the source output is essentially pure H^+, from arc ionization of monoatomic hydrogen.

3,678,324
CATHODE RAY TUBE HAVING STANDBY CATHODE ASSEMBLY ON ROTATABLE SUPPORT

James L. Leonard, 102 Archer Drive, Godfrey, Ill.

Filed June 17, 1970, Ser. No. 47,002
Int. Cl. H01j 1/00, 21/22, 29/50
U.S. Cl. 313—236 14 Claims



Apparatus for use in cathode ray tubes and particularly in multi-gun color television picture tubes and like devices to enable substituting for the active cathodes and associated parts other standby cathodes and parts which will restore the tube to full emissive power and substantially double the life of the tube, said apparatus including a multicathode assembly mounted inside the neck portion of the envelope of the picture tube, said assembly having a plurality of active and standby cathodes and associated heater elements mounted thereon, and means including magnetic means for moving said assembly between alternate positions inside the tube envelope whereby selected ones of the cathodes and their associated heater elements are in operative positions and others are not. The present apparatus enables replacement of the active cathodes without requiring any modification of the tube envelope itself, without requiring removal of the tube from the set in which it is installed, and with little or no modification or adjustment of the set to accommodate the change.

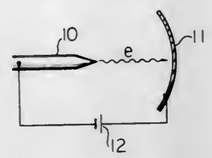
3,678,325
HIGH-FIELD EMISSION CATHODES AND METHODS FOR PREPARING THE CATHODES

Jun Nishida, and Takahumi Ohbora, both of Osaka, Japan, assignors to Matsushita Electric Industrial Company, Limited, Kadoma City, Osaka, Japan

Filed March 10, 1970, Ser. No. 18,176
Claims priority, application Japan, March 14, 1969, 44/21072
Int. Cl. H01j 1/14, 19/06; H01k 1/04
U.S. Cl. 313—346 5 Claims

High-field emission cathodes fabricated by implanting metal ions of low work function into a pointed tip portion of a

formed cathode which is stable at high temperatures and chemically inert to gas molecules including oxygen. The

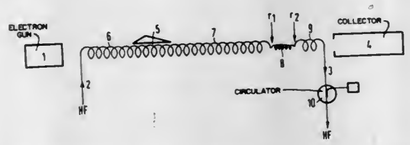


cathodes provide for operation stability for a prolonged period of time with a low applied voltage.

3,678,326
TRAVELLING WAVE TUBE HAVING IMPROVED EFFICIENCY

Hinrich Heynisch, Graefelfing, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Dec. 2, 1970, Ser. No. 94,323
Claims priority, application Germany, Dec. 23, 1969, P 19 64 721.3
Int. Cl. H01j *25/34*
U.S. Cl. 315—3.6 **8 Claims**

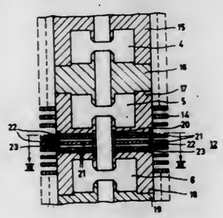


The efficiency of a travelling wave tube is improved by the provision of a resonance section having a decreased delay interval with regard to the normal delay interval of the delay line of the tube. The resonance section is interposed in the delay line at the collector-side end of the delay line in such a manner that reflecting impact points are present at its ends and that at a medium operational frequency of λ_o the length of the resonance section is $l = n\lambda_o/2$.

3,678,327
HEAT TRAP FOR AN AIR-COOLED VHF POWER KLYSTRON

Wolfgang Schmidt, Hamburg-Othmarschen, Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 30, 1970, Ser. No. 93,596
Claims priority, application Germany, Dec. 2, 1969, P 19 60 421.8
Int. Cl. H01j *25/10*
U.S. Cl. 315—5.39 **4 Claims**

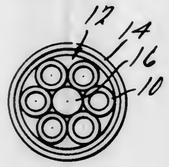


A heat trap for an air-cooled klystron having components stacked to form the drift tube and individual resonators. The heat trap is arranged between the components and comprises a thin wall pipe forming part of the drift tube and having cooling fins attached to the exterior surfaces thereof. The cooling fins apertures for members supporting the stacked components.

3,678,328
CHANNEL MULTIPLIER ASSEMBLY AND METHOD OF MANUFACTURE THEREOF

Fred H. Cross, Birmingham, and Bagdasar Deradoorian, Detroit, both of Mich., assignors to The Bendix Corporation

Filed Nov. 1, 1968, Ser. No. 772,556
Int. Cl. N01j *29/41*
U.S. Cl. 315—12 **2 Claims**

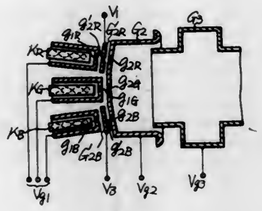


A bundle of individual channel multipliers stacked to form a multiplier array, the individual channels being fabricated of a lower temperature softening glass and the bundle being inserted into a higher temperature softening glass tube, the walls of the individual channels being expanded to fill the interstices within the higher softening temperature tube.

3,678,329
CATHODE RAY TUBE

Senri Miyaoka, Kanagawa-ken, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed June 22, 1970, Ser. No. 48,081
Claims priority, application Japan, June 30, 1969, 44/51893, Japan, June 30, 1969, 44/51892
Int. Cl. H01j *29/50*
U.S. Cl. 315—13 R **14 Claims**

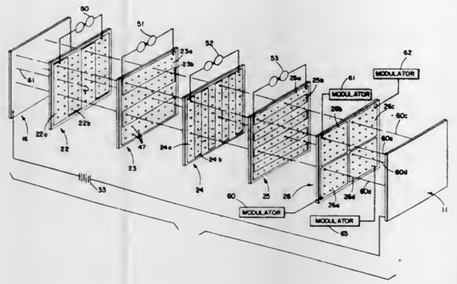


In a cathode ray tube of the type in which a plurality of electron beams are directed toward a phosphor screen by a beam generating assembly and are made to intersect each other substantially at the optical center of a main focusing electron lens by which all of the beams are focused on the screen, the usual grid electrode assembly is provided with an additional or auxiliary electrode for at least one of the beams, which auxiliary electrode has applied thereto a selected voltage by which the beam cutoff voltages for the plural beams can be maintained at selected values while permitting independent control of the modulation conditions for the several beams.

3,678,330
MULTI-BEAM ELECTRON BEAM SCANNER UTILIZING A MODULATION PLATE FOR MODULATING EACH OF THE BEAMS INDEPENDENTLY

Bobby L. Landrum, Palos Verdes Peninsula, Calif., assignor to Northrop Corporation, Beverly Hill, Calif.

Filed May 1, 1970, Ser. No. 33,838
Int. Cl. H01j *29/50*
U.S. Cl. 315—13 R **4 Claims**

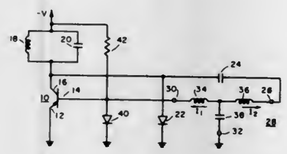


A plurality of flat coded dynode members are sandwiched between an electron emitting cathode in the form of flat plate and a flat target plate. Each dynode member has a plurality of apertures formed therein which are aligned with corresponding apertures on all of the other dynodes, each such set of aligned apertures forming an electron beam channel. The dynodes also each have a pair of separate conductive finger patterns, the finest of such finger patterns defining an elemental scanning area of the target plate. The finger patterns and number of dynodes utilized are chosen so as to provide a predetermined number of simultaneous scanning beams. A modulation grid having apertures therein corresponding to the apertures on the dynode and having separate portions covering the areas encompassed by each of the scanning beams is placed between the cathode and target to control the energization of the beams.

3,678,331
SAWTOOTH CURRENT GENERATOR

Martin Fischman, Wantagh, N.Y., assignor to GTE Laboratories Incorporated

Filed Jan. 22, 1970, Ser. No. 5,062
Int. Cl. H01j *29/70*
U.S. Cl. 315—27 TD **7 Claims**

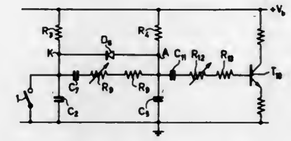


A sawtooth current generator is disclosed which provides a linear time varying current for the coil of a magnetic deflection system of a television display tube. The coil is coupled to the collector of a transistor and the transistor is coupled to a resonant circuit which provides feedback to sustain the circuit oscillations and to actuate the transistor. In addition, a diode is coupled to the collector of the transistor. A constant voltage is maintained across the inductor by the alternate conduction of the transistor and the diode so that a linear time varying current flows in the inductor.

3,678,332
CIRCUIT ARRANGEMENT FOR ADJUSTING THE LINEARITY OF THE DEFLECTION SIGNAL GENERATED FOR A DEFLECTION SYSTEM

Antonius Boekhorst, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed March 10, 1970, Ser. No. 18,135
Claims priority, application Netherlands, March 20, 1969, 6904267
Int. Cl. H01j *29/70*
U.S. Cl. 315—27 R **5 Claims**

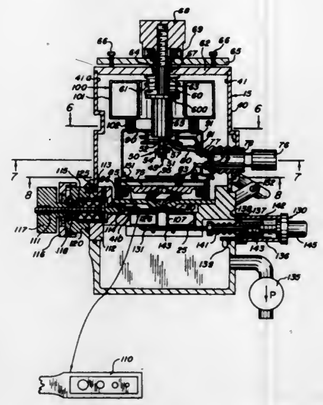


A circuit arrangement for adjusting the linearity of the deflection signal generated for a deflection system, particularly for a field deflection signal in a television receiver. Two RC-networks which are connected through a third RC-network during the sweep are arranged after the field oscillator between supply voltage and earth. The variation of the resistor in this third RC-network renders it possible to vary the curvature of the voltage waveform at the output. During the flyback the two charge capacitors are discharged by means of a diode which is connected parallel to the third network. The frequency amplitude and linearity adjusting members are separated from one another.

3,678,333
FIELD EMISSION ELECTRON GUN UTILIZING MEANS FOR PROTECTING THE FIELD EMISSION TIP FROM HIGH VOLTAGE DISCHARGES

Vincent J. Coates, Los Altos, and Leonard M. Weiler, Saratoga, both of Calif., assignors to American Optical Corporation, Framingham, Mass.

Filed June 15, 1970, Ser. No. 46,425
Int. Cl. H01j *29/56*
U.S. Cl. 315—31 **37 Claims**



A field emission electron gun comprises a field emission tip as its source of electrons. A first anode is spaced downstream from the tip and when a voltage is applied between the first anode and the tip, electrons from the tip are accelerated toward the first anode. An opening in the first anode limits the

angular spread of the electron beam. A second anode is spaced downstream from the first anode and when a voltage is applied between the second anode and the tip, the energy level of the electrons at the image or specimen plane is controlled. The electrostatic field between the first and the second anode brings the electron beam into focus.

For protecting the field emission tip against high voltage discharges, a third electrode in the form of a shield electrode surrounds the field emission tip and is maintained at or near the electrical potential of the tip. Within the shield is a fourth electrode or intermediate electrode which serves, when voltage is applied thereto as an electrode, to draw electrons from the tip and to restore or maintain normal operating conditions for the field emission electron gun. An ion-getter vacuum pump and a reactive sublimator vacuum pump are formed in the electron gun by evaporating a highly reactive element or getter material on the inner walls of the third electrode, which serves as a collector by inducing gas molecules which strike this surface to adhere thereto and to be imbedded therein. The inner walls of the third electrode react with reactive gases present in the region of the tip and the fourth electrode. The ion getter pump operates by ionizing residual gas molecules which are then impelled by electric fields and are imbedded under the coating of sublimed getter material. The primary electron beam from the tip strikes the surface of the fourth electrode, thereby causing reflected and secondary electrons to be emitted from the surface, which electrons form an electron cloud capable of ionizing molecules within the chamber. The electron cloud is formed and the ionized gas molecules are collected by applying the appropriate potentials to the electrodes in the gun assembly. The third electrode may be cooled by a liquid nitrogen cooling system, which functions as a cryogenic vacuum pump. This cooling system can also be used to cool the tip in order to reduce the tip flicker noise resulting in greater stability of electron emission.

3,678,334

NON-THERMIONIC GLOW DISCHARGE DEVICES

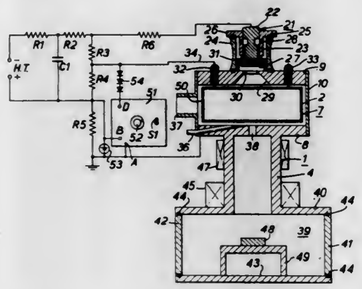
Ronald Arthur Dugdale, Blewbury; Stanley Denis Ford, Newbury, and John Thomas Maskrey, Abingdon, all of England, assignors to United Kingdom Atomic Energy Authority, London, England

Filed Sept. 2, 1969, Ser. No. 854,404

Claims priority, application Great Britain, Sept. 5, 1968, 42,371/68

Int. Cl. H01j *37/06*

U.S. Cl. 315—111 **2 Claims**



A glow discharge device comprising an enclosure and means to maintain a suitable gas in the enclosure at a predetermined pressure. An electrode arrangement is either at least partly disposed within the enclosure or forms part of a wall of the enclosure. The electrode arrangement includes one or more anodes, a cathode, and a control electrode. Power supply means are provided to apply a electrical potentials to the anode or anodes said cathode and said control electrode to maintain a first potential difference between an anode and said cathode to generate a first glow discharge, and to maintain a second potential difference between an anode and said control electrode to generate a second glow discharge. The combined first and second glow discharges produces a beam of charged particles, the power intensity of which is controlled by varying the potential applied to the control electrode to vary the glow discharge independently of the potential applied to the cathode.

3,678,335

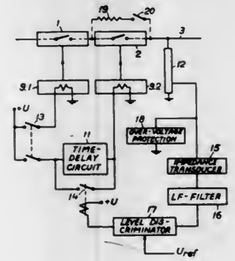
CIRCUIT BREAKER FOR HIGH VOLTAGE DIRECT CURRENT

Walter Pucher, Vasteras, Sweden, assignor to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Filed June 1, 1971, Ser. No. 148,711

Int. Cl. H02h *3/00*, *7/10*

U.S. Cl. 317—11 A **4 Claims**



In a switching device for HVDC comprising two series-connected breaker units, the operating release of the device comprises a time delay means controlled by the voltage of the HVDC network. When breaking at voltages above a certain level, one of the breaker units opens a predetermined time before the other one, thus reducing the switching over-voltage. Below said level, however, the breaker units open simultaneously.

3,678,336

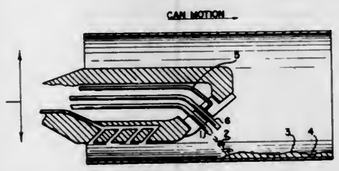
ELECTROSTATIC POWDER STRIPING APPLICATOR

Robert A. Winkless, Oak Lawn, Ill., assignor to Continental Can Company, Inc., New York, N.Y.

Filed July 10, 1970, Ser. No. 53,755

Int. Cl. B05b *5/02*

U.S. Cl. 317—3 **6 Claims**



A powder applicator nozzle is set at an acute angle to the direction of travel of the workpiece. The applicator has corona charging pins to impart an electric charge to the powder coming from the nozzle. Powder is jetted from a powder nozzle past the corona charging pins. Air under pressure is used for cleaning the charging pins to avoid powder particles clinging to the pointed tip and destroying its electrical characteristics.

3,678,337

ENVIRONMENTAL CONTROL APPARATUS

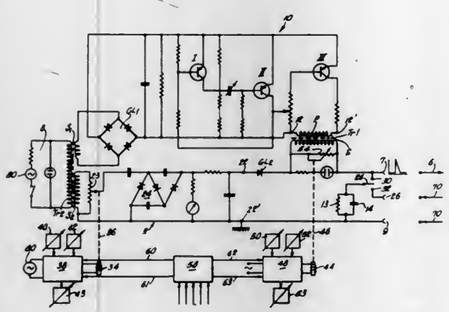
Kurt Grauvogel, Ottweiler, Saar, Germany

Continuation-in-part of Ser. No. 765,605, Oct. 7, 1968. This application July 9, 1969, Ser. No. 840,444

Claims priority, application Switzerland, July 11, 1968, 10432/68

Int. Cl. H05b *3/00*

U.S. Cl. 317—4 **14 Claims**



The apparatus re-creates indoors electric and magnetic fields which occur naturally out-of-doors. A direct current field is created in an enclosure, such as a building, and low-frequency recurring disturbances or pulses are created in the field. The disturbances and/or the direct current field can be varied in time duration and frequency, either in a random manner or a pre-determined pattern, in order to avoid unresponsiveness of the persons in the building to the beneficial effects of the fields.

3,678,338

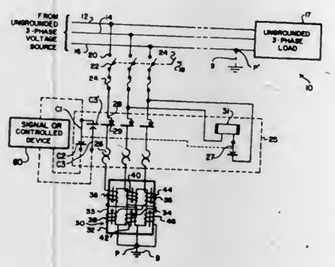
PROTECTIVE AUTOMATICALLY DISCONNECTABLE GROUPING MEANS FOR AN UNGROUNDED A.C. ELECTRICAL DISTRIBUTION SYSTEM

Robert W. Beachley, P.O. Box 11281, Charlotte, N.C.

Filed Feb. 25, 1971, Ser. No. 118,700

Int. Cl. H02h *3/16*

U.S. Cl. 317—18 R **10 Claims**



An ungrounded a.c. electrical distribution system is provided with a protective grounding device in circuit with means for automatically disconnecting the grounding device in the event that a fault to ground occurs on any line of the system. The grounding device can be a transformer having a neutral grounded point. The automatic disconnection means may be circuit breakers or current limiting fuses and may further include a relay assembly having automatically opening contacts. The relay assembly can be thermally operable. The transformer can be a zig-zag transformer. External signal devices can be connected to the relay assembly.

3,678,339

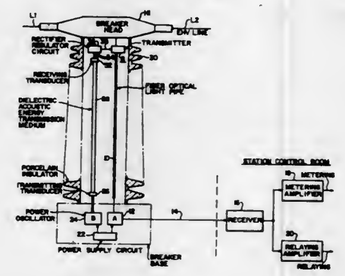
SIGNAL TRANSMITTING SYSTEM FOR EXTRA HIGH VOLTAGE TRANSMISSION LINE

Shan C. Sun, Penn Hills; Paul O. Raygor, Irwin, both of Pa., and , assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed March 25, 1971, Ser. No. 127,874

Int. Cl. H02h *1/00*

U.S. Cl. 317—58 **11 Claims**



An apparatus for providing power for transmitting relaying signals from an extra high voltage transmission line to ground potential which avoids the use of a high cost current transformer and which is immediately effective to provide such signals when the transmission line is initially energized to protect such line if it is energized when a fault is present. The apparatus supplies the power from ground potential to line potential by means of sonic quantity transmitted from a first transducer to a second transducer through an elongated rod-like insulating member which preferably is caused to vibrate at its resonant frequency.

3,678,340

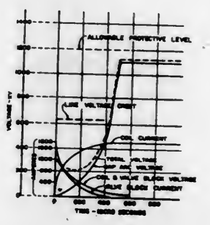
LIGHTNING ARRESTER AND GAP UNIT THEREFOR

John W. Kalb, Medina, Ohio, assignor to The Ohio Brass Company, Mansfield, Ohio

Filed Jan. 7, 1970, Ser. No. 1,186

Int. Cl. H02h *9/06*

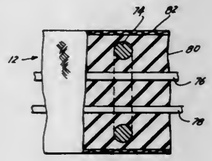
U.S. Cl. 317—61 **16 Claims**



A lightning arrester particularly adapted for extra high voltage AC systems and high voltage DC systems comprising a series of arc gap units and coil assemblies for moving the arcs outwardly. The gap units and coil assemblies are connected in series between a line of the system to be protected and ground without the intervention of series valve blocks. The gap units develop arc voltages greater than the system line to ground voltage so that the gaps can interrupt the power follow cur-

rent, but the total of the gap voltage and coil assembly voltage does not exceed the allowable protective level at any time. The gap units are designed so that the arcs flutter so as to minimize localized overheating and erosion of the gap plate material.

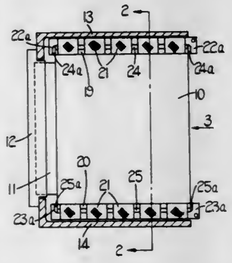
3,678,341
SURGE VOLTAGE PROTECTION SYSTEM
James M. Constable, Flushing, N.Y., assignor to Del Electronics Corp., Mount Vernon, N.Y.
Filed Aug. 5, 1970, Ser. No. 61,379
Int. Cl. H02h 1/04
U.S. Cl. 317—61.5 3 Claims



Protection against surge voltages, particularly in high power applications such as electron welding systems, is provided by causing a pair of electrical conductors carrying current in opposite directions to pass through a toroid of high magnetic permeability, that toroid producing a high inductance in those lines without saturating, that inductance acting in conjunction with protective capacitors connected across the lines so as to minimize the surge voltages produced by short circuits or other abnormalities in the overall system.

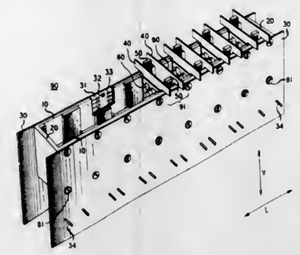
3,678,342
MOUNTING ARRANGEMENT FOR A BOARD WHICH SUPPORTS ELECTRICAL CONDUCTORS
Jeffery Isaac Shaw, Cook Hill, near Alcester, England, assignor to Joseph Lucas Industries Limited, Birmingham, England
Filed Jan. 6, 1971, Ser. No. 104,236
Int. Cl. H05k 7/20
U.S. Cl. 317—100 14 Claims

A mounting arrangement for a printed wiring board has flexible tongues, which include bars secured to opposite sides of the board by braided metal strips, engageable in guides in a



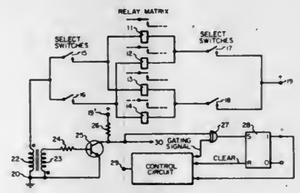
supporting structure by clamps which form part of the guides. The arrangement achieves good thermal conduction between the supporting structure and the boards without applying stresses to the latter.

3,678,343
CERAMIC SUBSTRATE INTERCONNECTION DEVICE
Robert Earl Van Dayne, Fair Haven, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Aug. 30, 1971, Ser. No. 175,869
Int. Cl. H05k 7/14, 7/18
U.S. Cl. 317—100 9 Claims



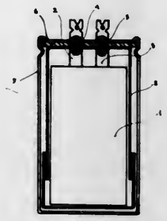
A device for interconnecting a plurality of integrated circuit ceramic substrate pairs via common printed circuit boards substantially comprises a frame having the boards attached thereto in parallel spaced relationship to each other and perpendicular to the individual substrates. Associated with each substrate pair to form a module are first and second camming members and first and second backing plates, each plate being directly adjacent to and in intimate contact with its associated substrate. Upon insertion of the camming members into associated channels on the frame, a force directed longitudinally along the device is applied to the backing plates thereby separating the plates and urging conductive terminals located along opposite edges of the substrates against associated resilient spring contacts mounted on the frame. It is a feature of this invention that the structural backing plate also serves to dissipate heat generated by its associated substrate.

3,678,344
ELECTROMAGNETIC RELAY OPERATION MONITOR
William R. Wedmore, Glen Ellyn, Ill., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.
Filed Feb. 25, 1971, Ser. No. 118,717
Int. Cl. H01h 47/00
U.S. Cl. 317—137 1 Claim



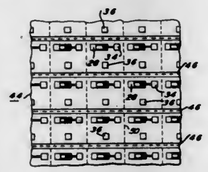
A monitoring circuit is disclosed that is connected to the driving conductor to the relay by a transformer having one winding in series with the drive line from a fast operating, electronic, common control sequencing circuit. The monitor circuit includes a transistor, connected to another winding of the transformer and normally biased to be nonconductive. The transistor is brought into its conductive state by the dip in the operating current flowing in the drive conductor as sensed by the transistor to set a bistable device to record the operation of the relay.

3,678,345
CAPACITOR IMPREGNATED WITH ELECTROLYTE AND OIL CONTAINING DEPOLARIZER
Niels Hvidtfeldt, Snebaervaenget, and Adam Ruttkay, Drosselvej, both of Denmark, assignors to Wicon Kondenstorfabrik A/S, Copenhagen, Denmark
Filed Jan. 22, 1971, Ser. No. 108,925
Claims priority, application Great Britain, Jan. 23, 1970, 3,462/70
Int. Cl. H01g 9/00
U.S. Cl. 317—230 4 Claims



An electrolytic capacitor comprises a capacitance element consisting of a convolutely wound metal and spacer strip assembly, which is impregnated with an electrolyte and additionally impregnated with oil which also completely fills a metal can in which the capacitance element is enclosed.

3,678,346
SEMICONDUCTOR DEVICE AND METHOD OF MAKING THE SAME
Jack M. Hirshon, Doylestown, and Philip D. Warner, Lansdale, both of Pa., assignors to TRW, Inc.
Filed Nov. 10, 1964, Ser. No. 410,182
Int. Cl. H01l 1/14
U.S. Cl. 317—234 R 3 Claims



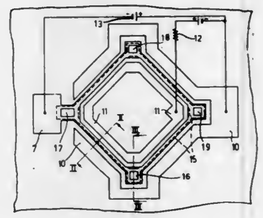
An electrical semiconductor device comprising a flat disc of a semiconductor material of one conductivity type having in one surface thereof an area of the opposite conductivity type to provide a P-N junction with the material of the disc. A protective oxide film covers the one surface of the disc and has two openings therethrough. One of the openings exposes at least a portion of the area of the opposite conductivity type and the other opening exposes a portion of the surface of the disc. A separate electrode of an electrically conductive metal is coated over each of the exposed portions of the disc and the area of the opposite conductivity type. A separate flat terminal strap of an electrically conductive metal having a length substantially greater than its width is secured at one end to each of the electrodes and extends a substantial distance beyond the edge of the disc. The terminal straps lie in a plane juxtaposed and parallel to the surface of the disc and are secured to their respective electrodes along a flat surface of the straps. Also, the straps are arranged so that they are not in alignment with each other. For a three terminal semiconductor device, such as a transistor, a third electrode is provided in a third opening in the oxide film and a third terminal strap is attached to the third electrode and extends beyond the edge of the disc. The third terminal strap is arranged so that it is not in alignment with either of the other two terminal straps.

The semiconductor device is made as part of a large flat wafer of the semiconductor material which contains a plurality of the semiconductor devices and which is cut or broken apart between the semiconductor devices to separate them. A surface of the wafer is coated with a protective oxide film, and the P-N junctions of the semiconductor devices are formed in the surface of the wafer through holes provided in the oxide film. After the P-N junctions are formed, the electrodes for the semiconductor devices are coated on the surface of the wafer through holes provided in the oxide layer. The terminal straps for all of the semiconductor elements are then simultaneously formed and simultaneously bonded to their respective electrodes. The terminal straps may be formed separate from the wafer and then bonded to the electrodes or they may be formed directly on the wafer.

ERRATUM

For Class 317—280 see:
Patent No. 3,677,280

3,678,347
DEEP DEPLETION SEMICONDUCTOR DEVICE WITH SURFACE INVERSION PREVENTING MEANS
Theodorus Joannes Tulp; Johannes Arnoldus Appels, and Else Kool, all of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
Filed June 24, 1970, Ser. No. 49,403
Claims priority, application Netherlands, July 1, 1969, 6910027
Int. Cl. H01l 11/14
U.S. Cl. 317—235 R 11 Claims

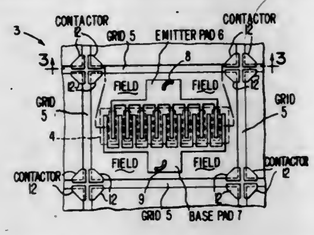


A semiconductor device, for example, a deep-depletion field effection traNsistor, in which the formation of an inversion layer below an electrode provided on an insulating layer is counteracted by a rectifying contact preferably connected to said electrode, as a result of which minority charge carriers below the electrode layer are removed. As a result of this a depletion zone formed by the electrode potential in a semiconductor layer situated below the electrode can expand without hindrance to influence a current path in the semiconductor layer.

3,678,348
METHOD AND APPARATUS FOR ETCHING FINE LINE PATTERNS IN METAL ON SEMICONDUCTIVE DEVICES
Robert L. Reber, Sunnyvale, and James C. Huiskens, San Jose, both of Calif., assignors to Communications Transistor Corporation, San Carlos, Calif.
Continuation-in-part of Ser. No. 62,446, Aug. 10, 1970, abandoned. This application Nov. 23, 1970, Ser. No. 91,734
Int. Cl. H01l 19/00
U.S. Cl. 317—235 12 Claims

A method for etching fine line patterns in a metal film overlaying an apertured insulative layer on a semiconductive sub-

strate is disclosed. In the method, a layer of etch-resistance material is deposited over the metal film to be etched, such etch-resistance layer being apertured with a fine line aperture pattern portion and an open field aperture portion. The open field portion is disposed overlaying the non-apertured portion of the insulative layer. In addition, the layer of etch-resistant material includes a contactor portion bridging between the

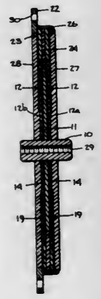


open field portion of the aperture pattern therein and a nearby aperture through the insulative layer to the semiconductive substrate to protect, from the etchant, a conductive bridge between the semiconductive substrate and the field portion of the metal film to be etched. The conductive bridge forms a conductive path independent of the active semiconductive junctions of the semiconductive device being formed. The metal film is then preferably etched in an electrolytic cell.

3,678,349
CAPACITOR

Paul Russo, Franklin Square, N.Y., assignor to Polyflon Corporation, New Rochelle, N.Y.

Continuation-in-part of Ser. No. 49,746, June 25, 1970, abandoned. This application May 19, 1971, Ser. No. 144,910
Int. Cl. H01g 1/08
U.S. Cl. 317—243 14 Claims



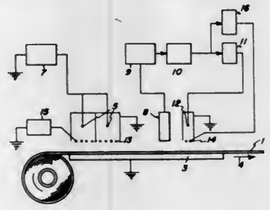
A capacitor is produced by stacking on a rod-like conductor two spaced capacitor discs separated by a metallic disc or radial element all in intimate contact, and encircling the discs with a metal retaining element in contact with the peripheries of the capacitor discs, the metal disc having a smaller diameter. The capacitor discs are formed from plastic materials such as polytetrafluoroethylene polymer or printed circuit board material or the like, clad on both sides with the cladding being removed on one side adjacent the outer periphery and on the other side adjacent a central aperture, the capacitor elements being secured in assembled relationship. A plurality of the aforesaid capacitors can be conveniently secured in stacked relationship to provide increased capacitance.

3,678,350
ELECTRIC CHARGING METHOD

Seiji Matsumoto; Masamichi Sato, and Osamu Fukushima, all of Asaki, Japan, assignors to Xerox Corporation, Stamford, Conn.

Filed April 19, 1971, Ser. No. 134,940
Int. Cl. H01t 19/00
U.S. Cl. 317—262 A 4 Claims

Apparatus for uniformly charging the surface of an insulating member by first charging a portion of the surface to a magnitude smaller than the desired amount of charge by a first charging electrode. The amount of charge thus deposited is subsequently detected and compared with the desired amount

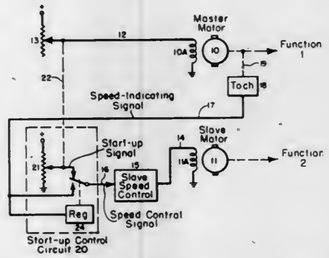


of charge to be deposited. As a result of the comparison, a second charging electrode, spaced apart from the first charging electrode, is energized whereby the total charge applied to the portion of the insulating member previously charged is substantially equal to the desired amount of charge.

3,678,351
MASTER-SLAVE MOTOR SYSTEM WITH START-UP CONTROL CIRCUIT

Richard Shemanske, Ithaca, N.Y., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed May 24, 1971, Ser. No. 146,260
Int. Cl. H02p 1/56
U.S. Cl. 318—61 9 Claims



A control circuit provides start-up speed control for a slave motor from a pot ganged to another pot regulating the master motor speed. The speed of either the master motor or slave motor is sensed. When the sensed speed reaches a preset value, control of the slave motor is switched from the start-up pot to a speed-indicating signal derived from the master motor.

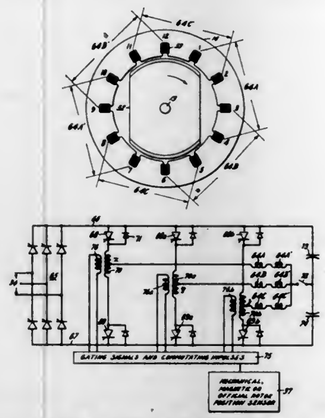
3,678,352
COMPATIBLE PERMANENT MAGNET OR RELUCTANCE BRUSHLESS MOTORS AND CONTROLLED SWITCH CIRCUITS

Burnice D. Bedford, Scotia, N.Y., assignor to General Electric Company

Filed Nov. 6, 1970, Ser. No. 87,484
Int. Cl. H02k 29/00
U.S. Cl. 318—138 9 Claims

Brushless motors have physical and electrical characteristics to be compatible with energization by the simple

square or stepped wave voltages easily produced with inverter type motor control circuits having a small number of controlled switches responsive to a rotor position sensor. These motors employ a few pairs of opposing non-distributed stator windings arranged overlapping or non-overlapping with a

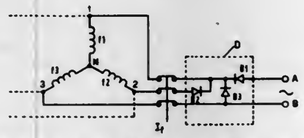


predetermined winding pitch, and a constant gap magnetically polarized or non-polarized rotor with pole faces having related angular dimensions, to thereby produce rectilinear back emf voltages with approximately the same wave shape as the energizing voltages. The circuits can control the applied voltage to adjust motor speed.

3,678,353
ELECTRONIC DEVICE FOR ELECTRICALLY BRAKING INDUCTION MOTORS, PARTICULARLY THREE-PHASE MOTORS

Giorgio Marchi, Via Zuretti 64, Milano, Italy

Filed March 17, 1971, Ser. No. 125,073
Claims priority, application Italy, March 23, 1970, 22287 A/70
Int. Cl. H02p 3/20
U.S. Cl. 318—211 7 Claims



A dynamic brake circuit for an a-c motor which includes a single phase a-c circuit connected across two stator terminals of a three phase motor after the motor energizing circuit is opened. A first diode is connected in series with the single phase a-c circuit and the two stator terminals. Two additional diodes are connected from the stator terminal receiving the first diode to the other two stator terminals, respectively, by the device which connects the single phase a-c circuit to the stator terminals.

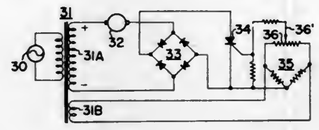
3,678,354
DC MOTOR CONTROL APPARATUS

Tatsushi Kitanosono, Yokohama-shi; Yukio Mashimo, and Yoshiyuki Takishima, both of Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 13, 1969, Ser. No. 865,587
Claims priority, application Japan, Oct. 16, 1968, 43/75378; Oct. 16, 1968, 43/75379; June 6, 1969, 44/44481; Aug. 20, 1969, 44/65817
Int. Cl. H02k 7/22
U.S. Cl. 318—294 7 Claims

Apparatus for controlling the drive of a direct current (DC)

motor to permit it to be rotated reversibly, which comprises a motor driving circuit with a DC motor and switching means connected in series with an alternating current (AC) source and a resistor bridge circuit for controlling the switching

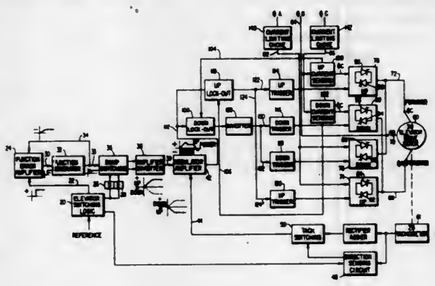


means. The DC motor is driven to rotate reversibly under the control of the switching means to be energized by the output voltage of pickup terminals of said resistor bridge circuit to bring a controlled object into the predetermined position.

3,678,355
CONTROL FOR THREE PHASE A.C. MOTOR

Jiri B. Bucek, and James R. Shultz, both of York, Pa., assignors to Fincor Inc., York, Pa.

Filed Aug. 11, 1970, Ser. No. 62,869
Int. Cl. H02p 1/40
U.S. Cl. 318—203 R 25 Claims



A control for a three phase A.C. motor elevator drive in which direction and desired speed signals, as dictated by customer and user demand, are electronically processed to provide intermediate ramp control signals. A summing circuit which utilizes the intermediate ramp control signal and a signal from an elevator motor speed and direction sensing circuit has an output which determines and controls the voltage input, via electronic trigger controls to thyristor controlled power and reversing switching circuits in at least two channels of the three phase A.C. input to a three phase A.C. drive motor. The motor control circuit incorporates a high rate of off-on and phase reversing switching with phase angle control of voltage and current to provide interrelated variable A.C. power supply for both drive and braking of the elevator drive motor in both directions of movement of the elevator cab.

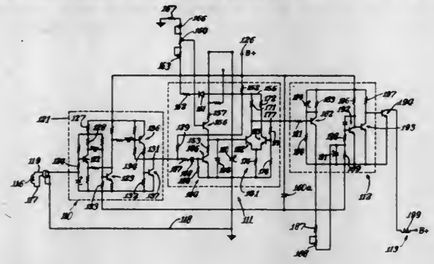
3,678,356
FREQUENCY RESPONSIVE ELECTRICAL CIRCUIT

William F. Van Ostrand, Hagerstown, Ind., assignor to Dynamic Precision Controls Corporation, Hagerstown, Ind.

Filed Sept. 26, 1967, Ser. No. 670,703
Int. Cl. H02p 5/06
U.S. Cl. 318—341 6 Claims

This disclosure deals with an electrical circuit designed to receive a train of input signals and produce an output signal that is indicative of the frequency at which the input signals

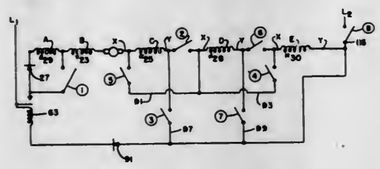
are received. When the frequency of the input signals is below a critical value, the output signal is in the form of pulses having a width which is proportional to the input signal frequency, and when the input signal frequency is above this critical value, the output signal is zero.



3,678,357
MULTIPLE PUSH BUTTON SWITCH SPEED CONTROL SYSTEM

Roy L. Swanke, Newington, and Gordon H. Raymond, Southington, both of Conn., assignors to Dynamic Corporation of America, New Hartford, Conn.

Division of Ser. No. 766,280, Oct. 9, 1968, abandoned. This application April 24, 1970, Ser. No. 31,803
Int. Cl. H02k 23/00
U.S. Cl. 318—245 6 Claims



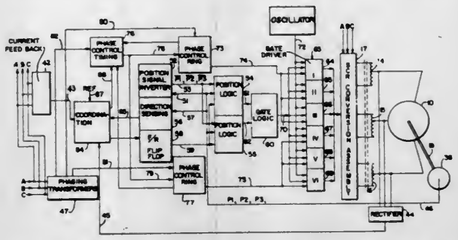
A speed control system for a universal electric motor wherein field windings on one side of the armature are permuted by contacts of a multiple push button switch into a predetermined number of different series and parallel interconnections to achieve a maximum number of significantly different motor operating speeds with a minimum number of switch contacts. The number of speeds thus available is preferably doubled by selectively switching an additional diode and field winding into the field circuit, and a series switch contact is further provided in this circuit to interrupt current flow therein while the winding interconnections are being permuted to reduce the maximum current carried by the permutation switch contacts.

3,678,358
BRUSHLESS DC ADJUSTABLE SPEED DRIVE WITH STATIC REGENERATIVE DC MOTOR CONTROL

Edwin E. Kolatorowicz, Erie, Pa., assignor to General Electric Company

Filed July 14, 1970, Ser. No. 54,703
Int. Cl. H02k 29/00
U.S. Cl. 318—254 3 Claims

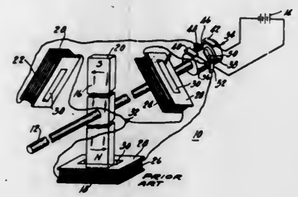
For a brushless direct current motor there is provided a static adjustable speed control circuit including an SCR converter for controlling the average voltage applied to the motor windings by phase control of current flowing directly from a multi-phase power source and for commutating the current through the motor winding to maintain the proper current flow direction and torque. The SCR converter is controlled as a function of rotor position, a-c line input conditions, phase advance and SCR converter voltage output. A voltage feedback signal from the converter output is compared to a reference voltage to derive a comparison signal used to adjust the phase advance and thereby control the average voltage applied to the motor terminals. The polarity of the comparison signal determines whether motoring action or regeneration is to occur. Current feedback from the input lines is used to prevent combinations of SCRs from "turning on" and short circuiting the load.



3,678,359
DIRECT CURRENT MOTOR HAVING IMPROVED COMMUTATION MEANS

Donovan F. Peterson, 655 Meadow Lane, Elm Grove, Wis.

Filed Dec. 21, 1970, Ser. No. 100,061
Int. Cl. H02k 29/02
U.S. Cl. 318—254 5 Claims



A direct current motor of the type having a bar magnet rotor utilizes magnetic reed switches as a commutation means. The reed switches are operable by the bar magnet rotor to effect commutation of the motor.

3,678,360
MOTOR SPEED CONTROL WITH TRANSFORMER FEEDBACK MEANS

William J. Minarik, Los Angeles, and Raymond J. Mason, Lynwood, both of Calif., assignors to Minarik Electric Company, Los Angeles, Calif.

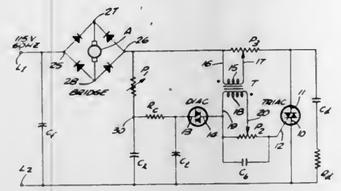
Filed Feb. 2, 1970, Ser. No. 7,740
Int. Cl. H02p 5/16
U.S. Cl. 318—332 17 Claims

A power supply circuit including a Triac for controlling the initiation of current flow to the load during each half-cycle. Firing of the Triac is directly controlled by a diac, and during each half-cycle the firing of the diac is controlled by a timing capacitor which is charged first in one direction and then in the other by current flowing from the alternating current source.

In one form of the circuit the exact firing point of the diac (and hence of the Triac) is also influenced by a feedback transformer which derives a regenerative feedback voltage from the current flowing through the Triac, and which operates when the Triac current increases to advance the point at which the Triac fires.

In another form of the circuit a regenerative feedback voltage is achieved without the use of a transformer, using Zener diodes for line voltage regulation and a number of resistors and capacitors suitably connected in the circuit.

The circuits are illustrated as supplying current to an electric motor, which requires an increase in operating voltage in order to maintain the motor speed constant when the mechanical load on the motor increases.

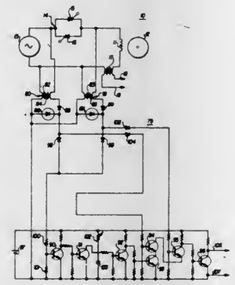


The purpose of the above abstract is to provide a non-legal technical statement of the disclosure of the contents of the instant patent application and thus serve as a searching-scanning tool for scientists, engineers and researchers. Accordingly, this abstract is not intended to be used in understanding or otherwise comprehending the principles of the present invention hereinafter described in detail, nor is it intended to be used in interpreting or in any way limiting the scope or fair meaning of the claims appended hereto.

3,678,361
STARTING CONTROL FOR AN A.C. ELECTRIC MOTOR DEVICE

Hideomi Takahashi, Tokyo, and Katsuhiko Takigami, Kawasaki, both of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Kanagawa-ken, Japan

Filed July 23, 1971, Ser. No. 165,559
Claims priority, application Japan, July 25, 1970, 45/64798
Int. Cl. H02h 7/09
U.S. Cl. 318—473 4 Claims

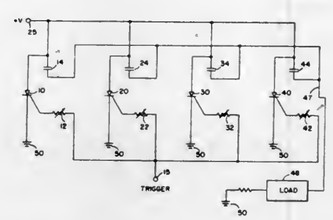


An electric motor is connected to an A. C. voltage supply through a thyristor switching device and is started by the full voltage starting method. In order to prevent the thyristors in the thyristor switching device from a burn-out due to an excessive starting current, the thyristor switching device is controlled to be intermittently turned off during the starting period of the motor under the control of a thyristor temperature rise anticipation circuit. The thyristor switching device is also controlled to be intermittently turned on during the starting period under the control of a thyristor temperature fall anticipation circuit and a synchronous indicating circuit.

3,678,362
SOLID STATE PULSER USING PARALLEL STORAGE CAPACITORS

Donald J. Amberger, Hauppauge, and Robert A. Celentano, Huntington, both of N.Y., assignors to The United States of America as represented by the Secretary of the Army

Filed Sept. 17, 1970, Ser. No. 72,954
Int. Cl. H02m 3/10, 3/18; H03k 3/57
U.S. Cl. 320—1 7 Claims

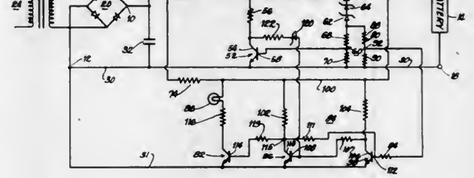


A solid state pulse generator that produces high current narrow pulses and includes a bank of parallel silicon controlled rectifier-capacitor combinations, designed for driving a gallium arsenide diode laser. A trigger circuit is connected to all the gate circuits of the silicon controlled rectifiers, through separate adjustable resistors. The adjustable resistors make it possible to simultaneously fire the silicon controlled rectifiers with a single trigger pulse.

3,678,363
AUTOMATIC BATTERY CHARGER WITH MULTIPLE RATE CHARGING

Richard Bertrem Ringle, Milwaukee, Wis., assignor to Globe-Union Inc., Milwaukee, Wis.

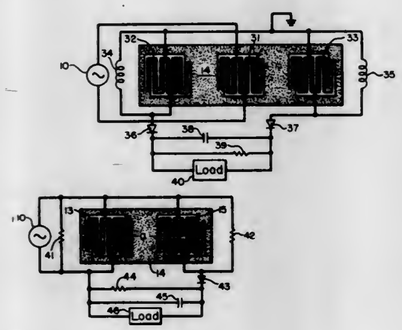
Filed April 6, 1970, Ser. No. 25,916
Int. Cl. H02j 7/10
U.S. Cl. 320—24 13 Claims



A battery charging circuit is disclosed having a multiple mode program of operation for fully automatic battery charging. In a first mode a rectified power supply provides a constant charging current flow to the terminals of a substantially discharged battery. In a second mode, initiated when a prescribed minimum charge is reached, the flow of charging current and the resultant rate of charge are reduced as the battery terminal voltage approaches a certain percentage of full charge. In a third mode, initiated at a prescribed intermediate voltage, charging continues through an unregulated rectified power supply until a maximum terminal voltage is reached. The unregulated current supply is cut off when the maximum voltage is reached, and the limited current supply comes back on in a fourth standby mode which impresses a float voltage upon the battery. This mode continues until the battery is

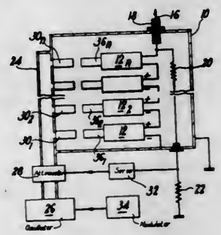
discharged below the prescribed minimum voltage or another battery is connected to the charging circuit, at which time the program is automatically repeated.

3,678,364
SURFACE WAVE DEVICES
Adrian J. De Vries, Elmhurst, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.
Division of Ser. No. 721,038, April 12, 1968, Continuation-in-part of Ser. No. 582,387, Sept. 27, 1966, abandoned. This application May 18, 1971, Ser. No. 144,501
Int. Cl. H03h 9/32; H03d 3/00, 3/16
U.S. Cl. 329—117 **3 Claims**



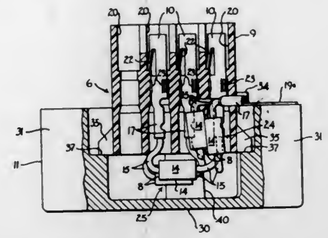
An acoustic filter for use in an FM receiver includes a body of piezoelectric material propagative of acoustic surface waves, a pair of surface wave interaction devices and a diode arranged as a discriminator.

3,678,365
WAVEGUIDE DEVICE FOR BRINGING AN ELEMENT TO A HIGH DIRECT-CURRENT POTENTIAL
Charles Fremiot, Grenoble, France, assignor to Commissariat A L'Energie Atomique, Paris, France
Filed Nov. 23, 1970, Ser. No. 91,766
Claims priority, application France, Nov. 27, 1969, 6940998
Int. Cl. H02m 7/02
U.S. Cl. 321—8 R **13 Claims**



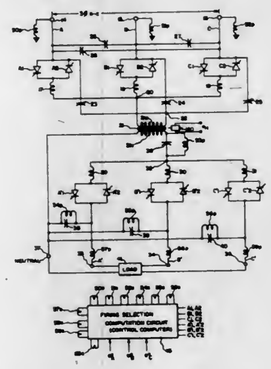
A DC high voltage source comprising a plurality of modules whose outputs are connected in series ending relation and each having a microwave receiving antenna and a rectifier, each receiving antenna is couplet with a respective transmitting antennae fed by a magnetron through a waveguide. The microwaves are preferably modulated at radiofrequency and each module then comprises a step up transformer.

3,678,366
RECTIFIER NETWORK ASSEMBLY
Paul A. Tharman, Milwaukee, Wis., assignor to Briggs & Stratton Corporation, Wauwatosa, Wis.
Filed July 30, 1971, Ser. No. 167,691
Int. Cl. H02m 7/00
U.S. Cl. 321—8 R **5 Claims**



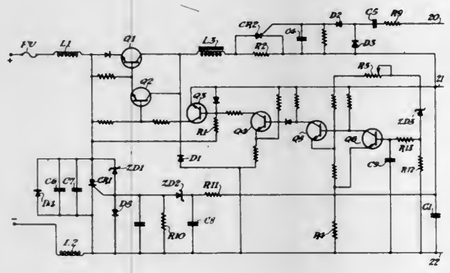
In a rectifier assembly comprising diodes that have wire terminals projecting axially in opposite directions from a cylindrical body, permanent connections between diode terminals comprise crimp connectors integral with terminal members such as plug jacks. The terminal members are seated in bores in a plug body which is partway received in an open topped metal casing. The casing is filled with epoxy that embeds the diodes, their connections with the terminal members and part of the plug body.

3,678,367
VERSATILE POWER CONVERTERS WITH A HIGH FREQUENCY LINK
William McMurray, Schenectady, N.Y., assignor to General Electric Company
Filed May 26, 1971, Ser. No. 146,863
Int. Cl. H02m 5/30
U.S. Cl. 321—7 **37 Claims**



A power converter circuit with a high frequency transformer or capacitor link between input and output switching circuits is operated by a control computer to provide voltage, frequency, and phase conversion and regulation. Each switching circuit has a plurality of solid state switches establishing multiple circuit paths from the input to the output terminals through the single phase high frequency link by conduction of different combinations of switches. Selected combinations of switches are fired synchronously at a high frequency switching rate to generate a series of energy transfer pulses. The control computer operates immediately in advance of each energy transfer pulse to calculate the net effective error, according to a predetermined criterion, between the instantaneous predicted output voltage (or current) and the desired or reference output voltage for each possible combination of switches. The combination that produces the minimum net effective error is selected and fired next. Single phase AC, polyphase AC, and DC input and output switching circuit configurations can be combined as desired.

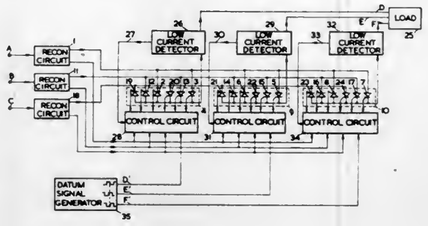
3,678,368
OVERVOLTAGE PROTECTION ARRANGEMENT FOR POWER CONVERTERS
Ralph Popp, Pittsburgh, Pa., assignor to Westinghouse Air Brake Company, Swissvale, Pa.
Filed March 15, 1971, Ser. No. 124,365
Int. Cl. H02m 1/18
U.S. Cl. 321—11 **1 Claim**



A controlled rectifier is connected in multiple across a non-regulated d.c. source which supplies operating energy to a transistorized d.c. to d.c. converter apparatus. Also connected across the source, oppositely poled, is a Zener diode with a reverse breakdown voltage greater than the normal source voltage but less than the breakdown potential which damages the transistors in the voltage regulator portion of the converter. A gating signal is applied to the controlled rectifier if Zener diode breakdown occurs due to a sustained increase in source voltage. A fuse interrupts the leads from the source when the resulting high current flows through the controlled rectifier and protects the transistors from damage. Another Zener diode is connected, with reverse polarity, across the connections between the regulator and inverter portions of the converter. Its reverse breakdown voltage is selected just above the normal regulated output voltage, but low enough to protect the transistors in the inverter circuits. This second Zener diode also supplies a gating signal to the controlled rectifier, if breakdown occurs, to protect against an overvoltage due to a fault in the regulator circuits. Additional Zener diodes may be used in similar manner to protect against overvoltage faults at other points in the converter apparatus.

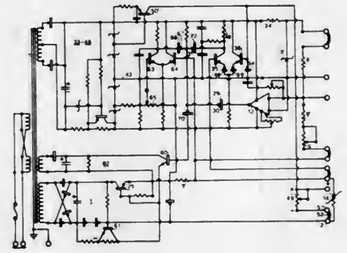
3,678,369
CYCLOCONVERTERS
Reginald John Kingston Splatt, Farnham, England, assignor to Minister of Technology in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England
Filed Oct. 21, 1970, Ser. No. 82,779
Claims priority, application Great Britain, Oct. 24, 1969, 52,193/69
Int. Cl. H02m 5/30
U.S. Cl. 321—69 R **7 Claims**

A cycloconverter with a supply voltage reference signal generator, a datum signal generator, and variable period timing circuits each triggered by an output of the reference signal generator and each operating for a period determined by an output of the datum signal generator. Trigger circuits are controlled by the timing circuits and controlled rectifiers, rendered conductive by trigger signals from the trigger circuits, transmit power from an AC supply to one or more output lines to form a supply at another frequency. Low current detectors in each output line and gating circuits responsive to



an output of the datum signal generator and one of the low current detectors ensure that the trigger signals are not applied to any of the rectifiers when the current flowing in the output line supplied by them is less than a predetermined value or of the opposite polarity to the current which they are connected to conduct.

3,678,370
VOLTAGE LIMITING CIRCUIT FOR CONSTANT CURRENT POWER SUPPLIES
Joseph R. Gately, Woodside, N.Y., assignor to Forbro Design Corp., New York, N.Y.
Filed Oct. 30, 1970, Ser. No. 85,416
Int. Cl. G05f 1/58
U.S. Cl. 323—4 **1 Claim**

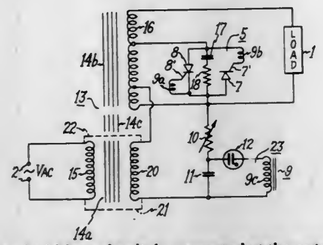


A current regulated power supply employs a current bridge regulating circuit. A voltage limiting circuit is provided using a voltage comparison circuit drawing negligible current so that the current regulation is substantially undisturbed. A back-up current limiter is provided to limit output current in case of malfunction of the main current regulator.

3,678,371
LAMP CONTROL CIRCUIT WITH HIGH LEAKAGE REACTANCE TRANSFORMER AND CONTROLLED BILATERAL SWITCHING MEANS
Joe A. Nuckolls, Hendersonville, N.C., assignor to General Electric Company
Filed Nov. 25, 1968, Ser. No. 778,687
Int. Cl. H05b 41/38
U.S. Cl. 323—6 **3 Claims**

Load power control device for control of the operation of gaseous discharge lamps or other loads comprises a high

reactance transformer having the primary connected to an alternating current voltage source, a secondary connected to



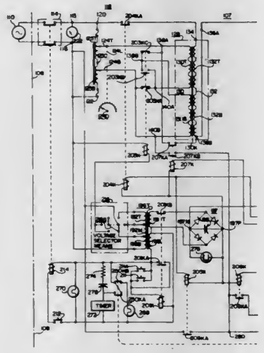
the load, and a bi-lateral switch connected at the output of the high reactance transformer and in parallel with the load for controlling the power applied to the load.

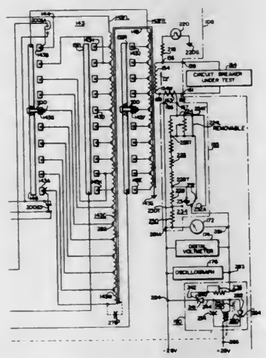
3,678,372

PORTABLE CIRCUIT BREAKER TESTER FOR CALIBRATING A CIRCUIT BREAKER OVER A WIDE RANGE OF CURRENT

Frederick A. Elder, Murrysville, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed April 7, 1970, Ser. No. 26,196
Int. Cl. G05f 1/24
U.S. Cl. 323—45 **5 Claims**





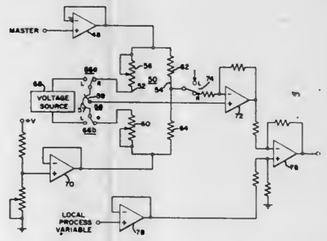
A tester for circuit breakers in which the tapped primary of a power transformer is used in conjunction with the secondary of a voltage boosting transformer controlled by a variable transformer to generate current in the circuit interrupter to be tested. The range of current is continuously variable from zero to approximately 50,000 amperes. A device for measuring the duration of the current in the circuit interrupter is provided and a means for measuring quick surges of current which immediately trip a faulty or overloaded circuit interrupter is provided to determine duration of breaker engagement and maximum current flowing before interruption.

3,678,373

RATIO CONTROLLER WITH ZERO RATIO CAPABILITY

John Edward Riley, Saugus, Mass., assignor to General Electric Company

Filed Nov. 27, 1970, Ser. No. 93,156
Int. Cl. G01r 17/14
U.S. Cl. 323—75 N **8 Claims**



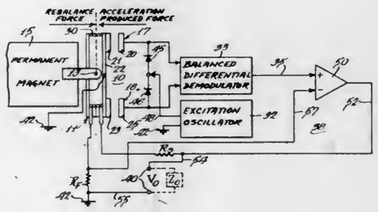
A ratio controller having circuitry for establishing a zero ratio. A master signal provided by a master controller is applied to the upper end of a bridge circuit consisting of two parallel branches. The first branch includes a series-connected potentiometer winding. The second branch includes two series-connected resistors. The ratio of impedances in the second branch can be made equal to the ratio of impedances in the first branch taken between the nominal zero setting of the potentiometer and the upper and lower ends, respectively, of the bridge circuit. An amplifier has a first input connected to the potentiometer tap and a second input connected to the junction of the resistors in the second branch. The output of this amplifier represents the setpoint at which the local process variable should be maintained.

3,678,374

SERVOED TRANSDUCER SYSTEM WITH CURRENT OUTPUT CIRCUIT

Burton J. Thompson, Mount Lake Terrace, Wash., assignor to Sundstrand Data Control, Inc.

Filed Jan. 6, 1970, Ser. No. 966
Int. Cl. G05d 13/62, 15/01
U.S. Cl. 323—90 **15 Claims**



A servoed transducer uses differential sensing capacitors connected to a detector circuit to generate an error signal proportional to movement of a pivoted seismic mass. The error

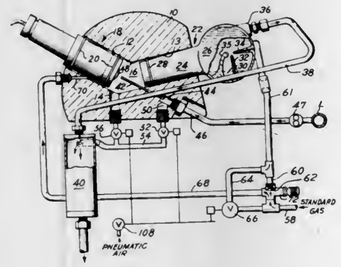
signal is amplified by a servo amplifier with closed loop feedback in order to maintain for a fixed error signal a constant current through a torque coil which rebalances the seismic mass. The servo amplifier output circuit presents zero impedance to an external load.

3,678,375

ELECTRONIC APPARATUS FOR ACCURATELY MONITORING AND RECORDING THE PARTIAL PRESSURE OF A GAS

Otho K. McFarland, Glencoe, and James F. Tamburrino, Chicago, both of Ill., assignors to Abbott Laboratories

Filed Sept. 24, 1969, Ser. No. 4,789
Int. Cl. G01n 27/42
U.S. Cl. 324—29 **5 Claims**



An electronic apparatus for continuously metering and recording the partial pressure of CO_2 including a voltage sensitive meter and recorder. The meter is adapted to receive and read voltage generated by an electrode representative of the partial pressure of CO_2 in a stream of liquid introduced to the electrode. The recorder is adapted to record the voltage output from the meter together with a compensating voltage or in the alternative to record a pre-determined voltage which may be set independently of the voltage output of the meter. Electronic circuitry allows the recorder to automatically monitor the electrode voltage together with a compensating voltage. The circuitry also allows the periodic recalibration of the voltage supplied to the recorder. The calibration and monitoring of the partial pressure of CO_2 may be done either manually or automatically. The electronic circuitry generally includes resistive networks, power supplies, time delay units, solenoid coils and associated relays.

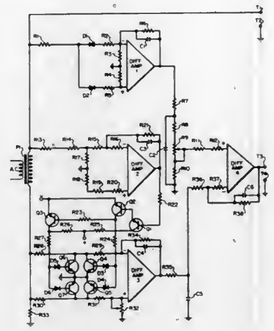
3,678,376

ARRANGEMENT FOR TESTING BREAKDOWN OF THE INSULATION OF A CONDUCTOR UTILIZING AN ALTERNATING CURRENT CIRCUIT TO ELIMINATE STRAY CAPACITANCE EFFECTS

Dale R. Jaster, Northlake, and James S. Nasby, Chicago, both of Ill., assignors to GTE Automatic Electric Laboratories, Inc., Northlake, Ill.

Filed Dec. 14, 1970, Ser. No. 97,826
Int. Cl. G01r 31/14
U.S. Cl. 324—54 **4 Claims**

A circuit for testing breakdown conditions of insulation in networks or circuitry where substantial amounts of stray capacitance exist between the conductor under test and return paths such as ground. Measurement of real current flowing



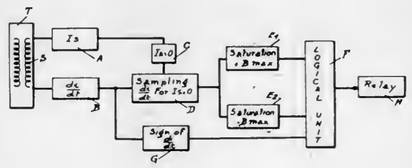
through the network under test permits high speed testing without concern for stray capacitance effects.

3,678,377

APPARATUS FOR DETECTING SATURATION PERIODS OF A TRANSFORMER

Alain Chiffert, Jouy-en-Josas, France, assignor to Compagnie Des Compteurs, Paris, France

Filed Dec. 8, 1970, Ser. No. 96,182
Claims priority, application France, Dec. 11, 1969, 6942943
Int. Cl. G01r 31/06
U.S. Cl. 324—55 **7 Claims**



An apparatus for detecting saturation periods of an electrical transformer in which successive derivative samples of the current flowing in the transformer are compared when the current traverses a zero datum, the signs of the respective derivative samples are also detected, and a logical circuit controlled by the derivative samples as well as their signs functions to produce logic signals of one state or another, i.e., 1 or 0 depending upon whether or not the transformer is saturated.

3,678,378

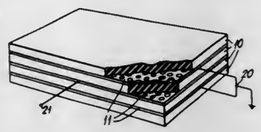
CAPACITORS

John James Trott, Bracknell, and James William Grainger, Camberley, Surrey, both of England, assignors to National Research Development Corporation, London, England

Filed March 28, 1969, Ser. No. 811,513
Claims priority, application Great Britain, April 4, 1968, 16,316/68
Int. Cl. G01r 27/26; H01g 7/00
U.S. Cl. 324—61 R **9 Claims**

A capacitor is described, the capacity of which varies with pressure applied thereto. The capacitor may have sheet metal electrodes separated by natural rubber layers, one at least of

the electrodes being perforated so that when pressure is applied to the capacitor the rubber can deform and the electrodes can move closer together. The capacitor may be connected in a bridge circuit which then gives an output dependent on the pressure applied. The capacitor is useful in measuring wheel and axle loads.



3,678,379

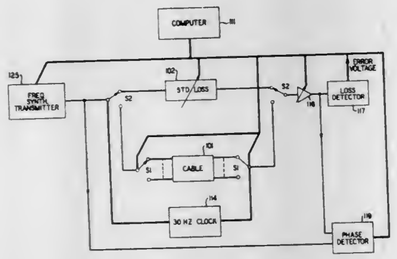
COMPUTER CONTROLLED MULTICONDUCTOR COMMUNICATION CABLE TESTING SYSTEM

Frank Joseph Arvay, Scotch Plains; George Frieber, Basking Ridge; Joseph William Lechleider, Colts Neck, and Robert Anderson Sutton, Whitehouse, all of N.J., assignors to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.

Filed Dec. 4, 1970, Ser. No. 95,029

Int. Cl. G01r *27/00, 15/12*

U.S. Cl. 324—73 **5 Claims**



Automatic sequential testing of the transmission characteristics of the conductors in a multipair communication cable is effected by the use of computer techniques to provide programming and initiation of switching sequences. A standard loss comparison technique is implemented by fast acting connector mechanisms and high isolation switch matrices.

3,678,380

MEASURING DEVICE FOR USE IN MOVING BODIES FOR NAVIGATION PURPOSES TO DETERMINE THE CHANGE OF ORIENTATION THEREOF

Klaus Dieter Erben; Walter Kroy, and Walter Erich Mehnert, all of Munich, Germany, assignors to Messerschmitt-Bolkow-Blohm GmbH, Munich, Germany

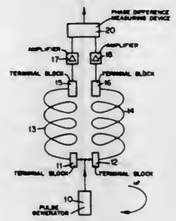
Filed Feb. 9, 1970, Ser. No. 9,484

Claims priority, application Germany, Feb. 17, 1969, P 19 07 838.7

Int. Cl. G01r *25/00*; H03d *13/00*

U.S. Cl. 324—83 A **3 Claims**

Orientation or a change of orientation measuring device for navigation purposes particularly in aircraft and spacecraft. The device utilizes a pair of superconductors wound in coil form connected at one end to a pulse generator and at the other end to a phase difference measuring device. The apparatus utilizes the Sagnac effect derived from the phase difference of the pulses at their output for measuring the orientation or change in orientation of the craft on which the device is carried.



3,678,381

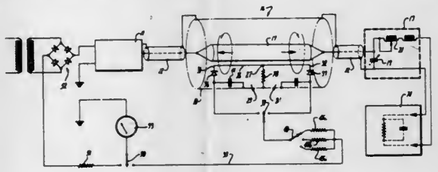
RADIO FREQUENCY WATTMETER

Harvey James Beaudry, Fremont, Calif., assignor to International Plasma Corporation

Filed Aug. 19, 1968, Ser. No. 753,681

Int. Cl. G01r *21/04, 27/04*

U.S. Cl. 324—95 **10 Claims**



A wattmeter for measuring the power delivered by a generator operating at a radio frequency, to a load of variable impedance through a coaxial transmission line, wherein the wattmeter is designed for accurate operation when the load is free from capacitive and inductive reactance as evidenced by the wattmeter indicating zero reflected power.

3,678,382

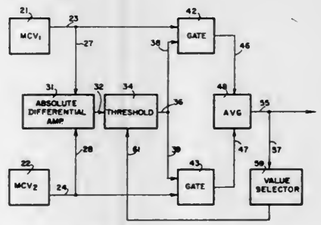
MALFUNCTION DETECTION CIRCUIT AND METHOD

Robert I. Klein, Hialeah, Fla., assignor to Coulter Electronics, Inc., Hialeah, Fla.

Filed April 9, 1970, Ser. No. 27,007

Int. Cl. G01r *7/00*

U.S. Cl. 324—140 R **11 Claims**



In order to detect a malfunction in one or both of two parallel channels carrying the same data, in a dynamic manner, the absolute differential value of the outputs of these two channels is determined and such absolute differential value is compared with a threshold value which is a pre-selected percent of the average value of the output from the two channels. If the absolute differential value is less than the threshold value, the average output is coupled to an output line; however, whenever the absolute differential value exceeds the threshold value, all data is rejected and there is no output.

3,678,383

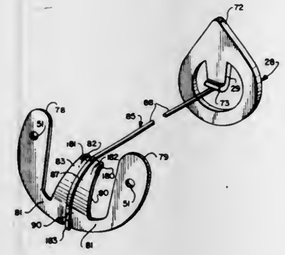
HIGH IMPACT WITHSTANDING TAUT BAND SUSPENSION INSTRUMENT

Willem J. L. Boreas, Sayreville, N.J., assignor to Weston Instruments, Inc., Newark, N.J.

Continuation-in-part of Ser. No. 836,828, June 26, 1969, Pat. No. 3,624,505. This application May 3, 1971, Ser. No. 139,513

Int. Cl. G01r *1/00*

U.S. Cl. 324—154 R **8 Claims**



In a taut band suspension instrument in which each taut band extends between two convex support surfaces and the end portions of the taut band are secured to the respective supports by fused metal connections at points spaced radially from the axis defined by the band, the support surface at the end of the band farther from the rotor is provided with a shallow groove, the bottom of the groove being continuous and uninterrupted and having a width at least twice the width of the taut band, the support surface at the other end of the band being smooth and unbroken for the full width thereof. The combination of the two support surfaces allows the taut band to shift laterally when the instrument is under shock, yet assures that the outer end of the taut band will be properly oriented when installed and thereafter.

3,678,384

ELECTRON BEAM APPARATUS

Charles W. Oatley, Cambridge, England, assignor to Cambridge Scientific Instruments Limited, Cambridge, England, a part interest

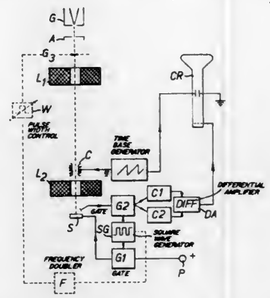
Filed Aug. 25, 1969, Ser. No. 852,710

Claims priority, application Great Britain, Aug. 24, 1968, 40,560/68

Int. Cl. G01r *31/22, 15/12*

U.S. Cl. 324—158 R **13 Claims**

In electron beam apparatus in which an electron beam is caused to impinge on a specimen surface and the resulting secondary electrons are analyzed to show the distribution of electric potential on the surface, the potential on the surface is switched rapidly on and off or the potential on a grid between the specimen and collector is switched rapidly between two levels, and the signals from the collector in the two conditions are directed into two channels, from which the difference signal is used to show the potential of the surface, largely independent of topography and other factors. The beam itself can also be switched on and off at double the switching frequency.



In the grid version there can be a second grid to shield the specimen from the switched grid.

3,678,385

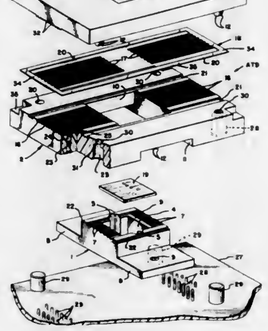
ASSEMBLY AND TEST DEVICE FOR MICROELECTRONIC CIRCUIT MEMBERS

Peter Martin Bruner, Mechanicsburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Sept. 26, 1969, Ser. No. 861,274

Int. Cl. G01r *31/22*; H05k *1/00*

U.S. Cl. 324—158 F **1 Claim**



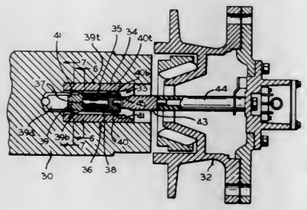
An assembly and test device for microelectronic circuit members has a circuit-holding member provided with an area in which a microelectronic circuit member is disposed and grooves are in communication with the area. A lead frame-holding member has an opening in which the circuit-holding member is positioned and it has grooves for receiving leads of a lead frame, these grooves being disposed in alignment with the grooves of the circuit-holding member when the holding members are latchably secured together. A pressure-applying member is latchably secured onto the lead frame-holding member and it is provided with ribs that are mateable with the aligned grooves of the circuit-holding and lead frame-holding members so that ends of the leads are held in engagement with terminals of the microelectronic member in order that the ends of the leads can be soldered or welded onto the terminals, the ribs also hold the leads in engagement with electrical connectors of the lead frame-holding member. The lead frame-holding member with the circuit-holding member and

the pressure-applying member in position thereon after the leads have been connected to the terminals on the microelectronic member and the leads have been severed from the lead frame is connected as an assembly onto a test board with electrical connectors thereon mated with the electrical connectors of the lead frame-holding member to test the electrical connections between the leads and the terminals and the operation of the microelectronic member over a predetermined time.

3,678,386
APPARATUS FOR DETECTING MOTION AND INDICATING SPEED

Marshall Miles, Wilmette, Ill., assignor to Vapor Corporation, Chicago, Ill.

Filed Nov. 4, 1970, Ser. No. 86,846
Int. Cl. G01p 3/48
U.S. Cl. 324—174 **5 Claims**

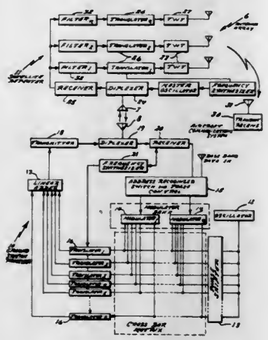


Apparatus for determining whether an axle on a railroad vehicle is locked and for determining axle speed including a permanent magnet and coil assembly fixed to a bearing box and arranged within a splined hole of the axle, and a voltage or frequency responsive indicator connected to the coil.

3,678,387
SATELLITE COMMUNICATIONS SYSTEM

Quintus C. Wilson, Sudbury, Mass., assignor to The United States of America as represented by the Secretary of the Air Force

Filed Aug. 5, 1970, Ser. No. 69,520
Int. Cl. H04b 7/20, 7/00
U.S. Cl. 325—4 **1 Claim**

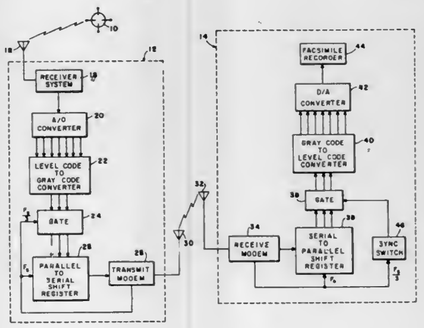


A ground-air communications system is disclosed that includes ground station processors, aircraft, and satellite borne repeaters. Satellite weight and power economies are achieved by scanning with repeater antennas. The preferred embodiment utilizes a phased array antenna having its antenna elements and amplifiers disposed in the satellite borne repeater and its phase shifting and modulating components disposed in the ground station processor. Phase shifted modulated carrier waves are translated in frequency prior to transmission from the ground station processor and are retranslated to their original frequencies by the repeater. Means are provided to lock transmitted and received carrier waves in phase and frequency.

3,678,388
GROUND STATION SYSTEM FOR RETRANSMITTING SATELLITE FACSIMILE SIGNALS OVER DIGITAL DATA LINKS

Reeve D. Peterson, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy

Filed Dec. 14, 1970, Ser. No. 97,862
Int. Cl. H04b 7/20; H04n 1/00
U.S. Cl. 325—4 **2 Claims**



A ground station system for digitally processing automatic-picture-transmission (APT) pictures transmitted by earth-orbiting satellites whereby the processed pictures can be retransmitted over a digital data link to other remote receiving stations. At the transmit end of the system, APT pictures in the form of facsimile signals from satellites are sampled and gray-shade level quantized to produce a serial bit stream. The bit stream is re-transmitted over a digital data link to receiving stations where the received bit stream is suitably processed to thereby convert it to facsimile signals identical to the ones received directly from the satellite.

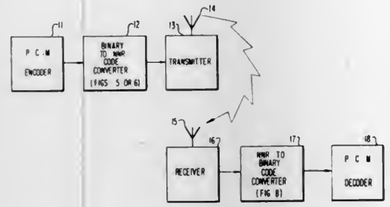
3,678,389
METHOD AND MEANS FOR MINIMIZING THE SUBJECTIVE EFFECT OF BIT ERRORS ON PCM-ENCODED VOICE COMMUNICATION

Arthur F. Heers, San Francisco, Calif., and William G. Schmidt, Rockville, Md., assignors to Communications Satellite Corporation

Filed Oct. 21, 1969, Ser. No. 868,145
Int. Cl. H04b 1/00
U.S. Cl. 325—38 R **13 Claims**

This disclosure concerns a method and a means for minimizing the subjective effect of bit errors on PCM-encoded voice communication. The input signal is assumed to be Laplace distributed with the words in the middle of the code occurring most often. A new code is formulated so that a single bit error in the mid ranges changes the sample level to a minimum degree. In the specific example presented, a seven-bit code having 128 sample levels is employed, with the 63rd and 64th levels bracketing the midpoint. The code word **0000000** is arbitrarily assigned to the 63rd level, and one of its nearest neighbors (words differing from it by a single bit)

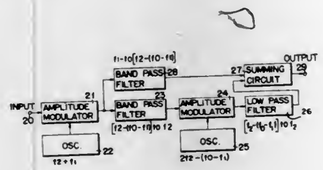
1000000, is assigned to the 64th level. The six remaining or unassigned nearest neighbors of **0000000** are then assigned to levels **57** to **62**, while the six other nearest neighbors of **1000000** are assigned to levels **65** to **70**. Thereafter, the unassigned nearest neighbors of the level **62** word, **0000001**, are assigned to levels **52** to **56**, and so on, until the entire code word pattern is completed. Because of the manner in which the code, which has as yet no recognized name, is generated, it is designated in the disclosure as the "nearest-neighbor-rule" or simply "NNR" code. In order to facilitate the interface with existing PCM communication equipment, the straight binary code coming out of the PCM encoder is converted to the folded binary code, and the folded binary code is then converted to the NNR code. This code is transmitted through a receiving station via any suitable communications link and there decoded by the reverse process, i.e., NNR code to folded binary code to straight binary code and thence to message signal samples. There is no obvious relationship between the binary codes and the NNR code. For a seven-bit code, there are 128 possible combinations; however, the symmetrical properties of the folded binary code reduces the encoding and decoding problem to 32 possible combinations. Conversion between the straight binary code and the folded binary code may be performed serially or in parallel. Conversion between the folded binary code and the NNR code is accomplished by a decoding matrix which selectively reads the contents of one of 32 storage registers.



3,678,390
FREQUENCY MODULATION COMMUNICATION SYSTEM

Masahiro Iwasaki; Nobuyuki Goto, both of Yokohama-shi; Hiroya Fujisaki, and Kunihiko Niwa, both of Tokyo, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed Oct. 8, 1969, Ser. No. 864,670
Claims priority, application Japan, Oct. 11, 1968, 43/73748; Oct. 11, 1968, 43/73749
Int. Cl. H04b 1/62
U.S. Cl. 325—46 **2 Claims**

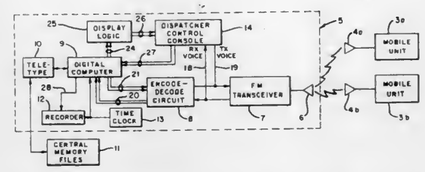


The frequency modulation communication system modifies the frequency spectrum of transmission signals in transmission and reception so as to allow them to have desired characteristics, equivalently improves the signal-to-noise ratio (S/N ratio) and consequently improves the articulation of signals particularly associated with speech, thereby enabling a prescribed frequency band to be prominently compressed. For modification of the frequency spectrum, there are used means for inverting frequency spectra and means for rearranging or interchanging them.

3,678,391
DIGITAL COMMUNICATION SYSTEM

Warren G. Gough, Mountain View, Calif., assignor to Sylvania Electric Products, Inc.

Filed April 6, 1970, Ser. No. 25,841
Int. Cl. H04b 1/00
U.S. Cl. 325—55 **28 Claims**



The dispatcher's equipment and each mobile unit in a police patrol car has a standard frequency modulated (FM) transceiver for communicating with voice messages. Each mobile unit also has digital circuitry for identifying itself, selecting a prescribed digital code message, synchronizing its operation with that of circuitry in the dispatcher's equipment, converting the digital message to an audio signal for transmission by the FM transceiver, converting an audio signal received by the transceiver to a digital message, and presenting a visual display of digital messages transmitted and received. The dispatcher's equipment includes similar circuitry for selecting, displaying, transmitting and receiving digital messages. In order to synchronize transmitting and receiving circuitry, each receiving circuit resets counters in an associated clock circuit on the leading edge of each digital input having a high logic level. Each mobile unit is manually actuated to transmit a signal acknowledging receipt of a digital message. The dispatcher's equipment automatically transmits a signal acknowledging receipt of a digital message. Routine digital messages from mobile units such as requests to go off duty for lunch or for a status check on an automobile license plate number are processed automatically by a digital computer in the dispatcher's equipment. The assignment/availability status of mobile units and recent digital messages received therefrom and transmitted thereto are visually displayed on the dispatcher's equipment.

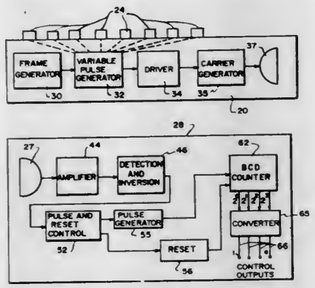
3,678,392
TV REMOTE CONTROL SYSTEM

Larry R. Houghton, St. Joseph, Mich., assignor to Whirlpool Corporation

Filed Oct. 12, 1970, Ser. No. 80,021
Int. Cl. H04b 1/06; H04n 5/44
U.S. Cl. 325—392 **19 Claims**

A remote transmitter for controlling a television receiver generates a reference frame pulse of fixed time duration, which triggers a variable pulse generator. The width of the variable pulse is either incrementally or continuously adjustable to select different command functions. The pulse is coupled to a carrier generator which modulates a carrier or command signal of appropriate frequency for the remote control system. Since only a single carrier frequency is required for the whole system, operation may be limited to narrow band widths facilitating elimination of undesirable noise. A remote control receiver locally generates a series of high frequency

pulses proportional in number to the pulse width of the received remote control signal. The pulses are counted to ac-



tuate a single output corresponding to the selected command function.

3,678,393

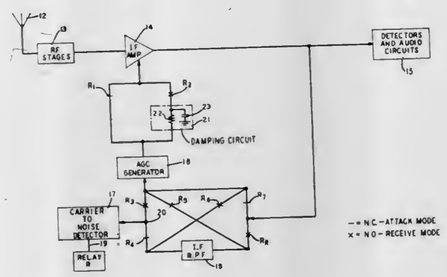
AUTOMATIC GAIN CONTROL HAVING A FAST BROADBAND ATTACK MODE AND A SLOW NARROW BAND RECEIVE MODE

John Anthony Newell, Middletown, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Sept. 30, 1970, Ser. No. 76,819

Int. Cl. H04b *1/16*

U.S. Cl. 325—410 **7 Claims**



An Automatic Gain Control (AGC) circuit having a fast broadband attack mode and a slow narrow band receive mode. A CODAN-like circuit is employed to judge the quality of the received signal. If the quality is poor, the AGC circuit responds to the total received energy. If the quality is good, a narrow band filter along with suitable damping is switched into the AGC loop so that it responds in a stable mode only to the received carrier energy.

3,678,394

SUPERHETERODYNE RECEIVER WITH AUTOMATIC TUNING TO A RECEPTION FREQUENCY

Martin Ebisch, Hohenschaeftlarn, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

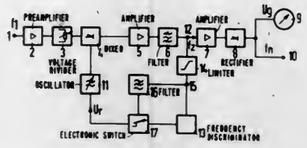
Filed March 23, 1970, Ser. No. 21,880

Claims priority, application Germany, March 24, 1969, P 19 14 919.0

Int. Cl. H04b *1/26*

U.S. Cl. 325—423 **4 Claims**

A superheterodyne receiver having an automatic intermediate frequency control circuit with means to prevent the faulty regulation thereof. The receiver has means for receiving a radio frequency signal and mixing the same with the output of a superheterodyne oscillator. This produces an intermediate frequency signal which is coupled to a frequency or



phase discriminator to produce an error signal for controlling the frequency of the superheterodyne oscillator. A regulation circuit is provided having an electronic switch to interrupt the feedback circuit when only unwanted frequencies tend to produce faulty regulation of the superheterodyne oscillator.

3,678,395

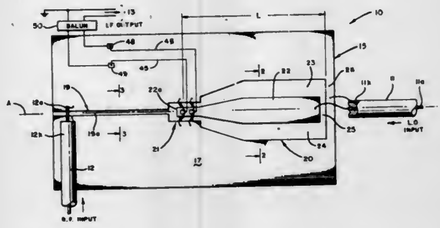
BROADBAND PLANAR BALANCED CIRCUIT

James Keith Hunton, Los Altos; Wayne M. Kelly, Sunnyvale, and James S. Takeuchi, Belmont, all of Calif., assignors to GTE Sylvania Incorporated

Filed Oct. 14, 1970, Ser. No. 79,906

Int. Cl. H03c *1/58*; H04b *1/26*

U.S. Cl. 325—446 **12 Claims**



A broadband planar balanced circuit comprising the junction of slot-line and coplanar-line transmission media. The coplanar and slot lines are formed on one side of a conductively covered dielectric sheet or substrate and are axially aligned. Integrated circuit diodes are connected across the junction and react with microwave energy propagating to the junction along the coplanar and slot lines. The intersection of these two lines has the characteristics of a hybrid junction necessary for the realization of microwave integrated circuit balanced mixers and is also applicable to broadband integrated circuit balanced frequency multipliers.

3,678,396

SIGNAL THRESHOLD CROSSING COUNTER EMPLOYING MONOSTABLE MULTIVIBRATOR TO SUPPRESS EXTRANEOUS CROSSING INDICATIONS

Harold Henry Hoffman, Holmdel, N.J., assignor to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.

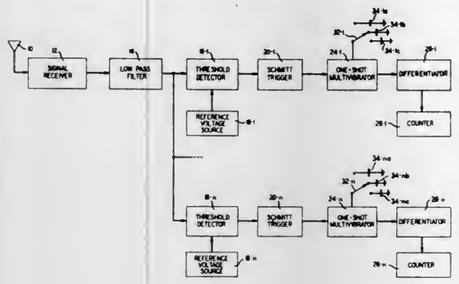
Filed July 28, 1970, Ser. No. 58,859

Int. Cl. H04b *1/10*

U.S. Cl. 325—474 **3 Claims**

This specification describes a signal threshold crossing counter in which extraneous threshold crossing indications caused by high frequency noise signals accompanying an intelligence signal are suppressed by time domain filtering of the crossing indications. This time domain filtering is accom-

plished by means of an inhibiting or blocking monostable multivibrator having an internal time constant intermediate the



period of intelligence signal threshold crossings and the period of the accompanying noise signals.

3,678,397

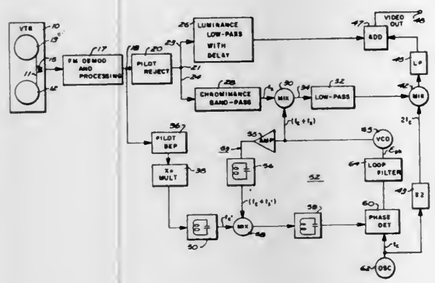
APPARATUS FOR CORRECTING PHASE SHIFTS IN ANGLE-MODULATED SIGNALS

Bert H. Dann, Mountain View, Calif., assignor to Bell & Howell Company, Chicago, Ill.

Filed Oct. 31, 1969, Ser. No. 872,847

Int. Cl. H04b *1/26*

U.S. Cl. 325—423 **3 Claims**



Apparatus for providing an output signal having an angular position which follows in a fixed relationship the angular position of an angle modulated input signal in which a first phase shift is imposed on the input signal during a preliminary processing thereof, in which a second phase shift corresponding to the first phase shift is imposed on a feedback of said output signal, and in which said output signal is produced in response to a process including a heterodyning of said input signal having said first phase shift and said feedback having said second phase shift.

3,678,398

PRESETTABLE FREQUENCY DIVIDER

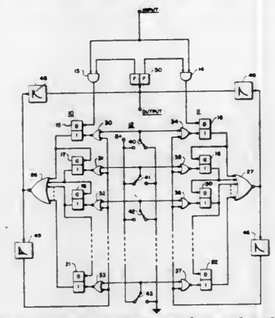
Kai E. Thomenius, Monmouth, N.J., assignor to The United States of America as represented by the Secretary of the Army

Filed March 23, 1972, Ser. No. 127,297

Int. Cl. H03k *21/32*

U.S. Cl. 328—48 **2 Claims**

A frequency divider including two down-counters having common input and output terminals, an input signal steering device, and a presettable logic circuit. The latter includes a series of switches which are preset to establish a particular divisor by establishing an initial count in the down-counters. The steering device includes a pair of gates which steers the input signal to one of the two down-counters which in turn counts the cycles of the input signals. After counting down to



zero, the down-counter generates an input signal which is used by: (1) the steering device, to transfer the input signal to the other down-counter; (2) the presettable logic circuit, to reestablish the count in the down-counters, and the output terminal, to generate the frequency divided output.

3,678,399

METHOD OF AND APPARATUS FOR ELECTRONICALLY OBTAINING THE ARGUMENT OF A COMPLEX FUNCTION

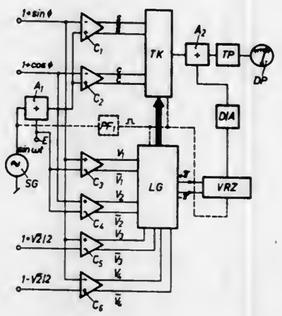
Francois Mottier, Zurich, and Peter J. Wild, Wettingen, both of Switzerland, assignors to Brown, Boveri & Company Ltd., Baden, Switzerland

Filed Jan. 20, 1971, Ser. No. 108,078

Claims priority, application Switzerland, Jan. 22, 1970, 868/70

Int. Cl. H03d *13/00*

U.S. Cl. 328—134 **13 Claims**



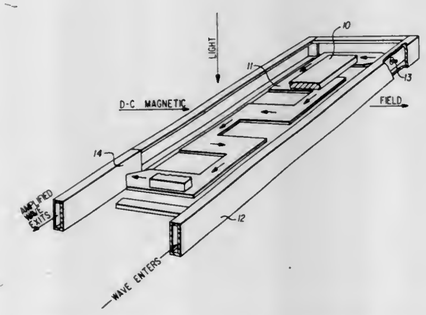
A method and apparatus are disclosed for precisely recovering the arbitrary argument of an output signal from a transducer having a sinusoidal transfer characteristic. The respective function values of the transducer output are continuously compared with a sinusoidally varying reference voltage of known angular frequency and amplitude. The angular frequency of the reference voltage is set sufficiently high so that the value of the transducer output signal does not change appreciably during a cycle of the reference voltage. The amplitude of the reference voltage is made equal to the maximum possible amplitude of the transducer output signal. From this comparison is derived electronically a pulse-width modulated signal, the width of each pulse being determined by the inter-

val between two points in time at which amplitude equality occurs between the transducer output and the reference voltage during each half-cycle of the reference voltage.

ERRATUM

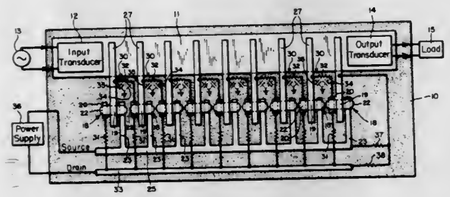
For Class 329—117 see:
Patent No. 3,678,364

3,678,400
$^2S_{1/2}$ IMPURITY MASER
William C. Holton, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.
Filed June 10, 1968, Ser. No. 735,771
Int. Cl. H01s 1/02
U.S. Cl. 330—4 **22 Claims**



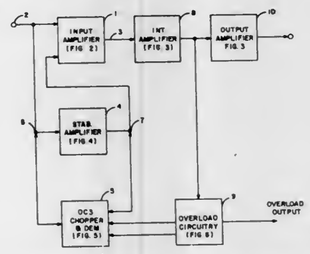
A maser is disclosed in which a predominantly optically transparent crystal of either single or polycrystalline characteristics is used, the crystal containing at sites of cubic symmetry ions having a $^2S_{1/2}$ ground state, an excited state, and a nonzero nuclear magnetic moment, and being mounted in a low temperature device, subjected to a magnetic field, and optically pumped by light energy.

3,678,401
SOLID-STATE TRAVELING-WAVE AMPLIFICATION SYSTEM
Robert Adler, Northfield, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.
Filed Oct. 5, 1970, Ser. No. 77,956
Int. Cl. H03f 3/16
U.S. Cl. 330—5.5 **13 Claims**



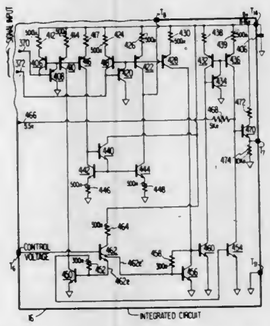
An input transducer launches acoustic surface waves along a piezoelectric propagating medium to an output transducer. An iterative series of solid-state amplifiers is disposed alongside the propagating medium. Associated with each amplifier is a signal delay device. A corresponding iterative series of electrodes, also spaced successively along the propagating medium, individually couple successive portions of that medium to respective ones of the amplifiers. Each electrode responds to wave energy in the medium for feeding an input signal to its associated amplifier and an adjacent electrode responds to the delayed output of that amplifier for producing a field in the medium that re-enforces the wave energy. The principle of operation extends at higher frequencies to the use of an electrical delay line with the electrodes, or simply conductors, individually tapped to respective different portions of that line. In any case, all of the different elements are deposited in solid-state form over the surface of a substrate, resulting in a completely integrated amplification system.

3,678,402
STABILIZED DIRECT COUPLED AMPLIFIER HAVING IMPROVED FREQUENCY RESPONSE AND MINIMUM INTERMODULATION DISTORTION
George F. Tempel, Neptune, N.J., assignor to Electronic Associates Inc., Long Branch, N.J.
Filed March 13, 1968, Ser. No. 717,484
Int. Cl. H03f 1/02
U.S. Cl. 330—9 **1 Claim**



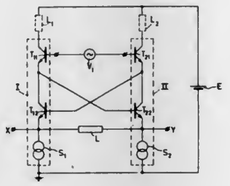
Improved frequency response, lower distortion factors and rapid overload recovery are obtained in a stabilized operational amplifier by eliminating the blocking capacitor at the input to the circuit from the summing junction. This is accomplished by having an insulated gate field effect transistor connected between the summing junction of the amplifier and the first input stage; or, by utilizing insulated gate field effect transistor circuitry as the first amplifier stage.

3,678,403
BALANCED VARIABLE GAIN AMPLIFIER
Jack Craft, Somerville, N.J., assignor to RCA Corporation
Filed Aug. 26, 1970, Ser. No. 66,973
Int. Cl. H03g 3/30
U.S. Cl. 330—13 **11 Claims**



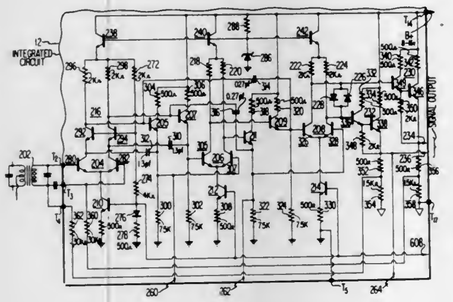
A balanced variable gain amplifier which can be gain controlled without disturbing the DC output level comprising, but not limited to, a complementary output stage characterized by a high signal-to-noise ratio suitable for fabrication on a monolithic semiconductor chip.

3,678,404
LINEAR AMPLIFIER CIRCUIT
Dirk Blom; Adrianus Johannes Wilhelmus Marie Van Overbeek, and Wilhelmus Antonius Joseph Marie Zwijsen, all of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
Filed June 8, 1970, Ser. No. 44,133
Claims priority, application Netherlands, June 10, 1969, 6908784
Int. Cl. H03j 3/04
U.S. Cl. 330—22 **6 Claims**



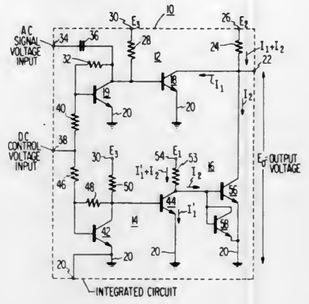
A linear amplifier circuit comprising two stages; each stage further comprising two transistors traversed in series by the same current. Cross coupling between the two stages avoid deviations from linearity of the amplifier due to differences in the base-emitter voltages of the transistors. The circuit is suitable for use in integrated circuits.

3,678,405
AMPLIFIER-LIMITER CIRCUIT WITH REDUCED AM TO PM CONVERSION
Jack Avins, Princeton, N.J., assignor to RCA Corporation
Filed Aug. 26, 1970, Ser. No. 66,921
Int. Cl. H03f 1/38
U.S. Cl. 330—26 **6 Claims**



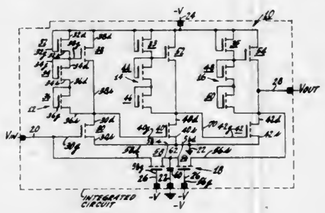
An amplifier-limiter circuit, having a plurality of translating stages, which utilizes positive feedback to obtain an essentially constant phase delay in each translating stage from low signal wave input levels to relatively high input signal wave levels, where each translating stage goes into limiting. As each translating stage goes progressively into limiting, with stronger signal waves, the effect of the positive feedback automatically decreases.

3,678,406
VARIABLE GAIN AMPLIFIER
Jack Avins, Princeton, N.J., assignor to RCA Corporation
Filed Aug. 26, 1970, Ser. No. 66,944
Int. Cl. H03g 3/30
U.S. Cl. 330—29 **8 Claims**



A variable gain direct current coupled amplifier having a fixed DC output level and suitable for fabrication on an integrated circuit chip.

3,678,407
HIGH GAIN MOS LINEAR INTEGRATED CIRCUIT AMPLIFIER
Richard Wilfred Ahrons, Somerville, N.J., assignor to RCA Corporation
Filed March 18, 1970, Ser. No. 20,522
Int. Cl. H03f 3/16
U.S. Cl. 330—35 **12 Claims**

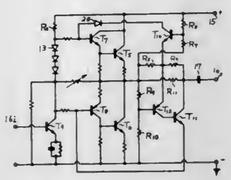


A low power dissipation high load impedance metal-oxide semiconductor field-effect transistor (MOS FET) linear integrated circuit amplifier capable of operation at relatively low power supply voltages with high gain.

3,678,408
TRANSISTOR PROTECTIVE CIRCUIT
Tadao Suzuki, Toyko, Japan, assignor to Sony Corporation, Toyko, Japan
Continuation of Ser. No. 775,386, Nov. 13, 1968, abandoned. This application Dec. 8, 1970, Ser. No. 96,287
Int. Cl. H03f 27/00, 1/38
U.S. Cl. 330—207 P **4 Claims**

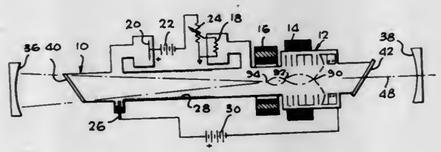
A protective circuit for a transistor which limits the maximum allowable collector power loss so as to prevent the transistor from being destroyed is disclosed. A second transistor is connected in circuit with the main transistor to

control the power loss in the main transistor. In one embodiment the protective transistor has a linear response and in



another embodiment the protective circuit has a different slope in different operating ranges.

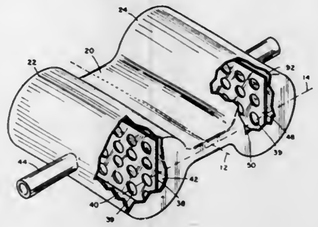
3,678,409
DEFLECTABLE LIGHT MASER
Marion S. Rose, Los Angeles, Calif., assignor to Litton Systems, Inc., Beverly Hills, Calif.
Filed Dec. 17, 1965, Ser. No. 514,723
Int. Cl. H01s 3/10
U.S. Cl. 331—94.5 **14 Claims**



Laser apparatus having a coaxial cathode ray gun having its elements aligned along an axis, the elements including a heater element, a cathode element heated thereby, at least one accelerating electrode element axially removed from the cathode element to propel an electron stream from the cathode, a control grid element interposed between the cathode and the accelerating electrode elements in the electron stream, a focusing electrode element interposed between the control grid element and the accelerating electrode element, all of the elements being substantially symmetrical about the common axis and having apertures formed therein to clear an optical path in the region of said axis, the gun being surrounded and supported by a bulb having optical windows at both ends of the gun along the common axis, the bulb being filled with gas of a type to sustain laser action, and means for raising the energy of the gas in the region of the axis to a lasing threshold.

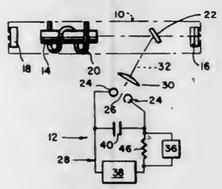
3,678,410
TRANSVERSE FLOW LASER CELL
Robert C. Kocher, Great Neck; Franklin K. Moore, Ithaca; Harold Samelson, Sea Cliff, and William R. Watson, College Point, all of N.Y., assignors to GTE Laboratories Incorporated
Filed Nov. 24, 1970, Ser. No. 92,354
Int. Cl. H01s 3/02
U.S. Cl. 331—94.5 **7 Claims**

A laser cell for a transverse flow liquid laser has an active region in the form of a rectangular prism and cylindrical input and output chambers mounted in spaced-apart relationship in the transverse direction at opposite ends of the active region.



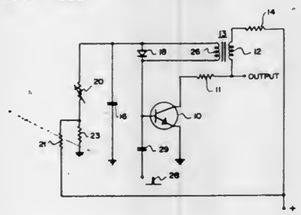
A baffle positioned in the input chamber causes the liquid to flow uniformly through the active region.

3,678,411
LASER Q-SWITCHING MONITORING METHOD AND APPARATUS
Durk J. Pearson, Palos Verdes Estates, Calif., assignor to TRW Inc., Redondo Beach, Calif.
Filed Dec. 18, 1970, Ser. No. 99,355
Int. Cl. H01s 3/02
U.S. Cl. 331—94.5 **11 Claims**



A method of and means for monitoring a Q-switching laser to detect and/or count giant Q-switched pulses emitted by the laser. At least a fraction of the light energy from the laser is focussed within a spark gap biased to a voltage slightly less than its breakdown voltage in a manner such that each giant pulse triggers a spark discharge across the gap. The giant pulses are detected and/or counted by detecting and/or counting the current pulses which occur during the spark discharges.

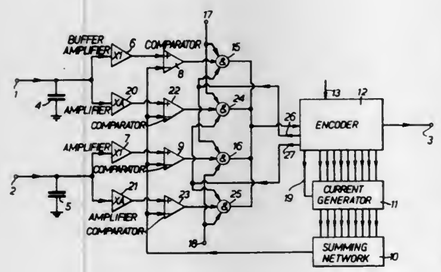
3,678,412
FREQUENCY STABLE BLOCKING OSCILLATOR
Rolf E. Spies, Lyons, Ill., assignor to Motorola, Inc., Franklin Park, Ill.
Continuation of Ser. No. 873,942, Nov. 4, 1969, abandoned.
Filed Feb. 10, 1971, Ser. No. 114,391
Int. Cl. H03k 3/30
U.S. Cl. 331—112 **8 Claims**



A frequency stable blocking oscillator using a timing capacitor to control the conduction of a transistor amplifier

includes a transformer having a primary winding connected to the collector electrode of the transistor and a secondary winding connected between the timing capacitor and the base of the transistor. Upon conduction of the transistor, the voltage induced in the secondary winding is applied to a diode connected to the capacitor to produce a bucking voltage in opposition to and proportional to the magnitude of the DC operating voltage supplied to the oscillator. This bucking voltage establishes the starting charge on the capacitor, with a reduced bucking voltage being applied to the capacitor for a drop in the operating voltage and with an increased bucking voltage being applied to the capacitor when the operating voltage rises, thereby stabilizing the frequency of operation of the oscillator irrespective of variations of the operating or supply voltage.

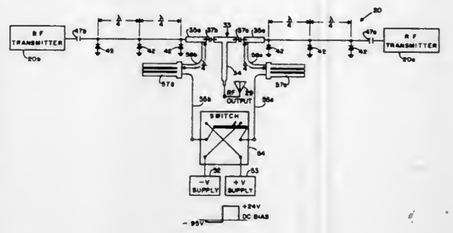
3,678,413
PULSE CODE MODULATION FEEDBACK ENCODERS
Peter John Wakeling, Essex, England, assignor to The Marconi Company Limited, London, England
Filed Dec. 3, 1970, Ser. No. 94,816
Claims priority, application Great Britain, Jan. 3, 1970, 344/70
Int. Cl. H03k 7/00
U.S. Cl. 332—9 R **6 Claims**



A pulse code modulation encoder having two comparators, one receiving analogue signals to be encoded via a unity gain amplifier and the other arranged to receive signals after they have been amplified by a fixed amount. If the analogue signal is above a predetermined value it is fed to the one comparator and if below the predetermined value it is fed to the other comparator. The predetermined value is the voltage represented by the first amplitude digit of the P.C.M. code and dependent upon whether the analogue signal is above or below the predetermined value then AND gates in the comparator outputs are either inhibited or enabled.

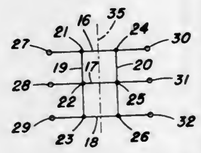
3,678,414
MICROSTRIP DIODE HIGH ISOLATION SWITCH
Ben R. Halliord, Dallas, Tex., assignor to Collins Radio Company, Dallas, Tex.
Filed Oct. 19, 1970, Ser. No. 81,943
Int. Cl. H01p 5/12
U.S. Cl. 333—7 **17 Claims**

A shield enclosed microstrip circuit microwave multi-diode switch with undesired waveguide signal transmission minimized. Diodes are spaced and connective microstrip sections dimensioned for optimum signal isolation in the OFF state. Further, diode dc bias isolation is provided for multi-diode sections of such switches by signal path coupling capacitors, along with dc bias supply RF rejection filtering minimizing loss of signal power and that minimizes disturbance of



signal line impedance over a relatively broad band range of operation.

3,678,415
MULTIPLE PORT HYBRID CIRCUIT
Takaji Kuroda, Tokyo, Japan, assignor to Nippon Electric Company, Limited, Tokyo, Japan
Filed June 25, 1970, Ser. No. 49,650
Claims priority, application Japan, June 30, 1969, 44/51644
Int. Cl. H01p 5/12
U.S. Cl. 333—9 **12 Claims**

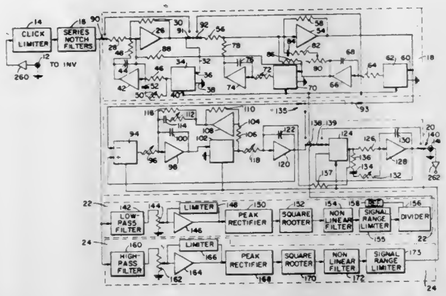


A hybrid circuit adapted to transmit at least n electromagnetic waves in response to a supplied electromagnetic wave, and to synthesize a single electromagnetic wave from *n* supplied electromagnetic waves is disclosed in accordance with the teachings of the present invention wherein *n* conducting channels comprised of *n* spaced conducting means are disposed intermediate *n* pairs of ports, *n* being an integer greater than two. Said *n* spaced conducting means are further disposed in intersecting relationship with *m* spaced conducting means, where *m* is an integer greater than one, to form discrete junctions at the intersecting points thereof. Each of said *n* and *m* conducting means include portions interposed between adjacent discrete junctions such that said portions have effective lengths equal to integral multiples of a quarter of the wavelength of a supplied electromagnetic wave.

3,678,416
DYNAMIC NOISE FILTER HAVING MEANS FOR VARYING CUTOFF POINT
Richard S. Burwen, 12 Holmes Road, Lexington, Mass.
Filed Nov. 3, 1970, Ser. No. 86,398
Int. Cl. H03h 7/10; H04b 15/00
U.S. Cl. 333—17 **24 Claims**

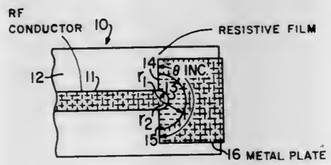
A dynamic noise filter especially adapted for use in high fidelity audio reproduction systems to eliminate perceived noise. Controllable high-pass and low-pass filters are employed which respectively filter the low and high frequency portions of the audio spectrum. A very wide dynamic range of controllable cutoff points is achieved by each filter with different selectable rates of attenuation with frequency. The same attenuation characteristics are maintained throughout the range of cutoff points for each filter. In the presence of masking audio signals a fast attack, slow decay control is

developed for each filter to cause the amount of filtering to decrease with increasing masking signals. The novel noise



filter further features high frequency click impulse reduction, hum noise attenuation, and corner peaking and attenuation rate control.

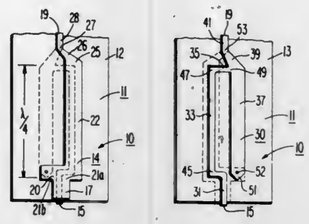
3,678,417
PLANAR R. F. LOAD RESISTOR FOR MICROSTRIP OR STRIPLINE
Lawrence H. Ragan, Dallas, and Charles R. Pratt, Richardson, Tex., assignors to Collins Radio Company, Dallas, Tex.
Filed July 14, 1971, Ser. No. 162,515
Int. Cl. H01p *1/26*
U.S. Cl. 333—22 R **10 Claims**



A planar film RF load resistor useful, in some instances, from dc up into the microwave frequency range and, in other instances, particularly useful through broadband ranges in the microwave frequency spectrum range. It is a planar thin (or thick) film RF load resistor having a smaller radius edge in conductive contact with a like shaped radius edge of an RF signal thin (or thick) film conductor, and a larger radius outer edge in conductive contact with a highly conductive film plate. The radius centers are substantially the same for the planar film RF load resistors with both microstrip and stripline units.

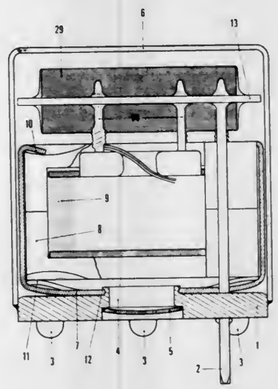
3,678,418
PRINTED CIRCUIT BALUN
Oakley McDonald Woodward, Princeton, N.J., assignor to RCA Corporation
Filed July 28, 1971, Ser. No. 166,771
Int. Cl. H03h *7/38*, *7/42*; H01p *3/02*
U.S. Cl. 333—26 **6 Claims**

A printed circuit balun includes a first relatively broad conductor on a first surface of a dielectric substrate which conductor first-mentioned from an unbalanced end of the balun to a point near the opposite balanced end of the balun. On the opposite or second surface of the substrate, there is provided a second conductor that has a first relatively narrow conductor portion spaced directly opposite the first-mentioned broad conductor. The second conductor also has on the second surface a second relatively broad conductor portion parallel to the narrow portion of the second conductor. The second relatively broad conductor portion of the second conductor is coupled at a point near the unbalanced end of the balun



through the substrate to the first-mentiondd broad conductor on the first surface of the substrate. The narrow conductor portion of the second conductor is joined to the broad conductor portion of the second conductor near the balanced end of the balun.

3,678,419
THREE-TERMINAL MODULAR ELECTRIC FILTERS
Jacques R. Boulin, Paris, and Alexis Nepomiastchy, Bagneux, both of France, assignors to Societe Anonyme de Telecommunications, Paris, France
Filed Dec. 28, 1970, Ser. No. 101,691
Claims priority, application France, Aug. 4, 1970, 7028785
Int. Cl. H03h *7/10*; H05k *1/18*
U.S. Cl. 333—70 S **2 Claims**

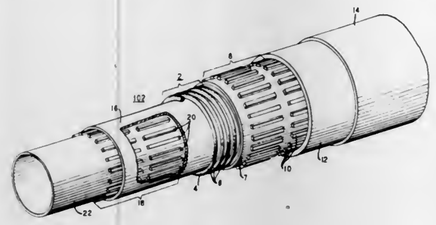


An improved modular construction of a three-terminal electric filter element comprising an adjustable inductance and a plurality of fixed capacitors, comprising an insulating base bearing output pins and assembled to a metal casing, wherein the capacitors are fixed mechanically and connected electrically to a connecting plate which is made of an insulating material and at least one of whose surfaces bears a circuit of electric connections in the form of a printed circuit for connecting the members making up the modular element, and wherein the pins extend through the inside of the casing to engage in holes with which the connecting plate is formed at selected points of the printed circuit.

ERRATUM

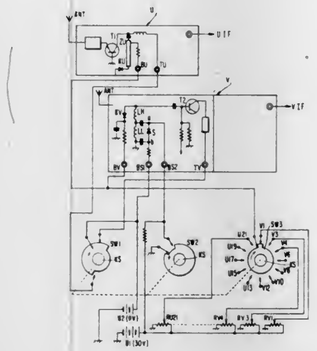
For Class 333—73 see:
Patent No. 3,678,433

3,678,420
SPURIOUS MODE SUPPRESSING WAVEGUIDE
Dietrich Anselm Alsberg, Berkeley Heights, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Oct. 27, 1970, Ser. No. 84,436
Int. Cl. H01p *1/16*, *3/12*
U.S. Cl. 333—95 R **9 Claims**



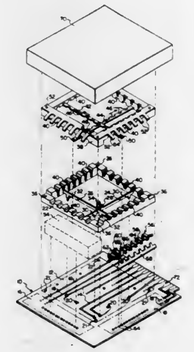
Conversion of the TE_{01} energy mode of electromagnetic wave transmission into spurious or unwanted modes can be reduced by utilizing a dipole array which is interposed in a dielectric lining layer located between the inner wall surface of a conductive waveguide tube and a coupling screen concentric with the tube. A further reduction in mode conversion can be achieved by applying a second dielectric lining containing a dipole pattern around the inside of the coupling screen.

3,678,421
PRESET DEVICE FOR ALL CHANNEL TUNER USING VARIABLE REACTANCE ELEMENT AS TUNING ELEMENT
Ichiro Ono, Tokyo, Japan, assignor to Alps Electric Co., Ltd., Tokyo, Japan
Filed Oct. 6, 1970, Ser. No. 78,518
Claims priority, application Japan, Oct. 6, 1969, 44/95246
Int. Cl. H03j *3/18*
U.S. Cl. 334—15 **5 Claims**



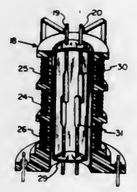
This invention relates to an all channel tuner with means for tuning a variable capacitance element, said means interlocking with an operating shaft of a power source changeover switch. The power source changeover switch changes the polarity of a switching element for short-circuiting part of a coil for the tuning of a VHF tuner. A variable resistor selection switch adjusts a reverse bias to the variable capacitance element. The selection of a desired frequency band and the selection of the variable resistors for a desired channel are simultaneously carried out by the rotation of a channel shaft. A variable reactance element is used as the tuning element. A driver engages the shaft of one of the variable resistors by the pressure in the axial direction of the adjusting shaft. The adjusting shaft is coaxial with the channel shaft.

3,678,422
MINIATURE CROSSBAR SWITCH
William A. Reimer, Wheaton, Ill., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.
Filed July 29, 1971, Ser. No. 167,314
Int. Cl. H01h *67/14*
U.S. Cl. 335—112 **11 Claims**



A miniature crossbar switch adapted to be mounted on and connected through a printed wiring card includes a plurality of orthogonal bus bars; those in a first direction being provided with a fixed electrical contact and those in the orthogonal direction being provided with a movable safety pin type contact element. A like plurality of orthogonally disposed select bars having notches adapted to receive the movable contact element are driven by solenoids in axial translation to urge the movable and fixed electrical contacts together to complete a selected circuit path.

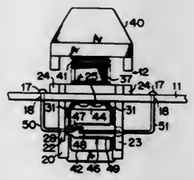
3,678,423
WINDINGS FOR OPERATING EFFICIENTLY CONTACTS OF REEDS WITH CONSTRICTED AREAS
Richard M. Rovnyak, Hanover Park, Ill., assignor to Automatic Electric Laboratories, Inc., Northlake, Ill.
Filed Aug. 31, 1970, Ser. No. 68,288
Int. Cl. H01h *51/28*
U.S. Cl. 335—154 **1 Claim**



The length of an operating winding is related to the positions of constricted areas that result incidentally from forma-

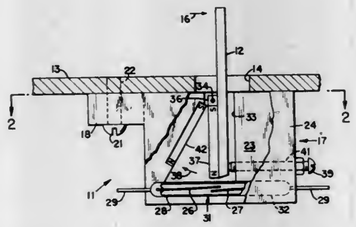
tions of a blade from round wire at one end of each reed. Since sensitivity of a winding for operating the reeds is found to decrease rapidly as the winding becomes longer than the distance between the constricted areas, a sectional winding for operating the reeds is centered over the contacts between the constricted areas, and hold windings, effective after the reluctance of the path has been decreased by closure of the contacts, are positioned in an adjacent winding space.

3,678,424
KEYBOARD SWITCH ASSEMBLY
Hideo Iwashima, and Satoshi Fukao, both of Aichi-ken, Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya-shi, Japan
Filed May 13, 1971, Ser. No. 143,092
Claims priority, application Japan, May 19, 1970, 45/42766
Int. Cl. H01h *13/00*
U.S. Cl. 335—206 **9 Claims**



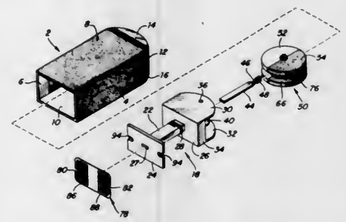
A keyboard switch assembly comprising a flat board printed with key input circuits and perforated with a plurality of apertures; and a plurality of key switch units inserted into the apertures, the unit consisting of a key guide member of synthetic resinous material, a key longitudinally slidable therethrough and a magnetic reed switch connected to the key input circuit so as to be actuated upon key depression.

3,678,425
SELF-CONTAINED REED SWITCH UNIT
Lawrence Holmes, Jr., 22A Byrne Court, Wayne, N.J.
Continuation of Ser. No. 833,126, June 13, 1969, abandoned. This application Dec. 10, 1970, Ser. No. 97,044
Int. Cl. H01h *5/02, 3/16*
U.S. Cl. 335—207 **1 Claim**



A compact and long lived electrical switch has a housing containing reed contacts of ferromagnetic material which are opened and closed by movement of a permanent magnet carried on a pivotable actuator lever. A stationary second magnet within the housing repels the first magnet to generate a force urging the actuator lever towards the unoperated position thereof.

3,678,426
ELECTROMAGNETIC INDICATOR
George E. Pihl, Abington, Mass., assignor to Miniature Electronic Components Corp., Holbrook, Mass.
Filed Aug. 27, 1971, Ser. No. 175,652
Int. Cl. H01f *7/08*
U.S. Cl. 335—234 **12 Claims**

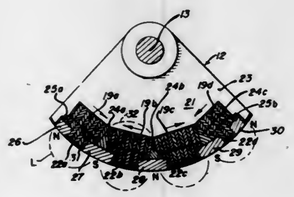


A two position indicating device including an indicator member in the form of a rotor that carries a single permanent magnet and is mounted for rotation between two limit positions which are determined by engagement of spaced-apart portions of the rotor with the end of a pole piece of a stationary electromagnet structure. The electromagnet structure comprises a combined bobbin and rotor support, the rotor support having two spaced ears and the rotor being rotatably mounted to the spaced ears by detent means comprising a hole in each ear and two pins carried by the rotor. Attachment and removal of the rotor is achieved by flexing the two ears apart far enough to release the two rotor pins. A coil is wound around the bobbin and terminal means are provided for energizing the coil to selectively establish first and second electromagnetic fields of opposite orientation for effecting movement of the rotor between its two limit positions.

ERRATUM

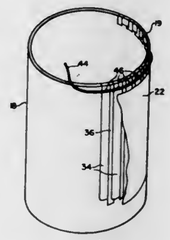
For Class 335—284 see:
Patent No. 3,678,436

3,678,427
MAGNETIC SEPARATOR
Donald G. Morgan, Milwaukee, Wis., assignor to Electronic Memories & Magnetics Corporation, Los Angeles, Calif.
Filed June 10, 1970, Ser. No. 45,095
Int. Cl. H01h *7/02*
U.S. Cl. 335—304 **8 Claims**



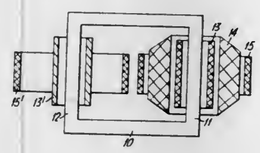
A magnet assembly for use such as in a magnetic separator having means for providing increased lines of flux, increased effective pole area, decreased gap length, improved repelling of flux leak lines at the edges of the magnet poles and reduction in the flux leakage at the rear face of the magnet. Herein these means comprise a magnet element disposed at the extremities of the respective poles to define aiding poles in the magnetic circuit.

3,678,428
INTERWINDING SHIELD FOR POWER TRANSFORMERS
Louis Morris, Campbell, Ohio, and Theodore R. Specht, Sharon, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed May 17, 1971, Ser. No. 143,773
Int. Cl. H01f *15/04*
U.S. Cl. 336—84 **6 Claims**



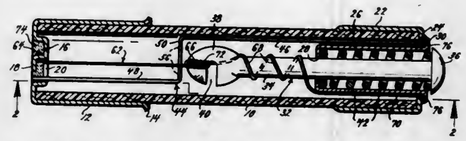
An electrostatic shield for placement between the high and low voltage windings of a power transformer. The shield is constructed from interleaved layers of insulating and conducting strips which are assembled onto an insulating member and placed around the low voltage winding of the power transformer. The shield may be connected to ground potential by means of a header lead which is connected to each conducting strip. The unique construction of the shield provides adequate isolation between the windings without excessive heat development in the conducting strips.

3,678,429
H.V. TESTING TRANSFORMER WINDING ARRANGEMENT
Frank Anthony James Collin, Oldham, England, assignor to Ferranti, Limited, Hollinwood, Lancashire, England
Filed Jan. 8, 1971, Ser. No. 104,953
Claims priority, application Great Britain, Jan. 8, 1970, 901/70
Int. Cl. H01f *27/28*
U.S. Cl. 336—170 **3 Claims**



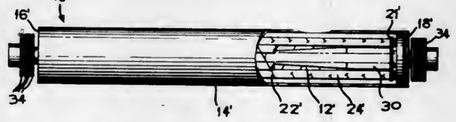
A high-voltage transformer for producing test voltages has a low-voltage primary winding, a high-voltage secondary winding, and a cascade winding. The primary winding is formed by two separate low-voltage windings wound on separate limbs of a ferromagnetic core and connected in parallel so that their magnetic fluxes assist in the wound core limbs. The high-voltage secondary winding is wound over one only of the low-voltage windings. The cascade winding is formed by two separate low-voltage windings connected in parallel and in phase, one being wound over the high-voltage winding on one limb and the other being wound over the low-voltage winding on the other limb.

3,678,430
PROTECTOR FOR ELECTRIC CIRCUIT
Aldino J. Gaia, St. Louis, Mo., assignor to McGraw-Edison Company, Elgin, Ill.
Filed July 19, 1971, Ser. No. 163,884
Int. Cl. H01h *85/10, 85/30*
U.S. Cl. 337—159 **18 Claims**



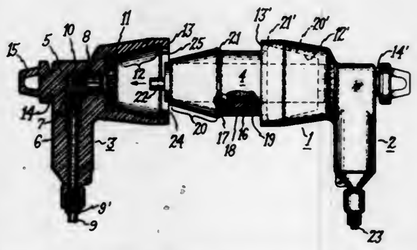
A small diameter, elongated, electric fuse has a casing which encloses and protects a fusible element, an indicating plunger, and a strain wire which normally holds that plunger in retracted position. The fusible element has a portion which is positioned adjacent the inner surface of the casing to permit unobstructed movement of the plunger, has a second portion which is spaced inwardly of the inner surface of the casing so it is largely unaffected by the temperature of the casing, and has a third portion which extends transversely of the casing and which develops a heat barrier and which has an opening to accomodate the strain wire.

3,678,431
HIGH POWER FUSE
LeRoy H. Franklin, 1016 Castlegate Lane, Mountain View, Calif.
Filed Sept. 17, 1969, Ser. No. 858,741
Int. Cl. H01h *85/02*
U.S. Cl. 337—185 **6 Claims**



A high power fuse consisting of a helically wound fusible element forming an interior space within with heat withdrawing means can be operated.

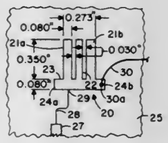
3,678,432
VENTED FUSE MODULE FOR UNDERGROUND POWER CABLE SYSTEM
Vincent J. Bolliver, Pittsfield, Mass., assignor to General Electric Company
Filed April 26, 1971, Ser. No. 137,441
Int. Cl. H01h *85/02, 85/54;* **H01r** *13/52*
U.S. Cl. 337—201 **6 Claims**



A multi-part, separable fuse module having a relatively flexible pair of overlapping surfaces that afford a water-tight seal

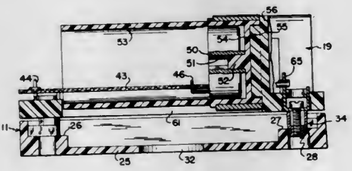
between the parts of the module is provided with gas-venting passage-ways through predetermined portions of these overlapping surfaces in order to enable high pressure gases to temporarily open the passageways and escape from the interior of the module, without allowing water to enter the module. In combination with the fuse module, the invention comprises a rigid clamping member mounted over the relatively separable parts of the module to maintain them in fixed relationship during a gas-venting operation.

3,678,433
RF REJECTION FILTER
Ben R. Halliford, Dallas, Tex., assignor to Collins Radio Company, Dallas, Tex.
Filed July 24, 1970, Ser. No. 58,016
Int. Cl. H03h 7/08
U.S. Cl. 333—73 S **10 Claims**



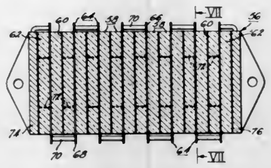
An RF suppression filter using several quarter RF wavelength long strips in parallel that are open-ended to form an RF ground at their common tie-points in the form of a section of conductive line. This base line is extended to terminations at each end to a length beyond the respective outside stubs that enables all stubs to recognize the same electrical reference plane and yet to a length that is short relative to any RF wavelength encountered within the operational bandwidth for the filter.

3,678,434
TEMPERATURE SENSING DEVICE FOR ROOM AIR TEMPERING APPARATUS
Robert E. Brooks, Worthington, Ohio, assignor to Ranco Incorporated, Columbus, Ohio
Filed July 22, 1970, Ser. No. 57,104
Int. Cl. H01c 1/02
U.S. Cl. 338—196 **1 Claim**



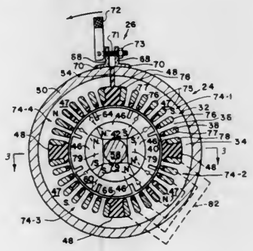
An adjustable temperature sensing device for controlling the operation of a room air tempering apparatus includes a potentiometer supported on a frame and which is adjusted by rotating a hollow cylindrical member which surrounds the potentiometer and is journalled in an abutment on the frame. The device includes a cover having an opening which exposes a portion of the cylindrical member by which the member is manually engaged for rotation. The cover has a second opening extending alongside another cylindrical portion of the adjusting member which exposes a small segment of a spiral indicator on the exterior of the adjusting member for indicating the setting of the potentiometer.

3,678,435
ELECTRICAL RESISTOR
Herbert M. Pflanz, Westwood, Mass., assignor to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.
Filed Nov. 9, 1970, Ser. No. 87,925
Int. Cl. H01c 1/02
U.S. Cl. 338—263 **18 Claims**



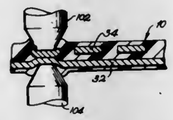
There are disclosed several embodiments of a resistor which comprises an electrical resistance element made of porous resistance material which is completely or partially embedded in a body of inelastic noncombustible electrical insulating material. In one embodiment, the resistance element in the form of a spirally wound ribbon is embedded in a body in the form of a hollow cylindrical insulator in which circuit breaker contacts are housed to provide a built-in resistor in circuit with the contacts. In another embodiment, the resistance element in spirally wound ribbon form is embedded in a body in the form of solid cylindrical insulator to provide a separate resistor. An electrical device, such as a static or solid state component, can be embedded in the solid body in circuit with the resistance element. In another embodiment, the resistance element in the form of a flat sinuous member is embedded in a body of insulating material in the form of a short solid cylindrical member which may be used independently as a resistor or stacked together with other similar units to provide a larger resistor.

3,678,436
MAGNETIZING APPARATUS AND METHOD
William M. Herdrich, and Norman A. Bender, both of Fort Wayne, Ind., assignors to General Electric Company
Filed May 24, 1971, Ser. No. 146,133
Int. Cl. H01f 13/00
U.S. Cl. 335—284 **14 Claims**



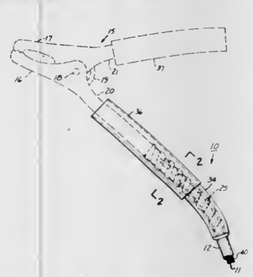
Apparatus and method for magnetizing a permanent magnet rotor member for a dynamoelectric machine, the rotor member including four members formed of permanent magnet material each having transversely spaced surface areas to be oppositely polarized. A magnetic stator core member is provided having a yoke portion with a plurality of radially inwardly extending teeth defining winding slots therebetween, the teeth being divided into four circumferentially spaced groups and having inner ends defining a bore for receiving the rotor member. Four windings are provided each comprising a plurality of concentric coils distributed in respective ones of the slots of one of the groups of teeth. The windings are connected in parallel and arranged when energized to excite alternate tooth groups to form opposite poles respectively aligned with the areas to be polarized. A capacitor discharge power supply is coupled to the windings for producing thereacross a momentary high voltage pulse of preselected magnitude thereby to cause a highly peaked surge of current flow in the windings. The preferred method includes establishing a short duration highly peaked magnetic field in preselected regions of space and magnetizing permanently magnetizable members previously disposed in those regions.

3,678,437
FLAT CABLE WAFER
James L. Vaden, Tustin, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.
Filed Dec. 30, 1970, Ser. No. 102,717
Int. Cl. H01r 29/00
U.S. Cl. 339—18 C **4 Claims**



A flat cable wafer for interconnection between a first plurality of conductors imbedded in the wafer in a first plane and a second pair of conductors imbedded in the wafer in a second plane. Each of the first plurality of conductors is positioned so as to be interconnectible with each of the second plurality of conductors, the wafer being formed of an insulating material which, upon application of heat transverse to the plane of the wafer causes at least one of said conductors in each of the plurality of planes to be joined together.

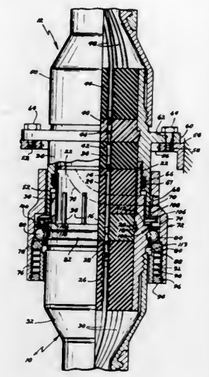
3,678,438
JUMPER CABLE
Michael J. Gamson, 5449 Rimhurst, Glendora, Calif.
Filed March 25, 1971, Ser. No. 128,032
Int. Cl. H01r 11/24
U.S. Cl. 339—29 B **11 Claims**



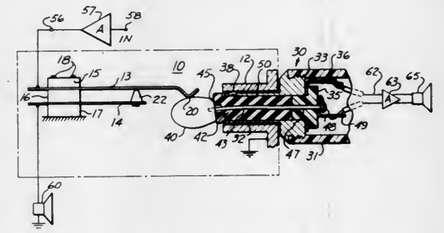
A jumper cable with a clamp on each end of an insulated conductor, there being attached to this combination at the junction of the conductor and each of the clamps a peripheral helical flexure to relieve the strain on the junction by limiting the least radius attainable by bending the electrical connector adjacent to the junction.

3,678,439
QUICK-RELEASE ELECTRICAL CONNECTOR
Ottomar H. Vetter, Minneapolis, Minn., assignor to United-Carr, Incorporated, Boston, Mass.
Filed Aug. 6, 1970, Ser. No. 61,763
Int. Cl. H01r 13/62
U.S. Cl. 339—46 **12 Claims**

Twisting a coupling ring in the usual manner causes mating of the two components of an electrical connector. Normally, several balls, more specifically segments thereof, are confined in a circumferential groove formed on one of the components by the encircling coupling ring. When a sufficient axial force is applied, a carrier sleeve causes the balls to be displaced from the circumferential groove, the carrier sleeve overcoming the biasing action of a coil spring. The dislodgment of the balls is assured by means of a camming sleeve which also assists in returning the balls to the groove for remating the connector.



3,678,440
YIELDABLE ELECTRICAL PLUG
Richard C. Gilsdorf, Duarte, Calif., assignor to Bell & Howell Company, Chicago, Ill.
Filed Oct. 5, 1970, Ser. No. 77,994
Int. Cl. H01r 13/08
U.S. Cl. 339—61 R **2 Claims**

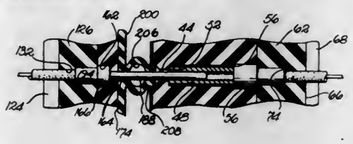


An electrical plug has a hollow-cylindrical shell contact member and a center contact member carried by a spring wire which extends through the shell contact member. An electrically insulating resilient sleeve for the spring wire fills the space between the spring wire and the shell contact member and projects from the shell contact member to avoid contact between the shell and center contact members during flexing of the spring wire.

3,678,441
ELECTRICAL CONNECTOR INTERFACIAL SEALS
Harlan R. Upstone, Arcadia, and Edward C. Paugh, Hacienda Heights, both of Calif., assignors to International Telephone and Telegraph Corporation, New York, N.Y.
Filed Feb. 26, 1970, Ser. No. 14,379
Int. Cl. H01r 13/52
U.S. Cl. 339—94 R **6 Claims**

An interfacial seal for an electrical connector for use between electrical connector interfaces. The environmental

seal is formed of a resilient material and mounted on one of the connectors. A rear portion of the seal is fixed to the connector member. Upon mating, the front portion of the seal forms a sealing surface between the connector members and



an intermediate portion of the seal collapses outwardly. The intermediate and forward portion of the seal may be initially tubular in shape and surround the contacts of one of the connector members. Moreover, a groove may be formed on the inner surface of the tubular members which provides a relief.

3,678,442

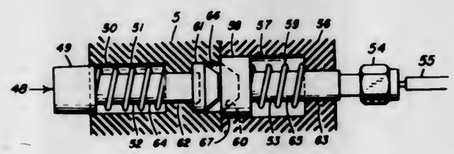
AUTOMATIC ELECTRIC COUPLER

Geoffrey W. Cope, Williamsonville, and George C. Skinner, Elma, both of N.Y., assignors to Dresser Industries, Inc.

Continuation of Ser. No. 844,700, May 26, 1969, abandoned, which is a division of Ser. No. 703,375, Feb. 6, 1968, Pat. No. 3,506,139. This application April 15, 1971, Ser. No. 134,489

Int. Cl. H01r *13/52, 13/24*

U.S. Cl. 339—111 **1 Claim**



An electric coupler mountable on a mechanical railway coupler as part of a coupler assembly for automatically connecting electric lines between cars incident to their mechanical coupling, the coupler combining normally projected end contactable pins for non-arcing amperage lines with hermaphroditic fixed socket and retractable pin contacts for lines carrying arcing amerages, the sockets of which are automatically cleaned on coupling, the several contacts being energizable before coupling without producing external arcing during coupling.

3,678,443

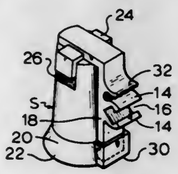
ELECTRICAL LAMP SOCKET

Rudolph Koehler, 32 Fleming Drive, Willowdale, Ontario, Canada

Filed May 19, 1969, Ser. No. 825,821

Int. Cl. H01r *13/60*

U.S. Cl. 339—119 L **10 Claims**



A form lighting assembly and lamp sockets therefor wherein each socket has a heavy duty resilient clip stiff enough to maintain the socket in a fixed orientation on the form. The clip may either be integral with the exterior side wall of the socket or may be carried on a separate tongue itself firmly anchored to the socket.

3,678,444

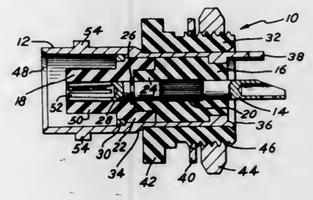
CONNECTOR WITH ISOLATED GROUND

William P. Stevens; George M. Hubbard, and William D. Wagner, all of Franklin, Ind., assignors to The Bendix Corporation

Filed Jan. 15, 1971, Ser. No. 106,838

Int. Cl. H01r *17/04;* **H02b** *1/02*

U.S. Cl. 339—130 C **5 Claims**



A chassis mountable coaxial cable connector assembly having an isolated ground. A connector pin is attached to the center wire of the coaxial cable with insulation surrounding the connector pin to prevent unwanted signal attenuation to a housing of the connector assembly. The housing is connected to the shielding braid of the coaxial cable with the shielding braid and housing forming a floating type ground. The cable connector assembly includes a unitary constructed flanged cylinder with a threaded portion for mounting the connector assembly in a chassis and, simultaneously, isolating the housing from the chassis.

3,678,445

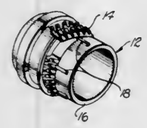
ELECTRICAL CONNECTOR SHIELD

Salvatore T. Brancaleone, Temple City, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed July 31, 1970, Ser. No. 59,978

Int. Cl. H01r *15/06*

U.S. Cl. 339—143 R **2 Claims**



A shielding arrangement for eliminating electromagnetic interference in an electrical connector. A first shell member contains a bore portion on its outer surface and an annular groove adjacent to the bore portion. A conductive shielding member having a section contiguous to the bore portion and a first spring portion adjacent one side of the surface snaps into the groove for removably securing the shield to the shell and a second spring portion adjacent the other side of the section. The second spring portion may be formed at an acute angle with respect to the section and yieldable to provide good electrical contact between the first shell member and a second shell member movable with respect to said first shell member. The first shell member may contain a second annular groove opposite the first annular groove, the shield section at junction

of the section and the second spring member being insertable into the second annular groove. Further, the spring members may be formed of finger portions.

3,678,446

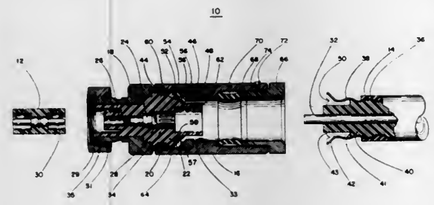
COAXIAL CABLE CONNECTOR

Hilbert R. Siebelist, Las Vegas, Nev., assignor to The United States of America as represented by the United States Atomic Energy Commission

Filed June 2, 1970, Ser. No. 42,636

Int. Cl. H01r *17/04*

U.S. Cl. 339—177 E **5 Claims**



A connector for coaxial cables suitable for use on a group of cables having the same impedance characteristics and similar nominal size but different structural details. A backshell of the connector which is sufficiently large to receive each cable of the group fastens to a body which contains a mass of dielectric material in which a central conductor contact is fitted. A seat and collar with complementary frustoconical surfaces adapted to receive an outwardly and forwardly flared end of the outer conductor of the cable are positioned generally within the transition between the backshell and the body. Complementary fastening means on a body and the backshell force the collar and seat together against the flared end of the outer conductor.

3,678,447

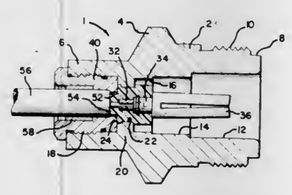
COAXIAL CABLE CONNECTOR SUB-ASSEMBLY

George William Ziegler, Jr., Carlisle, and Donald Kent Hughes, Mechanicsburg, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed June 17, 1970, Ser. No. 46,942

Int. Cl. H01r *17/04*

U.S. Cl. 339—177 E **6 Claims**



The invention relatives to male and female coaxial cable connector sub-assemblies utilizing a universal fitting crimped to the end of a coaxial cable and threadably attached to a sub-assembly. Each sub-assembly has a central dielectric plug press-fitted in place. A center contact or a center contact receptacle is pressed into the plug and maintained by a protecting skirt which bites into the dielectric plug. The center contact or receptacle receives a projecting portion of the coaxial cable center conductor when the universal fitting is threadably attached. In other preferred embodiments, the center contact and the corresponding center contact receptacle are each laterally supported by another dielectric plug which provides adjustment for impedance mismatch entirely through the connector sub-assembly.

3,678,448

PINS FOR ELECTRICAL CONNECTORS

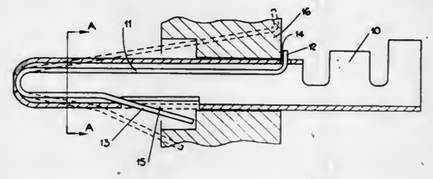
Donald Allan Young, Sutton Coldfield, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

Filed Jan. 6, 1971, Ser. No. 104,235

Claims priority, application Great Britain, Jan. 10, 1970, 1,321/70

Int. Cl. A01r *9/08*

U.S. Cl. 339—217 S **1 Claim**



A pin for an electrical connector is of hollow form and contains a leaf spring whose ends project from the pin at axially spaced locations to locate the pin axially in an associated connector body. One of the spring ends can be depressed to allow the pin to enter the body.

3,678,449

BATTERY TERMINAL CLAMP

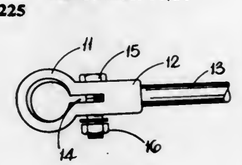
Richard Clive Jones, Bromsgrove, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

Filed Nov. 10, 1970, Ser. No. 88,366

Claims priority, application Great Britain, Nov. 21, 1969, 57,037/69

Int. Cl. H01r *11/26*

U.S. Cl. 339—225 **3 Claims**



A battery terminal clamp comprises a conductive collar adapted to engage a terminal post, and an integral sleeve extending from said collar and adapted to have a lead electrically connected thereto. A slot is formed in the sleeve and the clamp further includes locking means for reducing the diameter of the collar by closing the slot, so that in use on a battery the collar grips and makes electrical connection to a terminal post of the battery.

3,678,450

BATTERY CONNECTOR

Eugene C. Azamber, 4664 W. Hammond, Fresno, Calif., and Frank D. Cabe, 1310 N. Wishon Avenue, Fresno, Calif.

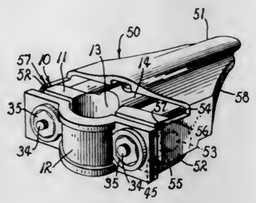
Filed March 31, 1971, Ser. No. 129,925

Int. Cl. H01r *13/62*

U.S. Cl. 339—226 **8 Claims**

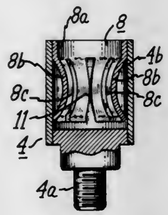
A battery connector having a body providing separable portions defining a clamping opening therebetween, resilient

means urging the portions toward each into clamping configuration, one of said portions having a socket therein disposed toward an opposite portion, and a handle pivotally mounted in the socket engageable with the opposite portion operable to



force the portions apart against the urging of the resilient means, the handle being releasably captured in the socket and urged into seated engagement in the socket by said opposite means under the force imparted thereto by the resilient means.

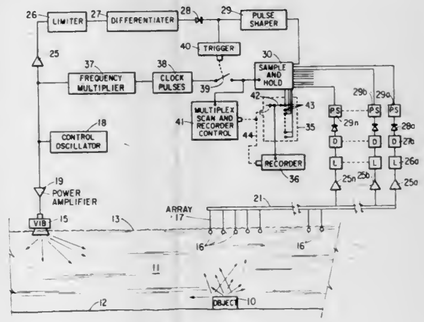
3,678,451
SOCKET TYPE CONTACT FOR A FUSE HOLDER
Vincent J. Bolliver, Pittsfield, Mass., assignor to General Electric Company
Filed Dec. 7, 1970, Ser. No. 95,660
Int. Cl. H01r 13/12
U.S. Cl. 339—258 R **7 Claims**



A socket type contact for a fuse holder is provided with a plurality of resilient, fuse-terminal-receiving fingers, each of which are characterized by containing an embossment or knurled portion. The respective embossments on each of the resilient contact fingers are arranged to form a substantially linear contact surface for a fuse terminal that is adapted to be inserted between the contact fingers. The contact configuration thus defined affords a high pressure, line contact between the flexible fingers and a fuse terminal while at the same time enabling the terminal to be pivoted axially about the line contact without causing the fingers to move radially with respect to the contact body.

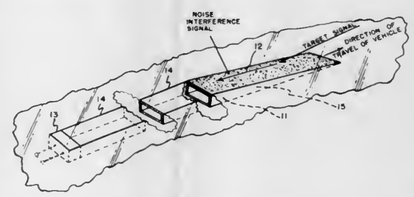
3,678,452
RECORDING ELASTIC-WAVE PHASE HOLOGRAPHIC DATA
Daniel Silverman, Tulsa, Okla., assignor to Amoco Production Company, Tulsa, Okla.
Continuation-in-part of Ser. Nos. 824,925, May 15, 1969, and Ser. No. 858,635, Sept. 17, 1969. This application April 30, 1970, Ser. No. 33,417
Int. Cl. G01s 9/66
U.S. Cl. 340—3 R **11 Claims**

In elastic-wave holography where transducers are used to convert the detected elastic waves into corresponding electrical signals, the phase pattern of many transducers spread over the hologram area is recorded by sampling all of the electrical signals during one cycle of the coherent elastic waves to get a relative time delay for the zero-axis crossings of each signal. Pulses at zero-axis crossing times, produced by amplifying, clipping, and differentiating the signals, are then shaped or stretched to form short square waves of time duration M, or phase duration K electrical degrees, where K equals 360°/L, L being the integral number of phase intervals into which the coherent-wave cycle is subdivided. Each value of K also corresponds to one step of the gray scale used in recording the final hologram.



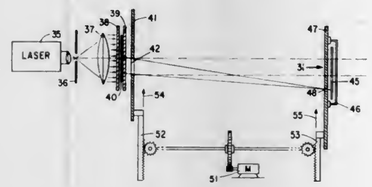
To record the hologram directly or in a form suitable for later playback, all transducer outputs during one coherent-wave cycle are scanned L times, once for each successive K° interval, to detect the square-wave pulses. In each scan, the occurrence times of pulses correspond to those transducer positions in the hologram area having relative phases within the given K° interval. These are accordingly the positions for recording a particular gray-scale density on the final hologram. Succeeding scans detect the positions of different phase and different corresponding density on the hologram, until all phase intervals and hologram density points have been covered.

3,678,453
FLUSH MOUNTED ACOUSTIC SENSOR
Tibor G. Horwath, Alexandria, Va., assignor to The United States of America as represented by the Secretary of the Army
Filed Oct. 23, 1970, Ser. No. 83,561
Int. Cl. H04b 11/00
U.S. Cl. 340—15 **3 Claims**



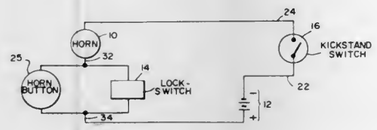
This invention is a dynamic pressure sensor of the flush mounted variety for use in sensing the presence of an acoustic energy source in a moving fluid environment. The sensor is especially adaptable to moving vehicle applications wherein the sensor is located on the moving vehicle and boundary layer interference due to movement of the vehicle and the sensor in air is a prime consideration.

3,678,454
GEOPHYSICAL SURVEYING USING FRESNEL PILOT SIGNALS
John B. Farr, and Ralph A. Landrum, Jr., both of Tulsa, Okla., assignors to Amoco Production Company, Tulsa, Okla.
Filed May 2, 1969, Ser. No. 821,189
Int. Cl. G01v 1/28
U.S. Cl. 340—15.5 SC **9 Claims**



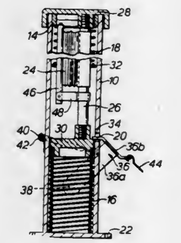
In seismic geophysical surveying, a servo-controlled vibrator is driven by a pilot signal that corresponds generally to the variations in density that are encountered in scanning at a constant rate along a radial segment of a Fresnel zone plate, and the resulting seismic waves that arrive at a spaced receiver are recorded as a conventional variable density trace. The pilot signal is thus one that becomes self-compressing by the diffraction of monochromatic light to a focal point on the axis of the zone plate. Accordingly, illumination of the recorded variable density trace by monochromatic light effectively time-compresses each repetition of the pilot signal in the recorded trace by producing in the plane of the Fresnel zone plate focus a concentration of illumination that represents by its intensity and position the amplitude and travel time of seismic wave energy from the vibrator to the receiver by a particular path. In practice, any pilot signal for which the frequency varies linearly with time is so closely similar to a true Fresnel signal that it focuses monochromatic light in the same way.

3,678,455
CYCLE THEFT ALARM
Richard S. Levey, 2 Foyler Avenue, Lynbrook, N.Y.
Continuation-in-part of Ser. No. 826,164, May 20, 1969, abandoned. This application Jan. 14, 1971, Ser. No. 106,460
Int. Cl. B60r 25/10
U.S. Cl. 340—63 **3 Claims**



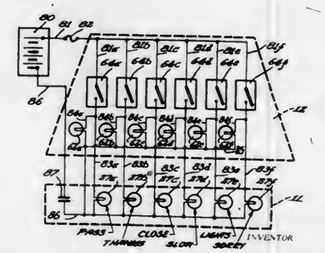
An alarm device wherein the horn button, normally found on motorcycles, is by-passed with a lock switch. A lead of a battery is joined to a kickstand switch and to the horn, so that when the kickstand switch is moved to a closed position with a lock switch closed, the horn sounds. The kickstand switch is spring loaded in an open position so that it closes only when the weight of the motorcycle is removed.

3,678,456
VEHICLE MOUNTED WARNING DEVICE
Eugene Gerald Gruber, 70 Paisley Boulevard, Mississauga, Ontario, Canada
Filed Dec. 7, 1970, Ser. No. 95,811
Int. Cl. B60q 1/00
U.S. Cl. 340—87 **2 Claims**



Means for supporting a visual warning signal for movement on a vehicle between a retracted, concealed position and an extended display position; a latch releasably holding said signal in the concealed position and a spring biasing it to display position when released by the latch; the movement of the signal to display position being controlled by limiting and speed checking devices.

3,678,457
INDICATOR FOR AUTOMOBILES
Edward R. Lev, 3121 W. Jerome Street, Chicago, Ill.
Filed June 29, 1970, Ser. No. 50,676
Int. Cl. B06q 1/00
U.S. Cl. 340—107 **2 Claims**

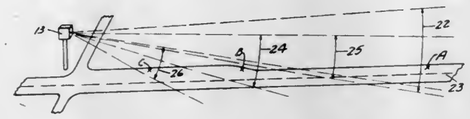


A visual signal indicator for vehicles which has a light unit mountable at the rear of the vehicle which contains a plurality of separate light source containing chambers adapted to reflect light towards one end of the chambers, each chamber being closed at that end by a translucent-opaque screen containing one or more messages illuminated by the light, and a control unit adapted to be attached interiorly of the vehicle, the control unit having switching for selectively activating different chambers of the rear mounted unit, the control unit also including indicator means for indicating which of the rear mounted chambers is illuminated.

3,678,458
DIRECTIONAL SIGNAL HAVING REFRACTIVE INDICANT AREAS

Gunnar R. Ljungkull, White Bear Lake, and Robert H. Johnson, Saint Paul, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed July 9, 1970, Ser. No. 53,592
Int. Cl. B60q 1/100
U.S. Cl. 340—107 **7 Claims**

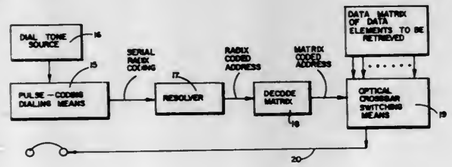


A traffic signal, appearing from a distance as a uniformly illuminated warning light, converts into an instructional signal as viewed during the approach. The instructional area is defined by a multi-prismatic refractor.

3,678,459
OPTICAL CROSSBAR SWITCHING DEVICE

Arthur J. Grolitzer, Reseda, and Francis E. Mounts, Santa Monica, both of Calif., assignors to Rheem Manufacturing Company, New York, N.Y.

Continuation of Ser. No. 762,746, Sept. 26, 1968, abandoned. This application April 23, 1971, Ser. No. 137,087
Int. Cl. H03k 19/14
U.S. Cl. 340—166 **6 Claims**



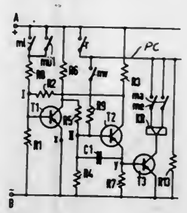
Electronic data matrix retrieval means employing an optical crossbar switching device. A resolver means adapted to be responsive to a radix-coded pulse code address provides an output set corresponding to the radix coded address. A matrix decoder responsive to the resolver converts the radix-coded address to a matrix coded address. The photo-electric crossbar switching device is responsive to the matrix coded address to connect an addressing terminal to an addressed terminal of a data element in a data storage matrix.

3,678,460
CODE-RESPONSIVE CONTROL RECEIVING SYSTEM

Hans-Wolfgang Steinlein, Nurnberg, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed March 29, 1971, Ser. No. 128,682
Claims priority, application Germany, April 2, 1970, P 20 15 674.5
Int. Cl. H04q 9/00
U.S. Cl. 340—167 **5 Claims**

A code-responsive control receiving system for response to a preselectable code combination operates on the pulse interval principle and has a polarized command relay with differential windings which have one energizing lead in common. In the receiver system, a pulse circuit is supplied with pulse sequences of active and passive preselection pulses for the preselection of the code combination. A synchronous selector has switching members for selectively connecting the respective windings of the command relay to the pulse circuit. The switching members of the selector comprise preselector contacts proper, main contacts and quenching contacts. A receiver relay is provided with make contacts which close in accordance with the rhythm of the arriving pulses and connect the pulse circuit to a direct voltage source when the make contact closes. The main contacts are connected in the separate leads of the relay windings, and a switching device, preferably a transistor, is connected in the common lead of the windings.

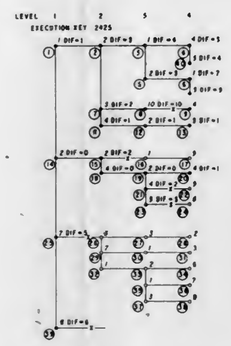


The switching device is controlled by the preselector and quenching contacts. A bistable flip flops circuit has two trigger control circuits and has an output connected to the switching device so as to control the switching operation thereof. One of the control input or trigger circuits is connected through the quenching contact to one pole of the direct voltage source. The other control input circuit of the flip flop circuit is connected through the preselector contacts to the pulse circuit.

3,678,461
EXPANDED SEARCH FOR TREE ALLOCATED PROCESSORS

William C. Choate, Dallas, and Michael K. Masten, Richardson, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed June 1, 1970, Ser. No. 42,430
Int. Cl. G06f 15/40
U.S. Cl. 340—172.5 **24 Claims**

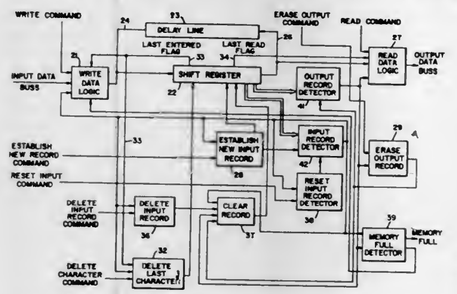


A trained processor is described which operates beyond an untrained point. Information is stored in a memory array in a tree allocated file. Information is stored in the memory as key functions with associated trained responses. After the processor has been trained, it is able during an execution cycle to find and appropriate response for other key functions. These key functions are compared with the reference key functions stored in the memory array to find an appropriate trained response. During the execution cycle, there are some key functions for which there is no corresponding reference key function stored in the memory array and thereupon no appropriate trained response. These key functions for which no trained response is found are termed untrained points. Thereupon a key function which constitutes an untrained point is effectively compared with the reference key functions stored in the memory array to establish and store a difference function relative to each stored key function. Logic means then selects for the untrained point a trained response from those trained responses best satisfying a predetermined decision criteria. During the comparison operation, conditions are measured that indicate when key functions corresponding to a given group of trained responses cannot be an appropriate response for the untrained point in question. Logic means waive further examination of stored key functions, and thereby greatly expedite the efficiency of search.

3,678,462
MEMORY FOR STORING PLURALITY OF VARIABLE LENGTH RECORDS

David C. Condon, Monte Sereno, and Andrew J. Nichols, Palo Alto, both of Calif., assignors to Novar Corporation, Mountain View, Calif.

Filed June 22, 1970, Ser. No. 48,145
Int. Cl. G06f 13/02
U.S. Cl. 340—172.5 **10 Claims**

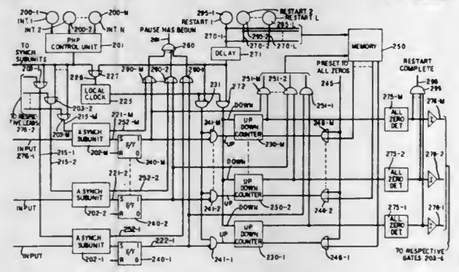


Memory apparatus for use with a data processing system having an electric typewriter input/ouput where the memory unit includes a delay line along with logic means which provide for dynamic allocation of memory space. In particular, this is provided by a particular data format with certain character flags and record markers.

3,678,463
CONTROLLED PAUSE IN DATA PROCESSING APPARTUS

Theodore Richmond Peters, Bernardsville, N.J., assignor to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.

Filed April 27, 1970, Ser. No. 32,083
Int. Cl. G06f 9/18
U.S. Cl. 340—172.5 **10 Claims**

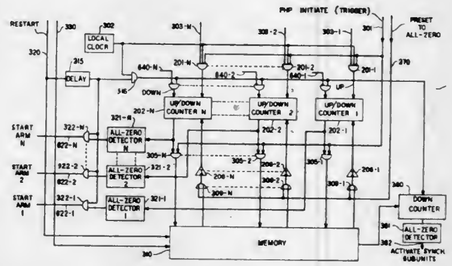


Apparatus for permitting a precise halt and restart in execution in one or more subunits in a data processing system which subunits are not necessarily amenable to an immediate halt. Means are provided to determine and store for each such subunit the respective time, T_R, elapsed from the occurrence of a request to halt until an actual halt is effected (usually at the end of a processing sequence). Upon restarting of the system generally, the particular subunits are delayed by an amount equal to the respective value of T_R.

3,678,464
CONTROLLED PAUSE AND RESTART OF MAGNETIC DISC MEMORIES AND THE LIKE

Theodore Richmond Peters, Bernardsville, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed June 29, 1970, Ser. No. 50,470
Int. Cl. G06f 9/18; G11b 19/20
U.S. Cl. 340—172.5 **9 Claims**

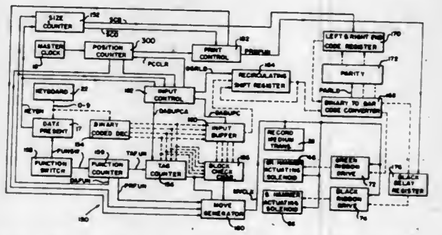


Techniques are disclosed for permitting the halt and subsequent synchronized restart of a data processing or similar system including a plurality of asynchronous subunits such as magnetic disc memories by generating and storing information indicative of the state of each subunit at the time of halting, and, at the time a system restart is desired, by delaying the restart of individual subunits by an appropriate period which is a function of the previously stored information.

3,678,465
CONTROL MEANS FOR AN OPTICAL BAR CODE SERIAL PRINTER

Richard E. Graham, Dayton, Ohio, assignor to The National Cash Register Company, Dayton, Ohio

Filed June 30, 1970, Ser. No. 51,149
Int. Cl. G05b 11/01
U.S. Cl. 340—172.5 **27 Claims**



Control logic circuitry for a printing apparatus which records data according to a predetermined color bar code on a moving record medium. The apparatus includes first and second recording stations and a feed mechanism for successively feeding the record medium thereto in equal increments, so as to provide equally-spaced recording locations on the

record medium. First and second indicia (parallel bars printed in first and second colors) are recorded on the record medium at the appropriate recording locations in conformity with the code. The surface of the record medium is used for a third indicium, which likewise is recorded thereon in the form of a parallel bar. Data to be recorded on the record medium is entered through a keyboard and converted by the logic into a bar code which is fed to logic circuitry which controls printing apparatus at the first and second recording stations and the record medium feed mechanism, thereby determining the color printed on the recording medium.

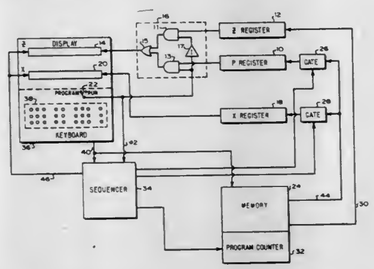
The code used is of the transition type, which utilizes three different indicia. Each succeeding indicium printed on the record medium is always different from the adjacent indicium, thus eliminating the need for a separate clocking pulse on the record medium.

3,678,466

ELECTRONIC CALCULATOR

Richard M. Spangler, Loveland, Colo., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Oct. 14, 1970, Ser. No. 80,533
Int. Cl. G09f *9/00*
U.S. Cl. 340—172.5 **2 Claims**



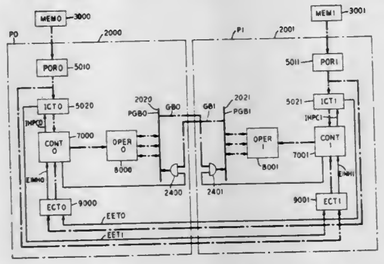
A programmable electronic calculator having a display register for storing numerical information is provided with an additional register which always contains the current instruction code and program statement number. A control on the keyboard permits the display of either register without disturbing the contents of either register.

3,678,467

MULTIPROCESSOR WITH COOPERATIVE PROGRAM EXECUTION

Eric Nussbaum, St Charles; Wing Noon Toy, Glen Ellyn, both of Ill., and Melvin Neil Wolnsky, Dover, N.J., assignors to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.

Filed Oct. 20, 1970, Ser. No. 82,354
Int. Cl. G06f *15/16*
U.S. Cl. 340—172.5 **18 Claims**



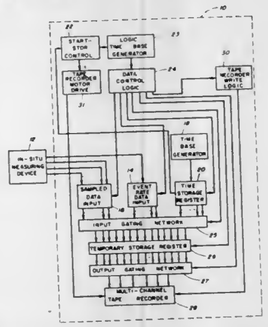
Disclosed herein is a multiprocessor control for a communications switching system wherein an instruction stored in the program order register of one processor is decoded both within that processor and within another processor to initiate and control cooperative data processing operations in both processors. Data and control information is exchanged between processors by means of cross-coupled gating buses which are employed within each respective processor for communication among its own registers and data processing functional circuits.

3,678,468

DIGITAL DATA STORAGE SYSTEM

Donald E. Jefferson, Silver Spring, and Ronald G. Vermillion, Rockville, both of Md., assignors to the United States of America as represented by the Secretary of the Navy

Filed Dec. 15, 1970, Ser. No. 98,345
Int. Cl. G01v *3/00*; G11b *5/00*
U.S. Cl. 340—172.5 **11 Claims**



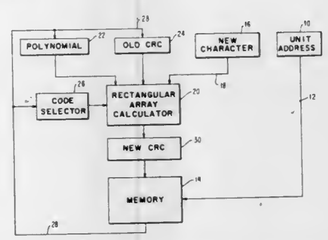
A digital data storage system for an in-situ measuring device having a simplified logic to perform all of the functions required to record fourteen bit data words on six tape channels, with parallel-in and parallel-out processing between the measuring device sensors and the tape recorder. The storage system accepts and records sampled data and event data from the measuring device and records the time of occurrence of this data. An internal clock and associated logic determine the initiation and termination of sampling intervals, and other logic controls the transfer of data from temporary storage to tape.

3,678,469

UNIVERSAL CYCLIC DIVISION CIRCUIT

Richard B. Freeman, Cary; Michael T. Kawalec, Chapel Hill; Andrew W. Maholick, and Stanley R. Stager, III, both of Raleigh, all of N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 1, 1970, Ser. No. 94,070
Int. Cl. G08c *25/00*; H04l *1/10*; G08b *29/00*
U.S. Cl. 340—172.5 **7 Claims**



Described is a universal cyclic division circuit for developing cyclic redundancy checks upon data wherein the circuitry

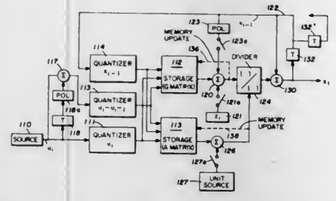
may be utilized for more than one character size and for more than one polynomial. The system employs a storage device which contains information as to the character size in use as well as storage for the polynomial being used for checking data transmissions over a given communications channel. This information is used to control a universal matrix which uses the stored polynomial to generate the proper cyclic redundancy check character for the new data received and combines it with the cumulative cyclic redundancy check character developed by the matrix for previous characters. Upon the completion of a data transmission, the cyclic redundancy check character developed by the matrix should be identical to the cyclic redundancy check character developed in the transmitter if an error free transmission and reception has occurred.

3,678,470

STORAGE MINIMIZED OPTIMUM PROCESSOR

William C. Choate, and Michael K. Masten, both of Dallas, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation-in-part of Ser. No. 837,425, June 30, 1969, abandoned, and a continuation of Ser. No. 889,240, Dec. 30, 1969, abandoned. This application March 9, 1971, Ser. No. 122,513
Int. Cl. G06f *3/05*
U.S. Cl. 340—172.5 **10 Claims**



A trainable signal processor having at least one input signal u and one desired output signal z applied thereto during training and having at least one input signal u and one actual output signal x derived therefrom during execution is provided. From each member of the input sequence $u(t_i)$ a key K_i is generated. K_i may have only a finite number of values and is a single valued function of u. Corresponding to a specific value of the K_i generated during training a trained response is derived from samples of the desired output signal z measured at instances t_i at which that value of K_i occurred and is maintained in a tree allocated file. The file thereby associates with each set of K_i values a trained response. Storage is provided for only those sets of K_i values which actually occurred during training, generally constituting a small fraction of those sets which may theoretically occur, particularly when the input is of multidimensional character. During execution the tree allocated file provides for efficient retrieval of the trained responses which are employed in determining the actual output signal of the processor.

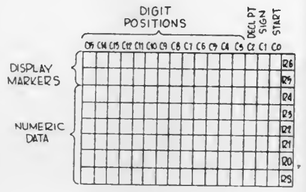
3,678,471

ZERO SUPPRESSION CIRCUIT

Robert A. Ragen, Hayward; Carl E. Herendeen, Danville, both of Calif., and Gary R. Wood, Albuquerque, N. Mex., assignors to The Singer Company, New York, N.Y.

Filed May 20, 1971, Ser. No. 145,362
Int. Cl. G06f *3/14*
U.S. Cl. 340—172.5 **13 Claims**

A zero suppression circuit for suppressing the display of nonsignificant zeros by the data indicator unit of a data storage system, e.g., the memory unit of an electronic desk top calculator. Each displayed register is individually examined order-by-order; a counter is incremented at the beginning of each examined digit position and is reset to an initial state for each digit position containing a nonzero digit. After each digit position of a register has been examined, zero suppression markers corresponding to the digit positions containing non-



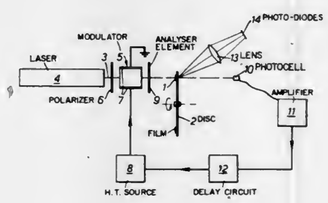
significant zeros are placed in corresponding digit positions of a different register. When these markers are detected during the display of each examined register, the display unit is disabled.

3,678,472

DATA STORAGE ARRANGEMENTS

John C. Bass, Northampton, and Peter Waterworth, Bugbrooke, both of England, assignors to The Plessey Company Limited, Ilford, Essex, England

Filed May 13, 1970, Ser. No. 36,734
Claims priority, application Great Britain, May 19, 1969, 25,489/69
Int. Cl. G11c *13/04*
U.S. Cl. 340—173 LT **12 Claims**



A data storage arrangement in which information is stored in the form of a plurality of juxtaposed holograms in which a pulsed light beam is caused to successively traverse the holograms, it being arranged that the light beam pulsates at a frequency corresponding to the time period taken to make one traverse of the holograms, the relative position of the light beam pulse during said period being variable so that the light beam illuminates a certain one of said holograms for the purpose of reading out information stored therein.

3,678,473

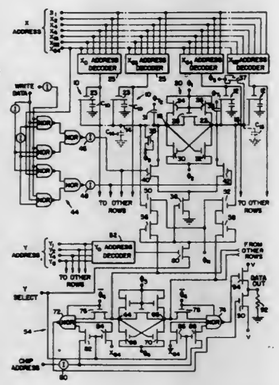
READ-WRITE CIRCUIT FOR CAPACITIVE MEMORY ARRAYS

Sven Wahlstrom, Palo Alto, Calif., assignor to Shell Oil Company, New York, N.Y.

Filed June 4, 1970, Ser. No. 43,460
Int. Cl. G11c *11/24*, *11/40*
U.S. Cl. 340—173 CA **15 Claims**

Writing on a memory array equipped with a cross-coupled MOSFET sensing circuit operating on a race principle is facilitated by always writing a "0" but selecting the node of the cross-coupled MOSFET sensing circuit onto which the

"0" is written. A low-impedance data output can be provided by driving data output line gates through a NOR gate output



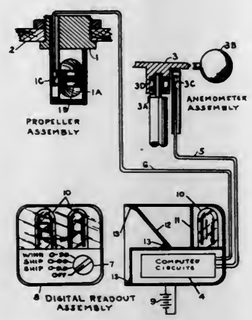
amplifier which also prevents switching transients from interfering with the race.

3,678,474

MARINE SPEEDOMETER AND ANEMOMETER WITH DIGITAL READOUT

Robert M. Brown, Lyndhurst, Ohio, assignor to Robert M. Brown and Computech, Inc., Lyndhurst, Ohio

Filed Sept. 3, 1970, Ser. No. 69,217
Int. Cl. G06f *15/50*
U.S. Cl. 340—173 R 7 Claims



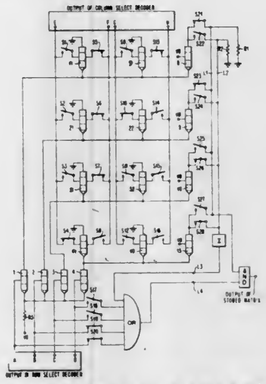
A marine speedometer and anemometer utilizing a common computer circuit and having an electro-luminescent display. A selector switch connects a pulse source and at the same time selects the proper computer circuits to produce a direct digital readout of ship or wind speed in knots or miles per hour. The pulses sources are a propeller device installed beneath the boat in the water and a cup or vane type anemometer rotor device mounted in the open where it can be driven by the wind. The digital display is mounted in a deep enclosure along with the computer circuitry and is fitted with a non-reflecting filter and window for protection against water and weather and to insure good legibility in bright or dark lighting.

3,678,475

READ ONLY MEMORY AND METHOD OF USING SAME

Paul V. Jordan, Beacon; John A. Palmieri, Wappingers Falls, and William T. Wade, Poughkeepsie, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 1, 1971, Ser. No. 111,504
Int. Cl. G11c *11/40, 17/00*
U.S. Cl. 340—174 SP 14 Claims



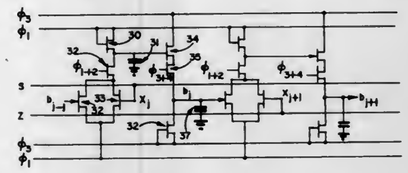
A method and apparatus for storing in a read only memory a matrix having one or more rows each with a majority of "1" bits. There is formed the complement of each of those rows having a majority of "1" bits to form a new matrix wherein no row has a majority of "1" bits. The new matrix is stored in a read only memory. Upon reading out one or more rows of the matrix the bits of the complemented rows are reinverted.

3,678,476

READ-ONLY RANDOM ACCESS SERIAL MEMORY SYSTEMS

Michel A. Ebertin, Yorba Linda, Calif., assignor to North American Rockwell Corporation

Continuation of Ser. No. 783,536, Oct. 13, 1968, abandoned.
This application Jan. 25, 1971, Ser. No. 109,557
Int. Cl. G11c *11/40, 19/00*
U.S. Cl. 340—173 SP 1 Claim



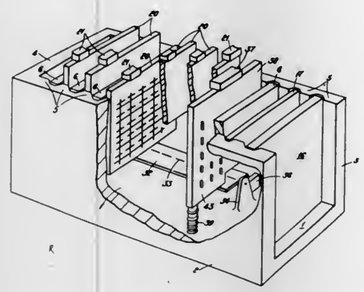
A plurality of words each having a variable word length is stored in a memory by selectively connecting input lines for each of the words to storage elements corresponding to each bit position of each word. Storage elements for certain bit positions are connected to an input line or lines having a voltage level representing a logic "1" and the remaining storage elements are connected to an input line having a voltage level representing a logic "0". A read-only memory system is implemented after the connections are made. The lines are actuated to apply the voltage levels to the storage elements. The stored information is shifted out of the memory system during a readout period following the actuation of the lines. The read-only memory may be randomly addressed by actuating a selected input line prior to gating the information from the memory system.

3,678,477

INFORMATION STORAGE EQUIPMENT

William Sinclair, Bramcote, England, assignor to Ericsson Telephones Limited, Ilford, Essex, England

Filed Sept. 5, 1969, Ser. No. 855,525
Claims priority, application Great Britain, Sept. 25, 1968, 45640
Int. Cl. G11c *17/00*; G06k *7/06*
U.S. Cl. 340—173 R 7 Claims



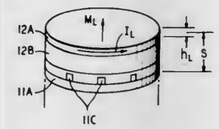
A punched card information store in which information is stored on cards as holes punched at selected points of a storage array, the cards being stored vertically in a container having partitions disposed one between each pair of adjacent cards. The partitions and cards are perforated uniformly at points of an idle array and accommodate horizontal rows of sensing balls. The balls of a row are spring-loaded into contact with each other. To read information stored on a card, the relevant card is displaced vertically within the container until the storage array of the card registers with the idle array of the partitions. If a hole is punched at a point of a storage array, displacement of the card does not affect the balls of the row running horizontally through the point concerned. But if there is no hole, adjacent balls of the row become separated by the thickness of the displaced card. Ball separation is sensed at the springs, affording a sensed pattern that is the inverse of the storage pattern punched on the displaced card.

3,678,478

STACKING ARRANGEMENT WHICH PROVIDES SELF-BIASING FOR SINGLE WALL DOMAIN ORGANIZATIONS

John Alexander Copeland, III, Gillette, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Feb. 18, 1971, Ser. No. 116,407
Int. Cl. G11c *11/14*
U.S. Cl. 340—174 TF 8 Claims



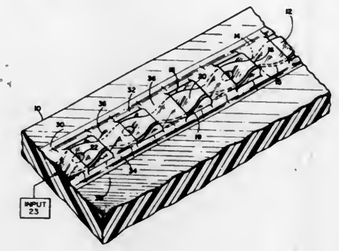
Large capacity memory systems employing single wall domain devices comprise an arrangement in which layers, of materials in which domains can be moved, are stacked to form a compact component. A stacking arrangement is described which eliminates the necessity of an externally supplied bias field normally present, for practical purposes, in single wall domain devices.

3,678,479

CONDUCTOR ARRANGEMENT FOR PROPAGATION IN MAGNETIC BUBBLE DOMAIN SYSTEMS

John M. Owens, Newport Beach, Calif., assignor to North American Rockwell Corporation

Filed March 12, 1971, Ser. No. 123,638
Int. Cl. G11c *21/00, 11/14*
U.S. Cl. 340—174 TF 5 Claims



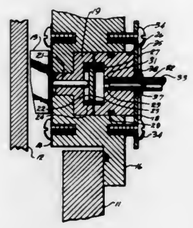
A conductor arrangement for the propagation of single wall domains in a magnetic bubble domain system is disclosed. The conductor arrangement is positioned on top of a strip or channel of film of a magnetic bubble domain material to provide a field gradient which causes the magnetic bubble domain to be moved from a nonrestricted portion through a restricted portion to a second nonrestricted portion of the strip or channel. The conductor arrangement consists of a pair of elongated conductors positioned along and outside of the outer edges of the nonrestricted portion of the strip or channel. These two elongated conductors are connected to each other by conductors which are positioned on top of the restricted strip or channel portions.

3,678,480

COUPLING FOR A PNEUMATIC ACTUATED MAGNETIC HEAD

Alpheus F. Stansell, and Eugene E. Bennett, both of Thousand Oaks, Calif., assignors to Burroughs Corporation, Detroit, Mich.

Filed Feb. 2, 1970, Ser. No. 7,463
Int. Cl. G11b *5/60, 21/20*; F16l *3/04*
U.S. Cl. 340—174.1 E 6 Claims

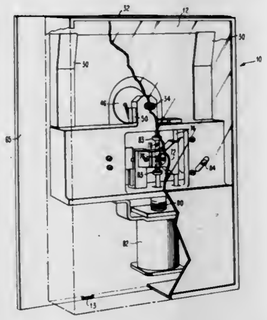


A pneumatic actuating device for a magnetic recording head for a disk memory file or the like is described. Pneumatic pressure is brought to the actuator by an air supply tube which is held in place and also sealed by an O-ring surrounding the tube and compressed between a flat surface and a conical surface so as to squeeze inwardly on the outside wall of the tube. Pneumatic pressure within the assembly acts on a diaphragm to which a rigid disk is attached, and the disk acts on one end of a pin, the other end of which actuates the recording head.

3,678,481
DATA STORAGE APPARATUS EMPLOYING A SINGLE MAGNETIC DISK

Warren L. Dalziel; Jay B. Nilson, and Donald L. Wartner, all of San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed March 13, 1970, Ser. No. 19,197
Int. Cl. G11b *25/04, 5/54, 5/82*
U.S. Cl. 340—174.1 C 6 Claims

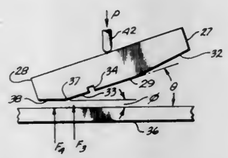


A magnetic disk storage file employs an interchangeable sealed disk cartridge that drops into a guide channel, with the file cover open. When the cover is closed, the disk cartridge is positioned by a centering device, and at the same time is clamped to a rotary drive. Upon energization of a solenoid actuator, the flexible disk is loaded against a magnetic head assembly. The head assembly is mounted to a carriage, enabling direct accessing of the disk radially through an elliptical aperture in the cartridge.

3,678,482
MULTIPLE SURFACE FLUID FILM BEARING

Shahbuddin A. Billawala, Thousand Oaks, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Filed Aug. 26, 1970, Ser. No. 67,012
Int. Cl. G11b *5/60, 21/20*
U.S. Cl. 340—174.1 E 17 Claims

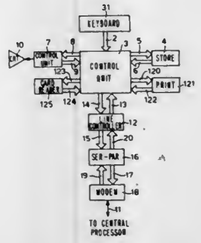


A magnetic memory system having a recording head adjacent a movable disk is described wherein the recording head is separated from the disk by a fluid bearing. In a preferred embodiment, the bearing comprises a taper land bearing having a main bearing face preceded by a converging bearing face. A narrow slot provides a hydrodynamic separation between the trailing edge of the main face and the leading edge of a satellite face coplanar with the main bearing face. A diverging face is provided aft of the satellite face. In operation the recording head is retracted until the disk is up to its usual rotational speed, and then the head is advanced toward the disk to its final floating position in the order of 30 microinches from the surface. The satellite face and diverging face cooperate during the transitional "landing" of the recording head to produce a fluid film force that pivots the recording head to its final floating position without contact between the disk and head.

3,678,483
TERMINAL EQUIPMENT FOR THE TRANSMISSION OF DATA WITH DISPLAY AND INPUT AND OUTPUT UNITS

Antonio Bartocci, Ivrea, Italy, assignor to Ing. C. Olivetti & C., S.p.A., Ivrea (Turin), Italy

Filed May 18, 1970, Ser. No. 38,215
Claims priority, application Italy, May 19, 1969, 51906 A/69
Int. Cl. G06f *3/00*
U.S. Cl. 340—172.5 3 Claims

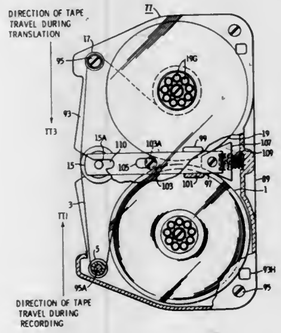


A data communication system comprises a central data processer and a terminal equipment for interrogation of an reply to the processer, said equipment comprising input and output units, a recirculating serial store, a keyboard and a displaying device. The system is provided with a control unit data terminal equipment for interrogation and reply comprising a recirculating serial store, a keyboard for operator control of the equipment and entry of information into the store, a device for displaying the information for transmission and reception respectively, from and to a central data processer, for permitting the dispatch of the information from the store to a peripheral output unit, and also for permitting the input of information coming from a peripheral input unit, and the control unit being responsive to an instruction coming from either the keyboard or from the central processer or from the peripheral input unit to enable the passage of the control unit from various different states into one fixed state capable of producing the said dispatch to the peripheral output unit.

3,678,484
REVERSE-DIRECTION TAPE TRANSLATION

Albert H. Maxwell, Jr., Raleigh, N.C., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Dec. 23, 1969, Ser. No. 887,682
Int. Cl. G11b *5/02, 19/26;* G01r *13/04*
U.S. Cl. 340—174.1 H 4 Claims

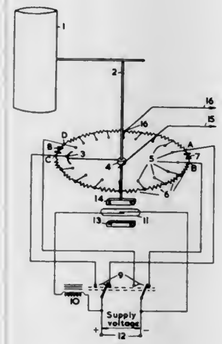


A tape recorder is provided with a removable tape cartridge unit which contains a pay-out or supply reel and a take-up reel. A brake inhibits movement of the reels when the cartridge unit is removed from its operating position. During recording the tape is transferred from the supply to the take-up reel in a first direction. After recording the cartridge is placed in a translation device. The tape is now run in the opposite direction during translation to rewind the tape on the supply reel while carrying out the translating operation.

3,678,485
SHAFT ANGLE TRANSDUCERS

John Ivor Parry Jones, Salisbury, England, assignor to Minister of Technology in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed Oct. 6, 1969, Ser. No. 863,881
Int. Cl. G08c *21/00*
U.S. Cl. 340—177 R 15 Claims



A continuously rotatable and reversible shaft angle transducer on a wind-vane shaft is a rotary potentiometer which in one form has a pair of spaced gaps respectively bridged by a pair of diodes passing current around in only one direction; D.C. supply is connected across one gap by bi-stable switching means which, when the potentiometer brush reaches that gap, transfer the supply connections to the other gap but which restore the first connection when the brush is at said other gap. The output, which is taken — from the brush by a lead and from a point between the gaps another by lead — to a voltmeter, varies over one or other of two ranges according to the position of the bi-stable switching means. The bi-stable switching means can comprise a combination of a relay with a biassed reed switch triggered by a magnet on the shaft. Alternatively the bridging of the first gap by the brush triggers a pair of transistors to reverse the polarity of D.C. supply to the gaps, whereupon supply to the first gap is blocked by diodes but is admitted to the other gap by other diodes; the bridging of the second gap by the brush reverses this action.

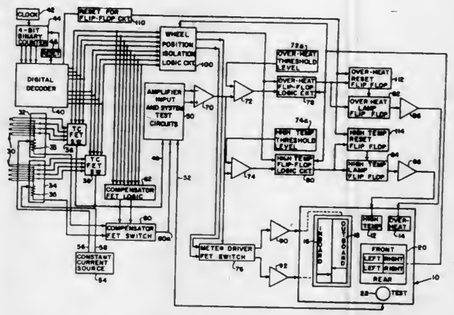
In a modification the gaps are located adjacent one another and the D.C. supply is connected to the remote ends of the gaps through resistors; the output is taken from the potentiometer brush by leads, to which one or other pole of the D.C. supply is connected by the bi-stable biassed reed switch triggered by a magnet on the shaft. Alternatively the reversal of supply connections to the common junction of the gaps is by bi-stable combination of a pair of transistors triggered by the bridging of one or the other said gaps.

The potentiometer comprises a continuous resistor engaged by a rotary brush, or resistor sections connected to studs engaged by a rotary brush, or resistor sections connected in circuit by magnetic reed switches or by light-sensitive switches.

3,678,486
MONITORING SYSTEM

David P. Bickel, Cuyahoga Falls; Melvin H. Davis, Northfield Center; Karl H. Starks, Jr., Tallmadge, and John Tooras, Akron, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Oct. 16, 1969, Ser. No. 866,890
Int. Cl. G08b *17/06, 26/00*
U.S. Cl. 340—227 6 Claims

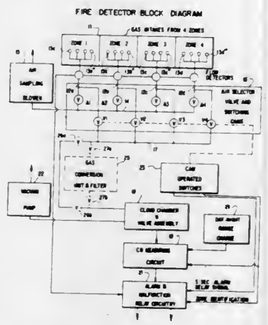


A temperature indication system particularly adapted for brake usages provided which includes a plurality of temperature sensors such as thermocouples cooperating with field effect transistor switches controlled by a digital decoder to effectively pass only one of a plurality of signals entering the switch at one time to a single amplifier. The output of the amplifier may be logically compared to provide a high temperature signal indication, or an exact temperature signal indication, depending upon the readout characteristics desired.

3,678,487
MULTI-ZONE INCIPIENT OR ACTUAL FIRE AND/OR DANGEROUS GAS DETECTION SYSTEM

Frederick A. Ludewig, Jr., Ballston Spa, and Frank W. Van Lulk, Jr., Schenectady, both of N.Y., assignors to Environment/One Corporation, Schenectady, N.Y.

Filed Feb. 8, 1971, Ser. No. 113,284
Int. Cl. G08b *19/00*
U.S. Cl. 340—236 34 Claims



A multi-zone detecting system for incipient or actual fires and/or dangerous gas accumulations comprising a multi-zone sampling system for obtaining samples of the atmosphere of the respective zones being monitored and supplying the same to a common sampling station. The sample gases are continuously drawn off and supplied through a rotary selector valve sequentially to the input of a common condensation nuclei

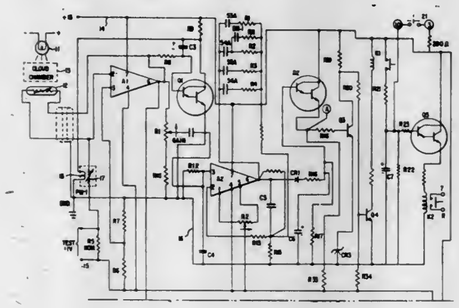
particle detector located at the common sampling station. The sensitivity of the condensation nuclei detector is individually adjusted in synchronism with the operation of the rotary selector valve to adjust the sensitivity of the condensation nuclei detector to the individual background conditions existing in each zone being monitored as the detector is sequentially switched from one zone to the next. The sensitivity of the common condensation nuclei detector is decreased for a predetermined short time settling interval following each sequential switching operation prior to making a measurement with respect to the sample atmosphere of the new zone to which it is switched. A gas conversion device can be interposed in the input to the common condensation nuclei detector for converting certain dangerous gases that might be entrained in the sample atmospheres from the several zones into condensation nuclei for supply and analysis by the condensation nuclei detector. With such an arrangement, the concentration of condensation nuclei particles detected would be in proportion to the dangerous gas constituency of the sample atmospheres. A continuous flow sample system provides a relatively fast responding detection of the occurrence of an alarm condition in any of the several zones being monitored. Additional advantageous features are described.

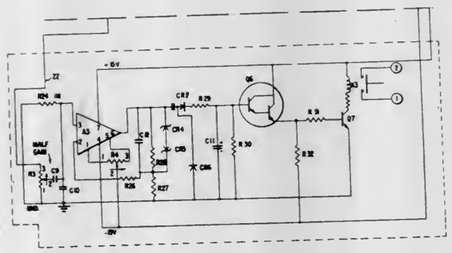
3,678,488

SELF-ADJUSTING CONDENSATION NUCLEI MONITOR MEASURING CIRCUIT HAVING ADJUSTABLE GAIN

George F. Skala, Schenectady, N.Y., assignor to Environment/One Corporation, Schenectady, N.Y.

Filed Feb. 8, 1971, Ser. No. 113,561
Int. Cl. G08b 19/00
U.S. Cl. 340—236 **20 Claims**





A detecting and amplifying circuit for a multi-zone fire and/or detection system comprising a common sensor-detector located at a control station for detecting and signaling the existence of an alarm condition in any one of the zones being monitored. The common sensor-detector preferably comprises a condensation nuclei monitor and is selectively switched from one zone to the next to monitor conditions in each respective zone sequentially. The rate at which the zones are monitored is relatively rapid on the order of once every 10 minutes or slow depending upon the number of zones, etc. An output feedback amplifier is coupled to the output from the common condensation nuclei sensor-detector for amplifying the output signals derived from the detector. A plurality of gain change resistors are selectively connectable in the feedback path of the output feedback amplifier to adjust its gain selectively to a number of different values. Cam operated switches which are operated synchronously with the selective switching of the common condensation nuclei sensor detector from one zone to the next operate to connect in preselected ones of the resistors into effective circuit relationship in the feedback path of the output feedback amplifier. Consequently, the sensitivity of the overall detecting and amplifying circuit is individually adjusted to background conditions existing in each of the zones being monitored synchronously with the switching of the common condensation nuclei monitor sensor-detector from one zone to the next. The condensation nuclei monitor is of the self-adjusting type including a first photo cell detector for detecting short term changes in light level of a light beam impinging on the photo cell as opposed to longer term changes in operating characteristics of the photo cell due to temperature effects, dust accumulation in the optical path, aging and the like. Self-adjustment is provided by a second lamp-photo cell module having the photo cell connected in circuit relationship with the first nuclei particle sensing photo cell for maintaining substantially constant long term electric energization conditions across the first photo cell. A first output feedback amplifier is provided with the first photo cell connected in its feedback path and is responsive to both fast and long time constant changes in operating conditions of the first photo cell. The lamp of the lamp-photo cell module is connected in a second long time constant feedback path of the first feedback amplifier for controlling the intensity of the light impinging on the second photo cell whereby substantially constant long term electric energization conditions are maintained across the first nuclei particle sensing photo cell. By reason of the inclusion of the feedback lamp-photo cell module in the long time constant feedback path, isolation between the output of the feedback amplifier and the input to the nuclei particle sensing photo cell, is provided.

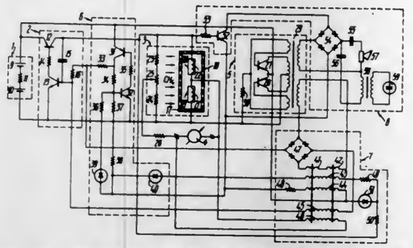
3,678,489

APPARATUS FOR DETERMINING THE CONCENTRATION OF COMBUSTIBLE GASES AND VAPORS

Alexandr Nazarievich Scherban, ulitsa Sverdlova, 10, kv. 31; Neonil Izrailevich Furman, ulitsa Erevanskaya, 10, kv. 2; Boris Feodosievich Sotnichenko, Stavropolsky pereulok, 3, kv. 1; Nikolai Stefanovich Belogolovin, Novo-Pushkinskaya ulitsa, 4, kv. 10; Jury Ivanovich Chopovsky, ulitsa Saxaganskogo, 13, kv. 16; Jury Nikolaevich Sutormin, ulitsa Vilgelma Pika, 24, kv. 48, all of Kiev; Valentin Ivanovich Zaitsev, ulitsa Ostrovskogo, 3, Konotop; Vladimir Ivanovich Kot, ulitsa Ostrovskogo, 6, Konotop; Nikolai Tarasovich Mikhalljuk, ulitsa Ostrovskogo, 8, Konotop; Sergei Andreevich Denisenko, ulitsa Ostrovskogo, 11, Konotop; Anatoly Vasilievich Chaschinov, ulitsa Korolenko, 17, kv. 72, Konotop; Stepan Vasilievich Shaporev, prospekt Lenina, 8, kv. 31, Konotop, and Svetlana Mikhailovna Samoilenko, Rusanovskaya naberezhnaya, 22, kv. 83, Kiev, all of U.S.S.R.

Filed Feb. 8, 1971, Ser. No. 113,292
Int. Cl. G08b 21/00
U.S. Cl. 340—237 R **2 Claims**

An apparatus for determining the concentration of combustible gases and vapors in which there is a control relay which is electrically connected to an a.c. source and which accepts the signal proportional to the concentration of combustible gases and vapors from a catalytic-oxidation transducer and the output signal of which controls a single-shot multivibrator electrically connected to the catalytic-oxidation transducer and the self-contained d.c. voltage source in such a manner that at the critical concentration of combustible gases and vapors the single-shot multivibrator periodically disconnects the catalytic-oxidation transducer from the self-contained d.c. voltage source and at the same time turns on the alarm unit giving signals about the critical concentration of combustible gases and vapors.

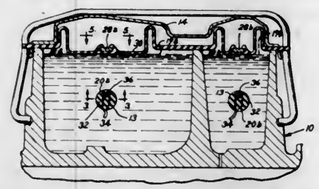


3,678,490

MASTER CYLINDER LOW FLUID INDICATOR

James Basil Putt, South Bend, Ind., assignor to The Bendix Corporation

Filed March 24, 1971, Ser. No. 127,686
Int. Cl. G08b 21/00; B60t 17/22
U.S. Cl. 340—244 E **3 Claims**



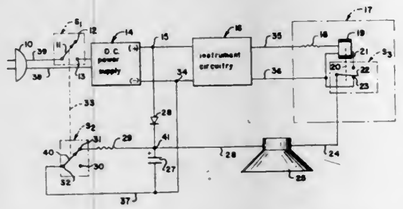
A fluid level warning device for indicating to the driver that an abnormally low supply of fluid is available in the master cylinder reservoir for actuating the brakes of a vehicle. The device includes a horizontally disposed reed switch which is located in the wall of the reservoir and a magnet secured to the reservoir diaphragm for actuating the switch.

3,678,491

INSTRUMENT POWER-DISCONNECT ALARM

Christopher C. Day, Newtonville, Mass., assignor to American Optical Corporation, Southbridge, Mass.

Filed July 20, 1970, Ser. No. 56,295
Int. Cl. G08b 21/00
U.S. Cl. 340—253 C **6 Claims**



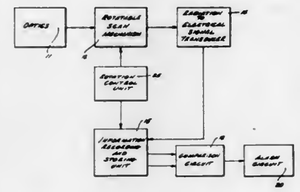
An instrument power-disconnect alarm. Apparatus is disclosed which provides an alarm in the event of inadvertent power disconnection from electronic instrumentation. For normal instrument power turnoff, the alarm is disabled. The present invention is particularly useful in conjunction with instruments used in monitoring, measuring or stimulating bodily function of hospitalized bedridden patients, where accidental power turnoff of a critical electronic instrument could be a matter of life and death.

3,678,492

OPTO-ELECTRONIC SCENE MONITORING SYSTEM

Robert P. Casper, Los Angeles, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Oct. 26, 1970, Ser. No. 84,028
Int. Cl. G08b 13/18
U.S. Cl. 340—258 B **10 Claims**



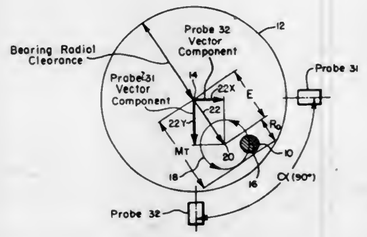
An intrusion detection system is disclosed in which a scene under observation is scanned by a rotatable scanning mechanism with each revolution thereof defining x scene scan periods. Signals from each transducer, associated with the scanning mechanism, are recorded on a magnetic drum. The latter revolves one revolution per y revolutions of the scanning mechanism. Two read heads per transducer are positioned at the drum at a radial angle $\theta = (360/x) \cdot (1/y)$. The signals from the two read heads are compared to provide an alarm indication whenever their difference exceeds a selected threshold level.

3,678,493

MACHINERY SHAFT RADIAL POSITION MONITOR/ALARM SYSTEM

Scott James Shuey, Fullerton, Calif., assignor to Borg-Warner Corporation, Chicago, Ill.

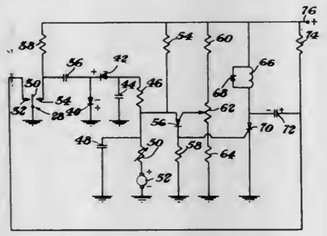
Filed Sept. 21, 1970, Ser. No. 73,992
Int. Cl. G08b 23/00
U.S. Cl. 340—269 **11 Claims**



A system for monitoring the static and dynamic radial position of a machinery shaft and, if desired, giving an alarm for positions exceeding a pre-set limit. The system was designed for monitoring of large capacity rotating pumps but may find use in other machinery such as turbines, compressors, motors, or the like. Two proximity probes, preferably of the non-contacting type, are positioned adjacent to but spaced from the shaft in a plane perpendicular to its axis along different radii,

from the nominal shaft center, which radii are preferably separated by 90° of arc. The output from each probe is converted into two signals (d.c. and a.c.) respectively representative of the radial displacements and the dynamic components of motion of the shaft relative to each probe. These four separate signals are then processed to obtain an orbit radius (R_o) signal and an eccentricity (E) signal which may be displayed individually. The R_o and E signals are also summed to produce a total motion (M_T) signal which may be displayed and is also employed to operate an alarm when M_T exceeds a pre-set limit. A preselected time delay is preferably incorporated in the alarm to prevent unnecessary actuations during transient conditions such as at start-up.

3,678,494
SLEEP SENSING APPARATUS FOR USE ON AUTOMOTIVE VEHICLES
Donald D. Setser, Tulsa, Okla., assignor to The Dow Chemical Company, Midland, Mich.
Filed Feb. 25, 1971, Ser. No. 118,599
Int. Cl. G08b *21/00*
U.S. Cl. 340—279 **4 Claims**



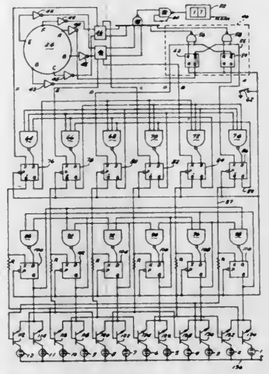
An electrical sensing switch is coupled to the steering mechanism of the vehicle whereby the normal moving of a steering wheel results in frequent movement and actuation of the contacts of the switch.

Actuation of the multi-contact switch depending on movement of the vehicle's steering wheel, results in a cutoff or non-cutoff of a unijunction switch, depending on frequency of actuation of the switch, used to control a silicon controlled rectifier in series with an alarm circuit coupled across a power source. A d.c. generator, coupled to the vehicle drive, provides a bucking voltage whose amplitude is speed dependent for adjusting the operation threshold of the unijunction switch.

Lack of normal steering movement results in the operation of the silicon control rectifier as a spike of energy is received from the unijunction switch, thus sounding the alarm. Alarm resetting is accomplished through a steering wheel movement which grounds a capacitor which is coupled to the silicon controlled rectifier.

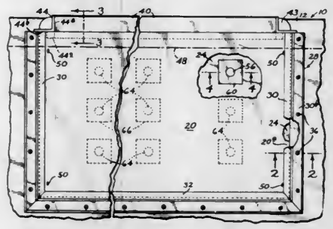
3,678,495
TARGET INDICATING SYSTEM AND METHOD
Roswell W. Gilbert, New York, N.Y., assignor to Technical Management Services, Inc., Westfield, N.J.
Filed Feb. 26, 1970, Ser. No. 14,611
Int. Cl. G08b *27/00*
U.S. Cl. 340—323 **23 Claims**

Transducers are spaced evenly in opposed pairs around a metal target. The transducers receive acoustic waves created by bullets striking the target and produce corresponding electrical signals. The approximate "score" of the impact (the distance from the center of the target) is determined by starting a counter with the signal from the first transducer to receive an acoustic wave, and then stopping the counter with the signal from the last transducer to receive the acoustic wave. The approximate azimuth of the impact is determined



by using the transducer signals and logic circuitry to light one of twelve lamps to indicate in which of 12 sectors of a circle the impact is located.

3,678,496
TOUCH-OPERATED SIGNAL PRODUCER
Bernard J. Stalp, Hillsboro, Oreg., assignor to Data Time, Inc., Beaverton, Oreg.
Filed April 20, 1970, Ser. No. 30,046
Int. Cl. G08b *5/22*
U.S. Cl. 340—323 **6 Claims**

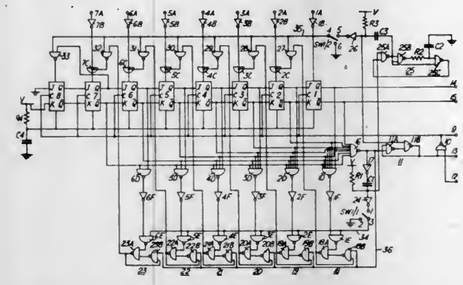


A submersible touch-operated signal producer including a pair of spaced, opposed walls sealingly connected at their edges to define a fluid-retaining chamber therebetween. One of the walls is flexible, and when it is touched, it deflects to produce a disturbance in fluid held between the walls. A transducer having a pair of output terminals is mounted in the container and is actuated by such disturbance in such fluid to produce a signal at its output terminals which actuates a remotely located timer circuit.

3,678,497
CHARACTER GENERATION SYSTEM HAVING BOLD FONT CAPABILITY
Christopher Alan Watson, Takeley, and John Raymond Maxfield, Harlow, England, assignors to International Standard Electric Corporation, New York, N.Y.
Filed Dec. 17, 1970, Ser. No. 99,195
Int. Cl. G06f *3/14*
S. Cl. 340—324 A **18 Claims**

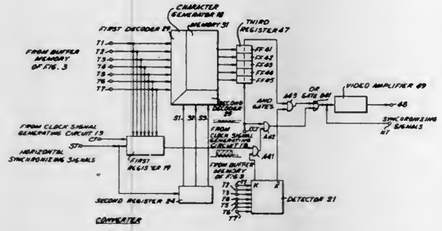
In a character generation system a bold font is generated by causing the last dot of each horizontal line of dots from which

a standard character is formed to be repeated. A loop-gated shift register converter arrangement determines from an inter-



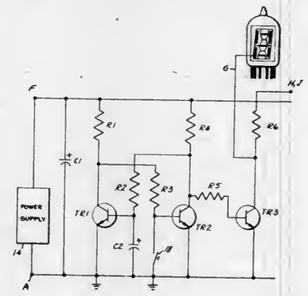
rogated character store output which dot is the last in each horizontal dot row of the selected character, and then presents the next following register stage.

3,678,498
VIDEO DISPLAY SYSTEM INCLUDING RASTER TYPE CATHODE RAY TUBE
Takeo Nagamatsu; Yusaku Yamada, both of Kawasaki, and Kazumi Yamada, Yokohama, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan
Filed Oct. 19, 1970, Ser. No. 81,689
Claims priority, application Japan, Oct. 25, 1969, 44/85421
Int. Cl. G06f *3/14*
U.S. Cl. 340—324 A **3 Claims**



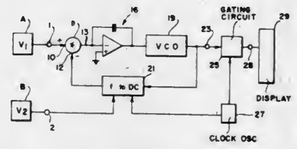
A memory of a video display system including raster type cathode ray tube display means stores character codes, codes indicating the height of a bar graph displayed in a direction perpendicular to the raster trace of the cathode ray tube, codes indicating the start of the area of the bar graph and codes indicating the end of the bar graph in the address corresponding to the display position in the display means. The memory transfers out each code successively in the order of the display position. A character generator is connected to the memory and receives the character codes from the memory and produces character video signals corresponding to the character codes. A detector is connected to the memory and detects codes indicating the start of the area of the bar graph and codes indicating the end of the bar graph. A register connected to the memory and to a source of horizontal synchronizing signals counts the horizontal synchronizing signals for determining the number of the scanning line in the display means and for comparing the number of the scanning line determined with codes indicating the height of the bar graph. A first gate circuit is connected to the character generator and stops the output of the character generator when codes indicating the start of the area of the bar graph are detected by the detector. The first gate circuit transfers the output of the character generator to a video signal amplifier when codes indicating the end of the bar graph are detected by the detector. A second gate circuit connected to a source of clock signals transfers a clock signal for the display of the bar graph to the video signal amplifier when the number of the scanning line is greater than the number corresponding to codes indicating the height of the bar graph as determined by the register.

3,678,499
ELECTRONIC DIGITAL CLOCK POWER FAILURE INDICATOR
Clyde W. McCarty, Woodville, Mass., assignor to General Electric Company
Filed Oct. 27, 1970, Ser. No. 84,410
Int. Cl. G08b *29/00*
U.S. Cl. 340—336 **4 Claims**



A power failure indicator for an electronic digital clock or similar electronic device with numeral readout components wherein an indicator segment of one of the numeral readout components is utilized for indicating a power failure.

3,678,500
ANALOG DIGITAL CONVERTER
Douglas M. Bauer, Danvers, Mass., assignor to General Electric Company
Filed Aug. 4, 1970, Ser. No. 60,885
Int. Cl. H03k *13/02*
U.S. Cl. 340—347 AD **4 Claims**

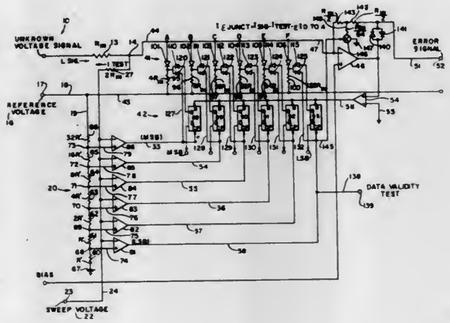


An analog to digital converter system is provided for producing an output frequency indicative of the ratio of first and second direct current signals. A summing circuit has a first direct current voltage connected to its non-inverting input and provides an output to an integrator. The integrator output is coupled to and controls a voltage controlled oscillator which provides a train of output pulses. The second direct current voltage is coupled to a frequency to direct current converter connected in a feedback loop between the oscillator and an inverting input of the summing network. The output of the summing network is thus nulled at a pulse rate proportional to the ratio of the voltages. The output of the voltage controlled oscillator may then be supplied to a digital readout device to provide a visual indication of the ratio of the first and second voltages.

3,678,501
CIRCUIT FOR CONVERTING AN UNKNOWN ANALOG VALUE INTO A DIGITAL VALVE BY SUCCESSIVE APPROXIMATIONS

Robert S. Prill, West Paterson, N.J., assignor to The Singer Company, New York, N.Y.

Filed Nov. 3, 1969, Ser. No. 873,196
Int. Cl. H03k 13/17
U.S. Cl. 340—347 AD 17 Claims

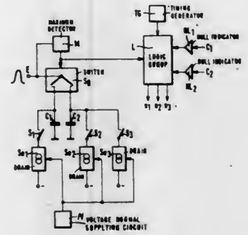


An analog-programmed, successive-approximations, analog to digital/digital to analog (A to D, D to A) converter circuit wherein an unknown analog voltage input signal is converted to a digital output signal. The converter includes an analog programmer comprising a plurality of binary-weighted, series-connected resistors in circuit with a known reference signal to provide weighted, known input signals to each of a plurality of differential comparators. A sweep signal, in circuit with the unknown analog signal, provides a second input to the differential comparators of the analog programmer. The programmer comparators are sequentially switched at known signal magnitudes from one logical state to another to provide a plurality of discrete signals. The changes in the respective output states of the comparators provide a first data input to corresponding flipflop circuits in a data register. A predetermined digital output state of the data register will enable a corresponding analog summing path of a precision D to A converter. Each analog summing path comprises a diode in circuit with a binary-weighted resistor. A current summing amplifier provides a signal to the input of a data feedback comparator which indicates the relative magnitudes of the known input signal and the unknown test signal. When the magnitude of the unnown input signal exceeds the magnitude of a test signal in the circuit, the data feedback comparator produces an output having a predetermined logical state. That predetermined output from the data feedback comparator will cause a predetermined flipflop circuit in the output data register to enable the corresponding analog summing path in the converter circuit means. Conversely, when the magnitude of the input signal is less than the magnitude of the test signal, the corresponding converter analog summing path will remain in its disenabled state. By sequentially switching the programmer comparators at predetermined intervals, the unknown input signal is determined by successively approximating the magnitude of the input signal by successively enabling the signal summing paths in the converter section.

3,678,502
METHOD FOR THE DIGITAL CONVERSION OF AN ANALOG VALUE WITH THE EXTENDED COUNTING PROCESS

Eberhard Kienzler, Karlsruhe, Germany, assignor to Siemens Aktiengesellschaft, Berlin, Germany

Filed March 23, 1970, Ser. No. 21,681
Claims priority, application Germany, March 24, 1970, P 19 14 916.7
Int. Cl. H03k 13/02
U.S. Cl. 340—347 NT 10 Claims

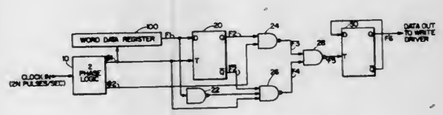


In the digital conversion of an analog value with the extended counting method, the discharge of a first analog memory condenser is started one beat prior to the start of the discharge of a second or main analog condenser at a relatively strong current rate (coarse encoding). When the discharge voltage of the first memory condenser reaches the reference potential, the discharge of the main condenser at the relatively strong current rate is interrupted and its discharge continues at a relatively weak current rate until the reference potential is reached (fine encoding). The discharge of the main condenser is thus performed by a plurality of currents of different, but constant intensity, having a predetermined ratio and their number is equal to the number of steps in which the condenser is discharged.

3,678,503
TWO PHASE ENCODER SYSTEM FOR THREE FREQUENCY MODULATION

George H. Sollman, Cambridge, Mass., assignor to Honeywell, Inc., Minneapolis, Minn.

Filed July 6, 1970, Ser. No. 52,327
Int. Cl. H04l 3/00
U.S. Cl. 340—347 DD 12 Claims

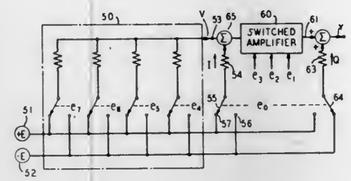


A multiphase encoder translates the bits of a Non-Return-to-Zero digital signal into a three frequency self-clocking signal characterized by having a data transition at the center of a binary ONE bit and a data transition between successive binary ZERO bits.

3,678,504
SEGMENT ANALOG-TO-DIGITAL OR DIGITAL-TO-ANALOG CONVERTER

Hisashi Kaneko, Tokyo, Japan, assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Aug. 5, 1970, Ser. No. 61,220
Int. Cl. H03k 13/02
U.S. Cl. 340—347 DA 4 Claims

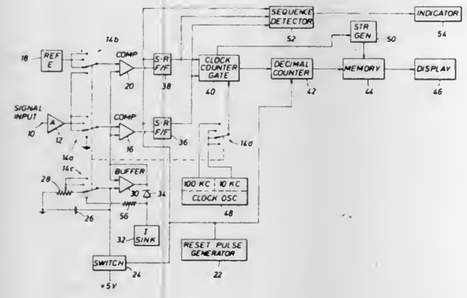


A segment-type decoder in which binary signals representing the mantissa of a digital signal to be decoded are applied to a linear coder component to produce an output current from which there is added to or subtracted a first predetermined current in accordance with a sign bit. The resulting current is applied to a switched amplifier whose gain is determined by the characteristic portion of the digital signal and from whose output is added or subtracted a second predetermined current in accordance with the sign bit to yield an analog representation of the input signal.

3,678,505
SIMULTANEOUS LOGARITHMIC CONVERSION AND DIGITAL DISPLAY APPARATUS

William T. Mostyn, Jr., Waco, Tex., assignor to Musi Comics International, Inc., Waco, Tex.

Filed Nov. 9, 1970, Ser. No. 87,697
Int. Cl. H03k 13/20
U.S. Cl. 340—347 AD 5 Claims

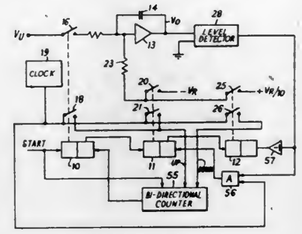


A simultaneous positive or negative logarithm conversion and digital display apparatus utilizing two comparators, one actuated when the exponentially decaying voltage on a capacitor discharging through a shunting resistor reaches the level of a reference voltage and the other actuated when the exponential decaying voltage reaches the level of the measured input signal. A clock generator connected through a gate to a counter provides the means for digitally displaying the logarithmically related time interval during which the counter operates.

3,678,506
TRIPLE-SLOPE ANALOG-TO-DIGITAL CONVERTERS

Desmond Wheable, Farnborough, England, assignor to The Solartron Electronic Group Limited, Farnborough, England

Filed Oct. 2, 1968, Ser. No. 764,490
Claims priority, application Great Britain, Oct. 27, 1967, 48,988/67
Int. Cl. H03k 13/20
U.S. Cl. 340—347 NT 1 Claim

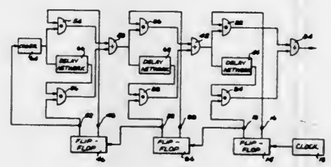


A ramp type analogue to digital converter including an integrating circuit the output of which is first set to a level dependent upon the magnitude of an analogue input voltage to be converted. A reference signal is then applied to ramp down the integrator output level to a datum level and the conversion is effected by counting clock pulses while the integrator output is ramping down to datum level. The magnitude of the reference signal and the numerical weighting of the clock pulses being counted are scaled down by a common factor when the ramp reaches a value close to the datum level so that the slope of the ramp is reduced and the resolution of conversion is increased as it approaches datum. Thus, compared with a ramp type digital voltmeter having a constant slope discharge ramp and a given resolution, the discharge time is reduced for the same resolution of conversions.

3,678,507
CODE COMPRESSION SYSTEM

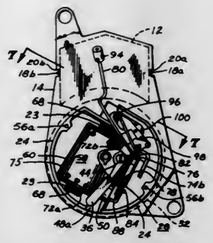
Ernest I. Rensin, Northridge, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Dec. 15, 1969, Ser. No. 885,087
Int. Cl. G06f 5/00, 5/06
U.S. Cl. 340—347 DD 5 Claims



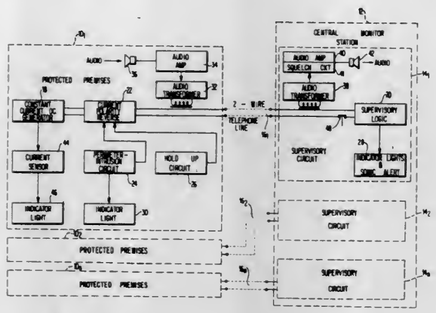
A code compression system whose output is an identical maximal length sequence code at a multiple of an input frequency code. A plurality of identical maximal length sequence codes are provided at a predetermined frequency which are delayed by fixed amounts with respect to each other. The codes are sampled at a rate higher than the frequency of the codes. The sampled codes are then combined to produce the output code at a multiple of the input frequency.

3,678,508
COMPACT FREQUENCY SELECTIVE RINGER
Robert W. Collier, Rochester, N.Y., assignor to Stromberg-Carlson Corporation, Rochester, N.Y.
Filed Dec. 22, 1969, Ser. No. 887,051
Int. Cl. G10k *1/064*
U.S. Cl. 340—392 **9 Claims**



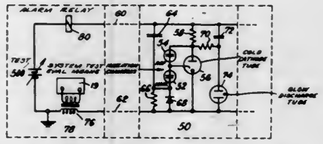
A ringer having an electromagnetic circuit and a movable armature operating a clapper assembly is positioned within a gong so that a clapper strikes the gong upon energization of the electromagnetic circuit. The opening of a resonator is mounted adjacent to the gong. The armature carries a rod which extends out from under the gong and through the opening to carry a weight within the resonator. The weight is used to adjust the frequency response of the ringer.

3,678,509
SECURITY ALARM SYSTEM
Dan Carlo, Bethesda, and James F. Pinkman, Kensington, both of Md., assignors to Multra-Guard, Inc., Rockville, Md.
Filed July 30, 1970, Ser. No. 59,413
Int. Cl. G08b *29/00*
U.S. Cl. 340—409 **30 Claims**



A constant DC current generator powers a communication link including a pair of telephone lines coupled between a protected premises and a central monitor station. The communications link includes means for reversing the DC polarity of the constant current from a predetermined polarity indicative of a normal condition to an opposite polarity in response to a detected alarm condition which occurs in response to a change in the operating parameters of a separate supervisory circuit located at the protected premises. The change in polarity is sensed at the central station and an indication of the alarm condition is presented. DC signalling of the alarm condition as well as the normal condition is thus provided by means of constant current control and DC polarity sensing. Signalling back to the protected premises from the central station is achievable by interrupting the continuity of the communication link and causing the constant current DC generator to sense the open circuit condition. Also when desirable an audio signal is adapted to be transmitted over the communication link from the protected premises to the central station.

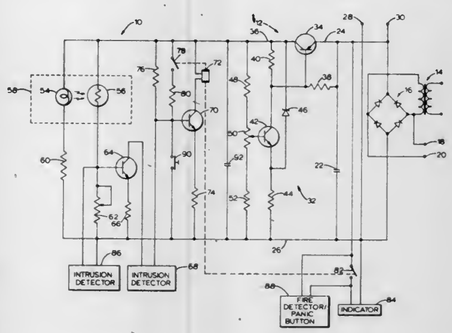
3,678,510
FIRE ALARM SYSTEMS EQUIPPED WITH CIRCUIT MONITORING DEVICES
Beat Walthard; Andreas Scheidweiler, and Max Kuhn, all of Stafa, Switzerland, assignors to Cerberus AG, Mannedorf, Switzerland
Division of Ser. No. 636,174, May 4, 1967, Pat. No. 3,564,524. This application Oct. 5, 1970, Ser. No. 78,127
Claims priority, application Switzerland, May 9, 1966, 6703/66
Int. Cl. G08b *29/00*
U.S. Cl. 340—410 **9 Claims**



A fire alarm system including a plurality of fire alarms arranged in groups. Alarm-simulating conditions are produced in each fire alarm by an electric test signal, the response of each fire alarm being sent to an evaluation device at a central signal station through a circuit coupling the fire alarms together.

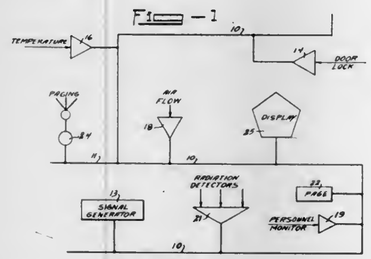
Each alarm generates an oscillation in normal condition which is suppressed in the alarm state.

3,678,511
ALARM CIRCUIT
Elmer M. Benedict, 506 State Street, Schenectady, N.Y.
Filed Dec. 9, 1969, Ser. No. 883,486
Int. Cl. G08b *19/00, 17/10*
U.S. Cl. 340—420 **1 Claim**



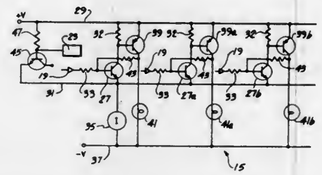
The disclosed embodiment of the invention is a circuit which is responsive to one of a number of abnormal conditions for activating an alarm. The circuit includes a highly regulated power supply formed of a transistor connected in series between an unregulated voltage supply and the detector portion of the circuit. A feedback circuit, which senses voltage fluctuations, controls the level of conduction of the transistor, thereby controlling the voltage drop thereacross to provide a regulated output voltage. A smoke detector is formed of a light and a photocell mounted in a smoke chamber, the interior of which is shielded from ambient light. Any increase in the resistor of the photocell caused by the presence of smoke activates, through an amplifier circuit, a latching relay, which in turn activates an alarm. The amplifier circuit is also responsive to either the closing of normally open contacts or the opening of normally closed contacts to actuate the relay. Additional detectors and controls are connected in parallel with the relay contacts which energize the alarm.

3,678,512
TELEMONITORING SYSTEM
Richard W. Fergus, Lombard, Ill., assignor to The United States of America as represented by the United States Atomic Energy Commission
Filed Oct. 21, 1970, Ser. No. 82,674
Int. Cl. G08b *26/00*
U.S. Cl. 340—408 **5 Claims**



A multistation monitoring system is interconnected by a single cable. Pulses are transmitted over the cable by a signal generator. Each station counts the pulses and upon the receipt of the appropriate pulse each station changes the pulse width according to the data to be transmitted. Provision is also made to transmit control pulses which can be used to activate controls at remote locations.

3,678,513
PEAK SELECTION CIRCUIT AND APPARATUS UTILIZING SAME
William H. Ward, Jr., Huntington Beach, Calif., assignor to General Monitors, Inc., Costa Mesa, Calif.
Filed Oct. 28, 1970, Ser. No. 84,698
Int. Cl. G08b *23/00*
U.S. Cl. 340—414 **7 Claims**

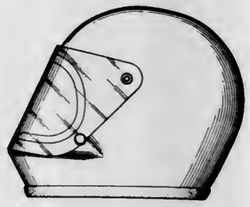


A peak selection circuit connectible to receive several variable amplitude signals for selecting the signal of greatest amplitude and indicating which channel provided such signal. This peak selection circuit can be used, for example, in an apparatus for detecting a gas at first and second locations which comprises a first sensor for providing a first electrical signal having a characteristic variable in accordance with the concentration of the gas at the first location, a second sensor for providing a second electrical signal having a characteristic variable in accordance with the concentration of the gas at the second location, a circuit coupled to the first and second sensors for automatically selecting the signal having the characteristic indicative of the greatest amount of the gas, and an indicator responsive to the selected signal for providing an indication as to which of the signals was selected by the circuit.

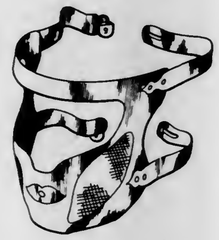
DESIGNS

JULY 18, 1972

224,281
HELMET
Victor J. Padilla, 13212 Magnolia, Garden Grove, Calif. 92644
Filed Dec. 4, 1970, Ser. No. 26,293
Term of patent 14 years
Int. Cl. D2—*03*
U.S. Cl. D2—232



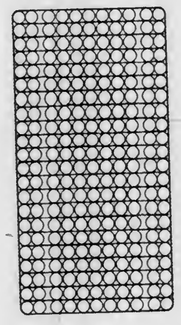
224,282
FACE MASK
Thomas D. Candela, 34 E. 2nd St., New York, N.Y. 10003
Filed Nov. 2, 1970, Ser. No. 25,782
Term of patent 14 years
Int. Cl. D2—*03*
U.S. Cl. D2—234



224,283
SLIDER CASING FOR SAFETY BELT
Michel Tixier, Billancourt, France, assignor to Regie Nationale des Usines Renault, Billancourt, and Automobiles Peugeot, Paris, France
Continuation-in-part of design application Ser. No. 19,213, Sept. 19, 1969. This application Sept. 29, 1970, Ser. No. 25,263
Claims priority, application France Mar. 19, 1969
Term of patent 14 years
Int. Cl. D2—*07*
U.S. Cl. D2—408



224,284
BED SPRING UNIT OR SIMILAR ARTICLE
Richard C. Roe, Palatine, Ill., and Wilton J. Davis, Rensselear, Ind., assignors to Sealy, Inc., Chicago, Ill.
Filed Apr. 2, 1970, Ser. No. 22,430
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D5—2



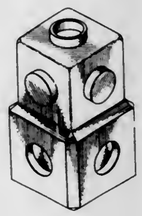
224,285
ARMCHAIR
Eugenio Gerli, Milan, Italy, assignor to Tecno S.p.A., Milan, Italy
Filed July 20, 1970, Ser. No. 24,039
Claims priority, application Italy Jan. 19, 1970
Term of patent 14 years
Int. Cl. D6—*02*
U.S. Cl. D6—71



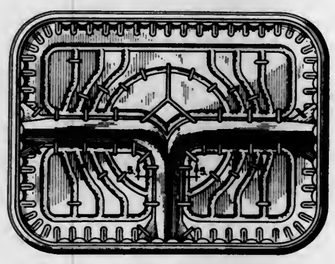
224,286
BOTTLE
Jack H. Rosfeld, Greenville, S.C., assignor to Texize Chemicals, Inc.
Filed Sept. 26, 1968, Ser. No. 13,733
Term of patent 14 years
The portion of the term of the patent subsequent to Aug. 12, 1983, has been disclaimed
Int. Cl. D9—*01*
U.S. Cl. D9—116



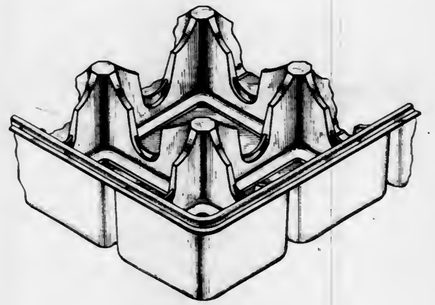
224,287
BOTTLE OR SIMILAR ARTICLE
Theo M. S. Coster, Beyt Horon St. 7, Tel Baruch, Israel
Filed July 10, 1970, Ser. No. 23,893
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—157



224,288
FOOD PACKAGING TRAY
Roy W. Bloch, Northbrook, Ill., assignor to Ekco Products, Inc., Wheeling, Ill.
Filed Sept. 14, 1970, Ser. No. 24,986
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—185



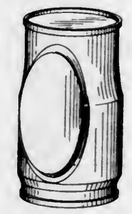
224,289
PACKAGING CONTAINER FOR COMESTIBLES OR THE LIKE
Roy W. Bloch, Northbrook, Ill., assignor to Ekco Products, Inc., Wheeling, Ill.
Filed Oct. 28, 1970, Ser. No. 25,690
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—187



224,290
KNIFE BLADE DISPENSING PACKAGE
John C. Robertson, Orange, N.J., assignor to The Stanley Works, New Britain, Conn.
Filed Feb. 9, 1970, Ser. No. 21,324
Term of patent 14 years
Int. Cl. D20—*02*
U.S. Cl. 9—191



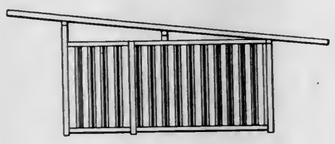
224,291
CAN OR SIMILAR ARTICLE
Carmen T. Mascia, Westmont, and Richard D. Bagguley, Dolton, Ill., assignors to Continental Can Company, Inc., New York, N.Y.
Filed June 1, 1971, Ser. No. 148,665
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—216

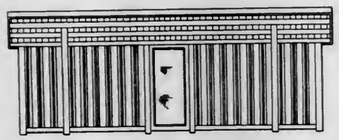


224,292
BUILDING FRAME MEMBER
James Franklin McCaul III, Birmingham, Ala., assignor to Schokbeton Products Corp., Birmingham, Ala.
Filed Aug. 14, 1970, Ser. No. 24,495
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D13—1

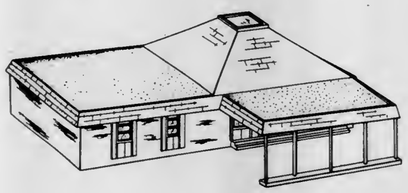


224,293
COMFORT STATION SHELTER OR SIMILAR ARTICLE
Robert S. Wormser, Hillsdale, Mich., assignor to Game Time Inc., Litchfield, Mich.
Filed Mar. 18, 1971, Ser. No. 125,908
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1

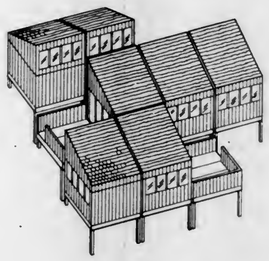




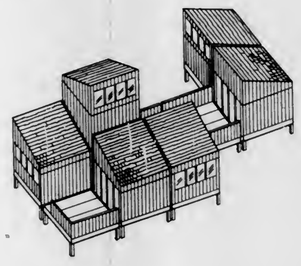
224,294
MOTEL OFFICE BUILDING
Howard L. Schwartz, Miami Beach, Fla., assignor to United Inns Mfg. Corp., Kansas City, Mo.
Filed May 3, 1971, Ser. No. 140,021
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1



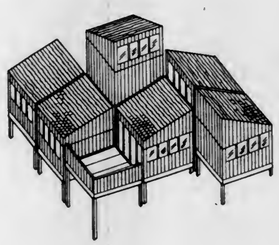
224,295
PRE-ASSEMBLED MODULAR HOUSING STRUCTURE
Edward D. Kelbish, 280 Vandervilt Ave., Brooklyn, N.Y. 11205
Filed May 14, 1971, Ser. No. 143,725
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1



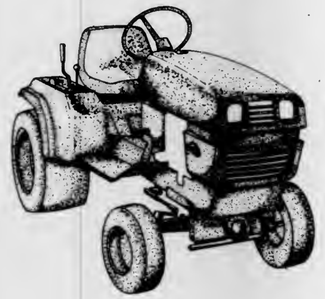
224,296
PRE-ASSEMBLED MODULAR HOUSING STRUCTURE
Edward D. Kelbish, 280 Vanderbilt Ave., Brooklyn, N.Y. 11205
Filed May 14, 1971, Ser. No. 143,726
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1



224,297
PRE-ASSEMBLED MODULAR HOUSING STRUCTURE
Edward D. Kelbish, 280 Vanderbilt Ave., Brooklyn, N.Y. 11205
Filed May 14, 1971, Ser. No. 143,727
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1



224,298
LAWN AND GARDEN TRACTOR
Constantine J. Kermes, Lancaster County, Pa., assignor to Sperry Rand Corporation, New Holland, Pa.
Filed Oct. 5, 1970, Ser. No. 25,343
Term of patent 14 years
Int. Cl. D12—*09*
U.S. Cl. D14—3



224,299
REAR VIEW MIRROR
Lynn Harold Hodge, 12618 Wyoming Ave., Detroit, Mich. 48238
Filed Aug. 17, 1970, Ser. No. 24,532
Term of patent 3½ years
Int. Cl. D12—*16*
U.S. Cl. D14—6



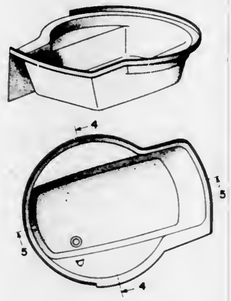
224,300
REAR VIEW MIRROR
Lynn Harold Hodge, 12618 Wyoming Ave., Detroit, Mich. 48238
Filed Aug. 17, 1970, Ser. No. 24,535
Term of patent 3½ years
Int. Cl. D12—*16*
U.S. Cl. D14—6



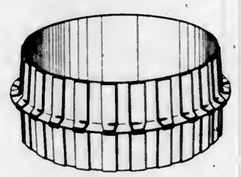
224,301
SNOWMOBILE
Terry D. Swan, 420 43rd St., Richmond, Calif. 94805
Filed May 25, 1970, Ser. No. 23,131
Term of patent 7 years
Int. Cl. D12—*13*
U.S. Cl. D14—24



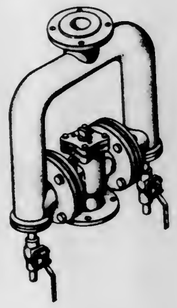
224,302
BATHTUB
James A. Tiller, 3801 Kingswood Drive, Decatur, Ga. 30032
Filed May 18, 1970, Ser. No. 23,053
(Filed under Rule 47(b) and 35 U.S.C. 118)
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—55



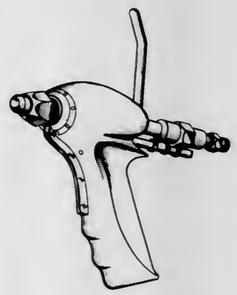
224,303
COUPLING RING FOR DRAINAGE PIPES
Hakan Georg Fritiof Bergkvist, Vastbovagen 47, S–331 00 Varnamo, Sweden
Filed Nov. 20, 1970, Ser. No. 26,091
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—43



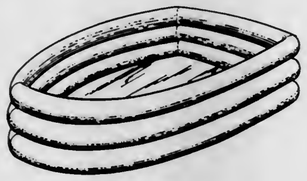
224,304
DUPLEX STRAINER UNIT
Russell G. Smith, Cincinnati, Ohio, assignor to Xomox Corporation, Cincinnati, Ohio
Filed Sept. 8, 1970, Ser. No. 24,883
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—4



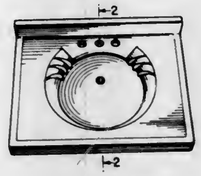
224,305
PLURAL FLUID CONTROL MIXING AND SPRAY GUN
Wallace F. Krueger, 4401 Merriweather Road, Toledo, Ohio 43623
Filed June 8, 1970, Ser. No. 23,367
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—17



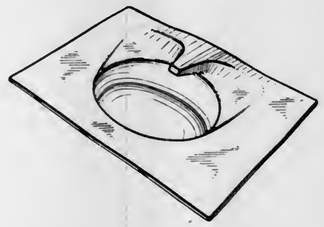
224,306
BABY BATH
John P. Anderson, 9621 Clearbrook Drive, Huntington Beach, Calif. 92646
Filed Sept. 15, 1970, Ser. No. 25,014
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—52



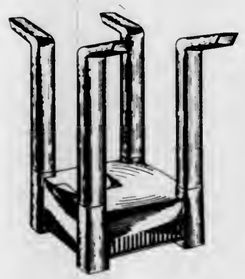
224,307
INTEGRAL COUNTER TOP AND LAVATORY
David L. Bogna, 16814 Blackhawk St., Granada Hills, Calif. 91344
Filed Jan. 5, 1971, Ser. No. 104,193
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—58



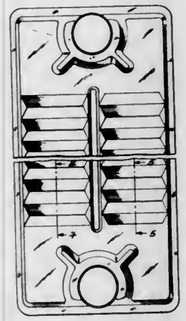
224,308
VANITY SINK
Donald G. Lauer, Elizabeth, N.J., Cooper C. Woodring, Plandome, N.Y., and Joseph Anthony Rinaldi, Fort Lee, N.J., assignors to J. C. Penney Company, Inc., New York, N.Y.
Filed Jan. 6, 1971, Ser. No. 104,530
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—58



224,309
BOOT AND SHOE DRYER
Martin J. Wolff, West Haven, Conn., assignor to Sperry Rand Corporation, New York, N.Y.
Filed Apr. 26, 1971, Ser. No. 137,742
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—77



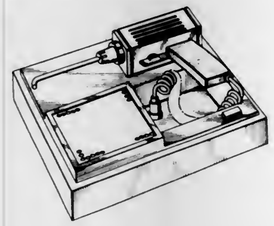
224,310
COOLING PANEL
Edward J. Clarkin, Florissant, Mo., assignor to Nooter Corporation, St. Louis, Mo.
Filed Jan. 6, 1971, Ser. No. 104,547
Term of patent 14 years
Int. Cl. D23—*99*
U.S. Cl. D23—127



224,311
FLOAT FOR SANITIZING AGENT DISPENSER
James E. Brett, Redondo Beach, Calif., assignor to Purex Corporation, Ltd., Lakewood, Calif.
Filed Mar. 15, 1971, Ser. No. 124,658
Term of patent 14 years
Int. Cl. D23—*99*
U.S. Cl. D23—150



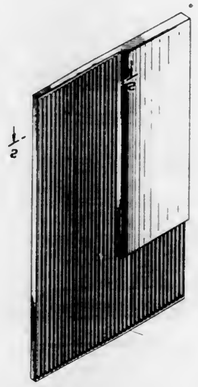
224,312
HAND-HELD ULTRAVIOLET LIGHT UNIT FOR DENTAL USE
Ronald C. Webb, York, Pa., and Gerald L. Lenz, East Brunswick, N.J., assignors to Conrad Precision Industries, Inc.
Filed Mar. 15, 1971, Ser. No. 124,083
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—1



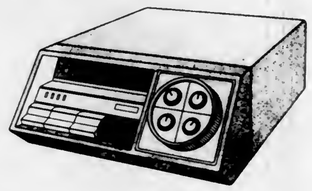
224,313
MAGNETIC TAPE CASSETTE TRANSPORT
Hari K. Matsuda, Evanston, Ill., assignor to Ampex Corporation, Redwood City, Calif.
Filed June 3, 1971, Ser. No. 149,883
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D26—14



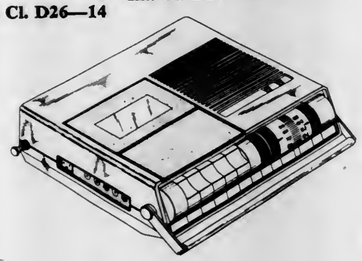
224,314
PANEL FOR USE ON ELECTRONIC EQUIPMENT CABINETS OR THE LIKE
Carl Frederick Schaus, Ballston Lake, N.Y., assignor to Honeywell Information Systems Inc.
Filed Dec. 2, 1970, Ser. No. 26,248
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5



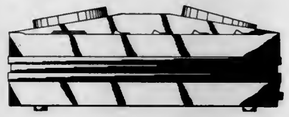
224,315
MAGNETIC TAPE CASSETTE TRANSPORT
Donald E. Leman, Des Plaines, Ill., assignor to Ampex Corporation, Redwood City, Calif.
Filed June 1, 1971, Ser. No. 149,101
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D26—14

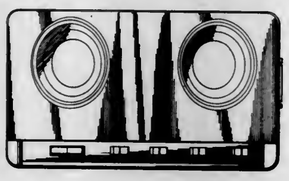


224,316
COMBINED MAGNETIC TAPE CASSETTE TRANSPORT AND RADIO
Orville W. Larson, Elmhurst, Ill., assignor to Ampex Corporation, Redwood City, Calif.
Filed June 1, 1971, Ser. No. 149,096
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D26—14

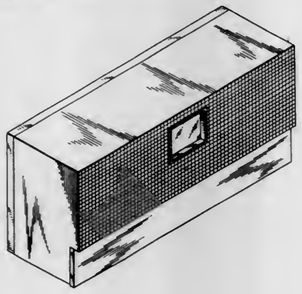


224,317
ACOUSTIC COUPLER
Joseph P. Marsalka and John P. Kennedy, Columbus, Ohio, assignors to Design Elements, Inc., Columbus, Ohio
Filed June 23, 1971, Ser. No. 156,153
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14

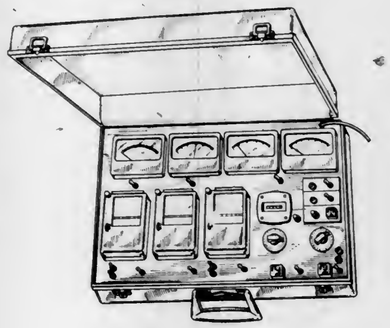




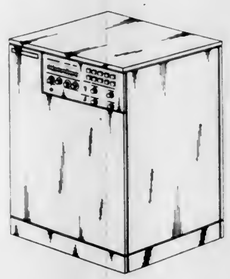
224,318
PHOTO ELECTRIC SWITCH
Robert D. Kahn, Rockville Centre, N.Y., assignor to Fedtro, Inc., Rockville Centre, N.Y.
Filed Jan. 22, 1971, Ser. No. 109,090
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—1



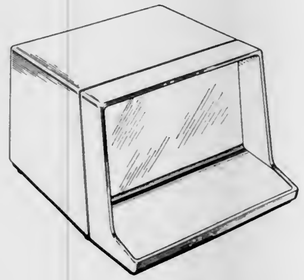
224,319
ELECTRIC SOLDERING EQUIPMENT MATCHING INSTRUMENT
Joseph A. Sylvester, Wayne, N.J., assignor to Hexacon Electric Company
Filed Nov. 10, 1970, Ser. No. 25,924
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D26—1



224,320
DATA PROCESSING UNIT
Myron F. Davis and Walter Furlani, Boca Raton, Fla., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Oct. 26, 1970, Ser. No. 25,656
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5

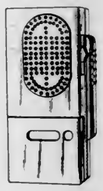


224,321
KEYBOARD OPERATED DISPLAY CONSOLE
Allen R. Williams, Jr., Lynnfield, Mass., assignor to Sanders Associates, Inc., Nashua, N.H.
Filed Feb. 22, 1971, Ser. No. 117,594
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5

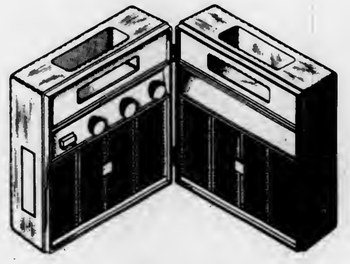


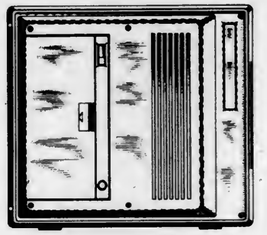
224,322
TAPE RECORDER
Manfred Paul Tupaj, Grobenzell, and Heinz Engert, Munich Untermenzing, Germany, assignors to Snd-Atlas-Werke G.m.b.H., Munich, Germany
Filed Sept. 15, 1970, Ser. No. 25,013
Claims priority, application Germany Mar. 23, 1970
Term of patent 3½ years
Int. Cl. D14—*01*
U.S. Cl. D26—14



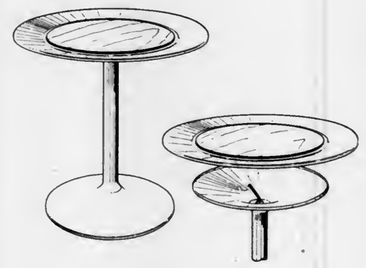


224,323
PORTABLE TAPE PLAYER
Richard H. Seager, Manlius, N.Y., assignor to General Electric Company
Filed June 23, 1971, Ser. No. 156,173
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D26—14





224,324
TRAY AND TABLE COMBINATION
William H. Wiggins, 137 Willowdale Ave., Willowdale, Ontario, Canada
Filed Mar. 23, 1970, Ser. No. 22,007
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D33—14



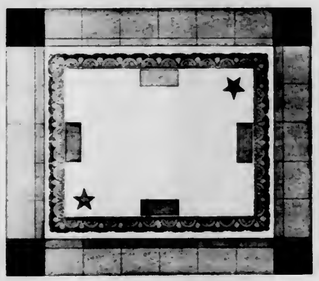
224,325
ANIMAL FIGURE HAND PUPPET
Marie H. Frost, Wheaton, and Russell B. Odell, Elgin, Ill., assignors to David C. Cook Publishing Company, Elgin, Ill.
Filed Feb. 16, 1971, Ser. No. 115,941
Term of patent 3½ years
Int. Cl. D21—*01*
U.S. Cl. D34—2



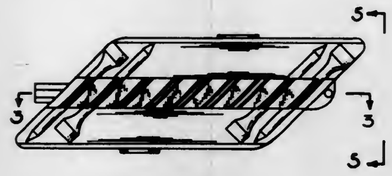
224,326
SEAT FOR PLAYGROUND APPARATUS
Ronald L. Ewers, Hillsdale, Mich., assignor to Game Time, Inc., Litchfield, Mich.
Filed Mar. 18, 1971, Ser. No. 125,902
Term of patent 14 years
Int. Cl. D21—*03*
U.S. Cl. D34—5



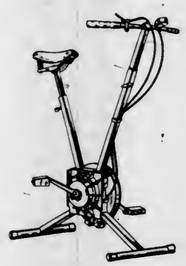
224,327
GAME BOARD
James J. Augustine, 206A Longview Drive, Geneva, Ill. 60134
Filed July 15, 1966, Ser. No. 3,090
The portion of the term of the patent subsequent to Jan. 18, 1983, has been disclaimed
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5



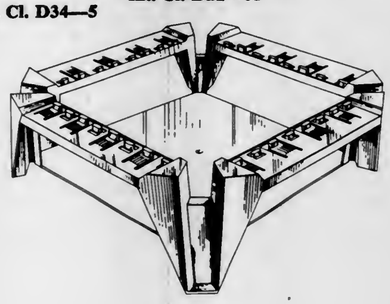
224,328
COMBINED GOLF ACCESSORIES AND HOLDER THEREOF
Edward L. Cicero, 52—62 66th St., Maspeth, N.Y. 11378
Filed Sept. 9, 1970, Ser. No. 24,902
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5



224,329
BICYCLE EXERCISER
Stig Gunnar Hjelmquist, Box 6, 573 01 Tranas, Sweden.
Filed Apr. 5, 1971, Ser. No. 131,578
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5



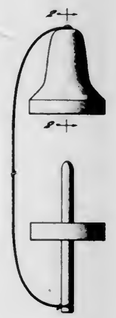
224,330
ELASTIC-BAND-SUPPORTING FRAME FOR USE IN A GAME
Donald J. Rodemeyer, Cliffside Park, N.J., assignor to Ideal Toy Corporation, Hollis, N.Y.
Filed Oct. 15, 1970, Ser. No. 25,514
Claims priority, application Canada July 21, 1970
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5



224,331
PINWHEEL TOY OR SIMILAR ARTICLE
Arthur Halpern, New York, N.Y., assignor to M. I. Sales Co., Inc., New York, N.Y.
Filed Mar. 1, 1971, Ser. No. 122,653
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15



224,332
TETHER TOY
Angel F. Hernandez, 1210 NE. 81st St. Terrace, Miami, Fla. 33138
Filed Jan. 27, 1971, Ser. No. 110,363
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15



224,333
ADJUSTABLE FLOWER POT HOLDER
Samuel P. Kelly, 806 Grand Ave., Fort Worth, Tex. 76106
Filed Oct. 27, 1970, Ser. No. 25,686
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D35—3



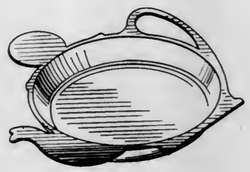
224,334
SHELLFISH MEAT PATTIE MOLD
Fenton W. Prehn, P.O. Box 842, Seaview, Wash. 98644
Filed Apr. 16, 1970, Ser. No. 22,460
Term of patent 14 years
Int. Cl. D7—*04*
U.S. Cl. D44—1



224,335
DIE RELEASE FOR A SHELLFISH MEAT PATTIE MOLD
Fenton W. Prehn, P.O. Box 842, Seaview, Wash. 98644
Filed Apr. 16, 1970, Ser. No. 22,468
Term of patent 14 years
Int. Cl. D7—*04*
U.S. Cl. D44—1



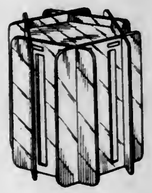
224,336
SAUCER FOR A TEA BAG OR THE LIKE
David M. Shatan, Mamaroneck, N.Y., assignor to Presto Plastics Corporation, Mamaroneck, N.Y.
Filed Oct. 9, 1970, Ser. No. 25,419
Term of patent 14 years
Int. Cl. D7—*06*
U.S. Cl. D44—9



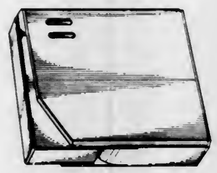
224,337
COMBINED KNIFE SHARPENER AND MEAT CARVING FORK
Rinzy Nocero, 181 73rd St., Brooklyn, N.Y. 11209
Filed May 25, 1971, Ser. No. 146,857
Term of patent 14 years
Int. Cl. D7—*04*
U.S. Cl. D44—29



224,338
TABLE LAMP
Alfredo Martini, Via della Giardina, Monza, Italy, and Roberto Coizet, Pizza Oberdan 4, Milan, Italy
Filed Oct. 19, 1970, Ser. No. 25,537
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D48—20

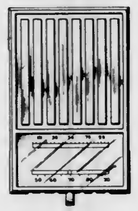


224,339
CIGARETTE LIGHTER
Kenjiro Goto, Tokyo, Japan, assignor to Mansei Kogyo Kabushiki Kaisha, Kawaguchi-shi, Saitama, Japan
Filed May 24, 1971, Ser. No. 146,600
Term of patent 14 years
Int. Cl. D27—*05*
U.S. Cl. D48—27



224,340
DISC DISPENSER
Walter Swirple, 8444 Lochdale, Dearborn Heights, Mich. 48127
Filed Apr. 21, 1971, Ser. No. 136,284
Term of patent 14 years
Int. Cl. D9—*99*
U.S. Cl. D52—2

224,341
THERMOSTAT HOUSING
Anthony C. Cairo, Holland, Mich., assignor to Simicon Company, Holland, Mich.
Filed Sept. 16, 1970, Ser. No. 25,019
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D52—7



224,342
PALLET MAKING JIG
Irving Dumm III, 8297 Oak Knoll Drive, Roseville, Calif. 95678, and Robert A. Wilson, 8821 Etiwanda Ave., Etiwanda, Calif. 91739
Filed Aug. 28, 1970, Ser. No. 24,747
Term of patent 14 years
Int. Cl. D8—*99*
U.S. Cl. D54—1



224,343
FORK OR SIMILAR ARTICLE OF FLATWARE
Ignacio Arcocha Basterra, La Vega s/n Guernica, Spain
Filed July 17, 1970, Ser. No. 24,238
Term of patent 14 years
Int. Cl. D7—*03*
U.S. Cl. D54—12



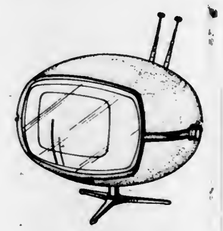
224,344
FORK OR SIMILAR ARTICLE OF FLATWARE
Ignacio Arcocha Basterra, La Vega s/n Guernica, Spain
Filed July 17, 1970, Ser. No. 24,645
Term of patent 14 years
Int. Cl. D7—*03*
U.S. Cl. D54—12



224,345
SPOON OR SIMILAR ARTICLE OF FLATWARE
William J. Knope, Meriden, Conn., assignor to International Silver Company, Meriden, Conn.
Filed Feb. 1, 1971, Ser. No. 111,794
Term of patent 14 years
Int. Cl. D7—*03*
U.S. Cl. D54—12



224,346
TELEVISION RECEIVER
Yasunobu Nakamura, Suita, Tadashi Sumino, Osamu Sugihara and Kazuhiro Ueda, Takatsuki, and Makoto Terauchi, Ibaragi, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Mar. 15, 1971, Ser. No. 124,651
Claims priority, application Japan Sept. 16, 1970
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D56—4



224,347
PAIR OF SPECTACLES
Jack Bloch, Leominster, Mass., assignor to Foster Grant Co., Inc., Leominster, Mass.
Filed Sept. 10, 1970, Ser. No. 24,928
Term of patent 14 years
Int. Cl. D16—*06*
U.S. Cl. D57—1



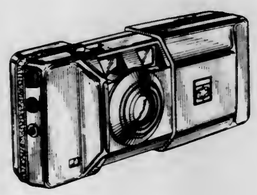
224,348
PAIR OF SPECTACLES
Jack Bloch, Leominster, Mass., assignor to Foster Grant Co., Inc., Leominster, Mass.
Filed Sept. 10, 1970, Ser. No. 24,931
Term of patent 14 years
Int. Cl. D16—*06*
U.S. Cl. D57—1



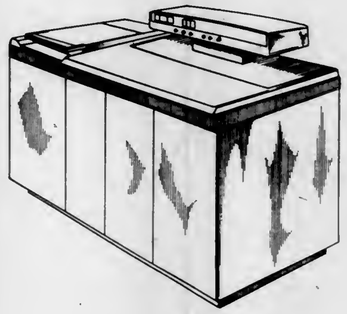
224,349
PAIR OF SPECTACLES
Jack Bloch, Leominster, Mass., assignor to Foster Grant Co., Inc., Leominster, Mass.
Filed Sept. 10, 1970, Ser. No. 24,932
Term of patent 14 years
Int. Cl. D16—*06*
U.S. Cl. D57—1



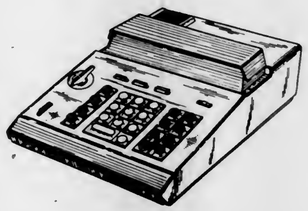
224,350
CAMERA
Masahiro Fukuda, Kawasaki-shi, Japan, assignor to Fuji Shashin Film Kabushiki Kaisha, Minamiashigara-machi, Ashigarakami-gun, Kanagawa-ken, Japan
Filed Sept. 11, 1969, Ser. No. 19,118
Claims priority, application Japan Apr. 9, 1969
Term of patent 14 years
Int. Cl. D16—*01*
U.S. Cl. D61—1



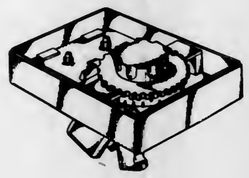
224,351
OFFICE COPIER
Earl E. Hoyt, Washington Township, Bergen County, N.J., assignor to Van Dyk Research Corporation, Whippany, N.J.
Filed June 1, 1970, Ser. No. 23,233
Term of patent 14 years
Int. Cl. D16—*05*
U.S. Cl. D61—1



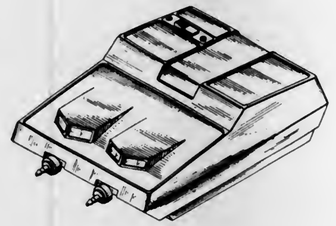
224,352
DESK ELECTRONIC CALCULATOR
Tatsuya Mikami, Narashino, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan
Filed Oct. 15, 1970, Ser. No. 25,506
Claims priority, application Japan Apr. 16, 1970
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5



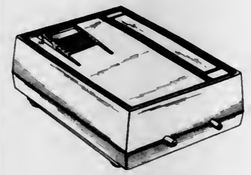
224,353
TAPE PRINTER OR SIMILAR ARTICLE
Fred C. Rosenow, Northridge, Calif., assignor to Data Collection Systems, Inc., Northridge, Calif.
Filed Sept. 22, 1970, Ser. No. 25,134
Term of patent 14 years
Int. Cl. D18—*99*
U.S. Cl. D64—10



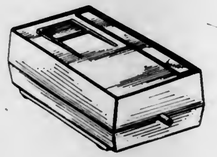
224,354
AIR-PUMP FOR AQUARIUM OR THE LIKE
Ryozo Kondo, 972 Tsutsumikata-machi Ohta-ku, Tokyo, Japan
Filed Aug. 21, 1970, Ser. No. 24,625
Term of patent 3½ years
Int. Cl. D15—*02*
U.S. Cl. D65—1



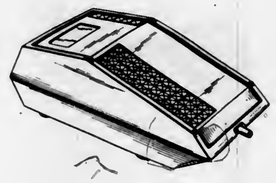
224,355
AIR-PUMP FOR AQUARIUM OR THE LIKE
Ryozo Kondo, 972 Tsutsumikata-machi, Ohta-ku, Tokyo, Japan
Filed Nov. 16, 1970, Ser. No. 25,989
Term of patent 3½ years
Int. Cl. D15—*02*
U.S. Cl. D65—1



224,356
AIR-PUMP FOR AQUARIUM OR THE LIKE
Ryozo Kondo, 972 Tsutsumikata-machi, Ohta-ku, Tokyo, Japan
Filed Nov. 16, 1970, Ser. No. 26,011
Term of patent 3½ years
Int. Cl. D15—*02*
U.S. Cl. D65—1



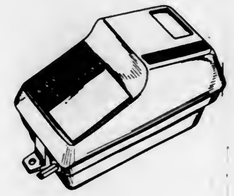
224,357
AIR-PUMP FOR AQUARIUM OR THE LIKE
Ryozo Kondo, 972 Tsutsumikata-machi, Ohta-ku, Tokyo, Japan
Filed Nov. 16, 1970, Ser. No. 26,012
Term of patent 3½ years
Int. Cl. D15—*02*
U.S. Cl. D65—1



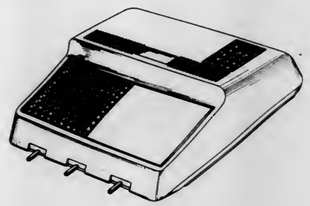
224,358
AIR-PUMP FOR AQUARIUM OR THE LIKE
Ryozo Kondo, 972 Tsutsumikata-machi, Ohta-ku, Tokyo, Japan
Filed Nov. 16, 1970, Ser. No. 26,017
Term of patent 3½ years
Int. Cl. D15—*02*
U.S. Cl. D65—1



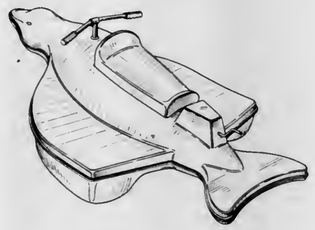
224,359
AQUARIUM AIR-PUMP OR THE LIKE
Ryozo Kondo, 972 Tsutsumikata-machi, Ohta-ku, Tokyo, Japan
Filed Apr. 26, 1971, Ser. No. 137,729
Term of patent 3½ years
Int. Cl. D15—*02*
U.S. Cl. D65—1



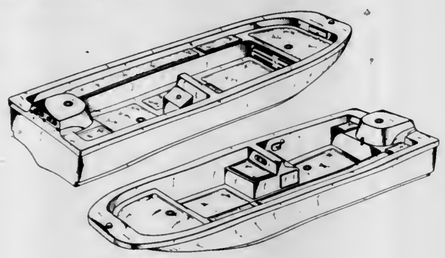
224,360
AQUARIUM AIR-PUMP OR THE LIKE
Ryozo Kondo, 972 Tsutsumikata-machi, Ohta-ku, Tokyo, Japan
Filed June 16, 1971, Ser. No. 137,730
Term of patent 3½ years
Int. Cl. D15—*02*
U.S. Cl. D65—1



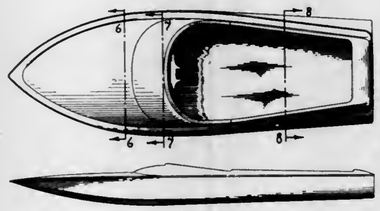
224,361
DOLPHIN-SHAPED BOAT
Robert A. Nelson, Guelph, Ontario, Canada, assignor to Everett A. E. Fagg, Mississauga, Ontario, Canada
Filed Sept. 21, 1970, Ser. No. 25,075
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D71—1



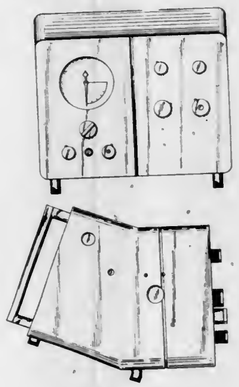
224,362
BOAT
William H. Wilson, Fort Smith, Ark., assignor to Rebel Boat Company, Inc., Fort Smith, Ark.
Filed Dec. 28, 1970, Ser. No. 26,660
Term of patent 14 years
Int. Cl. D12—*06*
U.S. Cl. D71—1



224,363
BOAT HULL
Jack Davidson, 3316 E. Annadale, Fresno, Calif. 93725
Filed Feb. 11, 1971, Ser. No. 114,741
Term of patent 14 years
Int. Cl. D12—*06*
U.S. Cl. D71—1



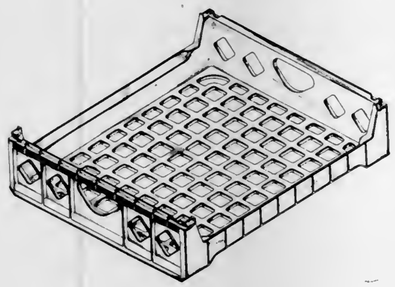
224,364
AUTOMATIC LUNG VENTILATOR
Douglas James Warner, Berkeley, and Arnold Wolf, Los Angeles, Calif., assignors to Veriflo Corporation, Richmond, Calif.
Filed Apr. 1, 1971, Ser. No. 130,546
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D83—1



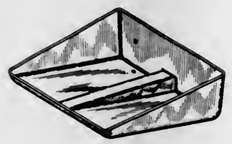
224,365
SHOE HORN
Gerald D. Lewis, 8221 Deerfield Drive, Huntington Beach, Calif. 92646
Filed Oct. 19, 1970, Ser. No. 25,555
Term of patent 14 years
Int. Cl. D28—*99*
U.S. Cl. D86—10



224,366
BREAD TRAY
Houston Rehrig, Pasadena, Calif. (4291 Bandini Blvd., Los Angeles, Calif. 90023)
Filed Oct. 27, 1970, Ser. No. 25,683
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D87—1



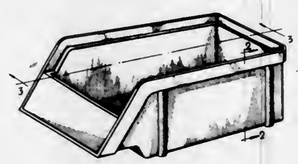
224,367
PNEUMATIC TUBE SYSTEM CARRIER STORAGE TRAY
William H. Terrell, Akron, Ohio, assignor to Diebold, Incorporated, Canton, Ohio
Filed Nov. 5, 1970, Ser. No. 26,427
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D87—1



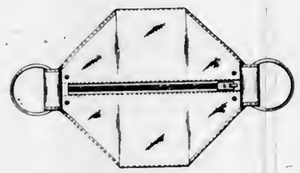
224,368
BOX FOR AN ELECTRIC SHAVER
Franco Bettonica, Milan, Italy, assignor to U.S. Philips Corporation
Filed Nov. 19, 1970, Ser. No. 26,240
Claims priority, application Switzerland May 21, 1970
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D87—1



224,369
STORAGE BIN
Fred Mears, Hempstead, N.Y., assignor to G. B. Lewis Company, Watertown, Wis.
Continuation of design application Ser. No. 8,709, July 21, 1967. This application Dec. 19, 1969, Ser. No. 20,447
Term of patent 14 years
Int. Cl. D3—*99*; D9—*03*
U.S. Cl. D87—1



224,370
TOTE BAG
Morris J. Berry, Brooklyn, N.Y., assignor to Fashioncraft-Excello, Brooklyn, N.Y.
Filed Nov. 12, 1970, Ser. No. 25,946
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D87—3



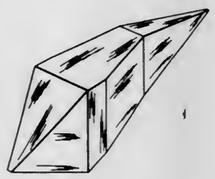
224,371
UMBRELLA RUNNER
Kazuo Kokado, 1/3 Higashi-Imazato 2-chome, Higashinari-ku, Osaka, Japan
Filed Apr. 30, 1971, Ser. No. 139,321
Term of patent 7 years
Int. Cl. D3—*03*
U.S. Cl. D88—3



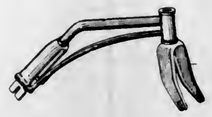
224,372
CITRUS FRUIT PEELER
Christopher H. Clarke, 1575 Homewood Drive, Altadena, Calif. 91001
Filed Mar. 12, 1971, Ser. No. 123,936
Term of patent 14 years
Int. Cl. D7—*04*
U.S. Cl. D89—1



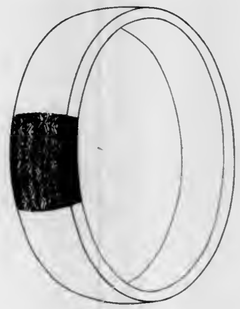
224,373
BICYCLE COVER
Joseph A. Lischeron, 1048 Pelissier St., Windsor, Ontario, Canada
Filed Dec. 28, 1970, Ser. No. 26,644
Term of patent 3½ years
Int. Cl. D12—*16*
U.S. Cl. D90—6



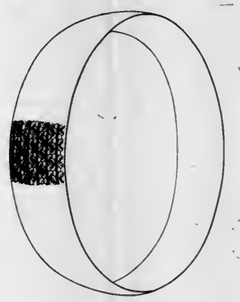
224,374
VELOCIPEDE FRAME
Raymond Boucher, Dothan, Ala., and Charles Voytko, Johnstown, Pa., assignors to Hedstrom Company, Bedford, Pa.
Filed Oct. 8, 1970, Ser. No. 25,398
Term of patent 7 years
Int. Cl. D12—*11*
U.S. Cl. D90—8



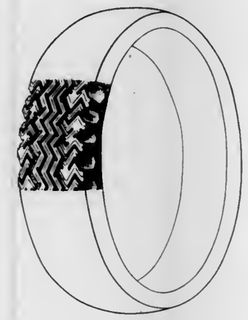
224,375
PNEUMATIC TIRE TREAD AND BUTTRESS
Marco Maxemovich, Warren, Mich., assignor to Uniroyal, Inc., New York, N.Y.
Filed July 22, 1969, Ser. No. 18,306
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D90—20



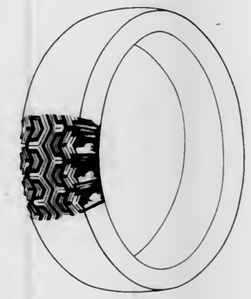
224,376
TREAD FOR A PNEUMATIC TIRE
Dale J. Beaudoin, Detroit, Mich., assignor to Uniroyal, Inc., New York, N.Y.
Filed July 22, 1969, Ser. No. 18,307
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D90—20



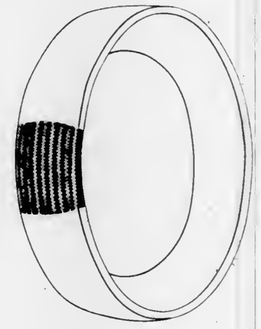
224,377
PNEUMATIC TIRE TREAD AND BUTTRESS
James F. Newman, St. Clair Shores, Mich., assignor to Uniroyal, Inc., New York, N.Y.
Filed Aug. 15, 1969, Ser. No. 18,704
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D90—20



224,378
PNEUMATIC TIRE TREAD AND BUTTRESS
James F. Newman, St. Clair Shores, Mich., assignor to Uniroyal, Inc., New York, N.Y.
Filed Aug. 15, 1969, Ser. No. 18,706
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D90—20



224,379
PNEUMATIC TIRE TREAD AND BUTTRESS COMBINATION
Robert F. Busch, St. Clair Shores, and William K. Pope, Detroit, Mich., assignors to Uniroyal, Inc., New York, N.Y.
Filed Sept. 9, 1969, Ser. No. 19,071
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D90—20



224,380
DRY SHAVER
Maarten Willem van Lelyveld, Drachten, Netherlands, assignor to U.S. Philips Corporation
Filed Oct. 9, 1970, Ser. No. 25,421
Claims priority, application Switzerland Apr. 17, 1970
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D95—3



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 18TH DAY OF JULY, 1972

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A/S Raufoss Ammunisjonsfabrikker: *See*—
Giljarhus, Gunnar; and Vien, Hans, 3,677,181.

AB Instrumenta: *See*—
Nybom, Nils Goran, 3,677,227.

Abbott Laboratories: *See*—
McFarland, Otho K.; and Tamburrino, James F., 3,678,375.
Pride, Emanuel; and Warren, Brian, 3,677,707.

Abbott, Malcolm K.; and Dowdy, David A., to Bendix Corporation, The. Diaphragm trimmer. 3,677,118, Cl. 83-211.000.

Abegg, Jean-Louis: *See*—
Kalopisis, Gregoire; Abegg, Jean-Louis; Ghilardi, Guiliana; and de Beaulieu, Henri Philippe, 3,678,157.

Ackermann, Joseph, to Siemens-Elektrogerate GmbH. Device for cleaning the walls of the muffle chamber of baking and roasting ovens. 3,678,245, Cl. 219-396.000.

Actmedia, Inc., mesne: *See*—
Hedu, Jon, 3,677,570.

Adams, John Howard, to Chevron Research Company. Polypropylene stabilized with metal salts of N-hydroxyalkylbenzyl alkylenepolyamines. 3,678,000, Cl. 260-45.75n.

Adams, John Howard, to Chevron Research Company. Polypropylene stabilized by nickel salts of N-(hydroxyalkylbenzyl) alkylenepolyamines. 3,678,001, Cl. 260-45.75n.

Adams, John Howard, to Chevron Research Company. Substituted flavanones. 3,678,044, Cl. 260-240.00f.

Adams, Madison B. Power assisting assembly for a clutch mechanism. 3,677,379, Cl. 192-91.00r.

Adams, Philip E.; and Fearnow, Philip W, to Du Pont de Nemours, E. I., and Company. Process for foaming aqueous protein-containing blasting agents. 3,678,140, Cl. 149-109.000.

Adams, Wade L. Duct assembly unit for air-water induction system of air conditioning in multi-story buildings. 3,677,285, Cl. 137-357.000.

Adamson, Wayne G., to Square D Company. Handle locking attachment for electrical control devices. 3,678,228, Cl. 200-42.00t.

Addmaster Corporation: *See*—
Grey, Michael W., 3,677,463.

Adkins, Murray R. Rotary engine. 3,677,235, Cl. 123-8.350.

Adler, Robert, to Zenith Radio Corporation. Solid-state traveling-wave amplification system. 3,678,401, Cl. 330-5.5.

Admiral Corporation: *See*—
Maleck, Le Roy R., 3,676,896.

Afdahl, Ronald L.; and Barber, Harold W., to Phillips Petroleum Company. Treatment of hydrocarbon gases. 3,676,981, Cl. 55-30.000.

Aga Aktiebolag: *See*—
Granqvist, Carl-Erik, 3,677,646.
Johannisson, Dag Olof Alfred, 3,677,527.

Agafonov, Nikolai Georgievich: *See*—
Maximovich, Boleslav Ivanovich; Dudko, Daniil Andreevich; Agafonov, Nikolai Georgievich; Maximov, Igor Petrovich; Andreev, Vadim Grigorievich; Lepilov, Nikolai Yakovlevich; Svinov, Alexei Kapitonovich; Slonimsky, Alexandr Borisovich; Volk, Boris Zakharovich; Gubin, Alexandr Ivanovich; and Katsman, Berta Osipovna, 3,677,330.

Ager, John W., to FMC Corporation. Oxidation of p-xylene and p-toluic acid to terephthalic acid in aqueous medium. 3,678,106, Cl. 260-524.00r.

Agfa-Gevaert Aktiengesellschaft: *See*—
Glockner, Hans; Meier, Ernst; and Puschel, Walter, 3,677,764.
Herzhoff, Peter; Gref, Hans; Wolfgang, Leverkusen; Frenken, Hans; Assenmacher, Peter; and Westen, Dietmar, 3,677,076.
Kremp, Rudolf; and Winkler, Alfred, 3,677,147.

Agristeel Limited: *See*—
Gugin, Robert J., 3,677,349.

Ahmed, Nazeer, to Western Electric Company, Incorporated. Method of positive fluid flow extrusion and optimum fluid control element therefor. 3,677,050, Cl. 72-60.

Ahrons, Richard Wilfred, to RCA Corporation. High gain MOS linear integrated circuit amplifier. 3,678,407, Cl. 330-35.000.

Aisin Seiki Kabushiki Kaisha: *See*—
Hirozawa, Koichiro; and Asano, Tadao, 3,677,104.
Hirozawa, Koichiro; and Takahashi, Shigeo, 3,677,277.

Aiuppa, Francesco. Lawn sweeper. 3,676,886, Cl. 15-83.000.

Ajinomoto Co., Inc.: *See*—
Ariyoshi, Yasuo; Yamatani, Tetsuo; Uchiyama, Noboru; and Sato, Naotake, 3,678,026.
Mitsugi, Koji; Nakase, Takashi; and Hasegawa, Yoshisuke, 3,677,898.
Yamazaki, Akihiro; Furukawa, Teruo; and Kumashiro, Izumi, 3,678,030.

Akers, George J., to Vermont American Corporation. Adjustable squeegee for applying synthetic fillers. 3,676,888, Cl. 15-245.000.

Aktiengesellschaft Brown, Boveri & Cie: *See*—
Floessel, Dieter, 3,678,234.

Akuta, Tomohiko; Honsyo, Yoshi; Hashirizaki, Sinya; Hiruma, Teruo; and Kurasawa, Kazuo, to Nippon Steel Corporation. Method and apparatus for digital measurement with an industrial television. 3,678,192, Cl. 178-7.830.

Albertson, Noel F.; and Wetterau, William F., to Sterling Drug Inc. Process for the preparation of 1,2,3,4,5,6-hexahydro-2,6-methano-3-benzazocines. 3,678,056, Cl. 260-293.520.

Albrecht, Gerd: *See*—
Schippers, Heinz; Geil, Walter; Albrecht, Gerd; and Jung, Reinhold, 3,677,863.

Alderuccio, Carmelo Leon, to Alderuccio, Lee, & Associates, Inc. Chemical etching solution for printed wiring boards. 3,677,950, Cl. 252-79.500.

Alderuccio, Lee, & Associates, Inc.: *See*—
Alderuccio, Carmelo Leon, 3,677,950.

Ali, Mir Akbar; Schwartz, Murray A.; and Li, Pei Ching, to IIT Research Institute. Zinc-lanthanum borate glass composition. 3,677,778, Cl. 106-47.00q.

Alinari, Carlo. Depth gauges. 3,677,087, Cl. 73-300.000.

Alker, Heinrich: *See*—
Glass, Eduard; and Alker, Heinrich, 3,677,318.

Allegheny Ludlum Industries, Inc.: *See*—
Bloom, William M., 3,677,394.
Morgan, Jack B., 3,677,073.

Allen, Donald J.; and O'Neill, Joseph L., to Merck & Co., Inc. Stabilized aqueous suspension of calcium (-) (ois-1, 2-epoxypropyl)-phosphonate. 3,678,163, Cl. 424-203.000.

Allen, Frances Mignon. Portable bath capsule. 3,677,263, Cl. 128-24.100.

Allen, Marvin M.: *See*—
Cox, Arthur R.; and Allen, Marvin M., 3,677,830.

Allen, Rodger E.: *See*—
Curtis, Richard S.; and Allen, Rodger E., 3,677,807.

Allen, Thomas E., to Caterpillar Tractor Co. Stabilizing strut for tracked loader. 3,677,427, Cl. 214-140.000.

Alles, Hirtus E. Self-anchorable composite item and method of making same. 3,677,951, Cl. 250-92.000.

Allied Chemical Corporation: *See*—
Anello, Louis G.; and Sweeney, Richard F., 3,678,068.
Formaini, Richard E., 3,677,736.
Hino, John Bernhard; and Taub, Bernard, 3,678,011.

Allied Welder Corporation: *See*—
Jewett, Walter L., 3,677,053.

Allis-Chalmers Manufacturing Company: *See*—
Pflanz, Herbert M., 3,678,435.
Slosiarek, Michael L., 3,677,565.

Allmanna Svenska Elektriska Aktiebolaget: *See*—
Pucher, Walter, 3,678,335.

Alps Electric Co., Ltd.: *See*—
Ono, Ichiro, 3,678,421.

Alsberg, Dietrich Anselm, to Bell Telephone Laboratories, Incorporated. Spurious mode suppressing waveguide. 3,678,420, Cl. 333-95.00r.

Althouse, Victor E., to Raychem Corporation. Method and means of die matrix expansion. 3,677,875, Cl. 161-117.000.

Altwicker, Elmar R.: *See*—
Touval, Irving; and Altwicker, Elmar R., 3,678,071.

Aluminum Company of America: *See*—
La Barge, Robert L., 3,677,429.

Amano, Hiroyuki; Tsuji, Nobuo; and Shirasu, Kazuo, to Fuji Phôto Film Co., Ltd. Color elements containing brightening agents and ultraviolet absorbers. 3,677,762, Cl. 96-74.000.

Ambac Industries Incorporated: *See*—
Weiss, Paul C., 3,677,540.

Amberger, Donald J.; and Celentano, Robert A., to United States of America, Army. Solid state pulser using parallel storage capacitors. 3,678,362, Cl. 320-1.000.

Ambuco Limited Grosvenor House: *See*—
Morrison, William F.; and Hauser, Henry A., 3,677,715.

Amchem Products, Inc.: *See*—
Harris, Robert George, 3,677,953.

Amemiya, Koitsuro: *See*—
Oohara, Saburo; Amemiya, Koitsuro; Nishijima, Yasushi; Fukushima, Mitsuyoshi; and Shimizu, Kunio, 3,677,871.

American Air Filter Company, Inc.: *See*—
Rivers, Richard D.; Byers, Thomas W.; and Fortener, Edward J., 3,677,289.

American Chemical & Refining Company Incorporated: *See*—
Young, George Ralph, Jr., 3,677,929.

American Chemosol Corporation: *See*—

Hudson, Perry B., 3,677,269.

American Cyanamid Company: *See—*
Bauer, Victor John; Fanshawe, William Joseph; and Wiegand, Gretchen Ellen, 3,678,062.
Economou, Peter, 3,677,888.
Joseph, Joseph Peter; Dusza, John Paul; and Bernstein, Seymour, 3,678,029.
Maulding, Donald Roy, 3,677,957.
Szumski, Stephen Aloysius; and McCoy, Donald Walter, 3,678,150.

American Gas Association, mesne: *See—*
Granryd, Eric G. U., 3,677,026.
Granryd, Eric G. U., 3,677,027.

American Home Products Corporation: *See—*
Mc Caully, Ronald J., 3,678,043.
McCaully, Ronald J., 3,678,032.
Robinson, Charles A., 3,678,037.

American Hospital Supply Corporation: *See—*
McPhee, Charles J., 3,677,248.

American Optical Corporation: *See—*
Coates, Vincent J.; and Welter, Leonard M., 3,678,333.
Day, Christopher C., 3,677,261.
Day, Christopher C., 3,678,296.
Day, Christopher C., 3,678,491.
Metcalfe, Richard T.; and Crandon, Harry D., 3,678,141.
Richards, William D., 3,678,210.

Ameripol, Inc.: *See—*
Bozik, John E.; Swift, Harold E.; and Wu, Ching-Yong, 3,677,968.

Ameripol, Inc., mesne: *See—*
Bozik, John E.; Swift, Harold E.; and Wu, Ching Yong, 3,678,022.

Ames, O.; Division of: *See—*
Robison, James W.; and Eads, Harold L., 3,676,930.

Amoco Production Company: *See—*
Farr, John B.; and Landrum, Ralph A., Jr., 3,678,454.
Newton, George R.; and Jageler, Alfred H., 3,677,081.
Silverman, Daniel, 3,678,452.

AMP Incorporated: *See—*
Bruner, Peter Martin, 3,678,385.
Ziegler, George William, Jr.; and Hughes, Donald Kent, 3,678,447.

Ampex Corporation: *See—*
Villers, Walter H.; and Johnson, Ernest B., 3,677,495.

Amsted Industries Incorporated: *See—*
Visser, Jan, 3,677,061.

Ancra Corporation: *See—*
Prete, Ernest, Jr., 3,677,195.

Anderson, Carl C.: *See—*
Dowbenko, Rostyslaw; Chang, Wen-Hsuan; and Anderson, Carl C., 3,677,978.
Dowbenko, Rostyslaw; and Anderson, Carl C., 3,678,007.

Anderson, Fred N., to Cherry Electrical Products Corporation. Axially reciprocal actuator for a sealed switch. 3,678,235, Cl. 200-168.00g.

Anderson, William G. Invalid lifting apparatus. 3,677,424, Cl. 214-77.000.

Ando, Masao; and Hori, Masao, to Chisso Corporation. Method for levelling the temperature of an electrically heated pipeline. 3,678,243, Cl. 219-301.000.

Ando, Noriyoshi: *See—*
Oishi, Kazuo; Kurebayashi, Tokuhiro; Ando, Noriyoshi; Yamamoto, Noboru; and Yoshida, Hiroshi, 3,677,253.

Ando, Zenjiro: *See—*
Isogawa, Masataka; Minato, Shoichi; and Ando, Zenjiro, 3,678,132.

Andre, Eugene R.; and Rautio, John M. Hydrostatic holding device. 3,677,559, Cl. 279-1.00q.

Andreev, Vadim Grigorievich: *See—*
Maximovich, Boleslav Ivanovich; Dudko, Daniil Andreevich; Agafonov, Nikolai Georgievich; Maximov, Igor Petrovich; Andreev, Vadim Grigorievich; Lepilov, Nikolai Yakovlevich; Svinov, Alexei Kapitonovich; Slonimsky, Alexandr Borisovich; Volk, Boris Zakharovich; Gubin, Alexandr Ivanovich; and Katsman, Berta Osipovna, 3,677,330.

Andress, Harry J., Jr., to Mobil Oil Corporation. Liquid hydrocarbon compositions containing reaction products of amine derivatives of 1-olefin /maleic anhydride copolymers and methyl vinyl ether-maleic anhydride copolymers as anti-static agents. 3,677,724, Cl. 44-62.

Andress, Harry J., Jr., to Mobil Oil Corporation. Liquid hydrocarbon compositions containing anti-static agents. 3,677,725, Cl. 44-62.000.

Anello, Louis G.; and Sweeney, Richard F., to Allied Chemical Corporation. Fluorocarbon acids. 3,678,068, Cl. 260-484.00r.

Anglade, Carlos, Jr. Frame and building structure and method of constructing same. 3,676,964, Cl. 52-86.000.

Anhalt, John W.; and Morrison, Robert M., to International Telephone and Telegraph Corporation. Electrical contact insertion-extraction tool. 3,676,912, Cl. 29-203.00h.

Anthony, Russell W.; and Motz, Carl H., to Lear Siegler, Inc. Ring gear rounder. 3,677,052, Cl. 72-107.000.

Antonen, Robert C., to Dow Corning Corporation. Hydroxylated copolymers composed of monomethylsiloxane units and diphenylsiloxane units. 3,677,872, Cl. 161-93.000.

Antonenko, Anatoly Ivanovich, to Institut Elektrodinamihi Akademii Nauk Ukrainskoi SSR. Winding of alternating-current electric machine. 3,678,312, Cl. 310-185.000.

Anvil Industries, Inc., mesne: *See—*
Martin, Joseph L., 3,677,303.

Anzelone, Thomas A., Jr.; Larson, Harold A.; and Stricker, Alfred A., to International Business Machines Corporation. Wafer mounting. 3,677,853, Cl. 156-160.000.

Anzen Products, Inc.: *See—*
Lorenzen, Walter C., 3,677,474.

Aoki, Katashi. Mold clamping mechanism of injection molding machine. 3,677,685, Cl. 425-450.000.

Apitz, Siegfried, to International Standard Electric Corporation. Tape tension checking device for cassette recorders. 3,677,496, Cl. 242-199.000.

Appels, Johannes Arnoldus: *See—*
Tulp, Theodorus Joannes; Appels, Johannes Arnoldus; and Kooi, Else, 3,678,347.

Appelt, Weldon F. Aerial pieline system. 3,677,189, Cl. 104-124.000.

Appiani, Edoardo; and Felici, Alberto, to Pirelli Societa per Azioni Centro Pirelli. Deformable casing joining cable ends. 3,678,175, Cl. 174-92.000.

Applied Aluminum Research Corporation: *See—*
Toth, Charles, 3,677,742.

Applied Power Industries, Inc.: *See—*
Buys, Pieter, 3,677,518.
Schultz, John R., 3,677,295.

Arai, Choji: *See—*
Yasuda, Hiroyuki; and Arai, Choji, 3,677,274.

Araki, Shinichi: *See—*
Susuki, Rinnosuke; Hoshi, Hiroshi; Araki, Shinichi; and Ishii, Masao, 3,677,459.

Araki, Taketoshi: *See—*
Fukui, Hisaaki; Araki, Taketoshi; and Fuchi, Yoshikane, 3,677,755.

Arc-O-Vec, Inc.: *See—*
Lennox, Thomas H., 3,678,249.

Archer, Giles Allan; and Sternbach, Leo Henryk, to Hoffmann-La Roche Inc. 2-Substituted amino-1,4-benzodiazepine. 3,678,036, Cl. 260-239.0bd.

Argento, Benny J.: *See—*
Rick, Edward A.; McKeon, James E.; Fitton, Peter; and Argento, Benny J., 3,678,085.

Arimura, Tohru; Kamata, Masamoto; Saito, Morio; Suzuki, Hiromu; and Iguchi, Masakazu, to Nippon Kokan Kabushiki Kaisha. Method of feed-forwardly controlling a tandem rolling mill. 3,677,045, Cl. 72-8.000.

Ariyoshi, Yasuo; Yamatani, Tetsuo; Uchiyama, Noboru; and Sato, Naotake, to Ajinomoto Co., Inc. Method of purifying lower alkyl esters of alpha-L-aspartyl-L-phenylalanine. 3,678,026, Cl. 260-112.500.

Armitage, John L., and Co.: *See—*
Jeff, William C.; Luyster, Thomas, Jr.; Lynch, James F., Jr.; and Moroli, Frank A., 3,677,794.

Arrigo, Joseph T.; and Christensen, Nils J., to Universal Oil Products Company. Hydrogenation of nitrobenzene. 3,678,108, Cl. 260-563.00d.

Arrington, Lee O.: *See—*
King, James L.; and Arrington, Lee O., 3,677,641.

Arthur, Jett C., Jr.; Singh, Sujan; and Hinojosa, Oscar, to United States of America, Agriculture. High energy radiation stabilization of cellulose obtained by esterifying with furoyl chloride. 3,677,692, Cl. 8-120.000.

Arvay, Frank Joseph; Frieber, George; Lechleider, Joseph William; and Sutton, Robert Anderson, to Bell Telephone Laboratories, Incorporated. Computer controlled multiconductor communication cable testing system. 3,678,379, Cl. 324-73.000.

Asahi Glass Co., Ltd.: *See—*
Ishiyama, Masahiko, 3,677,960.

Asahi Kasei Kogyo Kabushiki Kaisha: *See—*
Fukui, Hisaaki; Araki, Taketoshi; and Fuchi, Yoshikane, 3,677,755.
Fukuma, Noboru; Kobayashi, Hidehiko; Matsui, Kenichi; Sakashita, Masahira; and Henmi, Hiroshi, 3,677,880.
Ueda, Haruo; Sugi, Masanao; and Chayamichi, Hiroshi, 3,677,492.

Asahina, Michio: *See—*
Yamamura, Katsumi; Harigaya, Hiroshi; Kasai, Kazutomo; and Asahina, Michio, 3,677,744.

Asaki Kasei Kogyo Kabushiki Kaisha: *See—*
Kai, Tsunetoshi; Hagihara, Takeaki; and Ishido, Teruhisa, 3,677,920.

Asano, Hidejiro; and Ouyagi, Yashichi, to Nippon Steel Corporation. Method of forming corrosion resistant films on steel plates. 3,677,797, Cl. 117-71.00m.

Asano, Tadao: *See—*
Hirozawa, Koichiro; and Asano, Tadao, 3,677,104.

Aschberger, Anton A.: *See—*
Erlandson, Paul M.; Aschberger, Anton A.; and Cary, John T., 3,678,241.

Aschkenasy, Herbert; Schuler, John Joseph, Jr.; and Bower, Jerry Efton, to Celanese Coatings Company. Electrodeposition coatings from amine salts of vinyl modified fatty acids. 3,677,984, Cl. 260-21.000.

Ashar, Kanu G., to International Business Machines Corporation. Method of making pedestal transistor having minimal side injection. 3,677,837, Cl. 148-175.000.

Ashbrook, Clifford Logan; and Wing, Wilson Gordon. Muzzle choke. 3,676,947, Cl. 42-79.000.

Aspden, Ronald, to Itek Corporation. Optical surface generating apparatus. 3,676,960, Cl. 51-165.710.

Assenmacher, Peter: *See—*
Herzhoff, Peter; Gref, Hans; Wolfgang, Leverkusen; Frenken, Hans; Assenmacher, Peter; and Westen, Dietmar, 3,677,076.

Associated Lead Manufacturers Limited: *See—*
Davis, Walter Dennis, 3,677,926.

Astin, Allen V.: *See—*
Rabinow, Jacob; Rotkin, Israel; and Astin, Allen V., 3,677,184.

Atkinson, Cyril Millward, to Northrop Weaving Machinery Limited. Loom sleys. 3,677,306, Cl. 139-188.000.

Atkinson, Wallace E., to Long Manufacturing Co., Inc. Combination lock construction. 3,677,042, Cl. 70-70.000.

Atomic Energy of Canada Limited: *See—*
Round, Kenneth J., 3,678,303.

Auergesellschaft GmbH: *See—*
Nather, Claus Siegfried, 3,677,398.

Augl, Joseph M.; Bailey, William J.; and Erickson, Porter W., to United States of America, Navy. Method of rehardening encapsulating compositions. 3,677,787, Cl. 117-2.00r.

Aunstrup, Knud, to Novo Terapeutisk Laboratorium A/S. Preparation of amyloglucosidase. 3,677,902, Cl. 195-66.00r.

Austin, Frank C. Holding tool. 3,676,911, Cl. 29-203.

Austin, George Wesley, to Foseco International Limited. Process of submerged nozzle continuous casting using a basalt flux. 3,677,325, Cl. 164-73.000.

Autoelektronik AG: *See—*
Diener, Rudolf, 3,677,254.
Diener, Rudolf, 3,678,299.

Automatic Electric Laboratories Inc.: *See—*
Rovnyak, Richard M., 3,678,423.

Automobiles Peugeot: *See—*
Regneault, Marcel; and Le Creurer, Maurice, 3,677,256.

Avco Corporation: *See—*
Cronstedt, Val, 3,677,662.
Cronstedt, Val, 3,677,663.

Avins, Jack, to RCA Corporation. Amplifier-limiter circuit with reduced AM to PM conversion. 3,678,405, Cl. 330-26.000.

Avins, Jack, to RCA Corporation. Variable gain amplifier. 3,678,406, Cl. 330-29.000.

AVM Corporation: *See—*
Moldovan, Michael Terrance, Jr., 3,677,462.

Ayaki, Kazuo: *See—*
Terazawa, Yoshizumi; and Ayaki, Kazuo, 3,678,317.

Ayres, William M.; and Henry, Ronald A., to United States of America, Navy. Gas generator composition containing a nitrogen rich compound and a catalyst. 3,677,841, Cl. 149-92.000.

Azamber, Eugene C.; and Cabe, Frank D. Battery connector. 3,678,450, Cl. 339-226.000.

B & J Manufacturing Company, mesne: *See—*
Corless, Lee M., 3,677,320.

Badische Anilin- & Soda-Fabrik Aktiengesellschaft: *See—*
Eckert, Guenter; Marx, Matthias; Hartmann, Heinrich; and Wuertele, Lothar, 3,677,813.
Schaefer, Hans, 3,677,914.
Schaefer, Hans, 3,677,915.

Bailey, William J.: *See—*
Augl, Joseph M.; Bailey, William J.; and Erickson, Porter W., 3,677,787.

Baker, Donald R.: *See—*
Dillard, Paul A.; and Baker, Donald R., 3,677,508.

Baker, Gerald S., to Cameron Iron Works, Inc. Apparatus for controlling well pressure. 3,677,353, Cl. 175-25.000.

Baker Perkins Inc.: *See—*
Temple, Hiram E., 3,677,393.

Baldeschwieler, John D., to Varian Associates. Ion cyclotron resonance stimulated glow-discharge method and apparatus for spectral analysis. 3,677,642, Cl. 356-85.000.

Ballou, Clayton R., 1/5 to Hursh, Jack E. Shoring structure. 3,676,972, Cl. 52-638.

Ban, Itsuki. Endless magnetic tape cartridge removing apparatus. 3,677,557, Cl. 274-4.00b.

Banner Metals, Inc.: *See—*
Wilson, James D., 3,677,172.

Barabas, Eugene S.; Grosser, Frederick; and Schneider, Louis, to GAF Corporation. Stable aqueous emulsions containing a terpolymer of vinyl alcohol, a vinyl ester and an N-vinyl lactam. 3,677,990, Cl. 260-29.6wb.

Barajas, Joseph W. Brake. 3,677,376, Cl. 188-341.000.

Baranauckas, Charles F.: *See—*
Frank, Arlen W.; and Baranauckas, Charles F., 3,678,100.

Barber, Harold W.: *See—*
Afdahl, Ronald L.; and Barber, Harold W., 3,676,981.

Barber-Colman Company: *See—*
Dilling, George R., 3,677,489.

Barkman, Byron L.; Moe, William West; and Ross, Austin, to Printing Developments, Inc. Mechanisms and circuits for facsimile reproducing systems. 3,678,187, Cl. 178-6.70r.

Barmag Barmer Maschinenfabrik Aktiengesellschaft: *See—*
Schippers, Heinz; Geil, Walter; Albrecht, Gerd; and Jung, Reinhold, 3,677,863.

Barnett, Jackson Herman, Jr. Method for impregnating wood. 3,677,805, Cl. 117-102.00a.

Barnett, Morris A.; and Silver, Alexander, to Garrett Corporation, The. Coated fluid bearing foils and fabricating method. 3,677,612, Cl. 308-5.000.

Barone, Bruno: *See—*
Croce, Louis J.; and Barone, Bruno, 3,678,105.

Barr, David William: *See—*
Holyoake, Noel Victor; and Barr, David William, 3,677,047.

Barrineau, Wade H., to Southern Cross Industries, Inc. Merchandise support with hinged shelf. 3,677,203, Cl. 108-111.000.

Barry, Leonard D. Unit load hold-down and mounting. 3,677,194, Cl. 105-368.00b.

Barten, Piet Gerard Joseph, to U.S. Philips Corporation. Plural beam cathode ray tube having boundary-shaped cylindrical electrodes correcting beam aberration. 3,678,316, Cl. 313-69.00c.

Barten, Piet Gerard Joseph, to U.S. Philips Corporation, mesne. Cathode ray tube having triangular gun array and curvilinear spacing between the fourth and fifth grids. 3,678,320, Cl. 313-70.00c.

Bartocci, Antonio, to Olivetti, Ing. C., & C., S.p.A. Terminal equipment for the transmission of data with display and input and output units. 3,678,483, Cl. 340-172.500.

Basic Incorporated: *See—*
Hughey, Vaughn V., 3,677,779.

Bass, John C.; and Waterworth, Peter, to Plessey Company Limited, The. Data storage arrangements. 3,678,472, Cl. 340-173.0lt.

Bastiaanse, Abraham G. Liquid treatment method. 3,677,936, Cl. 210-15.000.

Bastian, Jean-Michel: *See—*
Ebnother, Anton; Bastian, Jean-Michel; and Gadient, Fulvio, 3,678,057.
Ebnother, Anton; Bastian, Jean-Michel; and Rissi, Erwin, 3,678,058.

Bateson, Norman E.; and Pringle, William L., to Pullman Incorporated. Cargo handling and transportation system. 3,677,192, Cl. 105-368.00r.

Bathla, Pritam S.; and Simmons, Carl E., to United Aircraft Products, Inc. Remote accumulator charge indicator. 3,677,334, Cl. 165-11.000.

Batscha, Alexander P., to General Electric Company. Composite cycle turbomachinery. 3,677,012, Cl. 60-262.000.

Battelle Development Corporation, mesne: *See—*
Lewis, Robert W., 3,677,616.
Upatnieks, Juris, 3,677,617.

Battelle Development Corporation, The: *See—*
Bol, Jan; Buttner, Hildegard; and Kuhn, Peter, 3,677,966.
McCurdy, Hugh R.; Rausch, Doyle W.; and McIntire, Hoy O., 3,677,749.

Batz, Simon, to Indiana University Foundation. Difluoroxalatostannate(II) complexes. 3,678,153, Cl. 424-52.000.

Batzer, Hans: *See—*
Lohse, Friedrich; Schmid, Rolf; Fisch, Willy; and Batzer, Hans, 3,678,009.
Schmid, Rolf; Lohse, Friedrich; and Batzer, Hans, 3,678,127.

Bauer, Adolf: *See—*
Weber, Karl-Heinz; Bauer, Adolf; Merz, Herbert; and Minck, Klaus, 3,678,033.

Bauer, Douglas M., to General Electric Company. Analog digital converter. 3,678,500, Cl. 340-347.0ad.

Bauer, Victor John; Fanshawe, William Joseph; and Wiegand, Gretchen Ellen, to American Cyanamid Company. Certain 4-[(indazol-3-yl)-pyridinium] compounds. 3,678,062, Cl. 260-296.00r.

Bauger, Louis Jules; Beyler, Roland Robert Charles; Le Guen, Henri; Pidebois, Jacques Eloi; and Schenher, Michel Bernard, to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation. Device for burning the unburnt residue in the exhaust gases of internal combustion engines. 3,677,013, Cl. 60-303.000.

Baumgartner, Max. Electromagnetic load compensated weighing apparatus including damping. 3,677,357, Cl. 177-188.000.

Baxter Laboratories Inc.: *See—*
Shaye, Nat, 3,677,242.

BDH Pharmaceuticals Limited: *See—*
Beckham, Robinson, 3,677,397.

Beachley, Robert W. Protective automatically disconnectable grouping means for an ungrounded A. C. electrical distribution system. 3,678,338, Cl. 317-18.00r.

Beal, Edward W., to Connecticut International Corporation. Optical system for aircraft guidance light. 3,678,260, Cl. 240-1.200.

Beatrice Food Co.: *See—*
Bronson, Donald L.; and Magnuson, Raymond A., 3,677,322.

Beaudry, Harvey James, to International Plasma Corporation. Radio frequency wattmeter. 3,678,381, Cl. 324-95.000.

Beaulieu, Raymond D., to Monsanto Company. Sulfonated phenol-aldehyde resins. 3,677,979, Cl. 260-2.20c.

Beaulieu, Raymond D., to Monsanto Company. Process for making methylolated phenol-sulfonic acid. 3,678,101, Cl. 260-572.00r.

Bechmann, Gerhart, to Leitz, Ernst, G.m.b.H. Lens mount. 3,677,155, Cl. 95-44.00c.

Beck, Merrill G., to Lord Corporation. Axial suspension system that accommodate relative lateral movement. 3,677,535, Cl. 267-63.000.

Becker, Klaus, to Demag Aktiengesellschaft. Syphon lifting device having piston actuated venting valve. 3,677,598, Cl. 294-64.00r.

Beckham, Robinson, to BDH Pharmaceuticals Limited. Package for dosage units. 3,677,397, Cl. 206-42.000.

Beckman Instruments, Inc.: *See—*
Harman, John N., III; and Neti, Radhakrishna M., 3,677,708.

Sawa, Kenneth B.; and Bleak, Thomas M., 3,678,247.
Becton, Dickinson and Company: *See—*
Welch, Joseph T., 3,677,245.
Bedford, Burnice D., to General Electric Company. Compatible permanent magnet or reluctance brushless motors and controlled switch circuits. 3,678,352, Cl. 318-138.000.
Beech-Nut Inc.: *See—*
Witzel, Frank, 3,677,770.
Beiler, Jay Morton: *See—*
Binon, Fernand; and Beiler, Jay Morton, 3,678,063.
Belaieff, James Frank, to Frame S.A. Spraying rotor for a dish washing machine or an industrial glass-ware washing machine. 3,677,473, Cl. 239-251.000.
Bell & Howell Company: *See—*
Dann, Bert H., 3,678,397.
Ferrari, Leonard A., 3,677,626.
Gilsdorf, Richard C., 3,678,440.
Johnson, Robert F.; and Lichodziejewski, Wieslaw, 3,677,627.
Bell, Howard F.; and Scheineman, John A., to Shell Oil Company. Pipeline flow tee. 3,677,292, Cl. 137-544.000.
Bell, R. Gordon. Pie and cake saver. 3,677,168, Cl. 99-234.00s.
Bell Telephone Company of Canada, The: *See—*
Lorange, Jean G., 3,678,203.
Bell Telephone Laboratories, Incorporated: *See—*
Alsberg, Dietrich Anselm, 3,678,420.
Arvay, Frank Joseph; Frieber, George; Lechleider, Joseph William; and Sutton, Robert Anderson, 3,678,379.
Chow, Woo Foung, 3,678,287.
Copeland, John Alexander, III, 3,678,478.
Herriott, Donald Richard; and Rawson, Eric Gordan, 3,677,651.
Hoffman, Harold Henry, 3,678,396.
Hubbauer, Philip Clark; and McHenry, Edwin John, 3,678,178.
Kaneko, Hisashi, 3,678,504.
Lutchansky, Milton; and Rhines, Warren Joseph, 3,677,371.
Newell, John Anthony, 3,678,393.
Nussbaum, Eric; Toy, Wing Noon; and Woinsky, Melvin Neil, 3,678,467.
Panish, Morton B.; and Sumski, Stanley, 3,677,228.
Peters, Theodore Richmond, 3,678,463.
Peters, Theodore Richmond, 3,678,464.
Van Duyne, Robert Earl, 3,678,343.
Belluscio, Anthony W. Apparatus for the construction of concrete structures. 3,676,975, Cl. 52-743.000.
Belogolovin, Nikolai Stefanovich: *See—*
Scherban, Alexandr Nazarievich; Furman, Neonil Izrailevich; Sotnichenko, Boris Feodosievich; Belogolovin, Nikolai Stefanovich; Chopovsky, Jury Ivanovich; Sutormin, Jury Nikolaevich; Zaitsev, Valentin Ivanovich; Kot, Vladimir Ivanovich; Mikhailjuk, Nikolai Tarasovich; Denisenko, Sergei Andreevich; Chaschinov, Anatoly Vasilievich; Shaporev, Stepan Vasilievich; and Samoilenko, Svetlana Mikhailovna, 3,678,489.
Benac, Rene: *See—*
Fontan, Andre; and Benac, Rene, 3,677,572.
Benatar, Victor; and Johnson, Roy A., to Mead Corporation, The. Divider-rotator mechanism. 3,677,389, Cl. 198-31.0ab.
Bender, Norman A.: *See—*
Herdrich, William M.; and Bender, Norman A., 3,678,436.
Bendix Corporation, The: *See—*
Abbott, Malcolm K.; and Dowdy, David A., 3,677,118.
Brown, Arthur K., Jr., 3,677,140.
Burnett, Richard T., 3,677,372.
Cross, Fred H.; and Deradoorian, Bagdasar, 3,678,328.
Davis, Dennis J.; Sudnick, Dennis J.; Juhasz, John E.; and Kurichh, Sham, 3,677,609.
Deradoorian, Bagdasar; Goodrich, George W.; and Theodorou, Dimitri G., 3,677,730.
Fulmer, Keith H., 3,677,002.
Goscenski, Edward J., 3,677,007.
Goscenski, Edward J., 3,677,138.
Lewis, Richard L., 3,677,608.
Miller, Donald L., 3,677,377.
Pouwels, Edward M.; and Roberts, James K., 3,677,610.
Putt, James Basil, 3,678,490.
Shutt, Paul B., 3,677,606.
Stevens, William P.; Hubbard, George M.; and Wagner, William D., 3,678,444.
Taplin, Lael B., 3,677,095.
Troeger, Henry, 3,677,378.
Benedict, Elmer M. Alarm circuit. 3,678,511, Cl. 340-420.000.
Bennet, Maureen Constance. Buoyant aquatic amusement device with reinforcing cover. 3,677,539, Cl. 272-1.00b.
Bennett, Eugene E.: *See—*
Stansell, Alpheus F.; and Bennett, Eugene E., 3,678,480.
Bennett, Frank W.; and Van Delinder, Loren S., to Union Carbide Corporation. Anti-seize thread composition. 3,677,803, Cl. 117-94.000.
Bennett, John E.; and O'Leary, Kevin J., to Diamond Shamrock Corporation. Preparation of solid solutions of metallic oxide mixtures by flame-spraying. 3,677,975, Cl. 252-518.000.
Bennett, Moreland P., to General Electric Company. Metallurgical bonding of dissimilar metals. 3,678,242, Cl. 219-118.000.
Bente, Waldama. Fluidized sand trap ejector. 3,677,590, Cl. 291-3.000.
Bentley, David J., Jr.: *See—*
Sirota, Julius; Bentley, David J., Jr.; and Jubilee, Benjamin D., Jr., 3,677,985.
Benzing, Ernst, Kontrolluhrenfabrik, Fried, Firma: *See—*
Graf, Eckhart, 3,678,227.
Berelc, Dorothy C.: *See—*
Schrank, Shirley L.; Berelc, John M.; Berelc, Dorothy C.; and Schrank, Charles O., 3,677,272.
Berelc, John M.: *See—*
Schrank, Shirley L.; Berelc, John M.; Berelc, Dorothy C.; and Schrank, Charles O., 3,677,272.
Berg, Coleman David, to Fleck Industries, Inc. Paper roll dispenser. 3,677,485, Cl. 242-55.300.
Berg, Dennis Richard. Apparatus for preservation of meat. 3,677,167, Cl. 99-234.000.
Berg Electronics, Inc.: *See—*
Berg, Quentin; and Kendall, Jerry A., 3,677,116.
Berg, Quentin; and Kendall, Jerry A., to Berg Electronics, Inc. Blanking device for ribbon cable. 3,677,116, Cl. 83-55.000.
Berger, Abe, to General Electric Company. Functional group containing thioether silanes. 3,678,089, Cl. 260-448.20n.
Berger, James E. Fluid proportioner means. 3,677,296, Cl. 137-606.000.
Bergey, John M.; Le Van, James O.; Walton, Richard S.; and Brethauer, Louis G., to Hamilton Watch Company. Electronic watch. 3,676,993, Cl. 58-23.000.
Bergmeyer, Hans Ulrich; Naher, Gotthilf; Thum, Waldemar; Lauerer, Albert; and Emmer, Rudolf, to Boehringer Mannheim GmbH. Process for the production of glycerokinase. 3,677,901, Cl. 195-66.00r.
Berkeley Bio-Engineering, Inc.: *See—*
Murr, William C., 3,677,074.
Bernhardt, Bruno Friedrich: *See—*
Engelhardt, Walter; and Bernhardt, Bruno Friedrich, 3,676,980.
Bernstein, Robert J. Jam cleat. 3,677,214, Cl. 114-218.000.
Bernstein, Seymour: *See—*
Joseph, Joseph Peter; Dusza, John Paul; and Bernstein, Seymour, 3,678,029.
Berry, Hugh: *See—*
Gussack, Seymour I.; and Berry, Hugh, 3,677,594.
Berry, Willis E., to National Union Electric Corporation. Shag rug cleaning nozzle apparatus. 3,676,894, Cl. 15-362.000.
Bertin, Jean Henri, to Societe d' Etudes et de Developpement des Aeroglisseurs Marins Terrestres et Amphibies S.E.D.A.M. Pressure fluid confining facility for ground-effect machine. 3,677,361, Cl. 180-127.000.
Bertolacini, Ralph J.: *See—*
Gutberlet, Louis C.; and Bertolacini, Ralph J., 3,677,972.
Best, William J., to Ladney, Michael, Jr. Method of producing coated vacuum metallized articles. 3,677,792, Cl. 117-35.00v.
Bethlehem Steel Corporation: *See—*
Mayer, Edward H.; and Oliver, Evan M., 3,677,834.
Bettencourt, Joseph, 30% each to Pleich, John D. and Holland, Paul. Corrective mirror assembly. 3,677,620, Cl. 350-145.000.
Beyler, Roland Robert Charles: *See—*
Bauger, Louis Jules; Beyler, Roland Robert Charles; Le Guen, Henri; Pidebois, Jacques Eloi; and Schenher, Michel Bernard, 3,677,013.
Bianco, Archangel J. Mechanism for forming a substantially spherical comestible product. 3,676,897, Cl. 17-32.
Bickel, David P.; Davis, Melvin H.; Starks, Karl H., Jr.; and Tsoras, John, to Goodyear Tire & Rubber Company, The. Monitoring system. 3,678,486, Cl. 340-227.000.
Bier, Milan. Electroosmotic and electrodialysis concentration, purification, and desalting. 3,677,923, Cl. 204-180.00p.
Biethan, Uwe: *See—*
Riemhofer, Franz; Dittmann, Walter; Biethan, Uwe; Hornung, Karl-Heinz; and Schultze, Ernst-Christian, 3,678,128.
Billawala, Shahbuddin A., to Burroughs Corporation. Multiple surface fluid film bearing. 3,678,482, Cl. 340-174.10e.
Bilow, Norman: *See—*
Miller, Leroy J.; and Bilow, Norman, 3,677,976.
Bilow, Norman, to Hughes Aircraft Company. Curable polyphenylene copolymers and resin compositions thereof. 3,678,006, Cl. 260-47.00r.
Binon, Fernand; and Beiler, Jay Morton, to Richardson-Merrell, Inc. 3-(4-Pyridyl)-4-(2-hydroxyphenyl)pyrazole derivatives. 3,678,063, Cl. 260-296.00r.
Bio-Medical Sciences, Inc.: *See—*
Lang, Robert A., 3,677,088.
Pickett, Charles G.; Lang, Robert A.; and Comers, Robert C., 3,677,866.
Birch, Silas B., Jr.: *See—*
Sarff, Forest M.; and Birch, Silas B., Jr., 3,677,308.
Birchall, William R.: *See—*
Watson, Lloyd M.; and Birchall, William R., 3,677,477.
Bird Provision Co.: *See—*
Vogel, Paul W., 3,677,775.
Birrell, George B., to Dow Chemical Company, The. Preparation of linear alpha olefin polymers having broad molecular weight distributions. 3,678,025, Cl. 260-94.90e.
Biscoe, Thomas S.: *See—*
Porter, David H.; and Biscoe, Thomas S., 3,678,265.

Bishop, John F.; Hunter, Walker F., Jr.; and Rowley, Martin E., to Eastman Kodak Company. Readily removable opaque protective layers and articles containing them. 3,677,790, Cl. 117-33.300.
Bishop, Nigel Douglas: *See—*
Ghosh, Ranajit; and Bishop, Nigel Douglas, 3,678,167.
Bittner, Donald L. Determination of uricase activity. 3,677,903, Cl. 195-103.50r.
Bjork, Lars; Erikson, Uno Eugen; and Ingelman, Bjorn Gustav-Adolf. Method for the X-ray visualization of body cavities and a preparation for carrying out the method. 3,678,152, Cl. 424-5.000.
Bjushgens, Georgy Sergeevich: *See—*
Tupolev, Andrei Nikolaevich; Tupolev, Alexei Andreevich; Cheremukhin, Georgy Alexeevich; Bliznjuk, Valentin Ivanovich; Pukhov, Alexandr Leonidovich; Svischev, Georgy Petrovich; Bjushgens, Georgy Sergeevich; and Mikeladze, Vitaly Georgievich, 3,677,502.
Blachly, Donald L.; and Weidner, Jack E., to Oster, John, Manufacturing Co. Liquid heating vessel. 3,678,246, Cl. 219-437.000.
Black and Decker Manufacturing Company, The: *See—*
Brucker, William S., 3,677,657.
Blackwell, John; and Tropea, Alfred, to Du Pont de Nemours, E. I., and Company. Preparation of water-insoluble mono- and disazo dyes. 3,678,028, Cl. 260-186.000.
Blanc, Jean-Henry: *See—*
Reulet, Philippe; Pfister, Alain; Tellier, Jacques; Blanc, Jean-Henry; Jorgensen, Kirsten Borre; and Bohlbro, Hans, 3,678,091.
Blank, Fritz: *See—*
Van Auken, John A.; Kaufman, Mahlon Gene; and Blank, Fritz, 3,677,635.
Bleak, Thomas M.: *See—*
Sawa, Kenneth B.; and Bleak, Thomas M., 3,678,247.
Bliemeister, Louis W. Apparatus for producing metal shot. 3,677,669, Cl. 425-6.000.
Blitz, Daniel, to Sanders Associates, Inc. Fail-safe mechanical timer. 3,677,101, Cl. 74-112.000.
Bliznjuk, Valentin Ivanovich: *See—*
Tupolev, Andrei Nikolaevich; Tupolev, Alexei Andreevich; Cheremukhin, Georgy Alexeevich; Bliznjuk, Valentin Ivanovich; Pukhov, Alexandr Leonidovich; Svischev, Georgy Petrovich; Bjushgens, Georgy Sergeevich; and Mikeladze, Vitaly Georgievich, 3,677,502.
Bloch, Herman S., to Universal Oil Products Company. Hydrocarbon conversion catalyst and process. 3,678,120, Cl. 260-668.00a.
Block, Jacob: *See—*
Patil, Arvind S.; Icraus, John W.; and Block, Jacob, 3,677,939.
Block, Leonard A.; and Dunn, William J., to Quaker Industries Inc. Shelving structure. 3,677,416, Cl. 211-148.000.
Blom, Dirk; Van Overbeek, Adrianus Johannes Wilhelmus Marie; and Zwijsen, Wilhelmus Antonius Joseph Marie, to U.S. Philips Corporation. Linear amplifier circuit. 3,678,404, Cl. 330-22.000.
Bloom, William M., to Allegheny Ludlum Industries, Inc. Conveyor roll. 3,677,394, Cl. 198-127.000.
Bloomfield Valve Corporation: *See—*
Wolfson, Joseph, 3,677,286.
Blosch, Walter, to Liss S.A. Method for producing dials. 3,677,793, Cl. 117-38.000.
Blough, Ronald S.; and Curry, Norval, to Fairfield Engineering & Manufacturing Company. Livestock confinement house with improved environmental control. 3,677,229, Cl. 119-16.000.
Blough, Ronald S., to Fairfield Engineering & Manufacturing Company. Livestock drinking device. 3,677,231, Cl. 119-75.000.
Blount, Elmo M.; Snavely, Earl S., Jr.; Messenger, Joseph U.; and Prueger, Nicolas J., to Mobil Oil Corporation. Permafrost completion. 3,677,340, Cl. 166-1.000.
Blowout prevention apparatus for subaqueous drilling: *See—*
Lloyd, Samuel H.; and Santa Fe International Corporation, 3,677,352.
Blum, Julius, Messrs.: *See—*
Rock, Erich, 3,676,898.
Blumenthal, Warren B., to NL Industries, Inc. Polymeric chromium sulfatozirconate compositions, their preparation and use. 3,677,798, Cl. 117-62.100.
Bock, Franz: *See—*
Rottner, Emil; Bock, Franz; Muth, Willi; and Wenzel, Gunter, 3,678,146.
Boehly, Michael A., to Stromberg-Carlson Corporation. Test apparatus for digital repeaters. 3,678,222, Cl. 179-175.31r.
Boehringer Ingelheim G.m.b.H.: *See—*
Weber, Karl-Heinz; Bauer, Adolf; Merz, Herbert; and Minck, Klaus, 3,678,033.
Boehringer Mannheim GmbH: *See—*
Bergmeyer, Hans Ulrich; Naher, Gotthilf; Thum, Waldemar; Lauerer, Albert; and Emmer, Rudolf, 3,677,901.
Boehringer, Wilfred E., to Mc Donnell Douglas Corporation. Trim and damping cylinder. 3,677,488, Cl. 244-103.00r.
Boekhorst, Antonius, to U.S. Philips Corporation. Circuit arrangement for adjusting the linearity of the deflection signal generated for a deflection system. 3,678,332, Cl. 315-27.00r.
Boes, David J., to United States of America, Air Force. Method for preparing metal matrix composites containing modified polytetrafluoroethylene. 3,678,145, Cl. 264-115.000.
Boetto, Charles; and Orkwiszewski, Wayne L., to International Harvester Company. Hydraulic alternator. 3,677,348, Cl. 172-2.000.
Boffa, Gioacchino; Crotti, Argento; Pieri, Giampiero; Mangini, Angelo; and Tundo, Antonio, to Montecatini Edison S.p.A. 6,15 Dialkoxy 5,14 diaza isoviolanthrones. 3,678,053, Cl. 260-272.000.
Boggs, Charles L., to International Paper Company. Laminated board structure and method of making same. 3,677,868, Cl. 161-37.000.
Boggs, Jesse K., to Esso Research and Engineering Company. Tertiary alkylation utilizing an admixture of olefins and tertiary alkyl chlorides. 3,678,123, Cl. 260-671.00r.
Bognaes, Ragnar; and Solberg, Olav, to Kvaerner Brug. Tank construction for liquified and/or compressed gas. 3,677,021, Cl. 62-55.000.
Bohlbro, Hans: *See—*
Reulet, Philippe; Pfister, Alain; Tellier, Jacques; Blanc, Jean-Henry; Jorgensen, Kirsten Borre; and Bohlbro, Hans, 3,678,091.
Bok, Johannes Gerardus, to U.S. Philips Corporation. Camera with piezo-electric crystal flash ignition system. 3,677,153, Cl. 95-11.00r.
Bokros, Jack C.; and Ellis, Willard H., to Gulf Oil Corporation. Method of making a prosthetic device. 3,677,795, Cl. 117-46.0cg.
Boi, Jan; Buttner, Hildegard; and Kuhn, Peter, to Battelle Development Corporation, The. Temperature indicating dispersion filter. 3,677,966, Cl. 252-408.000.
Boliver, Vincent J., to General Electric Company. Vented fuse module for underground power cable system. 3,678,432, Cl. 337-201.000.
Boliver, Vincent J., to General Electric Company. Socket type contact for a fuse holder. 3,678,451, Cl. 339-258.00r.
Bolliand, Robert; and Saligny, Claude, to Societe Rhodiaceta-D.A.P.I.D. Process and apparatus for the production of synthetic textile stuffing material. 3,677,855, Cl. 156-181.000.
Boltrek, Henry; and Kraft, Joseph K., to Westinghouse Electric Corporation. Modular drive unit for a conveyor. 3,677,388, Cl. 198-16.000.
Bond, Donald Spencer, to RCA Corporation. Radio facsimile postal system for multiple addresees. 3,678,180, Cl. 178-5.000.
Bond, William D., to World Industries, Inc. Plural cavity toroidal float pool chemical package. 3,677,711, Cl. 23-267.00a.
Bonk, Joseph S.: *See—*
Dinenno, Philip A., Jr.; Bonk, Joseph S.; Conrad, Kenneth C.; Moore, Rodney S.; Lochman, Harry E.; and Torello, Daniel D., 3,677,658.
Booher, Robert K., to North American Rockwell Corporation. Ratioless and non-inverting logic circuit using field effect boosting devices. 3,678,290, Cl. 307-205.
Boorujy, Salem, to Environmental Sciences, Inc. Tertiary filtering arrangement. 3,677,413, Cl. 210-502.000.
Boothe, Jerry E.; Hoover, Merwin F.; and Schiegg, Dallas L., to Calgon Corporation. Fluorocarbon containing diallylamines. 3,678,110, Cl. 260-567.60m.
Borden Company, The: *See—*
Sandler, Stanley R., 3,677,883.
Borden, George W.; and Trecker, David J., to Union Carbide Corporation. N,N'-(dihydroxy)ethylenebisnorbornenes. 3,678,073, Cl. 260-326.00c.
Bordes, Marcel E. Stabilizing monorail vehicle. 3,677,188, Cl. 104-120.000.
Boreas, Willem J. L., to Weston Instruments Inc. High impact withstanding taut band suspension instrument. 3,678,383, Cl. 324-154.00r.
Boreskov, Georgy Konstantinovich: *See—*
Stepanov, Gennady Arkadievich; Tsailingold, Anatoly Lvovich; Pilipenko, Fedor Semenovich; Sodolev, Valerian Mikhailovich; Boreskov, Georgy Konstantinovich; Buyanov, Roman Alexeevich; and Venyaminov, Sergei Alexeevich, 3,678,124.
Borg-Warner Corporation: *See—*
Crowell, Jack R., 3,677,333.
Payne, Harold R., 3,677,025.
Shemanske, Richard, 3,678,351.
Shuey, Scott James, 3,678,493.
Borg-Warner Corporation, mesne: *See—*
Frank, Arlen W.; and Baranauckas, Charles F., 3,678,100.
Borgstedt, Hans-Ulrich; Ruhle, Manfred; and Wincierz, Peter, to Metallgesellschaft Aktiengesellschaft. Composite material of vanadium alloys and iron or nickel alloys. 3,677,723, Cl. 29-194.000.
Bornstein, Leopold F., to Georgia-Pacific Corporation. Veneer cross binder and laminates prepared therefrom. 3,677,884, Cl. 161-262.000.
Bosch, Robert, Photokino G.m.b.H.: *See—*
Stolzenwald, Ralf J.; and Korner, Peter, 3,677,625.
Bosworth, Delbert B.; and Goodridge, Ernest E., to United Industrial Syndicate, Inc.; d/b/a, Portland Company; division of and United Industrial Syndicate Inc. Carton dispensers having plural cam denesters. 3,677,439, Cl. 221-251.000.
Bott, Ned. Fifth wheel coupler apparatus. 3,677,563, Cl. 280-425.00r.
Boulin, Jacques R.; and Nepomiastchy, Alexis, to Societe Anonyme de Telecommunications. Three-terminal modular electric filters. 3,678,419, Cl. 333-70.00s.
Bower, Jerry Efton: *See—*
Aschkenasy, Herbert; Schuler, John Joseph, Jr.; and Bower, Jerry Efton, 3,677,984.
Bowers, David L., to General Electric Company. Body organ stimulator with interference rejector. 3,677,251, Cl. 128-419.000.
Bowles, Arnold Gordon, to National Forge Company. High production isostatic molding device. 3,677,674, Cl. 425-78.000.
Bowles Fluidics Corporation: *See—*
Kopera, Anthony, 3,677,276.

Bowles, William R., to Phillips Petroleum Company. Method and apparatus for forming a foundation-leg assembly for and offshore platform. 3,677,113, Cl. 61-46.000.

Boxman, Peter; and Frederik, Johannes van Roessel, to Philips Broadcast Equipment Corporation. Chroma key circuit. 3,678,182, Cl. 178-5.40r.

Boyer, Fred S. Locking devices. 3,677,434, Cl. 220-59.000.

Boyer, Joseph E., to Owens-Illinois, Inc. Apparatus for trimming blown plastic articles. 3,677,454, Cl. 225-99.000.

Bozenhard, Walter Frank: *See—*
Patmore, James R.; Bozenhard, Walter Frank; and Spampanato, Gavino Anthony, 3,678,258.

Bozik, John E.; Swift, Harold E.; and Wu, Ching-Yong, to Ameripol, Inc. Coordination polymerization catalyst. 3,677,968, Cl. 252-431.00n.

Bozik, John E.; Swift, Harold E.; and Wu, Ching Yong, to Ameripol, Inc., mesne. Polymerizing unsaturated monomers with a catalyst of an iron complex, a dialkyl aluminum compound and a bidentate ligand. 3,678,022, Cl. 260-88.700.

Bra-Con Industries, Inc.: *See—*
Marvin, Neil T., 3,677,175.

Brabazon, John J. Knee support. 3,677,265, Cl. 128-80.00c.

Braden, Alvin H. Fish food feeding apparatus. 3,677,230, Cl. 119-51.000.

Brammall, Inc.: *See—*
Van Gompel, James J., 3,677,058.

Brancaleone, Salvatore T., to International Telephone and Telegraph Corporation. Electrical connector shield. 3,678,445, Cl. 339-143.00r.

Braun, Dieter; and Heinemann, Klaus, to Siemens Aktiengesellschaft. Particle-beam device equipped with magnetic means for transversely displacing parts thereof. 3,678,270, Cl. 250-49.50b.

Brecher, Charles; Pappalardo, Romano; and Samelson, Harold, to GTE Laboratories Incorporated. Liquid laser containing cycloheptatriene. 3,677,959, Cl. 252-301.20r.

Breckenridge, G. J.: *See—*
Kalnin, I. L.; and Breckenridge, G. J., 3,677,804.

Breen, Edward L.: *See—*
Schneider, Marion F.; and Breen, Edward L., 3,678,275.

Breitfuss, Thomas K. Keyed joint arrangement for interconnecting pipe sections. 3,677,581, Cl. 285-292.000.

Bremson Photo Industries, Inc.: *See—*
Daugherty, Arthur J., 3,677,638.

Breslow, Jeffrey Dale, to Marvin Glass & Associates. Visual and audible signal producing target apparatus. 3,677,545, Cl. 273-102.10c.

Brethauer, Louis G.: *See—*
Bergey, John M.; Le Van, James O.; Walton, Richard S.; and Brethauer, Louis G., 3,676,993.

Brett, Thomas J., Jr.: *See—*
Mastromatteo, Richard; and Brett, Thomas J., Jr., 3,678,135.

Bretti, Franco, to Olivetti, Ing. C., & C., S.p.A. Automatic writing arrangements for accounting or calculating machines. 3,677,385, Cl. 197-19.000.

Briggs & Stratton Corporation: *See—*
Tharman, Paul A., 3,678,366.

Brindisi, Frank A., Jr.; Nagy, Joseph S.; and Yarkosky, Eugene F., to Enthone, Incorporated. Selectively stripping tin and/or lead from copper substrates. 3,677,949, Cl. 252-79.400.

Briner, William W.: *See—*
Widder, James S.; and Briner, William W., 3,678,154.

Bristol-Myers Company: *See—*
Crenshaw, Ronnie R., 3,678,076.

British Insulated Callender's Cables Limited: *See—*
Lawrenson, Thomas, 3,678,177.

British Titan Products Company Limited: *See—*
Williams, Frank Ronald; Whitehead, Jack; Marshall, Jefferson; Conners, Alan; and Gosden, Derek Vernon, 3,677,740.

Britton, G. B., & Sons Limited: *See—*
Christie, Gerald Anthony; and Doble, Brian Reginald, 3,677,678.
Christie, Gerald Anthony; Doble, Brian Reginald; and Bromfield, Alec Roy, 3,677,679.

Brochard, Claude; and Cossart, Rene, to Creusot-Loire. Positioning the work in a milling lathe. 3,677,114, Cl. 82-2.500.

Brockman, Edwin. Toothbrush. 3,677,264, Cl. 128-62.00a.

Brode, George L., to Union Carbide Corporation. Vulcanized silicon terminated polymers. 3,678,010, Cl. 260-75.00t.

Bromfield, Alec Roy: *See—*
Christie, Gerald Anthony; Doble, Brian Reginald; and Bromfield, Alec Roy, 3,677,679.

Bronstein, Benjamin. Pick-up load holder. 3,677,562, Cl. 280-179.00a.

Brooker, Leslie G. S.: *See—*
Van Lare, Earl J.; and Brooker, Leslie G. S., 3,678,045.

Brooks, Robert E., to Ranco Incorporated. Temperature sensing device for room air tempering apparatus. 3,678,434, Cl. 338-196.000.

Bronson, Donald L.; and Magnuson, Raymond A., to Beatrice Food Co. Mounting arrangement for pivotal space divider. 3,677,322, Cl. 160-135.000.

Brother Kogyo Kabushiki Kaisha: *See—*
Iwashima, Hideo; and Fukao, Satoshi, 3,678,424.

Brotherton, Thomas K.; Lynn, John W.; and Knopf, Robert J., to Union Carbide Corporation. Polyurethane products. 3,677,983, Cl. 260-2.5at.

Brown, Alexander M., to Sherwood Medical Industries Inc. Needle cap for syringe package. 3,677,247, Cl. 128-221.000.

Brown, Arthur K., Jr., to Bendix Corporation, The. Hydraulic booster with safety device. 3,677,140, Cl. 91-391.000.

Brown, Boveri & Company, Ltd.: *See—*
Mottier, Francois; and Wild, Peter J., 3,678,399.

Brown, Buck C., to Control Concepts Corporation. Vertical locking circuit. 3,678,199, Cl. 178-69.5tv.

Brown, Carl W.; Reppert, Allen B.; and Dobbins, Billy D., to United States of America, Navy. Scanning interferometer-beam rider guidance system. 3,677,500, Cl. 244-3.130.

Brown, Dale G.: *See—*
Hill, Ira D.; Mikherjee, Barid B.; and Brown, Dale G., 3,678,172.

Brown, Dale H., to General Electric Company. Combined steam power plant and water distillation system. 3,677,905, Cl. 202-172.000.

Brown, Gaylord W., to Koehring Company. Plastics thermoforming machine. 3,677,675, Cl. 425-107.000.

Brown, Henry; and Tomaszewski, Thaddeus W., to Udylite Corporation, The. Codeposition of a metal and fluorocarbon resin particles. 3,677,907, Cl. 204-16.000.

Brown, John Colin; and Cheer, Roy Anthony, to Ilford Limited. Development process. 3,677,761, Cl. 96-66.500.

Brown, Robert M.: *See—*
Brown, Robert M., 3,678,474.

Brown, Robert M., to Brown, Robert M. and Computech, Inc. Marine speedometer and anemometer with digital readout. 3,678,474, Cl. 340-173.00r.

Brown, Terry D.: *See—*
Wood, Harold V.; and Brown, Terry D., 3,677,994.

Browning Arms Company: *See—*
Lawrence, John S., 3,677,566.

Browning, William C.; Perricone, Alphonse C.; and Elting, Katherine Anne C., to Milchem Incorporated. Galactomannan composition and treatment for the prevention of thixotropy destruction of same by ligands. 3,677,961, Cl. 252-316.000.

Brucker, William S., to Black and Decker Manufacturing Company, The. Chuck guard. 3,677,657, Cl. 408-241.00g.

Bruner, Peter Martin, to AMP Incorporated. Assembly and test device for microelectronic circuit members. 3,678,385, Cl. 324-158.00f.

Brunkhardt, Frederick W.: *See—*
Meyers, Peter G.; Sweeney, Eric C.; and Brunkhardt, Frederick W., 3,677,422.

Bryk, Petri; Haani, Martti; Honkasalo, Jorma B.; Kinnunen, Jorma; Lindsjo, Olle; Nyholm, Erik; Poijarvi, Jaakko; Rastas, Jussi; and Kangas, Juhani, to Outokumpu Oy. Process for removal and recovery of mercury from gases. 3,677,696, Cl. 23-2.

Bucek, Jiri B.; and Shultz, James R., to Fincor, Inc. Control for three phase A. C. motor. 3,678,355, Cl. 318-203.00r.

Buchanan, Alan D., to Monsanto Australia Limited. Production of para-substituted phenol/formaldehyde resins. 3,677,986, Cl. 260-29.300.

Bucher-Guyer AG Maschinenfabrik: *See—*
Hauser-Lienhard, Hans Ulrich, 3,676,988.

Buck, Eugene W. Radial positioner, lock and rotary contacts for electromagnetic drill mount. 3,677,656, Cl. 408-76.000.

Buckeye Cellulose Corporation, The: *See—*
Schoggen, Howard L., 3,678,031.

Buerger, Herbert. Process for making a wheel trim lock ring assembly. 3,676,919, Cl. 29-469.000.

Bugaut, Andree: *See—*
Kalopissis, Gregoire; Bugaut, Andree; and Estradier, Francoise, 3,677,690.

Bump, Thomas R.: *See—*
Huebotter, Paul R.; and Bump, Thomas R., 3,677,893.

Bungardt, Karl; Lehnert, Gunter; and Meinhardt, Helmut W., to Deutsche Edelstahlwerke Aktiengesellschaft. Protective diffusion layer on nickel and/or cobalt-based alloys. 3,677,789, Cl. 117-22.000.

Bunker-Ramo Corporation, The: *See—*
Cook, William H., 3,678,190.

Burkhardt, Joseph A.: *See—*
Childers, Thomas W.; Burkhardt, Joseph A.; and Koerner, Roger J., 3,677,001.

Burland, Oliver John. Supporting bar assembly for vehicle. 3,677,451, Cl. 224-47.10f.

Burnett, Richard T.: *See—*
Schultz, Harold B.; Fulmer, Keith H.; and Burnett, Richard T., 3,677,607.

Burnett, Richard T., to Bendix Corporation, The. Disc brake mounting means. 3,677,372, Cl. 188-73.300.

Burns, Erwin; and Stevenson, Alan D. Hanger and packer well tool. 3,677,341, Cl. 166-124.000.

Burridge, Robert E.: *See—*
Kamenir, Melvin; and Burridge, Robert E., 3,678,218.

Burroughs Corporation: *See—*
Billawala, Shahbuddin A., 3,678,482.
Findlay, Campbell, 3,677,486.
Miller, Leo H.; and Colegrove, James A., 3,677,059.
Stansell, Alpheus F.; and Bennett, Eugene E., 3,678,480.
Wallace, Harry L., 3,677,452.
Zopff, Thomas E., 3,678,223.

Burwen, Richard S. Dynamic noise filter having means for varying cutoff point. 3,678,416, Cl. 333-17.000.

Burzan, Vernon J.: *See—*

Hall, William D.; and Burzan, Vernon J., 3,677,623.
Lee, Charles K.; and Burzan, Vernon J., 3,677,154.

Burzan, Vernon J., to KMS Industries, Inc. Identification card locator assembly. 3,677,639, Cl. 355-76.000.

Bush, Donald M., to United States of America, Atomic Energy Commission. Thermal battery having a thermal reservoir pellet. 3,677,822, Cl. 136-83.005.

Bush, Richard Paul; and Thomas, Bryan, to Dow Corning Limited. Organosilicon compounds containing silazane and siloxane linkages. 3,677,977, Cl. 260-47.00r.

Bushey, Donald F., to United States of America, Army. Extractor for primer cartridge cases. 3,677,133, Cl. 89-27.00b.

Busler, William R., to Phillips Petroleum Company. Lactone polymerization with a dicarboxylic acid-water initiator. 3,678,069, Cl. 260-484.00a.

Butler Manufacturing Company: *See—*
Kimmel, Albert L., 3,677,988.

Buttner, Hildegard: *See—*
Bol, Jan; Buttner, Hildegard; and Kuhn, Peter, 3,677,966.

Buyanov, Roman Alexeevich: *See—*
Stepanov, Gennady Arkadievich; Tsailingold, Anatoly Lvovich; Pilipenko, Fedor Semenovich; Sodolev, Valerian Mikhailovich; Boreskov, Georgy Konstantinovich; Buyanov, Roman Alexeevich; and Venyaminov, Sergei Alexeevich, 3,678,124.

Buys, Pieter, to Applied Power Industries, Inc. Hydraulic jack. 3,677,518, Cl. 254-93.00r.

Buzova, Zoya Mikhailovna: *See—*
Nabiullin, Faat Khatovich; Buzova, Zoya Mikhailovna; Gertsik, Mikhailovich; and Zjuzin, Sergei Alexeevich, 3,677,824.

Buzzi, Umberto; Dufresne, Jacques Pierre; and Farfaletti-Casali, Flaviano, to European Atomic Energy Community (Euraton). Apparatus for charging and discharging fuel elements in a vertical-channel nuclear reactor. 3,677,328, Cl. 165-47.000.

Byers, Thomas W.: *See—*
Rivers, Richard D.; Byers, Thomas W.; and Fortener, Edward J., 3,677,289.

Byron, John W., to Phillips Petroleum Company. Production of carbon black. 3,677,704, Cl. 23-209.400.

Cabe, Frank D.: *See—*
Azamber, Eugene C.; and Cabe, Frank D., 3,678,450.

Caiola, Leonard, to Information Utilization Corporation. Analysis of radioactive slide specimen and method of preparation. 3,678,148, Cl. 424-1.000.

Calgon Corporation: *See—*
Boothe, Jerry E.; Hoover, Merwin F.; and Schiegg, Dallas L., 3,678,110.

California Injection Molding Co., Inc.: *See—*
Etherington, Roger F., 3,677,680.

Cambridge Scientific Instruments Limited: *See—*
Oatley, Charles W., 3,678,384.

Cameron Iron Works, Inc.: *See—*
Baker, Gerald S., 3,677,353.
Wedel, Alfred W., 3,677,575.

Campbell, Henry Fred, to Campbell Research Corporation. Stressed concrete structures and method of making. 3,676,968, Cl. 52-223.000.

Campbell, James K.; and Lee, Kenneth M., to Dow Corning Corporation. Silicone-acrylate soil release treatment for organic textiles. 3,677,810, Cl. 117-138.80f.

Campbell Research Corporation: *See—*
Campbell, Henry Fred, 3,676,968.

Canon Kabushiki Kaisha: *See—*
Kitanosono, Tatsushi; Mashimo, Yukio; and Takishima, Yoshiyuki, 3,678,354.
Komori, Shigehiro; and Hattori, Hiroyuki, 3,677,222.
Taguchi, Tatsuya, 3,677,149.
Yamamoto, Hideo, 3,678,193.

Cargill Incorporated: *See—*
McNeff, Larry Cecil, 3,677,767.

Carlson, Arthur W., to Velsicol Chemical Corporation. Process for preparing a methano-poly-cyclic hydroquinone. 3,678,116, Cl. 260-619.00f.

Carlson, John David, to Koppers Company, Inc. Integrated insulated and weatherproof roof system. 3,677,878, Cl. 161-160.000.

Carlson, Ronald H., to Hooker Chemical Corporation. Synergistic metal sequestrant. 3,677,956, Cl. 252-180.000.

Carrier Corporation: *See—*
Raymond, Glendon A., 3,677,028.
Traver, Darwin G.; and Herb, Carl C., 3,677,164.

Carroll, Harold E., to United McGill Corporation, mesne. Apparatus for and method of manufacturing flexible tubing. 3,677,046, Cl. 72-49.000.

Carroll, Robert L.; and Hayward, Charles R., to Swift Agricultural Chemicals Corporation, mesne. Production of fertilizer from wet phosphoric acid. 3,677,734, Cl. 71-34.

Carruth, Buster L.: *See—*
Mahlstede, Gerald F.; and Carruth, Buster L., 3,677,273.

Carter, Alastair Howroyd. Discoidal electric motor. 3,678,314, Cl. 310-268.000.

Cartridge Television, Inc.: *See—*
Protas, Arthur I., 3,677,494.

Cartwright, John Sutton; and Fuchs, Francis Joseph, Jr., to Western Electric Company, Incorporated. Method of and apparatus for positive fluid flow extrusion. 3,677,049, Cl. 72-60.

Carty, Edward J.; and McDowell, Francis C., to General Electric Company. Fibrous glass filled polycarbonate resins. 3,678,079, Cl. 260-37.0pc.

Cary, John T.: *See—*
Erlandson, Paul M.; Aschberger, Anton A.; and Cary, John T., 3,678,241.

Casebier, Ronald L.; Herrick, Franklin W.; Gray, Kenneth R.; and Johnston, Frederic A., to International Telephone and Telegraph Corporation. Processes for preparing mannose and mannose derivatives. 3,677,818, Cl. 127-46.00r.

Cash, John H., Jr.; and Cunningham, James A., to Texas Instruments, Incorporated. RG sputtering method. 3,677,924, Cl. 204-192.000.

Casper, Robert P., to Hughes Aircraft Company. Opto-electronic scene monitoring system. 3,678,492, Cl. 340-258.00b.

Cassidy, Edward K.: *See—*
Stepenske, Lawrence D.; and Cassidy, Edward K., 3,677,226.

Castrantas, Harry M.; Keay, Robert E.; and MacKellar, Donald G., to FMC Corporation. Treatment of dry cleaning baths. 3,677,955, Cl. 252-162.000.

Caterpillar Tractor Co.: *See—*
Allen, Thomas E., 3,677,427.
Johnson, Harold M.; and Page, Russel D., 3,677,350.

Caterpillar Tractor Company: *See—*
Groezinger, John J., 3,678,271.

Cathey, Le Conte, to United States of America, Atomic Energy Commission. Thermoelectric generator. 3,677,825, Cl. 136-202.000.

Caule, Elmer J., to Olin Corporation. Tarnish resistant copper and copper alloys. 3,677,828, Cl. 148-6.15r.

Celanese Coatings Company: *See—*
Aschkenasy, Herbert; Schuler, John Joseph, Jr.; and Bower, Jerry Efton, 3,677,984.

Celanese Corporation: *See—*
Gump, Klaus H., 3,678,049.
Hou, Kenneth C., 3,677,799.
Kalnin, I. L.; and Breckenridge, G. J., 3,677,804.
Ram, Michael J.; Riggs, John P.; and Clarke, Charles M., 3,677,705.

Celentano, Robert A.: *See—*
Amberger, Donald J.; and Celentano, Robert A., 3,678,362.

Centre Electronique Horloger SA: *See—*
Choffat, Hubert, 3,678,309.

Cerberus AG: *See—*
Walthard, Beat; Scheidweiler, Andreas; and Kuhn, Max, 3,678,510.

Chadbourne, Gilbert R., to Keyes Fibre Company. Pallet. 3,677,201, Cl. 108-58.000.

Chamberlain, Anna B.: *See—*
Deike, Robert F., 3,676,965.

Chamberlain, William H.: *See—*
Deike, Robert F., 3,676,965.

Chang, Wen-Hsuan: *See—*
Dowbenko, Rostyslaw; Chang, Wen-Hsuan; and Anderson, Carl C., 3,677,978.

Chaparro, John J.; Ellis, Lowell V.; Meanor, Doyle W.; Morton, William D., Jr.; Richelmann, Bernd H.; Ross, George B.; and Toth, John E., to Delta Design, Inc. Integrated circuit bandling system. 3,677,401, Cl. 209-73.000.

Charles River Foundation, The: *See—*
Merrill, Edward W., 3,677,444.

Charron, Jean. Camper trailer. 3,677,600, Cl. 296-27.000.

Chaschinov, Anatoly Vasilievich: *See—*
Scherban, Alexandr Nazarievich; Furman, Neonil Izrailevich; Sotnichenko, Boris Feodosievich; Belogolovin, Nikolai Stefanovich; Chopovsky, Jury Ivanovich; Sutormin, Jury Nikolaevich; Zaitsev, Valentin Ivanovich; Kot, Vladimir Ivanovich; Mikhailjuk, Nikolai Tarasovich; Denisenko, Sergei Andreevich; Chaschinov, Anatoly Vasilievich; Shaporev, Stepan Vasilievich; and Samoilenko, Svetlana Mikhailovna, 3,678,489.

Chatelain, Jean; and Soussan, Salomon, to Produits Chimiques Pechiney-Saint-Gobain. Process for preparing vinyl based polymers and copolymers insoluble in their monomers. 3,678,021, Cl. 260-80.810.

Chatterjea, Probir K., to International Harvester Company. Hydrostatic transmission hydraulic control and single lever for operating same. 3,677,362, Cl. 180-6.480.

Chayamichi, Hiroshi: *See—*
Ueda, Haruo; Sugi, Masanao; and Chayamichi, Hiroshi, 3,677,492.

Cheer, Roy Anthony: *See—*
Brown, John Colin; and Cheer, Roy Anthony, 3,677,761.

Chemcell Limited: *See—*
Riordon, Peter R., 3,677,881.

Chemical Separations Corporation: *See—*
Higgins, Irwin R.; and Ferner, Jack D., 3,677,937.

Chemische Werke Huels Aktiengesellschaft Patentabteilung: *See—*
Frese, Albert, 3,678,023.

Chemische Werke Huls Aktiengesellschaft: *See—*
Riemhofer, Franz; Dittmann, Walter; Biethan, Uwe; Hornung, Karl-Heinz; and Schultze, Ernst-Christian, 3,678,128.

Chemotronics International, Inc.: *See—*
Rice, Edwin Eugene; and Franklin, Charles Henry, 3,676,963.

Chen, Philip L., to Xerox Corporation. Optical recorder. 3,677,148, Cl. 95-4.50r.

Chepurnoi, Nikolai Prokhorovich: *See—*

Kostylev, Alexandr Dmitrievich; Gurkov, Konstantin Stepanovich; Tkach, Khai Berkovich; and Chepurnoi, Nikolai Prokhorovich, 3,677,354.

Cheremukhin, Georgy Alexeevich: *See—*
Tupolev, Andrei Nikolaevich; Tupolev, Alexei Andreevich; Cheremukhin, Georgy Alexeevich; Blizniuk, Valentin Ivanovich; Pukhov, Alexandr Leonidovich; Svischev, Georgy Petrovich; Bjushgens, Georgy Sergeevich; and Mikeladze, Vitaly Georgievich, 3,677,502.

Cherry Electrical Products Corporation: *See—*
Anderson, Fred N., 3,678,235.
Long, Eric L., 3,678,255.

Chervenak, Michael C.: *See—*
Weber, Carl L.; Wolk, Ronald H.; and Chervenak, Michael C., 3,677,716.

Chevron Research Company: *See—*
Adams, John Howard, 3,678,000.
Adams, John Howard, 3,678,001.
Adams, John Howard, 3,678,044.
Kemp, Jacob D., 3,678,099.
White, Robert J., 3,677,971.

Chicago Bridge & Iron Company: *See—*
Garrigus, James P., 3,677,016.

Chiffert, Alain, to Compagnie des Compteurs. Apparatus for detecting saturation periods of a transformer. 3,678,377, Cl. 324-55.000.

Childers, Thomas W.; Burkhardt, Joseph A.; and Koerner, Roger J., to Esso Production Research Company. Submerged hydraulic system. 3,677,001, Cl. 60-51.000.

Chin, Sonny B. Photographic equipment cart. 3,677,573, Cl. 280-43.100.

Chisso Corporation: *See—*
Ando, Masao; and Hori, Masao, 3,678,243.

Chlumecky, Nicholas, to Commercial Shearing & Stamping Company. Tunnel lining. 3,677,015, Cl. 61-45.00r.

Choate, William C.; and Masten, Michael K., to Texas Instruments, Incorporated. Expanded search for tree allocated processors. 3,678,461, Cl. 340-172.500.

Choate, William C.; and Masten, Michael K., to Texas Instruments, Incorporated. Storage minimized optimum processor. 3,678,470, Cl. 340-172.500.

Choffat, Hubert, to Centre Electronique Horloger SA. Piezoelectric resonator. 3,678,309, Cl. 310-8.500.

Chopovsky, Jury Ivanovich: *See—*
Scherban, Alexandr Nazarievich; Furman, Neonil Izrailevich; Sotnichenko, Boris Feodosievich; Belogolovin, Nikolai Stefanovich; Chopovsky, Jury Ivanovich; Sutormin, Jury Nikolaevich; Zaitsev, Valentin Ivanovich; Kot, Vladimir Ivanovich; Mikhailjuk, Nikolai Tarasovich; Denisenko, Sergei Andreevich; Chaschinov, Anatoly Vasilievich; Shaporev, Stepan Vasilievich; and Samoilenko, Svetlana Mikhailovna, 3,678,489.

Choudbury, Alok: *See—*
Wahlster, Manfred; and Choudbury, Alok, 3,677,323.

Chow, Woo Foung, to Bell Telephone Laboratories, Incorporated. Magnetic domain logic arrangement. 3,678,287, Cl. 307-88.0lc.

Christensen, Nils J.: *See—*
Arrigo, Joseph T.; and Christensen, Nils J., 3,678,108.

Christie, Gerald Anthony; and Doble, Brian Reginald, to Britton, G. B., & Sons Limited. Moulding machine with pivoted welt plates. 3,677,678, Cl. 425-119.000.

Christie, Gerald Anthony; Doble, Brian Reginald; and Bromfield, Alec Roy, to Britton, G. B., & Sons Limited. Moulds for forming footwear. 3,677,679, Cl. 425-119.000.

Chrysler Corporation: *See—*
Harrington, Jerry E., 3,677,672.
Sarto, Jorma O., 3,677,240.

Chung, Daniel A.; and Pearson, Charles J., to Goodyear Tire & Rubber Company, The. Polyureaurethane shock absorbing compositions. 3,677,869, Cl. 161-42.000.

Chuo Tatemono Co., Ltd.: *See—*
Miyake, Shigenobu, 3,677,918.

Ciba Limited: *See—*
Huber-Emden, Helmut, 3,678,046.
Matter, Eric, 3,678,042.
Robinson, Brian; and Fillingham, Stephen Harvey, 3,677,693.

Ciba-Geigy AG: *See—*
Lohse, Friedrich; Schmid, Rolf; Fisch, Willy; and Batzer, Hans, 3,678,009.
MacPherson, Ian Alexander; Inman, Eric Richard; Stirling, John Andrew; and Irvine, Alexander McHugh, 3,677,782.
Nikles, Erwin, 3,678,074.
Nikles, Erwin, 3,678,075.
Schmid, Rolf; Lohse, Friedrich; and Batzer, Hans, 3,678,127.

Ciba-Geigy Corporation: *See—*
Finch, Neville, 3,678,092.
Gruenfeld, Norbert; and Pesterfield, Enos C., Jr., 3,678,169.
Gschwend, Heinz Werner; and deStevens, George, 3,678,059.
Pickles, Wilfred, 3,677,910.

Cibie, Pierre, to Projecteurs Cibie. Hydraulic circuits. 3,677,299, Cl. 138-26.000.

Clark Equipment Company: *See—*
Dence, Donald S., 3,677,105.

Clark, Frank S., to Monsanto Company. Polyphenyl thioether lubricating compositions. 3,677,944, Cl. 252-48.400.

Clark, Harold A. Method for application of pressure-sensitive adhesives. 3,677,859, Cl. 156-250.000.

Clark, James M., to International Telephone and Telegraph Corporation. Frame synchronization system. 3,678,200, Cl. 178-69.50r.

Clark, Joseph Edwin. Drilling and degasser. 3,676,984, Cl. 55-193.000.

Clarke, Charles D., to Mattel, Inc. Flatiron toy doll accessory. 3,676,950, Cl. 46-14.000.

Clarke, Charles M.: *See—*
Ram, Michael J.; Riggs, John P.; and Clarke, Charles M., 3,677,705.

Clarkson, Frank Henry, to Clarkson International Tools Limited. Chuck having means to axially position tool. 3,677,560, Cl. 279-47.000.

Clarkson International Tools Limited: *See—*
Clarkson, Frank Henry, 3,677,560.

Clifford, Cecil Frank. Electromechanical oscillator with isochronous compensation and/or frequency regulation. 3,678,307, Cl. 310-22.000.

Clippingdale, John Walter; and Watson, Charles Andrew, to Lever Brothers Company. Toothpastes. 3,678,155, Cl. 424-52.000.

Coates, Vincent J.; and Welter, Leonard M., to American Optical Corporation. Field emission electron gun utilizing means for protecting the field emission tip fom high voltage discharges. 3,678,333, Cl. 315-31.000.

Coberley, Daniel A.: *See—*
MacCallum, James A.; Howard, Velmar E.; and Coberley, Daniel A., 3,677,856.

Coburn, Michael D., to United States of America, Atomic Energy Commission. 2,6-Bis(picrylamino)-3,5-dinitropyridine and a method for its preparation. 3,678,061, Cl. 260-296.00r.

Coccagna, Daniel T.; and Eldamati, Salah Eldin A. Pallet. 3,677,200, Cl. 108-58.000.

Coe, Ronald J., to SCI Systems, Inc. Solid state relay. 3,678,291, Cl. 307-202.000.

Coensgen, Frederic H.; and Nexsen, William E., Jr., to United States of America, Atomic Energy Commission. Magnetic compression controlled thermonuclear reactor. 3,677,889, Cl. 176-3.000.

Coffield, George C., Jr., to United States of America, Army. Fastener. 3,677,588, Cl. 287-189.36f.

Cohen, Gerald; and Crystal, Maurice I., to Sylvania Electric Products Inc. Modular switching network. 3,678,205, Cl. 179-15.0aq.

Cohrs, Arthur H.; and Kresse, Franklin T. Tree excavating machine. 3,676,941, Cl. 37-2.00r.

Cole, John M.; and Sinclair, William, to Thomas & Betts Corporation. Method of fabricating a magnetic memory matrix. 3,676,924, Cl. 29-604.000.

Colegrove, James A.: *See—*
Miller, Leo H.; and Colegrove, James A., 3,677,059.

Colgate-Palmolive Company: *See—*
Ledgett, Lowell Ashton, 3,677,714.
Renold, Adolph, 3,678,084.

Collier, Robert W., to Stromberg-Carlson Corporation. Compact frequency selective ringer. 3,678,508, Cl. 340-392.000.

Collins, David R. Corner construction for aquarium or the like. 3,677,433, Cl. 220-4.00r.

Collins Radio Company: *See—*
Hallford, Ben R., 3,678,414.
Hallford, Ben R., 3,678,433.
Ragan, Lawrence H.; and Pratt, Charles R., 3,678,417.

Columbia Broadcasting System, Inc.: *See—*
Goldmark, Peter C.; and Hollywood, John M., 3,678,181.

Combined steady-state/dynamic total head probe: *See—*
Hoeflinger, Richard P.; and United States of America, Air Force, 3,677,079.

Combitainer S.A.: *See—*
Lindqvist, Karl Sigvard, 3,677,199.

Combustion Engineering, Inc.: *See—*
Klausing, Melvin H., 3,676,935.

Comers, Robert C.: *See—*
Pickett, Charles G.; Lang, Robert A.; and Comers, Robert C., 3,677,866.

Commercial Appliances, Inc.: *See—*
Shelton, Winston L.; and Pottinger, Eugene A., 3,677,170.

Commercial Shearing & Stamping Company: *See—*
Chlumecky, Nicholas, 3,677,015.

Commercial Solvents Corporation: *See—*
Frump, John A., 3,678,065.
Gagliardi, Domenick Donald, 3,677,812.

Commissariat a l'Energie Atomique: *See—*
Fremiot, Charles, 3,678,365.

Communications Satellite Corporation: *See—*
Heers, Arthur F.; and Schmidt, William G., 3,678,389.

Communications Transistor Corporation: *See—*
Reber, Robert L.; and Huiskens, James C., 3,678,348.

Comon Tatar Inc.: *See—*
Tatar, Frank J., 3,677,399.

Compagnie de Saint Gobain: *See—*
Martin, Michel, 3,677,731.

Compagnie des Compteurs: *See—*
Chiffert, Alain, 3,678,377.
Larmurier, Claude Fernand Emile, 3,677,078.
Soupenne, Henri, 3,677,466.

Compagnie Industrielle de Precontrainte et d'Equipment des Constructions (C.I.P.E.C.): *See—*

Wattiez, Gerard Charles Lucien, 3,677,145.

Compteurs Schlumberger: *See—*
Herrmann, Pierre, 3,678,262.

Compufoto, Inc.: *See—*
Nielsen, Asger T., 3,677,146.

Computech, Inc.: *See—*
Brown, Robert M., 3,678,474.

Condon, David C.; and Nichols, Andrew J., to Novar Corporation. Memory for storing plurality of variable length records. 3,678,462, Cl. 340-172.500.

Connecticut International Corporation: *See—*
Beal, Edward W., 3,678,260.

Conners, Alan: *See—*
Williams, Frank Ronald; Whitehead, Jack; Marshall, Jefferson; Conners, Alan; and Gosden, Derek Vernon, 3,677,740.

Connor, Augustus S., to Wix Corporation. Oil filter and seal means therefor. 3,677,412, Cl. 210-440.000.

Connor Engineering Corporation: *See—*
Gibbs, James C.; and Daninhersch, Harry, 3,677,165.

Conrad, Kenneth C.: *See—*
Dinenno, Philip A., Jr.; Bonk, Joseph S.; Conrad, Kenneth C.; Moore, Rodney S.; Lochman, Harry E.; and Torello, Daniel D., 3,677,658.

Constable, James M., to Del Electronics Corporation. Surge voltage protection system. 3,678,341, Cl. 317-61.500.

Constructions Mills-K: *See—*
Coppel, Georges, 3,677,382.

Continental Can Company, Inc.: *See—*
Erlandson, Paul M.; Aschberger, Anton A.; and Cary, John T., 3,678,241.
Westfall, James E., 3,677,431.
Winkless, Robert A., 3,678,336.

Control Concepts Corporation: *See—*
Brown, Buck C., 3,678,199.

Controls Switch, Inc., mesne: *See—*
Mc Neil, Daniel E., 3,678,261.

Cook, Charles R., Jr., to International Telephone and Telegraph Corporation. Method of fabricating a semiconductor device. 3,676,922, Cl. 29-577.000.

Cook, William H., to Bunker-Ramo Corporation, The. Automatic photo comparison system. 3,678,190, Cl. 178-6.800.

Coolidge, Anson S.: *See—*
Wunder, John E.; and Coolidge, Anson S., 3,676,987.

Cope, Geoffrey W.; and Skinner, George C., to Dresser Industries, Inc. Automatic electric coupler. 3,678,442, Cl. 339-111.000.

Copeland, John Alexander, III, to Bell Telephone Laboratories, Incorporated. Stacking arrangement which provides self-biasing for single wall domain organizations. 3,678,478, Cl. 340-174.0tf.

Copier, Harald; and Tonsbeek, Christiaan Herman Theodoor, to Lever Brothers Company. Certain 2-acyl-2-thiazolines. 3,678,064, Cl. 260-306.7.

Coppel, Georges, to Constructions Mills-K. Flexible bearing for a conveyor roller capable of being incorporated in a rolling plane. 3,677,382, Cl. 193-35.00b.

Copper Range Company: *See—*
Finlay, Walter L.; Fisher, Henry J.; and Hay, Donald A., 3,677,745.

Coppola, Mario. Device for the automatic molding of paste-like, solidifiable products, such as, for instance, cosmetics and the like. 3,677,677, Cl. 425-109.000.

Coran, Aubert Y.; and Vineyard, Billy D., to Monsanto Company. Monosubstituted ureas as fuel additives. 3,677,726, Cl. 44-71.000.

Corey, Victor B., to Sundstrand Data Control, Inc. Measuring system for a fluid flow stream. 3,677,086, Cl. 73-205.00r.

Cork, Gordon H.; Tenniswood, David M.; and Kaptur, Robert E., to Gemco Electric Company. Machine control. 3,677,099, Cl. 74-89.200.

Corkill, John L., to Husky Oil Ltd. Submersible pump assembly. 3,677,665, Cl. 417-410.000.

Corless, Lee M., to B & J Manufacturing Company, mesne. Tire bead seating and inflation apparatus and method for using same. 3,677,320, Cl. 157-1.100.

Corning Glass Works: *See—*
Dornan, John R., 3,677,732.
Lawless, William N., 3,677,718.
Shoup, Robert D., 3,678,144.

Corrugated Finishing Products, Inc.: *See—*
Dragoo, Sherman L., 3,677,111.

Cossart, Rene: *See—*
Brochard, Claude; and Cossart, Rene, 3,677,114.

Cotton, Ronald K.; and Rae, Barney O., to Cutler-Hammer Inc. Storage and retrieval system with a motor current sensing to detect obstructions. 3,677,420, Cl. 214-16.40a.

Coulter Electronics, Inc.: *See—*
Klein, Robert I., 3,678,382.

Cox, Arthur R.; and Allen, Marvin M., to United Aircraft Corporation. Processing of the precipitation hardening nickel-base superalloys. 3,677,830, Cl. 148-12.700.

Cox, Clifford B. Remote control door lock. 3,677,043, Cl. 70-92.000.

Cox, James P., to Inglis, John, Frozen Foods Company. Method for trimming projections from globular articles. 3,677,315, Cl. 146-224.000.

CPC International Inc.: *See—*
Giesecke, Frederick Adolph, 3,677,290.

Mokrzycki, Stanley Martin; Sexton, Edwin Leon; Powers, Thomas George; and Melnick, Daniel, 3,677,768.

Craft, Jack, to RCA Corporation. Balanced variable gain amplifier. 3,678,403, Cl. 330-13.000.

Crandon, Harry D.: *See—*
Metcalfe, Richard T.; and Crandon, Harry D., 3,678,141.

Crenshaw, Ronnie R., to Bristol-Myers Company. Tetrahydrodibenzothiophenes. 3,678,076, Cl. 260-330.500.

Creusot-Loire: *See—*
Brochard, Claude; and Cossart, Rene, 3,677,114.

Crickmer, Charles D. Well swab. 3,677,143, Cl. 92-241.000.

Crivello, James V., to General Electric Company. Oxidation of hydroxylated aromatic compositions. 3,678,080, Cl. 260-396.00r.

Crivello, James V., to General Electric Company. Oxidation of hydroxylated aromatic compositions. 3,678,081, Cl. 260-396.00r.

Croce, Louis J.; and Barone, Bruno, to Petro-Tex Chemical Corporation. Promotion of liquid phase oxidation catalysts. 3,678,105, Cl. 260-524.

Cronkhite, Leonard W., Jr.: *See—*
Merrill, Edward W., 3,677,444.

Cronstedt, Val, to Avco Corporation. Multilayer ring damped turbomachine rotor assembly. 3,677,662, Cl. 416-183.000.

Cronstedt, Val, to Avco Corporation. Damped turbomachine rotor assembly. 3,677,663, Cl. 416-183.000.

Cross, Fred H.; and Deradoorian, Bagdasar, to Bendix Corporation, The. Channel multiplier assembly and method of manufacture thereof. 3,678,328, Cl. 315-12.000.

Cross, Norton M., Jr.: *See—*
Guyer, Reynolds W., Jr.; Cross, Norton M., Jr.; Griggs, Barbara Allen; and Lundquist, Martin A., 3,677,446.

Crotti, Argento: *See—*
Boffa, Gioacchino; Crotti, Argento; Pieri, Giampiero; Mangini, Angelo; and Tundo, Antonio, 3,678,053.

Crovetti, Aldo J.: *See—*
Horrom, Bruce W.; Crovetti, Aldo J.; and Viste, Kenneth L., 3,677,739.

Crowell, Jack R., to Borg-Warner Corporation. Start-up system for continuous casting mold. 3,677,333, Cl. 164-154.000.

Crystal, Maurice I.: *See—*
Cohen, Gerald; and Crystal, Maurice I., 3,678,205.

Cucchiara, Philip M.: *See—*
O'Brien, Walter F., 3,677,124.

Cullen, John Lesley: *See—*
Newstead, Charles; Cullen, John Lesley; and Zajko, Michal, 3,677,374.

Cunliffe, Alwyn: *See—*
Gordon, Stuart; Evans, Geoffrey Ian; and Cunliffe, Alwyn, 3,678,138.

Cunningham, Elmer E.: *See—*
Greenspan, Gilbert; Curtis, Lawrence R.; Cunningham, Elmer E.; and Tabler, James G., 3,678,277.

Cunningham, Hugh: *See—*
Raetzsch, Carl W.; and Cunningham, Hugh, 3,677,927.

Cunningham, James A.: *See—*
Cash, John H., Jr.; and Cunningham, James A., 3,677,924.

Cunningham, Robert E.: *See—*
Haley, David J.; Cunningham, Robert E.; and Privott, Wilbur J., Jr., 3,677,481.

Curry, Norval: *See—*
Blough, Ronald S.; and Curry, Norval, 3,677,229.

Curtis, Lawrence R.: *See—*
Greenspan, Gilbert; Curtis, Lawrence R.; Cunningham, Elmer E.; and Tabler, James G., 3,678,277.

Curtis, Richard S.; and Allen, Rodger E. Method of making bearing balls. 3,677,807, Cl. 117-105.000.

Cutler-Hammer Inc.: *See—*
Cotton, Ronald K.; and Rae, Barney O., 3,677,420.
Kintner, Paul M., 3,677,421.

Cutter, James W. Material cutting apparatus with reciprocating cutting elements. 3,677,117, Cl. 83-150.

Cutting, Arch E.; Owens, Carlos L.; Williams, Dewey H.; and Hooper, Felix E., to Southern Machinery Company. Loom having interconnected warp let-off and cloth take-up means at back of loom. 3,677,305, Cl. 139-99.000.

Cutting Room Appliances Corp.: *See—*
Paterson, Stephen, 3,677,536.

Cyr, Lawrence. Means for adjusting heights of cut in power mower. 3,677,574, Cl. 280-43.130.

Czerniejewski, Conrad P.: *See—*
Hocker, Richard L.; Czerniejewski, Conrad P.; and Hopper, John D., 3,677,653.

Czirely, Julius. Contraceptive device. 3,677,225, Cl. 128-132.000.

Dahle, Norman A., to Gulf Research & Development Company. Combating unwanted vegetation with 2-(2',5'- dimethyl-pyrrolidinyl)-5-aryl-1,3,4-thiadiazoles. 3,677,737, Cl. 71-90.000.

Daly, John L. Baseboard molding incorporating cover sections for concealing electrical wall outlet receptacles. 3,676,974, Cl. 52-716.

Dalziel, Warren L.; Nilson, Jay B.; and Wartner, Donald L., to International Business Machines Corporation. Data storage apparatus employing a single magnetic disk. 3,678,481, Cl. 340-174.10c.

Damon Corporation: *See—*
Munn, David E.; and Maddestra, Robert, 3,678,310.

Dan, Carlo; and Pinkham, James F., to Multra-Guard, Inc. Security alarm system. 3,678,509, Cl. 340-409.000.

Dancy, William B., to International Minerals & Chemical Corporation. Beneficiation of clay-containing sylvinite ore. 3,677,475, Cl. 241-20.000.
D'Andrea, Guiliano, to United States of America, Army. Thermally conductive bearing material. 3,677,879, Cl. 161-170.000.
Danielson, Gunnar H., to Valley Craft Products, Inc. Drum pallet. 3,677,436, Cl. 220-97.00b.
Daninhersch, Harry: *See—*
Gibbs, James C.; and Daninhersch, Harry, 3,677,165.
Dann, Bert H., to Bell & Howell Company. Apparatus for correcting phase shifts in angle-modulated signals. 3,678,397, Cl. 325-423.000.
Darrel, Bernard: *See—*
Weichbrodt, Bjorn; and Darrel, Bernard, 3,677,072.
Dart Industries, Inc.: *See—*
Hardy, Donald F., 3,677,801.
DaSilva, Miguel. Lock with key activating alarm mechanism. 3,677,219, Cl. 116-80.000.
Data Packaging Corporation: *See—*
Lowry, Alan B.; Mathus, Gregory; and Staciokas, Leon, 3,677,497.
Data Printer Corporation: *See—*
Foley, John J.; Satas, Wallace J.; and Konkel, Joseph, 3,677,176.
Data Time, Inc.: *See—*
Stalp, Bernard J., 3,678,496.
Daugherty, Arthur J., to Bremson Photo Industries, Inc. Photographic printing apparatus. 3,677,638, Cl. 355-74.000.
Davidson, James P.: *See—*
Miller, Stanley J.; and Davidson, James P., 3,677,211.
Davis, Dennis J.; Sudnick, Dennis J.; Juhasz, John E.; and Kurichh, Shasa, to Bendix Corporation, The. Adaptive control for fluid pressure braking system. 3,677,609, Cl. 303-21.0be.
Davis, Hazel E. Lipstick dispenser. 3,677,654, Cl. 401-63.000.
Davis, James A. Receptacle for dispensing rollable pill containers. 3,677,440, Cl. 221-279.000.
Davis, James G., to United States of America, Air Force. Transparent fluid sampler permitting particulate analysis in an assembled condition. 3,677,065, Cl. 73-28.000.
Davis, John Christopher Hammond, to Plessey Telecommunications Research Limited; k/a and Plessey BTR Limited. Gyroscope uncaging device. 3,677,098, Cl. 74-5.120.
Davis, Melvin H.: *See—*
Bickel, David P.; Davis, Melvin H.; Starks, Karl H., Jr.; and Tsoras, John, 3,678,486.
Davis, Paul, to Sweetheart Plastics, Inc. Container. 3,677,435, Cl. 220-60.00r.
Davis, Walter Dennis, to Associated Lead Manufacturers Limited. Cell for electrolytic refining of metals. 3,677,926, Cl. 204-243.00r.
Day, Christopher C., to American Optical Corporation. Impedance pneumograph. 3,677,261, Cl. 128-2.10z.
Day, Christopher C., to American Optical Corporation. Electrical signal slope polarity change detector. 3,678,296, Cl. 307-231.000.
Day, Christopher C., to American Optical Corporation. Instrument power-disconnect alarm. 3,678,491, Cl. 340-253.00c.
DCA Food Industries, Inc.: *See—*
Smadar, Yechiel; and Goodman, Abraham H., 3,677,443.
de Beaulieu, Henri Philippe: *See—*
Kalopissis, Gregoire; Abegg, Jean-Louis; Ghilardi, Guiliana; and de Beaulieu, Henri Philippe, 3,678,157.
De Boer, Charles D.; and Luckey, George W., to Eastman Kodak Company. Pigmented photosensitive polymer system. 3,677,763, Cl. 96-82.000.
De Brebisson, Michel, to U.S. Philips Corporation. Method of manufacturing a zener diode. 3,677,838, Cl. 148-187.000.
De Frees, Paul T. Keycase. 3,677,044, Cl. 70-456.00r.
De Gaudemaris, Gabriel: *See—*
Rabilloud, Guy; Sillion, Bernard; and De Gaudemaris, Gabriel, 3,678,005.
De Jager, Evert; and Homan, Jan Daniel Herman, to Organon Inc. Adsorption complexes of peptides having acrenocorticotropic hormone activity. 3,678,027, Cl. 260-112.500.
de Kock, Arie Jan Rudolf: *See—*
Wesselink, Gustaaf Adolf; Holmes, Thomas; de Kock, Arie Jan Rudolf; and Goorissen, Jan, 3,678,315.
De Stevens, George: *See—*
Werner, Lincoln Harvey; and De Stevens, George, 3,678,039.
De Valenzuela, Ricardo Barredo. System of fixing braided cables and rods subjected to stress. 3,676,900, Cl. 24-126.00l.
De Vries, Adrian J., to Zenith Radio Corporation. Surface wave devices. 3,678,364, Cl. 329-117.000.
De Vries, Albert J.: *See—*
Le Page, Madeleine A.; and De Vries, Albert J., 3,677,938.
De Weese, Richard O.: *See—*
Young, Claude F.; and De Weese, Richard O., 3,677,403.
Deakin, Stanley Thomas, to Sealectro Corporation. Apparatus and process thereof for coating with polytetrafluoroethylene and other materials. 3,677,471, Cl. 239-85.000.
Deere & Company: *See—*
Markham, David Rees, 3,677,316.
Deere and Company: *See—*
Roth, Wolfgang, 3,677,142.
Deike, Robert F., 1/4 to Chamberlain, William H. and 1/4 to Chamberlain, Anna B. Pole or post mounting for ground anchor. 3,676,965, Cl. 52-98.000.
Dekhar, Inc.: *See—*
Wahlberg, Edward John, 3,677,593.
Del Electronics Corporation: *See—*
Constable, James M., 3,678,341.
Delaney Gallay Limited: *See—*
McGuire, Kenneth John, 3,677,870.
Dell John D.: *See—*
Perrin, Alfred J.; Dell John D.; Evans, David B.; and Lewis, George Stanley, 3,677,339.
Delonge, Jean Georges. Plant box. 3,676,953, Cl. 47-38.100.
Delpino, Frank H. Analog entry data card for game scoring, or the like, and method of using the same. 3,678,251, Cl. 235-61.11a.
Delta Design, Inc.: *See—*
Chaparro, John J.; Ellis, Lowell V.; Meanor, Doyle W.; Morton, William D., Jr.; Richelmann, Bernd H.; Ross, George B.; and Toth, John E., 3,677,401.
Demag Aktiengesellschaft: *See—*
Becker, Klaus, 3,677,598.
Dence, Donald S., to Clark Equipment Company. Hydraulic shifting mechanism for a mechanical transmission. 3,677,105, Cl. 74-477.000.
Denisenko, Sergei Andreevich: *See—*
Scherban, Alexandr Nazarievich; Furman, Neonil Izrailevich; Sotnichenko, Boris Feodosievich; Belogolovin, Nikolai Stefanovich; Chopovsky, Jury Ivanovich; Sutormin, Jury Nikolaevich; Zaitsev, Valentin Ivanovich; Kot, Vladimir Ivanovich; Mikhailjuk, Nikolai Tarasovich; Denisenko, Sergei Andreevich; Chaschinov, Anatoly Vasilievich; Shaporev, Stepan Vasilievich; and Samoilenko, Svetlana Mikhailovna, 3,678,489.
Denk, Hans; and Habrich, Reiner, to Siemens Aktiengesellschaft. Flame-resistant cast resin molding materials, particularly for the production of non-combustible electrical components. 3,677,999, Cl. 260-38.000.
Denning, Ralph Murch, to Rolls-Royce Limited. Jet propulsion power plant. 3,677,501, Cl. 244-12.00b.
Dennis, Kent S.: *See—*
Zimmerman, Robert L.; Dennis, Kent S.; and Moore, Eugene R., 3,678,016.
Deradoorian, Bagdasar: *See—*
Cross, Fred H.; and Deradoorian, Bagdasar, 3,678,328.
Deradoorian, Bagdasar; Goodrich, George W.; and Theodorou, Dimitri G., to Bendix Corporation, The. Method of fabricating an array of channel multipliers. 3,677,730, Cl. 65-36.000.
deStevens, George: *See—*
Gechwend, Heinz Werner; and deStevens, George, 3,678,059.
Dethloff, Jurgen; and Grottrup, Helmut, to Intelecron Patentverwaltung GmbH. Identification switch. 3,678,250, Cl. 235-61.11r.
Deutsche Edelstahlwerke Aktiengesellschaft: *See—*
Bungardt, Karl; Lehnert, Gunter; and Meinhardt, Helmut W., 3,677,789.
Devine, Edward, to Security Systems, Inc. Elevator alarm system. 3,677,370, Cl. 187-37.000.
Dexter Corporation, The: *See—*
Klapprott, David K.; and Paradis, Daniel L., 3,678,130.
Klapprott, David K.; and Paradis, Daniel L., 3,678,131.
Dexter, Martin; Spivack, John Denon; and Steinberg, David Herbert, to Geigy Chemical Corporation. Alkylhydroxyphenyl polyamides as antioxidants. 3,677,965, Cl. 252-403.000.
Dexter, Martin; and Spivack, John Denon, to Geigy Chemical Corporation. Substituted derivatives of malonic acid useful as stabilizers. 3,678,095, Cl. 260-473.00a.
Diamond Shamrock Corporation: *See—*
Bennett, John E.; and O'Leary, Kevin J., 3,677,975.
Lichtman, Irwin A.; and Rosengart, Abraham M., 3,677,963.
Dicke, Clarence C., to Dicke Tool Company. Portable folding warning sign standard. 3,677,511, Cl. 248-448.000.
Dicke Tool Company: *See—*
Dicke, Clarence C., 3,677,511.
Dickey, W. S., Clay Manufacturing Company: *See—*
Siegfried, Edward C.; Harwell, Conner J.; and Murphy, Shields, 3,677,687.
Diener, Rudolf, to Autoelektronik AG. Thyristor circuit arrangement, especially for periodically switching-in and switching-out a load. 3,677,254, Cl. 123-148.00e.
Diener, Rudolf, to Autoelektronik AG. Transistor circuit arrangement for supplying a load with work pulses of constant current intensity. 3,678,299, Cl. 307-275.000.
Dierks, James E., to Eastman Kodak Company. Camera. 3,677,152, Cl. 95-11.00r.
Dietrick, Gerald P. Fluid handling system for electrical discharge machining equipment. 3,678,240, Cl. 219-69.00d.
Dietz, Walter A.: *See—*
King, William H., Jr.; and Dietz, Walter A., 3,677,066.
Digges, Kennerly H., to United States of America, Air Force. Heat removal system for brakes. 3,677,360, Cl. 180-124.000.
Digital Information Devices, Inc.: *See—*
Lowry, Alan B.; Mathus, Gregory; and Staciokas, Leon, 3,677,497.
Dillard, Paul A.; and Baker, Donald R., to TRW Inc. Folding depolyable panel structure having roll-up retaining spring for stowage. 3,677,508, Cl. 244-155.000.
Dillenburger, Wolfgang, to Fernseh GmbH. Smearing effect attenuation. 3,678,195, Cl. 178-7.200.
Dilling, George R., to Barber-Colman Company. Guide for unwinding thread from a package. 3,677,489, Cl. 242-129.720.

Dinenno, Philip A., Jr.; Bonk, Joseph S.; Conrad, Kenneth C.; Moore, Rodney S.; Lochman, Harry E.; and Torello, Daniel D., to Westinghouse Electric Corporation. Split casting steam chest, nozzle chamber and casing assembly for turbines. 3,677,658, Cl. 415-108.000.
Dinizo, Philip T., Jr. Swimming pool water purifier. 3,677,408, Cl. 210-169.000.
Dinsmore, D. J., Co.: *See—*
Taylor, Henry A.; and Sterner, Maurice E., Jr., 3,676,956.
Dittmann, Walter: *See—*
Riemhofer, Franz; Dittmann, Walter; Biethan, Uwe; Hornung, Karl-Heinz; and Schultze, Ernst-Christian, 3,678,128.
Dixon, Thomas P.; and Worrell, Robert J., to United Aircraft Corporation. Fluid pressure variation sensor and indicator. 3,677,218, Cl. 116-70.000.
Dobbins, Billy D.: *See—*
Brown, Carl W.; Reppert, Allen B.; and Dobbins, Billy D., 3,677,500.
Doble, Brian Reginald: *See—*
Christie, Gerald Anthony; and Doble, Brian Reginald, 3,677,678.
Christie, Gerald Anthony; Doble, Brian Reginald; and Bromfield, Alec Roy, 3,677,679.
Dobler, Christian D.; and Lilly, Herbert J., Jr., to Subsea Equipment Associates Limited, mesne. Method for connection of an underwater riser to a floating facility. 3,677,310, Cl. 141-1.
Dobo, Janos; Somogyi, Agnes; and Lakner, Endre, to Medimpex Gyogyszerkulkereskedelmi Vallalat. Dose indicator paint of an aqueous emulsion of vinyl chloride copolymer and methanyl yellow. 3,677,967, Cl. 252-408.000.
Dokoupil, Jiri, to Maschinenfabrik Turner A.G. Apparatus for working flat, flexible material. 3,677,041, Cl. 69-33.000.
Dombroski, Edward L. Tile structure with cruciform shaped foundation supporting tiles. 3,676,971, Cl. 52-603.000.
Doner, John T., to Whirlpool Corporation. Removable door structure. 3,677,259, Cl. 126-194.000.
Dora, Ralph A.: *See—*
Graff, Jack; and Dora, Ralph A., 3,677,706.
Doris, Thomas A., Jr., to United States of America, Army. Low light level tracer mix. 3,677,842, Cl. 149-109.00.
Dornan, John R., to Corning Glass Works. Molten galss shears. 3,677,732, Cl. 65-133.000.
Dorsch, Johannes. Method and apparatus for the measurement of dye dilution in blood. 3,677,648, Cl. 356-40.000.
Douglas, David. Feverage container. 3,677,524, Cl. 259-72.000.
Dow Chemical Company, The: *See—*
Birrell, George B., 3,678,025.
Hargash, Paul, 3,677,522.
Lindy, Lowell B., 3,677,952.
Liu, Gordon Y. T.; and Strange, Carl P., 3,678,024.
Moore, Carl, 3,677,991.
Pence, Samuel A., Jr., 3,677,987.
Seiber, James N.; and Stringham, Robert R., 3,677,916.
Setser, Donald D., 3,678,494.
Stout, Caleb M.; Nimerick, Kenneth H.; and Parks, Christ F., 3,677,014.
Sun, Yun-Chung, 3,677,023.
Zimmerman, Robert L.; Dennis, Kent S.; and Moore, Eugene R., 3,678,016.
Dow Corning Corporation: *See—*
Antonen, Robert C., 3,677,872.
Campbell, James K.; and Lee, Kenneth M., 3,677,810.
Gansheimer, Josef; and Schanzer, Oswald, 3,677,946.
Metevia, Virgil L.; Narlock, Raymond M.; and Mast, Milfred E., 3,677,877.
Saam, John C.; and Fearon, Frederick W. G., 3,678,125.
Saam, John C.; and Fearon, Frederick W. G., 3,678,126.
Young, Donald G., 3,677,998.
Dow Corning Limited: *See—*
Bush, Richard Paul; and Thomas, Bryan, 3,677,977.
Dowbenko, Rostyslaw; Chang, Wen-Hsuan; and Anderson, Carl C., to PPG Industries, Inc. Metal salt complexes of imidazoles as curing agents for one-part epoxy resins. 3,677,978, Cl. 260-2.0ep.
Dowbenko, Rostyslaw; and Anderson, Carl C., to PPG Industries, Inc. Metal salt complexes of imidazolium salts as curing agents for one part epoxy resins. 3,678,007, Cl. 260-47.0en.
Dowdy, David A.: *See—*
Abbott, Malcolm K.; and Dowdy, David A., 3,677,118.
Dragoo, Sherman L., to Corrugated Finishing Products, Inc. Method for producing cutting rules. 3,677,111, Cl. 76-101.00r.
Dresser Industries, Inc.: *See—*
Cope, Geoffrey W.; and Skinner, George C., 3,678,442.
Drohmann, Carl, Gesellschaft mit beschrankter Haftung: *See—*
Engelhardt, Walter; and Bernhardt, Bruno Friedrich, 3,676,980.
Druet, Charles F. Device for the preparation of mixtures of liquids in pre-determined proportions and quantities. 3,676,932, Cl. 33-126.70a.
Dryden, Hugh L., Jr., to Searle, G. D., & Co. Esterification of 17-hydroxy steroids. 3,678,082, Cl. 260-397.500.
Du Pont de Nemours, E. I., and Company: *See—*
Adams, Philip E.; and Fearnow, Philip W., 3,678,140.
Blackwell, John; and Tropea, Alfred, 3,678,028.
Irsay, Robert D., 3,678,170.
Knowles, Richard N., 3,677,802.
Knowles, Richard N., 3,678,109.
Knowles, Richard N., 3,678,171.
McClellan, William R.; and Stiles, Alvin B., 3,678,139.
Middleton, William J., 3,678,117.
Du Pont of Canada Limited: *See—*
Fairfield, Hugh J., 3,676,991.
Dubach, Paul. Process for permanently crimping yarn and the like. 3,678,142, Cl. 264-25.
Dubeck, Michael; and Shubkin, Ronald L., to Ethyl Corporation. Preparation of carboxylic acids. 3,678,083, Cl. 260-413.
Dudko, Daniil Andreevich: *See—*
Maximovich, Bolesiav Ivanovich; Dudko, Daniil Andreevich; Agafonov, Nikolai Georgievich; Maximov, Igor Petrovich; Andreev, Vadim Grigorievich; Lepilov, Nikolai Yakovlevich; Svinov, Alexei Kapitonovich; Slonimsky, Alexandr Borisovich; Volk, Boris Zakharovich; Gubin, Alexandr Ivanovich; and Katsman, Berta Osipovna, 3,677,330.
Dufresne, Jacques Pierre: *See—*
Buzzi, Umberto; Dufresne, Jacques Pierre; and Farfaletti-Casali, Flaviano, 3,677,328.
Dufton, John Peter: *See—*
Panter, Robert B.; Dufton, John Peter; Duthie, Robert W.; and Verbaas, George, 3,678,197.
Dugdale, Ronald Arthur; Ford, Stanley Denis; and Maskrey, John Thomas, to United Kingdom Atomic Energy Authority. Non-thermionic glow discharge devices. 3,678,334, Cl. 315-111.000.
Dunlop Holdings Limited: *See—*
King, Colin F., 3,677,300.
Dunn, William J.: *See—*
Block, Leonard A.; and Dunn, William J., 3,677,416.
Dupieux, Jacques Georges; Gadre, Jean-Claude; Le Corre, Jean-Pierre; deceased (by La Corre, Yvette Marie Laurence; administratrix); and Loisel, Jean Francois Pierre Julien, to International Standard Electric Corporation. TDM switching network using time spaced control signals. 3,678,206, Cl. 179-18.00j.
Duprey, Richard H., to Interroyal Corporation. Bed locking device. 3,676,881, Cl. 5-63.000.
Dusza, John Paul: *See—*
Joseph, Joseph Peter; Dusza, John Paul; and Bernstein, Seymour, 3,678,029.
Duthie, Robert W.: *See—*
Panter, Robert B.; Dufton, John Peter; Duthie, Robert W.; and Verbaas, George, 3,678,197.
Dutkewych, Oleh Borys: *See—*
Shipley, Charles Raymond; Gulla, Michael; and Dutkewych, Oleh Borys, 3,677,776.
Dutkiewicz, Bronislaw K., to Stone & Webster Engineering Corporation. Heating apparatus and process. 3,677,234, Cl. 122-240.00a.
Dyer, George A., to North American Rockwell Corporation. Two-step magnetic driver. 3,678,298, Cl. 307-270.000.
Dyer, Robert F., to Hoover Company, The. Suction cleaner. 3,676,890, Cl. 15-339.000.
Dynamic Corporation of America: *See—*
Swanke, Roy L.; and Raymond, Gordon H., 3,678,357.
Dynamic Precision Controls Corporation: *See—*
Van Ostrand, William F., 3,678,356.
Dynamics Corporation of America: *See—*
Swanke, Roy L.; and Raymond, Gordon H., 3,678,288.
Eads, Harold L.: *See—*
Robison, James W.; and Eads, Harold L., 3,676,930.
Earing, Mason H., to General Electric Company. Epoxy resin cement. 3,677,995, Cl. 260-37.0ep.
Eastern Products Corporation: *See—*
Roles, David Jack, 3,677,589.
Eastman Kodak Company: *See—*
Bishop, John F.; Hunter, Walker F., Jr.; and Rowley, Martin E., 3,677,790.
De Boer, Charles D.; and Luckey, George W., 3,677,763.
Dierks, James E., 3,677,152.
Ettischer, Helmut, 3,677,156.
Ford, John A., Jr.; McConkey, Robert C.; and Laakso, Thomas M., 3,677,754.
Harned, William L., 3,677,476.
Harvey, Donald M., 3,677,160.
Inglis, George M., 3,677,631.
Johnson, Robert B., 3,677,455.
Johnson, Robert B.; and Kirn, Thomas G., 3,677,498.
King, James L.; and Arrington, Lee O., 3,677,641.
Klanderman, Bruce H.; and Faber, Jan W. H., 3,678,072.
Knowles, Frederick G.; and Taylor, Clarence R., 3,677,487.
Looker, Jerome J.; and Fox, Charles J., 3,677,752.
MacDonald, William A., Jr., 3,677,632.
Morse, John E.; and Rosenburgh, Norman J., 3,677,864.
Ort, Wolfgang, 3,677,158.
Porter, Roy Donald, 3,677,163.
Rubin, Jacob C.; and Sukel, Gerald J., 3,677,069.
Sturm, Edward L., 3,677,157.
Van Lare, Earl J.; and Brooker, Leslie G. S., 3,678,045.
Vukosic, Robert S., 3,678,209.
Wangerin, Elmer O., 3,677,499.
Webb, Richard V., 3,677,964.
Willis, Roger L., 3,678,286.
Ebertin, Michel A., to North American Rockwell Corporation. Read-only random access serial memory systems. 3,678,476, Cl. 340-173.0sp.

Ebisch, Martin, to Siemens Aktiengesellschaft. Superheterodyne receiver with automatic tuning to a reception frequency. 3,678,394, Cl. 325-423.000.
Ebnother, Anton; Bastian, Jean-Michel; and Gadient, Fulvio, to Sandoz Ltd.; a/k/a and Sandoz A.G. 1,3,4,4a,5,9b-Hexahydro-5-phenyl-2H-indeno [1,2-c]-pyridines. 3,678,057, Cl. 260-293.540.
Ebnother, Anton; Bastian, Jean-Michel; and Rissi, Erwin, to Sandoz Ltd.; a/k/a and Sandoz A.G. 1,3,4,9b-Tetrahydro-2(2H)-indeno-[1,2-c] pyridines. 3,678,058, Cl. 260-293.540.
Eckert, Guenter; Marx, Matthias; Hartmann, Heinrich; and Wuertele, Lothar, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Process for dressing leather and the dressed leather. 3,677,813, Cl. 117-142.000.
Ecofon Verkaufsgesellschaft Probst KG: *See—*
Herterich, Walter; Probst, Georg; and Wurm, Bruno, 3,677,386.
Herterich, Walter; Probst, Georg; and Wurm, Bruno, 3,677,387.
Econo-Mail, Inc.: *See—*
Whitman, Nelson, 3,677,460.
Economou, Peter, to American Cyanamid Company. Manufacture of paper using amphoteric strengthening agents. 3,677,888, Cl. 162-164.000.
EdAids, Inc.: *See—*
Oberst, Charles V.; and Oberst, Glen C., 3,676,939.
Eddy, John W., to GTE Automatic Electric Laboratories Incorporated. Marker path finding arrangement including sound immediate ring. 3,678,208, Cl. 179-18.0ge.
Edlin, William Joel Reginald. Cleaning apparatus for floor coverings. 3,676,889, Cl. 15-320.000.
Edmisson, Russell C.; and Starr, Stanley R., to Mattel, Inc. Looped track system for toy wheeled vehicles. 3,677,469, Cl. 238-10.00e.
Edmonston, Robert P.; Gribens, Joel A.; and Simons, Charles W., to Grace, W. R., & Co. Compositions for gaskets having improved resistance to water-based aerosol products. 3,677,993, Cl. 260-33.60a.
Edwards, Frederick James, to Thermal Syndicate Limited. Tiled surface and method of application. 3,676,970, Cl. 52-385.000.
Edwards High Vacuum International Limited: *See—*
Wycliffe, Henryk; and Power, Basil Dixon, 3,677,664.
Eggleston, Philip William, to Imperial Chemical Industries, Limited. Process for making a patterened fabric by using differential shrinkage yarns. 3,676,906, Cl. 28-72.0ft.
Ehlert, Delbert D. Cable shackle. 3,676,899, Cl. 24-122.600.
Ehrat, Kurt. Circuit for generating a series of cipher pulses. 3,678,198, Cl. 178-22.000.
Ehrenreich, A., & Cie.: *See—*
Scheerer, Wolfgang, 3,677,585.
Schmidt, Andreas; and Muller, Paul, 3,677,587.
Stuck, Klaus, 3,677,586.
Eichner, Martin: *See—*
Reidmann, Manfred; and Eichner, Martin, 3,677,709.
Eig, Merrill; and Scavuzzo, John J., to United States of America, Army. Apparatus for laboratory simulation of ballistic field testing. 3,677,063, Cl. 73-7.000.
Elazar, Shmuel: *See—*
Funfstuck, Horst; and Elazar, Shmuel, 3,677,260.
Elbert, Raymond J.; and Farrier, Ernest G., to Union Carbide Corporation. Porous metal bodies of uniform porosity. 3,677,721, Cl. 29-182.200.
Eldamati, Salah Eldin A.: *See—*
Coccagna, Daniel T.; and Eldamati, Salah Eldin A., 3,677,200.
Elder, Frederick A., to Westinghouse Electric Corporation. Portable circuit breaker tester for calibrating a circuit breaker over a wide range of current. 3,678,372, Cl. 323-45.000.
Electro-Mechanical Instrument Company, Inc.: *See—*
Mackenzie, Elbert K., 3,677,619.
Electronic Associates, Inc.: *See—*
Patmore, James R.; Bozenhard, Walter Frank; and Spampanato, Gavino Anthony, 3,678,258.
Tempel, George F., 3,678,402.
Electronic Memories & Magnetics Corporation: *See—*
Morgan, Donald G., 3,678,427.
Electroprint, Inc.: *See—*
Noon, Alonzo W., 3,677,224.
Elenburg, Wayland D. Core retrieving apparatus. 3,677,355, Cl. 175-215.000.
Elfab Corporation: *See—*
Kendall, Jerry A., 3,676,926.
Elkins, James L. Non-polluting exhaust system for internal combustion engines. 3,677,239, Cl. 123-119.00a.
Ellendt, Gunther: *See—*
Thiel, Reinhard; and Ellendt, Gunther, 3,677,819.
Ellis, Lowell V.: *See—*
Chaparro, John J.; Ellis, Lowell V.; Meanor, Doyle W.; Morton, William D., Jr.; Richelmann, Bernd H.; Ross, George B.; and Toth, John E., 3,677,401.
Ellis, Willard H.: *See—*
Bokros, Jack C.; and Ellis, Willard H., 3,677,795.
Elrod, Daniel W. Record display device. 3,676,942, Cl. 40-124.200.
Elting, Katherine Anne C.: *See—*
Browning, William C.; Perricone, Alphonse C.; and Elting, Katherine Anne C., 3,677,961.
Emisco, Inc.: *See—*
Hansen, Poul E., 3,677,237.
Emmer, Rudolf: *See—*
Bergmeyer, Hans Ulrich; Naher, Gotthilf; Thum, Waldemar; Lauerer, Albert; and Emmer, Rudolf, 3,677,901.
Emmons, William D.: *See—*
Lewis, Sheldon N.; Merritt, Richard F.; and Emmons, William D., 3,678,098.
Engelhard Minerals & Chemicals Corporation: *See—*
Keith, Carl D.; Haley, Alfred J., Jr.; and Kero, Robert M., 3,677,815.
Engelhardt, Walter; and Bernhardt, Bruno Friedrich, to Drohmann, Carl, Gesellschaft mit beschrankter Haftung. Apparatus for wrapping bulky or stacked objects. 3,676,980, Cl. 53-183.000.
Enger Kress Company: *See—*
Kery, Ervin, 3,677,317.
Enthone, Incorporated: *See—*
Brindisi, Frank A., Jr.; Nagy, Joseph S.; and Yarkosky, Eugene F., 3,677,949.
Environment/One Corporation: *See—*
Ludewig, Frederick A., Jr.; and Van Luik, Frank W., Jr., 3,678,487.
Skala, George F., 3,678,488.
Environmental Sciences, Inc.: *See—*
Boorujy, Salem, 3,677,413.
Erben, Klaus Dieter; Kroy, Walter; and Mehnert, Walter Erich, to Messerschmitt-Bolkow-Blohm GmbH. Measuring device for use in moving bodies for navigation purposes to determine the change of orientation thereof. 3,678,380, Cl. 324-83.00a.
Erdmann, Hans, to ITT Industries, Inc. Booster for hydraulic systems. 3,677,006, Cl. 60-54.60p.
E.R.E. Laboratory, Inc.: *See—*
Walker, Richard K., 3,677,628.
Erickson, Porter W.: *See—*
Augi, Joseph M.; Bailey, William J.; and Erickson, Porter W., 3,677,787.
Ericsson Telephones Limited: *See—*
Sinclair, William, 3,678,477.
Erikson, Uno Eugen: *See—*
Bjork, Lars; Erikson, Uno Eugen; and Ingelman, Bjorn Gustav-Adolf, 3,678,152.
Erlandson, Paul M.; Aschberger, Anton A.; and Cary, John T., to Continental Can Company, Inc. Inert atmosphere tack welder. 3,678,241, Cl. 219-72.000.
Erxleben, Ewald: *See—*
Raban, Joachim; Erxleben, Ewald; and Wildenau, Wolfgang, 3,677,806.
Espinos, Jose M.: *See—*
Esteve, Antonio; and Espinos, Jose M., 3,678,040.
Esposito, Joseph Alexander. Dispensing liner and pad for utensils. 3,677,438, Cl. 221-63.000.
Esso Production Research Company: *See—*
Childers, Thomas W.; Burkhardt, Joseph A.; and Koerner, Roger J., 3,677,001.
Esso Research and Engineering Company: *See—*
Boggs, Jesse K., 3,678,123.
Holt, Thomas E.; and Taylor, Edward B., 3,677,850.
King, William H., Jr.; and Dietz, Walter A., 3,677,066.
Mertzweiller, Joseph K.; and Tenney, Horace M., 3,677,969.
Mertzweiller, Joseph K.; and Tenney, Horace M., 3,677,970.
Minckler, Leon Sherwood, Jr., 3,678,013.
Wagensommer, Joseph, 3,678,019.
Esteve, Antonio; and Espinos, Jose M., to Laboratorios del Dr. Esteve, S.A. and Laboratorios Espinos y Bofill S.A. Process for the preparation of hydroxybenzene sulfonates of morpholinomethyl aminooxazolidones. 3,678,040, Cl. 260-240.00a.
Estin, Hans H.: *See—*
Merrill, Edward W., 3,677,444.
Estlick, Raymond J., to Raytheon Company. Hydraulic power unit. 3,677,005, Cl. 60-54.60a.
Estradier, Francoise: *See—*
Kalopissis, Gregoire; Bugaut, Andree; and Estradier, Francoise, 3,677,690.
Etablissements Clin-Byla: *See—*
Mousseron, Max J., 3,678,041.
Etat Francais: *See—*
Maxime, Jacques Paul Robert; and Maurel, Andre Bernard, 3,677,134.
Etchell, Gordon, to North American Rockwell Corporation. Printing plates in registry. 3,677,121, Cl. 83-437.000.
Etcheverry, John P.: *See—*
Greenwood, Roger; and Etcheverry, John P., 3,677,298.
Etherington, Roger F., to California Injection Molding Co., Inc. Fluidic sensing for molding system. 3,677,680, Cl. 425-129.000.
Ethyl Corporation: *See—*
Dubeck, Michael; and Shubkin, Ronald L., 3,678,083.
Klopfer, Oskar E. H., 3,678,113.
Woolensak, John C.; and Napolitano, John P., 3,678,112.
Ettischer, Helmut, to Eastman Kodak Company. Simplified synchronizing mechanism for cameras adapted to use mechanically fired flash lamps. 3,677,156, Cl. 95-11.50r.
Eubank, Joseph P., Jr. Picture frame. 3,676,944, Cl. 40-155.000.
Eubanks, Edgar W.: *See—*
Meyers, Raymond E.; and Eubanks, Edgar W., 3,678,004.
European Atomic Energy Community (Euraton): *See—*
Buzzi, Umberto; Dufresne, Jacques Pierre; and Farfaletti-Casali, Flaviano, 3,677,328.

Evans, Christopher Charles, to United Kingdom, Secretary of State for Defence in the Government of the. Furnace for the manufacture of ceramics whiakers. 3,677,713, Cl. 23-277.00r.
Evans, David B.: *See—*
Perrin, Alfred J.; Dell John D.; Evans, David B.; and Lewis, George Stanley, 3,677,339.
Evans, Geoffrey Ian: *See—*
Gordon, Stuart; Evans, Geoffrey Ian; and Cunliffe, Alwyn, 3,678,138.
Exton Development Company: *See—*
Stevens, Charles Edward, 3,676,962.
Exton, John M.; as trustee of the Trust: *See—*
Stevens, Charles Edward, 3,676,962.
Extracorporeal Medical Specialties, Inc.: *See—*
Hassinger, Robert J., 3,677,244.
Nerz, Joseph E., 3,677,243.
Faber, Jan W. H.: *See—*
Klanderman, Bruce H.; and Faber, Jan W. H., 3,678,072.
Fagen, John. Compressor for cam follower spring. 3,676,913, Cl. 29-217.000.
Fagersta Bruks Aktiebolag: *See—*
Loqvist, Kaj-Ragnar, 3,677,060.
Fairchild Camera and Instrument Corporation: *See—*
Weckler, Gene P., 3,677,280.
Fairfield Engineering & Manufacturing Company: *See—*
Blough, Ronald S.; and Curry, Norval, 3,677,229.
Blough, Ronald S., 3,677,231.
Fairfield, Hugh J., to Du Pont of Canada Limited. Crimped discontinuous filaments. 3,676,991, Cl. 57-140.00r.
Fairfield-Noble Corporation: *See—*
Igneri, Anthony V.; Milack, Joseph, Jr.; and Longo, John, 3,677,205.
Fanshawe, William Joseph: *See—*
Bauer, Victor John; Fanshawe, William Joseph; and Wiegand, Gretchen Ellen, 3,678,062.
Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning: *See—*
Neeb, Rudolf, 3,678,054.
Farfaletti-Casali, Flaviano: *See—*
Buzzi, Umberto; Dufresne, Jacques Pierre; and Farfaletti-Casali, Flaviano, 3,677,328.
Farr, John B.; and Landrum, Ralph A., Jr., to Amoco Production Company. Geophysical surveying using Fresnel pilot signals. 3,678,454, Cl. 340-15.5rs.
Farrier, Ernest G.: *See—*
Elbert, Raymond J.; and Farrier, Ernest G., 3,677,721.
Fassler, Edwin Eduard. Coupling for combustion tubes. 3,677,515, Cl. 251-149.700.
Fastener Corporation: *See—*
Ramspeck, Howard B.; and Obergfell, Allen R., 3,677,456.
Ramspeck, Howard B.; and Novak, Raymond F., 3,677,457.
Faw, Frederick L.; Johnson, Ralph E.; Warren, Constance A.; and Glenn, Dwight W., to United States of America, Health, Education and Welfare. Standardized set of compensating filters for mantle-field radiation therapy. 3,678,233, Cl. 250-86.000.
Fearing, Ralph B., to Stauffer Chemical Company. Pesticidal phosphoro and phosphono acetylhydrazides. 3,678,165, Cl. 424-211.000.
Fearnow, Philip W: *See—*
Adams, Philip E.; and Fearnow, Philip W, 3,678,140.
Fearon, Frederick W. G.: *See—*
Saam, John C.; and Fearon, Frederick W. G., 3,678,125.
Saam, John C.; and Fearon, Frederick W. G., 3,678,126.
Feiner, Maria; Gubler, Michel; and Guillon, Joseph, to Monsanto Company. Flame retardant composition comprising an organic bromine compound, an organic phosphate and a lead salt. 3,677,942, Cl. 252-8.100.
Feldman, Julian: *See—*
Frampton, Orville D.; and Feldman, Julian, 3,678,118.
Felici, Alberto: *See—*
Appiani, Edoardo; and Felici, Alberto, 3,678,175.
Felstead, Edward, to Imperial Chemical Industries Limited. Spray-drying process. 3,677,321, Cl. 159-48.000.
Fergus, Richard W., to United States of America, Atomic Energy Commission. Telemonitoring system. 3,678,512, Cl. 340-408.000.
Ferm, Carl W.; and Sechler, Fred R. Sewage treatment system. 3,677,409, Cl. 210-195.000.
Ferner, Jack D.: *See—*
Higgins, Irwin R.; and Ferner, Jack D., 3,677,937.
Fernseh GmbH: *See—*
Dillenburger, Wolfgang, 3,678,195.
Ferranti, Limited: *See—*
James, Frank Anthony, 3,678,429.
Ferrari, Harry M., to Westinghouse Electric Corporation. Internally pressurized fuel element. 3,677,894, Cl. 176-68.000.
Ferrari, Leonard A., to Bell & Howell Company. Image display from continuously moving image carrier. 3,677,626, Cl. 352-109.000.
Fesperman, Jerome M.: *See—*
Mazzara, Vincent B.; and Fesperman, Jerome M., 3,677,941.
Feuersanger, Alfred E.; and Harris, Lawrence M., to United States of America, Army, mesne. Photolithographic etching method for nickel oxide. 3,677,847, Cl. 156-8.000.
Field, George Francis; Sternbach, Leo Henryk; and Zally, William Joseph, to Hoffmann-La Roche Inc. 1,4-Benzodiazepin-5-ones and methods for the preparation thereof. 3,678,038, Cl. 260-239.30d.
Fieldcrest Mills, Inc.: *See—*
Mac Isaac, John T., Jr.; and Troy, James E., 3,677,206.
Files, William C., to McGraw-Edison Company. Slant mounted laundry machine. 3,677,039, Cl. 68-146.000.
Fillingham, Stephen Harvey: *See—*
Robinson, Brian; and Fillingham, Stephen Harvey, 3,677,693.
Finch, Neville, to Ciba-Geigy Corporation. 3-Hydroxycyclopentyl-alkanoic acids. 3,678,092, Cl. 260-468.00r.
Finckh, Hermann, Metalltuch-und Maschinenfabrik: *See—*
Holz, Emil, 3,677,402.
Fincor, Inc.: *See—*
Bucek, Jiri B.; and Shultz, James R., 3,678,355.
Findlay, Campbell, to Burroughs Corporation. Uniform ribbon feed apparatus. 3,677,486, Cl. 242-67.400.
Fink, Robert H.; and Palm, Eugene J., to United States of America, Army. Rocket motor and method. 3,677,010, Cl. 60-220.000.
Finkelstein, Ehud, to Merck & Co., Inc. Process for separating an acid from an amide. 3,678,060, Cl. 260-295.50a.
Finlay, Walter L.; Fisher, Henry J.; and Hay, Donald A., to Copper Range Company. Copper base composition. 3,677,745, Cl. 75-153.000.
Fiore, Joseph P., to Zenith Radio Corporation. Manufacture of shadow mask color picture tube. 3,676,914, Cl. 29-25.160.
Fiorucci, Georges P. Arrangement provided with a photo-cell and controlling the detecting means and the stop motion in a loom upon breaking of a thread in the warping, weaving and knitting systems. 3,677,307, Cl. 139-353.000.
Firestone, Raymond A., to Merck & Co., Inc. Method for the preparation of (cis-1,2-epoxypropyl)phosphonic acid products. 3,678,078, Cl. 260-348.00r.
Fisch, Willy: *See—*
Lohse, Friedrich; Schmid, Rolf; Fisch, Willy; and Batzer, Hans, 3,678,009.
Fischer, Artur. Method of making structural element. 3,676,918, Cl. 29-453.000.
Fischer, Gerd; Straub, Dieter; and Voigt, Heinz Eberhard, to Licentia Patent-Verwaltungs-G.m.b.H. Logic module connected to act as flip-flop. 3,678,301, Cl. 307-289.000.
Fischer, William K., to Uniroyal, Inc. Thermoplastic polymer blends containing polyvinyl chloride, polyether urethane and butadiene-acrylonitrile copolymers. 3,678,129, Cl. 260-859.0pv.
Fischman, Martin, to GTE Laboratories Incorporated. Sawtooth current generator. 3,678,331, Cl. 315-27.0td.
Fisher, Henry J.: *See—*
Finlay, Walter L.; Fisher, Henry J.; and Hay, Donald A., 3,677,745.
Fisons Limited: *See—*
Miller, John; and Searle, Martin, 3,678,114.
Fitton, Peter: *See—*
Rick, Edward A.; McKeon, James E.; Fitton, Peter; and Argento, Benny J., 3,678,085.
Fitzgerald, James E., to North American Rockwell Corporation. Petri dish including a chamber for a sterilized specimen-spreading element and process for using the petri dish. 3,677,904, Cl. 195-103.5.
Fleck Industries, Inc.: *See—*
Berg, Coleman David, 3,677,485.
Fleischer, Robert L.; and Price, Paul B., to General Electric Company. Process for making an elastic stretchy sheet containing apertures having a diameter of at least five angstroms and being suitable as a molecular sieve. 3,677,844, Cl. 156-2.000.
Fletcher, H. E., Co.: *See—*
Fletcher, Ralph A.; and Oliver, Joseph R., 3,677,258.
Fletcher, Ralph A.; and Oliver, Joseph R., to Fletcher, H. E., Co. Apparatus for continuously gauging and cutting stone in a guillotine type cutting machine. 3,677,258, Cl. 125-23.00c.
Fletcher, Roy W.; and Forte, Anthony D., to Union Special Machine Company. Blindstitch sewing machine. 3,677,208, Cl. 112-178.000.
Fleuret, Louis; and Trepaez, Jean, to Uniroyal Englebert France S.A. Process for manufacturing belted tires. 3,677,852, Cl. 156-127.000.
Fleury, Jean, to Regie Nationale des Usines Renault. Machine for electrochemically machining workpieces. 3,677,928, Cl. 204-224.000.
Flick, Kenneth E., to Jewel Manufacturing Company. Scaffolding clamp. 3,677,582, Cl. 287-49.000.
Floessel, Dieter, to Aktiengesellschaft Brown, Boveri & Cie. Compressed gas switch having columnar construction. 3,678,234, Cl. 200-148.00b.
Fluorodynamics, Inc.: *See—*
Roberts, Robert, 3,677,845.
FMC Corporation: *See—*
Ager, John W., 3,678,106.
Castrantas, Harry M.; Keay, Robert E.; and MacKellar, Donald G., 3,677,955.
Lynch, Charles Andrew, Jr.; and Orwoll, Edward Francis, 3,678,086.
Fogle, William A., Jr.; Jason, Joseph B.; and Head, Richard A. Steamer and soda-dispensing system. 3,677,173, Cl. 99-357.000.
Foley, John J.; Satas, Wallace J.; and Konkel, Joseph, to Data Printer Corporation. Ribbon control apparatus for high speed printers. 3,677,176, Cl. 101-96.000.
Fontan, Andre; and Benac, Rene. Straddle tractors. 3,677,572, Cl. 280-39.000.
Forbro Design Corporation: *See—*
Gately, Joseph R., 3,678,370.
Ford, Allen G. Skirted air cushioned planing hull. 3,677,213, Cl. 114-67.00a.

Ford, George L.: *See—*
Oliver, Robert K.; and Ford, George L., 3,677,533.
Ford, John A., Jr.; McConkey, Robert C.; and Laakso, Thomas M., to Eastman Kodak Company. Photosensitive element comprising light sensitive polymers and process of using. 3,677,754, Cl. 96-35.100.
Ford, Stanley Denis: *See—*
Dugdale, Ronald Arthur; Ford, Stanley Denis; and Maskrey, John Thomas, 3,678,334.
Foreman, Christopher Roy; and Shipman, Patricia Violet, to Patent Protection Limited. Power driven air filter. 3,676,985, Cl. 55-317.000.
Formaini, Richard E., to Allied Chemical Corporation. Liquid fertilizer suspension containing ureaform. 3,677,736, Cl. 71-28.000.
Formica Corporation: *See—*
Oliver, Jay Thomas, 3,677,876.
Forssblad, Lars-Henrik; and Jerkeman, Per, to Korsnas-Marma Aktiebolag. Method of producing highly absorbent cellulose. 3,677,886, Cl. 162-72.000.
Forster, Friedrich M. O. Apparatus for repairing defects in metallic workpieces by automatic means. 3,676,959, Cl. 51-165.00r.
Forte, Anthony D.: *See—*
Fletcher, Roy W.; and Forte, Anthony D., 3,677,208.
Fortener, Edward J.: *See—*
Rivers, Richard D.; Byers, Thomas W.; and Fortener, Edward J., 3,677,289.
Foseco International Limited: *See—*
Austin, George Wesley, 3,677,325.
Foster Wheeler Corporation: *See—*
Hill, William G., 3,678,239.
Fowler, Richard Payson, to Johns-Manville Corporation. Electrolytic process and apparatus for recovering nickel from asbestos ore. 3,677,919, Cl. 204-113.000.
Fox, Charles J.: *See—*
Looker, Jerome J.; and Fox, Charles J., 3,677,752.
Fradette, Joseph J., to White Motor Corporation. Apparatus for incandescent filament mounting. 3,678,266, Cl. 240-90.000.
Frame S.A.: *See—*
Belaieff, James Frank, 3,677,473.
Frampton, Orville D.; and Feldman, Julian, to National Distillers and Chemical Corporation. Process for preparing ethanol. 3,678,118, Cl. 260-641.000.
Francis, Donald R.; and Haberlin, Richard J., to Polaroid Corporation. Novel photographic processes. 3,677,753, Cl. 96-29.000.
Francis, Joseph S. Meat pickling machines and the like. 3,677,169, Cl. 99-256.000.
Francis, Marion D., to Procter & Gamble Company, The. Compositions for inhibiting anomalous deposition and mobilization of calcium phosphate in animal tissue. 3,678,164, Cl. 424-204.000.
Frank, Arlen W.; and Baranauckas, Charles F., to Borg-Warner Corporation, mesne. 2-Haloperfluoro-1-cycloalken-1-yl phosphoryl compounds and process for the preparation thereof. 3,678,100, Cl. 260-502.40r.
Franklin, Charles Henry: *See—*
Rice, Edwin Eugene; and Franklin, Charles Henry, 3,676,963.
Franklin, LeRoy H. High power fuse. 3,678,431, Cl. 337-185.000.
Frans, Robert D. Apparatus for reducing oxygen content of oxidic mineral ore. 3,677,534, Cl. 266-20.000.
Franzen, Walter B., to Whitney, W. A., Corporation. Power operated I-beam rotator. 3,677,418, Cl. 214-1.0qc.
Fraser, Alan R., to Gray-Tim, Inc. Process for producing battery-grade manganese dioxide. 3,677,700, Cl. 23-145.000.
Frati, Augustus. Forms for concrete wall construction. 3,676,967, Cl. 52-220.000.
Frederik, Johannes van Roessel: *See—*
Boxman, Peter; and Frederik, Johannes van Roessel, 3,678,182.
Freeman, Carlos A., Jr. Reaction--impulse--counterrotating--airfoil. 3,677,503, Cl. 244-23.
Freeman, Richard B.; Kawalec, Michael T.; Maholick, Andrew W.; and Stager, Stanley R., III, to International Business Machines Corporation. Universal cyclic division circuit. 3,678,469, Cl. 340-172.500.
Freer, Edgar P., to Hubach-Freer Corporation, mesne. Precision digital linear adjustment mechanism and height gage embodying same. 3,676,934, Cl. 33-169.00r.
Fremiot, Charles, to Commissariat a l'Energie Atomique. Waveguide device for bringing an element to a high direct-current potential. 3,678,365, Cl. 321-8.00r.
Frenken, Hans: *See—*
Herzhoff, Peter; Gref, Hans; Wolfgang, Leverkusen; Frenken, Hans; Assenmacher, Peter; and Westen, Dietmar, 3,677,076.
Frese, Albert, to Chemische Werke Huels Aktiengesellschaft Patentabteilung. Process for the production of free-flowing, granular, atactic polybutene-1. 3,678,023, Cl. 260-93.700.
Frick Company: *See—*
Schaeffer, Bruce S.; and Pike, John A., 3,677,029.
Frieber, George: *See—*
Arvay, Frank Joseph; Frieber, George; Lechleider, Joseph William; and Sutton, Robert Anderson, 3,678,379.
Friley, Paul B.: *See—*
Siegfried, Edward C.; Harwell, Conner J.; and Murphy, Shields, 3,677,687.
Frump, John A., to Commercial Solvents Corporation. Production of hydroxymethyl vinyl oxazoline. 3,678,065, Cl. 260-307.00f.
Frymire, Garold D.: *See—*
Rapport, Jerry; and Frymire, Garold D., 3,676,954.
Fuchi, Yoshikane: *See—*
Fukui, Hisaaki; Araki, Taketoshi; and Fuchi, Yoshikane, 3,677,755.
Fuchs, Francis Joseph, Jr.: *See—*
Cartwright, John Sutton; and Fuchs, Francis Joseph, Jr., 3,677,049.
Fuchs, Francis Joseph, Jr., to Western Electric Company, Incorporated. Method of positive flow extrusion. 3,677,048, Cl. 72-60.
Fuji Photo Film Co., Ltd.: *See—*
Amano, Hiroyuki; Tsuji, Nobuo; and Shirasu, Kazuo, 3,677,762.
Iwano, Haruhiko; and Shimamura, Isao, 3,677,760.
Nadazawa, Yoshiyuki; Nakamura, Yashuharu; Takei, Haruo; Sato, Akira; and Ikeda, Tadashi, 3,677,765.
Tamai, Yasuo; Osawa, Sadao; and Taguchi, Seiichi, 3,677,766.
Fujimori, Yoshiaki; to Kabushiki Kaisha Suwa Seikosha. Waterproof watch case. 3,676,996, Cl. 58-90.00r.
Fujimori, Yoshiaki, to Kabushiki Kaisha Suwa Seikosha. Structure for sealing a watch crystal in a waterproof watch. 3,676,997, Cl. 58-90.00r.
Fujimoto, Hiroshi; and Fukuda, Mitsugu, to Kurita Water Industries Ltd. and Unitika Ltd. Method of treating scouring and dyeing waste water. 3,677,940, Cl. 210-44.000.
Fujisaki, Hiroya: *See—*
Iwasaki, Masahiro; Goto, Nobuyuki; Fujisaki, Hiroya; and Niwa, Kunihiko, 3,678,390.
Fujisawa, Tamotsu; Yamamoto, Mizuo; and Tsuchihashi, Genichi, to Sagami Chemical Research Center. Process for production of sulfur-containing phenols. 3,678,115, Cl. 260-609.00f.
Fujitsu Limited: *See—*
Nagamatsu, Takeo; Yamada, Yusaku; and Yamada, Kazumi, 3,678,498.
Fujiwara, Ryozo; Ohara, Eiji; and Maeda, Kazuo, to Mitsui Toatsu Chemicals, Inc. Method of stabilizing anhydrous sodium dithionite. 3,677,699, Cl. 23-116.000.
Fukao, Satoshi: *See—*
Iwashima, Hideo; and Fukao, Satoshi, 3,678,424.
Fukuda, Mitsugu: *See—*
Fujimoto, Hiroshi; and Fukuda, Mitsugu, 3,677,940.
Fukui, Hisaaki; Araki, Taketoshi; and Fuchi, Yoshikane, to Asahi Kasei Kogyo Kabushiki Kaisha. Relief lithographic plates and photosensitizing solutions. 3,677,755, Cl. 96-35.100.
Fukuma, Noboru; Kobayashi, Hidehiko; Matsui, Kenichi; Sakashita, Masahira; and Henmi, Hiroshi, to Asahi Kasei Kogyo Kabushiki Kaisha. Synthetic conjugate filament fibers and a process for the manufacture of the same. 3,677,880, Cl. 161-173.000.
Fukushima, Mitsuyoshi: *See—*
Oohara, Saburo; Amemiya, Koitsuro; Nishijima, Yasushi; Fukushima, Mitsuyoshi; and Shimizu, Kunio, 3,677,871.
Fukushima, Osamu: *See—*
Matsumoto, Seiji; Sato, Masamichi; and Fukushima, Osamu, 3,678,350.
Fulmer, Keith H.: *See—*
Schultz, Harold B.; Fulmer, Keith H.; and Burnett, Richard T., 3,677,607.
Fulmer, Keith H., to Bendix Corporation, The. Subsidiary supply for hydraulic brake booster. 3,677,002, Cl. 60-52.00b.
Funasaki, Yasuo: *See—*
Hatagi, Hiroyuki; Kanamaru, Kenichi; and Funasaki, Yasuo, 3,678,226.
Funfstuck, Horst; and Elazar, Shmuel, to Statham Instruments Inc. Arrhythmia detector. 3,677,260, Cl. 128-2.06a.
Furlong, Owen D.; Rowe, Alan C.; and Wright, Eric F., to Westland Aircraft Limited. Fluid flow control systems. 3,677,293, Cl. 137-561.000.
Furman, Neonil Izrailevich: *See—*
Scherban, Alexandr Nazarievich; Furman, Neonil Izrailevich; Sotnichenko, Boris Feodosievich; Belogolovin, Nikolai Stefanovich; Chopovsky, Jury Ivanovich; Sutormin, Jury Nikolaevich; Zaitsev, Valentin Ivanovich; Kot, Vladimir Ivanovich; Mikhailjuk, Nikolai Tarasovich; Denisenko, Sergei Andreevich; Chaschinov, Anatoly Vasilievich; Shaporev, Stepan Vasilievich; and Samoilenko, Svetlana Mikhailovna, 3,678,489.
Furukawa, Fujio: *See—*
Taniguchi, Kaname; Furukawa, Fujio; Hisatome, Tomiro; and Kimura, Yoshito, 3,677,660.
Furukawa, Teruo: *See—*
Yamazaki, Akihiro; Furukawa, Teruo; and Kumashiro, Izumi, 3,678,030.
G. & W. H. Corson Inc.: *See—*
Minnick, Leonard John, 3,677,703.
Gadient, Fulvio: *See—*
Ebnother, Anton; Bastian, Jean-Michel; and Gadient, Fulvio, 3,678,057.
Gadre, Jean-Claude: *See—*
Dupieux, Jacques Georges; Gadre, Jean-Claude; Le Corre, Jean-Pierre; and Loisel, Jean Francois Pierre Julien, 3,678,206.
GAF Corporation: *See—*
Barabas, Eugene S.; Grosser, Frederick; and Schneider, Louis, 3,677,990.
Gagliardi, Domenick Donald, to Commercial Solvents Corporation. Oil repellant fibrous materials and preparation thereof. 3,677,812, Cl. 117-139.50a.
Gagnaux, Pierre, to Sandoz Ltd.; a/k/a and Sandoz A.G. Preparation of O,O-dimethyl-thionophosphoric acid[O-quinoxalyl-(2)]ester. 3,678,050, Cl. 260-250.00r.

Gaia, Aldino J., to McGraw-Edison Company. Protector for electric circuit. 3,678,430, Cl. 337-159.000.
Gamble, Robert P.: *See—*
Tien, John K.; and Gamble, Robert P., 3,677,835.
Gamon-Camet Industries, Inc.: *See—*
Masson, Narinder; Korenicki, William John; and Lechner, Walter Ludwig, 3,677,084.
Gamson, Michael J. Jumper cable. 3,678,438, Cl. 339-29.00b.
Gansheimer, Josef; and Schanzer, Oswald, to Dow Corning Corporation. Extreme pressure lubrication through additives. 3,677,946, Cl. 252-51.50a.
Ganzhorn, Harry E., to Raychem Corporation. Self-locking heat shrinkable insulating sleeve. 3,678,174, Cl. 174-84.00r.
Garland, Carl C., to Parke, Davis & Company. Vibratory cleaner. 3,676,958, Cl. 51-163.000.
Garnier, Michel Robert; and Rioux, Christian Paul Gilbert, to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation. Jet propulsion power plant. 3,678,306, Cl. 310-11.000.
Garrett Corporation, The: *See—*
Barnett, Morris A.; and Silver, Alexander, 3,677,612.
Garrigus, James P., to Chicago Bridge & Iron Company. Corrosion protection for well casing of offshore structure. 3,677,016, Cl. 61-46.500.
Garven, Ernest H. Cymbal attachment. 3,677,127, Cl. 84-402.000.
Gast, Gerald E., to Whirlpool Corporation. Band remover for cartons. 3,677,519, Cl. 254-131.000.
Gately, Joseph R., to Forbro Design Corporation. Voltage limiting circuit for constant-current power supplies. 3,678,370, Cl. 323-4.000.
Gates Rubber Company, The: *See—*
Stuemky, Robert E., 3,677,109.
Gearhart-Owen Industries, Inc.: *See—*
Hallmark, Bobby Joe, 3,677,080.
Geigy Chemical Corporation: *See—*
Dexter, Martin; Spivack, John Denon; and Steinberg, David Herbert, 3,677,965.
Dexter, Martin; and Spivack, John Denon, 3,678,095.
Geil, Walter: *See—*
Schippers, Heinz; Geil, Walter; Albrecht, Gerd; and Jung, Reinhold, 3,677,863.
Geissler, Ulrich M., to Harrington-Geissler & Associates, Inc. Rotary tool and turbine therefor. 3,677,351, Cl. 173-57.000.
Gele, Pierre; and Laprade, Bernard, said Laprade, Bernard assor. to and Les Usines Laprade S.A. Carburettors operating under a constant reduced pressure. 3,677,241, Cl. 123-119.0db.
Gemco Electric Company: *See—*
Cork, Gordon H.; Tenniswood, David M.; and Kaptur, Robert E., 3,677,099.
General Electric Company: *See—*
Batscha, Alexander P., 3,677,012.
Bauer, Douglas M., 3,678,500.
Bedford, Burnice D., 3,678,352.
Bennett, Moreland P., 3,678,242.
Berger, Abe, 3,678,089.
Boliver, Vincent J., 3,678,432.
Boliver, Vincent J., 3,678,451.
Bowers, David L., 3,677,251.
Brown, Dale H., 3,677,905.
Carty, Edward J.; and McDowell, Francis C., 3,678,079.
Crivello, James V., 3,678,080.
Crivello, James V., 3,678,081.
Earing, Mason H., 3,677,995.
Fleischer, Robert L.; and Price, Paul B., 3,677,844.
Girard, Roland T.; and Rice, George A., 3,677,796.
Herdrich, William M.; and Bender, Norman A., 3,678,436.
Holub, Fred F.; and Hoback, John T., 3,678,015.
Kidd, Thomas L., Jr.; and McClain, Albert D., Jr., 3,676,943.
Kolatorowicz, Edwin E., 3,678,358.
McCarty, Clyde W., 3,678,499.
McMurray, William, 3,678,367.
Nuckolls, Joe A., 3,678,371.
Osteen, Mitchell M.; and Grindle, James L., 3,678,263.
Riley, John Edward, 3,678,373.
Staub, Fred W., 3,677,338.
Weichbrodt, Bjorn; and Darrel, Bernard, 3,677,072.
Wright, Archibald N., 3,677,800.
General Electric Company, mesne: *See—*
Jahns, Frederick William, Jr., 3,677,882.
General Instrument Corporation: *See—*
Popper, Jay D., 3,678,293.
General Kinematics Corporation: *See—*
Musschoot, Albert, 3,677,395.
General Mills, Inc.: *See—*
King, Charles W., 3,677,769.
General Monitors, Inc.: *See—*
Ward, William H., Jr., 3,678,513.
Genova Products: *See—*
Williams, Robert M., 3,677,301.
Genra: *See—*
Ward, William H., Jr., 3,678,513.
Gentemann, Arthur J. Rowing device. 3,677,216, Cl. 115-24.100.
Georgia-Pacific Corporation: *See—*
Bornstein, Leopold F., 3,677,884.
Gerber Garment Technology, Inc.: *See—*
Gerber, Heinz Joseph; and Pearl, David Raymond, 3,677,123.
Gerber, Heinz Joseph; and Pearl, David Raymond, to Gerber Garment Technology, Inc. Penetrable bed used for cutting sheet material. 3,677,123, Cl. 83-561.000.
Gertsik, Mikhailovich: *See—*
Nabiullin, Faat Khatovich; Buzova, Zoya Mikhailovna; Gertsik, Mikhailovich; and Zjuzin, Sergei Alexeevich, 3,677,824.
Gerwig, Jeffrey C., to Windings, Inc. Box with inwardly tapering guide cones for universal wind package with radial pay-out. 3,677,491, Cl. 242-163.000.
Ghilardi, Guiliana: *See—*
Kalopissis, Gregoire; Abegg, Jean-Louis; Ghilardi, Guiliana; and de Beaulieu, Henri Philippe, 3,678,157.
Ghosh, Ranajit; and Bishop, Nigel Douglas, to Imperial Chemical Industries Limited. Fungicidal composition containing thio-carbamyl-α-lactones. 3,678,167, Cl. 424-248.000.
Giacino, Christopher: *See—*
Mussinan, Cynthia; Giacino, Christopher; and Katz, Ira, 3,677,772.
Gibbs, James C.; and Daninhersch, Harry, to Connor Engineering Corporation. Adjustable air pattern air diffuser. 3,677,165, Cl. 98-40.0dl.
Gibbs, James W.; and Gibbs, John L., to Marine Bank and Trust Company, mesne. Hydraulic flush tank. 3,677,294, Cl. 137-572.000.
Gibbs, John L.: *See—*
Gibbs, James W.; and Gibbs, John L., 3,677,294.
Gidon Industries Limited: *See—*
Wright, Peter C.; and Kirsch, Donald L., 3,677,365.
Giesecke, Frederick Adolph, to CPC International Inc. Pressure venting assembly. 3,677,290, Cl. 137-528.000.
Giffen, James W. Article transfer apparatus. 3,677,419, Cl. 214-1.0bv.
Gilbert, Roswell W., to Technical Management Services, Inc. Target indicating system and method. 3,678,495, Cl. 340-323.000.
Giles, Walter W. Tallying devices. 3,677,221, Cl. 116-135.000.
Giljarhus, Gunnar; and Vien, Hans, to A/S Raufoss Ammunisjonsfabrikker. Projectile with multiple effect. 3,677,181, Cl. 102-52.000.
Gillery, Frank H., to PPG Industries, Inc. Process for forming electroconductive tin oxide films by pyrolyzation of alkyl and aryl tin fluorides. 3,677,814, Cl. 117-211.000.
Gillette Company, The: *See—*
Pearson, Harold E., 3,676,902.
Gilsdorf, Richard C., to Bell & Howell Company. Yieldable electrical plug. 3,678,440, Cl. 339-61.00r.
Giolito, Silvio L.; and Mirviss, Stanley B., to Stauffer Chemical Company. Triaryl phosphate functional fluids. 3,677,948, Cl. 252-78.000.
Gipe, Harry F., to Scott Paper Company. Dry planographic plates and methods, production and use. 3,677,178, Cl. 101-450.000.
Girard, Roland T.; and Rice, George A., to General Electric Company. Protective coating to inhibit oxidation and/or carburization of metallic surfaces. 3,677,796, Cl. 117-70.00a.
Girling Limited: *See—*
Hodges, Peter Kinson, 3,678,232.
Newstead, Charles; Cullen, John Lesley; and Zajko, Michal, 3,677,374.
Girola, Angelo. Master for machine tools, particularly for milling machines, to remove metal by level layers. 3,677,136, Cl. 90-62.000.
Givaudan Corporation: *See—*
Kitchens, Garry C.; Hochstetler, Alan R.; and Kaiser, Kent, 3,678,119.
Glass, Eduard; and Alker, Heinrich. Radial tires. 3,677,318, Cl. 152-356.000.
Glathe, Wolfgang, to Schlumberger Overseas Messgeratebau und Vertrieb GmbH. Amplifier stage circuit for a logarithmic amplifier. 3,678,294, Cl. 307-230.000.
Glaverbel S.A.: *See—*
Plumat, Emile, 3,677,729.
Gleixner, Franz, to Sick, Erwin, Firma. Photoelectric sensing device. 3,678,281, Cl. 250-216.000.
Glenn, Dwight W.: *See—*
Faw, Frederick L.; Johnson, Ralph E.; Warren, Constance A.; and Glenn, Dwight W., 3,678,233.
Globe-Union Inc.: *See—*
Ringle, Richard Bertrem, 3,678,363.
Glockner, Hans; Meier, Ernst; and Puschel, Walter, to Agfa-Gevaert Aktiengesellschaft. Silver halide emulsion containing purple coupler for color photography and process of making the same. 3,677,764, Cl. 96-100.000.
Godel, Albert, to Societe Anonyme Activit. Process of activation and gasification of fluidised carbonaceous materials. 3,677,727, Cl. 48-206.000.
Goldmark, Peter C.; and Hollywood, John M., to Columbia Broadcasting System, Inc. Color film recording and reproducing apparatus. 3,678,181, Cl. 178-5.20r.
Gooderum, Leoda J. Zipper foot attachment for sewing machines. 3,677,209, Cl. 112-240.000.
Goodman, Abraham H.: *See—*
Smadar, Yechiel; and Goodman, Abraham H., 3,677,443.
Goodman, H., & Sons, Inc.: *See—*
Goodman, Jacob, 3,677,270.
Goodman, Jacob, to Goodman, H., & Sons, Inc. Spring-tongue clasps. 3,677,270, Cl. 132-48.00r.
Goodrich, B. F., Company, The: *See—*
Kletecka, George; and Smith, Peter D., 3,678,047.

Goodrich, George W.: *See—*
Deradoorian, Bagdasar; Goodrich, George W.; and Theodorou, Dimitri G., 3,677,730.

Goodridge, Ernest E.: *See—*
Bosworth, Delbert B.; and Goodridge, Ernest E., 3,677,439.

Goodwin, Zeno E. Weighing apparatus for liquids. 3,677,356, Cl. 177-190.000.

Goodyear Tire & Rubber Company, The: *See—*
Bickel, David P.; Davis, Melvin H.; Starks, Karl H., Jr.; and Tsoras, John, 3,678,486.
Chung, Daniel A.; and Pearson, Charles J., 3,677,869.
Shelton, James R.; and Hopper, Roger J., 3,678,017.

Goorissen, Jan: *See—*
Wesselink, Gustaaf Adolf; Holmes, Thomas; de Kock, Arie Jan Rudolf; and Goorissen, Jan, 3,678,315.

Gordon, Stuart; Evans, Geoffrey Ian; and Cunliffe, Alwyn, to Imperial Metal Industries (Kynoch) Limited. Solid propellant charge making in mold having perforated separator means. 3,678,138, Cl. 264-3.00r.

Gordon, William F.; and Newman, James W., to Windings, Inc. Package of flexible material. 3,677,490, Cl. 242-163.000.

Goscenski, Edward J., to Bendix Corporation, The. Concentric brake booster with moving hoses. 3,677,007, Cl. 60-54.60p.

Goscenski, Edward J., to Bendix Corporation, The. Mechanism for hydraulic brake booster. 3,677,138, Cl. 91-373.000.

Gosden, Derek Vernon: *See—*
Williams, Frank Ronald; Whitehead, Jack; Marshall, Jefferson; Conners, Alan; and Gosden, Derek Vernon, 3,677,740.

Gosling, Dickinson, to Labatt, John, Limited. End loading twin beverage carton. 3,677,458, Cl. 229-27.000.

Gosudarstvenny Naucho-Issledovatelsky I Proektny Institut Onsnovnoi Khimii: *See—*
Yanush, Appolinaria Vasilievna, 3,677,697.

Goto, Nobuyuki: *See—*
Iwasaki, Masahiro; Goto, Nobuyuki; Fujisaki, Hiroya; and Niwa, Kunihiko, 3,678,390.

Gotoh, Toshiaki: *See—*
Matsumoto, Shigeru; and Gotoh, Toshiaki, 3,677,605.

Gottweis, Gert; Herrlich, Michael; Klas, Gunther; Schober, Joachim; Thiede, Peter; and Zachaus, Eberhard, to Ingenieurburo fur Rationalisierung der Suss- und Dauerbackwarenindustrie. Apparatus for packing bags in boxes or cartons. 3,676,978, Cl. 53-59.00r.

Gough, Geoffrey R.: *See—*
Maguire, Mary H.; Gough, Geoffrey R.; and Michal, Frank, 3,678,162.

Gough, Warren G., to Sylvania Electric Products, Inc. Digital communication system. 3,678,391, Cl. 325-55.000.

Grace, W. R., & Co.: *See—*
Edmonston, Robert P.; Gribens, Joel A.; and Simons, Charles W., 3,677,993.
Sterrett, Robert W.; and Jacob, Francis J., 3,677,874.

Graf, Eckhart, to Benzing, Ernst, Kontrolluhrenfabrik, Fried, Firma. Cam operated program mechanism with mechanical vibratory actuating means. 3,678,227, Cl. 200-38.00r.

Graff, Jack; and Dora, Ralph A., to Packard Instrument Company, Inc., mesne. Reactor. 3,677,706, Cl. 23-230.00r.

Graff, William R., to Simplimatic Engineering Co. Missing container detector. 3,678,254, Cl. 235-92.0pk.

Graham, Richard E., to National Cash Register Company, The. Control means for an optical bar code serial printer. 3,678,465, Cl. 340-172.500.

Grainger, James William: *See—*
Trott, John James; and Grainger, James William, 3,678,378.

Grandy, Andrew J. Wire forming apparatus. 3,677,309, Cl. 140-149.000.

Granqvist, Carl-Erik, to Aga Aktiebolag. Instrument for measuring distance. 3,677,646, Cl. 356-4.000.

Granryd, Eric G. U., to American Gas Association, mesne. Internal combustion heat engine and process. 3,677,026, Cl. 62-115.000.

Granryd, Eric G. U., to American Gas Association, mesne. Internal combustion heat engine and process. 3,677,027, Cl. 62-115.000.

Grauvogel, Kurt. Environmental control apparatus. 3,678,337, Cl. 317-4.000.

Gray, Dan E., to Shair of Canada Limited. Air cushion vehicle. 3,677,359, Cl. 180-121.000.

Gray, Kenneth R.: *See—*
Casebier, Ronald L.; Herrick, Franklin W.; Gray, Kenneth R.; and Johnston, Frederic A., 3,677,818.

Gray-Tim, Inc.: *See—*
Fraser, Alan R., 3,677,700.

Green, Angelica G., to Kimberly-Clark Corporation. Gauze section for a surgical drape sheet. 3,677,266, Cl. 128-132.00d.

Green, Victor J. Trampoline. 3,677,368, Cl. 182-139.000.

Greenspan, Gilbert; Curtis, Lawrence R.; Cunningham, Elmer E.; and Tabler, James G. Apparatus for providing recorded chromatic data displays of varying sensor signals. 3,678,277, Cl. 250-83.30r.

Greenwood, Roger; and Etcheverry, John P., to International Telephone and Telegraph Corporation. Pilot valve operated main valve with lost motion connected and tandem operated valves. 3,677,298, Cl. 137-625.640.

Gref, Hans: *See—*
Herzhoff, Peter; Gref, Hans; Wolfgang, Leverkusen; Frenken, Hans; Assenmacher, Peter; and Westen, Dietmar, 3,677,076.

Gregoire Engineering & Development Co.: *See—*
Gregoire, Resta S., 3,677,212.

Gregoire, Resta S., to Gregoire Engineering & Development Co. Submersible watercraft. 3,677,212, Cl. 114-61.000.

Grey, Michael W., to Addmaster Corporation. Checkwriter. 3,677,463, Cl. 235-58.cwm.

Gribens, Joel A.: *See—*
Edmonston, Robert P.; Gribens, Joel A.; and Simons, Charles W., 3,677,993.

Grier, Nathaniel, to Merck & Co., Inc., mesne. Nitroalkyl-piperazines for inhibiting bacteria fungi and nematodes. 3,678,168, Cl. 424-250.000.

Griffin & company: *See—*
Parker, Samuel A.; and Wilding, Edwin L., 3,677,390.

Griffith, James J., to United Aircraft Corporation. Load anticipation control for a free turbine type of power plant. 3,678,285, Cl. 290-40.000.

Griggs, Barbara Allen: *See—*
Guyer, Reynolds W., Jr.; Cross, Norton M., Jr.; Griggs, Barbara Allen; and Lundquist, Martin A., 3,677,446.

Grindle, James L.: *See—*
Osteen, Mitchell M.; and Grindle, James L., 3,678,263.

Groezinger, John J., to Caterpillar Tractor Company. Marking and detection of subsurface defects in multi-layer hose structures. 3,678,271, Cl. 250-71.50r.

Grolitzer, Arthur J.; and Mounts, Francis E., to Rheem Manufacturing Company. Optical crossbar switching device. 3,678,459, Cl. 340-166.00r.

Gross, F. R., Co. Inc.: *See—*
Gross, Frank Robert, 3,676,910.

Gross, Frank Robert, to Gross, F. R., Co. Inc. Machine for forming heat-exchanger fins. 3,676,910, Cl. 29-202.00d.

Grosse, Aristid V., to Reynolds Metals Company, mesne. Method of reducing reaction between adjacent layers of liquid substances having different densities. 3,677,326, Cl. 165-1.

Grossenbacher, Charles-Andre: *See—*
Simon-Vermot, Andre; and Grossenbacher, Charles-Andre, 3,676,998.

Grosser, Frederick: *See—*
Barabas, Eugene S.; Grosser, Frederick; and Schneider, Louis, 3,677,990.

Grottrup, Helmut: *See—*
Dethloff, Jurgen; and Grottrup, Helmut, 3,678,250.

Grove Manufacturing Company: *See—*
Keller, Joseph H., Jr.; and Sterner, Russell L., 3,677,417.

Growth International Industries Corporation: *See—*
Yates, George, Jr., 3,677,430.

Groz, Theodor & Beckert, Ernst Nadelfabrik: *See—*
Wiederhut, Wolfgang; Landenberger, Helmut; and Hofmann, Ulrich, 3,677,035.

Gruber, Eugene Gerald. Vehicle mounted warning device. 3,678,456, Cl. 340-87.000.

Gruenfeld, Norbert; and Pesterfield, Enos C., Jr., to Ciba-Geigy Corporation. Pyridyl-2-imidazolones as anti-inflammatory agents. 3,678,169, Cl. 424-263.000.

Grummon, Glenn D.; and Wiegert, Philip E., to Mallinckrodt Chemical Worsk. Method for preparing seleno-derivatives of α-amino acids. 3,678,067, Cl. 260-482.00r.

Gschwend, Heinz Werner; and deStevens, George, to Ciba-Geigy Corporation. 3-Aminoalkylidene-indazoles. 3,678,059, Cl. 260-295.50b.

GTE Automatic Electric Laboratories, Inc.: *See—*
Jaster, Dale R.; and Nasby, James S., 3,678,376.
Reimer, William A., 3,678,176.

GTE Automatic Electric Laboratories Incorporated: *See—*
Eddy, John W., 3,678,208.
Panter, Robert B.; Dufton, John Peter; Duthie, Robert W.; and Verbaas, George, 3,678,197.
Reimer, William A., 3,676,923.
Reimer, William A., 3,678,422.
Wedmore, William R., 3,678,344.

GTE Laboratories Incorporated: *See—*
Brecher, Charles; Pappalardo, Romano; and Samelson, Harold, 3,677,959.
Fischman, Martin, 3,678,331.
Kocher, Robert C.; Moore, Franklin K.; Samelson, Harold; and Watson, William R., 3,678,410.

GTE Sylvania Incorporated: *See—*
Hartman, Raymond G., 3,677,096.
Hunton, James Keith; Kelly, Wayne M.; and Takeuchi, James S., 3,678,395.
Little, John C., 3,677,652.

Guarino, Henry R., to United States of America, Health, Education and Welfare, mesne. Volume metering apparatus for circulatory assist pumps. 3,677,092, Cl. 73-432.00a.

Gubin, Alexandr Ivanovich: *See—*
Maximovich, Boleslav Ivanovich; Dudko, Daniil Andreevich; Agafonov, Nikolai Georgievich; Maximov, Igor Petrovich; Andreev, Vadim Grigorievich; Lepilov, Nikolai Yakovlevich; Svinov, Alexei Kapitonovich; Slonimsky, Alexandr Borisovich; Volk, Boris Zakharovich; Gubin, Alexandr Ivanovich; and Katsman, Berta Osipovna, 3,677,330.

Gubler, Michel: *See—*
Feiner, Maria; Gubler, Michel; and Guillon, Joseph, 3,677,942.

Gudath, Ernest Andrew: *See—*
Hollingsworth, Clinton A.; Snyder, John Harold; and Gudath, Ernest Andrew, 3,677,701.

Gugin, Robert J., to Agristeel Limited. Steering device for cultivating implements. 3,677,349, Cl. 172-285.000.

Gugol-Clini-Tex, Inc.: *See—*
Horonick, Andrew; and Munschy, Andre V., 3,678,151.

Guigan, Jean, to Hoffmann-La Roche Inc. Apparatus for transferring liquids. 3,677,091, Cl. 73-423.00a.

Guillon, Joseph: *See—*
Feiner, Maria; Gubler, Michel; and Guillon, Joseph, 3,677,942.

Gulf & Western Industries, Inc.: *See—*
Hulterstrum, Harold D., 3,678,225.

Gulf Oil Corporation: *See—*
Bokros, Jack C.; and Ellis, Willard H., 3,677,795.
Koutz, Stanley L., 3,677,008.

Gulf Research & Development Company: *See—*
Dahle, Norman A., 3,677,737.

Gulick, Ronald A.: *See—*
Prikryl, Walter F.; and Gulick, Ronald A., 3,677,108.

Gulla, Michael: *See—*
Shipley, Charles Raymond; Gulla, Michael; and Dutkewych, Oleh Borys, 3,677,776.

Gullick Dobson Limited: *See—*
Small, Fred, 3,677,603.

Gump, Klaus H., to Celanese Corporation. Polymerization of aromatic nitriles in 2-pyrrolidinone as solvent and catalyst at elevated temperatures. 3,678,049, Cl. 260-248.0cs.

Gurkov, Konstantin Stepanovich: *See—*
Kostylev, Alexandr Dmitrievich; Gurkov, Konstantin Stepanovich; Tkach, Khai Berkovich; and Chepurnoi, Nikolai Prokhorovich, 3,677,354.

Gusev, Vladimir Alexeevich; and Rudenko, Nikolai Nikolaevich. Device for applying onto pipes coatings of viscous insulating substances. 3,677,862, Cl. 156-392.000.

Gussack, Seymour I.; and Berry, Hugh, to X-L-O Automotive Accessories, Inc. Bumper guard mounting assembly. 3,677,594, Cl. 293-67.000.

Gustafson, Craig S. Roof flange with elastomeric collar. 3,677,576, Cl. 285-43.000.

Gutberlet, Louis C.; and Bertolacini, Ralph J., to Standard Oil Company. Hydrocracking catalyst. 3,677,972, Cl. 252-455.00z.

Guyer, Reynolds W., Jr.; Cross, Norton M., Jr.; Griggs, Barbara Allen; and Lundquist, Martin A., to Guyer, Reynolds W., Jr.; d/b/a and Winson Concepts. Liquid gun for use on wheeled vehicle. 3,677,446, Cl. 222-177.000.

Guyer, Reynolds W., Jr.; d/b/a: *See—*
Guyer, Reynolds W., Jr.; Cross, Norton M., Jr.; Griggs, Barbara Allen; and Lundquist, Martin A., 3,677,446.

Haani, Martti: *See—*
Bryk, Petri; Haani, Martti; Honkasalo, Jorma B.; Kinnunen, Jorma; Lindsjo, Olle; Nyholm, Erik; Poijarvi, Jaakko; Rastas, Jussi; and Kangas, Juhani, 3,677,696.

Habegger, Oskar: *See—*
Strebel, Albert; and Habegger, Oskar, 3,677,107.

Haberlin, Richard J.: *See—*
Francis, Donald R.; and Haberlin, Richard J., 3,677,753.

Habrich, Reiner: *See—*
Denk, Hans; and Habrich, Reiner, 3,677,999.

Hagihara, Takeaki: *See—*
Kai, Tsunetoshi; Hagihara, Takeaki; and Ishido, Teruhisa, 3,677,920.

Haigler, John S. Pill counting apparatus having chute shifting on predetermined count. 3,677,437, Cl. 221-7.000.

Halcon International, Inc.: *See—*
Thiel, Reinhard; and Ellendt, Gunther, 3,677,819.

Haley, Alfred J., Jr.: *See—*
Keith, Carl D.; Haley, Alfred J., Jr.; and Kero, Robert M., 3,677,815.

Haley, David J.; Cunningham, Robert E.; and Privott, Wilbur J., Jr., to Monsanto Company, mesne. Method and apparatus for taking up fiber. 3,677,481, Cl. 242-18.00r.

Hall, Douglas Wilson: *See—*
Higginbotham, Gordon John Spencer; and Hall, Douglas Wilson, 3,677,324.

Hall, William D.; and Shaefer, Lewis H., to KMS Industries, Inc. Pressure sensitive fingerprint input for identification apparatus. 3,677,223, Cl. 118-10.000.

Hall, William D.; and Burzan, Vernon J., to KMS Industries, Inc. Clean window assembly for real time fingerprint input to fingerprint identification system. 3,677,623, Cl. 350-321.000.

Hallford, Ben R., to Collins Radio Company. Microstrip diode high isolation switch. 3,678,414, Cl. 333-7.000.

Hallford, Ben R., to Collins Radio Company. RF rejection filter. 3,678,433, Cl. 333-73.00s.

Hallmark, Bobby Joe, to Gearhart-Owen Industries, Inc. Sidewall well-formation fluid sampler. 3,677,080, Cl. 73-155.000.

Hamilton, Douglas L. P. Automobile bumper. 3,677,595, Cl. 293-73.000.

Hamilton Watch Company: *See—*
Bergey, John M.; Le Van, James O.; Walton, Richard S.; and Brethauer, Louis G., 3,676,993.

Hammoto, Kazuko: *See—*
Nitda, Taro; Yumoto, Hiroshi; Tsuruoka, Takashi; Hammoto, Kazuko; Shomura, Takashi; and Ohashi, Takao, 3,678,159.

Hampel, Daniel, to RCA Corporation. Multi-function logic gate circuits. 3,678,292, Cl. 307-207.000.

Hanchett Company: *See—*
Hutchings, Paul D., Sr., 3,677,093.

Hands, Clifford Henry George: *See—*
Maund, John Keith; and Hands, Clifford Henry George, 3,677,720.

Hanff, Herbert, to Licentia Patent-Verwaltungs-G.m.b.H. High-frequency drying apparatus. 3,676,936, Cl. 34-1.000.

Hannah, Bruce R.: *See—*
Morrison, Andrew Ivar; and Hannah, Bruce R., 3,677,601.

Hansen, Poul E., to Emisco, Inc. Auxiliary air valve. 3,677,237, Cl. 123-97.00b.

Harada, Motoo; and Sasaki, Kenichi. Continuous vacuum advance system of ignition timing. 3,677,238, Cl. 123-117.00a.

Hardesty, Donald E.; and Rodgers, Thomas A., to Shell Oil Company. Molten salt hydroconversion process. 3,677,932, Cl. 208-108.000.

Hardy, Donald F., to Dart Industries, Inc. Method of coating irregular objects. 3,677,801, Cl. 117-94.000.

Harenberg, Harold L., Jr., to McDonnell Douglas Corporation. Performance and failure assessment monitor. 3,678,256, Cl. 235-150.200.

Hargash, Paul, to Dow Chemical Company, The. Feeder stream mixer. 3,677,522, Cl. 259-4.000.

Harigaya, Hiroshi: *See—*
Yamamura, Katsumi; Harigaya, Hiroshi; Kasai, Kazutomo; and Asahina, Michio, 3,677,744.

Harman, John N., III; and Neti, Radhakrishna M., to Beckman Instruments, Inc. NO_x analysis and scrubber therefor. 3,677,708, Cl. 23-232.00r.

Harmuth, Henning Friedolf, to International Telephone and Telegraph Corporation. Signal processing and transmission by means of walsh functions. 3,678,204, Cl. 179-15.0bc.

Harned, William L., to Eastman Kodak Company. Method of fine-grinding. 3,677,476, Cl. 241-21.000.

Harnish, Mark E.; and Peters, Merrit A., to International Minerals & Chemical Corporation. Use of refractory parting layer to aid skill removal from furnace linings. 3,678,143, Cl. 264-30.000.

Harrell, Marvin L.: *See—*
Nixon, Dalbro R., Jr.; McIlhenny, David J.; and Harrell, Marvin L., 3,677,441.

Harrington, Jerry E., to Chrysler Corporation. Apparatus for the manufacture of powder metal helical gears. 3,677,672, Cl. 425-78.000.

Harrington-Geissler & Associates, Inc.: *See—*
Geissler, Ulrich M., 3,677,351.

Harris, Lawrence M.: *See—*
Feuersanger, Alfred E.; and Harris, Lawrence M., 3,677,847.

Harris, Le Roy S., to K-G Industries, Inc. Shear and breaker means for briquetting apparatus. 3,677,683, Cl. 425-314.000.

Harris, Rano J., Jr.: *See—*
Harris, Rano J., Sr.; and Harris, Rano J., Jr., 3,677,448.

Harris, Rano J., Sr.; and Harris, Rano J., Jr., to Precision Sampling Corporation. Syringe with wire plunger for dispensing infinitesimally small, accurately measured quantities of fluid. 3,677,448, Cl. 222-387.000.

Harris, Richard A., to Western Electric Company, Incorporated. Apparatus for conveying and exposing a strip of radiant energy sensitive material. 3,677,644, Cl. 355-96.000.

Harris, Robert George, to Amchem Products, Inc. Permanganate silicate cleaner. 3,677,953, Cl. 252-103.000.

Hart, Dennis L.; and Howery, Robert A., to Rain Bird Sprinkler Mfg. Corporation. Rotary sprinkler. 3,677,472, Cl. 239-230.000.

Hartley Controls Corporation: *See—*
Hartley, Nelson, 3,677,523.

Hartley, Nelson, to Hartley Controls Corporation. Rebound pug mill. 3,677,523, Cl. 259-69.000.

Hartman, Charles W., to United States of America, Atomic Energy Commission. Plasma heating and densification in axisymmetric toroidal plasma confinement devices. 3,677,890, Cl. 176-5.000.

Hartman, Raymond G., to GTE Sylvania Incorporated. Miniature indexing mechanism. 3,677,096, Cl. 74-527.000.

Hartman, Warren Emery; and Johnson, William Randall, to Worthington Foods, Inc. Fiber washing apparatus. 3,677,038, Cl. 68-20.000.

Hartmann, Heinrich: *See—*
Eckert, Guenter; Marx, Matthias; Hartmann, Heinrich; and Wuertele, Lothar, 3,677,813.

Harvey, Donald M., to Eastman Kodak Company. Compact film-pack camera. 3,677,160, Cl. 95-40.000.

Harwell, Conner J.: *See—*
Siegfried, Edward C.; Harwell, Conner J.; and Murphy, Shields, 3,677,687.

Hasegawa, Yoshisuke: *See—*
Mitsugi, Koji; Nakase, Takashi; and Hasegawa, Yoshisuke, 3,677,898.

Hashimoto, Saburo, to Union Oil Company of California. Alkane utilization in foam system. 3,677,895, Cl. 195-28.00r.

Hashirizaki, Sinya: *See—*
Akuta, Tomohiko; Honsyo, Yoshi; Hashirizaki, Sinya; Hiruma, Teruo; and Kurasawa, Kazuo, 3,678,192.

Hassinger, Robert J., to Extracorporeal Medical Specialties, Inc. Removable catheter needle. 3,677,244, Cl. 128-214.400.

Hatagi, Hiroyuki; Kanamaru, Kenichi; and Funasaki, Yasuo, to Nippon Kokan Kabushiki Kaisha. Hollow conductor roll. 3,678,226, Cl. 191-1.00a.

Hatay, Charles. Method of equalizing supply of thread to a plurality of knitting stations. 3,677,036, Cl. 66-132.00r.

Hattori, Hiroyuki: *See—*

Komori, Shigehiro; and Hattori, Hiroyuki, 3,677,222.
Haug, Edward J., Jr., to United States of America, Army. Machine gun having a firing system means for obtaining substantially constant and minimum recoil forces. 3,677,135, Cl. 89-42.00b.
Haugwitz, Rudiger D.; and Lakshmi, Venkatachala, to Squibb, E. R., & Sons, Inc. Thiocyanic acid esters. 3,678,066, Cl. 260-309.200.
Hauser, Henry A.: *See—*
Morrison, William F.; and Hauser, Henry A., 3,677,715.
Hauser-Lienhard, Hans Ulrich, to Bucher-Guyer AG Maschinenfabrik. Hay-making machine. 3,676,988, Cl. 56-1.000.
Hawthorne, William C. Apparatus and methods for feeding sheets of material from stacks with one side in vertical registration. 3,677,537, Cl. 271-29.000.
Hay, Donald A.: *See—*
Finlay, Walter L.; Fisher, Henry J.; and Hay, Donald A., 3,677,745.
Haya Glass Works Limited: *See—*
Horikawa, Susumu; and Nakagawa, Kenshi, 3,677,785.
Hayakawa, Hideo, to Yugen Kaisha Tsukasa Sokken. Tandem-type hot-wire velocity meter probe. 3,677,085, Cl. 73-204.000.
Hayashi, Koichiro: *See—*
Ito, Akihiko; Nakase, Yoshiaki; Kojima, Katsumi; Yoshida, Masaru; Iwai, Tadashi; Hayashi, Koichiro; and Okamura, Seizo, 3,677,922.
Hayashi, Shinichi: *See—*
Yamamura, Katsumi; Miyasaka, Tsugumitsu; Hayashi, Shinichi; Yamamoto, Masao; and Matsubara, Yukio, 3,677,909.
Hayashi, Yoshiki; Sasaki, Hiromi; and Matsumura, Toichi, to Matsushita Electric Industrial Co., Ltd. Method for making electrically conducting layer of copper iodide. 3,677,816, Cl. 117-217.000.
Hayashibara Company: *See—*
Kurimuto, Masashi; Sugimoto, Kaname; and Hirao, Mamoru, 3,677,896.
Hayes, John B.; and Knight, Bruce L., to Marathon Oil Company. Mobility control in flooding reservoirs containing water-sensitive clay minerals. 3,677,344, Cl. 166-252.000.
Hayward, Charles R.: *See—*
Carroll, Robert L.; and Hayward, Charles R., 3,677,734.
Head, Richard A.: *See—*
Fogle, William A., Jr.; Jason, Joseph B.; and Head, Richard A., 3,677,173.
Hedberg, Frederick L.; and Rosenberg, Harold, to United States of America, Air Force. Polychlorinated metallocenes and their synthesis. 3,678,088, Cl. 260-429.0cy.
Hedu, Jon, to Actmedia, Inc., mesne. Display device for nestable type shopping cart. 3,677,570, Cl. 280-33.99a.
Heers, Arthur F.; and Schmidt, William G., to Communications Satellite Corporation. Method and means for minimizing the subjective effect of bit errors on PCM-encoded voice communication. 3,678,389, Cl. 325-38.00r.
Hegler, Wilhelm. Apparatus for forming plastic tubing having a smooth inner wall and a corrugated outer wall. 3,677,676, Cl. 425-109.000.
Heinemann, Klaus: *See—*
Braun, Dieter; and Heinemann, Klaus, 3,678,270.
Heinonen, Russell M., Jr., to Technical Operations, Incorporated. Intermittent film pressure mechanism for cinematographic cameras. 3,677,629, Cl. 352-225.000.
Heneghan, Patrick J., to Teletype Corporation. Transition sensing circuit. 3,678,295, Cl. 307-235.000.
Henkel & Cie G.m.b.H.: *See—*
Klement, Gunter, 3,677,809.
Henmi, Hiroshi: *See—*
Fukuma, Noboru; Kobayashi, Hidehiko; Matsui, Kenichi; Sakashita, Masahira; and Henmi, Hiroshi, 3,677,880.
Henrich, Werner. Apparatus for winding wire and the like. 3,677,483, Cl. 242-25.00r.
Henricot, Paul, to Societe Anonyme Usines Emile Henricot. Damping and control device for a bogie bolster. 3,677,363, Cl. 105-197.00d.
Henry, Ronald A.: *See—*
Ayres, William M.; and Henry, Ronald A., 3,677,841.
Herb, Carl C.: *See—*
Traver, Darwin G.; and Herb, Carl C., 3,677,164.
Herckelbout et Fils: *See—*
Herckelbout, Jacques Pierre Albert, 3,676,957.
Herckelbout, Jacques Pierre Albert, to Herckelbout et Fils. Spring grinding machines. 3,676,957, Cl. 51-118.000.
Hercules Incorporated: *See—*
MacDuff, Richard; and Stewart, Paul M., 3,677,530.
Vandenberg, Edwin J., 3,678,136.
Herdrich, William M.; and Bender, Norman A., to General Electric Company. Magnetizing apparatus and method. 3,678,436, Cl. 335-284.000.
Herendeen, Carl E.: *See—*
Ragen, Robert A.; Herendeen, Carl E.; and Wood, Gary R., 3,678,471.
Herr, John A.; and Porter, Oswald M., to Singer Company, The. Electric scissors. 3,676,928, Cl. 30-228.000.
Herrick, Franklin W.: *See—*
Casebier, Ronald L.; Herrick, Franklin W.; Gray, Kenneth R.; and Johnston, Frederic A., 3,677,818.
Herriott, Donald Richard; and Rawson, Eric Gordan, to Bell Telephone Laboratories, Incorporated. Focus and magnification adjustment of a high-performance camera. 3,677,651, Cl. 356-126.000.
Herrlich, Michael: *See—*
Gottweis, Gert; Herrlich, Michael; Klas, Gunther; Schober, Joachim; Thiede, Peter; and Zachaus, Eberhard, 3,676,978.
Herrmann, Pierre, to Compteurs Schlumberger. Infrared gas analyser. 3,678,262, Cl. 250-43.50r.
Hertell, Siegfried: *See—*
Ostwald, Fritz; and Hertell, Siegfried, 3,677,220.
Herterich, Walter; Probst, Georg; and Wurm, Bruno, to Ecofon Verkaufsgesellschaft Probst KG. Electrically operated typewriter. 3,677,386, Cl. 197-53.000.
Herterich, Walter; Probst, Georg; and Wurm, Bruno, to Ecofon Verkaufsgesellschaft Probst KG. Electric typewriter with printed circuit keyboard. 3,677,387, Cl. 197-98.000.
Herzhoff, Peter; Gref, Hans; Wolfgang, Leverkusen; Frenken, Hans; Assenmacher, Peter; and Westen, Dietmar, to Agfa-Gevaert Aktiengesellschaft. Method of measuring web tension. 3,677,076, Cl. 73-144.000.
Hessler, Henry M., 1/3 to Pazder, George J., Jr. and 1/3 to Rudkin, Alva James, Jr. Power hand saw. 3,677,313, Cl. 143-68.00f.
Hewlett-Packard Company: *See—*
Spangler, Richard M., 3,678,466.
Hewlett-Packard GmbH: *See—*
Reidmann, Manfred; and Eichner, Martin, 3,677,709.
Heynisch, Hinrich, to Siemens Aktiengesellschaft. Travelling wave tube having improved efficiency. 3,678,326, Cl. 315-3.600.
Hicks, Alan A., to Kohner Bros., Inc. Puzzle with multiple passageways having a common intersection and objects shiftable among said compartments. 3,677,547, Cl. 273-109.000.
Hicks, Glenn W. Faucet. 3,677,516, Cl. 251-174.000.
Higashide, Eiji: *See—*
Shibata, Motoo; Yamamoto, Hiroichi; Higashide, Eiji; Mizuno, Komei; Imanishi, Mashiko; and Miyake, Akira, 3,678,161.
Higginbotham, Gordon John Spencer; and Hall, Douglas Wilson, to Rolls-Royce Limited. Method and apparatus for producing a metal article. 3,677,324, Cl. 164-60.000.
Higgins, Irwin R.; and Ferner, Jack D., to Chemical Separations Corporation. Split loop contactor. 3,677,937, Cl. 210-19.000.
Hill, Ira D.; Mikherjee, Barid B.; and Brown, Dale G., to Tenneco Chemicals, Inc. Allethronyl esters of certain cyclopropane-carboxylic acids as insecticides. 3,678,172, Cl. 424-306.000.
Hill, Richard L. Fishing lure. 3,676,948, Cl. 43-42.45.
Hill, Thomas D.: *See—*
Root, James R.; and Hill, Thomas D., 3,677,517.
Hill, William G., to Foster Wheeler Corporation. Inert gas shielded arc welding torches. 3,678,239, Cl. 219-60.00a.
Hincz, Thomas W. Board game apparatus. 3,677,548, Cl. 273-130.00r.
Hino, John Bernhard; and Taub, Bernard, to Allied Chemical Corporation. Novel polyurethane-urea coating composition and cast film. 3,678,011, Cl. 260-75.0nh.
Hinojosa, Oscar: *See—*
Arthur, Jett C., Jr.; Singh, Sujan; and Hinojosa, Oscar, 3,677,692.
Hirao, Mamoru: *See—*
Kurimuto, Masashi; Sugimoto, Kaname; and Hirao, Mamoru, 3,677,896.
Hirooka, Masaaki: *See—*
Yasui, Seimei; Hirooka, Masaaki; and Oshima, Teruo, 3,678,018.
Hirose, Hiromitsu: *See—*
Morita, Ken-Ichi; Suzuki, Zennosuke; and Hirose, Hiromitsu, 3,678,093.
Hirozawa, Koichiro; and Asano, Tadao, to Aisin Seiki Kabushiki Kaisha. Speed change mechanism. 3,677,104, Cl. 74-336.000.
Hirozawa, Koichiro; and Takahashi, Shigeo, to Aisin Seiki Kabushiki Kaisha. Mechano-hydraulically operated governor. 3,677,277, Cl. 137-54.000.
Hirsch, Nathan M. Apparatus for washing blood cells. 3,677,710, Cl. 23-258.500.
Hirschon, Jack M.; and Warner, Philip D., to TRW Inc. Semiconductor device and method of making the same. 3,678,346, Cl. 317-234.00r.
Hiruma, Teruo: *See—*
Akuta, Tomohiko; Honsyo, Yoshi; Hashirizaki, Sinya; Hiruma, Teruo; and Kurasawa, Kazuo, 3,678,192.
Hiruta, Makoto: *See—*
Suzuki, Hisao; Musashi, Akira; Hiruta, Makoto; and Muramoto, Hiroo, 3,678,014.
Hisatome, Tomiro: *See—*
Taniguchi, Kaname; Furukawa, Fujio; Hisatome, Tomiro; and Kimura, Yoshito, 3,677,660.
Hitachi, Ltd.: *See—*
Kasano, Hiroyuki; and Kawamura, Masao, 3,678,302.
Hittmair, Paul: *See—*
Kaiser, Wolfgang; Nitzsche, Siegfried; Wohlfarth, Ernst; and Hittmair, Paul, 3,677,996.
Kaiser, Wolfgang; Nitzsche, Siegfried; Wohlfarth, Ernst; Strasser, Alois; and Hittmair, Paul, 3,677,997.
Kaiser, Wolfgang; Nitzsche, Siegfried; Wohlfarth, Ernst; and Hittmair, Paul, 3,678,003.
Nitzsche, Siegfried; Kaiser, Wolfgang; Wohlfarth, Ernst; and Hittmair, Paul, 3,677,784.
Hoback, John T.: *See—*
Holub, Fred F.; and Hoback, John T., 3,678,015.
Hochstetler, Alan R.: *See—*
Kitchens, Garry C.; Hochstetler, Alan R.; and Kaiser, Kent, 3,678,119.
Hocker, Richard L.; Czerniejewski, Conrad P.; and Hopper, John D. Laser sensitometer. 3,677,653, Cl. 356-256.000.

Hockin, John: *See—*
Lund, Carl H.; Hockin, John; and Woulds, Michael J., 3,677,331.
Lund, Carl H.; Hockin, John; and Woulds, Michael J., 3,677,746.
Lund, Carl H.; Hockin, John; and Woulds, Michael J., 3,677,747.
Hockin, John, to Martin-Marietta Corporation. Alloy. 3,677,748, Cl. 75-171.000.
Hodges, Peter Kinson, to Girling Limited. Liquid reservoirs. 3,678,232, Cl. 200-84.00c.
Hodgson, Jo. Wrist bands. 3,677,450, Cl. 224-4.00e.
Hoeflinger, Richard P.; and United States of America, Air Force, to Combined steady-state/dynamic total head probe. . 3,677,079, Cl. 73-147.000.
Hoffman, Harold Henry, to Bell Telephone Laboratories, Incorporated. Signal threshold crossing counter employing monostable multivibrator to suppress extraneous crossing indications. 3,678,396, Cl. 325-474.000.
Hoffmann-La Roche Inc.: *See—*
Archer, Giles Allan; and Sternbach, Leo Henryk, 3,678,036.
Field, George Francis; Sternbach, Leo Henryk; and Zally, William Joseph, 3,678,038.
Guigan, Jean, 3,677,091.
Leimgruber, Willy; and Weigele, Manfred, 3,678,051.
Hofmann, Gunter A.G.: *See—*
Lutz, Michael A.; and Hofmann, Gunter A.G., 3,678,289.
Hofmann, Ulrich: *See—*
Wiederhut, Wolfgang; Landenberger, Helmut; and Hofmann, Ulrich, 3,677,035.
Holland, Paul: *See—*
Bettencourt, Joseph, 3,677,620.
Hollingsworth, Clinton A.; Snyder, John Harold; and Gudath, Ernest Andrew. Sulfuric acid defluorination. 3,677,701, Cl. 23-172.000.
Hollmann, Walter G.; and Lozo, Frederick M., III, to Teledyne, Inc., mesne. Line drawing and marking system. 3,677,786, Cl. 117-1.700.
Hollywood, John M.: *See—*
Goldmark, Peter C.; and Hollywood, John M., 3,678,181.
Holmes, Lawrence, Jr. Self-contained reed switch unit. 3,678,425, Cl. 335-207.000.
Holmes, Thomas: *See—*
Wesselink, Gustaaf Adolf; Holmes, Thomas; de Kock, Arie Jan Rudolf; and Goorissen, Jan, 3,678,315.
Holt, Thomas E.; and Taylor, Edward B., to Esso Research and Engineering Company. Method of producing fibrous products. 3,677,850, Cl. 156-62.200.
Holtkamp, Heinz-Otto: *See—*
Wittler, Hans; and Holtkamp, Heinz-Otto, 3,676,908.
Holton, William C., to Texas Instruments, Incorporated. 2S 1/2 impurity maser. 3,678,400, Cl. 330-4.000.
Holub, Fred F.; and Hoback, John T., to General Electric Company. Process for making polyimide prepolymer with mixture of phenolic and hydrocarbon solvents. 3,678,015, Cl. 260-78.0ua.
Holyoake, Noel Victor; and Barr, David William. Forming of tubular metal ducting. 3,677,047, Cl. 72-50.000.
Holz, Emil, to Finckh, Hermann, Metalltuch-und Maschinenfabrik. Centrifugal classifier. 3,677,402, Cl. 209-270.000.
Homan, Jan Daniel Herman: *See—*
De Jager, Evert; and Homan, Jan Daniel Herman, 3,678,027.
Honeywell, Inc.: *See—*
Sollman, George H., 3,678,503.
Honkasalo, Jorma B.: *See—*
Bryk, Petri; Haani, Martti; Honkasalo, Jorma B.; Kinnunen, Jorma; Lindsjo, Olle; Nyholm, Erik; Poijarvi, Jaakko; Rastas, Jussi; and Kangas, Juhani, 3,677,696.
Honsyo, Yoshi: *See—*
Akuta, Tomohiko; Honsyo, Yoshi; Hashirizaki, Sinya; Hiruma, Teruo; and Kurasawa, Kazuo, 3,678,192.
Hoogendorn, Helen M.; Narken, Bernt; Roeder, Paul J.; and Sunners, Brian, to International Business Machines Corporation. Air bearing magnetic head with glass slider body. 3,678,211, Cl. 179-100.20p.
Hooker Chemical Corporation: *See—*
Carlson, Ronald H., 3,677,956.
Maund, John Keith; and Hands, Clifford Henry George, 3,677,720.
Hooper, Felix E.: *See—*
Cutting, Arch E.; Owens, Carlos L.; Williams, Dewey H.; and Hooper, Felix E., 3,677,305.
Hoover Company, The: *See—*
Dyer, Robert F., 3,676,890.
Hoover, Merwin F.: *See—*
Boothe, Jerry E.; Hoover, Merwin F.; and Schiegg, Dallas L., 3,678,110.
Hopper, John D.: *See—*
Hocker, Richard L.; Czerniejewski, Conrad P.; and Hopper, John D., 3,677,653.
Hopper, Roger J.: *See—*
Shelton, James R.; and Hopper, Roger J., 3,678,017.
Hori, Masao: *See—*
Ando, Masao; and Hori, Masao, 3,678,243.
Horii, Stoshi: *See—*
Miyake, Akira; Horii, Stoshi; and Ueyanagi, Jisaburo, 3,678,160.
Horikawa, Susumu; and Nakagawa, Kenshi, to Haya Glass Works Limited. Transparent crystallized glass. 3,677,785, Cl. 106-39.0dv.
Horne, John E.: *See—*
Smith, Francis Rawdon; and Horne, John E., 3,677,554.
Hornung, Karl-Heinz: *See—*
Riemhofer, Franz; Dittmann, Walter; Biethan, Uwe; Hornung, Karl-Heinz; and Schultze, Ernst-Christian, 3,678,128.
Horonick, Andrew; and Munschy, Andre V., to Gugol-Clini-Tex, Inc. Biological staining method. 3,678,151, Cl. 424-3.000.
Horrom, Bruce W.; Crovetti, Aldo J.; and Viste, Kenneth L., to Rohm and Haas Company. Herbicidal 3,4,5-trisubstituted benzamides. 3,677,739, Cl. 71-118.000.
Horwath, Tibor G., to United States of America, Army. Flush mounted accoustic sensor. 3,678,453, Cl. 340-15.000.
Hoshi, Hiroshi: *See—*
Susuki, Rinnosuke; Hoshi, Hiroshi; Araki, Shinichi; and Ishii, Masao, 3,677,459.
Susuki, Rinnosuke; Hoshi, Hiroshi; Saito, Jiro; and Suzuki, Masao, 3,677,857.
Hou, Kenneth C., to Celanese Corporation. Vapor phase boron deposition by pulse discharge. 3,677,799, Cl. 117-93.10r.
Houghton, Larry R., to Whirlpool Corporation. TV remote control system. 3,678,392, Cl. 325-392.000.
Houlihan, William J., to Sandoz-Wander, Inc. Dialkylaminomethylphenyl benzyl alcohols. 3,678,111, Cl. 260-570.000.
Hounshell, James R.; and Pringle, William L., to Pullman Incorporated. Flexible movable enclosure for vehicles. 3,677,197, Cl. 105-378.000.
Houtz, Kenneth E., to International Harvester Company. Self aligning and self adjusting thrust bushing assembly. 3,677,613, Cl. 308-135.000.
Howard, Velmar E.: *See—*
MacCallum, James A.; Howard, Velmar E.; and Coberley, Daniel A., 3,677,856.
Howe, Spencer D., to Hughes Aircraft Company. Scanning device. 3,678,308, Cl. 310-36.000.
Howery, Robert A.: *See—*
Hart, Dennis L.; and Howery, Robert A., 3,677,472.
Hoyt Manufacturing Corporation: *See—*
Janson, Harry W., 3,676,937.
Hu, Kwoh H.: *See—*
Lampi, Rauno A.; Hu, Kwoh H.; and Osborne, Richard F., 3,678,276.
Hubach-Freer Corporation, mesne: *See—*
Freer, Edgar P., 3,676,934.
Hubbard, George M.: *See—*
Stevens, William P.; Hubbard, George M.; and Wagner, William D., 3,678,444.
Hubbauer, Philip Clark; and McHenry, Edwin John, to Bell Telephone Laboratories, Incorporated. High temperature compression seal terminal. 3,678,178, Cl. 174-152.00r.
Huber, Charles L., to Xerox Corporation. Portable document abstrator. 3,677,633, Cl. 355-7.000.
Huber-Emden, Helmut, to Ciba Limited. N-Acyl-3,4-dihydro-oxazine-(1,3) compounds for controlling phytopathogenic fungi. 3,678,046, Cl. 260-244.00r.
Huck, Rodney M.; and Le Blanc, John R., to Monsanto Company. Thermosettable aromatic amine formaldehyde resin compositions modified with an aromatic polycarboxylic compound. 3,678,008, Cl. 260-65.000.
Huck, Rodney M., to Monsanto Company. Aromatic amine-modified resole resins in combination with aromatic polycarboxylic compounds. 3,678,103, Cl. 260-51.500.
Hudson, Earl A., to Reliance Paper & Bag Co. Method and apparatus for manufacturing flat, tubular wrappers. 3,677,144, Cl. 93-1.00r.
Hudson, Leslie Gordon. Drawer units and runners therefor. 3,677,615, Cl. 312-346.000.
Hudson, Perry B., to American Chemosol Corporation. Tobacco additive device. 3,677,269, Cl. 131-134.000.
Huebotter, Paul R.; and Bump, Thomas R., to United States of America, Atomic Energy Commission. Fuel assembly for a liquid-metal-cooled fast breeder reactor. 3,677,893, Cl. 176-78.000.
Hughes Aircraft Company: *See—*
Bilow, Norman, 3,678,006.
Casper, Robert P., 3,678,492.
Howe, Spencer D., 3,678,308.
Lutz, Michael A.; and Hofmann, Gunter A.G., 3,678,289.
Miller, Leroy J.; and Bilow, Norman, 3,677,976.
Hughes, Donald Kent: *See—*
Ziegler, George William, Jr.; and Hughes, Donald Kent, 3,678,447.
Hughes, Hugh S. Switch holder and guard, 3,678,236, Cl. 200-169.0pb.
Hughey, Vaughn V., to Basic Incorporated. Process for improving the hydration resistance of dead-burned magnesia. 3,677,779, Cl. 106-58.000.
Huiskens, James C.: *See—*
Reber, Robert L.; and Huiskens, James C., 3,678,348.
Hulterstrum, Harold D., to Gulf & Western Industries, Inc. Repeat cycle timer of modular construction with improved adjustable cam. 3,678,225, Cl. 200-38.0ba.
Humphryes, Reginald Frederick; and Mason, Iain Mc Laren. Acoustic wave device for converting bulk mode waves to surface waves and vice versa. 3,678,304, Cl. 310-8.000.
Hunter, Walker F., Jr.: *See—*
Bishop, John F.; Hunter, Walker F., Jr.; and Rowley, Martin E., 3,677,790.
Hunton, James Keith; Kelly, Wayne M.; and Takeuchi, James S., to GTE Sylvania Incorporated. Broadband planar balanced circuit. 3,678,395, Cl. 325-446.000.

Huret, Jacques Andre; and Huret, Roger Henri. Gear change for bicycle or like machine. 3,677,103, Cl. 74-217.00b.
Huret, Roger Henri: *See—*
Huret, Jacques Andre; and Huret, Roger Henri, 3,677,103.
Hurletion Incorporated: *See—*
MacCallum, James A.; Howard, Velmar E.; and Coberley, Daniel A., 3,677,856.
Hursh, Jack E.: *See—*
Ballou, Clayton R., 3,676,972.
Husky Oil Ltd.: *See—*
Cortill, John L., 3,677,665.
Hutchings, Paul D., Sr., to Hanchett Company. Balancing heads for dynamic balancing machines. 3,677,093, Cl. 73-473.000.
Hvidtfeldt, Niels; and Ruttkay, Adam, to Wicon Kondensatorfabrik A/S. Capacitor impregnated with electrolyte and oil containing depolarizer. 3,678,345, Cl. 317-230.000.
Hydraulic Industries, Inc.: *See—*
Tennis, Francis H., 3,677,281.
Hydrocarbon Research, Inc.: *See—*
Weber, Carl L.; Wolk, Ronald H.; and Chervenak, Michael C., 3,677,716.
I-T-E Imperial Corporation: *See—*
Rickert, Frank J.; and Pokorny, Frank J., 3,678,237.
Icraus, John W.: *See—*
Patil, Arvind S.; Icraus, John W.; and Block, Jacob, 3,677,939.
Ideal Security Hardware Corporation: *See—*
Waldo, Russell W., 3,677,591.
Igneri, Anthony V.; Milack, Joseph, Jr.; and Longo, John, to Fairfield-Noble Corporation. Creasing machine. 3,677,205, Cl. 112-200.000.
Iguchi, Masakazu: *See—*
Arimura, Tohru; Kamata, Masamoto; Saito, Morio; Suzuki, Hiromu; and Iguchi, Masakazu, 3,677,045.
IIT Research Institute: *See—*
Ali, Mir Akbar; Schwartz, Murray A.; and Li, Pei Ching, 3,677,778.
Ikeda, Hisayuki: *See—*
Tamate, Tokutaro; Yagi, Eiichi; and Ikeda, Hisayuki, 3,677,925.
Ikeda, Tadashi: *See—*
Nadazawa, Yoshiyuki; Nakamura, Yashuharu; Takei, Haruo; Sato, Akira; and Ikeda, Tadashi, 3,677,765.
Ilford Limited: *See—*
Brown, John Colin; and Cheer, Roy Anthony, 3,677,761.
Imanishi, Mashiko: *See—*
Shibata, Motoo; Yamamoto, Hiroichi; Higashide, Eiji; Mizuno, Komei; Imanishi, Mashiko; and Miyake, Akira, 3,678,161.
Imperial Chemical Industries, Limited: *See—*
Eggleston, Philip William, 3,676,906.
Felstead, Edward, 3,677,321.
Ghosh, Ranajit; and Bishop, Nigel Douglas, 3,678,167.
Kail, John Alan Elliott, 3,677,811.
Last, Anthony Graham Marshall, 3,677,980.
Imperial Metal Industries (Kynoch) Limited: *See—*
Gordon, Stuart; Evans, Geoffrey Ian; and Cunliffe, Alwyn, 3,678,138.
Indiana University Foundation: *See—*
Batz, Simon, 3,678,153.
Information Utilization Corporation: *See—*
Caiola, Leonard, 3,678,148.
Ingelman, Bjorn Gustav-Adolf: *See—*
Bjork, Lars; Erikson, Uno Eugen; and Ingelman, Bjorn Gustav-Adolf, 3,678,152.
Ingenieurburo fur Rationalisierung der Suss- und Dauerbackwarenindustrie: *See—*
Gottweis, Gert; Herrlich, Michael; Klas, Gunther; Schober, Joachim; Thiede, Peter; and Zachaus, Eberhard, 3,676,978.
Inglis, George M., to Eastman Kodak Company. Lap dissolve slide projector with single shiftable slide tray. 3,677,631, Cl. 353-83.000.
Inglis, John, Frozen Foods Company: *See—*
Cox, James P., 3,677,315.
Inman, Eric Richard: *See—*
MacPherson, Ian Alexander; Inman, Eric Richard; Stirling, John Andrew; and Irvine, Alexander McHugh, 3,677,782.
Institut Elektrodinamihi Akademii Nauk Ukrainskoi SSR: *See—*
Antonenko, Anatoly Ivanovich, 3,678,312.
Institut Elektrosvarki Imeni E. O. Patona: *See—*
Maximovich, Boleslav Ivanovich; Dudko, Daniil Andreevich; Agafonov, Nikolai Georgievich; Maximov, Igor Petrovich; Andreev, Vadim Grigorievich; Lepilov, Nikolai Yakovlevich; Svinov, Alexei Kapitonovich; Slonimsky, Alexandr Borisovich; Volk, Boris Zakharovich; Gubin, Alexandr Ivanovich; and Katsman, Berta Osipovna, 3,677,330.
Institut Francais du Petrole des Carburants et Lubrifiants: *See—*
Rabilloud, Guy; Sillion, Bernard; and De Gaudemaris, Gabriel, 3,678,005.
Intelectron Patentverwaltung GmbH: *See—*
Dethloff, Jurgen; and Grottrup, Helmut, 3,678,250.
Intercosmo s.n.c.: *See—*
Luciano, De Pietri, 3,677,271.
International Business Machines Corporation: *See—*
Anzelone, Thomas A., Jr.; Larson, Harold A.; and Stricker, Alfred A., 3,677,853.
Ashar, Kanu G., 3,677,837.
Dalziel, Warren L.; Nilson, Jay B.; and Wartner, Donald L., 3,678,481.
Freeman, Richard B.; Kawalec, Michael T.; Maholick, Andrew W.; and Stager, Stanley R., III, 3,678,469.
Hoogendorn, Helen M.; Narken, Bernt; Roeder, Paul J.; and Sunners, Brian, 3,678,211.
Jordan, Paul V.; Palmieri, John A.; and Wade, William T., 3,678,475.
Lorenz, Max R., 3,677,836.
Luhrs, Otto R., 3,678,220.
Mathisen, Einar S., 3,677,634.
Parker, John E., 3,678,313.
International Flavors & Fragrances Inc.: *See—*
Mussinan, Cynthia; Giacino, Christopher; and Katz, Ira, 3,677,772.
International Harvester Company: *See—*
Boetto, Charles; and Orkwiszewski, Wayne L., 3,677,348.
Chatterjea, Probir K., 3,677,362.
Houtz, Kenneth E., 3,677,613.
Luft, Robert G., 3,677,358.
International Minerals & Chemical Corporation: *See—*
Dancy, William B., 3,677,475.
Harnish, Mark E.; and Peters, Merrit A., 3,678,143.
International Paper Company: *See—*
Boggs, Charles L., 3,677,868.
International Plasma Corporation: *See—*
Beaudry, Harvey James, 3,678,381.
International Standard Electric Corporation: *See—*
Apitz, Siegfried, 3,677,496.
Dupieux, Jacques Georges; Gadre, Jean-Claude; Le Corre, Jean-Pierre; and Loisel, Jean Francois Pierre Julien, 3,678,206.
Payne, Roy David, 3,678,252.
Watson, Christopher Alan; and Maxfield, John Raymond, 3,678,497.
Weston, James Henry, 3,677,106.
International Telephone and Telegraph Corporation: *See—*
Anhalt, John W.; and Morrison, Robert M., 3,676,912.
Brancaleone, Salvatore T., 3,678,445.
Casebier, Ronald L.; Herrick, Franklin W.; Gray, Kenneth R.; and Johnston, Frederic A., 3,677,818.
Clark, James M., 3,678,200.
Cook, Charles R., Jr., 3,676,922.
Greenwood, Roger; and Etcheverry, John P., 3,677,298.
Harmuth, Henning Friedolf, 3,678,204.
Miller, Charles Eveleigh; and Schlatter, Gerald Lance, 3,677,067.
Rensin, Ernest I., 3,678,507.
Upstone, Harlan R.; and Paugh, Edward C , 3,678,441.
Vaden, James L., 3,678,437.
Interroyal Corporation: *See—*
Duprey, Richard H., 3,676,881.
Ireland, Glen V. Hydraulic press. 3,676,915, Cl. 29-251.000.
Irie, Katsumasa. Hood. 3,676,879, Cl. 2-202.000.
Irsay, Robert D., to Du Pont de Nemours, E. I., and Company. Pharmaceutical method and compositions employing substituted chromanone oximes and chromanone oxime ethers. 3,678,170, Cl. 424-283.000.
Irvine, Alexander McHugh: *See—*
MacPherson, Ian Alexander; Inman, Eric Richard; Stirling, John Andrew; and Irvine, Alexander McHugh, 3,677,782.
Isard, Arsene; and Weiss, Francis, to Ugine Kuhlmann. Tetrasubstituted carboxylic diacids and process for their preparation. 3,678,102, Cl. 260-514.00r.
Ishida, Tomio: *See—*
Sato, Kunio; Sugihara, Kanji; Wakabayashi, Takashi; and Ishida, Tomio, 3,676,925.
Ishido, Teruhisa: *See—*
Kai, Tsunetoshi; Hagihara, Takeaki; and Ishido, Teruhisa, 3,677,920.
Ishigaki, Eiichi, to Ishigaki Kiko Co., Ltd. Horizontally travelling-type vacuum filter. 3,677,411, Cl. 210-393.000.
Ishigaki Kiko Co., Ltd.: *See—*
Ishigaki, Eiichi, 3,677,411.
Ishii, Keiichiro; Ueyama, Michio; Miyazaki, Koshin; and Noto, Tetsuo, to Nippon Soda Co., Ltd. Antifouling paint. 3,677,777, Cl. 106-15.0af.
Ishii, Masao: *See—*
Susuki, Rinnosuke; Hoshi, Hiroshi; Araki, Shinichi; and Ishii, Masao, 3,677,459.
Ishiyama, Masahiko, to Asahi Glass Co., Ltd. Glass laser materials. 3,677,960, Cl. 252-301.40f.
Isogawa, Masataka; Minato, Shoichi; and Ando, Zenjiro, to Kanegafuchi Kogaku Kogyo Kabushiki Kaisha. Vinyl chloride resin blends. 3,678,132, Cl. 260-876.00r.
Isshiki, Tomiya: *See—*
Yonemitsu, Eiichi; Isshiki, Tomiya; Suzuki, Tsuyoshi; and Yashima, Yukio, 3,678,107.
Itek Corporation: *See—*
Aspden, Ronald, 3,676,960.
Johnston H. Ronald, 3,677,645.
Sanford, Lloyd Clifford, 3,677,150.
Vohl, Paul, 3,677,717.
Ito, Akihiko; Nakase, Yoshiaki; Kojima, Katsumi; Yoshida, Masaru; Iwai, Tadashi; Hayashi, Koichiro; and Okamura, Seizo, to Japan Atomic Energy Research Institute. Polymerization of tetraoxane, in the presence of acetal and a sulfur initiator. 3,677,922, Cl. 204-159.210.

Ito, Makoto: *See—*
Miura, Yotaro; and Ito, Makoto, 3,678,214.
Itoh, Kunio: *See—*
Wada, Tadashi; Itoh, Kunio; and Kuga, Naoyoshi, 3,677,981.
ITT Industries, Inc.: *See—*
Erdmann, Hans, 3,677,006.
Keller, Hans, 3,678,300.
Kupfmuller, Karl, 3,677,094.
Ostwald, Fritz; and Hertell, Siegfried, 3,677,220.
Iwai, Tadashi: *See—*
Ito, Akihiko; Nakase, Yoshiaki; Kojima, Katsumi; Yoshida, Masaru; Iwai, Tadashi; Hayashi, Koichiro; and Okamura, Seizo, 3,677,922.
Iwano, Haruhiko; and Shimamura, Isao, to Fuji Photo Film Co., Ltd. Hardening process for photographic light sensitive elements. 3,677,760, Cl. 96-50.0pt.
Iwasaki, Masahiro; Goto, Nobuyuki; Fujisaki, Hiroya; and Niwa, Kunihiko, to Tokyo Shibaura Electric Co., Ltd. Frequency modulation communication system. 3,678,390, Cl. 325-46.000.
Iwase, Hideo. Sewing machine for sewing patterns. 3,677,207, Cl. 112-118.000.
Iwashima, Hideo; and Fukao, Satoshi, to Brother Kogyo Kabushiki Kaisha. Keyboard switch assembly. 3,678,424, Cl. 335-206.000.
Iwatsu Electric Company, Ltd.: *See—*
Souri, Hiroshi, 3,678,322.
I.W.S. Nominee Company Limited: *See—*
Robinson, Brian; and Fillingham, Stephen Harvey, 3,677,693.
Jackson, Byron, Inc.: *See—*
Shirvany, John Anoush, 3,677,017.
Jackson, Dennis B., to Wiltshire Cutlery Company Proprietary Limited. Knife scabbard or holder. 3,676,961, Cl. 51-214.000.
Jacob, Francis J.: *See—*
Sterrett, Robert W.; and Jacob, Francis J., 3,677,874.
Jageler, Alfred H.: *See—*
Newton, George R.; and Jageler, Alfred H., 3,677,081.
Jahns, Frederick William, Jr., to General Electric Company, mesne. Industrial laminate surfaced on one side with a copper foil and on the other side with a white pigmented film of adherable polyvinyl fluoride. 3,677,882, Cl. 161-189.
James, Frank Anthony, to Ferranti, Limited. H.V. testing transformer winding arrangement. 3,678,429, Cl. 336-170.000.
Janson, Harry W., to Hoyt Manufacturing Corporation. Solvent reclaimer controls. 3,676,937, Cl. 34-46.000.
Janssen, Eduard Josef Philomena: *See—*
Notelteirs, Victor Rosallie; and Janssen, Eduard Josef Philomena, 3,678,319.
Japan Atomic Energy Research Institute: *See—*
Ito, Akihiko; Nakase, Yoshiaki; Kojima, Katsumi; Yoshida, Masaru; Iwai, Tadashi; Hayashi, Koichiro; and Okamura, Seizo, 3,677,922.
Jasny, Jan, to Polska Akademia Naul Instytut Chemii Fizycznej. Spectrophosphorimeter. 3,678,272, Cl. 250-71.00r.
Jason, Joseph B.: *See—*
Fogle, William A., Jr.; Jason, Joseph B.; and Head, Richard A., 3,677,173.
Jaster, Dale R.; and Nasby, James S., to GTE Automatic Electric Laboratories, Inc. Arrangement for testing breakdown of the insulation of a conductor utilizing an alternating current circuit to eliminate stray capacitance effects. 3,678,376, Cl. 324-54.000.
Jeff, William C.; Luyster, Thomas, Jr.; Lynch, James F., Jr.; and Moroli, Frank A., to Armitage, John L., and Co. Textured articles and process for preparing same. 3,677,794, Cl. 117-45.000.
Jefferson, Donald E.; and Vermillion, Ronald G., to United States of America, Navy. Digital data storage system. 3,678,468, Cl. 340-172.500.
Jeffreys, George A. Live latic acid bacteria cultures and process of producing same. 3,677,897, Cl. 195-55.000.
Jenkinson, Richard D., to Union Carbide Corporation. Ethylene/acrylic acid copolymer emulsions. 3,677,989, Cl. 260-29.60h.
Jerkeman, Per: *See—*
Forssblad, Lars-Henrik; and Jerkeman, Per, 3,677,886.
Jewel Manufacturing Company: *See—*
Flick, Kenneth E., 3,677,582.
Jewett, Walter L., to Allied Welder Corporation. Planishing machine. 3,677,053, Cl. 72-111.000.
Johannisson, Dag Olof Alfred, to AGA Aktiebolag. Humidification equipment for gases. 3,677,527, Cl. 261-76.000.
Johns-Manville Corporation: *See—*
Fowler, Richard Payson, 3,677,919.
Johnson & Johnson: *See—*
Zirnite, Richard N., 3,677,788.
Johnson, Cecil J.: *See—*
Leas, Lawrence E.; Leas, Robert L.; and Johnson, Cecil J., 3,677,204.
Johnson, Ernest B.: *See—*
Villers, Walter H.; and Johnson, Ernest B., 3,677,495.
Johnson, Everett A.; and Silverman, Daniel. Method and apparatus for authentication of information records. 3,677,465, Cl. 235-61.70r.
Johnson, Harold Hector; South, Derek Bye; and White, Charles Victor Burdett, to Rotasign Limited. Display unit with radiation sensitive control. 3,678,282, Cl. 250-219.0fr.
Johnson, Harold M.; and Page, Russel D., to Caterpillar Tractor Co. Hydraulic motor grader blade lift, centershift control. 3,677,350, Cl. 172-789.000.
Johnson, Marvin M.; and Tabler, Donald C., to Phillips Petroleum Company. Molybdenum-antimony catalysts for hydrocarbon treating. 3,677,933, Cl. 208-109.000.
Johnson, Mary Zane. Liquid fuel and air mixture charge forming device. 3,677,529, Cl. 261-129.
Johnson, Ralph E.: *See—*
Faw, Frederick L.; Johnson, Ralph E.; Warren, Constance A.; and Glenn, Dwight W., 3,678,233.
Johnson, Robert B., to Eastman Kodak Company. Film advancing device. 3,677,455, Cl. 226-49.000.
Johnson, Robert B.; and Kirn, Thomas G., to Eastman Kodak Company. Spindle assembly for web handling apparatus. 3,677,498, Cl. 242-207.000.
Johnson, Robert F.; and Lichodziejewski, Wieslaw, to Bell & Howell Company. Film sprocket hole sensing. 3,677,627, Cl. 352-109.000.
Johnson, Robert H.: *See—*
Ljungkull, Gunnar R.; and Johnson, Robert H., 3,678,458.
Johnson, Roy A.: *See—*
Benatar, Victor; and Johnson, Roy A., 3,677,389.
Johnson, William Randall: *See—*
Hartman, Warren Emery; and Johnson, William Randall, 3,677,038.
Johnston, Frederic A.: *See—*
Casebier, Ronald L.; Herrick, Franklin W.; Gray, Kenneth R.; and Johnston, Frederic A., 3,677,818.
Johnston H. Ronald, to Itek Corporation. Automatic stereoplotting apparatus having a low inertia servo system. 3,677,645, Cl. 356-2.000.
Johnston, Reed H., to Veeder Industries, Inc., mesne. Computing device. 3,678,253, Cl. 235-92.0fl.
Joliot, Adolphe: *See—*
Pointout, Rene; Rouvet, Jacques; and Joliot, Adolphe, 3,677,826.
Jones, Derrick A., to Minnesota Mining and Manufacturing Company. High reduction camera and locating apparatus. 3,677,161, Cl. 95-45.000.
Jones, John Ivor Parry, to United Kingdom of Great Britain and Northern Ireland, Minister of Technology in Her Britannic Majesty's Government of the. Shaft angle transducers. 3,678,485, Cl. 340-177.00r.
Jones, Rexford W.; and Thompson, William B., to Staley, A. E., Manufacturing Company. Photographically producing molecularly dispersed dye images. 3,677,759, Cl. 96-48.000.
Jones, Richard Clive, to Lucas, Joseph, (Industries) Limited. Battery terminal clamp. 3,678,449, Cl. 339-225.000.
Jordan, Paul V.; Palmieri, John A.; and Wade, William T., to International Business Machines Corporation. Read only memory and method of using same. 3,678,475, Cl. 340-173.0sp.
Jorgensen, Kirsten Borre: *See—*
Reulet, Philippe; Pfister, Alain; Tellier, Jacques; Blanc, Jean-Henry; Jorgensen, Kirsten Borre; and Bohlbro, Hans, 3,678,091.
Joseph, Joseph Peter; Dusza, John Paul; and Bernstein, Seymour, to American Cyanamid Company. Estrogen glucosaminides of 2-aminoglucose. 3,678,029, Cl. 260-210.500.
Joynes, John L., to United States of America, Navy. Self activated fluidic control for a submerged towed body. 3,677,278, Cl. 137-81.500.
Jubilee, Benjamin D., Jr.: *See—*
Sirota, Julius; Bentley, David J., Jr.; and Jubilee, Benjamin D., Jr., 3,677,985.
Juhasz, John E.: *See—*
Davis, Dennis J.; Sudnick, Dennis J.; Juhasz, John E.; and Kurichh, Sham, 3,677,609.
Jung, Reinhold: *See—*
Schippers, Heinz; Geil, Walter; Albrecht, Gerd; and Jung, Reinhold, 3,677,863.
Jvirblis, Gail D.: *See—*
Mammino, Joseph; and Jvirblis, Gail D., 3,677,750.
K-G Industries, Inc.: *See—*
Harris, Le Roy S., 3,677,683.
Kabushiki Kaisha Daini: *See—*
Morita, Katsuhiko, 3,676,994.
Kabushiki Kaisha Daini Seikosha: *See—*
Morita, Katsuhiko; and Yamamoto, Yoshio, 3,676,995.
Kabushiki Kaisha Ideal: *See—*
Yasuda, Hiroyuki; and Arai, Choji, 3,677,274.
Kabushiki Kaisha Ricoh: *See—*
Kadowaki, Tatsusuke, 3,677,624.
Ohta, Wasaburo; and Sakai, Katsuo, 3,677,751.
Kabushiki Kaisha Suwa Seikosha: *See—*
Fujimori, Yoshiaki, 3,676,996.
Fujimori, Yoshiaki, 3,676,997.
Yamamura, Katsumi; Harigaya, Hiroshi; Kasai, Kazutomo; and Asahina, Michio, 3,677,744.
Kabushikikaisha Yokogawa Denki Seisakusho: *See—*
Tamate, Tokutaro; Yagi, Eiichi; and Ikeda, Hisayuki, 3,677,925.
Kadono, Tetsuro: *See—*
Okumura, Tamotsu; and Kadono, Tetsuro, 3,677,410.
Kadowaki, Tatsusuke, to Kabushiki Kaisha Ricoh. Movie projector for use with a film cartridge or reel. 3,677,624, Cl. 352-73.000.
Kaempen, Charles E. Composite structure. 3,677,432, Cl. 220-3.000.
Kai, Tsunetoshi; Hagihara, Takeaki; and Ishido, Teruhisa, to Asaki Kasei Kogyo Kabushiki Kaisha. Photopolymerizable diisocyanate modified unsaturated polyester containing acrylic monomers. 3,677,920, Cl. 204-159.150.

Kail, John Alan Elliott, to Imperial Chemical Industries Limited. Antistatic thermoplastic polymer film. 3,677,811, Cl. 117-138.80e.

Kaiser, Kent: *See—*
Kitchens, Garry C.; Hochstetler, Alan R.; and Kaiser, Kent, 3,678,119.

Kaiser, Wolfgang: *See—*
Nitzsche, Siegfried; Kaiser, Wolfgang; Wohlfarth, Ernst; and Hittmair, Paul, 3,677,784.

Kaiser, Wolfgang; Nitzsche, Siegfried; Wohlfarth, Ernst; and Hittmair, Paul, to Wacker-Chemie G.m.b.H. Room temperature vulcanizable silicone rubber containing polyglycol derivative. 3,677,996, Cl. 260-46.50g.

Kaiser, Wolfgang; Nitzsche, Siegfried; Wohlfarth, Ernst; Strasser, Alois; and Hittmair, Paul, to Wacker-Chemie G.m.b.H. Bouncing putties. 3,677,997, Cl. 260-33.2sb.

Kaiser, Wolfgang; Nitzsche, Siegfried; Wohlfarth, Ernst; and Hittmair, Paul, to Wacker-Chemie G.m.b.H. Room temperature vulcanizable silicone elastomer stocks. 3,678,003, Cl. 260-46.50g.

Kajiwara, Tokuji. Mixer. 3,677,100, Cl. 74-660.000.

Kalb, John W., to Ohio Brass Company, The. Lightning arrester and gap unit therefor. 3,678,340, Cl. 317-61.000.

Kalfaian, Meguer V. Bandwidth compression system in phonetic sound spectrum. 3,678,201, Cl. 179-1.0sa.

Kalnin, I. L.; and Breckenridge, G. J., to Celanese Corporation. Moldable needle-like assemblies. 3,677,804, Cl. 117-100.00a.

Kalopissis, Gregoire; Bugaut, Andree; and Estradier, Francoise, to Societe anonyme dite: L'Oreal. Dyeing human hair with aqueous solution of indamines. 3,677,690, Cl. 8-10.000.

Kalopissis, Gregoire; Abegg, Jean-Louis; Ghilardi, Guiliana; and de Beaulieu, Henri Philippe, to Societe Anonyme dite: L'Oreal. Hair treatment compositions containing polycondensable compounds. 3,678,157, Cl. 424-71.000.

Kamata, Masamoto: *See—*
Arimura, Tohru; Kamata, Masamoto; Saito, Morio; Suzuki, Hiromu; and Iguchi, Masakazu, 3,677,045.

Kamenir, Melvin; and Burridge, Robert E., to Litton Business Systems, Inc. Handheld transducer operational state and directional indicator. 3,678,218, Cl. 179-100.20c.

Kanamaru, Kenichi: *See—*
Hatagi, Hiroyuki; Kanamaru, Kenichi; and Funasaki, Yasuo, 3,678,226.

Kanegafuchi Boseki Kabushiki Kaisha: *See—*
Oohara, Saburo; Amemiya, Koitsuro; Nishijima, Yasushi; Fukushima, Mitsuyoshi; and Shimizu, Kunio, 3,677,871.
Sugimoto, Yoshitaka; Sannomiya, Isao; and Noumi, Kazunobu, 3,677,694.

Kanegafuchi Kogaku Kogyo Kabushiki Kaisha: *See—*
Isogawa, Masataka; Minato, Shoichi; and Ando, Zenjiro, 3,678,132.

Kaneko, Hisashi, to Bell Telephone Laboratories, Incorporated. Segment analog-to-digital or digital-to-analog converter. 3,678,504, Cl. 340-347.0da.

Kangas, Juhani: *See—*
Bryk, Petri; Haani, Martti; Honkasalo, Jorma B.; Kinnunen, Jorma; Lindsjo, Olle; Nyholm, Erik; Poijarvi, Jaakko; Rastas, Jussi; and Kangas, Juhani, 3,677,696.

Kao Soap Co., Ltd.: *See—*
Majima, Kanji; and Morita, Goro, 3,677,934.
Nakajima, Meiken; and Nakagawa, Yunosuke, 3,677,954.

Kaplan, Sam H., to Zenith Radio Corporation. Screening a black-surround color cathode-ray tube. 3,677,758, Cl. 96-36.100.

Kaptur, Robert E.: *See—*
Cork, Gordon H.; Tenniswood, David M.; and Kaptur, Robert E., 3,677,099.

Kasai, Kazutomo: *See—*
Yamamura, Katsumi; Harigaya, Hiroshi; Kasai, Kazutomo; and Asahina, Michio, 3,677,744.

Kasano, Hiroyuki; and Kawamura, Masao, to Hitachi, Ltd. Solid state electronic device utilizing difference in effective mass. 3,678,302, Cl. 307-299.000.

Katagiri, Yoshiharu: *See—*
Yoshida, Susumu; Ohgoshi, Akio; Miyaoka, Senri; and Katagiri, Yoshiharu, 3,678,318.

Kathawala, Faizulla G., to Sandoz-Wander, Inc. Treatment of inflammation with 1,2,3-benzotriozin-4 (3H)-ones. 3,678,166, Cl. 424-246.000.

Katsman, Berta Osipovna: *See—*
Maximovich, Boleslav Ivanovich; Dudko, Daniil Andreevich; Agafonov, Nikolai Georgievich; Maximov, Igor Petrovich; Andreev, Vadim Grigorievich; Lepilov, Nikolai Yakovlevich; Svinov, Alexei Kapitonovich; Slonimsky, Alexandr Borisovich; Volk, Boris Zakharovich; Gubin, Alexandr Ivanovich; and Katsman, Berta Osipovna, 3,677,330.

Katz, Ira: *See—*
Mussinan, Cynthia; Giacino, Christopher; and Katz, Ira, 3,677,772.

Kaufman, Harold A.: *See—*
Strong, Jerry G.; and Kaufman, Harold A., 3,678,070.

Kaufman, M. Gene: *See—*
Van Auken, John; Kaufman, M. Gene; and Pfaff, William A., 3,677,637.

Kaufman, Mahlon Gene: *See—*
Van Auken, John A.; Kaufman, Mahlon Gene; and Blank, Fritz, 3,677,635.

Kawai, Masanobu, to Kyowa Hakko Kogyo Kabushiki Kaisha. Process for producing cellulase. 3,677,899, Cl. 195-66.00r.

Kawalec, Michael T.: *See—*
Freeman, Richard B.; Kawalec, Michael T.; Maholick, Andrew W.; and Stager, Stanley R., III, 3,678,469.

Kawamoto, Tamio: *See—*
Takagi, Takeshi; Kawamoto, Tamio; and Miyazaki, Toshio, 3,677,381.

Kawamura, Masao: *See—*
Kasano, Hiroyuki; and Kawamura, Masao, 3,678,302.

Kawashima, Nobuki, to University of Tokyo, President. Diaphragmless radioactive radiation counter. 3,678,274, Cl. 250-83.60r.

Kayser, Emil J. Method of making pile weatherstripping. 3,677,851, Cl. 156-73.000.

Keay, Robert E.: *See—*
Castrantas, Harry M.; Keay, Robert E.; and MacKellar, Donald G., 3,677,955.

Keith, Carl D.; Haley, Alfred J., Jr.; and Kero, Robert M., to Engelhard Minerals & Chemicals Corporation. Method of making an electrolytic anode. 3,677,815, Cl. 117-215.000.

Keith, Frederick Walter, Jr., to Pennwalt Corporation. Liquid and sludge treatment. 3,677,405, Cl. 210-71.000.

Keller, Hans, to ITT Industries, Inc. Monolithic integrable flip flop circuit. 3,678,300, Cl. 307-288.000.

Keller, Joseph H., Jr.; and Sterner, Russell L., to Grove Manufacturing Company. Mounting assembly for installation of hydraulic jacks on outrigger. 3,677,417, Cl. 212-145.000.

Kellert, Paul H. Modular building construction and method. 3,676,973, Cl. 52-262.000.

Kelly, Wayne M.: *See—*
Hunton, James Keith; Kelly, Wayne M.; and Takeuchi, James S., 3,678,395.

Kelso Marine, Inc.: *See—*
Thatcher, Russell S., 3,677,009.

Kemmerling, Robert A.: *See—*
Reim, Thomas E.; Pollack, Jerry J.; and Kemmerling, Robert A., 3,678,268.

Kemp, Jacob D., to Chevron Research Company. Process for the esterification of isobutene. 3,678,099, Cl. 260-497.00r.

Kendall, Giles Arthur; and Minick, Robert, to Menasco Manufacturing Company. Tactical cargo hook. 3,677,507, Cl. 244-137.000.

Kendall, Jerry A.: *See—*
Berg, Quentin; and Kendall, Jerry A., 3,677,116.

Kendall, Jerry A., to Elfab Corporation. Method for manufacturing connector terminals. 3,676,926, Cl. 29-625.000.

Keniston, John W. Pincers. 3,677,112, Cl. 81-43.000.

Kennecott Copper Corporation: *See—*
Wang, Chih-Chung, 3,677,906.

Kentucky Fried Chicken Corporation, mesne: *See—*
Pelster, Arthur F.; and Modglin, Donald D., 3,677,174.

Kenwell, Edward Albert. Book support for the physically infirm. 3,677,510, Cl. 248-441.000.

Kero, Robert M.: *See—*
Keith, Carl D.; Haley, Alfred J., Jr.; and Kero, Robert M., 3,677,815.

Kershner, Carl J.: *See—*
Lonadier, Frank D.; and Kershner, Carl J., 3,677,958.

Kery, Ervin, to Enger Kress Company. Ladies. 3,677,317, Cl. 150-28.00r.

Keyes Fibre Company: *See—*
Chadbourne, Gilbert R., 3,677,201.

Kian, Leonard. Safety clasp construction. 3,676,903, Cl. 24-265.000.

Kidd, Thomas L., Jr.; and McClain, Albert D., Jr., to General Electric Company. Non-flammable, thin, integrally illuminated control panel overlay. 3,676,943, Cl. 40-130.00m.

Kidde, Walter, & Company, Inc.: *See—*
Young, Herbert, 3,677,202.

Kienzler, Eberhard, to Siemens Aktiengesellschaft. Method for the digital conversion of an analog value with the extended counting process. 3,678,502, Cl. 340-347.0nt.

Kihara, Nobutoshi, to Sony Corporation. Counter for a tape record/playback mechanism. 3,678,215, Cl. 179-100.20e.

Kihara, Nobutoshi, to Sony Corporation. Withdrawing a magnetic recording tape from a cassette and engaging a loop formed in the tape with the guide drum of a magnetic recording and/or reproducing apparatus. 3,678,217, Cl. 179-100.20t.

Kilduff, Timothy J., to United States of America, Army. Multi-purpose conductive adhesive. 3,677,974, Cl. 252-514.000.

Kimberly-Clark Corporation: *See—*
Green, Angelica G., 3,677,266.
Knauf, Nicholas T., 3,677,861.
Sager, Karl E., 3,677,854.
Sokolowski, Robert C., 3,677,858.

Kimmel, Albert L., to Butler Manufacturing Company. Texture coating composition of polyvinyl acetate emulsion, asbestos and Portland cement. 3,677,988, Cl. 260-29.60s.

Kimura, Yoshito: *See—*
Taniguchi, Kaname; Furukawa, Fujio; Hisatome, Tomiro; and Kimura, Yoshito, 3,677,660.

King, Charles W., to General Mills, Inc. Multi-textured and patterned doughs. 3,677,769, Cl. 99-86.000.

King, Colin F., to Dunlop Holdings Limited. Pressure reducing devices. 3,677,300, Cl. 138-42.000.

King, James A.; and Maxam, David R., to Stauffer Chemical Company. Filter aid slurry metering process. 3,677,406, Cl. 210-75.000.

King, James L.; and Arrington, Lee O., to Eastman Kodak Company. Photographic printing apparatus. 3,677,641, Cl. 355-83.000.

King, James Robert; and Myers, Gerald D., to King Nutronics Corporation. Parachute actuator testing apparatus. 3,677,062, Cl. 73-4.00r.

King Nutronics Corporation: *See—*
King, James Robert; and Myers, Gerald D., 3,677,062.

King, William H., Jr.; and Dietz, Walter A., to Esso Research and Engineering Company. Method for preconditioning piezoelectric sorption detectors. 3,677,066, Cl. 73-23.000.

Kinney, John D.: *See—*
Osher, John E.; Kinney, John D.; and Steinhaus, James F., 3,678,323.

Kinnicutt, Roger, Jr. Self-tailing portable capstan. 3,677,521, Cl. 254-183.000.

Kinnunen, Jorma: *See—*
Bryk, Petri; Haani, Martti; Honkasalo, Jorma B.; Kinnunen, Jorma; Lindsjo, Olle; Nyholm, Erik; Poijarvi, Jaakko; Rastas, Jussi; and Kangas, Juhani, 3,677,696.

Kintner, Paul M., to Cutler-Hammer, Inc. Storage courier boundary control system. 3,677,421, Cl. 214-16.40a.

Kirkpatrick, Milton E., to TRW Inc. Annular heat pipe. 3,677,329, Cl. 165-105.000.

Kirkpatrick, Truman; and Nilles, James Jacob, to Sherwin-Williams Company, The. Calcined molybdated zinc oxide pigments and method of preparation thereof. 3,677,783, Cl. 106-292.000.

Kirn, Thomas G.: *See—*
Johnson, Robert B.; and Kirn, Thomas G., 3,677,498.

Kirsch, Donald L.: *See—*
Wright, Peter C.; and Kirsch, Donald L., 3,677,365.

Kirschey, Gerhard. Coupling operating by centrifugal force. 3,677,380, Cl. 192-105.0ba.

Kissell, Kenneth E.: *See—*
Macknik, Louis S.; and Kissell, Kenneth E., 3,678,279.

Kitaigorodskaya, Evgenya Antonova: *See—*
Kitaigorodsky, Isaak Iljich, 3,677,728.

Kitaigorodsky, Isaak Iljich; deceased (by Kitaigorodskaya, Evgenya Antonova; administrator). Method of manufacturing crystalline-glass articles. 3,677,728, Cl. 65-19.000.

Kitanosono, Tatsushi; Mashimo, Yukio; and Takishima, Yoshiyuki, to Canon Kabushiki Kaisha. DC motor control apparatus. 3,678,354, Cl. 318-294.000.

Kitchens, Garry C.; Hochstetler, Alan R.; and Kaiser, Kent, to Givaudan Corporation. Acid isomerization of chamigrenes. 3,678,119, Cl. 260-666.0py.

Kiyomitsu, Eto: *See—*
Nishi, Seiya; Oshio, Akira; and Kiyomitsu, Eto, 3,677,780.

Kizielewski, Edward T.: *See—*
O'Neal, Donald V.; and Kizielewski, Edward T., 3,677,630.

Klanderman, Bruce H.; and Faber, Jan W. H., to Eastman Kodak Company. 9,10-Bridged anthracene compounds. 3,678,072, Cl. 260-326.50b.

Klanke, Charles E. Adjustable pipe coupling. 3,677,580, Cl. 285-184.000.

Klapprott, David K.; and Paradis, Daniel L., to Dexter Corporation, The. Adhesive compositions containing epoxy resin, carboxy containing copolymer and 1,5-dihydrozynaphthalene. 3,678,130, Cl. 260-837.000.

Klapprott, David K.; and Paradis, Daniel L., to Dexter Corporation, The. Adhesive compositions containing epoxy resin, carboxyl containing copolymer and 2,2- bis-(4-hydroxyphenyl) sulfone. 3,678,131, Cl. 260-837.00r.

Klas, Gunther: *See—*
Gottweis, Gert; Herrlich, Michael; Klas, Gunther; Schober, Joachim; Thiede, Peter; and Zachaus, Eberhard, 3,676,978.

Klausing, Melvin H., to Combustion Engineering, Inc. Setting gage for multiple head tool holder. 3,676,935, Cl. 33-185.00r.

Klein, Robert I., to Coulter Electronics, Inc. Malfunction detection circuit and method. 3,678,382, Cl. 324-140.00r.

Klein, Stanley R. Disposable litter package having a scraping blade. 3,676,887, Cl. 15-104.800.

Klement, Gunter, to Henkel & Cie G.m.b.H. Process for the coating of filament bodies with an adhesive for metal and rubber. 3,677,809, Cl. 117-119.600.

Kletecka, George; and Smith, Peter D., to Goodrich, B. F., Company, The. Alkylhydroxyphenylcarboalkoxy-substituted isocyanurates. 3,678,047, Cl. 260-248.0ns.

Klingler, George A. Apparatus for accumulating and displaying fine particles in a gas. 3,677,650, Cl. 356-103.000.

Klopfer, Oskar E. H., to Ethyl Corporation. Nuclearly alkylated aniline recovery process. 3,678,113, Cl. 260-578.000.

KMS Industries, Inc.: *See—*
Burzan, Vernon J., 3,677,639.
Hall, William D.; and Shaefer, Lewis H., 3,677,223.
Hall, William D.; and Burzan, Vernon J., 3,677,623.
Lee, Charles K.; and Burzan, Vernon J., 3,677,154.

Knauf, Nicholas T., to Kimberly-Clark Corporation. Apparatus for pleating and ultrasonically sealing sanitary napkin tab ends. 3,677,861, Cl. 156-380.000.

Kneeland, David. Coupling. 3,677,033, Cl. 64-28.00r.

Knight, Bruce L.: *See—*
Hayes, John B.; and Knight, Bruce L., 3,677,344.

Knoll International, Inc.: *See—*
Morrison, Andrew Ivar; and Hannah, Bruce R., 3,677,601.

Knopf, Robert J.: *See—*
Brotherton, Thomas K.; Lynn, John W.; and Knopf, Robert J., 3,677,983.

Knowles, Frederick G.; and Taylor, Clarence R., to Eastman Kodak Company. Apparatus for storing strip material. 3,677,487, Cl. 242-71.200.

Knowles, Richard N., to Du Pont de Nemours, E. I., and Company. Process for strong, durable press fabrics. 3,677,802, Cl. 117-56.000.

Knowles, Richard N., to Du Pont de Nemours, E. I., and Company. Certain cyclohexylformamidines. 3,678,109, Cl. 260-564.00r.

Knowles, Richard N., to Du Pont de Nemours, E. I., and Company. Irritant composition comprising certain cyclohexylcarbamates. 3,678,171, Cl. 424-300.000.

Kobayashi, Hidehiko: *See—*
Fukuma, Noboru; Kobayashi, Hidehiko; Matsui, Kenichi; Sakashita, Masahira; and Henmi, Hiroshi, 3,677,880.

Koch, Charles Peter, to Monarch Western Equipment Ltd. Surface automobile conveyor. 3,677,190, Cl. 104-172.

Koch, Kenneth F.: *See—*
Peters, Robert L.; and Koch, Kenneth F., 3,678,191.

Koch, Louis, to Kohnstamm, H., & Co., Inc. Non-toxic dyes in polyglycerol fatty acid ester and glycol or glycerine and its mixture therein. 3,677,691, Cl. 8-41.

Kocher, Robert C.; Moore, Franklin K.; Samelson, Harold; and Watson, William R., to GTE Laboratories Incorporated. Transverse flow laser cell. 3,678,410, Cl. 331-94.500.

Koehler, Rudolph. Electrical lamp socket. 3,678,443, Cl. 339-119.00l.

Koehring Company: *See—*
Brown, Gaylord W., 3,677,675.

Koerner, Gotz; and Rossmy, Gerd, to Th. Goldschmidt A.G. Process for breaking petroleum emulsions. 3,677,962, Cl. 252-345.000.

Koerner, Roger J.: *See—*
Childers, Thomas W.; Burkhardt, Joseph A.; and Koerner, Roger J., 3,677,001.

Kohner Bros., Inc.: *See—*
Hicks, Alan A., 3,677,547.

Kohnstamm, H., & Co., Inc.: *See—*
Koch, Louis, 3,677,691.

Kojima, Katsumi: *See—*
Ito, Akihiko; Nakase, Yoshiaki; Kojima, Katsumi; Yoshida, Masaru; Iwai, Tadashi; Hayashi, Koichiro; and Okamura, Seizo, 3,677,922.

Kokx, Darrel D., to Procter & Gamble Company, The. Arcuately shaped sanitary napkin and method of formation. 3,677,249, Cl. 128-290.000.

Kolar, Charles Wesley, Jr., to Ralston Purina Company. Process for the manufacture of caramels. 3,677,771, Cl. 99-134.00r.

Kolatorowicz, Edwin E., to General Electric Company. Brushless DC adjustable speed drive with static regenerative DC motor control. 3,678,358, Cl. 318-254.000.

Kolb, Dieter, to Lestra AG. Pressure measuring device. 3,677,090, Cl. 73-420.000.

Kolb, Karl Heinz: *See—*
Laurent, Henry; Kolb, Karl Heinz; and Wiechert, Rudolf, 3,678,034.

Kolb, Robert Herrick: *See—*
Lilley, G. C.; and Kolb, Robert Herrick, 3,678,257.

Koleszar, Frank: *See—*
Sisk, George William, Jr.; Miller, Arthur William; and Koleszar, Frank, 3,677,166.

Komori, Shigehiro; and Hattori, Hiroyuki, to Canon Kabushiki Kaisha. Device for automatically regulating the concentration of developing solution. 3,677,222, Cl. 118-7.

Konishiroku Photo Industry Co., Ltd.: *See—*
Okumura, Minoru, 3,678,188.

Konkel, Joseph: *See—*
Foley, John J.; Satas, Wallace J.; and Konkel, Joseph, 3,677,176.

Kooi, Else: *See—*
Tulp, Theodorus Joannes; Appels, Johannes Arnoldus; and Kooi, Else, 3,678,347.

Kooi, Else, to U.S. Philips Corporation, mesne. Semiconductor device comprising an insulated gate field effect transistor and method of manufacturing the same. 3,676,921, Cl. 29-571.000.

Koomey, Paul C., to Stewart, C. Jim, & Stevenson, Inc. Safety apparatus for drilling rig. 3,677,520, Cl. 254-173.000.

Koono, Takehiko: *See—*
Naka, Jinshichi; Tokuda, Yasunori; Koono, Takehiko; and Utsugi, Jun, 3,677,773.

Kopanda, Joseph E.: *See—*
Nickelsen, Hubert O.; Kopanda, Joseph E.; and Piasecki, Felix J., 3,677,781.

Kopera, Anthony, to Bowles Fluidics Corporation. Interruptible jet sensor. 3,677,276, Cl. 137-14.000.

Koppers Company, Inc.: *See—*
Carlson, John David, 3,677,878.

Korenicki, William John: *See—*
Masson, Narinder; Korenicki, William John; and Lechner, Walter Ludwig, 3,677,084.

Korn, Joseph: *See—*
Schurig, Robert E.; and Korn, Joseph, 3,677,525.

Korner, Peter: *See—*
Stolzenwald, Ralf J.; and Korner, Peter, 3,677,625.

Korsnas-Marma Aktiebolag: *See—*
Forsblad, Lars-Henrik; and Jerkeman, Per, 3,677,886.

Kostylev, Alexandr Dmitrievich; Gurkov, Konstantin Stepanovich; Tkach, Khai Berkovich; and Chepurnoi, Nikolai Prokhorovich. Device for stabilizing the course of the tunnelling element. 3,677,354, Cl. 175-76.000.

Kot, Vladimir Ivanovich: *See—*
Scherban, Alexandr Nazarievich; Furman, Neonil Izrailevich; Sotnichenko, Boris Feodosievich; Belogolovin, Nikolai Stefanovich; Chopovsky, Jury Ivanovich; Sutormin, Jury Nikolaevich; Zaitsev, Valentin Ivanovich; Kot, Vladimir Ivanovich; Mikhailjuk, Nikolai Tarasovich; Denisenko, Sergei Andreevich; Chaschinov, Anatoly Vasilievich; Shaporev, Stepan Vasilievich; and Samoilenko, Svetlana Mikhailovna, 3,678,489.

Kothmann, Gilbert C. Safety trailer hitch. 3,677,564, Cl. 280-457.

Koutz, Stanley L., to Gulf Oil Corporation. Energy storage system and method. 3,677,008, Cl. 60-59.00t.

Kraft, Joseph K.: *See—*
Boltrek, Henry; and Kraft, Joseph K., 3,677,388.

Krapcho, John, to Squibb, E. R., & Sons, Inc. Benzamide derivatives. 3,678,052, Cl. 260-268.00r.

Krauer, Werner; and Martinelli, Alfred, to Polymetron Ltd. Apparatus for changing tubes in peristaltic pumps. 3,677,577, Cl. 285-137.000.

Krause, Erich, to Universal Maschinenfabrik Dr. Rudolf Schieber KG. Flat knitting machine with automatic transfer device. 3,677,037, Cl. 66-147.000.

Kremp, Rudolf; and Winkler, Alfred, to Agfa-Gevaert Aktiengesellschaft. Photographic apparatus for making exposures in accordance with the carrier frequency method. 3,677,147, Cl. 95-1.00r.

Kresse, Franklin T.: *See—*
Cohrs, Arthur H.; and Kresse, Franklin T., 3,676,941.

Krost, Eleanor Burditt: *See—*
Withem, Donald D., 3,677,255.

Kroy, Walter: *See—*
Erben, Klaus Dieter; Kroy, Walter; and Mehnert, Walter Erich, 3,678,380.

Krueger, Harvey R.: *See—*
Nitschneider, Robert M.; Neumann, Charles G.; and Krueger, Harvey R., 3,677,461.

Kuga, Naoyoshi: *See—*
Wada, Tadashi; Itoh, Kunio; and Kuga, Naoyoshi, 3,677,981.

Kuhn, Max: *See—*
Walthard, Beat; Scheidweiler, Andreas; and Kuhn, Max, 3,678,510.

Kuhn, Peter: *See—*
Bol, Jan; Buttner, Hildegard; and Kuhn, Peter, 3,677,966.

Kumashiro, Izumi: *See—*
Yamazaki, Akihiro; Furukawa, Teruo; and Kumashiro, Izumi, 3,678,030.

Kupfmuller, Karl, to ITT Industries, Inc. Method of producing a voltage equal to the speed of road vehicles. 3,677,094, Cl. 73-503.000.

Kurasawa, Kazuo: *See—*
Akuta, Tomohiko; Honsyo, Yoshi; Hashirizaki, Sinya; Hiruma, Teruo; and Kurasawa, Kazuo, 3,678,192.

Kurebayashi, Tokuhiro: *See—*
Oishi, Kazuo; Kurebayashi, Tokuhiro; Ando, Noriyoshi; Yamamoto, Noboru; and Yoshida, Hiroshi, 3,677,253.

Kurichh, Sham: *See—*
Davis, Dennis J.; Sudnick, Dennis J.; Juhasz, John E.; and Kurichh, Sham, 3,677,609.

Kurimuto, Masashi; Sugimoto, Kaname; and Hirao, Mamoru, to Hayashibara Company. Process for preparing crystalline maltose. 3,677,896, Cl. 195-31.00r.

Kurita Water Industries Ltd.: *See—*
Fujimoto, Hiroshi; and Fukuda, Mitsugu, 3,677,940.

Kuroda, Takaji, to Nippon Electric Company, Limited. Multiple port hybrid circuit. 3,678,415, Cl. 333-9.000.

Kurokawa, Hiromichi, to Sony Corporation. Index signal generating apparatus for single tube camera. 3,678,184, Cl. 178-5.4st.

Kvaerner Brug: *See—*
Bognaes, Ragnar; and Solberg, Olav, 3,677,021.

Kwake, John P., to Kydar Company, The. Inflatable enclosure for swimming pools and the like. 3,676,880, Cl. 4-172.120.

Kydar Company, The: *See—*
Kwake, John P., 3,676,880.

Kyowa Hakko Kogyo Kabushiki Kaisha: *See—*
Kawai, Masanobu, 3,677,899.

Kyser, Leslie T., to Singer Company, The, mesne. Asynchronous logic for determining number of leading zeros in a digital word. 3,678,259, Cl. 235-156.000.

La Barge, Robert L., to Aluminum Company of America. Nipple assembly and package. 3,677,429, Cl. 215-11.00c.

La Corre, Yvette Marie Laurence: *See—*
Dupieux, Jacques Georges; Gadre, Jean-Claude; Le Corre, Jean-Pierre; and Loisel, Jean Francois Pierre Julien, 3,678,206.

La Croce, John Matthew. Milking assistance device. 3,677,232, Cl. 119-146.000.

La Roe, Emmett T., to McDonnell Douglas Corporation. Store rack hook assembly. 3,677,506, Cl. 244-137.000.

La Salle Machine Tool, Inc.: *See—*
Lamb, Donald P., 3,677,383.
Skrentner, James A., 3,677,115.

La Telemecanique Electrique: *See—*
Santerre, Fernand; and Libaud, Francis, 3,676,990.

La Vanchy, Wayne N. Connections for conditioned air ducts. 3,677,579, Cl. 285-169.000.

Laakso, Thomas M.: *See—*
Ford, John A., Jr.; McConkey, Robert C.; and Laakso, Thomas M., 3,677,754.

Labatt, John, Limited: *See—*
Gosling, Dickinson, 3,677,458.

LaBaw, Kenneth B., to United States of America, Navy. Radiation sensitive optical tracker. 3,678,283, Cl. 250-216.000.

Laboratorios del Dr. Esteve, S.A.: *See—*
Esteve, Antonio; and Espinos, Jose M., 3,678,040.

Laboratorios Espinos y Bofill S.A.: *See—*
Esteve, Antonio; and Espinos, Jose M., 3,678,040.

Ladney, Michael, Jr.: *See—*
Best, William J., 3,677,792.

Lagerqvist, Roger; and Stenlund, Stig, to Monsun-Tison AB. Device in fluid-containing cylinders having a fluid-operated piston. 3,677,141, Cl. 91-394.000.

Lakner, Endre: *See—*
Dobo, Janos; Somogyi, Agnes; and Lakner, Endre, 3,677,967.

Lakshmi, Venkatachala: *See—*
Haugwitz, Rudiger D.; and Lakshmi, Venkatachala, 3,678,066.

Lamb, Donald P., to La Salle Machine Tool, Inc. Part meter. 3,677,383, Cl. 193-35.00a.

Lampi, Rauno A.; Hu, Kwoh H.; and Osborne, Richard F., to United States of America, Army. Infrared radiometric detection of seal defects. 3,678,276, Cl. 250-83.30h.

Landenberger, Helmut: *See—*
Wiederhut, Wolfgang; Landenberger, Helmut; and Hofmann, Ulrich, 3,677,035.

Landrum, Bobby L., to Northrop Corporation. Multi-beam electron beam scanner utilizing a modulation plate for modulating each of the beams independently. 3,678,330, Cl. 315-13.00r.

Landrum, Ralph A., Jr.: *See—*
Farr, John B.; and Landrum, Ralph A., Jr., 3,678,454.

Lang, Robert A.: *See—*
Pickett, Charles G.; Lang, Robert A.; and Comers, Robert C., 3,677,866.

Lang, Robert A., to Bio-Medical Sciences, Inc. Disposable type thermometer. 3,677,088, Cl. 73-356.000.

Lapointe, Lloyd J.; and Voegelin, Howard J., to Veeder Industries Inc. Counter mechanism. 3,677,468, Cl. 235-144.0pn.

Laprade, Bernard: *See—*
Gele, Pierre; and Laprade, Bernard, 3,677,241.

Laprade, Bernard assor. to: *See—*
Gele, Pierre; and Laprade, Bernard, 3,677,241.

Larmurier, Claude Fernand Emile, to Compagnie des Compteurs. Fluidic-pneumatic devices with forces balancing. 3,677,078, Cl. 73-141.00r.

Larson, Harold A.: *See—*
Anzelone, Thomas A., Jr.; Larson, Harold A.; and Stricker, Alfred A., 3,677,853.

Larson, Howard M. Foldable crawler. 3,677,569, Cl. 280-32.600.

Last, Anthony Graham Marshall, to Imperial Chemical Industries Limited. Foamed polyolefin films. 3,677,980, Cl. 260-2.5ha.

Lauerer, Albert: *See—*
Bergmeyer, Hans Ulrich; Naher, Gotthilf; Thum, Waldemar; Lauerer, Albert; and Emmer, Rudolf, 3,677,901.

Laurent, Henry; Kolb, Karl Heinz; and Wiechert, Rudolf, to Schering Aktiengesellschaft. 2-Chloro-$\Gamma^{1,4}$-steroids. 3,678,034, Cl. 260-239.550.

Lawless, William N., to Corning Glass Works. Technique for flux growth of barium titanate single crystals. 3,677,718, Cl. 23-301.00r.

Lawrence, John S., to Browning Arms Company. Ski-binding heel mechanism. 3,677,566, Cl. 280-11.35t.

Lawrenson, Thomas, to British Insulated Callender's Cables Limited. Telecommunication cables. 3,678,177, Cl. 174-113.00c.

Laws, Peter. Change-over valves. 3,677,291, Cl. 137-554.000.

Le Blanc, John R.: *See—*
Huck, Rodney M.; and Le Blanc, John R., 3,678,008.

Le Coq, Daniel France, to North American Philips Company, Inc. Camera tube targets. 3,677,833, Cl. 148-33.200.

Le Corre, Jean-Pierre: *See—*
Dupieux, Jacques Georges; Gadre, Jean-Claude; Le Corre, Jean-Pierre; and Loisel, Jean Francois Pierre Julien, 3,678,206.

Le Creurer, Maurice: *See—*
Regneault, Marcel; and Le Creurer, Maurice, 3,677,256.

Le Guen, Henri: *See—*
Bauger, Louis Jules; Beyler, Roland Robert Charles; Le Guen, Henri; Pidebois, Jacques Eloi; and Schenher, Michel Bernard, 3,677,013.

Le Page, Madeleine A.; and De Vries, Albert J., to Produits Chimiques Pechiney-Saint-Gobain. Chromatographic separation with porous silica. 3,677,938, Cl. 210-31.000.

Le Van, James O.: *See—*
Bergey, John M.; Le Van, James O.; Walton, Richard S.; and Brethauer, Louis G., 3,676,993.

Le Van, Wayne P. Apparatus for cooking strips of meat. 3,677,171, Cl. 99-339.000.

Lear Siegler, Inc.: *See—*
Anthony, Russell W.; and Motz, Carl H., 3,677,052.

Leas Brothers Development Corporation: *See—*
Leas, Lawrence E.; Leas, Robert L.; and Johnson, Cecil J., 3,677,204.

Leas, Lawrence E.; Leas, Robert L.; and Johnson, Cecil J., to Leas Brothers Development Corporation. High temperature heat generator. 3,677,204, Cl. 110-1.000.

Leas, Robert L.: *See—*
Leas, Lawrence E.; Leas, Robert L.; and Johnson, Cecil J., 3,677,204.

Lechleider, Joseph William: *See—*
Arvay, Frank Joseph; Frieber, George; Lechleider, Joseph William; and Sutton, Robert Anderson, 3,678,379.

Lechner, Walter Ludwig: *See—*
Masson, Narinder; Korenicki, William John; and Lechner, Walter Ludwig, 3,677,084.

Ledgett, Lowell Ashton, to Colgate-Palmolive Company. Porous ring feed head. 3,677,714, Cl. 23-285.000.

Lee, Charles K.; and Burzan, Vernon J., to KMS Industries, Inc. Card and holder for fingerprint identification system. 3,677,154, Cl. 95-1.100.

Lee, Kenneth M.: *See—*
Campbell, James K.; and Lee, Kenneth M., 3,677,810.

Leesona Limited: *See—*
Mc Kenzie, John, 3,677,482.

Lehigh University: *See—*
Merkel, Joseph R., 3,677,900.

Lehnert, Gunter: *See—*
Bungardt, Karl; Lehnert, Gunter; and Meinhardt, Helmut W., 3,677,789.

Leimgruber, Willy; and Weigele, Manfred, to Hoffmann-La Roche Inc. Derivatives of 1,6-phenazinediol 5,10-dioxide. 3,678,051, Cl. 260-267.000.

Leitz, Ernst, G.m.b.H.: *See—*
Bechmann, Gerhart, 3,677,155.
Werner, Nickel; and Nikolaos, Christopoulos, 3,677,151.

Lenfant, Henri. Automatic gas-trap. 3,677,279, Cl. 137-197.000.

Lennox, Thomas H., to Arc-O-Vec, Inc. Heater element. 3,678,249, Cl. 219-544.000.

Leonard, James L. Cathode ray tube having standby cathode assembly on rotatable support. 3,678,324, Cl. 313-236.000.

Lepilov, Nikolai Yakovlevich: *See—*
Maximovich, Boleslav Ivanovich; Dudko, Daniil Andreevich; Agafonov, Nikolai Georgievich; Maximov, Igor Petrovich; Andreev, Vadim Grigorievich; Lepilov, Nikolai Yakovlevich; Svinov, Alexei Kapitonovich; Slonimsky, Alexandr Borisovich; Volk, Boris Zakharovich; Gubin, Alexandr Ivanovich; and Katsman, Berta Osipovna, 3,677,330.

Les Fabriques d'Assortiments Reunies: *See—*
Simon-Vermot, Andre; and Grossenbacher, Charles-Andre, 3,676,998.

Les Usines Laprade S.A.: *See—*
Gele, Pierre; and Laprade, Bernard, 3,677,241.

Lestra AG: *See—*
Kolb, Dieter, 3,677,090.

Lev, Edward R. Indicator for automobiles. 3,678,457, Cl. 340-107.000.

Lever Brothers Company: *See—*
Clippingdale, John Walter; and Watson, Charles Andrew, 3,678,155.
Copier, Harald; and Tonsbeek, Christiaan Herman Theodoor, 3,678,064.

Levey, Richard S. Cycle theft alarm. 3,678,455, Cl. 340-63.000.

Levin, Alfred A.: *See—*
Richter, Sidney B.; and Levin, Alfred A., 3,677,735.

Levy, Joseph; and Psihas, James, to Universal Oil Products Company. Preparation of tertiary aminoalkyl derivatives of substituted acetohydroxamic acid esters. 3,678,048, Cl. 260-247.20b.

Lewis, Donald R., to Shell Oil Company. Method of measuring the abrasiveness of an abrasive fluid. 3,678,273, Cl. 250-83.00r.

Lewis, George Stanley: *See—*
Perrin, Alfred J.; Dell John D.; Evans, David B.; and Lewis, George Stanley, 3,677,339.

Lewis, Richard L., to Bendix Corporation, The. Adaptive braking system with hydraulically powered modulator. 3,677,608, Cl. 303-21.00f.

Lewis, Robert W., to Battelle Development Corporation, mesne. Reduced noise high resolution holographic imaging using spatially incoherent reconstructing radiation. 3,677,616, Cl. 350-3.500.

Lewis, Sheldon N.; Merritt, Richard F.; and Emmons, William D., to Rohm and Haas Company. Unsaturated quaternary monomers and polymers. 3,678,098, Cl. 260-89.500.

Lewis Spring & Manufacturing Co.: *See—*
Strzepek, Edward S., 3,677,054.

Leyrat, Pierre J., to Societe Anonyme Poclain. Hydraulic control for hydraulic bucket having reciprocating teeth. 3,677,604, Cl. 299-67.000.

Li, Pei Ching: *See—*
Ali, Mir Akbar; Schwartz, Murray A.; and Li, Pei Ching, 3,677,778.

Libaud, Francis: *See—*
Santerre, Fernand; and Libaud, Francis, 3,676,990.

Libbey-Owens-Ford Company: *See—*
Ritter, George F., Jr., 3,677,733.

Licentia Patent-Verwaltungs-G.m.b.H.: *See—*
Fischer, Gerd; Straub, Dieter; and Voigt, Heinz Eberhard, 3,678,301.
Hanff, Herbert, 3,676,936.

Lichodziejewski, Wieslaw: *See—*
Johnson, Robert F.; and Lichodziejewski, Wieslaw, 3,677,627.

Lichtman, Irwin A.; and Rosengart, Abraham M., to Diamond Shamrock Corporation. Defoamer composition and method of preparation. 3,677,963, Cl. 252-358.000.

Lilley, G. C.; and Kolb, Robert Herrick, to Shell Oil Company. Method and apparatus for determining the volumetric average of a parameter. 3,678,257, Cl. 235-151.340.

Lilly, Herbert J., Jr.: *See—*
Dobler, Christian D.; and Lilly, Herbert J., Jr., 3,677,310.

Lincoln Tool & Manufacturing Co.: *See—*
Schanke, Robert L., 3,677,480.

Lindqvist, Karl Sigvard, to Combitainer S.A. Arrangement in loading pallets supporting walls. 3,677,199, Cl. 108-56.

Lindqvist, Lars-Hakan. Life saving implements. 3,676,882, Cl. 9-14.000.

Lindsjo, Olle: *See—*
Bryk, Petri; Haani, Martti; Honkasalo, Jorma B.; Kinnunen, Jorma; Lindsjo, Olle; Nyholm, Erik; Poijarvi, Jaakko; Rastas, Jussi; and Kangas, Juhani, 3,677,696.

Lindy, Lowell B., to Dow Chemical Company, The. Method of bleaching sulfonate surfactants. 3,677,952, Cl. 252-94.000.

Link, Manfred, to Triumph Werke. Mechanism for positioning single element type carriers. 3,677,384, Cl. 197-16.000.

Linkletter, Robert P. Spout-type safety dispensing cap. 3,677,445, Cl. 222-153.000.

Lion Fat & Oil Co., Ltd.: *See—*
Tanaka, Ryohei, 3,677,821.

Liss S.A.: *See—*
Blosch, Walter, 3,677,793.

Lithium Corporation of America: *See—*
McElroy, Bobby Joe; and Merkley, Joseph Herbert, 3,678,121.

Little, John C., to GTE Sylvania, Incorporated. Fluid analyzer apparatus. 3,677,652, Cl. 356-183.000.

Litton Business Systems, Inc.: *See—*
Kamenir, Melvin; and Burridge, Robert E., 3,678,218.

Litton Systems, Inc.: *See—*
Rose, Marion S., 3,678,409.

Liu, Gordon Y. T.; and Strange, Carl P., to Dow Chemical Company, The. Crosslinking of ethylene polymers without a crosslinking agent. 3,678,024, Cl. 260-94.9ga.

Ljungkull, Gunnar R.; and Johnson, Robert H., to Minnesota Mining and Manufacturing Company. Directional signal having refractive indicant areas. 3,678,458, Cl. 340-107.000.

Lloyd, Samuel H.; and Santa Fe International Corporation, to Blowout prevention apparatus for subaqueous drilling. . 3,677,352, Cl. 175-7.000.

Lochman, Harry E.: *See—*
Dinenno, Philip A., Jr.; Bonk, Joseph S.; Conrad, Kenneth C.; Moore, Rodney S.; Lochman, Harry E.; and Torello, Daniel D., 3,677,658.

Lodding Engineering Corporation: *See—*
Pezaris, Constantine Demetrius; and Pantazelos, Theophanes G., 3,677,831.

Loeffel, Emil. Self-storing fire escape ladder. 3,677,366, Cl. 182-70.000.

Lohse, Friedrich: *See—*
Schmid, Rolf; Lohse, Friedrich; and Batzer, Hans, 3,678,127.

Lohse, Friedrich; Schmid, Rolf; Fisch, Willy; and Batzer, Hans, to Ciba-Geigy AG. Thermocurable crystalline polyurethanes based on branched polyesters. 3,678,009, Cl. 260-75.0np.

Loisel, Jean Francois Pierre Julien: *See—*
Dupieux, Jacques Georges; Gadre, Jean-Claude; Le Corre, Jean-Pierre; and Loisel, Jean Francois Pierre Julien, 3,678,206.

Lombardi, Luigi, to Pirelli Societa per Azioni. Medium voltage cables. 3,677,849, Cl. 156-53.000.

Lonadier, Frank D.; and Kershner, Carl J., to United States of America, Atomic Energy Commission. Radioactive heat source. 3,677,958, Cl. 252-301.00r.

Long, Eric L., to Cherry Electrical Products Corporation. Mechanical key lock-in. 3,678,255, Cl. 235-145.00r.

Long Manufacturing Co., Inc.: *See—*
Atkinson, Wallace E., 3,677,042.

Longhi, Giuseppe. Apparatus for making shaped bores in a continuous strip. 3,677,055, Cl. 72-326.000.

Longo, John: *See—*
Igneri, Anthony V.; Milack, Joseph, Jr.; and Longo, John, 3,677,205.

Looker, Jerome J.; and Fox, Charles J., to Eastman Kodak Company. Bis (dialkylaminoaryl) ethylene photoconductors. 3,677,752, Cl. 96-1.500.

Loqvist, Kaj-Ragnar, to Fagersta Bruks Aktiebolag. Composite tool. 3,677,060, Cl. 72-476.000.

Lorange, Jean G., to Bell Telephone Company of Canada, The. Coin operated telephone network allowing limited free calls. 3,678,203, Cl. 179-6.30r.

Lord Corporation: *See—*
Beck, Merrill G., 3,677,535.
Rautine, Donald E., 3,677,122.

Lorenz, Max R., to International Business Machines Corporation. Liquid epitaxy method of fabricating controlled band gap Ga Al as electroluminescent devices. 3,677,836, Cl. 148-171.000.

Lorenzen, Walter C., to Anzen Products, Inc. Adjustable liquid discharge jet. 3,677,474, Cl. 239-587.000.

Lovelock, James E., to Pye Limited. Method and apparatus for controlling the flow of gases. 3,677,275, Cl. 137-13.000.

Lowry, Alan B.; Mathus, Gregory; and Staciokas, Leon, to Data Packaging Corporation and Digital Information Devices, Inc. Tape cartridge mechanism for computer. 3,677,497, Cl. 242-199.000.

Lozo, Frederick M., III: *See—*
Hollmann, Walter G.; and Lozo, Frederick M., III, 3,677,786.

Lucas, Joseph, (Industries) Limited: *See—*
Jones, Richard Clive, 3,678,449.
Morris, John, 3,677,287.
Young, Donald Allan, 3,678,448.

Lucas, Joseph, Industries Limited: *See—*
Shaw, Jeffery Isaac, 3,678,342.

Luciano, De Pietri, to Intercosmo s.n.c. Cosmetics container. 3,677,271, Cl. 132-79.000.

Lucien, Rene, to Societe Messier. Disc brake assembly with replaceable friction members. 3,677,373, Cl. 188-73.600.

Luck, Dieter G. Hydraulically operated equipment. 3,677,426, Cl. 214-138.00r.

Luckey, George W.: *See—*
De Boer, Charles D.; and Luckey, George W., 3,677,763.

Ludewig, Frederick A., Jr.; and Van Luik, Frank W., Jr., to Environment/One Corporation. Multi-zone incipient or actual fire and/or dangerous gas detection system. 3,678,487, Cl. 340-236.000.

Ludlow Corporation: *See—*
Muri, Richard L.; and Vere, Thomas D., 3,677,817.

Luft, Robert G., to International Harvester Company. Drive train for low profile vehicle. 3,677,358, Cl. 180-44.00r.

Luhrs, Otto R., to International Business Machines Corporation. Angulated positioning marks for moving web. 3,678,220, Cl. 179-100.250.

Lund, Carl H.; Hockin, John; and Woulds, Michael J., to Martin-Marietta Corporation. Casting process for nickel base alloys. 3,677,331, Cl. 164-122.000.

Lund, Carl H.; Hockin, John; and Woulds, Michael J., to Martin-Marietta Corporation, mesne. Heat treatable alloy. 3,677,746, Cl. 75-171.000.

Lund, Carl H.; Hockin, John; and Woulds, Michael J., to Martin-Marietta Corporation, mesne. High temperature castable alloys and castings. 3,677,747, Cl. 75-171.000.

Lundquist, Martin A.: *See—*
Guyer, Reynolds W., Jr.; Cross, Norton M., Jr.; Griggs, Barbara Allen; and Lundquist, Martin A., 3,677,446.

Lutchansky, Miltos; and Rhines, Warren Joseph, to Bell Telephone Laboratories, Incorporated. Impact energy absorber. 3,677,371, Cl. 188-1.00c.

Lutz, Michael A.; and Hofmann, Gunter A.G., to Hughes Aircraft Company. Magnetic field control circuit for crossed field switching devices. 3,678,289, Cl. 307-149.000.

Luyster, Thomas, Jr.: *See—*
Jeff, William C.; Luyster, Thomas, Jr.; Lynch, James F., Jr.; and Moroli, Frank A., 3,677,794.

Lynch, Charles Andrew, Jr.; and Orwoll, Edward Francis, to FMC Corporation. Complexes of heavy metal salts of acid phosphate esters. 3,678,086, Cl. 260-429.900.

Lynch, James F., Jr.: *See—*
Jeff, William C.; Luyster, Thomas, Jr.; Lynch, James F., Jr.; and Moroli, Frank A., 3,677,794.

Lyness, Warren I.: *See—*
Macmillan, Francis S. Kilmer; and Lyness, Warren I., 3,678,156.

Lynn, John W.: *See—*
Brotherton, Thomas K.; Lynn, John W.; and Knopf, Robert J., 3,677,983.

Lyon, Archie L. Device for extracting mouthpieces from musical instruments. 3,677,129, Cl. 84-453.000.

M & T Chemicals Inc.: *See—*
Passal, Frank, 3,677,912.
Passal, Frank, 3,677,913.
Passal, Frank; and Tomson, Arthur J., 3,678,055.

Mac Isaac, John T., Jr.; and Troy, James E., to Fieldcrest Mills, Inc. Apparatus for making tufted fabrics. 3,677,206, Cl. 112-79.00r.

MacCallum, James A.; Howard, Velmar E.; and Coberley, Daniel A., to Hurletion Incorporated. Method for covering a printing roller. 3,677,856, Cl. 156-187.000.

MacDonald, William A., Jr., to Eastman Kodak Company. Environment control device for electrophotographic apparatus. 3,677,632, Cl. 355-3.000.

MacDuff, Richard; and Stewart, Paul M., to Hercules Incorporated. Oven for heating continuous tubing. 3,677,530, Cl. 263-3.000.

Mack, Grnat V., to Reynolds Metals Company. Casket construction and method of making same. 3,676,905, Cl. 27-6.000.

MacKellar, Donald G.: *See—*
Castrantas, Harry M.; Keay, Robert E.; and MacKellar, Donald G., 3,677,955.

Mackenzie, Elbert K., to Electro-Mechanical Instrument Company, Inc. Readout devices with light conducting channels. 3,677,619, Cl. 350-110.000.

Mackenzie, Robert A. Draw forming. 3,677,057, Cl. 72-305.000.

Macknik, Louis S.; and Kissell, Kenneth E., to United States of America, Air Force. Automatic variable gain optical tracker for space vehicles comprising DC system for error signal generation. 3,678,279, Cl. 250-203.000.

Macmillan, Francis S. Kilmer; and Lyness, Warren I., to Procter & Gamble Company, The. Compositions for topical application to animal tissue and method of enhancing penetration thereof. 3,678,156, Cl. 424-68.

MacPherson, Ian Alexander; Inman, Eric Richard; Stirling, John Andrew; and Irvine, Alexander McHugh, to Ciba-Geigy AG. Pigmentary form of an azomethine. 3,677,782, Cl. 106-288.00q.

Maddestra, Robert: *See—*
Munn, David E.; and Maddestra, Robert, 3,678,310.

Maeda, Kazuo: *See—*
Fujiwara, Ryozo; Ohara, Eiji; and Maeda, Kazuo, 3,677,699.

Magis, Sigfred F., to United States of America, Navy. Naturally fragmenting projectiles of AISI 06 steel. 3,676,907, Cl. 29-1.210.

Magnuson, Raymond A.: *See—*
Brorson, Donald L.; and Magnuson, Raymond A., 3,677,322.

Maguire, Mary H.; Gough, Geoffrey R.; and Michal, Frank, to University of Sydney, The. Inhibiting or preventing thrombus formation with 2-methylthioadenosine-5'-monophosphate. 3,678,162, Cl. 424-180.000.

Mahlstede, Gerald F.; and Carruth, Buster L., to Polar Chilled Products Co., Inc. Bottle rinsing apparatus. 3,677,273, Cl. 134-127.000.

Maholick, Andrew W.: *See—*
Freeman, Richard B.; Kawalec, Michael T.; Maholick, Andrew W.; and Stager, Stanley R., III, 3,678,469.

Maidenform Inc.: *See—*
Pedley, Dianne, 3,677,252.

Maier, Robert. Method of making a connector plug. 3,676,927, Cl. 29-629.000.

Majima, Kanji; and Morita, Goro, to Kao Soap Co., Ltd. Process for preparing purified linear alkylate bottom. 3,677,934, Cl. 208-323.000.

Makachev, Nikolai Ivanovich; and Parshin, Alexei Nikolaevich. Pneumatic rapier for inserting weft thread into warp sheds. 3,677,304, Cl. 139-127.00p.

Maleck, Le Roy R., to Stewart Research, Inc. Hinge and door detent. 3,676,895, Cl. 16-150.000.

Maleck, Le Roy R., to Admiral Corporation. Hinge and door detent. 3,676,896, Cl. 16-150.

Malek, Fritz J., to Metrophysics, Inc. Method and apparatus for measuring radiation absorption in a fluid specimen. 3,678,269, Cl. 250-43.50r.

Mallett, Wallace L. E. Bale lifter. 3,677,428, Cl. 214-147.00g.

Mallinckrodt Chemical Work: *See—*
Grummon, Glenn D.; and Wiegert, Philip E., 3,678,067.

Mammino, Joseph; and Jvirblis, Gail D., to Xerox Corporation. Photoelectrosolographic imaging process. 3,677,750, Cl. 96-1.000.

Mangini, Angelo: *See—*
Boffa, Gioacchino; Crotti, Argento; Pieri, Giampiero; Mangini, Angelo; and Tundo, Antonio, 3,678,053.

Marathon Oil Company: *See—*
Hayes, John B.; and Knight, Bruce L., 3,677,344.

Marchi, Giorgio. Electronic device for electrically braking induction motors, particularly three-phase motors. 3,678,353, Cl. 318-211.000.

Marconi Company Limited, The: *See—*
Wakeling, Peter John, 3,678,413.

Maremont Corporation: *See—*
McNally, Sellers B., 3,677,561.

Marine Bank and Trust Company, mesne: *See—*
Gibbs, James W.; and Gibbs, John L., 3,677,294.

Markham, David Rees, to Deere & Company. Method and apparatus for sharpening forage harvester knives. 3,677,316, Cl. 146-242.000.

Marshall, Jefferson: *See—*
Williams, Frank Ronald; Whitehead, Jack; Marshall, Jefferson; Conners, Alan; and Goaden, Derek Vernon, 3,677,740.

Martin, Anthony Michael. Apparatus for forming helical gear wheel bodies from powder. 3,677,671, Cl. 18-16.500.

Martin, Arthur Seymon. Method and apparatus for determining the coefficient of diffusion of a dissolved solute in unsaturated solution. 3,677,071, Cl. 73-61.400.

Martin, Clyde J., to Martin Industries, Inc. Pressure gauge. 3,677,089, Cl. 73-419.000.

Martin, Godfrey Q., to Shell Oil Company. Fluid diffusion apparatus. 3,677,528, Cl. 261-87.000.

Martin Industries, Inc.: *See—*
Martin, Clyde J., 3,677,089.

Martin, Joseph L., to Anvil Industries, Inc., mesne. Prefabricated conduit. 3,677,303, Cl. 138-109.000.

Martin, Michel, to Compagnie de Saint Gobain. Method for vertical suspension of glass sheets during thermal treatment. 3,677,731, Cl. 65-102.000.

Martin, Thomas B. Flow control valve. 3,677,288, Cl. 137-501.000.

Martin-Marietta Corporation: *See—*
Hockin, John, 3,677,748.
Lund, Carl H.; Hockin, John; and Woulds, Michael J., 3,677,331.

Martin-Marietta Corporation, mesne: *See—*
Lund, Carl H.; Hockin, John; and Woulds, Michael J., 3,677,746.
Lund, Carl H.; Hockin, John; and Woulds, Michael J., 3,677,747.

Martinelli, Alfred: *See—*
Krauer, Werner; and Martinelli, Alfred, 3,677,577.

Martinsons, Aleksandrs, to PPG Industries, Inc. Electrode coatings. 3,677,917, Cl. 204-99.000.

Maruyama, Yutaka: *See—*

Nakanishi, Michio; Oe, Takanori; and Maruyama, Yutaka, 3,678,077.

Marvin Glass & Associates: *See—*
Race, Andras, 3,677,541.

Marvin Glass & Associates: *See—*
Breslow, Jeffrey Dale, 3,677,545.

Marvin, Neil T., to Bra-Con Industries, Inc. Bale ejector. 3,677,175, Cl. 100-35.000.

Marx, John W., to Phillips Petroleum Company. Cellulose sponge for removing oil slicks. 3,677,982, Cl. 260-2.50r.

Marx, Matthias: *See—*
Eckert, Guenter; Marx, Matthias; Hartmann, Heinrich; and Wuertele, Lothar, 3,677,813.

Maschinenfabrik Burckhardt AG: *See—*
Strebel, Albert; and Habegger, Oskar, 3,677,107.

Maschinenfabrik Turner A.G.: *See—*
Dokoupil, Jiri, 3,677,041.

Mashimo, Yukio: *See—*
Kitanosono, Tatsushi; Mashimo, Yukio; and Takishima, Yoshiyuki, 3,678,354.

Maskrey, John Thomas: *See—*
Dugdale, Ronald Arthur; Ford, Stanley Denis; and Maskrey, John Thomas, 3,678,334.

Mason, Iain Mc Laren: *See—*
Humphryes, Reginald Frederick; and Mason, Iain Mc Laren, 3,678,304.

Mason, Raymond J.: *See—*
Minarik, William J.; and Mason, Raymond J., 3,678,360.

Masson, Narinder; Korenicki, William John; and Lechner, Walter Ludwig, to Gamon-Camet Industries, Inc. Compound fluid meter. 3,677,084, Cl. 73-197.000.

Mast, Milfred E.: *See—*
Metevia, Virgil L.; Narlock, Raymond M.; and Mast, Milfred E., 3,677,877.

Masten, Michael K.: *See—*
Choate, William C.; and Masten, Michael K., 3,678,461.
Choate, William C.; and Masten, Michael K., 3,678,470.

Mastromatteo, Richard; and Brett, Thomas J., Jr., to Uniroyal, Inc. Cocure of blend of rubber of low unsaturation and highly unsaturated rubber using long chain hydrocarbon dithiocarbamate accelerators. 3,678,135, Cl. 260-889.000.

Mathers, Ronald Alexander. Chessmen. 3,677,550, Cl. 273-137.00r.

Mathisen, Einar S., to International Business Machines Corporation. Contactless mask pattern exposure process and apparatus system having virtual extended depth of focus. 3,677,634, Cl. 355-2.000.

Mathus, Gregory: *See—*
Lowry, Alan B.; Mathus, Gregory; and Staciokas, Leon, 3,677,497.

Matsubara, Yukio: *See—*
Yamamura, Katsumi; Miyasaka, Tsugumitsu; Hayashi, Shinichi; Yamamoto, Masao; and Matsubara, Yukio, 3,677,909.

Matsuda, Hideaki; Mori, Hisakazu; and Yamauchi, Fujio, to Okura Kogyo Kabushiki Kaisha. Method of producing phosphorus-containing curable material. 3,678,012, Cl. 260-77.5ar.

Matsui, Kenichi: *See—*
Fukuma, Noboru; Kobayashi, Hidehiko; Matsui, Kenichi; Sakashita, Masahira; and Henmi, Hiroshi, 3,677,880.

Matsumoto, Seiji; Sato, Masamichi; and Fukushima, Osamu, to Xerox Corporation. Electric charging method. 3,678,350, Cl. 317-262.00a.

Matsumoto, Shigeru; and Gotoh, Toshiaki, to Nippon Oil Seal Industry Co., Ltd. Pressure control valve for brakes and the like. 3,677,605, Cl. 303-6.00c.

Matsumura, Toichi: *See—*
Hayashi, Yoshiki; Sasaki, Hiromi; and Matsumura, Toichi, 3,677,816.

Matsushita Electric Industrial Co., Ltd.: *See—*
Hayashi, Yoshiki; Sasaki, Hiromi; and Matsumura, Toichi, 3,677,816.
Sato, Kunio; Sugihara, Kanji; Wakabayashi, Takashi; and Ishida, Tomio, 3,676,925.

Matsushita Electric Industrial Company, Limited: *See—*
Nishida, Jun; and Ohhara, Takahumi, 3,678,325.
Yamashita, Sadahiko, 3,678,280.

Mattel, Inc.: *See—*
Clarke, Charles D., 3,676,950.
Edmisson, Russell C.; and Starr, Stanley R., 3,677,469.

Matter, Eric, to Ciba Limited. Process for the manufacture of aryloxazoles. 3,678,042, Cl. 260-240.0ca.

Mattingly, Frederick William, to Toolmasters Limited. Electric motor. 3,678,311, Cl. 310-156.000.

Maturo, Thomas F., Jr.; and Prisinzano, Frank. Beach cart. 3,677,571, Cl. 280-36.00r.

Maulding, Donald Roy, to American Cyanamid Company. Chemiluminescent reaction of chlorinated ethylene carbonate with hydrogen peroxide in the presence of a fluorescer. 3,677,957, Cl. 252-188.300.

Maund, John Keith; and Hands, Clifford Henry George, to Hooker Chemical Corporation. Purification of phosphonitrilic chloride polymers. 3,677,720, Cl. 23-357.000.

Maurel, Andre Bernard: *See—*
Maxime, Jacques Paul Robert; and Maurel, Andre Bernard, 3,677,134.

Maxam, David R.: *See—*
King, James A.; and Maxam, David R., 3,677,406.

Maxfield, John Raymond: *See—*
Watson, Christopher Alan; and Maxfield, John Raymond, 3,678,497.

Maxime, Jacques Paul Robert; and Maurel, Andre Bernard, to Etat Francais. Gunnery control device for turret-mounted firearm. 3,677,134, Cl. 89-41.00e.

Maximov, Igor Petrovich: *See—*
Maximovich, Boleslav Ivanovich; Dudko, Daniil Andreevich; Agafonov, Nikolai Georgievich; Maximov, Igor Petrovich; Andreev, Vadim Grigorievich; Lepilov, Nikolai Yakovlevich; Svinov, Alexei Kapitonovich; Slonimsky, Alexandr Borisovich; Volk, Boris Zakharovich; Gubin, Alexandr Ivanovich; and Katsman, Berta Osipovna, 3,677,330.

Maximovich, Boleslav Ivanovich; Dudko, Daniil Andreevich; Agafonov, Nikolai Georgievich; Maximov, Igor Petrovich; Andreev, Vadim Grigorievich; Lepilov, Nikolai Yakovlevich; Svinov, Alexei Kapitonovich; Slonimsky, Alexandr Borisovich; Volk, Boris Zakharovich; Gubin, Alexandr Ivanovich; and Katsman, Berta Osipovna, to Institut Elektrosvarki Imeni E. O. Patona. Method of manufacturing bimetallic rotors employed in electric machines. 3,677,330, Cl. 164-108.000.

Maxwell, Albert H., Jr., to Westinghouse Electric Corporation. Reverse-direction tape translation. 3,678,484, Cl. 340-174.10h.

Mayer, Edward H.; and Oliver, Evan M., to Bethlehem Steel Corporation. Nitride strengthened steel. 3,677,834, Cl. 148-36.

Mazzara, Vincent B.; and Fesperman, Jerome M., to Standard Oil Company. Oil fracturing propping agents. 3,677,941, Cl. 252-8.55r.

Mc Allister, Jack G. Roof structure. 3,676,976, Cl. 52-747.000.

Mc Caully, Ronald J., to American Home Products Corporation. 2,3-Dihydro-2-oxo-1H-1,4-benzodiazepine-3-carboxylic acid esters and related compounds. 3,678,043, Cl. 260-239.300.

Mc Donnell Douglas Corporation: *See—*
Boehringer, Wilfred E., 3,677,488.

Mc Kenzie, John, to Leesona Limited. Winding machine. 3,677,482, Cl. 242-18.00r.

Mc Neil, Daniel E., to Controls Switch, Inc., mesne. Lens assembly for indicator lights. 3,678,261, Cl. 240-151.000.

McCarty, Clyde W., to General Electric Company. Electronic digital clock power failure indicator. 3,678,499, Cl. 340-336.000.

McCaully, Ronald J., to American Home Products Corporation. Dialkanoyloxyacetyl penicillanic acid derivatives. 3,678,032, Cl. 260-239.100.

McClain, Albert D., Jr.: *See—*
Kidd, Thomas L., Jr.; and McClain, Albert D., Jr., 3,676,943.

McClellan, William R.; and Stiles, Alvin B., to Du Pont de Nemours, E. I., and Company. Conversion of methanol to formaldehyde using a bismuth molybdate on silica catalyst. 3,678,139, Cl. 260-603.0hf.

McConkey, Robert C.: *See—*
Ford, John A., Jr.; McConkey, Robert C.; and Laakso, Thomas M., 3,677,754.

McCoy, Donald Walter: *See—*
Szumski, Stephen Aloysius; and McCoy, Donald Walter, 3,678,150.

McCurdy, Hugh R.; Rausch, Doyle W.; and McIntire, Hoy O., to Battelle Development Corporation, The. Method of making high-density sintered chromium-bearing iron alloys. 3,677,749, Cl. 75-211.000.

McDonnell Douglas Corporation: *See—*
Harenberg, Harold L., Jr., 3,678,256.
La Roe, Emmett T., 3,677,506.
Wheeler, Mildred S., 3,677,139.

McDonough Company: *See—*
Robison, James W.; and Eads, Harold L., 3,676,930.

McDowell, Francis C.: *See—*
Carty, Edward J.; and McDowell, Francis C., 3,678,079.

McElroy, Bobby Joe; and Merkley, Joseph Herbert, to Lithium Corporation of America. Preparation of telomeric liquid polybutadiene oils. 3,678,121, Cl. 260-668.00b.

McFarland, Otho K.; and Tamburrino, James F., to Abbott Laboratories. Electronic apparatus for accurately monitoring and recording the partial pressure of a gas. 3,678,375, Cl. 324-29.000.

McGill Manufacturing Company, Inc.: *See—*
Osika, Thomas F., 3,678,229.

McGraw-Edison Company: *See—*
Files, William C., 3,677,039.
Gaia, Aldino J., 3,678,430.

McGuire, Kenneth John, to Delaney Gallay Limited. Heat shields. 3,677,870, Cl. 161-43.000.

McHenry, Edwin John: *See—*
Hubbauer, Philip Clark; and McHenry, Edwin John, 3,678,178.

McIlhenny, David J.: *See—*
Nixon, Dalbro R., Jr.; McIlhenny, David J.; and Harrell, Marvin L., 3,677,441.

McIlvaine, Robert L., to National Dust Collector Corporation. Method and apparatus for removing sludge from liquid. 3,677,407, Cl. 210-83.000.

McIntire, Hoy O.: *See—*
McCurdy, Hugh R.; Rausch, Doyle W.; and McIntire, Hoy O., 3,677,749.

McIver, Clement L., Jr., to Methods, Incorporated. Lathe turret. 3,677,110, Cl. 74-813.00l.

McKeon, James E.: *See—*
Rick, Edward A.; McKeon, James E.; Fitton, Peter; and Argento, Benny J., 3,678,085.
Trecker, David J.; and McKeon, James E., 3,678,096.

McMurray, William, to General Electric Company. Versatile power converters with a high frequency link. 3,678,367, Cl. 321-7.000.
McNally, Sellers B., to Maremont Corporation. Adjustable shock absorber assemblies. 3,677,561, Cl. 280-124.00f.
McNeff, Larry Cecil, to Cargill Incorporated. Molasses-urea reaction mixtures. 3,677,767, Cl. 99-6.000.
McPhee, Charles J., to American Hospital Supply Corporation. Surgical irrigation apparatus and method of using same. 3,677,248, Cl. 128-227.000.
Mead Corporation, The: *See—*
Benatar, Victor; and Johnson, Roy A., 3,677,389.
Meanor, Doyle W.: *See—*
Chaparro, John J.; Ellis, Lowell V.; Meanor, Doyle W.; Morton, William D., Jr.; Richelmann, Bernd H.; Ross, George B.; and Toth, John E., 3,677,401.
Medimpex Gyogyszerkulkereskedelmi Vallalat: *See—*
Dobo, Janos; Somogyi, Agnes; and Lakner, Endre, 3,677,967.
Mehnert, Walter Erich: *See—*
Erben, Klaus Dieter; Kroy, Walter; and Mehnert, Walter Erich, 3,678,380.
Meier, Ernst: *See—*
Glockner, Hans; Meier, Ernst; and Puschel, Walter, 3,677,764.
Meinhardt, Helmut W.: *See—*
Bungardt, Karl; Lehnert, Gunter; and Meinhardt, Helmut W., 3,677,789.
Meji Seika Kaisha Ltd.: *See—*
Nitda, Taro; Yumoto, Hiroshi; Tsuruoka, Takashi; Hammoto, Kazuko; Shomura, Takashi; and Ohashi, Takao, 3,678,159.
Melnick, Daniel: *See—*
Mokrzycki, Stanley Martin; Sexton, Edwin Leon; Powers, Thomas George; and Melnick, Daniel, 3,677,768.
Menasco Manufacturing Company: *See—*
Kendall, Giles Arthur; and Minick, Robert, 3,677,507.
Mencarelli, Vittorio. Ball valve. 3,677,514, Cl. 251-148.000.
Mendez, Charles E. Fuel transfer system for tractor trailer vehicles. 3,677,284, Cl. 137-351.000.
Merck & Co., Inc.: *See—*
Allen, Donald J.; and O'Neill, Joseph L., 3,678,163.
Finkelstein, Ehud, 3,678,060.
Firestone, Raymond A., 3,678,078.
Shen, Tsung-Ying; Witzel, Bruce E.; and Walford, Gordon L., 3,678,094.
Merck & Co., Inc., mesne: *See—*
Grier, Nathaniel, 3,678,168.
Merkel, Joseph R., to Lehigh University. Method of produicng collagenase with a species of vibrio. 3,677,900, Cl. 195-66.00r.
Merkley, Joseph Herbert: *See—*
McElroy, Bobby Joe; and Merkley, Joseph Herbert, 3,678,121.
Merrill, Edward W., to Estin, Hans H., Cronkhite, Leonard W., Jr., Wolbach, William E.; trustees of and Charles River Foundation, The. Micropump. 3,677,444, Cl. 222-135.000.
Merriman, Inc.: *See—*
Wayson, Andrew J.; and O'Connell, John T., 3,676,917.
Merritt, Richard F.: *See—*
Lewis, Sheldon N.; Merritt, Richard F.; and Emmons, William D., 3,678,098.
Merryman, George B.; and Merryman, Joseph H. Vibration monitoring system. 3,677,077, Cl. 73-146.000.
Merryman, Joseph H.: *See—*
Merryman, George B.; and Merryman, Joseph H., 3,677,077.
Mertzweiller, Joseph K.; and Tenney, Horace M., to Esso Research and Engineering Company. Hydrogenation of organic compounds. 3,677,969, Cl. 252-431.000.
Mertzweiller, Joseph K.; and Tenney, Horace M., to Esso Research and Engineering Company. Hydrogenation of organic compounds. 3,677,970, Cl. 252-431.000.
Merz, Herbert: *See—*
Weber, Karl-Heinz; Bauer, Adolf; Merz, Herbert; and Minck, Klaus, 3,678,033.
Meshbane, Alex; and Vilardi, Frank, to Savant Instruments, Inc. Electrophoresis testing apparatus. 3,677,930, Cl. 204-299.000.
Messenger, Joseph U.: *See—*
Blount, Elmo M.; Snavely, Earl S., Jr.; Messenger, Joseph U.; and Prueger, Nicolas J., 3,677,340.
Messerschmitt-Bolkow-Blohm GmbH: *See—*
Erben, Klaus Dieter; Kroy, Walter; and Mehnert, Walter Erich, 3,678,380.
Metal Bellows Corporation: *See—*
Zierak, Stephen J.; and Monteiro, Arnold J., 3,677,031.
Metallgesellschaft Aktiengesellschaft: *See—*
Borgstedt, Hans-Ulrich; Ruhle, Manfred; and Wincierz, Peter, 3,677,723.
Metcalfe, Richard T.; and Crandon, Harry D., to American Optical Corporation. Process for coloring epoxy plastic eyeglass frames and parts thereof. 3,678,141, Cl. 264-22.
Metevia, Virgil L.; Narlock, Raymond M.; and Mast, Milfred E., to Dow Corning Corporation. Article of silicone rubber having surfaces resistant to dirt pick-up. 3,677,877, Cl. 161-164.000.
Methods, Incorporated: *See—*
McIver, Clement L., Jr., 3,677,110.
Metrophysics, Inc.: *See—*
Malek, Fritz J., 3,678,269.
Meyers Electrocooling Products, Inc.: *See—*
Meyers, Peter G.; Sweeney, Eric C.; and Brunkhardt, Frederick W., 3,677,422.
Meyers, Peter G.; Sweeney, Eric C.; and Brunkhardt, Frederick W., to Meyers Electrocooling Products, Inc. Refuse handling system. 3,677,422, Cl. 214-17.00d.
Meyers, Raymond E.; and Eubanks, Edgar W., to SCM Corporation. Acid-stabilized epoxide resin coating compositions and method of preparing same. 3,678,004, Cl. 260-47.0ec.
Meyers, Richard D.: *See—*
Meyers, Walter E.; Meyers, Richard D.; and Meyers, Warren H., 3,677,544.
Meyers, Walter E.; Meyers, Richard D.; and Meyers, Warren H. Baseball practice device. 3,677,544, Cl. 273-26.00d.
Meyers, Warren H.: *See—*
Meyers, Walter E.; Meyers, Richard D.; and Meyers, Warren H., 3,677,544.
Michal, Frank: *See—*
Maguire, Mary H.; Gough, Geoffrey R.; and Michal, Frank, 3,678,162.
Michalko, Edward: *See—*
Mitsche, Roy T.; and Michalko, Edward, 3,677,973.
Michaud, Andre. Hockey stick. 3,677,542, Cl. 273-67.00a.
Middlebrook, Terence C., to Phillips Petroleum Company. Blend of ethylene-butene copolymer with butadiene-styrene radial block copolymer. 3,678,134, Cl. 260-876.00b.
Middleton, William J., to Du Pont de Nemours, E. I., and Company. 1,1-Bis(trifluoromethyl)-2,2-diphenylethylenes having selected substituents on phenyl. 3,678,117, Cl. 260-619.00r.
Midland-Ross Corporation: *See—*
Tollefsrud, Warren H.; and Shriver, Edward W., 3,677,423.
Midolo, Lawrence L., to United States of America, Air Force. Heat transfer apparatus with osmotic pumping. 3,677,337, Cl. 165-105.000.
Mikeladze, Vitaly Georgievich: *See—*
Tupolev, Andrei Nikolaevich; Tupolev, Alexei Andreevich; Cheremukhin, Georgy Alexeevich; Bliznjuk, Valentin Ivanovich; Pukhov, Alexandr Leonidovich; Svischev, Georgy Petrovich; Bjushgens, Georgy Sergeevich; and Mikeladze, Vitaly Georgievich, 3,677,502.
Mikhailjuk, Nikolai Tarasovich: *See—*
Scherban, Alexandr Nazarievich; Furman, Neonil Izrailevich; Sotnichenko, Boris Feodosievich; Belogolovin, Nikolai Stefanovich; Chopovsky, Jury Ivanovich; Sutormin, Jury Nikolaevich; Zaitsev, Valentin Ivanovich; Kot, Vladimir Ivanovich; Mikhailjuk, Nikolai Tarasovich; Denisenko, Sergei Andreevich; Chaschinov, Anatoly Vasilievich; Shaporev, Stepan Vasilievich; and Samoilenko, Svetlana Mikhailovna, 3,678,489.
Mikherjee, Barid B.: *See—*
Hill, Ira D.; Mikherjee, Barid B.; and Brown, Dale G., 3,678,172.
Milack, Joseph, Jr.: *See—*
Igneri, Anthony V.; Milack, Joseph, Jr.; and Longo, John, 3,677,205.
Milchem Incorporated: *See—*
Browning, William C.; Perricone, Alphonse C.; and Elting, Katherine Anne C., 3,677,961.
Miles, Marshall, to Vapor Corporation. Apparatus for detecting motion and indicating speed. 3,678,386, Cl. 324-174.000.
Miller, Arthur William: *See—*
Sisk, George William, Jr.; Miller, Arthur William; and Koleszar, Frank, 3,677,166.
Miller, Charles Eveleigh; and Schlatter, Gerald Lance, to International Telephone and Telegraph Corporation. Densitometer. 3,677,067, Cl. 73-32.000.
Miller, Charles W., to Minnesota Mining and Manufacturing Company. Detection of recorded control signals upon reproduction from recording medium. 3,678,221, Cl. 179-100.250.
Miller, Donald L., to Bendix Corporation, The. Self-adjusting electromagnetic clutch-brake. 3,677,377, Cl. 192-18.00b.
Miller, Fred B.: *See—*
Springston, George B., Jr.; Thomas, Samuel L.; and Miller, Fred B., 3,677,082.
Miller, John; and Searle, Martin, to Fisons Limited. Process for the preparation of triaminobenzene. 3,678,114, Cl. 260-580.000.
Miller, Leo H.; and Colegrove, James A., to Burroughs Corporation. Lithoplate bender. 3,677,059, Cl. 72-403.000.
Miller, Leroy J.; and Bilow, Norman, to Hughes Aircraft Company. Commercially useful polyphenylene polymers and method of production thereof. 3,677,976, Cl. 260-2.00h.
Miller, Stanley J.; and Davidson, James P., to National Can Corporation. Method of venting an aerosol dome. 3,677,211, Cl. 113-121.0aa.
Millmaster Onyx Corporation: *See—*
Shay, Edward Griffin; and Tavss, Edward A., 3,678,173.
Minarik Electric Company: *See—*
Minarik, William J.; and Mason, Raymond J., 3,678,360.
Minarik, William J.; and Mason, Raymond J., to Minarik Electric Company. Motor speed control with transformer feedback means. 3,678,360, Cl. 318-332.000.
Minato, Shoichi: *See—*
Isogawa, Masataka; Minato, Shoichi; and Ando, Zenjiro, 3,678,132.
Minck, Klaus: *See—*
Weber, Karl-Heinz; Bauer, Adolf; Merz, Herbert; and Minck, Klaus, 3,678,033.
Minckler, Leon Sherwood, Jr., to Esso Research and Engineering Company. Process of reacting carboxy-terminated polyalkylene polymer with an imine and resultant product. 3,678,013, Cl. 260-77.50r.
Miniature Electronic Components Corporation: *See—*
Pihl, George E., 3,678,426.
Minick, Robert: *See—*
Kendall, Giles Arthur; and Minick, Robert, 3,677,507.
Minieri, Pasquale P., to Tenneco Chemicals, Inc. Method for the control of pests with triorganotin (substituted phenoxides). 3,677,738, Cl. 71-97.000.
Minnesota Mining and Manufacturing Company: *See—*
Jones, Derrick A., 3,677,161.
Ljungkull, Gunnar R.; and Johnson, Robert H., 3,678,458.
Miller, Charles W., 3,678,221.
Sagawa, Burt K., 3,677,643.
Minnick, Leonard John, to G. & W. H. Corson Inc. Method of purifying hydrates of calcined dolomite and magnesite. 3,677,703, Cl. 23-186.000.
Minolta Camera Kabushiki Kaisha: *See—*
Nakatani, Keiji; and Takebe, Kaoru, 3,677,640.
Mirtain, Henri, to Uniroyal Englebert France S.A. Belted pneumatic tires. 3,677,319, Cl. 152-361.000.
Mirviss, Stanley B.: *See—*
Giolito, Silvio L.; and Mirviss, Stanley B., 3,677,948.
Misek, Victor A., to Sanders Associates, Inc. Electro-optical target motion sensor. 3,677,647, Cl. 356-28.000.
Mitsche, Roy T.; and Michalko, Edward, to Universal Oil Products Company. Transalkylation of alkylaromatic hydrocarbons in contact with a zeolite catalyst composition. 3,677,973, Cl. 252-455.00f.
Mitsubishi Edogawa Kagaku Kabushiki Kaisha: *See—*
Yonemitsu, Eiichi; Ishiki, Tomiya; Suzuki, Tsuyoshi; and Yashima, Yukio, 3,678,107.
Mitsubishi Jukogyo Kabushiki Kaisha: *See—*
Taniguchi, Kaname; Furukawa, Fujio; Hisatome, Tomiro; and Kimura, Yoshito, 3,677,660.
Mitsugi, Koji; Nakase, Takashi; and Hasegawa, Yoshisuke, to Ajinomoto Co., Inc. Acid protease and method of preparing the same. 3,677,898, Cl. 195-62.000.
Mitsui Toatsu Chemicals, Inc.: *See—*
Fujiwara, Ryozo; Ohara, Eiji; and Maeda, Kazuo, 3,677,699.
Miura, Yotaro; and Ito, Makoto, to Sony Corporation. Magnetic tape unloading mechanims for use with a tape record playback mechanism. 3,678,214, Cl. 179-100.20t.
Miyake, Akira: *See—*
Shibata, Motoo; Yamamoto, Hiroichi; Higashide, Eiji; Mizuno, Komei; Imanishi, Mashiko; and Miyake, Akira, 3,678,161.
Miyake, Akira; Horii, Stoshi; and Ueyanagi, Jisaburo, to Takeda Chemical Industries, Ltd. Hydroxyethane sulfonic acid derivative of enduracidin reduction product. 3,678,160, Cl. 424-117.000.
Miyake, Shigenobu, to Chuo Tatemono Co., Ltd. Method for directly electrochemically extracting gallium from a circulating aluminate solution in the Bayer process by eliminating impurities. 3,677,918, Cl. 204-105.00r.
Miyaoka, Senri: *See—*
Yoshida, Susumu; Ohgoshi, Akio; Miyaoka, Senri; and Katagiri, Yoshiharu, 3,678,318.
Miyaoka, Senri, to Sony Corporation. Cathode ray tube. 3,678,329, Cl. 315-13.00r.
Miyasaka, Tsugumitsu: *See—*
Yamamura, Katsumi; Miyasaka, Tsugumitsu; Hayashi, Shinichi; Yamamoto, Masao; and Matsubara, Yukio, 3,677,909.
Miyashita, Keiji. Simple spectrometer. 3,677,649, Cl. 356-74.000.
Miyazaki, Koshin: *See—*
Ishii, Keiichiro; Ueyama, Michio; Miyazaki, Koshin; and Noto, Tetsuo, 3,677,777.
Miyazaki, Toshio: *See—*
Takagi, Takeshi; Kawamoto, Tamio; and Miyazaki, Toshio, 3,677,381.
Mizuno, Komei: *See—*
Shibata, Motoo; Yamamoto, Hiroichi; Higashide, Eiji; Mizuno, Komei; Imanishi, Mashiko; and Miyake, Akira, 3,678,161.
Mobil Oil Corporation: *See—*
Andress, Harry J., Jr., 3,677,724.
Andress, Harry J., Jr., 3,677,725.
Blount, Elmo M.; Snavely, Earl S., Jr.; Messenger, Joseph U.; and Prueger, Nicolas J., 3,677,340.
Nnadi, John C., 3,677,943.
Rousso, Jack J., Jr.; and Willman, George N., 3,678,216.
Sherry, Howard S.; and Schwartz, Albert B., 3,677,698.
Strong, Jerry G.; and Kaufman, Harold A., 3,678,070.
Modglin, Donald D.: *See—*
Pelster, Arthur F.; and Modglin, Donald D., 3,677,174.
Moe, William West: *See—*
Barkman, Byron L.; Moe, William West; and Ross, Austin, 3,678,187.
Mokrzycki, Stanley Martin; Sexton, Edwin Leon; Powers, Thomas George; and Melnick, Daniel, to CPC International, Inc. Process for producing an instant cereal. 3,677,768, Cl. 99-83.000.
Moldovan, Michael Terrance, Jr., to AVM Corporation. Mechanical voting machine. 3,677,462, Cl. 235-54.00r.
Monarch Western Equipment Ltd.: *See—*
Koch, Charles Peter, 3,677,190.
Monsanto Australia Limited: *See—*
Buchanan, Alan D., 3,677,986.
Monsanto Company: *See—*
Beaulieu, Raymond D., 3,677,979.
Beaulieu, Raymond D., 3,678,101.
Clark, Frank S., 3,677,944.
Coran, Aubert Y.; and Vineyard, Billy D., 3,677,726.
Feiner, Maria; Gubler, Michel; and Guillon, Joseph, 3,677,942.
Huck, Rodney M.; and Le Blanc, John R., 3,678,008.
Huck, Rodney M., 3,678,103.
Mottus, Edward H.; and Ort, Morris R., 3,677,911.
Riley, Myrne R., 3,676,992.
Schierding, Royce G.; and Tolbert, Tommy L., 3,676,916.
Stenzel, Jurgen A., 3,677,741.
Taylor, Keith M., 3,678,090.
Monsanto Company, mesne: *See—*
Haley, David J.; Cunningham, Robert E.; and Privott, Wilbur J., Jr., 3,677,481.
Monsun-Tison AB: *See—*
Lagerqvist, Roger; and Stenlund, Stig, 3,677,141.
Montecatini Edison S.p.A.: *See—*
Boffa, Gioacchino; Crotti, Argento; Pieri, Giampiero; Mangini, Angelo; and Tundo, Antonio, 3,678,053.
Ottaviana, Quintino, 3,677,689.
Monteiro, Arnold J.: *See—*
Zierak, Stephen J.; and Monteiro, Arnold J., 3,677,031.
Montgomery, Andrew P.; deceased (by Montgomery, Ann P.; executrix), to Philco-Ford Corporation. Automatic frequency control of voltage variable reactance tuned receivers. 3,678,183, Cl. 178-5.8af.
Montgomery, Ann P.: *See—*
Montgomery, Andrew P., 3,678,183.
Monti, Renzo J., to United States of America, Army. Adjustable, quickly releasable webbing connector. 3,676,901, Cl. 24-191.000.
Moore, Carl, to Dow Chemical Company, The. Anionic acrylate latexes that possess sensitivity to alkalinity. 3,677,991, Cl. 260-29.6.
Moore, Dan B. Log type building unit. 3,676,969, Cl. 52-233.000.
Moore, Eric Desmond. Practice golf club. 3,677,553, Cl. 273-186.00a.
Moore, Eugene R.: *See—*
Zimmerman, Robert L.; Dennis, Kent S.; and Moore, Eugene R., 3,678,016.
Moore, Franklin K.: *See—*
Kocher, Robert C.; Moore, Franklin K.; Samelson, Harold; and Watson, William R., 3,678,410.
Moore, Robert David, Jr. Heat link, a heat transfer device with isolated fluid flow paths. 3,677,336, Cl. 165-105.000.
Moore, Rodney S.: *See—*
Dinenno, Philip A., Jr.; Bonk, Joseph S.; Conrad, Kenneth C.; Moore, Rodney S.; Lochman, Harry E.; and Torello, Daniel D., 3,677,658.
Moos, Albert H.: *See—*
Probst, Richard O.; and Moos, Albert H., 3,677,470.
Morello, Edwin F., to Standard Oil Company (Indiana). Polyamide-imide compositions containing coatability aids. 3,677,992, Cl. 260-32.80n.
Morgan, Burton D. Cored slab wall panels. 3,677,688, Cl. 425-468.000.
Morgan Construction Company: *See—*
Sieurin, Donald, 3,677,120.
Morgan, Donald G., to Electronic Memories & Magnetics Corporation. Magnetic separator. 3,678,427, Cl. 335-304.000.
Morgan, George W., to Subsea Equipment Associates Limited, mesne. Bi-axial articulating pipeline structure. 3,677,302, Cl. 138-106.000.
Morgan, Jack B., to Allegheny Ludlum Industries, Inc. Method and apparatus for evaluating metal cleanliness. 3,677,073, Cl. 73-67.900.
Mori, Hisakazu: *See—*
Matsuda, Hideaki; Mori, Hisakazu; and Yamauchi, Fujio, 3,678,012.
Mori, Hisayuki; and Noguchi, Yoji, to Sekisui Kegaku Ogyo Kabushiki Kaisha. Rotational molding apparatus. 3,677,670, Cl. 425-62.000.
Morita, Goro: *See—*
Majima, Kanji; and Morita, Goro, 3,677,934.
Morita, Katsuhiko, to Kabushiki Kaisha Daini. Hand setting mechanism for watches. 3,676,994, Cl. 58-68.000.
Morita, Katsuhiko; and Yamamoto, Yoshio, to Kabushiki Kaisha Daini Seikosha. Return mechanism for a stopwatch or a chronograph. 3,676,995, Cl. 58-76.000.
Morita, Ken-Ichi; Suzuki, Zennosuke; and Hirose, Hiromitsu, to Toray Industries, Inc. Process for the preparation of 2-(hydroxyhydrocarbyl) acrylates. 3,678,093, Cl. 260-468.00r.
Moroli, Frank A.: *See—*
Jeff, William C.; Luyster, Thomas, Jr.; Lynch, James F., Jr.; and Moroli, Frank A., 3,677,794.
Morris, John, to Lucas, Joseph, (Industries) Limited. Relief valve. 3,677,287, Cl. 137-491.000.
Morris, Louis; and Specht, Theodore R., to Westinghouse Electric Corporation. Interwinding shield for power transformers. 3,678,428, Cl. 336-84.000.
Morrison, Andrew Ivar; and Hannah, Bruce R., to Knoll International, Inc. Slung furniture. 3,677,601, Cl. 297-441.000.
Morrison, Clyde A. Peristaltic fluid pump. 3,677,667, Cl. 417-474.000.
Morrison, Robert M.: *See—*
Anhalt, John W.; and Morrison, Robert M., 3,676,912.

Morrison, William F.; and Hauser, Henry A., 1/2 to Universal Oil Products Company and 1/2 to Ambuco Limited Grosvenor House. Catalytic cracking apparatus. 3,677,715, Cl. 23-288.00a.
Morse, John E.; and Rosenburgh, Norman J., to Eastman Kodak Company. Tape dispenser and applicator. 3,677,864, Cl. 156-505.000.
Morton, William D., Jr.: *See—*
Chaparro, John J.; Ellis, Lowell V.; Meanor, Doyle W.; Morton, William D., Jr.; Richelmann, Bernd H.; Ross, George B.; and Toth, John E., 3,677,401.
Moscovich, Ivan. Board game apparatus. 3,677,549, Cl. 273-135.00r.
Moss, Norman, to Plessey Company Limited, The. Fuel-injection devices for mixture-aspiring internal-combustion engines. 3,677,236, Cl. 123-32.0ea.
Moss, Robert D. Power assist barge for ocean service. 3,677,215, Cl. 115-16.000.
Mostyn, William T., Jr., to MusiConics International, Inc. Simultaneous logarithmic conversion and digital display apparatus. 3,678,505, Cl. 340-347.0ad.
Motorola, Inc.: *See—*
O'Neal, Donald V.; and Kizielewski, Edward T., 3,677,630.
Palac, Kazimir, 3,677,791.
Spies, Rolf E., 3,678,412.
Mottier, Francois; and Wild, Peter J., to Brown, Boveri & Company, Ltd. Method of and apparatus for electronically obtaining the argument of a complex function. 3,678,399, Cl. 328-134.000.
Mottus, Edward H.; and Ort, Morris R., to Monsanto Company. Catalyst for polymerization of olefinic compounds. 3,677,911, Cl. 204-59.0qm.
Motz, Carl H.: *See—*
Anthony, Russell W.; and Motz, Carl H., 3,677,052.
Mounts, Francis E.: *See—*
Grolitzer, Arthur J.; and Mounts, Francis E., 3,678,459.
Mousseron, Max J., to Etablissements Clin-Byla. Substituted thiazolidine-4-ones. 3,678,041, Cl. 260-240.00a.
Mueller Co.: *See—*
Roos, Robert R., 3,677,578.
Muller, Helmut; and Pistl, Gustav, to Voith Getriebe KG. Hydrodynamic reversing gear. 3,677,004, Cl. 60-54.000.
Muller, Paul: *See—*
Schmidt, Andreas; and Muller, Paul, 3,677,587.
Multra-Guard, Inc.: *See—*
Dan, Carlo; and Pinkham, James F., 3,678,509.
Munach, Arnold S., to United States of America, Navy. Velocity discriminating time mechanical ordnance fuze. 3,677,186, Cl. 102-83.000.
Munn, David E.; and Maddestra, Robert, to Damon Corporation. Instructional electric motor. 3,678,310, Cl. 310-40.0mm.
Munschy, Andre V.: *See—*
Horonick, Andrew; and Munschy, Andre V., 3,678,151.
Munselle, Edward A. Method and apparatus for forming carbon dioxide snow. 3,677,020, Cl. 62-10.000.
Muramoto, Hiroo: *See—*
Suzuki, Hisao; Musashi, Akira; Hiruta, Makoto; and Muramoto, Hiroo, 3,678,014.
Muri, Richard L.; and Vere, Thomas D., to Ludlow Corporation. Novel pressure-sensitive transfer sheet. 3,677,817, Cl. 117-235.000.
Murphy, Shields: *See—*
Siegfried, Edward C.; Harwell, Conner J.; and Murphy, Shields, 3,677,687.
Murr, William C., to Berkeley Bio-Engineering, Inc. Tonometer probe for digital read-out. 3,677,074, Cl. 73-80.
Murray, Gregory J.; and Tarrant, Fred K., Jr., to Tarrant Manufacturing Company. Vacuum machine for street cleaning. 3,676,891, Cl. 15-346.000.
Musashi, Akira: *See—*
Suzuki, Hisao; Musashi, Akira; Hiruta, Makoto; and Muramoto, Hiroo, 3,678,014.
MusiConics International, Inc.: *See—*
Mostya, William T., Jr., 3,678,505.
Musschoot, Albert, to General Kinematics Corporation. Drive structure for use with vibratory devices. 3,677,395, Cl. 198-220.0da.
Mussinan, Cynthia; Giacino, Christopher; and Katz, Ira, to International Flavors & Fragrances Inc. Cycloalkyl mercaptan compositions and processes therefor. 3,677,772, Cl. 99-140.
Muth, Willi: *See—*
Rottner, Emil; Bock, Franz; Muth, Willi; and Wenzel, Gunter, 3,678,146.
Myers, Gerald D.: *See—*
King, James Robert; and Myers, Gerald D., 3,677,062.
Myhre, Jon F. Electric lamp. 3,678,264, Cl. 240-84.000.
Nabiullin, Faat Khatovich; Buzova, Zoya Mikhailovna; Gertsik, Mikhailovich; and Zjuzin, Sergei Alexeevich. Arrangement for manufacture of a primary cell electrode. 3,677,824, Cl. 136-175.
Nadazawa, Yoshiyuki; Nakamura, Yashuharu; Takei, Haruo; Sato, Akira; and Ikeda, Tadashi, to Fuji Photo Film Co., Ltd. Silver halide supersensitized photographic emulsion. 3,677,765, Cl. 96-124.000.
Nagamatsu, Takeo; Yamada, Yusaku; and Yamada, Kazumi, to Fujitsu Limited. Video display system including raster type cathode ray tube. 3,678,498, Cl. 340-324.00a.
Nagy, Ernest J., to Pullman Incorporated. Railroad hopper car with plow. 3,677,191, Cl. 105-248.000.
Nagy, Joseph S.: *See—*
Brindisi, Frank A., Jr.; Nagy, Joseph S.; and Yarkosky, Eugene F., 3,677,949.
Naher, Gotthilf: *See—*
Bergmeyer, Hans Ulrich; Naher, Gotthilf; Thum, Waldemar; Lauerer, Albert; and Emmer, Rudolf, 3,677,901.
Naka, Jinshichi; Tokuda, Yasunori; Koono, Takehiko; and Utsugi, Jun, to Takeda Chemical Industries, Ltd. Method for the production of a flavor enhancing crystal. 3,677,773, Cl. 99-140.00n.
Nakagawa, Kenshi: *See—*
Horikawa, Susumu; and Nakagawa, Kenshi, 3,677,785.
Nakagawa, Yunosuke: *See—*
Nakajima, Meiken; and Nakagawa, Yunosuke, 3,677,954.
Nakajima, Meiken; and Nakagawa, Yunosuke, to Kao Soap Co., Ltd. Liquid abrasive cleanser composition. 3,677,954, Cl. 252-121.000.
Nakamura, Yashuharu: *See—*
Nadazawa, Yoshiyuki; Nakamura, Yashuharu; Takei, Haruo; Sato, Akira; and Ikeda, Tadashi, 3,677,765.
Nakanishi, Michio; Oe, Takanori; and Maruyama, Yutaka, to Yoshitomi Pharmaceutical Industries, Ltd. 9-Oxoxanthen-2-yl-alkanoic acids. 3,678,077, Cl. 260-335.000.
Nakase, Takashi: *See—*
Mitsugi, Koji; Nakase, Takashi; and Hasegawa, Yoshisuke, 3,677,898.
Nakase, Yoshiaki: *See—*
Ito, Akihiko; Nakase, Yoshiaki; Kojima, Katsumi; Yoshida, Masaru; Iwai, Tadashi; Hayashi, Koichiro; and Okamura, Seizo, 3,677,922.
Nakatani, Keiji; and Takebe, Kaoru, to Minolta Camera Kabushiki Kaisha. Electrostatic contact printing device for use in a photographic contact printer. 3,677,640, Cl. 355-78.000.
Naken, M. I., Company: *See—*
Spier, Jerome B., 3,677,400.
Napolitano, John P.: *See—*
Woolensak, John C.; and Napolitano, John P., 3,678,112.
Narita, Fujiaki, to Sanyo Electric Co., Ltd. Video tape recorder with slow motion reproducing apparatus. 3,678,186, Cl. 178-66.0fs.
Narken, Bernt: *See—*
Hoogendorn, Helen M.; Narken, Bernt; Roeder, Paul J.; and Sunners, Brian, 3,678,211.
Narlock, Raymond M.: *See—*
Metevia, Virgil L.; Narlock, Raymond M.; and Mast, Milfred E., 3,677,877.
Nasby, James S.: *See—*
Jaster, Dale R.; and Nasby, James S., 3,678,376.
Nather, Claus Siegfried, to Auergesellschaft GmbH. Pack for gas mantles. 3,677,398, Cl. 206-45.34.
National Can Corporation: *See—*
Miller, Stanley J.; and Davidson, James P., 3,677,211.
Stepenske, Lawrence D.; and Cassidy, Edward K., 3,677,226.
National Cash Register Company, The: *See—*
Graham, Richard E., 3,678,465.
National Distillers and Chemical Corporation: *See—*
Frampton, Orville D.; and Feldman, Julian, 3,678,118.
Watson, Lloyd M.; and Birchall, William R., 3,677,477.
National Dust Collector Corporation: *See—*
McIlvaine, Robert L., 3,677,407.
National Forge Company: *See—*
Bowles, Arnold Gordon, 3,677,674.
National Research Development Corporation: *See—*
Trott, John James; and Grainger, James William, 3,678,378.
National Starch and Chemical Corporation: *See—*
Ray-Chaudhuri, Dilip K.; and Stockmann, Hans H., 3,678,035.
Sirota, Julius; Bentley, David J., Jr.; and Jubilee, Benjamin D., Jr., 3,677,985.
National Union Electric Corporation: *See—*
Berry, Willis E., 3,676,894.
Navara, Joseph. Window brace. 3,677,592, Cl. 292-288.000.
Neanhouse, Nick C. Cartridge loaded alarm device. 3,676,945, Cl. 42-1.00g.
Necchi S.p.A.: *See—*
Perlino, Silvano, 3,677,210.
Nee, Michael A., to Norris Industries, Inc. Disposable projectile launcher of the recoilless type. 3,677,131, Cl. 89-1.703.
Neeb, Rudolf, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Process for the manufacture of 6-nitro-9-amino-2-ethoxy-acridine. 3,678,054, Cl. 260-279.00r.
Negretti & Zambra (Aviation) Limited: *See—*
Underwood, Michael John, 3,678,231.
Nelson, Gordon E. Snow sled. 3,677,568, Cl. 280-21.00r.
Nepomiastchy, Alexis: *See—*
Boulin, Jacques R.; and Nepomiastchy, Alexis, 3,678,419.
Nerz, Joseph E., to Extracorporeal Medical Specialties, Inc. Separable surgical needle. 3,677,243, Cl. 128-214.400.
Neti, Radhakrishna M.: *See—*
Harman, John N., III; and Neti, Radhakrishna M., 3,677,708.
Neumann, Charles G.: *See—*
Nitschneider, Robert M.; Neumann, Charles G.; and Krueger, Harvey R., 3,677,461.
Newell, John Anthony, to Bell Telephone Laboratories, Incorporated. Automatic gain control having a fast broadband attack mode and a slow narrow band receiver mode. 3,678,393, Cl. 325-410.000.
Newman, James W.: *See—*
Gordon, William F.; and Newman, James W., 3,677,490.
Newstead, Charles; Cullen, John Lesley; and Zajko, Michal, to Girling Limited. Cam actuated drum brake. 3,677,374, Cl. 188-329.000.

Newton, George R.; and Jageler, Alfred H., to Amoco Production Company. Sidewall well-formation fluid sampler. 3,677,081, Cl. 73-155.000.
Nexsen, William E., Jr.: *See—*
Coensgen, Frederic H.; and Nexsen, William E., Jr., 3,677,889.
Nichols, Andrew J.: *See—*
Condon, David C.; and Nichols, Andrew J., 3,678,462.
Nichols, Duane W., to Whirlpool Corporation. Axially movable twist tray domestic ice maker. 3,677,030, Cl. 62-353.000.
Nicholson, Donald R. Animal dehorning apparatus. 3,676,929, Cl. 30-228.000.
Nickelsen, Hubert O.; Kopanda, Joseph E.; and Piasecki, Felix J., to United States Steel Corporation. Method of making cement clinkers. 3,677,781, Cl. 106-100.000.
Nielsen, Asger T., to Compufoto, Inc. Data source microfilm recorder with forms overlay. 3,677,146, Cl. 95-1.100.
Nikles, Erwin, to Ciba-Geigy AG. Process for the manufacture of oximinodithiolanes. 3,678,074, Cl. 260-327.00m.
Nikles, Erwin, to Ciba-Geigy AG. Carbamoyloximino-alkenyldithiolanes. 3,678,075, Cl. 260-327.00m.
Nikolaos, Christopoulos: *See—*
Werner, Nickel; and Nikolaos, Christopoulos, 3,677,151.
Nilles, James Jacob: *See—*
Kirkpatrick, Truman; and Nilles, James Jacob, 3,677,783.
Nilson, Jay B.: *See—*
Dalziel, Warren L.; Nilson, Jay B.; and Wartner, Donald L., 3,678,481.
Nimerick, Kenneth H.: *See—*
Stout, Caleb M.; Nimerick, Kenneth H.; and Parks, Christ F., 3,677,014.
Nippon Columbia Kabushikikaisha (Nippon Columbia Co., Ltd.): *See—*
Nishizawa, Masahiro, 3,677,757.
Nippon Electric Co., Ltd.: *See—*
Nishida, Nobuo; and Sakaguchi, Mitsuhito, 3,677,622.
Nippon Electric Company, Limited: *See—*
Kuroda, Takaji, 3,678,415.
Terazawa, Yoshizumi; and Ayaki, Kazuo, 3,678,317.
Nippon Kokan Kabushiki Kaisha: *See—*
Arimura, Tohru; Kamata, Masamoto; Saito, Morio; Suzuki, Hiromu; and Iguchi, Masakazu, 3,677,045.
Hatagi, Hiroyuki; Kanamaru, Kenichi; and Funasaki, Yasuo, 3,678,226.
Nippon Oil Seal Industry Co., Ltd.: *See—*
Matsumoto, Shigeru; and Gotoh, Toshiaki, 3,677,605.
Nippon Piston Ring Co., Ltd.: *See—*
Sugahara, Eisuke, 3,677,558.
Nippon Seiko Kabushiki Kaisha: *See—*
Suzuki, Toshio, 3,677,032.
Nippon Soda Co., Ltd.: *See—*
Ishii, Keiichiro; Ueyama, Michio; Miyazaki, Koshin; and Noto, Tetsuo, 3,677,777.
Suzuki, Hisao; Musashi, Akira; Hiruta, Makoto; and Muramoto, Hiroo, 3,678,014.
Nippon Steel Corporation: *See—*
Akuta, Tomohiko; Honsyo, Yoshi; Hashirizaki, Sinya; Hiruma, Teruo; and Kurasawa, Kazuo, 3,678,192.
Asano, Hidejiro; and Ouyagi, Yashichi, 3,677,797.
Nippondenso Kabushiki Kaisha: *See—*
Oishi, Kazuo; Kurebayashi, Tokuhiro; Ando, Noriyoshi; Yamamoto, Noboru; and Yoshida, Hiroshi, 3,677,253.
Takeda, Yosiaki, 3,678,224.
Nishi, Seiya; Oshio, Akira; and Kiyomitsu, Eto, to Onoda Cement Company Limited. Method of producing high strength mortar or concrete. 3,677,780, Cl. 106-90.000.
Nishida, Jun; and Ohhara, Takahumi, to Matsushita Electric Industrial Company, Limited. High-field emission cathodes and methods for preparing the cathodes. 3,678,325, Cl. 313-346.000.
Nishida, Nobuo; and Sakaguchi, Mitsuhito, to Nippon Electric Co., Ltd. Light deflector comprising cascaded light displacement means and hologram plate. 3,677,622, Cl. 350-163.000.
Nishijima, Yasushi: *See—*
Oohara, Saburo; Amemiya, Koitsuro; Nishijima, Yasushi; Fukushima, Mitsuyoshi; and Shimizu, Kunio, 3,677,871.
Nishizawa, Masahiro, to Nippon Columbia Kabushikikaisha (Nippon Columbia Co., Ltd.). Method of making phosphor screen for color cathode ray tube. 3,677,757, Cl. 96-36.100.
Nissan Motor Company, Limited: *See—*
Takagi, Takeshi; Kawamoto, Tamio; and Miyazaki, Toshio, 3,677,381.
Nitda, Taro; Yumoto, Hiroshi; Tsuruoka, Takashi; Hammoto, Kazuko; Shomura, Takashi; and Ohashi, Takao, to Meji Seika Kaisha Ltd. Antibiotics obtained from streptomyces miharaensis. 3,678,159, Cl. 424-116.000.
Nitschneider, Robert M.; Neumann, Charles G.; and Krueger, Harvey R., to Reynolds Products Inc. Security device. 3,677,461, Cl. 232-15.000.
Nitzsche, Siegfried: *See—*
Kaiser, Wolfgang; Nitzsche, Siegfried; Wohlfarth, Ernst; and Hittmair, Paul, 3,677,996.
Kaiser, Wolfgang; Nitzsche, Siegfried; Wohlfarth, Ernst; Strasser, Alois; and Hittmair, Paul, 3,677,997.
Kaiser, Wolfgang; Nitzsche, Siegfried; Wohlfarth, Ernst; and Hittmair, Paul, 3,678,003.
Nitzsche, Siegfried; Kaiser, Wolfgang; Wohlfarth, Ernst; and Hittmair, Paul, to Wacker-Chemie G.m.b.H. Method for preparing hydrophobic silica. 3,677,784, Cl. 106-309.000.
Nitzsche, Siegfried; and Wohlfarth, Ernst, to Wacker-Chemie G.m.b.H. Ambient temperature curable silicone rubber compositions. 3,678,002, Cl. 260-18.00s.
Niwa, Kunihiko: *See—*
Iwasaki, Masahiro; Goto, Nobuyuki; Fujisaki, Hiroya; and Niwa, Kunihiko, 3,678,390.
Nixon, Dalbro R., Jr.; McIlhenny, David J.; and Harrell, Marvin L., to Virginia Chemicals Inc. Multiple aerosol dispenser. 3,677,441, Cl. 252-63.000.
NL Industries, Inc.: *See—*
Blumenthal, Warren B., 3,677,798.
Nnadi, John C., to Mobil Oil Corporation. Novel phosphorus containing pyrimidines and lubricants containing same. 3,677,943, Cl. 252-46.700.
Noguchi, Yoji: *See—*
Mori, Hisayuki; and Noguchi, Yoji, 3,677,670.
Nold, Walter E. Apparatus and method for degassing a liquid. 3,676,983, Cl. 55-192.000.
Noon, Alonzo W., to Electroprint, Inc. Toner charging and feeding machine. 3,677,224, Cl. 118-63.000.
Norcross, Austin S., to Norcross Corporation. Magnetically coupled viscometer. 3,677,070, Cl. 73-57.000.
Norcross Corporation: *See—*
Norcross, Austin S., 3,677,070.
Nordeen, Erwin E., to Whirlpool Corporation. Vacuum cleaner nozzle lifting device. 3,676,892, Cl. 15-359.000.
Norris Industries, Inc.: *See—*
Nee, Michael A., 3,677,131.
North American Philips Company, Inc.: *See—*
Le Coq, Daniel France, 3,677,833.
North American Rockwell Corporation: *See—*
Booher, Robert K., 3,678,290.
Dyer, George A., 3,678,298.
Ebertin, Michel A., 3,678,476.
Etchell, Gordon, 3,677,121.
Fitzgerald, James E., 3,677,904.
Owens, John M., 3,678,479.
Northrop Corporation: *See—*
Landrum, Bobby L., 3,678,330.
Northrop Weaving Machinery Limited: *See—*
Atkinson, Cyril Millward, 3,677,306.
Notelteirs, Victor Rosallie; and Janssen, Eduard Josef Philomena, to U.S. Philips Corporation. Filament support for tubular lamp. 3,678,319, Cl. 313-271.000.
Noto, Tetsuo: *See—*
Ishii, Keiichiro; Ueyama, Michio; Miyazaki, Koshin; and Noto, Tetsuo, 3,677,777.
Noumi, Kazunobu: *See—*
Sugimoto, Yoshitaka; Sannomiya, Isao; and Noumi, Kazunobu, 3,677,694.
Novak, Raymond F.: *See—*
Ramspeck, Howard B.; and Novak, Raymond F., 3,677,457.
Novar Corporation: *See—*
Condon, David C.; and Nichols, Andrew J., 3,678,462.
Novo Terapeutisk Laboratorium A/S: *See—*
Aunstrup, Knud, 3,677,902.
Nuckolls, Joe A., to General Electric Company. Lamp control circuit with high leakage reactance transformer and controlled bilateral switching means. 3,678,371, Cl. 323-6.000.
Nussbaum, Eric; Toy, Wing Noon; and Woinsky, Melvin Neil, to Bell Telephone Laboratories, Incorporated. Multiprocessor with cooperative program execution. 3,678,467, Cl. 340-172.500.
N.V. Tot Aanneming van Werken voorheen H. J. Nederhorst: *See—*
Van Weele, Abraham Francois, 3,677,018.
Nybom, Nils Goran; deceased (by Nybon, Ethel Barbro Louis; administratrix), to AB Instrumenta. Coating device for producing a thin layer of a fluid or semi-fluid material. 3,677,227, Cl. 118-415.000.
Nybon, Ethel Barbro Louis: *See—*
Nybom, Nils Goran, 3,677,227.
Nyholm, Erik: *See—*
Bryk, Petri; Haani, Martti; Honkasalo, Jorma B.; Kinnunen, Jorma; Lindsjo, Olle; Nyholm, Erik; Poijarvi, Jaakko; Rastas, Jussi; and Kangas, Juhani, 3,677,696.
Oatley, Charles W., to Cambridge Scientific Instruments Limited. Electron beam apparatus. 3,678,384, Cl. 324-158.00r.
Oba, Harutaro; Sawazu, Toshihiko; Takeuchi, Sugio; and Yamaguchi, Norio, to Tokyo Electric Co., Ltd. Adding, subtracting and totaling calculator. 3,677,464, Cl. 235-60.0tk.
Obergfell, Allen R.: *See—*
Ramspeck, Howard B.; and Obergfell, Allen R., 3,677,456.
Oberst, Charles V.; and Oberst, Glen C., to EdAids, Inc. Student responder teaching device. 3,676,939, Cl. 35-48.00r.
Oberst, Glen C.: *See—*
Oberst, Charles V.; and Oberst, Glen C., 3,676,939.
O'Brien, Walter F., 50% to Cucchiara, Philip M. Harpsichord with sustain mechanism. 3,677,124, Cl. 84-258.000.
O'Connell, John T.: *See—*
Wayson, Andrew J.; and O'Connell, John T., 3,676,917.
O'Connor, Chadwell. Tiedown device. 3,677,509, Cl. 248-187.000.
Oe, Takanori: *See—*
Nakanishi, Michio; Oe, Takanori; and Maruyama, Yutaka, 3,678,077.

Oetiker, Hermann Walter, to Polytronic SA. Impenetrable automatically registering target. 3,677,546, Cl. 273-102.20r.

Ohara, Eiji: *See—*
Fujiwara, Ryozo; Ohara, Eiji; and Maeda, Kazuo, 3,677,699.

O'Hare, Louis Richard. Corona cell for nitrogen and other reactions. 3,677,931, Cl. 204-312.000.

Ohashi, Takao: *See—*
Nitda, Taro; Yumoto, Hiroshi; Tsuruoka, Takashi; Hammoto, Kazuko; Shomura, Takashi; and Ohashi, Takao, 3,678,159.

Ohgoshi, Akio: *See—*
Yoshida, Susumu; Ohgoshi, Akio; Miyaoka, Senri; and Katagiri, Yoshiharu, 3,678,318.

Ohhara, Takahumi: *See—*
Nishida, Jun; and Ohhara, Takahumi, 3,678,325.

Ohio Brass Company, The: *See—*
Kalb, John W., 3,678,340.

Ohta, Wasaburo; and Sakai, Katsuo, to Kabushiki Kaisha Ricoh. Polarity reversal electrophotography. 3,677,751, Cl. 96-1.00r.

Oishi, Kazuo; Kurebayashi, Tokuhiro; Ando, Noriyoshi; Yamamoto, Noboru; and Yoshida, Hiroshi, to Nippondenso Kabushiki Kaisha. Capacitor discharge type ignition system for internal combustion engines. 3,677,253, Cl. 123-148.00e.

Okada, Takashi, to Sony Corporation. Semiconductor circuit for phase comparison. 3,678,185, Cl. 178-5.4sd.

Okamura, Seizo: *See—*
Ito, Akihiko; Nakase, Yoshiaki; Kojima, Katsumi; Yoshida, Masaru; Iwai, Tadashi; Hayashi, Koichiro; and Okamura, Seizo, 3,677,922.

Okumura, Minoru, to Konishiroku Photo Industry Co., Ltd. Method for recording a photographic density. 3,678,188, Cl. 178-6.60r.

Okumura, Tamotsu; and Kadono, Tetsuro, to Shionogi & Co., Ltd. Sintered chromatographic plate and method for producing the same. 3,677,410, Cl. 210-198.000.

Okura Kogyo Kabushiki Kaisha: *See—*
Matsuda, Hideaki; Mori, Hisakazu; and Yamauchi, Fujio, 3,678,012.

Oldfield, Thomas Alfred, to Plessey Company Limited, The. Supercharging means for internal-combustion engines. 3,676,999, Cl. 60-13.000.

O'Leary, Kevin J.: *See—*
Bennett, John E.; and O'Leary, Kevin J., 3,677,975.

Olin Corporation: *See—*
Caule, Elmer J., 3,677,828.

Oliver, Evan M.: *See—*
Mayer, Edward H.; and Oliver, Evan M., 3,677,834.

Oliver, Jay Thomas, to Formica Corporation. Decorative laminate surfaced with a transparent film of polyvinyl fluoride which film is temporarily covered with a transparent film of nylon. 3,677,876, Cl. 161-165.000.

Oliver, Joseph R.: *See—*
Fletcher, Ralph A.; and Oliver, Joseph R., 3,677,258.

Oliver, Maywood. Banjo having combination banjo body and tone rings. 3,677,125, Cl. 84-271.000.

Oliver, Robert K.; and Ford, George L., to Union Oil Company of California. Method of using a coke preheater. 3,677,533, Cl. 263-52.000.

Olivetti, Ing. C., & C., S.p.A.: *See—*
Bartocci, Antonio, 3,678,483.
Bretti, Franco, 3,677,385.
Serracchioli, Francesco; and Restivo, Francesco, 3,678,179.

Olszewski, Walter J., to Union Carbide Corporation. Gas liquefaction process and apparatus. 3,677,019, Cl. 62-9.000.

O'Neal, Donald V.; and Kizielewski, Edward T., to Motorola, Inc. Audio-visual display apparatus for receiving cartridges containing audio visual information. 3,677,630, Cl. 353-15.000.

O'Neill, Joseph L.: *See—*
Allen, Donald J.; and O'Neill, Joseph L., 3,678,163.

Ono, Ichiro, to Alps Electric Co., Ltd. Preset device for all channel tuner using variable reactance element as tuning element. 3,678,421, Cl. 334-15.000.

Onoda Cement Company Limited: *See—*
Nishi, Seiya; Oshio, Akira; and Kiyomitsu, Eto, 3,677,780.

Oohara, Saburo; Amemiya, Koitsuro; Nishijima, Yasushi; Fukushima, Mitsuyoshi; and Shimizu, Kunio, to Kanegafuchi Boseki Kabushiki Kaisha. Multi-layered artificial leather material. 3,677,871, Cl. 161-84.000.

Oosone, Koozo, to Sony Corporation. Magnetic recording and reproducing device. 3,677,556, Cl. 274-4.00c.

Opresko, Stephen Thomas: *See—*
Stoller, Arthur Irwin; and Opresko, Stephen Thomas, 3,677,848.

Optical Research and Development Corporation: *See—*
Schwemin, Arnold J., 3,677,618.

Organon Inc.: *See—*
De Jager, Evert; and Homan, Jan Daniel Herman, 3,678,027.

Orkwiszewski, Wayne L.: *See—*
Boetto, Charles; and Orkwiszewski, Wayne L., 3,677,348.

Orrell, Irving F., Jr., to United States of America, Army. Digital data transmission and detection system. 3,678,194, Cl. 178-68.000.

Ort, Morris R.: *See—*
Mottus, Edward H.; and Ort, Morris R., 3,677,911.

Ort, Wolfgang, to Eastman Kodak Company. Mechanism for synchronizing operation of a camera shutter and a mechanically actuated flash device. 3,677,158, Cl. 95-11.500.

Orwoll, Edward Francis: *See—*
Lynch, Charles Andrew, Jr.; and Orwoll, Edward Francis, 3,678,086.

Osakeyhtio, A. Ahlstrom: *See—*
Tuomaala, Jorma A. K., 3,676,909.

Osawa, Sadao: *See—*
Tamai, Yasuo; Osawa, Sadao; and Taguchi, Seiichi, 3,677,766.

Osborne, Richard F.: *See—*
Lampi, Rauno A.; Hu, Kwoh H.; and Osborne, Richard F., 3,678,276.

Osher, John E.; Kinney, John D.; and Steinhaus, James F., to United States of America, Atomic Energy Commission. Hydrogen ion beam generating electrode. 3,678,323, Cl. 313-231.000.

Oshima, Teruo: *See—*
Yasui, Seimei; Hirooka, Masaaki; and Oshima, Teruo, 3,678,018.

Oshio, Akira: *See—*
Nishi, Seiya; Oshio, Akira; and Kiyomitsu, Eto, 3,677,780.

Osika, Thomas F., to McGill Manufacturing Company, Inc. Spring mounted key for electrical switch. 3,678,229, Cl. 200-42.00t.

Osteen, Mitchell M.; and Grindle, James L., to General Electric Company. Lighting assembly device. 3,678,263, Cl. 240-52.000.

Oster, John, Manufacturing Co.: *See—*
Blachly, Donald L.; and Weidner, Jack E., 3,678,246.

Ostwald, Fritz; and Hertell, Siegfried, to ITT Industries, Inc. Volume indicator for fluid tanks. 3,677,220, Cl. 116-118.000.

Oswald, Robert A. Method of producing time-position records of objects. 3,678,189, Cl. 178-6.70r.

Otis Engineering Corporation: *See—*
Sizer, Phillip S., 3,677,345.

Ottaviana, Quintino, to Montecatini Edison S.p.A. Process for dyeing manufactured articles of polyamidic resins. 3,677,689, Cl. 8-4.000.

Outokumpu Oy: *See—*
Bryk, Petri; Haani, Martti; Honkasalo, Jorma B.; Kinnunen, Jorma; Lindsjo, Olle; Nyholm, Erik; Poijarvi, Jaakko; Rastas, Jussi; and Kangas, Juhani, 3,677,696.
Vartiainen, Osmo O., 3,677,327.

Ouyagi, Yashichi: *See—*
Asano, Hidejiro; and Ouyagi, Yashichi, 3,677,797.

Owens, Carlos L.: *See—*
Cutting, Arch E.; Owens, Carlos L.; Williams, Dewey H.; and Hooper, Felix E., 3,677,305.

Owens, John M., to North American Rockwell Corporation. Conductor arrangement for propagation in magnetic bubble domain systems. 3,678,479, Cl. 340-174.0tf.

Owens-Illinois, Inc.: *See—*
Boyer, Joseph E., 3,677,454.

Oxford Chemicals: *See—*
Weaver, Roger; and Schaffstall, Eugene, 3,677,827.

Packard Instrument Company, Inc., mesne: *See—*
Graff, Jack; and Dora, Ralph A., 3,677,706.

Page, Edward, to Rich Manufacturing Company of California, mesne. Fire hydrant. 3,677,282, Cl. 137-283.000.

Page, Russel D.: *See—*
Johnson, Harold M.; and Page, Russel D., 3,677,350.

Paige, Edward George Sydney, to United Kingdom of Great Britain and Northern Ireland, Minister of aviation Supply in Her Britannic Majesty's Government of the. Acoustic surface wave devices. 3,678,305, Cl. 310-8.100.

Palac, Kazimir, to Motorola, Inc. Method of depositing vitreous material on a faceplate panel. 3,677,791, Cl. 117-33.5cm.

Palm, Eugene J.: *See—*
Fink, Robert H.; and Palm, Eugene J., 3,677,010.

Palmieri, John A.: *See—*
Jordan, Paul V.; Palmieri, John A.; and Wade, William T., 3,678,475.

Pan American Petroleum Corporation: *See—*
Silverman, Daniel, 3,677,342.

Panish, Morton B.; and Sumski, Stanley, to Bell Telephone Laboratories, Incorporated. Crystal growth apparatus. 3,677,228, Cl. 118-422.000.

Pantazelos, Theophanes G.: *See—*
Pezaris, Constantine Demetrius; and Pantazelos, Theophanes G., 3,677,831.

Panter, Robert B.; Dufton, John Peter; Duthie, Robert W.; and Verbaas, George, to GTE Automatic Electric Laboratories Incorporated. Dial pulse incoming trunk and register arrangement. 3,678,197, Cl. 179-18.0eb.

Pappalardo, Romano: *See—*
Brecher, Charles; Pappalardo, Romano; and Samelson, Harold, 3,677,959.

Paradis, Daniel L.: *See—*
Klapprott, David K.; and Paradis, Daniel L., 3,678,130.
Klapprott, David K.; and Paradis, Daniel L., 3,678,131.

Parke, Davis & Company: *See—*
Garland, Carl C., 3,676,958.

Parker, John E., to International Business Machines Corporation. Motor armature having an integral driving surface. 3,678,313, Cl. 310-236.000.

Parker, mesne: *See—*
Parker, Samuel A.; and Wilding, Edwin L., 3,677,390.

Parker, Samuel A.; and Wilding, Edwin L., 50% to Griffin & company, 25% to Scheu, Louis O., Jr. and 25% to said Parker, mesne. Leaf aligning method and machinery. 3,677,390, Cl. 198-33.00r.

Parks, Christ F.: *See—*
Stout, Caleb M.; Nimerick, Kenneth H.; and Parks, Christ F., 3,677,014.

Parks, Miles E.; and Scranton, Robert J. Portable card punching apparatus. 3,677,453, Cl. 225-93.000.

Parrish, Russell C., to Phillips Petroleum Company. Material moving apparatus and method. 3,677,311, Cl. 141-1.000.

Parshin, Alexei Nikolaevich: *See—*
Makachev, Nikolai Ivanovich; and Parshin, Alexei Nikolaevich, 3,677,304.

Passal, Frank, to M & T Chemicals Inc. Nickel electroplating and electrolytes therefor. 3,677,912, Cl. 204-49.000.

Passal, Frank, to M & T Chemicals, Inc. Nickel plating. 3,677,913, Cl. 204-49.000.

Passal, Frank; and Tomson, Arthur J., to M & T Chemicals Inc. N-2,3-dibromopropenyl pyridinium, quinolinium and isoquinolinium derivatives. 3,678,055, Cl. 260-290.00r.

Patchen, Lee H. Method for making reinforced grating. 3,678,147, Cl. 264-325.000.

Patent Protection Limited: *See—*
Foreman, Christopher Roy; and Shipman, Patricia Violet, 3,676,985.

Paterson, Stephen, to Cutting Room Appliances Corp. Slack forming device for cloth laying machines. 3,677,536, Cl. 270-31.000.

Patil, Arvind S.; Icraus, John W.; and Block, Jacob. Process for the use of vermiculite in waste water renovation. 3,677,939, Cl. 210-36.000.

Patmore, James R.; Bozenhard, Walter Frank; and Spampanato, Gavino Anthony, to Electronic Associates, Inc. Digitally controlled electronic function generator utilizing a breakpoint interpolation technique. 3,678,258, Cl. 235-150.530.

Patten, Dan H. Land and water craft trailer unit. 3,677,425, Cl. 214-85.100.

Paugh, Edward C.: *See—*
Upstone, Harlan R.; and Paugh, Edward C., 3,678,441.

Pawlina, Julian S., to Tecumseh Products Company. Spark arrester and muffler construction. 3,677,364, Cl. 181-36.00r.

Payne, Harold R., to Borg-Warner Corporation. Defrosting arrangement and method for a refrigeration system. 3,677,025, Cl. 62-81.000.

Payne, Roy David, to International Standard Electric Corporation. Pulse analyzer. 3,678,252, Cl. 235-92.0ev.

Pazder, George J., Jr.: *See—*
Hessler, Henry M., 3,677,313.

Peacock, Ralph W. Method of hand sewing moccasins. 3,676,883, Cl. 12-142.0mc.

Pearl, David Raymond: *See—*
Gerber, Heinz Joseph; and Pearl, David Raymond, 3,677,123.

Pearson, Charles J.: *See—*
Chung, Daniel A.; and Pearson, Charles J., 3,677,869.

Pearson, Durk J., to TRW Inc. Laser Q-switching monitoring method and apparatus. 3,678,411, Cl. 331-94.500.

Pearson, Harold E., to Gillette Company, The. Spring loaded hinge. 3,676,902, Cl. 24-252.000.

Pedley, Dianne, to Maidenform Inc. Unitary brassiere and slip combination. 3,677,252, Cl. 128-454.000.

Peil, Le Roy E. Apparatus for baggage inspection. 3,678,278, Cl. 250-108.00r.

Pelster, Arthur F.; and Modglin, Donald D., to Kentucky Fried Chicken Corporation, mesne. Deep fat frying equipment. 3,677,174, Cl. 99-417.000.

Pence, Samuel A., Jr., to Dow Chemical Company, The. Organo polymer cements with extended working time. 3,677,987, Cl. 260-29.60m.

Pennwalt Corporation: *See—*
Keith, Frederick Walter, Jr., 3,677,405.
Shapiro, Leonard, 3,677,673.

Pere, Carlo; and Tornich, Fulvio. Method for heating metal slabs or billets in continuous pusher-type furnaces. 3,677,531, Cl. 263-6.00r.

Perlino, Silvano, to Necchi S.p.A. Sewing machine with base extension. 3,677,210, Cl. 112-258.000.

Perricone, Alphonse C.: *See—*
Browning, William C.; Perricone, Alphonse C.; and Elting, Katherine Anne C., 3,677,961.

Perrin, Alfred J.; Dell John D.; Evans, David B.; and Lewis, George Stanley. Coiled tube banks. 3,677,339, Cl. 165-162.000.

Pesterfield, Enos C., Jr.: *See—*
Gruenfeld, Norbert; and Pesterfield, Enos C., Jr., 3,678,169.

Peter, Fritz. Wet processing for a continuous length of moving material. 3,677,695, Cl. 8-152.000.

Peters, Charles Michael Dansey. Energy supply apparatus and method for a building. 3,678,284, Cl. 290-1.000.

Peters, Merrit A.: *See—*
Harnish, Mark E.; and Peters, Merrit A., 3,678,143.

Peters, Robert L.; and Koch, Kenneth F., to United States of America, National Aeronautics and Space Administration. CRT blanking and brightness control circuit. 3,678,191, Cl. 178-7.5.

Peters, Theodore Richmond, to Bell Telephone Laboratories, Incorporated. Controlled pause in data processing apparatus. 3,678,463, Cl. 340-172.500.

Peters, Theodore Richmond, to Bell Telephone Laboratories, Incorporated. Controlled pause and restart of magnetic disc memories and the like. 3,678,464, Cl. 340-172.500.

Peterson, Donovan F. Direct current motor having improved commutation means. 3,678,359, Cl. 318-254.000.

Peterson, Ralph, to United States of America, Army. Base ejecting projectile. 3,677,182, Cl. 102-66.000.

Peterson, Reeve D., to United States of America, Navy. Ground station system for retransmitting satellite facsimile signals over digital data links. 3,678,388, Cl. 325-4.000.

Petreycik, Michael G. Chord teaching device. 3,677,130, Cl. 84-471.000.

Petro-Tex Chemical Corporation: *See—*
Croce, Louis J.; and Barone, Bruno, 3,678,105.

Pettersson, Bengt Edvard, to Sunds Aktiebolag. Apparatus for the washing of primarily, cellulosic pulp. 3,677,040, Cl. 68-181.

Pezaris, Constantine Demetrius; and Pantazelos, Theophanes G., to Lodding Engineering Corporation. Stress relief in solid materials. 3,677,831, Cl. 148-12.900.

Pfaff, William A.: *See—*
Van Auken, John; Kaufman, M. Gene; and Pfaff, William A., 3,677,637.

Pfeiffer, Francis R.; and Weisbach, Jerry A., to Smith Kline & French Laboratories. Adamantyl-substituted-alkyl 2-aminoethyl phosphates and phosphonates. 3,678,137, Cl. 260-944.000.

Pfister, Alain: *See—*
Reulet, Philippe; Pfister, Alain; Tellier, Jacques; Blanc, Jean-Henry; Jorgensen, Kirsten Borre; and Bohlbro, Hans, 3,678,091.

Pflanz, Herbert M., to Allis-Chalmers Manufacturing Company. Electrical resistor. 3,678,435, Cl. 338-263.000.

Philco-Ford Corporation: *See—*
Montgomery, Andrew P., 3,678,183.

Philips Broadcast Equipment Corporation: *See—*
Boxman, Peter; and Frederik, Johannes van Roessel, 3,678,182.

Phillips Petroleum Company: *See—*
Afdahl, Ronald L.; and Barber, Harold W., 3,676,981.
Bowles, William R., 3,677,113.
Busler, William R., 3,678,069.
Byron, John W., 3,677,704.
Johnson, Marvin M.; and Tabler, Donald C., 3,677,933.
Marx, John W., 3,677,982.
Middlebrook, Terence C., 3,678,134.
Parrish, Russell C., 3,677,311.
Thomas, William E., 3,677,180.
Wood, Harold V.; and Brown, Terry D., 3,677,994.

Piasecki, Felix J.: *See—*
Nickelsen, Hubert O.; Kopanda, Joseph E.; and Piasecki, Felix J., 3,677,781.

Pickens, Paul D. Pump. 3,677,661, Cl. 415-159.000.

Pickett, Charles G.; Lang, Robert A.; and Comers, Robert C., to Bio-Medical Sciences, Inc. Dispenser for disposable type thermometers. 3,677,866, Cl. 156-584.000.

Pickles, Wilfred, to Ciba-Geigy Corporation. Tin-plating method and electrolyte. 3,677,910, Cl. 204-54.00r.

Pidebois, Jacques Eloi: *See—*
Bauger, Louis Jules; Beyler, Roland Robert Charles; Le Guen, Henri; Pidebois, Jacques Eloi; and Schenher, Michel Bernard, 3,677,013.

Pierce, Laurance. Disc computer. 3,677,467, Cl. 235-78.000.

Pierce, Robert Dean: *See—*
Walsh, William J.; and Pierce, Robert Dean, 3,677,743.

Pierce, Victor F. J. Apparatus for stringed musical instruments. 3,677,126, Cl. 84-312.000.

Pieri, Giampiero: *See—*
Boffa, Gioacchino; Crotti, Argento; Pieri, Giampiero; Mangini, Angelo; and Tundo, Antonio, 3,678,053.

Pierlot, Michel Eugene, to Societe Industrielle de Brevets et d'Etudes S.I.B.E. Carburetion devices for internal combustion engine. 3,677,526, Cl. 261-23.00a.

Pietschmann, Helmut Richard, to Sybron Corporation. Speed control for dental handpieces. 3,676,931, Cl. 32-27.000.

Pihl, George E., to Miniature Electronic Components Corporation. Electromagnetic indicator. 3,678,426, Cl. 335-234.000.

Pike, John A.: *See—*
Schaeffer, Bruce S.; and Pike, John A., 3,677,029.

Pilditch, Robert M. Joining process for the assembly of decorative, stained glass. 3,676,920, Cl. 29-472.500.

Pilipenko, Fedor Semenovich: *See—*
Stepanov, Gennady Arkadievich; Tsailingold, Anatoly Lvovich; Pilipenko, Fedor Semenovich; Sodolev, Valerian Mikhailovich; Boreskov, Georgy Konstantinovich; Buyanov, Roman Alexeevich; and Venyaminov, Sergei Alexeevich, 3,678,124.

Pinkham, James F.: *See—*
Dan, Carlo; and Pinkham, James F., 3,678,509.

Pirelli Societa per Azioni: *See—*
Lombardi, Luigi, 3,677,849.

Pirelli Societa per Azioni Centro Pirelli: *See—*
Appiani, Edoardo; and Felici, Alberto, 3,678,175.

Pistl, Gustav: *See—*
Muller, Helmut; and Pistl, Gustav, 3,677,004.

Placements Jean Paul Tanguay Limited, mesne: *See—*
Tanguay, Jean Paul, 3,677,312.

Plana, Salvio. Automatic vegetable peeler. 3,677,314, Cl. 146-49.00b.

Pleich, John D.: *See—*
Bettencourt, Joseph, 3,677,620.

Plenge, Richard D., to United States of America, Navy. Waterproof sound, flash and recoil suppressor for firearms. 3,677,132, Cl. 89-14.00b.

Plessey BTR Limited: *See—*

Davis, John Christopher Hammond, 3,677,098.
Plessey Company Limited, The: *See—*
Bass, John C.; and Waterworth, Peter, 3,678,472.
Moss, Norman, 3,677,236.
Oldfield, Thomas Alfred, 3,676,999.
Plessey Telecommunications Research Limited; k/a: *See—*
Davis, John Christopher Hammond, 3,677,098.
Plumat, Emile, to Glaverbel S.A. Chemical tempering process for glass by spraying. 3,677,729, Cl. 65-30.000.
Poijarvi, Jaakko: *See—*
Bryk, Petri; Haani, Martti; Honkasalo, Jorma B.; Kinnunen, Jorma; Lindsjo, Olle; Nyholm, Erik; Poijarvi, Jaakko; Rastas, Jussi; and Kangas, Juhani, 3,677,696.
Pointout, Rene; Rouvet, Jacques; and Joliot, Adolphe. Three-way solenoid-operated valves. 3,677,826, Cl. 137-596.16.
Pokorny, Frank J.: *See—*
Rickert, Frank J.; and Pokorny, Frank J., 3,678,237.
Polar Chilled Products Co., Inc.: *See—*
Mahlstede, Gerald F.; and Carruth, Buster L., 3,677,273.
Polaroid Corporation: *See—*
Francis, Donald R.; and Haberlin, Richard J., 3,677,753.
Pollack, Jerry J.: *See—*
Reim, Thomas E.; Pollack, Jerry J.; and Kemmerling, Robert A., 3,678,268.
Polska Akademia Naul Instytut Chemii Fizycznej: *See—*
Jasny, Jan, 3,678,272.
Polyflon Corporation: *See—*
Russo, Paul, 3,678,349.
Polylok Corporation: *See—*
Simpson, Elswoth C., 3,677,034.
Polymer Processing Research Institute Ltd.: *See—*
Yazawa, Masahide; and Tani, Haruhisa, 3,677,484.
Polymetron Ltd.: *See—*
Krauer, Werner; and Martinelli, Alfred, 3,677,577.
Polytronic SA: *See—*
Oetiker, Hermann Walter, 3,677,546.
Popp, Ralph, to Westinghouse Air Brake Company. Overvoltage protection arrangement for power converters. 3,678,368, Cl. 321-11.000.
Popper, Jay D., to General Instrument Corporation. Self-biasing inverter. 3,678,293, Cl. 307-214.000.
Porter, David H.; and Biscoe, Thomas S., to Thomas Industries Inc. Lighting fixture support. 3,678,265, Cl. 240-84.000.
Porter, Oswald M.: *See—*
Herr, John A.; and Porter, Oswald M., 3,676,928.
Porter, Roy Donald, to Eastman Kodak Company. Method and apparatus for processing photographic film. 3,677,163, Cl. 95-90.500.
Portland Company; division of: *See—*
Bosworth, Delbert B.; and Goodridge, Ernest E., 3,677,439.
Possis Machine Corporation: *See—*
Schuette, Thomas L., 3,676,979.
Potteiger, Lester A., to United States of America, Navy. Telescoping ordnance device. 3,677,179, Cl. 102-56.000.
Pottinger, Eugene A.: *See—*
Shelton, Winston L.; and Pottinger, Eugene A., 3,677,170.
Pouwels, Edward M.; and Roberts, James K., to Bendix Corporation, The. Adaptive braking control valve. 3,677,610, Cl. 303-21.00f.
Powel, William Sydney, to Redland Tiles Limited, mesne. Apparatus for advancing pallets for making tiles. 3,677,686, Cl. 425-452.000.
Power, Basil Dixon: *See—*
Wycliffe, Henryk; and Power, Basil Dixon, 3,677,664.
Powers, Thomas George: *See—*
Mokrzycki, Stanley Martin; Sexton, Edwin Leon; Powers, Thomas George; and Melnick, Daniel, 3,677,768.
PPG Industries, Inc.: *See—*
Dowbenko, Rostyslaw; Chang, Wen-Hsuan; and Anderson, Carl C., 3,677,978.
Dowbenko, Rostyslaw; and Anderson, Carl C., 3,678,007.
Gillery, Frank H., 3,677,814.
Martinsons, Aleksandrs, 3,677,917.
Raetzsch, Carl W.; and Cunningham, Hugh, 3,677,927.
Schimmel, Karl F., 3,678,020.
Pratt, Charles R.: *See—*
Ragan, Lawrence H.; and Pratt, Charles R., 3,678,417.
Precision Sampling Corporation: *See—*
Harris, Rano J., Sr.; and Harris, Rano J., Jr., 3,677,448.
Prete, Ernest, Jr., to Ancra Corporation. Anchor fitting for retaining articles in a retainer track. 3,677,195, Cl. 105-369.00a.
Price, Franklin Carr. Method and apparatus for scrubbing gases. 3,676,982, Cl. 55-95.000.
Price, Paul B.: *See—*
Fleischer, Robert L.; and Price, Paul B., 3,677,844.
Pride, Emanuel; and Warren, Brian, to Abbott Laboratories. Method of determining haemoglobin. 3,677,707, Cl. 23-230.00b.
Prigal, Samuel J. Method of enhancing the action of a medicament. 3,678,149, Cl. 424-8.000.
Prikryl, Walter F.; and Gulick, Ronald A., to Research Engineering Company. Disengageable manual control. 3,677,108, Cl. 74-625.000.
Prill, Robert S., to Singer Company, The, mesne. Circuit for converting an unknown analog value into a digital value by successive approximations. 3,678,501, Cl. 340-347.0ad.
Pringle, William L.: *See—*
Bateson, Norman E.; and Pringle, William L., 3,677,192.
Hounshell, James R.; and Pringle, William L., 3,677,197.
Pringle, William L., to Pullman Incorporated. Railway car. 3,677,193, Cl. 105-368.00r.
Printing Developments, Inc.: *See—*
Barkman, Byron L.; Moe, William West; and Ross, Austin, 3,678,187.
Prisinzano, Frank: *See—*
Maturo, Thomas F., Jr.; and Prisinzano, Frank, 3,677,571.
Privott, Wilbur J., Jr.: *See—*
Haley, David J.; Cunningham, Robert E.; and Privott, Wilbur J., Jr., 3,677,481.
Probst, Georg: *See—*
Herterich, Walter; Probst, Georg; and Wurm, Bruno, 3,677,386.
Herterich, Walter; Probst, Georg; and Wurm, Bruno, 3,677,387.
Probst, Richard O.; and Moos, Albert H., to Ransburg Electro-Coating Corporation. Nozzle holder. 3,677,470, Cl. 239-15.000.
Procedyne Corporation: *See—*
Staffin, Herbert Kenneth, 3,677,404.
Procter & Gamble Company, The: *See—*
Francis, Marion D., 3,678,164.
Kokx, Darrel D., 3,677,249.
Macmillan, Francis S. Kilmer; and Lyness, Warren I., 3,678,156.
Schaeffer, Richard A., 3,677,391.
Slone, Thomas J., 3,676,933.
Widder, James S.; and Briner, William W., 3,678,154.
Produits Chimiques Pechiney-Saint-Gobain: *See—*
Chatelain, Jean; and Soussan, Salomon, 3,678,021.
Le Page, Madeleine A.; and De Vries, Albert J., 3,677,938.
Projecteurs Cibie: *See—*
Cibie, Pierre, 3,677,299.
Prokai, Bela: *See—*
Rosen, Meyer R.; and Prokai, Bela, 3,677,347.
Properzi, Ilario. Multiple housing rolling mill. 3,677,056, Cl. 72-227.000.
Protas, Arthur I., to Cartridge Television, Inc. Tape cartridge construction. 3,677,494, Cl. 242-194.000.
Protzman, Thomas F., to Staley, A. E., Manufacturing Company. Method of dry powder etching. 3,677,756, Cl. 96-36.000.
Prueger, Nicolas J.: *See—*
Blount, Elmo M.; Snavely, Earl S., Jr.; Messenger, Joseph U.; and Prueger, Nicolas J., 3,677,340.
Psihas, James: *See—*
Levy, Joseph; and Psihas, James, 3,678,048.
Pucher, Walter, to Allmanna Svenska Elektriska Aktiebolaget. Circuit breaker for high voltage direct current. 3,678,335, Cl. 317-11.00a.
Puhk, Heino, to SCM Corporation. Solubie alkali metal salt removal from substantially non-polar liquids. 3,678,097, Cl. 260-486.00r.
Pukhov, Alexandr Leonidovich: *See—*
Tupolev, Andrei Nikolaevich; Tupolev, Alexei Andreevich; Cheremukhin, Georgy Alexeevich; Bliznjuk, Valentin Ivanovich; Pukhov, Alexandr Leonidovich; Svischev, Georgy Petrovich; Bjushgens, Georgy Sergeevich; and Mikeladze, Vitaly Georgievich, 3,677,502.
Pullman Incorporated: *See—*
Bateson, Norman E.; and Pringle, William L., 3,677,192.
Hounshell, James R.; and Pringle, William L., 3,677,197.
Nagy, Ernest J., 3,677,191.
Pringle, William L., 3,677,193.
Schuller, James J., 3,677,196.
Yang, Tung H.; and Spence, John H., 3,677,198.
Puschel, Walter: *See—*
Glockner, Hans; Meier, Ernst; and Puschel, Walter, 3,677,764.
Putkowski, Ladislao (Wladyslaw). Hot runner system. 3,677,682, Cl. 18-30.0rh.
Putt, James Basil, to Bendix Corporation, The. Master cylinder low fluid indicator. 3,678,490, Cl. 340-244.00e.
Pye Limited: *See—*
Lovelock, James E., 3,677,275.
Quaker Industries Inc.: *See—*
Block, Leonard A.; and Dunn, William J., 3,677,416.
Quantor Corporation: *See—*
Studley, David K., 3,677,159.
Quermann, Thomas R., to Sperry Rand Corporation. Protective stops for a flexure suspended gyroscopic rotor. 3,677,097, Cl. 74-5.000.
Raban, Joachim; Erxleben, Ewald; and Wildenau, Wolfgang. Process for making tobacco smoke filters. 3,677,806, Cl. 117-104.00r.
Rabilloud, Guy; Sillion, Bernard; and De Gaudemaris, Gabriel, to Institut Francais du Petrole des Carburants et Lubrifiants. Mixed imide-isoindoloquinazolinediones heterocyclic polymers. 3,678,005, Cl. 260-47.0cp.
Rabinow, Jacob; Rotkin, Israel; and Astin, Allen V., to United States of America, Army. Proximity fuzes. 3,677,184, Cl. 102-70.20p.
Race, Andras, to Marvin Glass & Associates. Child's occupant propelled riding toy roundabout. 3,677,541, Cl. 272-33.00r.
Radek, John R., to Ready Metal Manufacturing Co. Cantilever merchandise support. 3,677,415, Cl. 211-59.000.
Radek, John R., to Ready Metal Manufacturing Company. Merchandise cabinet. 3,677,614, Cl. 312-108.000.
Rae, Barney O.: *See—*
Cotton, Ronald K.; and Rae, Barney O., 3,677,420.
Raetzsch, Carl W.; and Cunningham, Hugh, to PPG Industries, Inc. Electrolyzer. 3,677,927, Cl. 204-258.000.
Ragan, Lawrence H.; and Pratt, Charles R., to Collins Radio Company. Planar R. F. load resistor for microstrip or stripline. 3,678,417, Cl. 333-22.00r.

Ragen, Robert A.; Herendeen, Carl E.; and Wood, Gary R., to Singer Company, The. Zero suppression circuit. 3,678,471, Cl. 340-172.500.
Ragland, Douglas, to Ragland Manufacturing and Construction Company. Door frame assembly. 3,676,966, Cl. 52-211.000.
Ragland Manufacturing and Construction Company: *See—*
Ragland, Douglas, 3,676,966.
Rain Bird Sprinkler Mfg. Corporation: *See—*
Hart, Dennis L.; and Howery, Robert A., 3,677,472.
Raion Yushi Kabushiki Kaisha: *See—*
Susuki, Rinnosuke; Hoshi, Hiroshi; Araki, Shinichi; and Ishii, Masao, 3,677,459.
Susuki, Rinnosuke; Hoshi, Hiroshi; Saito, Jiro; and Suzuki, Masao, 3,677,857.
Ralston Purina Company: *See—*
Kolar, Charles Wesley, Jr., 3,677,771.
Ram, Michael J.; Riggs, John P.; and Clarke, Charles M., to Celanese Corporation. Process for the carbonization of a stabilized acrylic fibrous material. 3,677,705, Cl. 23-209.100.
Ramsey, Roy L. Insecticide distribution system. 3,676,949, Cl. 43-124.000.
Ramspeck, Howard B.; and Obergfell, Allen R., to Fastener Corporation. Safety for fastener driving tool. 3,677,456, Cl. 227-8.000.
Ramspeck, Howard B.; and Novak, Raymond F., to Fastener Corporation. Safety for fastener driving tool. 3,677,457, Cl. 227-8.000.
Ranco Incorporated: *See—*
Brooks, Robert E., 3,678,434.
Ransburg Electro-Coating Corporation: *See—*
Probst, Richard O.; and Moos, Albert H., 3,677,470.
Rapport, Jerry; and Frymire, Garold D., to Travel Trim & Vent Co. Escape hatch. 3,676,954, Cl. 49-141.000.
Rasmussen, Ole-Bendt. Extruded sheet material. 3,677,873, Cl. 161-109.000.
Rastas, Jussi: *See—*
Bryk, Petri; Haani, Martti; Honkasalo, Jorma B.; Kinnunen, Jorma; Lindsjo, Olle; Nyholm, Erik; Poijarvi, Jaakko; Rastas, Jussi; and Kangas, Juhani, 3,677,696.
Ratteree, James; and Seaman, James A. Brake drum truing method and apparatus. 3,677,655, Cl. 408-1.000.
Rausch, Doyle W.: *See—*
McCurdy, Hugh R.; Rausch, Doyle W.; and McIntire, Hoy O., 3,677,749.
Rausch, John J.: *See—*
Van Thyne, Ray J.; and Rausch, John J., 3,677,832.
Rausing, Anders Ruben, to Sobrefina SA. Combined package containing an enclosed gaseous atmosphere for preservation. 3,677,774, Cl. 99-171.00b.
Rautine, Donald E., to Lord Corporation. Slitting apparatus having independent resiliently supported anvil means. 3,677,122, Cl. 83-506.000.
Rautio, John M.: *See—*
Andre, Eugene R.; and Rautio, John M., 3,677,559.
Rawson, Eric Gordan: *See—*
Herriott, Donald Richard; and Rawson, Eric Gordan, 3,677,651.
Ray, Alden E.; and Strnat, Karl, to Th. Goldschmidt AG. Permanent magnet. 3,677,947, Cl. 252-62.540.
Ray-Chaudhuri, Dilip K.; and Stockmann, Hans H., to National Starch and Chemical Corporation. Carboxamido-aziridine compounds. 3,678,035, Cl. 260-239.00e.
Raychem Corporation: *See—*
Althouse, Victor E., 3,677,875.
Ganzhorn, Harry E., 3,678,174.
Stivers, Edward C., 3,677,921.
Raygor, Paul O.: *See—*
Sun, Shan C.; and Raygor, Paul O., 3,678,339.
Raymond, Glendon A., to Carrier Corporation. Refrigeration system. 3,677,028, Cl. 62-200.000.
Raymond, Gordon H.: *See—*
Swanke, Roy L.; and Raymond, Gordon H., 3,678,288.
Swanke, Roy L.; and Raymond, Gordon H., 3,678,357.
Raytheon Company: *See—*
Estlick, Raymond J., 3,677,005.
RCA Corporation: *See—*
Ahrons, Richard Wilfred, 3,678,407.
Avins, Jack, 3,678,405.
Avins, Jack, 3,678,406.
Bond, Donald Spencer, 3,678,180.
Craft, Jack, 3,678,403.
Hampel, Daniel, 3,678,292.
Stoller, Arthur Irwin; and Opresko, Stephen Thomas, 3,677,848.
Van Taylor, George, 3,677,505.
Woodward, Oakley Mc Donald, 3,678,418.
Ready Metal Manufacturing Co.: *See—*
Radek, John R., 3,677,415.
Ready Metal Manufacturing Company: *See—*
Radek, John R., 3,677,614.
Reams, William H., to United States of America, Navy. Arming device. 3,677,185, Cl. 102-78.000.
Reber, Robert L.; and Huiskens, James C., to Communications Transistor Corporation. Method and apparatus for etching fine line patterns in metal on semiconductive devices. 3,678,348, Cl. 317-235.000.
Redeco, Inc.: *See—*
Schwartz, Ralph E., 3,677,022.
Redland Tiles Limited, mesne: *See—*
Powel, William Sydney, 3,677,686.
Reed, Russell, Jr.: *See—*
Shaw, Graham C.; and Reed, Russell, Jr., 3,677,840.
Reeves, Richard A., to Sherwood Medical Industries Inc. Iontophoresis electrode. 3,677,268, Cl. 128-172.100.
Regie Nationale des Usines Renault: *See—*
Fleury, Jean, 3,677,928.
Regneault, Marcel; and Le Creurer, Maurice, to Automobiles Peugeot. Fuel injection device for an internal combustion engine. 3,677,256, Cl. 123-326.000.
Reidmann, Manfred; and Eichner, Martin, to Hewlett-Packard GmbH. Flame ionization detection apparatus and method. 3,677,709, Cl. 23-254.00e.
Reiling, Joseph W., to Woods, Charles, mesne. Built-in central vacuuming device. 3,676,986, Cl. 55-472.000.
Reim, Thomas E.; Pollack, Jerry J.; and Kemmerling, Robert A., to Republic Steel Corporation. Bulk density gage and bulk density control system. 3,678,268, Cl. 250-43.50d.
Reimer, William A., to GTE Automatic Electric Laboratories Incorporated. Methods of solenoid array memories. 3,676,923, Cl. 29-604.000.
Reimer, William A., to GTE Automatic Electric Laboratories, Inc. Wire clamp terminal clip of the flanged tubular type. 3,678,176, Cl. 174-94.00r.
Reimer, William A., to GTE Automatic Electric Laboratories Incorporated. Miniature crossbar switch. 3,678,422, Cl. 335-112.000.
Reiss, Stefan E., to Sylvania Electric Products, Inc. Method for fabricating multilayer magnetic devices. 3,677,843, Cl. 156-3.000.
Reliance Electric Company: *See—*
Steinke, Fred J., 3,677,583.
Reliance Paper & Bag Co.: *See—*
Hudson, Earl A., 3,677,144.
Renold, Adolph, to Colgate-Palmolive Company. Deodorization of fats. 3,678,084, Cl. 260-424.000.
Rensin, Ernest I., to International Telephone and Telegraph Corporation. Code compression system. 3,678,507, Cl. 340-347.0dd.
Rentz, John C., to United States of America, Army. Interchangeable tip for discrete dropping apparatus. 3,677,447, Cl. 222-193.000.
Reppert, Allen B.: *See—*
Brown, Carl W.; Reppert, Allen B.; and Dobbins, Billy D., 3,677,500.
Republic Mower Company (Proprietary) Limited: *See—*
Smythe, Eric Patrick Greenwood, 3,676,893.
Republic Steel Corporation: *See—*
Reim, Thomas E.; Pollack, Jerry J.; and Kemmerling, Robert A., 3,678,268.
Research Engineering Company: *See—*
Prikryl, Walter F.; and Gulick, Ronald A., 3,677,108.
Restivo, Francesco: *See—*
Serracchioli, Francesco; and Restivo, Francesco, 3,678,179.
Reulet, Philippe; Pfister, Alain; Tellier, Jacques; Blanc, Jean-Henry; Jorgensen, Kirsten Borre; and Bohlbro, Hans, to Societe Anonyme dite: Societe Nationale des Petroles d'Aquitaine. Process for the preparation of unsaturated alphatic nitriles by the oxidation of olefins. 3,678,091, Cl. 260-465.300.
Reynolds Metals Company: *See—*
Mack, Grnat V., 3,676,905.
Watts, Richard M., 3,676,952.
Reynolds Metals Company, mesne: *See—*
Grosse, Aristid V., 3,677,326.
Reynolds Products Inc.: *See—*
Nitschneider, Robert M.; Neumann, Charles G.; and Krueger, Harvey R., 3,677,461.
Rheem Manufacturing Company: *See—*
Grolitzer, Arthur J.; and Mounts, Francis E., 3,678,459.
Rheinstahl Huttenwerke A.G.: *See—*
Wahlster, Manfred; and Choudbury, Alok, 3,677,323.
Rhines, Warren Joseph: *See—*
Lutchansky, Milton; and Rhines, Warren Joseph, 3,677,371.
Rice, Edwin Eugene; and Franklin, Charles Henry, to Chemotronics International, Inc. Method for the removal of unwanted portions of an article. 3,676,963, Cl. 51-320.000.
Rice, George A.: *See—*
Girard, Roland T.; and Rice, George A., 3,677,796.
Rich Manufacturing Company of California, mesne: *See—*
Page, Edward, 3,677,282.
Richards, Brian John, to Siebe Gorman & Company Limited. Closed circuit breathing apparatus. 3,677,267, Cl. 128-145.800.
Richards, William D., to American Optical Corporation. Magnetic belt recorder head adjustment. 3,678,210, Cl. 179-100.2ca.
Richardson, John H. Elastic pull type exerciser. 3,677,543, Cl. 272-82.000.
Richardson-Merrell, Inc.: *See—*
Binon, Fernand; and Beiler, Jay Morton, 3,678,063.
Richelmann, Bernd H.: *See—*
Chaparro, John J.; Ellis, Lowell V.; Meanor, Doyle W.; Morton, William D., Jr.; Richelmann, Bernd H.; Ross, George B.; and Toth, John E., 3,677,401.
Richter, Sidney B.; and Levin, Alfred A., to Velsicol Chemical Corporation. Method for the control of aquatic plant life. 3,677,735, Cl. 71-66.000.
Rick, Edward A.; McKeon, James E.; Fitton, Peter; and Argento, Benny J., to Union Carbide Corporation. Process for making group

VIII metal cyanides and group VIII metal cyanide complexes. 3,678,085, Cl. 260-429.00r.
Rickert, Frank J.; and Pokorny, Frank J., to I-T-E Imperial Corporation. Self-aligning jaw contact. 3,678,237, Cl. 200-166.00e.
Riemhofer, Franz; Dittmann, Walter; Biethan, Uwe; Hornung, Karl-Heinz; and Schultze, Ernst-Christian, to Chemische Werke Huls Aktiengesellschaft. Coating compositions comprising a mixture of a polyester and an aminoplast. 3,678,128, Cl. 260-850.000.
Riggs, John P.: *See—*
Ram, Michael J.; Riggs, John P.; and Clarke, Charles M., 3,677,705.
Riley, John Edward, to General Electric Company. Ratio controller with zero ratio capability. 3,678,373, Cl. 323-75.
Riley, Myrne R., to Monsanto Company. Fluid spinning process for novel yarns. 3,676,992, Cl. 57-164.000.
Ringle, Richard Bertrem, to Globe-Union Inc. Automatic battery charger with multiple rate charging. 3,678,363, Cl. 320-24.000.
Riordon, Peter R., to Chemcell Limited. Open celled polypropylene filament of improved uniformity. 3,677,881, Cl. 161-178.
Rioux, Christian Paul Gilbert: *See—*
Garnier, Michel Robert; and Rioux, Christian Paul Gilbert, 3,678,306.
Rissi, Erwin: *See—*
Ebnother, Anton; Bastian, Jean-Michel; and Rissi, Erwin, 3,678,058.
Ritter, George F., Jr., to Libbey-Owens-Ford Company. Glass sheet bending and tempering apparatus. 3,677,733, Cl. 65-268.000.
Rivers, Richard D.; Byers, Thomas W.; and Fortener, Edward J., to American Air Filter Company, Inc. Pressure relief valve. 3,677,289, Cl. 137-527.800.
Roberts, James K.: *See—*
Pouwels, Edward M.; and Roberts, James K., 3,677,610.
Roberts, Robert, to Fluorodynamics, Inc. Method for the in situ covering of large diameter process rolls with heat shrinkable films of fluorinated ethylene polymers and the like. 3,677,845, Cl. 156-3.000.
Robinson, Brian; and Fillingham, Stephen Harvey, to I.W.S. Nominee Company Limited and Ciba Limited. Method of milling and resin treating keratinous fibers. 3,677,693, Cl. 8-127.500.
Robinson, Charles A., to American Home Products Corporation. Process for producing α-amino penicillin intermediates. 3,678,037, Cl. 260-239.100.
Robison, James W.; and Eads, Harold L., to Ames, O.; Division of McDonough Company. Hedge Shears. 3,676,930, Cl. 30-257.000.
Rock, Erich, to Blum, Julius, Messrs. Connector for plates. 3,676,898, Cl. 24-73.0pd.
Rock, Salvatore J. Pre-tied necktie rack. 3,677,414, Cl. 211-13.000.
Rodgers, Thomas A.: *See—*
Hardesty, Donald E.; and Rodgers, Thomas A., 3,677,932.
Roeder, Paul J.: *See—*
Hoogendorn, Helen M.; Narken, Bernt; Roeder, Paul J.; and Sunners, Brian, 3,678,211.
Rohm and Haas Company: *See—*
Horrom, Bruce W.; Crovetti, Aldo J.; and Viste, Kenneth L., 3,677,739.
Lewis, Sheldon N.; Merritt, Richard F.; and Emmons, William D., 3,678,098.
Ryan, Charles Francis, 3,678,133.
Roles, David Jack, to Eastern Products Corporation. Field installation clip for exposed grid systems. 3,677,589, Cl. 287-189.36a.
Rolls-Royce Limited: *See—*
Denning, Ralph Murch, 3,677,501.
Higginbotham, Gordon John Spencer; and Hall, Douglas Wilson, 3,677,324.
Roos, Robert R., to Mueller Co. Connection fitting for a pipe. 3,677,578, Cl. 285-162.000.
Root, James R.; and Hill, Thomas D., to Ruskin Manufacturing Company. Wrap-around damper frame. 3,677,517, Cl. 251-366.000.
Rose, Marion S., to Litton Systems, Inc. Deflectable light maser. 3,678,409, Cl. 331-94.500.
Rose, Nelson J. Loudspeaker balancing system. 3,678,202, Cl. 179-1.0at.
Rosen, Meyer R.; and Prokai, Bela, to Union Carbide Corporation. Method of extinguishing fires and compositions therefor containing cationic silicone surfactants. 3,677,347, Cl. 169-1.00a.
Rosenberg, Harold: *See—*
Hedberg, Frederick L.; and Rosenberg, Harold, 3,678,088.
Rosenberg, Peretz. Rotary pumps. 3,677,668, Cl. 418-45.000.
Rosenburgh, Norman J.: *See—*
Morse, John E.; and Rosenburgh, Norman J., 3,677,864.
Rosengart, Abraham M.: *See—*
Lichtman, Irwin A.; and Rosengart, Abraham M., 3,677,963.
Ross, Austin: *See—*
Barkman, Byron L.; Moe, William West; and Ross, Austin, 3,678,187.
Ross, George B.: *See—*
Chaparro, John J.; Ellis, Lowell V.; Meanor, Doyle W.; Morton, William D., Jr.; Richelmann, Bernd H.; Ross, George B.; and Toth, John E., 3,677,401.
Rossmy, Gerd: *See—*
Koerner, Gotz; and Rossmy, Gerd, 3,677,962.
Rotasign Limited: *See—*
Johnson, Harold Hector; South, Derek Bye; and White, Charles Victor Burdett, 3,678,282.
Roth, Solo S. Means for projecting an enlarged television image. 3,678,196, Cl. 178-75.00d.
Roth, Wolfgang, to Deere and Company. Expansible chamber device with internal accumulator. 3,677,142, Cl. 92-60.000.
Rothmann, Harry Edward; and Ruf, Walter, to St. Regis Paper Company. Bag applicator method and apparatus. 3,676,977, Cl. 53-24.
Rotkin, Israel: *See—*
Rabinow, Jacob; Rotkin, Israel; and Astin, Allen V., 3,677,184.
Rottner, Emil; Bock, Franz; Muth, Willi; and Wenzel, Gunter. Process for making pipe bends of thermoplastic material. 3,678,146, Cl. 264-313.000.
Round, Kenneth J., to Atomic Energy of Canada Limited. Nuclear power source. 3,678,303, Cl. 310-3.00r.
Rousso, Jack J., Jr.; and Willman, George N., to Mobil Oil Corporation. Air distributor for obtaining uniform head-tape contact in magnetic tape transport. 3,678,216, Cl. 179-100.20p.
Rouvet, Jacques: *See—*
Pointout, Rene; Rouvet, Jacques; and Joliot, Adolphe, 3,677,826.
Rovnyak, Richard M., to Automatic Electric Laboratories Inc. Windings for operating efficiently contacts of reeds with constricted areas. 3,678,423, Cl. 335-154.000.
Rowe, Alan C.: *See—*
Furlong, Owen D.; Rowe, Alan C.; and Wright, Eric F., 3,677,293.
Rowley, Martin E.: *See—*
Bishop, John F.; Hunter, Walker F., Jr.; and Rowley, Martin E., 3,677,790.
Rowsam, Kenneth P.; and Yost, De Witt M., to Sorg Paper Company, The. Anticounterfeit ticket. 3,677,887, Cl. 162-140.000.
Rubin, Jacob C.; and Sukel, Gerald J., to Eastman Kodak Company. Planar viscometer. 3,677,069, Cl. 73-56.000.
Rudenko, Nikolai Nikolaevich: *See—*
Gusev, Vladimir Alexeevich; and Rudenko, Nikolai Nikolaevich, 3,677,862.
Rudkin, Alva James, Jr.: *See—*
Hessler, Henry M., 3,677,313.
Ruf, Walter: *See—*
Rothmann, Harry Edward; and Ruf, Walter, 3,676,977.
Ruhle, Manfred: *See—*
Borgatedt, Hans-Ulrich; Ruhle, Manfred; and Wincierz, Peter, 3,677,723.
Ruhnau, Joachim. Machine for delivering multi-component plastics mixture. 3,677,442, Cl. 222-70.
Ruskin Manufacturing Company: *See—*
Root, James R.; and Hill, Thomas D., 3,677,517.
Russo, Paul, to Polyflon Corporation. Capacitor. 3,678,349, Cl. 317-243.000.
Rutkowski, Beverly J., to Whirlpool Corporation. Method to prevent glassware etching in a dishwasher. 3,677,820, Cl. 134-25.00a.
Ruttkay, Adam: *See—*
Hvidtfeldt, Niels; and Ruttkay, Adam, 3,678,345.
Ryan, Allen L.: *See—*
Vail, Thomas W.; and Ryan, Allen L., 3,677,555.
Ryan, Charles Francis, to Rohm and Haas Company. Modified vinyl halide polymers. 3,678,133, Cl. 260-876.00r.
Rymas, Frank, to Walmet Corporation, The. Cemented carbide composition and method of preparation. 3,677,722, Cl. 29-182.800.
Rys, Tadeusz J., to Square D Company. Motor starter unit with interlock means for selectively mountable circuit breaker operating mechanism. 3,678,230, Cl. 200-50.00a.
Saam, John C.; and Fearon, Frederick W. G., to Dow Corning Corporation. Siloxane containing thermoplastic. 3,678,125, Cl. 260-827.000.
Saam, John C.; and Fearon, Frederick W. G., to Dow Corning Corporation. Siloxane containing thermoplastic elastomers. 3,678,126, Cl. 260-827.000.
Sagami Chemical Research Center: *See—*
Fujisawa, Tamotsu; Yamamoto, Mizuo; and Tsuchihashi, Genichi, 3,678,115.
Sagawa, Burt K., to Minnesota Mining and Manufacturing Company. Reflective platen. 3,677,643, Cl. 355-91.000.
Sager, Karl E., to Kimberly-Clark Corporation. Method for applying adhesive to cross threads while crosslaying. 3,677,854, Cl. 156-173.000.
Saito, Jiro: *See—*
Susuki, Rinnosuke; Hoshi, Hiroshi; Saito, Jiro; and Suzuki, Masao, 3,677,857.
Saito, Morio: *See—*
Arimura, Tohru; Kamata, Masamoto; Saito, Morio; Suzuki, Hiromu; and Iguchi, Masakazu, 3,677,045.
Sakaguchi, Mitsuhito: *See—*
Nishida, Nobuo; and Sakaguchi, Mitsuhito, 3,677,622.
Sakai, Katsuo: *See—*
Ohta, Wasaburo; and Sakai, Katsuo, 3,677,751.
Sakashita, Masahira: *See—*
Fukuma, Noboru; Kobayashi, Hidehiko; Matsui, Kenichi; Sakashita, Masahira; and Henmi, Hiroshi, 3,677,880.
Saligny, Claude: *See—*
Bolliand, Robert; and Saligny, Claude, 3,677,855.
Salomon, Georges P. J. Low friction bearing arrangement for ski boot in contact with a ski. 3,677,567, Cl. 280-11.35c.
Samelson, Harold: *See—*
Brecher, Charles; Pappalardo, Romano; and Samelson, Harold, 3,677,959.
Kocher, Robert C.; Moore, Franklin K.; Samelson, Harold; and Watson, William R., 3,678,410.

Samoilenko, Svetlana Mikhailovna: *See—*
Scherban, Alexandr Nazarievich; Furman, Neonil Izrailevich; Sotnichenko, Boris Feodosievich; Belogolovin, Nikolai Stefanovich; Chopovsky, Jury Ivanovich; Sutormin, Jury Nikolaevich; Zaitsev, Valentin Ivanovich; Kot, Vladimir Ivanovich; Mikhailjuk, Nikolai Tarasovich; Denisenko, Sergei Andreevich; Chaschinov, Anatoly Vasilievich; Shaporev, Stepan Vasilievich; and Samoilenko, Svetlana Mikhailovna, 3,678,489.
Sanders Associates, Inc.: *See—*
Blitz, Daniel, 3,677,101.
Misek, Victor A., 3,677,647.
Sandler, Stanley R., to Borden Company, The. Polyvinyl acetate adhesives containing inorganic zirconium salts. 3,677,883, Cl. 161-251.000.
Sandoz A.G.: *See—*
Ebnother, Anton; Bastian, Jean-Michel; and Gadient, Fulvio, 3,678,057.
Ebnother, Anton; Bastian, Jean-Michel; and Rissi, Erwin, 3,678,058.
Gagnaux, Pierre, 3,678,050.
Sandoz Ltd.; a/k/a: *See—*
Ebnother, Anton; Bastian, Jean-Michel; and Gadient, Fulvio, 3,678,057.
Ebnother, Anton; Bastian, Jean-Michel; and Rissi, Erwin, 3,678,058.
Gagnaux, Pierre, 3,678,050.
Sandoz-Wander, Inc.: *See—*
Houlihan, William J., 3,678,111.
Kathawala, Faizulla G., 3,678,166.
Sanford, Lloyd Clifford, to Itek Corporation. Sensitometer light source apparatus. 3,677,150, Cl. 95-10.00r.
Sannomiya, Isao: *See—*
Sugimoto, Yoshitaka; Sannomiya, Isao; and Noumi, Kazunobu, 3,677,694.
Sansui Electric Co., Ltd.: *See—*
Takahashi, Susumu, 3,678,297.
Santa Fe International Corporation: *See—*
Lloyd, Samuel H.; and Santa Fe International Corporation, 3,677,352.
Santerre, Fernand; and Libaud, Francis, to La Telemecanique Electrique. Thread-sensing device for a textile machine. 3,676,990, Cl. 57-81.000.
Sanyo Electric Co., Ltd.: *See—*
Narita, Fujiaki, 3,678,186.
Yasuoka, Yoshio; and Shirakami, Yoshiaki, 3,678,238.
Sarff, Forest M.; and Birch, Silas B., Jr. Power-driven wire tying mechanism. 3,677,308, Cl. 140-93.600.
Sarto, Jorma O., to Chrysler Corporation. Crankcase ventilation. 3,677,240, Cl. 123-119.00b.
Sasaki, Hiromi: *See—*
Hayashi, Yoshiki; Sasaki, Hiromi; and Matsumura, Toichi, 3,677,816.
Sasaki, Kenichi: *See—*
Harada, Motoo; and Sasaki, Kenichi, 3,677,238.
Satas, Wallace J.: *See—*
Foley, John J.; Satas, Wallace J.; and Konkel, Joseph, 3,677,176.
Sato, Akira: *See—*
Nadazawa, Yoshiyuki; Nakamura, Yashuharu; Takei, Haruo; Sato, Akira; and Ikeda, Tadashi, 3,677,765.
Sato, Kunio; Sugihara, Kanji; Wakabayashi, Takashi; and Ishida, Tomio, to Matsushita Electric Industrial Co., Ltd. Method for making molded carbon composition resistors. 3,676,925, Cl. 29-613.000.
Sato, Masamichi: *See—*
Matsumoto, Seiji; Sato, Masamichi; and Fukushima, Osamu, 3,678,350.
Sato, Naotake: *See—*
Ariyoshi, Yasuo; Yamatani, Tetsuo; Uchiyama, Noboru; and Sato, Naotake, 3,678,026.
Sato, Seizi, to Sony Corporation. Magnetic recording and/or reproducing system having guide pins mounted on independently rotating plates for withdrawing tape from cassette. 3,678,213, Cl. 179-100.20z.
Savant Instruments, Inc.: *See—*
Meshbane, Alex; and Vilardi, Frank, 3,677,930.
Sawa, Kenneth B.; and Bleak, Thomas M., to Beckman Instruments, Inc. Temperature control circuit with zero average temperature offset error. 3,678,247, Cl. 219-501.000.
Sawazu, Toshihiko: *See—*
Oba, Harutaro; Sawazu, Toshihiko; Takeuchi, Sugio; and Yamaguchi, Norio, 3,677,464.
Saxon Industries, Inc.: *See—*
Van Auken, John; Kaufman, M. Gene; and Pfaff, William A., 3,677,637.
Van Auken, John A.; Kaufman, Mahlon Gene; and Blank, Fritz, 3,677,635.
Sayles, David C., to United States of America, Army. Composite propellant containing ballistic modifiers derived from metal chelates. 3,677,839, Cl. 149-19.000.
Scavuzzo, John J.: *See—*
Eig, Merrill; and Scavuzzo, John J., 3,677,063.
Schabert, Hans-Peter, to Siemens Aktiengesellschaft. Collecting device for cooling reactor core fragments in a fast breeder reactor. 3,677,892, Cl. 176-40.000.
Schacht, Louis L. Reversible closure. 3,676,955, Cl. 49-192.000.
Schaefer, Hans, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Process for the manufacture of butadiene derivatives. 3,677,914, Cl. 204-59.00r.
Schaefer, Hans, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Production of octadiene and dodecatrienes. 3,677,915, Cl. 204-59.00r.
Schaeffer, Bruce S.; and Pike, John A., to Frick Company. Evaporative condenser. 3,677,029, Cl. 62-305.000.
Schaeffer, Richard A., to Procter & Gamble Company, The. Apparatus and method for shingling articles of uniform non-planar shape. 3,677,391, Cl. 198-35.000.
Schaffstall, Eugene: *See—*
Weaver, Roger; and Schaffstall, Eugene, 3,677,827.
Schanke, Robert L., to Lincoln Tool & Manufacturing Co. Double needle winding head. 3,677,480, Cl. 242-1.10r.
Schanzer, Oswald: *See—*
Gansheimer, Josef; and Schanzer, Oswald, 3,677,946.
Schaus, Douglas I. Golf training device. 3,677,551, Cl. 273-183.00b.
Scheerer, Wolfgang, to Ehrenreich, A., & Cie. Ball joint for vehicle linkages. 3,677,585, Cl. 287-87.000.
Scheidweiler, Andreas: *See—*
Walthard, Beat; Scheidweiler, Andreas; and Kuhn, Max, 3,678,510.
Scheineman, John A.: *See—*
Bell, Howard F.; and Scheineman, John A., 3,677,292.
Schenher, Michel Bernard: *See—*
Bauger, Louis Jules; Beyler, Roland Robert Charles; Le Guen, Henri; Pidebois, Jacques Eloi; and Schenher, Michel Bernard, 3,677,013.
Scherban, Alexandr Nazarievich; Furman, Neonil Izrailevich; Sotnichenko, Boris Feodosievich; Belogolovin, Nikolai Stefanovich; Chopovsky, Jury Ivanovich; Sutormin, Jury Nikolaevich; Zaitsev, Valentin Ivanovich; Kot, Vladimir Ivanovich; Mikhailjuk, Nikolai Tarasovich; Denisenko, Sergei Andreevich; Chaschinov, Anatoly Vasilievich; Shaporev, Stepan Vasilievich; and Samoilenko, Svetlana Mikhailovna. Apparatus for determining the concentration of combustible gases and vapours. 3,678,489, Cl. 340-237.00r.
Schering Aktiengesellschaft: *See—*
Laurent, Henry; Kolb, Karl Heinz; and Wiechert, Rudolf, 3,678,034.
Scheu, Louis O., Jr.: *See—*
Parker, Samuel A.; and Wilding, Edwin L., 3,677,390.
Schiegg, Dallas L.: *See—*
Boothe, Jerry E.; Hoover, Merwin F.; and Schiegg, Dallas L., 3,678,110.
Schierding, Royce G.; and Tolbert, Tommy L., to Monsanto Company. Method for preparing metal molding compositions. 3,676,916, Cl. 29-419.000.
Schimmel, Karl F., to PPG Industries, Inc. Strippable unsaturated interpolymer compositions. 3,678,020, Cl. 260-80.780.
Schippers, Heinz; Geil, Walter; Albrecht, Gerd; and Jung, Reinhold, to Barmag Barmer Maschinenfabrik Aktiengesellschaft. Dies for producing multi-layer tubes or films. 3,677,863, Cl. 156-500.000.
Schlatter, Gerald Lance: *See—*
Miller, Charles Eveleigh; and Schlatter, Gerald Lance, 3,677,067.
Schlieckmann, Alfred: *See—*
Zippel, Bernd; and Schlieckmann, Alfred, 3,677,681.
Schlumberger Overseas Messgeratebau und Vertrieb GmbH: *See—*
Glathe, Wolfgang, 3,678,294.
Schmerling, Louis: *See—*
Vesely, Jerome A.; and Schmerling, Louis, 3,678,104.
Schmerling, Louis, to Universal Oil Products Company. Metal salts of halo-substituted polyhydropolycyclicdicarboxylic acids. 3,678,087, Cl. 260-435.00r.
Schmerling, Louis, to Universal Oil Products Company. Allylation or benzylation of aromatic compounds. 3,678,122, Cl. 260-671.00a.
Schmermund, Alfred. Arrangement for testing cigarettes. 3,677,068, Cl. 73-41.000.
Schmid, Rolf: *See—*
Lohse, Friedrich; Schmid, Rolf; Fisch, Willy; and Batzer, Hans, 3,678,009.
Schmid, Rolf; Lohse, Friedrich; and Batzer, Hans, to Ciba-Geigy AG. Carboxy terminated polyamides and diepoxides. 3,678,127, Cl. 260-830.00p.
Schmidt, Andreas; and Muller, Paul, to Ehrenreich, A., & Cie. Ball joint for vehicle linkages. 3,677,587, Cl. 287-87.000.
Schmidt, Ernst. Method and apparatus for rolling gear teeth or the like. 3,677,051, Cl. 72-78.000.
Schmidt, William G.: *See—*
Heers, Arthur F.; and Schmidt, William G., 3,678,389.
Schmidt, Wolfgang, to U.S. Philips Corporation. Heat trap for an air-cooled VHF power klystron. 3,678,327, Cl. 315-5.390.
Schneider, Louis: *See—*
Barabas, Eugene S.; Grosser, Frederick; and Schneider, Louis, 3,677,990.
Schneider, Marion F.; and Breen, Edward L., to United States of America, Air Force. Dosimetry system for measuring instantaneous dose and linear energy transfer spectrum of space radiations. 3,678,275, Cl. 250-83.60r.
Schneider, Raymond C., to Twin Disc, Incorporated. Aerodynamic torque converter. 3,677,003, Cl. 60-54.000.
Schober, Joachim: *See—*
Gottweis, Gert; Herrlich, Michael; Klas, Gunther; Schober, Joachim; Thiede, Peter; and Zachaus, Eberhard, 3,676,978.

Schoggen, Howard L., to Buckeye Cellulose Corporation, The. Slurry process for the production of absorptive carboxy methyl cellulose fibers. 3,678,031, Cl. 260-231.0cm.
Schon, Siegfried, to Siemens Aktiengesellschaft. Circuit arrangement for telephone private branch exchanges permitting conference calls between subscriber sets having video transmission. 3,678,207, Cl. 179-18.0bc.
Schramm, Richard F. Automotive oil crank case drain valve. 3,677,369, Cl. 184-1.500.
Schrank, Charles O.: *See—*
Schrank, Shirley L.; Berelc, John M.; Berelc, Dorothy C.; and Schrank, Charles O., 3,677,272.
Schrank, Shirley L.; Berelc, John M.; Berelc, Dorothy C.; and Schrank, Charles O. Cleaning device for beverage dispensers. 3,677,272, Cl. 134-93.000.
Schuette, Thomas L., to Possis Machine Corporation. Substrate transport means for skin packaging machines. 3,676,979, Cl. 53-112.00a.
Schuler, John Joseph, Jr.: *See—*
Aschkenasy, Herbert; Schuler, John Joseph, Jr.; and Bower, Jerry Efton, 3,677,984.
Schuller, James J., to Pullman Incorporated. Covered hopper car. 3,677,196, Cl. 105-377.000.
Schultz, Harold B.; Fulmer, Keith H.; and Burnett, Richard T. Hydraulic power brake system. 3,677,607, Cl. 303-10.000.
Schultz, John R., to Applied Power Industries, Inc. Directional valve control. 3,677,295, Cl. 137-596.120.
Schultze, Ernst-Christian: *See—*
Riembofer, Franz; Dittmann, Walter; Biethan, Uwe; Hornung, Karl-Heinz; and Schultze, Ernst-Christian, 3,678,128.
Schurig, Robert E.; and Korn, Joseph, to Sonic Development Corporation of America. Pressure wave atomizing apparatus. 3,677,525, Cl. 261-1.000.
Schutte, Harry D., to Schutte Pulverizer Co., Inc. Metal trap for hammer mills or the like. 3,677,478, Cl. 241-82.000.
Schutte Pulverizer Co., Inc.: *See—*
Schutte, Harry D., 3,677,478.
Schwartz, Albert B.: *See—*
Sherry, Howard S.; and Schwartz, Albert B., 3,677,698.
Schwartz, Murray A.: *See—*
Ali, Mir Akbar; Schwartz, Murray A.; and Li, Pei Ching, 3,677,778.
Schwartz, Ralph E., to Redeco, Inc. Method for extending the useful storage period of biological substances such as blood. 3,677,022, Cl. 62-56.000.
Schwarzler, Hans-Jurgen, to Vereinigte Flugtechnische Werke-Fokker Gesellschaft mit beschrankter Haftung. Control flap arrangement. 3,677,504, Cl. 244-42.0cc.
Schwemin, Arnold J., to Optical Research and Development Corporation. Binoculars having stabilizing reflectors. 3,677,618, Cl. 350-16.000.
SCI Systems, Inc.: *See—*
Coe, Ronald J., 3,678,291.
SCM Corporation: *See—*
Meyers, Raymond E.; and Eubanks, Edgar W., 3,678,004.
Puhk, Heino, 3,678,097.
Scott Paper Company: *See—*
Gipe, Harry F., 3,677,178.
Scott, William Kenneth, to United States of America, Army. Method for the detection and classification of defects in internal combustion engines. 3,677,075, Cl. 73-117.300.
Scranton, Robert J.: *See—*
Parks, Miles E.; and Scranton, Robert J., 3,677,453.
Sealectro Corporation: *See—*
Deakin, Stanley Thomas, 3,677,471.
Seaman, James A.: *See—*
Ratteree, James; and Seaman, James A., 3,677,655.
Searle, G. D., & Co.: *See—*
Dryden, Hugh L., Jr., 3,678,082.
Searle, Martin: *See—*
Miller, John; and Searle, Martin, 3,678,114.
Sechler, Fred R.: *See—*
Ferm, Carl W.; and Sechler, Fred R., 3,677,409.
Security Systems, Inc.: *See—*
Devine, Edward, 3,677,370.
Segall, Paul E. Preservation and storage of biologic materials. 3,677,024, Cl. 62-64.000.
Segerkvist, Bror Henrik. Spring type disc projecting device with cam operated cocking mechanism. 3,677,257, Cl. 124-8.000.
Seiber, James N.; and Stringham, Robert R., to Dow Chemical Company, The. Electrolytic reduction of 1,2,3,4-tetrachlorobenzene to obtain 1,2,4-trichlorobenzene. 3,677,916, Cl. 204-59.00r.
Sekisui Kegaku Ogyo Kabushiki Kaisha: *See—*
Mori, Hisayuki; and Noguchi, Yoji, 3,677,670.
Serck Industries Limited: *See—*
Walton, Peter, 3,677,297.
Serracchioli, Francesco; and Restivo, Francesco, to Olivetti, Ing. C., & C., S.p.A. Terminal apparatus. 3,678,179, Cl. 178-4.100.
Setser, Donald D., to Dow Chemical Company, The. Sleep sensing apparatus for use on automotive vehicles. 3,678,494, Cl. 340-279.000.
Sexton, Edwin Leon: *See—*
Mokrzycki, Stanley Martin; Sexton, Edwin Leon; Powers, Thomas George; and Melnick, Daniel, 3,677,768.
Shaefer, Lewis H.: *See—*
Hall, William D.; and Shaefer, Lewis H., 3,677,223.
Shair of Canada Limited: *See—*
Gray, Dan E., 3,677,359.
Shannon, James William, to Vickers Hoskins Pty., Limited. Self aligning latching mechanism on a cargo container spreader. 3,677,599, Cl. 294-67.0da.
Shapiro, Leonard, to Pennwalt Corporation. Rotary press. 3,677,673, Cl. 425-78.000.
Shaporev, Stepan Vasilievich: *See—*
Scherban, Alexandr Nazarievich; Furman, Neonil Izrailevich; Sotnichenko, Boris Feodosievich; Belogolovin, Nikolai Stefanovich; Chopovsky, Jury Ivanovich; Sutormin, Jury Nikolaevich; Zaitsev, Valentin Ivanovich; Kot, Vladimir Ivanovich; Mikhailjuk, Nikolai Tarasovich; Denisenko, Sergei Andreevich; Chaschinov, Anatoly Vasilievich; Shaporev, Stepan Vasilievich; and Samoilenko, Svetlana Mikhailovna, 3,678,489.
Shaw, Graham C.; and Reed, Russell, Jr., to Thiokol Chemical Corporation. Pyrotechnics comprising oxide of silver for weather modification use. 3,677,840, Cl. 149-19.000.
Shaw, Jeffery Isaac, to Lucas, Joseph, Industries Limited. Mounting arrangement for a board which supports electrical conductors. 3,678,342, Cl. 317-100.000.
Shay, Edward Griffin; and Tavss, Edward A., to Millmaster Onyx Corporation. Bactericidal quarternary ammonium derivatives of indene. 3,678,173, Cl. 424-329.000.
Shaye, Nat, to Baxter Laboratories Inc. Air block prevention system. 3,677,242, Cl. 128-214.00c.
Shearer, Bruce. Musical rolling hoop. 3,676,951, Cl. 46-114.000.
Shell Oil Company: *See—*
Bell, Howard F.; and Scheineman, John A., 3,677,292.
Hardesty, Donald E.; and Rodgers, Thomas A., 3,677,932.
Lewis, Donald R., 3,678,273.
Lilley, G. C.; and Kolb, Robert Herrick, 3,678,257.
Martin, Godfrey Q., 3,677,528.
Simpson, Samuel W., 3,677,064.
Wahlstrom, Sven, 3,678,473.
Shelton, James R.; and Hopper, Roger J., to Goodyear Tire & Rubber Company, The. Inhibiting premature vulcanization of rubbers. 3,678,017, Cl. 260-79.50b.
Shelton, Winston L.; and Pottinger, Eugene A., to Commercial Appliances, Inc. Pressure cooking apparatus. 3,677,170, Cl. 99-337.000.
Shemanske, Richard, to Borg-Warner Corporation. Master-slave motor system with start-up control circuit. 3,678,351, Cl. 318-61.000.
Shen, Tsung-Ying; Witzel, Bruce E.; and Walford, Gordon L., to Merck & Co., Inc. Substituted anilino carboxylic acids. 3,678,094, Cl. 260-471.00r.
Sheridan, John L., to Weyerhaeuser Company. Method of manufacturing consolidated articles by the use of steam atomized wax. 3,677,808, Cl. 117-105.300.
Sherry, Howard S.; and Schwartz, Albert B., to Mobil Oil Corporation. Low temperature-high temperature two stage ion exchange of zeolites. 3,677,698, Cl. 23-112.000.
Sherwin-Williams Company, The: *See—*
Kirkpatrick, Truman; and Nilles, James Jacob, 3,677,783.
Sherwood Medical Industries Inc.: *See—*
Brown, Alexander M., 3,677,247.
Reeves, Richard A., 3,677,268.
Shibata, Motoo; Yamamoto, Hiroichi; Higashide, Eiji; Mizuno, Komei; Imanishi, Mashiko; and Miyake, Akira, to Takeda Chemical Industries, Ltd. Gangtokmycin and production thereof by streptomyces gangtokensis. 3,678,161, Cl. 424-122.000.
Shimamura, Isao: *See—*
Iwano, Haruhiko; and Shimamura, Isao, 3,677,760.
Shimizu, Kunio: *See—*
Oohara, Saburo; Amemiya, Koitsuro; Nishijima, Yasushi; Fukushima, Mitsuyoshi; and Shimizu, Kunio, 3,677,871.
Shinetsu Chemical Company: *See—*
Wada, Tadashi; Itoh, Kunio; and Kuga, Naoyoshi, 3,677,981.
Shionogi & Co., Ltd.: *See—*
Okumura, Tamotsu; and Kadono, Tetsuro, 3,677,410.
Shipley, Charles Raymond; Gulla, Michael; and Dutkewych, Oleh Borys, to Shipley Company, Inc. Electroless plating solutions for cadmium and cadmium copper alloys. 3,677,776, Cl. 106-1.000.
Shipley Company, Inc.: *See—*
Shipley, Charles Raymond; Gulla, Michael; and Dutkewych, Oleh Borys, 3,677,776.
Shipman, Patricia Violet: *See—*
Foreman, Christopher Roy; and Shipman, Patricia Violet, 3,676,985.
Shirakami, Yoshiaki: *See—*
Yasuoka, Yoshio; and Shirakami, Yoshiaki, 3,678,238.
Shirasu, Kazuo: *See—*
Amano, Hiroyuki; Tsuji, Nobuo; and Shirasu, Kazuo, 3,677,762.
Shirvany, John Anoush, to Jackson, Byron, Inc. Dock fender structure. 3,677,017, Cl. 61-48.000.
Shively, John J. Anti-slip apparatus. 3,676,940, Cl. 36-8.100.
Shomura, Takashi: *See—*
Nitda, Taro; Yumoto, Hiroshi; Tsuruoka, Takashi; Hammoto, Kazuko; Shomura, Takashi; and Ohashi, Takao, 3,678,159.
Short, Henry O., to Simplimatic Engineering Co. Two direction quick adjusting bar clamp. 3,677,584, Cl. 287-49.000.
Shotmeyer, Albert. Manually operable elevator. 3,677,367, Cl. 182-136.000.

Shoup, Robert D., to Corning Glass Works. Silicate bodies containing coprecipitated oxides. 3,678,144, Cl. 264-42.000.
Showalter, William E., to Union Oil Company of California. Method for improving the injection profile of a water injection well. 3,677,343, Cl. 166-252.000.
Shriver, Edward W.: *See—*
Tollefsrud, Warren H.; and Shriver, Edward W., 3,677,423.
Shteinshleifer, Boris. Jewelry bracelet catch. 3,676,904, Cl. 24-265.0ws.
Shubkin, Ronald L.: *See—*
Dubeck, Michael; and Shubkin, Ronald L., 3,678,083.
Shuey, Scott James, to Borg-Warner Corporation. Machinery shaft radial position monitor/alarm system. 3,678,493, Cl. 340-269.000.
Shultz, James R.: *See—*
Bucek, Jiri B.; and Shultz, James R., 3,678,355.
Shutt, Paul B., to Bendix Corporation, The. Metering valve. 3,677,606, Cl. 303-6.00c.
Sibilia, Alfred F. Two-part cartridge magazine. 3,676,946, Cl. 42-50.000.
Sick, Erwin, Firma: *See—*
Gleixner, Franz, 3,678,281.
Siebe Gorman & Company Limited: *See—*
Richards, Brian John, 3,677,267.
Siebelist, Hilbert R., to United States of America, Atomic Energy Commission. Coaxial cable connector. 3,678,446, Cl. 339-177.00e.
Siegfried, Edward C.; Harwell, Conner J.; and Murphy, Shields; deceased (by Friley, Paul B.), to Dickey, W. S., Clay Manufacturing Company. Apparatus for ram forming monolithic plastic articles. 3,677,687, Cl. 425-457.000.
Siemens Aktiengesellschaft: *See—*
Braun, Dieter; and Heinemann, Klaus, 3,678,270.
Denk, Hans; and Habrich, Reiner, 3,677,999.
Ebisch, Martin, 3,678,394.
Heynisch, Hinrich, 3,678,326.
Kienzler, Eberhard, 3,678,502.
Schabert, Hans-Peter, 3,677,892.
Schon, Siegfried, 3,678,207.
Steinkein, Hans-Wolfgang, 3,678,460.
Siemens-Elektrogerate GmbH: *See—*
Ackermann, Joseph, 3,678,245.
Sieurin, Donald, to Morgan Construction Company. Shear mechanism. 3,677,120, Cl. 83-343.000.
Sillion, Bernard: *See—*
Rabilloud, Guy; Sillion, Bernard; and De Gaudemaris, Gabriel, 3,678,005.
Silver, Alexander: *See—*
Barnett, Morris A.; and Silver, Alexander, 3,677,612.
Silverman, Daniel: *See—*
Johnson, Everett A.; and Silverman, Daniel, 3,677,465.
Silverman, Daniel, to Pan American Petroleum Corporation. Method of increasing size of underground nuclear chimney. 3,677,342, Cl. 166-247.000.
Silverman, Daniel, to Amoco Production Company. Recording elastic-wave phase holographic data. 3,678,452, Cl. 340-3.00r.
Simmons, Carl E.: *See—*
Bathla, Pritam S.; and Simmons, Carl E., 3,677,334.
Simon-Vermot, Andre; and Grossenbacher, Charles-Andre, to Les Fabriques d'Assortiments Reunies. Balance for a time piece. 3,676,998, Cl. 58-107.000.
Simonetta, Enrico, to USAG S.p.A. Free-wheel device for transmitting torques and reversible ratchet dog comprising same. 3,677,102, Cl. 74-143.000.
Simons, Charles W.: *See—*
Edmonston, Robert P.; Gribens, Joel A.; and Simons, Charles W., 3,677,993.
Simplimatic Engineering Co.: *See—*
Graff, William R., 3,678,254.
Short, Henry O., 3,677,584.
Simpson, Allan R. Bass drum pedal assembly. 3,677,128, Cl. 84-422.000.
Simpson, Elsworth C., to Polylok Corporation. Method of and machine for making fabrics. 3,677,034, Cl. 66-84.000.
Simpson, Samuel W., to Shell Oil Company. Apparatus for automatic crystal point detection. 3,677,064, Cl. 73-17.00r.
Sinclair, William: *See—*
Cole, John M.; and Sinclair, William, 3,676,924.
Sinclair, William, to Ericsson Telephones Limited. Information storage equipment. 3,678,477, Cl. 340-173.00r.
Singer Company, The: *See—*
Herr, John A.; and Porter, Oswald M., 3,676,928.
Ragen, Robert A.; Herendeen, Carl E.; and Wood, Gary R., 3,678,471.
Singer Company, The, mesne: *See—*
Kyser, Leslie T., 3,678,259.
Prill, Robert S., 3,678,501.
Singh, Sujan: *See—*
Arthur, Jett C., Jr.; Singh, Sujan; and Hinojosa, Oscar, 3,677,692.
Sirota, Julius; Bentley, David J., Jr.; and Jubilee, Benjamin D., Jr., to National Starch and Chemical Corporation. Pressure sensitive adhesive compositions. 3,677,985, Cl. 260-27.00r.
Sisk, George William, Jr.; Miller, Arthur William; and Koleszar, Frank, to Whirlpool Corporation. Adjustable speed air drive-air sweep for air conditioner. 3,677,166, Cl. 98-94.000.
Sizer, Phillip S., to Otis Engineering Corporation. Pipe handling apparatus and method. 3,677,345, Cl. 166-315.000.
Skala, George F., to Environment/One Corporation. Self-adjusting condensation nuclei monitor measuring circuit having adjustable gain. 3,678,488, Cl. 340-236.000.
Skinner, George C.: *See—*
Cope, Geoffrey W.; and Skinner, George C., 3,678,442.
Skrentner, James A., to La Salle Machine Tool, Inc. Hydraulically operated tool compensator unit. 3,677,115, Cl. 82-24.000.
Slayton, John W. Electric grass edger. 3,676,989, Cl. 56-10.500.
Slegten, Pierre Arsene. Automatic grading linings for cylindrical tube or similar mills. 3,677,479, Cl. 241-183.000.
Slone, Thomas J., to Procter & Gamble Company, The. Continuous thickness measurement of a moving plastic web. 3,676,933, Cl. 33-147.001.
Slonimsky, Alexandr Borisovich: *See—*
Maximovich, Boleslav Ivanovich; Dudko, Daniil Andreevich; Agafonov, Nikolai Georgievich; Maximov, Igor Petrovich; Andreev, Vadim Grigorievich; Lepilov, Nikolai Yakovlevich; Svinov, Alexei Kapitonovich; Slonimsky, Alexandr Borisovich; Volk, Boris Zakharovich; Gubin, Alexandr Ivanovich; and Katsman, Berta Osipovna, 3,677,330.
Slosiarek, Michael L., to Allis-Chalmers Manufacturing Company. Swinging drawbar. 3,677,565, Cl. 280-499.000.
Smadar, Yechiel; and Goodman, Abraham H., to DCA Food Industries, Inc. Apparatus for despensing frozen comestibles. 3,677,443, Cl. 222-94.000.
Small, Fred, to Gullick Dobson Limited. Mine roof supports. 3,677,603, Cl. 299-31.000.
Smiernow, George A. Vacuum casting process. 3,677,332, Cl. 164-133.000.
Smith, Francis Hughes, to Vickers Limited. Optical field flattening devices. 3,677,621, Cl. 350-157.000.
Smith, Francis Rawdon; and Horne, John E. Duplicating apparatus for cassettes. 3,677,554, Cl. 274-3.000.
Smith Kline & French Laboratories: *See—*
Pfeiffer, Francis R.; and Weisbach, Jerry A., 3,678,137.
Smith, Peter D.: *See—*
Kletecka, George; and Smith, Peter D., 3,678,047.
Smith R. P. M. Corporation: *See—*
Smith, Roy R., Jr., 3,677,177.
Smith, Roy R., Jr., to Smith R. P. M. Corporation. Drive for controlling web length in rotary printing presses. 3,677,177, Cl. 101-228.000.
Smythe, Eric Patrick Greenwood, to Republic Mower Company (Proprietary) Limited. Rotary mower. 3,676,893, Cl. 15-328.000.
Snavely, Earl S., Jr.: *See—*
Blount, Elmo M.; Snavely, Earl S., Jr.; Messenger, Joseph U.; and Prueger, Nicolas J., 3,677,340.
Snyder, John Harold: *See—*
Hollingsworth, Clinton A.; Snyder, John Harold; and Gudath, Ernest Andrew, 3,677,701.
Sobrefina SA: *See—*
Rausing, Anders Ruben, 3,677,774.
Societe Anonyme Activit: *See—*
Godel, Albert, 3,677,727.
Societe Anonyme de Telecommunications: *See—*
Boulin, Jacques R.; and Nepomiastchy, Alexis, 3,678,419.
Societe anonyme dite: L'Oreal: *See—*
Kalopissis, Gregoire; Bugaut, Andree; and Estradier, Francoise, 3,677,690.
Kalopissis, Gregoire; Abegg, Jean-Louis; Ghilardi, Guiliana; and de Beaulieu, Henri Philippe, 3,678,157.
Societe Anonyme dite: Societe Nationale des Petroles d'Aquitaine: *See—*
Reulet, Philippe; Pfister, Alain; Tellier, Jacques; Blanc, Jean-Henry; Jorgensen, Kirsten Borre; and Bohlbro, Hans, 3,678,091.
Societe Anonyme Poclain: *See—*
Leyrat, Pierre J., 3,677,604.
Societe Anonyme Usines Emile Henricot: *See—*
Henricot, Paul, 3,677,363.
Societe d' Etudes et de Developpement des Aeroglisseurs Marins Terrestres et Amphibies S.E.D.A.M.: *See—*
Bertin, Jean Henri, 3,677,361.
Societe Industrielle de Brevets et d'Etudes S.I.B.E.: *See—*
Pierlot, Michel Eugene, 3,677,526.
Societe Messier: *See—*
Lucien, Rene, 3,677,373.
Societe Nationale d'Etude et de Construction de Moteurs d'Aviation: *See—*
Bauger, Louis Jules; Beyler, Roland Robert Charles; Le Guen, Henri; Pidebois, Jacques Eloi; and Schenher, Michel Bernard, 3,677,013.
Garnier, Michel Robert; and Rioux, Christian Paul Gilbert, 3,678,306.
Societe Rhodiaceta-D.A.P.I.D.: *See—*
Bolliand, Robert; and Saligny, Claude, 3,677,855.
Sodolev, Valerian Mikhailovich: *See—*
Stepanov, Gennady Arkadievich; Tsailingold, Anatoly Lvovich; Pilipenko, Fedor Semenovich; Sodolev, Valerian Mikhailovich; Boreskov, Georgy Konstantinovich; Buyanov, Roman Alexeevich; and Venyaminov, Sergei Alexeevich, 3,678,124.
Sokolowski, Robert C., to Kimberly-Clark Corporation. High temperature and pressure bonding of urethane foam. 3,677,858, Cl. 156-219.000.
Solartron Electronic Group Limited, The: *See—*
Wheable, Desmond, 3,678,506.
Solberg, Olav: *See—*

Bognaes, Ragnar; and Solberg, Olav, 3,677,021.
Sollman, George H., to Honeywell, Inc. Two phase encoder system for three frequency modulation. 3,678,503, Cl. 340-347.0dd.
Somogyi, Agnes: *See—*
Dobo, Janos; Somogyi, Agnes; and Lakner, Endre, 3,677,967.
Sonic Development Corporation of America: *See—*
Schurig, Robert E.; and Korn, Joseph, 3,677,525.
Sony Corporation: *See—*
Kihara, Nobutoshi, 3,678,215.
Kihara, Nobutoshi, 3,678,217.
Kurokawa, Hiromichi, 3,678,184.
Miura, Yotaro; and Ito, Makoto, 3,678,214
Miyaoka, Senri, 3,678,329.
Okada, Takashi, 3,678,185.
Oosone, Koozo, 3,677,556.
Sato, Seizi, 3,678,213.
Suzuki, Tadao, 3,678,408.
Yoshida, Susumu; Ohgoshi, Akio; Miyaoka, Senri; and Katagiri, Yoshiharu, 3,678,318.
Sorg Paper Company, The: *See—*
Rowsam, Kenneth P.; and Yost, De Witt M., 3,677,887.
Soros, Paul. Apparatus for storing particulate material. 3,677,392, Cl. 198-36.000.
Sotnichenko, Boris Feodosievich: *See—*
Scherban, Alexandr Nazarievich; Furman, Neonil Izrailevich; Sotnichenko, Boris Feodosievich; Belogolovin, Nikolai Stefanovich; Chopovsky, Jury Ivanovich; Sutormin, Jury Nikolaevich; Zaitsev, Valentin Ivanovich; Kot, Vladimir Ivanovich; Mikhailjuk, Nikolai Tarasovich; Denisenko, Sergei Andreevich; Chaschinov, Anatoly Vasilievich; Shaporev, Stepan Vasilievich; and Samoilenko, Svetlana Mikhailovna, 3,678,489.
Soupenne, Henri, to Compagnie des Compteurs. Variator for a liquid dispenser. 3,677,466, Cl. 235-61.00l.
Souri, Hiroshi, to Iwatsu Electric Company, Ltd. Multi-color plasma display panel. 3,678,322, Cl. 313-201.000.
Soussan, Salomon: *See—*
Chatelain, Jean; and Soussan, Salomon, 3,678,021.
South, Derek Bye: *See—*
Johnson, Harold Hector; South, Derek Bye; and White, Charles Victor Burdett, 3,678,282.
Southern Cross Industries, Inc.: *See—*
Barrineau, Wade H., 3,677,203.
Southern Machinery Company: *See—*
Cutting, Arch E.; Owens, Carlos L.; Williams, Dewey H.; and Hooper, Felix E., 3,677,305.
Spampanato, Gavino Anthony: *See—*
Patmore, James R.; Bozenhard, Walter Frank; and Spampanato, Gavino Anthony, 3,678,258.
Spangler, Richard M., to Hewlett-Packard Company. Electronic calculator. 3,678,466, Cl. 340-172.500.
Sparks, Allen K., to Universal Products Company. Stabilization of lubricants. 3,677,945, Cl. 252-49.600.
Specht, Theodore R.: *See—*
Morris, Louis; and Specht, Theodore R., 3,678,428.
Spence, John H.: *See—*
Yang, Tung H.; and Spence, John H., 3,677,198.
Sperl, Robert J. Metal plating product and process. 3,677,908, Cl. 204-38.00b.
Sperry Rand Corporation: *See—*
Quermann, Thomas R., 3,677,097.
Spier, Jerome B., to Naken, M. I., Company. Storage unit for flatware. 3,677,400, Cl. 206-75.000.
Spies, Rolf E., to Motorola, Inc. Frequency stable blocking oscillator. 3,678,412, Cl. 331-112.000.
Spivack, John Denon: *See—*
Dexter, Martin; Spivack, John Denon; and Steinberg, David Herbert, 3,677,965.
Dexter, Martin; and Spivack, John Denon, 3,678,095.
Splatt, Reginald John Bingston, to United Kingdom of Great Britain and Northern Ireland, Minister of Technology in Her Britannic Majesty's Government of the. Cycloconverters. 3,678,369, Cl. 321-69.00r.
Spragg, Hal R., to U.S. Atomic Energy Commission under the provisions of 42 USC 2182. Treatment of sewage. 3,677,935, Cl. 210-3.000.
Springston, George B., Jr.; Thomas, Samuel L.; and Miller, Fred B., to United States of America, Navy. Knotmeter for small craft. 3,677,082, Cl. 73-181.000.
Square D Company: *See—*
Adamson, Wayne G., 3,678,228.
Rys, Tadeusz J., 3,678,230.
Squibb, E. R., & Sons, Inc.: *See—*
Haugwitz, Rudiger D.; and Lakshmi, Venkatachala, 3,678,066.
Krapcho, John, 3,678,052.
St. Regis Paper Company: *See—*
Rothmann, Harry Edward; and Ruf, Walter, 3,676,977.
Staar Development Co.: *See—*
Staar, Marcel Jules Helene, 3,677,493.
Staar, Marcel Jules Helene, to Staar Development Co. Automatic stop mechanism for a recorder using magnetic tape stored in a cassette. 3,677,493, Cl. 242-191.000.
Staar, S.A.: *See—*
Staar, Theophiel Clement Josef Lodewijk, 3,677,396.
Staar, Theophiel Clement Josef Lodewijk, to Staar, S.A. Storage box for tape-containing cassettes and the like. 3,677,396, Cl. 206-1.00r.
Staciokas, Leon: *See—*
Lowry, Alan B.; Mathus, Gregory; and Staciokas, Leon, 3,677,497.
Staffin, Herbert Kenneth, to Procedyne Corporation. Moving bed filtration method. 3,677,404, Cl. 210-67.000.
Stager, Stanley R., III: *See—*
Freeman, Richard B.; Kawalec, Michael T.; Maholick, Andrew W.; and Stager, Stanley R., III, 3,678,469.
Staley, A. E., Manufacturing Company: *See—*
Jones, Rexford W.; and Thompson, William B., 3,677,759.
Protzman, Thomas F., 3,677,756.
Stalp, Bernard J., to Data Time, Inc. Touch-operated signal producer. 3,678,496, Cl. 340-323.000.
Standard Oil Company: *See—*
Gutberlet, Louis C.; and Bertolacini, Ralph J., 3,677,972.
Mazzara, Vincent B.; and Fesperman, Jerome M., 3,677,941.
Standard Oil Company (Indiana): *See—*
Morello, Edwin F., 3,677,992.
Stansell, Alpheus F.; and Bennett, Eugene E., to Burroughs Corporation. Coupling for a pneumatic actuated magnetic head. 3,678,480, Cl. 340-174.10e.
Starks, Karl H., Jr.: *See—*
Bickel, David P.; Davis, Melvin H.; Starks, Karl H., Jr.; and Tsoras, John, 3,678,486.
Starr, Stanley R.: *See—*
Edmisson, Russell C.; and Starr, Stanley R., 3,677,469.
Statham Instruments Inc.: *See—*
Funfstuck, Horst; and Elazar, Shmuel, 3,677,260.
Staub, Fred W., to General Electric Company. Surface condenser. 3,677,338, Cl. 165-111.000.
Stauffer Chemical Company: *See—*
Fearing, Ralph B., 3,678,165.
Giolito, Silvio L.; and Mirviss, Stanley B., 3,677,948.
King, James A.; and Maxam, David R., 3,677,406.
Stefanye, David. Process for the bluining of steel surfaces. 3,677,829, Cl. 148-6.350.
Stein, Leo. Transportable photographic enlarger. 3,677,636, Cl. 355-18.000.
Stein, Walter. Hypodermic syringe. 3,677,246, Cl. 128-218.00g.
Steinberg, David Herbert: *See—*
Dexter, Martin; Spivack, John Denon; and Steinberg, David Herbert, 3,677,965.
Steinhaus, James F.: *See—*
Osher, John E.; Kinney, John D.; and Steinhaus, James F., 3,678,323.
Steinke, Fred J., to Reliance Electric Company. Bushing and method of manufacturing. 3,677,583, Cl. 287-52.060.
Steinlein, Hans-Wolfgang, to Siemens Aktiengesellschaft. Code-responsive control receiving system. 3,678,460, Cl. 340-167.00r.
Stenlund, Stig: *See—*
Lagerqvist, Roger; and Stenlund, Stig, 3,677,141.
Stenzel, Jurgen A., to Monsanto Company. Method of processing ferrophosphorus. 3,677,741, Cl. 75-28.000.
Stepanov, Gennady Arkadievich; Tsailingold, Anatoly Lvovich; Pilipenko, Fedor Semenovich; Sodolev, Valerian Mikhailovich; Boreskov, Georgy Konstantinovich; Buyanov, Roman Alexeevich; and Venyaminov, Sergei Alexeevich. Process for the production of mono- and diolefin hydrocarbons. 3,678,124, Cl. 260-680.00e.
Stepenske, Lawrence D.; and Cassidy, Edward K., to National Can Corporation. Apparatus for coating articles. 3,677,226, Cl. 118-70.000.
Sterling Drug Inc.: *See—*
Albertson, Noel F.; and Wetterau, William F., 3,678,056.
Sternbach, Leo Henryk: *See—*
Archer, Giles Allan; and Sternbach, Leo Henryk, 3,678,036.
Field, George Francis; Sternbach, Leo Henryk; and Zally, William Joseph, 3,678,038.
Sterner, Maurice E., Jr.: *See—*
Taylor, Henry A.; and Sterner, Maurice E., Jr., 3,676,956.
Sterner, Russell L.: *See—*
Keller, Joseph H., Jr.; and Sterner, Russell L., 3,677,417.
Sterrett, Robert W.; and Jacob, Francis J., to Grace, W. R., & Co. Insulation product and method. 3,677,874, Cl. 161-116.000.
Stevens, Charles Edward, to Exton, John M.; as trustee of the Trust and Exton Development Company. Apparatus for ornamenting glass articles. 3,676,962, Cl. 51-227.00r.
Stevens, William P.; Hubbard, George M.; and Wagner, William D., to Bendix Corporation, The. Connector with isolated ground. 3,678,444, Cl. 339-130.00c.
Stevenson, Alan D.: *See—*
Burns, Erwin; and Stevenson, Alan D., 3,677,341.
Stewart, C. Jim, & Stevenson, Inc.: *See—*
Koomey, Paul C., 3,677,520.
Stewart, John Kenneth, to Tamper Inc. Reversible tamping bar. 3,677,187, Cl. 104-10.000.
Stewart, Paul M.: *See—*
MacDuff, Richard; and Stewart, Paul M., 3,677,530.
Stewart Research, Inc.: *See—*
Maleck, Le Roy R., 3,676,895.
Stiles, Alvin B.: *See—*
McClellan, William R.; and Stiles, Alvin B., 3,678,139.
Stipek, Harold A. Loop-supporting device. 3,677,597, Cl. 294-19.00r.

Stirling, John Andrew: *See—*
MacPherson, Ian Alexander; Inman, Eric Richard; Stirling, John Andrew; and Irvine, Alexander McHugh, 3,677,782.
Stivers, Edward C., to Raychem Corporation. Poly(1,12-dodecamethylene pyromellitimide) and poly(1,13-tridecamethylene promellitimide) and radiation-crosslinked products thereof. 3,677,921, Cl. 204-159.190.
Stockmann, Hans H.: *See—*
Ray-Chaudhuri, Dilip K.; and Stockmann, Hans H., 3,678,035.
Stockwell, Orville E. Reversible differential control valve and systems. 3,677,137, Cl. 91-6.000.
Stoller, Arthur Irwin; and Opresko, Stephen Thomas, to RCA Corporation. Method and material for etching semiconductor bodies. 3,677,848, Cl. 156-17.000.
Stolzenwald, Ralf J.; and Korner, Peter, to Bosch, Robert, Photokino G.m.b.H. Motion picture camera with dissolving shutter and variable-focus lens. 3,677,625, Cl. 352-91.000.
Stone & Webster Engineering Corporation: *See—*
Dutkiewicz, Bronislaw K., 3,677,234.
Stout, Caleb M.; Nimerick, Kenneth H.; and Parks, Christ F., to Dow Chemical Company, The. Method of inhibiting wind movement of loose particles from surfaces. 3,677,014, Cl. 61-36.000.
Strange, Carl P.: *See—*
Liu, Gordon Y. T.; and Strange, Carl P., 3,678,024.
Strasser, Alois: *See—*
Kaiser, Wolfgang; Nitzsche, Siegfried; Wohlfarth, Ernst; Strasser, Alois; and Hittmair, Paul, 3,677,997.
Straub, Dieter: *See—*
Fischer, Gerd; Straub, Dieter; and Voigt, Heinz Eberhard, 3,678,301.
Strebel, Albert; and Habegger, Oskar, to Maschinenfabrik Burckhardt AG. Push rod for a crank drive mechanism. 3,677,107, Cl. 74-579.00r.
Stricker, Alfred A.: *See—*
Anzelone, Thomas A., Jr.; Larson, Harold A.; and Stricker, Alfred A., 3,677,853.
Stringham, Robert R.: *See—*
Seiber, James N.; and Stringham, Robert R., 3,677,916.
Strnat, Karl: *See—*
Ray, Alden E.; and Strnat, Karl, 3,677,947.
Stromberg-Carlson Corporation: *See—*
Boehly, Michael A., 3,678,222.
Collier, Robert W., 3,678,508.
Strong, Jerry G.; and Kaufman, Harold A., to Mobil Oil Corporation. 4-Oxoperhydrobenzo [b] thiophenes and their preparation. 3,678,070, Cl. 260-332.30p.
Strzepek, Edward S., to Lewis Spring & Manufacturing Co. Method of forming a double torsion spring and machine therefor. 3,677,054, Cl. 72-131.000.
Stuck, Klaus, to Ehrenreich, A., & Cie. Ball joint with cover plate for vehicles linkages. 3,677,586, Cl. 287-87.000.
Studley, David K., to Quantor Corporation. Microfilm camera. 3,677,159, Cl. 95-31.0el.
Stuemky, Robert E., to Gates Rubber Company, The. Continuously variable friction gear. 3,677,109, Cl. 74-796.000.
Sturm, Edward L., to Eastman Kodak Company. Control, signal and actuating mechanism for use with photoflash lamp units having pre-energized strikers. 3,677,157, Cl. 95-11.50r.
Subsea Equipment Associates Limited, mesne: *See—*
Dobler, Christian D.; and Lilly, Herbert J., Jr., 3,677,310.
Morgan, George W., 3,677,302.
Sudnick, Dennis J.: *See—*
Davis, Dennis J.; Sudnick, Dennis J.; Juhasz, John E.; and Kurichh, Sham, 3,677,609.
Sugahara, Eisuke, to Nippon Piston Ring Co., Ltd. Oil stripping piston ring. 3,677,558, Cl. 277-138.000.
Sugi, Masanao: *See—*
Ueda, Haruo; Sugi, Masanao; and Chayamichi, Hiroshi, 3,677,492.
Sugihara, Kanji: *See—*
Sato, Kunio; Sugihara, Kanji; Wakabayashi, Takashi; and Ishida, Tomio, 3,676,925.
Sugimoto, Kaname: *See—*
Kurimuto, Masashi; Sugimoto, Kaname; and Hirao, Mamoru, 3,677,896.
Sugimoto, Yoshitaka; Sannomiya, Isao; and Noumi, Kazunobu, to Kanegafuchi Boseki Kabushiki Kaisha. Imparting crease resistance to fibrous silk structures through treatment with gaseous formaldehyde. 3,677,694, Cl. 8-127.600.
Sukel, Gerald J.: *See—*
Rubin, Jacob C.; and Sukel, Gerald J., 3,677,069.
Sumitomo Chemical Company, Ltd.: *See—*
Yasui, Seimei; Hirooka, Masaaki; and Oshima, Teruo, 3,678,018.
Sumski, Stanley: *See—*
Panish, Morton B.; and Sumski, Stanley, 3,677,228.
Sun, Shan C.; and Raygor, Paul O., to Westinghouse Electric Corporation. Signal transmitting system for extra high voltage transmission line. 3,678,339, Cl. 317-58.000.
Sun, Yun-Chung, to Dow Chemical Company, The. Process for dehydrating acetic acid. 3,677,023, Cl. 62-58.000.
Sunds Aktiebolag: *See—*
Pettersson, Bengt Edvard, 3,677,040.
Sundstrand Data Control, Inc.: *See—*
Corey, Victor B., 3,677,086.
Thompson, Burton J., 3,678,374.
Sunners, Brian: *See—*
Hoogendorn, Helen M.; Narken, Bernt; Roeder, Paul J.; and Sunners, Brian, 3,678,211.
Surface Technology Corporation: *See—*
Van Thyne, Ray J.; and Rausch, John J., 3,677,832.
Sussman, Bernard J., to Worthington Biochemical Corporation. Treatment of herniated intervertebral discs of mammals. 3,678,158, Cl. 424-94.000.
Susuki, Rinnosuke; Hoshi, Hiroshi; Araki, Shinichi; and Ishii, Masao, to Raion Yushi Kabushiki Kaisha. Handle grips for carton boxes. 3,677,459, Cl. 229-52.00a.
Susuki, Rinnosuke; Hoshi, Hiroshi; Saito, Jiro; and Suzuki, Masao, to Raion Yushi Kabushiki Kaisha. Method for manufacture of corrugated boards. 3,677,857, Cl. 156-210.000.
Sutormin, Jury Nikolaevich: *See—*
Scherban, Alexandr Nazarievich; Furman, Neonil Izrailevich; Sotnichenko, Boris Feodosievich; Belogolovin, Nikolai Stefanovich; Chopovsky, Jury Ivanovich; Sutormin, Jury Nikolaevich; Zaitsev, Valentin Ivanovich; Kot, Vladimir Ivanovich; Mikhailjuk, Nikolai Tarasovich; Denisenko, Sergei Andreevich; Chaschinov, Anatoly Vasilievich; Shaporev, Stepan Vasilievich; and Samoilenko, Svetlana Mikhailovna, 3,678,489.
Sutton, Robert Anderson: *See—*
Arvay, Frank Joseph; Frieber, George; Lechleider, Joseph William; and Sutton, Robert Anderson, 3,678,379.
Suzuki, Hiromu: *See—*
Arimura, Tohru; Kamata, Masamoto; Saito, Morio; Suzuki, Hiromu; and Iguchi, Masakazu, 3,677,045.
Suzuki, Hisao; Musashi, Akira; Hiruta, Makoto; and Muramoto, Hiroo, to Nippon Soda Co., Ltd. Low temperature peroxide curable thermosetting polyurethane resin having terminal unsaturation. 3,678,014, Cl. 260-77.5cr.
Suzuki, Masao: *See—*
Susuki, Rinnosuke; Hoshi, Hiroshi; Saito, Jiro; and Suzuki, Masao, 3,677,857.
Suzuki, Tadao, to Sony Corporation. Transistor protective circuit. 3,678,408, Cl. 330-207.00p.
Suzuki, Toshio, to Nippon Seiko Kabushiki Kaisha. Shell type needle bearing. 3,677,032, Cl. 64-17.00a.
Suzuki, Tsuyoshi: *See—*
Yonemitsu, Eiichi; Isshiki, Tomiya; Suzuki, Tsuyoshi; and Yashima, Yukio, 3,678,107.
Suzuki, Zennosuke: *See—*
Morita, Ken-Ichi; Suzuki, Zennosuke; and Hirose, Hiromitsu, 3,678,093.
Svinov, Alexei Kapitonovich: *See—*
Maximovich, Boleslav Ivanovich; Dudko, Daniil Andreevich; Agafonov, Nikolai Georgievich; Maximov, Igor Petrovich; Andreev, Vadim Grigorievich; Lepilov, Nikolai Yakovlevich; Svinov, Alexei Kapitonovich; Slonimsky, Alexandr Borisovich; Volk, Boris Zakharovich; Gubin, Alexandr Ivanovich; and Katsman, Berta Osipovna, 3,677,330.
Svischev, Georgy Petrovich: *See—*
Tupolev, Andrei Nikolaevich; Tupolev, Alexei Andreevich; Cheremukhin, Georgy Alexeevich; Bliznjuk, Valentin Ivanovich; Pukhov, Alexandr Leonidovich; Svischev, Georgy Petrovich; Bjushgens, Georgy Sergeevich; and Mikeladze, Vitaly Georgievich, 3,677,502.
Swanke, Roy L.; and Raymond, Gordon H., to Dynamics Corporation of America. Multiple push button switch speed control system. 3,678,288, Cl. 307-113.000.
Swanke, Roy L.; and Raymond, Gordon H., to Dynamic Corporation of America. Multiple-push button switch speed control system. 3,678,357, Cl. 318-245.000.
Sweeney, Eric C.: *See—*
Meyers, Peter G.; Sweeney, Eric C.; and Brunkhardt, Frederick W., 3,677,422.
Sweeney, Richard F.: *See—*
Anello, Louis G.; and Sweeney, Richard F., 3,678,068.
Sweetheart Plastics, Inc.: *See—*
Davis, Paul, 3,677,435.
Swift Agricultural Chemicals Corporation, mesne: *See—*
Carroll, Robert L.; and Hayward, Charles R., 3,677,734.
Swift, Harold E.: *See—*
Bozik, John E.; Swift, Harold E.; and Wu, Ching-Yong, 3,677,968.
Bozik, John E.; Swift, Harold E.; and Wu, Ching Yong, 3,678,022.
Sybron Corporation: *See—*
Pietschmann, Helmut Richard, 3,676,931.
Sylvania Electric Products Inc.: *See—*
Cohen, Gerald; and Crystal, Maurice I., 3,678,205.
Gough, Warren G., 3,678,391.
Reiss, Stefan E., 3,677,843.
Szumski, Stephen Aloysius; and McCoy, Donald Walter, to American Cyanamid Company. Process for improving the stability of PPD, OT and histoplasmin on tine applicators. 3,678,150, Cl. 424-12.000.
Tabler, Donald C.: *See—*
Johnson, Marvin M.; and Tabler, Donald C., 3,677,933.
Tabler, James G.: *See—*
Greenspan, Gilbert; Curtis, Lawrence R.; Cunningham, Elmer E.; and Tabler, James G., 3,678,277.
Tabor, John R. Tunneling machine with concrete wall forming mechanism. 3,677,602, Cl. 299-31.000.
Taguchi, Seiichi: *See—*
Tamai, Yasuo; Osawa, Sadao; and Taguchi, Seiichi, 3,677,766.

Taguchi, Tatsuya, to Canon Kabushiki Kaisha. Interlocking device for the exposure meter in a camera. 3,677,149, Cl. 95-10.00c.

Takagi, Takeshi; Kawamoto, Tamio; and Miyazaki, Toshio, to Nissan Motor Company, Limited. Hydraulic clutch with dump valve. 3,677,381, Cl. 192-106.00f.

Takahashi, Hideomi; and Takigami, Katsuhiko, to Tokyo Shibaura Electric Co., Ltd. Starting control for an A.C. electric motor device. 3,678,361, Cl. 318-473.000.

Takahashi, Shigeo: *See*—
Hirozawa, Koichiro; and Takahashi, Shigeo, 3,677,277.

Takahashi, Susumu, to Sansui Electric Co., Ltd. Switching circuit. 3,678,297, Cl. 307-251.000.

Takebe, Kaoru: *See*—
Nakatani, Keiji; and Takebe, Kaoru, 3,677,640.

Takeda Chemical Industries, Ltd.: *See*—
Miyake, Akira; Horii, Stoshi; and Ueyanagi, Jisaburo, 3,678,160.
Naka, Jinshichi; Tokuda, Yasunori; Koono, Takehiko; and Utsugi, Jun, 3,677,773.
Shibata, Motoo; Yamamoto, Hiroichi; Higashide, Eiji; Mizuno, Komei; Imanishi, Mashiko; and Miyake, Akira, 3,678,161.

Takeda, Yosiaki, to Nippondenso Kabushiki Kaisha. Contact breaker incorporating fuel injection timing switches. 3,678,224, Cl. 200-19.00m.

Takei, Haruo: *See*—
Nadazawa, Yoshiyuki; Nakamura, Yashuharu; Takei, Haruo; Sato, Akira; and Ikeda, Tadashi, 3,677,765.

Takeuchi, James S.: *See*—
Hunton, James Keith; Kelly, Wayne M.; and Takeuchi, James S., 3,678,395.

Takeuchi, Sugio: *See*—
Oba, Harutaro; Sawazu, Toshihiko; Takeuchi, Sugio; and Yamaguchi, Norio, 3,677,464.

Takigami, Katsuhiko: *See*—
Takahashi, Hideomi; and Takigami, Katsuhiko, 3,678,361.

Takimoto, Syozo. Marine propulsion device. 3,677,217, Cl. 115-31.000.

Takishima, Yoshiyuki: *See*—
Kitanosono, Tatsushi; Mashimo, Yukio; and Takishima, Yoshiyuki, 3,678,354.

Talley, James C., to United States of America, Navy. Pre-shaped fragmentation device. 3,677,183, Cl. 102-67.000.

Tamai, Yasuo; Osawa, Sadao; and Taguchi, Seiichi, to Fuji Photo Film Co., Ltd. Method of forming gelatin image. 3,677,766, Cl. 96-164.000.

Tamate, Tokutaro; Yagi, Eiichi; and Ikeda, Hisayuki, to Kabushikikaisha Yokogawa Denki Seisakusho. Apparatus for measuring pH. 3,677,925, Cl. 204-195.00r.

Tamburrino, James F.: *See*—
McFarland, Otho K.; and Tamburrino, James F., 3,678,375.

Tamper Inc.: *See*—
Stewart, John Kenneth, 3,677,187.

Tamplen, Jack W. Reversible arming method and apparatus for emplacing a locking device in tubing. 3,677,346, Cl. 166-315.000.

Tanaka, Ryohei, to Lion Fat & Oil Co., Ltd. Method for reconditioning the surface of plastics. 3,677,821, Cl. 134-42.000.

Tanguay, Jean Paul, to Placements Jean Paul Tanguay Limited, mesne. Slasher for cutting tree stems into logs of selected length. 3,677,312, Cl. 143-46.00f.

Tani, Haruhisa: *See*—
Yazawa, Masahide; and Tani, Haruhisa, 3,677,484.

Taniguchi, Kaname; Furukawa, Fujio; Hisatome, Tomiro; and Kimura, Yoshito, to Mitsubishi Jukogyo Kabushiki Kaisha. Propeller with kort nozzle. 3,677,660, Cl. 415-172.000.

Taplin, Lael B., to Bendix Corporation, The. Fluid oscillator for a linear output accelerometer. 3,677,095, Cl. 73-515.000.

Tarrant, Fred K., Jr.: *See*—
Murray, Gregory J.; and Tarrant, Fred K., Jr., 3,676,891.

Tarrant Manufacturing Company: *See*—
Murray, Gregory J.; and Tarrant, Fred K., Jr., 3,676,891.

Tatar, Frank J., to Comon Tatar Inc. Puzzle postcard. 3,677,399, Cl. 206-46.0am.

Taub, Bernard: *See*—
Hino, John Bernhard; and Taub, Bernard, 3,678,011.

Tavss, Edward A.: *See*—
Shay, Edward Griffin; and Tavss, Edward A., 3,678,173.

Taylor, Clarence R.: *See*—
Knowles, Frederick G.; and Taylor, Clarence R., 3,677,487.

Taylor, Edward B.: *See*—
Holt, Thomas E.; and Taylor, Edward B., 3,677,850.

Taylor, Henry A.; and Sterner, Maurice E., Jr., to Dinsmore, D. J., Co. Readily removable window with weather-stripping. 3,676,956, Cl. 49-446.000.

Taylor, Julian S. Flying shear. 3,677,119, Cl. 83-316.000.

Taylor, Keith M., to Monsanto Company. Ammoxidation of saturated hydrocarbons. 3,678,090, Cl. 260-465.300.

Technical Management Services, Inc.: *See*—
Gilbert, Roswell W., 3,678,495.

Technical Operations, Incorporated: *See*—
Heinonen, Russell M., Jr., 3,677,629.

Tecumseh Products Company: *See*—
Pawlina, Julian S., 3,677,364.

Teledyne, Inc., mesne: *See*—
Hollmann, Walter G.; and Lozo, Frederick M., III, 3,677,786.

Teletype Corporation: *See*—
Heneghan, Patrick J., 3,678,295.

Tellier, Jacques: *See*—
Reulet, Philippe; Pfister, Alain; Tellier, Jacques; Blanc, Jean-Henry; Jorgensen, Kirsten Borre; and Bohlbro, Hans, 3,678,091.

Tempel, George F., to Electronic Associates Inc. Stabilized direct coupled amplifier having improved frequency response and minimun intermodulation distortion. 3,678,402, Cl. 330-9.000.

Temple, Hiram E., to Baker Perkins Inc. Bakery products handling apparatus. 3,677,393, Cl. 198-85.000.

Tenneco Chemicals, Inc.: *See*—
Hill, Ira D.; Mikherjee, Barid B.; and Brown, Dale G., 3,678,172.
Minieri, Pasquale P., 3,677,738.

Tenney, Horace M.: *See*—
Mertzweiller, Joseph K.; and Tenney, Horace M., 3,677,969.
Mertzweiller, Joseph K.; and Tenney, Horace M., 3,677,970.

Tennis, Francis H., to Hydraulic Industries, Inc. Control valve and actuating lever assembly therefor. 3,677,281, Cl. 137-270.000.

Tenniswood, David M.: *See*—
Cork, Gordon H.; Tenniswood, David M.; and Kaptur, Robert E., 3,677,099.

Terazawa, Yoshizumi; and Ayaki, Kazuo, to Nippon Electric Company, Limited. Electron lens for convergence of plurality of beams. 3,678,317, Cl. 313-69.00r.

Texas Instruments, Incorporated: *See*—
Cash, John H., Jr.; and Cunningham, James A., 3,677,924.
Choate, William C.; and Masten, Michael K., 3,678,461.
Choate, William C.; and Masten, Michael K., 3,678,470.
Holton, William C., 3,678,400.

Th. Goldschmidt A.G.: *See*—
Koerner, Gotz; and Rossmy, Gerd, 3,677,962.
Ray, Alden E.; and Strnat, Karl, 3,677,947.

Tharman, Paul A., to Briggs & Stratton Corporation. Rectifier network assembly. 3,678,366, Cl. 321-8.00r.

Thatcher, Russell S., to Kelso Marine, Inc. Control arrangement for the male die of a hydraulic press brake. 3,677,009, Cl. 60-97.00e.

Theodorou, Dimitri G.: *See*—
Deradoorian, Bagdasar; Goodrich, George W.; and Theodorou, Dimitri G., 3,677,730.

Thermal Syndicate Limited: *See*—
Edwards, Frederick James, 3,676,970.

Theunissen, Matthias Johannes Joseph; and Verkuijlen, Wilhelmus Henricus Cornelis Gerardus, to U.S. Philips Corporation. Manufacturing semiconductor devices. 3,677,846, Cl. 156-8.000.

Thiede, Peter: *See*—
Gottweis, Gert; Herrlich, Michael; Klas, Gunther; Schober, Joachim; Thiede, Peter; and Zachaus, Eberhard, 3,676,978.

Thiel, Reinhard; and Ellendt, Gunther, to Halcon International, Inc. Process for the cleaning of plants which are used for the oxidation of saturated hydrocarbons in the presence of boron compounds. 3,677,819, Cl. 134-2.000.

Thiokol Chemical Corporation: *See*—
Shaw, Graham C.; and Reed, Russell, Jr., 3,677,840.

Thomas & Betts Corporation: *See*—
Cole, John M.; and Sinclair, William, 3,676,924.

Thomas, Bryan: *See*—
Bush, Richard Paul; and Thomas, Bryan, 3,677,977.

Thomas Industries Inc.: *See*—
Porter, David H.; and Biscoe, Thomas S., 3,678,265.

Thomas, Morton I. Tabbed anchoring tape means. 3,677,250, Cl. 128-348.000.

Thomas, Robert E. Pre-fab form for concrete. 3,677,512, Cl. 249-48.000.

Thomas, Samuel L.: *See*—
Springston, George B., Jr.; Thomas, Samuel L.; and Miller, Fred B., 3,677,082.

Thomas, William E., to Phillips Petroleum Company. Explosive device and container. 3,677,180, Cl. 102-24.00r.

Thomenius, Kai E., to United States of America, Army. Presettable frequency divider. 3,678,398, Cl. 328-48.000.

Thompson, Burton J., to Sundstrand Data Control, Inc. Servoed transducer system with current output circuit. 3,678,374, Cl. 323-90.000.

Thompson, William B.: *See*—
Jones, Rexford W.; and Thompson, William B., 3,677,759.

Thomson, Faulkner C. System for the detection and control of compressor stall. 3,677,000, Cl. 60-39.280.

Thum, Waldemar: *See*—
Bergmeyer, Hans Ulrich; Naher, Gotthilf; Thum, Waldemar; Lauerer, Albert; and Emmer, Rudolf, 3,677,901.

Tien, John K.; and Gamble, Robert P., to United Aircraft Corporation. Homogeneous nickel-base superalloy castings. 3,677,835, Cl. 148-32.500.

Tito, Kostag V. Ball valve. 3,677,283, Cl. 137-338.000.

Tkach, Khai Berkovich: *See*—
Kostylev, Alexandr Dmitrievich; Gurkov, Konstantin Stepanovich; Tkach, Khai Berkovich; and Chepurnoi, Nikolai Prokhorovich, 3,677,354.

Tokuda, Yasunori: *See*—
Naka, Jinshichi; Tokuda, Yasunori; Koono, Takehiko; and Utsugi, Jun, 3,677,773.

Tokyo Electric Co., Ltd.: *See*—
Oba, Harutaro; Sawazu, Toshihiko; Takeuchi, Sugio; and Yamaguchi, Norio, 3,677,464.

Tokyo Shibaura Electric Co., Ltd.: *See*—
Iwasaki, Masahiro; Goto, Nobuyuki; Fujisaki, Hiroya; and Niwa, Kunihiko, 3,678,390.
Takahashi, Hideomi; and Takigami, Katsuhiko, 3,678,361.

Tolbert, Tommy L.: *See*—
Schierding, Royce G.; and Tolbert, Tommy L., 3,676,916.

Tolksdorf, Wolfgang, to U.S. Philips Corporation. Device for a method of growing monocrystals. 3,677,712, Cl. 23-273.000.

Tollefsrud, Warren H.; and Shriver, Edward W., to Midland-Ross Corporation. Work transfer apparatus. 3,677,423, Cl. 214-18.00r.

Tomaszewski, Thaddeus W.: *See*—
Brown, Henry; and Tomaszewski, Thaddeus W., 3,677,907.

Tomson, Arthur J.: *See*—
Passal, Frank; and Tomson, Arthur J., 3,678,055.

Tonsbeek, Christiaan Herman Theodoor: *See*—
Copier, Harald; and Tonsbeek, Christiaan Herman Theodoor, 3,678,064.

Toolmasters Limited: *See*—
Mattingly, Frederick William, 3,678,311.

Topecon, Inc.: *See*—
Wild, Albert F., 3,678,212.

Toray Industries, Inc.: *See*—
Morita, Ken-Ichi; Suzuki, Zennosuke; and Hirose, Hiromitsu, 3,678,093.

Torello, Daniel D.: *See*—
Dinenno, Philip A., Jr.; Bonk, Joseph S.; Conrad, Kenneth C.; Moore, Rodney S.; Lochman, Harry E.; and Torello, Daniel D., 3,677,658.

Tornich, Fulvio: *See*—
Pere, Carlo; and Tornich, Fulvio, 3,677,531.

Toth, Charles, to Applied Aluminum Research Corporation. Process for increasing the percentage of aluminum in aluminum-manganese alloys. 3,677,742, Cl. 75-68.00b.

Toth, John E.: *See*—
Chaparro, John J.; Ellis, Lowell V.; Meanor, Doyle W.; Morton, William D., Jr.; Richelmann, Bernd H.; Ross, George B.; and Toth, John E., 3,677,401.

Touval, Irving; and Altwicker, Elmar R., to Universal Oil Products Company. N-Haloimides of polyhalo substituted polyhydrocyclicdicarboxylic acids. 3,678,071, Cl. 260-326.00c.

Toy, Wing Noon: *See*—
Nussbaum, Eric; Toy, Wing Noon; and Woinsky, Melvin Neil, 3,678,467.

Travel Trim & Vent Co.: *See*—
Rapport, Jerry; and Frymire, Garold D., 3,676,954.

Traver, Darwin G.; and Herb, Carl C., to Carrier Corporation. Ceiling air terminal. 3,677,164, Cl. 98-40.00d.

Trecker, David J.: *See*—
Borden, George W.; and Trecker, David J., 3,678,073.

Trecker, David J.; and McKeon, James E., to Union Carbide Corporation. Oxidation process for the synthesis of hydroxy α-hydroxy esters. 3,678,096, Cl. 260-484.00r.

Trehub, Arnold. Reading device for the blind. 3,676,938, Cl. 35-35.00a.

Trepaez, Jean: *See*—
Fleuret, Louis; and Trepaez, Jean, 3,677,852.

Tricault, Gerard J.: *See*—
Tricault, Yves P.; and Tricault, Gerard J., 3,678,248.

Tricault, Yves P.; and Tricault, Gerard J. Household dish-heating appliance. 3,678,248, Cl. 219-525.000.

Triumph Werke: *See*—
Link, Manfred, 3,677,384.

Trocciola, John C., to United Aircraft Corporation. Fuel saturator for low temperature fuel cells. 3,677,823, Cl. 136-86.00c.

Troeger, Henry, to Bendix Corporation, The. Self-energizing torque limiting disc clutch. 3,677,378, Cl. 192-54.00r.

Tropea, Alfred: *See*—
Blackwell, John; and Tropea, Alfred, 3,678,028.

Trott, John James; and Grainger, James William, to National Research Development Corporation. Capacitors. 3,678,378, Cl. 324-61.00r.

Troy, James E.: *See*—
Mac Isaac, John T., Jr.; and Troy, James E., 3,677,206.

Truelove, Edward L. Wrench with fluid draining provision. 3,677,513, Cl. 251-148.000.

TRW Inc.: *See*—
Dillard, Paul A.; and Baker, Donald R., 3,677,508.
Hirschon, Jack M.; and Warner, Philip D., 3,678,346.
Kirkpatrick, Milton E., 3,677,329.
Pearson, Durk J., 3,678,411.

Tsailingold, Anatoly Lvovich: *See*—
Stepanov, Gennady Arkadievich; Tsailingold, Anatoly Lvovich; Pilipenko, Fedor Semenovich; Sodolev, Valerian Mikhailovich; Boreskov, Georgy Konstantinovich; Buyanov, Roman Alexeevich; and Venyaminov, Sergei Alexeevich, 3,678,124.

Tschamper, Pierre M., to United States of America, Atomic Energy Commission. Anti-jam sliding seal structure. 3,677,891, Cl. 176-36.00r.

Tsoras, John: *See*—
Bickel, David P.; Davis, Melvin H.; Starks, Karl H., Jr.; and Tsoras, John, 3,678,486.

Tsuchihashi, Genichi: *See*—
Fujisawa, Tamotsu; Yamamoto, Mizuo; and Tsuchihashi, Genichi, 3,678,115.

Tsuji, Nobuo: *See*—
Amano, Hiroyuki; Tsuji, Nobuo; and Shirasu, Kazuo, 3,677,762.

Tsuruoka, Takashi: *See*—
Nitda, Taro; Yumoto, Hiroshi; Tsuruoka, Takashi; Hammoto, Kazuko; Shomura, Takashi; and Ohashi, Takao, 3,678,159.

Tulp, Theodorus Joannes; Appels, Johannes Arnoldus; and Kooi, Else, to U.S. Philips Corporation. Deep depletion semiconductor device with surface inversion preventing means. 3,678,347, Cl. 317-235.00r.

Tundo, Antonio: *See*—
Boffa, Gioacchino; Crotti, Argento; Pieri, Giampiero; Mangini, Angelo; and Tundo, Antonio, 3,678,053.

Tuomaala, Jorma A. K., to Osakeyhtio, A. Ahlstrom. Roller. 3,676,909, Cl. 29-110.000.

Tupolev, Alexei Andreevich: *See*—
Tupolev, Andrei Nikolaevich; Tupolev, Alexei Andreevich; Cheremukhin, Georgy Alexeevich; Bliznjuk, Valentin Ivanovich; Pukhov, Alexandr Leonidovich; Svischev, Georgy Petrovich; Bjushgens, Georgy Sergeevich; and Mikeladze, Vitaly Georgievich, 3,677,502.

Tupolev, Andrei Nikolaevich; Tupolev, Alexei Andreevich; Cheremukhin, Georgy Alexeevich; Bliznjuk, Valentin Ivanovich; Pukhov, Alexandr Leonidovich; Svischev, Georgy Petrovich; Bjushgens, Georgy Sergeevich; and Mikeladze, Vitaly Georgievich. Supersonic aircraft. 3,677,502, Cl. 244-13.000.

Twin Disc, Incorporated: *See*—
Schneider, Raymond C., 3,677,003.

Tybus, Frank W. Close tolerance pipe apparatus. 3,677,666, Cl. 417-424.000.

Uchiyama, Noboru: *See*—
Ariyoshi, Yasuo; Yamatani, Tetsuo; Uchiyama, Noboru; and Sato, Naotake, 3,678,026.

Udylite Corporation, The: *See*—
Brown, Henry; and Tomaszewski, Thaddeus W., 3,677,907.

Ueda, Haruo; Sugi, Masanao; and Chayamichi, Hiroshi, to Asahi Kasei Kogyo Kabushiki Kaisha. Bobbin winding. 3,677,492, Cl. 242-164.000.

Ueyama, Michio: *See*—
Ishii, Keiichiro; Ueyama, Michio; Miyazaki, Koshin; and Noto, Tetsuo, 3,677,777.

Ueyanagi, Jisaburo: *See*—
Miyake, Akira; Horii, Stoshi; and Ueyanagi, Jisaburo, 3,678,160.

Ugine Kuhlmann: *See*—
Isard, Arsene; and Weiss, Francis, 3,678,102.

Underwood, Michael John, to Negretti & Zambra (Aviation) Limited. Apparatus for detecting rapid change of fluid pressure. 3,678,231, Cl. 200-81.00r.

Union Carbide Corporation: *See*—
Bennett, Frank W.; and Van Delinder, Loren S., 3,677,803.
Borden, George W.; and Trecker, David J., 3,678,073.
Brode, George L., 3,678,010.
Brotherton, Thomas K.; Lynn, John W.; and Knopf, Robert J., 3,677,983.
Elbert, Raymond J.; and Farrier, Ernest G., 3,677,721.
Jenkinson, Richard D., 3,677,989.
Olszewski, Walter J., 3,677,019.
Rick, Edward A.; McKeon, James E.; Fitton, Peter; and Argento, Benny J., 3,678,085.
Rosen, Meyer R.; and Prokai, Bela, 3,677,347.
Trecker, David J.; and McKeon, James E., 3,678,096.
Young, Claude F.; and De Weese, Richard O., 3,677,403.

Union Oil Company of California: *See*—
Hashimoto, Saburo, 3,677,895.
Oliver, Robert K.; and Ford, George L., 3,677,533.
Showalter, William E., 3,677,343.

Union Special Machine Company: *See*—
Fletcher, Roy W.; and Forte, Anthony D., 3,677,208.

Uniroyal Englebert France S.A.: *See*—
Fleuret, Louis; and Trepaez, Jean, 3,677,852.
Mirtain, Henri, 3,677,319.

Uniroyal, Inc.: *See*—
Fischer, William K., 3,678,129.
Mastromatteo, Richard; and Brett, Thomas J., Jr., 3,678,135.

United Aircraft Corporation: *See*—
Cox, Arthur R.; and Allen, Marvin M., 3,677,830.
Dixon, Thomas P.; and Worrell, Robert J., 3,677,218.
Griffith, James J., 3,678,285.
Tien, John K.; and Gamble, Robert P., 3,677,835.
Trocciola, John C., 3,677,823.

United Aircraft Products, Inc.: *See*—
Bathla, Pritam S.; and Simmons, Carl E., 3,677,334.
Wunder, John E.; and Coolidge, Anson S., 3,676,987.

United Industrial Syndicate Inc.: *See*—
Bosworth, Delbert B.; and Goodridge, Ernest E., 3,677,439.

United Industrial Syndicate, Inc.; d/b/a: *See*—
Bosworth, Delbert B.; and Goodridge, Ernest E., 3,677,439.

United Kingdom Atomic Energy Authority: *See*—
Dugdale, Ronald Arthur; Ford, Stanley Denis; and Maskrey, John Thomas, 3,678,334.

United Kingdom of Great Britain and Northern Ireland, Minister of aviation Supply in Her Britannic Majesty's Government of the: *See*—
Paige, Edward George Sydney, 3,678,305.

United Kingdom of Great Britain and Northern Ireland, Minister of Technology in Her Britannic Majesty's Government of the: *See*—
Jones, John Ivor Parry, 3,678,485.
Splatt, Reginald John Bingston, 3,678,369.

United Kingdom, Secretary of State for Defence in the Government of the: *See*—
Evans, Christopher Charles, 3,677,713.

United McGill Corporation, mesne: *See—*
Carroll, Harold E., 3,677,046.
United States of America
Agriculture: *See—*
Arthur, Jett C., Jr.; Singh, Sujan; and Hinojosa, Oscar, 3,677,692.
Air Force: *See—*
Boes, David J., 3,678,145.
Davis, James G., 3,677,065.
Digges, Kennerly H., 3,677,360.
Hedberg, Frederick L.; and Rosenberg, Harold, 3,678,088.
Hoeflinger, Richard P.; and United States of America, Air Force, 3,677,079.
Macknik, Louis S.; and Kissell, Kenneth E., 3,678,279.
Midolo, Lawrence L., 3,677,337.
Schneider, Marion F.; and Breen, Edward L., 3,678,275.
Vickland, Clayton W., 3,677,011.
Wilson, Quintus C., 3,678,387.
Army: *See—*
Amberger, Donald J.; and Celentano, Robert A., 3,678,362.
Bushey, Donald F., 3,677,133.
Coffield, George C., Jr., 3,677,588.
D'Andrea, Guiliano, 3,677,879.
Doris, Thomas A., Jr., 3,677,842.
Eig, Merrill; and Scavuzzo, John J., 3,677,063.
Fink, Robert H.; and Palm, Eugene J., 3,677,010.
Haug, Edward J., Jr., 3,677,135.
Horwath, Tibor G., 3,678,453.
Kilduff, Timothy J., 3,677,974.
Lampi, Rauno A.; Hu, Kwoh H.; and Osborne, Richard F., 3,678,276.
Monti, Renzo J., 3,676,901.
Orrell, Irving F., Jr., 3,678,194.
Peterson, Ralph, 3,677,182.
Rabinow, Jacob; Rotkin, Israel; and Astin, Allen V., 3,677,184.
Rentz, John C., 3,677,447.
Sayles, David C., 3,677,839.
Scott, William Kenneth, 3,677,075.
Thomenius, Kai E., 3,678,398.
Zinn, Mortimer H., 3,678,321.
Army, mesne: *See—*
Feuersanger, Alfred E.; and Harris, Lawrence M., 3,677,847.
Atomic Energy Commission: *See—*
Bush, Donald M., 3,677,822.
Cathey, Le Conte, 3,677,825.
Coburn, Michael D., 3,678,061.
Coensgen, Frederic H.; and Nexsen, William E., Jr., 3,677,889.
Fergus, Richard W., 3,678,512.
Hartman, Charles W., 3,677,890.
Huebotter, Paul R.; and Blomp, Thomas R., 3,677,893.
Lonadier, Frank D.; and Kershner, Carl J., 3,677,958.
Osher, John E.; Kinney, John D.; and Steinhaus, James F., 3,678,323.
Siebelist, Hilbert R., 3,678,446.
Tschamper, Pierre M., 3,677,891.
Walsh, William J.; and Pierce, Robert Dean, 3,677,743.
Whatley, Marvin E., 3,677,719.
Health, Education and Welfare: *See—*
Faw, Frederick L.; Johnson, Ralph E.; Warren, Constance A.; and Glenn, Dwight W., 3,678,233.
Health, Education and Welfare, mesne: *See—*
Guarino, Henry R., 3,677,092.
National Aeronautics and Space Administration: *See—*
Peters, Robert L.; and Koch, Kenneth F., 3,678,191.
Navy: *See—*
Augl, Joseph M.; Bailey, William J.; and Erickson, Porter W., 3,677,787.
Ayres, William M.; and Henry, Ronald A., 3,677,841.
Brown, Carl W.; Reppert, Allen B.; and Dobbins, Billy D., 3,677,500.
Jefferson, Donald E.; and Vermillion, Ronald G., 3,678,468.
Joynes, John L., 3,677,278.
LaBaw, Kenneth B., 3,678,283.
Magis, Sigfred F., 3,676,907.
Munach, Arnold S., 3,677,186.
Peterson, Reeve D., 3,678,388.
Plenge, Richard D., 3,677,132.
Potteiger, Lester A., 3,677,179.
Reams, William H., 3,677,185.
Springston, George B., Jr.; Thomas, Samuel L.; and Miller, Fred B., 3,677,082.
Talley, James C., 3,677,183.
United States Steel Corporation: *See—*
Nickelsen, Hubert O.; Kopanda, Joseph E.; and Piasecki, Felix J., 3,677,781.
United-Carr, Incorporated: *See—*
Vetter, Ottomar H., 3,678,439.
Unitika Ltd.: *See—*
Fujimoto, Hiroshi; and Fukuda, Mitsugu, 3,677,940.
Universal Maschinenfabrik Dr. Rudolf Schieber KG: *See—*
Krause, Erich, 3,677,037.
Universal Oil Products Company: *See—*
Arrigo, Joseph T.; and Christensen, Nils J., 3,678,108.
Bloch, Herman S., 3,678,120.
Levy, Joseph; and Psihas, James, 3,678,048.
Mitsche, Roy T.; and Michalko, Edward, 3,677,973.
Morrison, William F.; and Hauser, Henry A., 3,677,715.
Schmerling, Louis, 3,678,087.
Schmerling, Louis, 3,678,122.
Touval, Irving; and Altwicker, Elmar R., 3,678,071.
Vesely, Jerome A.; and Schmerling, Louis, 3,678,104.
Universal Products Company: *See—*
Sparks, Allen K., 3,677,945.
University of Sydney, The: *See—*
Maguire, Mary H.; Gough, Geoffrey R.; and Michal, Frank, 3,678,162.
University of Tokyo, President: *See—*
Kawashima, Nobuki, 3,678,274.
University of Utah: *See—*
Wullstein, Leroy H., 3,677,702.
Upatnieks, Juris, to Battelle Development Corporation, mesne. Techniques of holographic data reduction utilizing an additional diffusing structure during reconstruction. 3,677,617, Cl. 350-3.500.
Upstone, Harlan R.; and Paugh, Edward C., to International Telephone and Telegraph Corporation. Electrical connector interfacial seals. 3,678,441, Cl. 339-94.00r.
U.S. Atomic Energy Commission under the provisions of 42 USC 2182: *See—*
Spragg, Hal R., 3,677,935.
U.S. Philips Corporation: *See—*
Barten, Piet Gerard Joseph, 3,678,316.
Blom, Dirk; Van Overbeek, Adrianus Johannes Wilhelmus Marie; and Zwijsen, Wilhelmus Antonius Joseph Marie, 3,678,404.
Boekhorst, Antonius, 3,678,332.
Bok, Johannes Gerardus, 3,677,153.
De Brebisson, Michel, 3,677,838.
Notelteirs, Victor Rosallie; and Janssen, Eduard Josef Philomena, 3,678,319.
Schmidt, Wolfgang, 3,678,327.
Theunissen, Matthias Johannes Joseph; and Verkuijlen, Wilhelmus Henricus Cornelis Gerardus, 3,677,846.
Tolksdorf, Wolfgang, 3,677,712.
Tulp, Theodorus Joannes; Appels, Johannes Arnoldus; and Kooi, Else, 3,678,347.
Werner, Helmut Wilhelm Werner, 3,678,267.
Wesselink, Gustaaf Adolf; Holmes, Thomas; de Kock, Arie Jan Rudolf; and Goorissen, Jan, 3,678,315.
U.S. Philips Corporation, mesne: *See—*
Barten, Piet Gerard Joseph, 3,678,320.
Kooi, Else, 3,676,921.
USAG S.p.A.: *See—*
Simonetta, Enrico, 3,677,102.
Utsugi, Jun: *See—*
Naka, Jinshichi; Tokuda, Yasunori; Koono, Takehiko; and Utsugi, Jun, 3,677,773.
Vaden, James L., to International Telephone and Telegraph Corporation. Flat cable wafer. 3,678,437, Cl. 339-18.00c.
Vail, Thomas W.; and Ryan, Allen L., to Warwick Electronics, Inc. Cassette changer. 3,677,555, Cl. 274-4.00f.
Valley Craft Products, Inc.: *See—*
Danielson, Gunnar H., 3,677,436.
Van Auken, John; Kaufman, M. Gene; and Pfaff, William A., to Saxon Industries, Inc. Microfilm attachment for copying machine. 3,677,637, Cl. 355-45.000.
Van Auken, John A.; Kaufman, Mahlon Gene; and Blank, Fritz, to Saxon Industries, Inc. Copying machine system. 3,677,635, Cl. 355-11.000.
Van Breugel, Johannes G. A. Electrode for measuring alternating voltages in an electrolyte. 3,677,083, Cl. 73-194.0em.
Van Delinder, Loren S.: *See—*
Bennett, Frank W.; and Van Delinder, Loren S., 3,677,803.
Van Duyne, Robert Earl, to Bell Telephone Laboratories, Incorporated. Ceramic substrate interconnection device. 3,678,343, Cl. 317-100.000.
Van Gompel, James J., to Brammall, Inc. Apparatus and method for restoring deformed rolls of sheet stock to cylindrical shape. 3,677,058, Cl. 72-393.000.
Van Lare, Earl J.; and Brooker, Leslie G. S., to Eastman Kodak Company. Methine dyes for use in photography. 3,678,045, Cl. 260-240.400.
Van Luik, Frank W., Jr.: *See—*
Ludewig, Frederick A., Jr.; and Van Luik, Frank W., Jr., 3,678,487.
Van Ostrand, William F., to Dynamic Precision Controls Corporation. Frequency responsive electrical circuit. 3,678,356, Cl. 318-341.000.
Van Overbeek, Adrianus Johannes Wilhelmus Marie: *See—*
Blom, Dirk; Van Overbeek, Adrianus Johannes Wilhelmus Marie; and Zwijsen, Wilhelmus Antonius Joseph Marie, 3,678,404.
Van Taylor, George, to RCA Corporation. Tape winding mechanism. 3,677,505, Cl. 242-56.00r.
Van Thyne, Ray J.; and Rausch, John J., to Surface Technology Corporation. Nitrided titanium alloys. 3,677,832, Cl. 148-31.500.
Van Weele, Abraham Francois, to N.V. Tot Aanneming van Werken voorheen H. J. Nederhorst. Method for driving a foundation element into the earth by means of vibration. 3,677,018, Cl. 61-53.500.
Vandenberg, Edwin J., to Hercules Incorporated. Flame retardant polyolefins. 3,678,136, Cl. 260-897.00c.
Vapor Corporation: *See—*
Miles, Marshall, 3,678,386.
Varian Associates: *See—*

Baldeschwieler, John D., 3,677,642.
Vartiainen, Osmo O., to Outokumpu Oy. Method for the recovery of heat from hot granular material. 3,677,327, Cl. 165-1.
Veeder Industries Inc.: *See—*
Lapointe, Lloyd J.; and Voegelin, Howard J., 3,677,468.
Veeder Industries, Inc., mesne: *See—*
Johnston, Reed H., 3,678,253.
Velsicol Chemical Corporation: *See—*
Carlson, Arthur W., 3,678,116.
Richter, Sidney B.; and Levin, Alfred A., 3,677,735.
Venyaminov, Sergei Alexeevich: *See—*
Stepanov, Gennady Arkadievich; Tsailingold, Anatoly Lvovich; Pilipenko, Fedor Semenovich; Sodolev, Valerian Mikhailovich; Boreskov, Georgy Konstantinovich; Buyanov, Roman Alexeevich; and Venyaminov, Sergei Alexeevich, 3,678,124.
Verbaas, George: *See—*
Panter, Robert B.; Dufton, John Peter; Duthie, Robert W.; and Verbaas, George, 3,678,197.
Vere, Thomas D.: *See—*
Muri, Richard L.; and Vere, Thomas D., 3,677,817.
Vereinigte Flugtechnische Werke-Fokker Gesellschaft mit beschrankter Haftung: *See—*
Schwarzler, Hans-Jurgen, 3,677,504.
Verkuijlen, Wilhelmus Henricus Cornelis Gerardus: *See—*
Theunissen, Matthias Johannes Joseph; and Verkuijlen, Wilhelmus Henricus Cornelis Gerardus, 3,677,846.
Vermillion, Ronald G.: *See—*
Jefferson, Donald E.; and Vermillion, Ronald G., 3,678,468.
Vermont American Corporation: *See—*
Akers, George J., 3,676,888.
Vesely, Jerome A.; and Schmerling, Louis, to Universal Oil Products Company. Hydroxylation of aromatic acids. 3,678,104, Cl. 260-521.00r.
Vetter, Ottomar H., to United-Carr, Incorporated. Quick-release electrical connector. 3,678,439, Cl. 339-46.000.
Vickers Hoskins Pty., Limited: *See—*
Shannon, James William, 3,677,599.
Vickers Limited: *See—*
Smith, Francis Hughes, 3,677,621.
Vickland, Clayton W., to United States of America, Air Force. Thrust control system for hybrid rocket motors. 3,677,011, Cl. 60-251.000.
Vien, Hans: *See—*
Giljarhus, Gunnar; and Vien, Hans, 3,677,181.
Vilardi, Frank: *See—*
Meshbane, Alex; and Vilardi, Frank, 3,677,930.
Villers, Walter H.; and Johnson, Ernest B., to Ampex Corporation. Tape retaining reel cartridge. 3,677,495, Cl. 242-197.000.
Vineyard, Billy D.: *See—*
Coran, Aubert Y.; and Vineyard, Billy D., 3,677,726.
Virginia Chemicals Inc.: *See—*
Nixon, Dalbro R., Jr.; McIlhenny, David J.; and Harrell, Marvin L., 3,677,441.
Visser, Jan, to Amsted Industries Incorporated. Ultrasonic test standard. 3,677,061, Cl. 73-1.00r.
Viste, Kenneth L.: *See—*
Horrom, Bruce W.; Crovetti, Aldo J.; and Viste, Kenneth L., 3,677,739.
Voegelin, Howard J.: *See—*
Lapointe, Lloyd J.; and Voegelin, Howard J., 3,677,468.
Vogel, Paul W., to Bird Provision Co. Method of preparing and packaging portion shaped meat products. 3,677,775, Cl. 99-174.000.
Vohl, Paul, to Itek Corporation. Apparatus and method for producing II-VI crystals. 3,677,717, Cl. 23-294.000.
Voigt, Heinz Eberhard: *See—*
Fischer, Gerd; Straub, Dieter; and Voigt, Heinz Eberhard, 3,678,301.
Voith Getriebe KG: *See—*
Muller, Helmut; and Pistl, Gustav, 3,677,004.
Volk, Boris Zakharovich: *See—*
Maximovich, Boleslav Ivanovich; Dudko, Daniil Andreevich; Agafonov, Nikolai Georgievich; Maximov, Igor Petrovich; Andreev, Vadim Grigorievich; Lepilov, Nikolai Yakovlevich; Svinov, Alexei Kapitonovich; Slonimsky, Alexandr Borisovich; Volk, Boris Zakharovich; Gubin, Alexandr Ivanovich; and Katsman, Berta Osipovna, 3,677,330.
Vriend, Joseph A. Isolator valve for pneumatic brake systems. 3,677,611, Cl. 303-84.00a.
Vukosic, Robert S., to Eastman Kodak Company. Strip material handling mechanism for soung systems. 3,678,209, Cl. 179-100.10a.
Wacker-Chemie G.m.b.H.: *See—*
Kaiser, Wolfgang; Nitzsche, Siegfried; Wohlfarth, Ernst; and Hittmair, Paul, 3,677,996.
Kaiser, Wolfgang; Nitzsche, Siegfried; Wohlfarth, Ernst; Strasser, Alois; and Hittmair, Paul, 3,677,997.
Kaiser, Wolfgang; Nitzsche, Siegfried; Wohlfarth, Ernst; and Hittmair, Paul, 3,678,003.
Nitzsche, Siegfried; Kaiser, Wolfgang; Wohlfarth, Ernst; and Hittmair, Paul, 3,677,784.
Nitzsche, Siegfried; and Wohlfarth, Ernst, 3,678,002.
Wada, Tadashi; Itoh, Kunio; and Kuga, Naoyoshi, to Shinetsu Chemical Company. Silicone elastomeric compositions and a method for preparing silicone sponge rubbers therefrom. 3,677,981, Cl. 260-2.50a.
Wade, William T.: *See—*
Jordan, Paul V.; Palmieri, John A.; and Wade, William T., 3,678,475.
Wagensommer, Joseph, to Esso Research and Engineering Company. Novel process for olefin polymerization. 3,678,019, Cl. 260-80.780.
Wagner, Walter. Side delivery tape applicator. 3,677,865, Cl. 156-577.000.
Wagner, William D.: *See—*
Stevens, William P.; Hubbard, George M.; and Wagner, William D., 3,678,444.
Wahlberg, Edward John, to Dekhar, Inc. Door hardware mechanism including decorative door knobs and door back plates. 3,677,593, Cl. 292-356.000.
Wahlster, Manfred; and Choudbury, Alok, to Rheinstahl Huttenwerke A.G. Process and apparatus for providing steel ingot. 3,677,323, Cl. 164-52.000.
Wahlstrom, Sven, to Shell Oil Company. Read-write circuit for capacitive memory arrays. 3,678,473, Cl. 340-173.0ca.
Wakabayashi, Takashi: *See—*
Sato, Kunio; Sugihara, Kanji; Wakabayashi, Takashi; and Ishida, Tomio, 3,676,925.
Wakeling, Peter John, to Marconi Company Limited, The. Pulse code modulation feedback encoders. 3,678,413, Cl. 332-9.00r.
Waldo, Russell W., to Ideal Security Hardware Corporation. Emergency lock release. 3,677,591, Cl. 292-221.000.
Walford, Gordon L.: *See—*
Shen, Tsung-Ying; Witzel, Bruce E.; and Walford, Gordon L., 3,678,094.
Walker, Richard K., to E.R.E. Laboratory, Inc. Reversible endless loop cartridge projector for teaching machines. 3,677,628, Cl. 352-128.000.
Wall, Thomas M., to West Point-Pepperell, Inc. Automatic doffer for articles adhered to a conveyor belt. 3,677,538, Cl. 271-76.000.
Wallace, Harry L., to Burroughs Corporation. Intermittent web advancing device. 3,677,452, Cl. 225-11.000.
Walmet Corporation, The: *See—*
Rymas, Frank, 3,677,722.
Walsh, William J.; and Pierce, Robert Dean, to United States of America, Atomic Energy Commission. Mixing and settling separation process for uranium or plutonium. 3,677,743, Cl. 75-84.100.
Walthard, Beat; Scheidweiler, Andreas; and Kuhn, Max, to Cerberus AG. Fire alarm systems equipped with circuit monitoring devices. 3,678,510, Cl. 340-410.000.
Walton, Peter, to Serck Industries Limited. Butterfly valves. 3,677,297, Cl. 137-625.280.
Walton, Richard S.: *See—*
Bergey, John M.; Le Van, James O.; Walton, Richard S.; and Brethauer, Louis G., 3,676,993.
Wang, Chih-Chung, to Kennecott Copper Corporation. Method and apparatus for producing thin copper foil. 3,677,906, Cl. 204-13.000.
Wangerin, Elmer O., to Eastman Kodak Company. Apparatus for feeding strip material of different widths. 3,677,499, Cl. 242-210.000.
Ward, William H., Jr., to Genra and General Monitors, Inc. Peak selection circuit and apparatus utilizing same. 3,678,513, Cl. 340-414.000.
Warner, Philip D.: *See—*
Hirschon, Jack M.; and Warner, Philip D., 3,678,346.
Warren, Brian: *See—*
Pride, Emanuel; and Warren, Brian, 3,677,707.
Warren, Constance A.: *See—*
Faw, Frederick L.; Johnson, Ralph E.; Warren, Constance A.; and Glenn, Dwight W., 3,678,233.
Wartner, Donald L.: *See—*
Dalziel, Warren L.; Nilson, Jay B.; and Wartner, Donald L., 3,678,481.
Warwick Electronics, Inc.: *See—*
Vail, Thomas W.; and Ryan, Allen L., 3,677,555.
Watanabe, Katsuo. Process for the preparation of sulfate pulp digestion white liquor. 3,677,885, Cl. 162-45.000.
Waterworth, Peter: *See—*
Bass, John C.; and Waterworth, Peter, 3,678,472.
Watson, Charles Andrew: *See—*
Clippingdale, John Walter; and Watson, Charles Andrew, 3,678,155.
Watson, Christopher Alan; and Maxfield, John Raymond, to International Standard Electric Corporation. Character generation system having bold font capability. 3,678,497, Cl. 340-324.00a.
Watson, Lloyd M.; and Birchall, William R., to National Distillers and Chemical Corporation. Apparatus for preparing dispersions of finely-divided alkali metal. 3,677,477, Cl. 241-31.000.
Watson, William R.: *See—*
Kocher, Robert C.; Moore, Franklin K.; Samelson, Harold; and Watson, William R., 3,678,410.
Wattiez, Gerard Charles Lucien, to Compagnie Industrielle de Precontrainte et d'Equipment des Constructions (C.I.P.E.C.). Expansion joint for road works. 3,677,145, Cl. 49-18.000.
Watts, Richard M., to Reynolds Metals Company. Lawn edging device. 3,676,952, Cl. 47-33.000.
Wayson, Andrew J.; and O'Connell, John T., to Merriman, Inc. Method of making a porous metal spinning ring. 3,676,917, Cl. 29-420.500.
Weather-Rite Inc.: *See—*
Weatherston, Richard N., 3,677,335.
Weatherston, Richard N., to Weather-Rite Inc. Staged heating and cooling system. 3,677,335, Cl. 165-12.000.

Weaver, Roger; and Schaffstall, Eugene, to Oxford Chemicals. Composition and method for blackening metal articles. 3,677,827, Cl. 148-6.14r.

Webb, Richard V., to Eastman Kodak Company. Solvent composition for liquid scintillation counting. 3,677,964, Cl. 252-364.000.

Weber, Carl L.; Wolk, Ronald H.; and Chervenak, Michael C., to Hydrocarbon Research, Inc. Phase separation of a gas-liquid-solid mixture. 3,677,716, Cl. 23-288.00e.

Weber, Karl-Heinz; Bauer, Adolf; Merz, Herbert; and Minck, Klaus, to Boehringer Ingelheim G.m.b.H. 7-Nitro-1H-1,5-benzodiazepine-2,4-(3H,5H)-diones. 3,678,033, Cl. 260-239.300.

Weckler, Gene P., to Fairchild Camera and Instrument Corporation. Optimum high gain-bandwidth phototransistor. 3,677,280, Cl. 317-235.000.

Wedel, Alfred W., to Cameron Iron Works, Inc. Apparatus for temporarily closing a pipeline. 3,677,575, Cl. 285-3.000.

Wedmore, William R., to GTE Automatic Electric Laboratories Incorporated. Electromagnetic relay operation monitor. 3,678,344, Cl. 317-137.000.

Weichbrodt, Bjorn; and Darrel, Bernard, to General Electric Company. Damage detection method and apparatus for machine elements utilizing vibrations therefrom. 3,677,072, Cl. 73-67.000.

Weidner, Jack E.: *See—*
Blachly, Donald L.; and Weidner, Jack E., 3,678,246.

Weigele, Manfred: *See—*
Leimgruber, Willy; and Weigele, Manfred, 3,678,051.

Weisbach, Jerry A.: *See—*
Pfeiffer, Francis R.; and Weisbach, Jerry A., 3,678,137.

Weiss, Francis: *See—*
Isard, Arsene; and Weiss, Francis, 3,678,102.

Weiss, Paul C., to Ambac Industries Incorporated. Material discharge control apparatus. 3,677,540, Cl. 222-23.000.

Welch, Joseph T., to Becton, Dickinson and Company. Self-contained disposable syringe. 3,677,245, Cl. 128-218.00s.

Welter, Leonard M.: *See—*
Coates, Vincent J.; and Welter, Leonard M., 3,678,333.

Wenzel, Gunter: *See—*
Rottner, Emil; Bock, Franz; Muth, Willi; and Wenzel, Gunter, 3,678,146.

Werft, August R. Golf practice apparatus. 3,677,552, Cl. 273-184.00b.

Werner, Helmut Wilhelm Werner, to U.S. Philips Corporation. Ion source comprising a concave-shaped repeller. 3,678,267, Cl. 250-41.95b.

Werner, Lincoln Harvey; and De Stevens, George. 4-Trifluoromethylanthranilic acids. 3,678,039, Cl. 260-239.6.

Werner, Nickel; and Nikolaos, Christopoulos, to Leitz, Ernst, G.m.b.H. Electronic exposure time measuring circuit with time indicator and shutter control means. 3,677,151, Cl. 95-10.0ce.

Wesselink, Gustaaf Adolf; Holmes, Thomas; de Kock, Arie Jan Rudolf; and Goorissen, Jan, to U.S. Philips Corporation. Low-pressure sodium vapour discharge lamp. 3,678,315, Cl. 313-27.000.

West Point-Pepperell, Inc.: *See—*
Wall, Thomas M., 3,677,538.

Westen, Dietmar: *See—*
Herzhoff, Peter; Gref, Hans; Wolfgang, Leverkusen; Frenken, Hans; Assenmacher, Peter; and Westen, Dietmar, 3,677,076.

Western Electric Company, Incorporated: *See—*
Ahmed, Nazeer, 3,677,050.
Cartwright, John Sutton; and Fuchs, Francis Joseph, Jr., 3,677,049.
Fuchs, Francis Joseph, Jr., 3,677,048.
Harris, Richard A., 3,677,644.

Westfall, James E., to Continental Can Company, Inc. Container closure. 3,677,431, Cl. 215-43.000.

Westinghouse Air Brake Company: *See—*
Popp, Ralph, 3,678,368.

Westinghouse Electric Corporation: *See—*
Boltrek, Henry; and Kraft, Joseph K., 3,677,388.
Dinenno, Philip A., Jr.; Bonk, Joseph S.; Conrad, Kenneth C.; Moore, Rodney S.; Lochman, Harry E.; and Torello, Daniel D., 3,677,658.
Elder, Frederick A., 3,678,372.
Ferrari, Harry M., 3,677,894.
Maxwell, Albert H., Jr., 3,678,484.
Morris, Louis; and Specht, Theodore R., 3,678,428.
Sun, Shan C.; and Raygor, Paul O., 3,678,339.

Westland Aircraft Limited: *See—*
Furlong, Owen D.; Rowe, Alan C.; and Wright, Eric F., 3,677,293.

Westlund, Linda K. Collapsible artificial Christmas tree. 3,677,867, Cl. 161-14.000.

Weston Instruments Inc.: *See—*
Boreas, Willem J. L., 3,678,383.

Weston, James Henry, to International Standard Electric Corporation. Steering columns. 3,677,106, Cl. 74-492.000.

Wetterau, William F.: *See—*
Albertson, Noel F.; and Wetterau, William F., 3,678,056.

Weyerhaeuser Company: *See—*
Sheridan, John L., 3,677,808.

Whatley, Marvin E., to United States of America, Atomic Energy Commission. Method for reprocessing molten fluoride salt reactor fuels. 3,677,719, Cl. 23-325.000.

Wheable, Desmond, to Solartron Electronic Group Limited, The. Triple-slope analog-to-digital converters. 3,678,506, Cl. 340-347.0nt.

Wheeler, Mildred S., to McDonnell Douglas Corporation. Line replaceable unit control valve. 3,677,139, Cl. 91-384.000.

Whirlpool Corporation: *See—*
Doner, John T., 3,677,259.
Gast, Gerald E., 3,677,519.
Houghton, Larry R., 3,678,392.
Nichols, Duane W., 3,677,030.
Nordeen, Erwin E., 3,676,892.
Rutkowski, Beverly J., 3,677,820.
Sisk, George William, Jr.; Miller, Arthur William; and Koleszar, Frank, 3,677,166.

White, Charles Victor Burdett: *See—*
Johnson, Harold Hector; South, Derek Bye; and White, Charles Victor Burdett, 3,678,282.

White Motor Corporation: *See—*
Fradette, Joseph J., 3,678,266.

White, Pierce H., Jr. Livestock insecticide applicator. 3,677,233, Cl. 119-157.000.

White, Robert J., to Chevron Research Company. Hydrotreating catalyst. 3,677,971, Cl. 252-455.00r.

Whitehead, Jack: *See—*
Williams, Frank Ronald; Whitehead, Jack; Marshall, Jefferson; Conners, Alan; and Gosden, Derek Vernon, 3,677,740.

Whitman, Nelson, to Econo-Mail, Inc. Envelope having chemically treated edges. 3,677,460, Cl. 229-85.000.

Whitney, W. A., Corporation: *See—*
Franzen, Walter B., 3,677,418.

Wicon Kondensatorfabrik A/S: *See—*
Hvidtfeldt, Niels; and Ruttkay, Adam, 3,678,345.

Widder, James S.; and Briner, William W., to Procter & Gamble Company, The. Oral compositions for calculus retardation. 3,678,154, Cl. 424-52.000.

Wiechert, Rudolf: *See—*
Laurent, Henry; Kolb, Karl Heinz; and Wiechert, Rudolf, 3,678,034.

Wiederhut, Wolfgang; Landenberger, Helmut; and Hofmann, Ulrich, to Groz, Theodor & Beckert, Ernst Nadelfabrik. Latch needle for knitting machines. 3,677,035, Cl. 66-122.000.

Wiegand, Gretchen Ellen: *See—*
Bauer, Victor John; Fanshawe, William Joseph; and Wiegand, Gretchen Ellen, 3,678,062.

Wiegert, Philip E.: *See—*
Grummon, Glenn D.; and Wiegert, Philip E., 3,678,067.

Wild, Albert F., to Topecon, Inc. Planar drive adapter for cassette tape recorder. 3,678,212, Cl. 179-100.20f.

Wild, Peter J.: *See—*
Mottier, Francois; and Wild, Peter J., 3,678,399.

Wildenau, Wolfgang: *See—*
Raban, Joachim; Erxleben, Ewald; and Wildenau, Wolfgang, 3,677,806.

Wilding, Edwin L.: *See—*
Parker, Samuel A.; and Wilding, Edwin L., 3,677,390.

Willard, Dennis, to Willard Laboratories, Inc. Flying magnetic head testing apparatus. 3,678,219, Cl. 179-100.2ca.

Willard Laboratories, Inc.: *See—*
Willard, Dennis, 3,678,219.

Williams, Bill D. Wrist watch assembly. 3,677,449, Cl. 224-4.00e.

Williams, Dewey H.: *See—*
Cutting, Arch E.; Owens, Carlos L.; Williams, Dewey H.; and Hooper, Felix E., 3,677,305.

Williams, Frank Ronald; Whitehead, Jack; Marshall, Jefferson; Conners, Alan; and Gosden, Derek Vernon, to British Titan Products Company Limited. Process of beneficiating titaniferous beach sand. 3,677,740, Cl. 75-1.000.

Williams, John G., to Worthington Corporation. Multi-stage pump and components therefor. 3,677,659, Cl. 415-111.000.

Williams, Robert M., to Genova Products. Plastic pipe fitting and closure. 3,677,301, Cl. 138-92.000.

Willis, Roger L., to Eastman Kodak Company. Automatic lamp changer and spare lamp indicator circuit. 3,678,286, Cl. 307-38.000.

Willman, George N.: *See—*
Rousso, Jack J., Jr.; and Willman, George N., 3,678,216.

Wilson, James D., to Banner Metals, Inc. Cooking rack-pan combination. 3,677,172, Cl. 99-347.000.

Wilson, Quintus C., to United States of America, Air Force. Satellite communications system. 3,678,387, Cl. 325-4.000.

Wiltshire Cutlery Company Proprietary Limited: *See—*
Jackson, Dennis B., 3,676,961.

Wincierz, Peter: *See—*
Borgstedt, Hans-Ulrich; Ruhle, Manfred; and Wincierz, Peter, 3,677,723.

Windings, Inc.: *See—*
Gerwig, Jeffrey C., 3,677,491.
Gordon, William F.; and Newman, James W., 3,677,490.

Wing, Wilson Gordon: *See—*
Ashbrook, Clifford Logan; and Wing, Wilson Gordon, 3,676,947.

Winkler, Alfred: *See—*
Kremp, Rudolf; and Winkler, Alfred, 3,677,147.

Winkless, Robert A., to Continental Can Company, Inc. Electrostatic powder striping applicator. 3,678,336, Cl. 317-3.000.

Winson Concepts: *See—*
Guyer, Reynolds W., Jr.; Cross, Norton M., Jr.; Griggs, Barbara Allen; and Lundquist, Martin A., 3,677,446.

Withem, Donald D., to Krost, Eleanor Burditt. Electrical ignition system. 3,677,255, Cl. 123-148.00e.

Wittler, H., & Co. KG: *See—*
Wittler, Hans; and Holtkamp, Heinz-Otto, 3,676,908.

Wittler, Hans; and Holtkamp, Heinz-Otto, to Wittler, H., & Co. KG. Broadening and stretching roller for flexible webs. 3,676,908, Cl. 29-116.0ad.

Witzel, Bruce E.: *See—*
Shen, Tsung-Ying; Witzel, Bruce E.; and Walford, Gordon L., 3,678,094.

Witzel, Frank, to Beech-Nut Inc. Carbonated candy. 3,677,770, Cl. 99-134.00r.

Wix Corporation: *See—*
Connor, Augustus S., 3,677,412.

Wohlfarth, Ernst: *See—*
Kaiser, Wolfgang; Nitzsche, Siegfried; Wohlfarth, Ernst; and Hittmair, Paul, 3,677,996.
Kaiser, Wolfgang; Nitzsche, Siegfried; Wohlfarth, Ernst; Strasser, Alois; and Hittmair, Paul, 3,677,997.
Kaiser, Wolfgang; Nitzsche, Siegfried; Wohlfarth, Ernst; and Hittmair, Paul, 3,678,003.
Nitzsche, Siegfried; Kaiser, Wolfgang; Wohlfarth, Ernst; and Hittmair, Paul, 3,677,784.
Nitzsche, Siegfried; and Wohlfarth, Ernst, 3,678,002.

Woinsky, Melvin Neil: *See—*
Nussbaum, Eric; Toy, Wing Noon; and Woinsky, Melvin Neil, 3,678,467.

Wolbach, William E.; trustees of: *See—*
Merrill, Edward W., 3,677,444.

Wolf, Lloyd J. Vehicle brake. 3,677,375, Cl. 188-138.000.

Wolfersperger, John J. Two chamber fuel burner. 3,677,532, Cl. 263-19.00a.

Wolfgang, Leverkusen: *See—*
Herzhoff, Peter; Gref, Hans; Wolfgang, Leverkusen; Frenken, Hans; Assenmacher, Peter; and Westen, Dietmar, 3,677,076.

Wolfson, Joseph, to Bloomfield Valve Corporation. Valve. 3,677,286, Cl. 137-469.000.

Wolk, Ronald H.: *See—*
Weber, Carl L.; Wolk, Ronald H.; and Chervenak, Michael C., 3,677,716.

Wood, Gary R.: *See—*
Ragen, Robert A.; Herendeen, Carl E.; and Wood, Gary R., 3,678,471.

Wood, Harold V.; and Brown, Terry D., to Phillips Petroleum Company. Cement-filled poly(arylene sulfide) resins. 3,677,994, Cl. 260-37.00r.

Woods, Charles, mesne: *See—*
Reiling, Joseph W., 3,676,986.

Woodward, Oakley Mc Donald, to RCA Corporation. Printed circuit balun. 3,678,418, Cl. 333-26.000.

Woolensak, John C.; and Napolitano , John P., to Ethyl Corporation. Process for preparing nuclear alkylated anilines and recovery of alumina. 3,678,112, Cl. 260-578.000.

World Industries, Inc.: *See—*
Bond, William D., 3,677,711.

Worline, Paul W. Film shrinking tunnel utilizing hot air and water as heat transfer medium. 3,678,244, Cl. 219-388.000.

Worrell, Robert J.: *See—*
Dixon, Thomas P.; and Worrell, Robert J., 3,677,218.

Worthington Biochemical Corporation: *See—*
Sussman, Bernard J., 3,678,158.

Worthington Corporation: *See—*
Williams, John G., 3,677,659.

Worthington Foods, Inc.: *See—*
Hartman, Warren Emery; and Johnson, William Randall, 3,677,038.

Woulds, Michael J.: *See—*
Lund, Carl H.; Hockin, John; and Woulds, Michael J., 3,677,331.
Lund, Carl H.; Hockin, John; and Woulds, Michael J., 3,677,746.
Lund, Carl H.; Hockin, John; and Woulds, Michael J., 3,677,747.

Wright, Archibald N., to General Electric Company. Anti-thrombogenic coatings and products. 3,677,800, Cl. 117-93.310.

Wright, Eric F.: *See—*
Furlong, Owen D.; Rowe, Alan C.; and Wright, Eric F., 3,677,293.

Wright, Peter C.; and Kirsch, Donald L., to Gidon Industries Limited. Automotive exhaust system. 3,677,365, Cl. 181-72.000.

Wu, Ching Yong: *See—*
Bozik, John E.; Swift, Harold E.; and Wu, Ching Yong, 3,678,022.

Wu, Ching-Yong: *See—*
Bozik, John E.; Swift, Harold E.; and Wu, Ching-Yong, 3,677,968.

Wuertele, Lothar: *See—*
Eckert, Guenter; Marx, Matthias; Hartmann, Heinrich; and Wuertele, Lothar, 3,677,813.

Wulc, Stanley S. Random motion suction cleaner. 3,676,884, Cl. 15-1.700.

Wulc, Stanley S. Random motion vehicle. 3,676,885, Cl. 15-1.700.

Wullstein, Leroy H., to University of Utah. Nitrogen fixation. 3,677,702, Cl. 23-193.000.

Wunder, John E.; and Coolidge, Anson S., to United Aircraft Products, Inc. Water separator. 3,676,987, Cl. 55-459.000.

Wurm, Bruno: *See—*
Herterich, Walter; Probst, Georg; and Wurm, Bruno, 3,677,386.
Herterich, Walter; Probst, Georg; and Wurm, Bruno, 3,677,387.

Wycliffe, Henryk; and Power, Basil Dixon, to Edwards High Vacuum International Limited. Rotary mechanical pumps of the screw type. 3,677,664, Cl. 417-310.000.

X-L-O Automotive Accessories, Inc.: *See—*
Gussack, Seymour I.; and Berry, Hugh, 3,677,594.

Xerox Corporation: *See—*
Chen, Philip L., 3,677,148.
Huber, Charles L., 3,677,633.
Mammino, Joseph; and Jvirblis, Gail D., 3,677,750.
Matsumoto, Seiji; Sato, Masamichi; and Fukushima, Osamu, 3,678,350.

Yagi, Eiichi: *See—*
Tamate, Tokutaro; Yagi, Eiichi; and Ikeda, Hisayuki, 3,677,925.

Yamada, Kazumi: *See—*
Nagamatsu, Takeo; Yamada, Yusaku; and Yamada, Kazumi, 3,678,498.

Yamada, Yusaku: *See—*
Nagamatsu, Takeo; Yamada, Yusaku; and Yamada, Kazumi, 3,678,498.

Yamaguchi, Norio: *See—*
Oba, Harutaro; Sawazu, Toshihiko; Takeuchi, Sugio; and Yamaguchi, Norio, 3,677,464.

Yamamoto, Hideo, to Canon Kabushiki Kaisha. Electronic printer. 3,678,193, Cl. 178-18.000.

Yamamoto, Hiroichi: *See—*
Shibata, Motoo; Yamamoto, Hiroichi; Higashide, Eiji; Mizuno, Komei; Imanishi, Mashiko; and Miyake, Akira, 3,678,161.

Yamamoto, Masao: *See—*
Yamamura, Katsumi; Miyasaka, Tsugumitsu; Hayashi, Shinichi; Yamamoto, Masao; and Matsubara, Yukio, 3,677,909.

Yamamoto, Mizuo: *See—*
Fujisawa, Tamotsu; Yamamoto, Mizuo; and Tsuchihashi, Genichi, 3,678,115.

Yamamoto, Noboru: *See—*
Oishi, Kazuo; Kurebayashi, Tokuhiro; Ando, Noriyoshi; Yamamoto, Noboru; and Yoshida, Hiroshi, 3,677,253.

Yamamoto, Yoshio: *See—*
Morita, Katsuhiko; and Yamamoto, Yoshio, 3,676,995.

Yamamura, Katsumi; Harigaya, Hiroshi; Kasai, Kazutomo; and Asahina, Michio, to Kabushiki Kaisha Suwa Seikosha. Age hardening stainless steel. 3,677,744, Cl. 75-128.00t.

Yamamura, Katsumi; Miyasaka, Tsugumitsu; Hayashi, Shinichi; Yamamoto, Masao; and Matsubara, Yukio. Palladium-nickel alloy plating bath. 3,677,909, Cl. 204-43.000.

Yamashita, Sadahiko, to Matsushita Electric Industrial Company, Limited. Electro-optical converter using a pulse generating diode to generate signal having pulse repetition frequency according to light signal. 3,678,280, Cl. 250-213.000.

Yamatani, Tetsuo: *See—*
Ariyoshi, Yasuo; Yamatani, Tetsuo; Uchiyama, Noboru; and Sato, Naotake, 3,678,026.

Yamauchi, Fujio: *See—*
Matsuda, Hideaki; Mori, Hisakazu; and Yamauchi, Fujio, 3,678,012.

Yamazaki, Akihiro; Furukawa, Teruo; and Kumashiro, Izumi, to Ajinomoto Co., Inc. Imidazole derivatives inhibiting NF sarcoma. 3,678,030, Cl. 260-216.50r.

Yang, Tung H.; and Spence, John H., to Pullman Incorporated. Draft sill arrangement for high capacity car. 3,677,198, Cl. 105-420.000.

Yanush, Appolinaria Vasilievna, to Gosudarstvenny Naucho-Issledovatelsky I Proektny Institut Onsnovnoi Khimii. Method of producing sodium percarbonate. 3,677,697, Cl. 23-62.000.

Yarkosky, Eugene F.: *See—*
Brindisi, Frank A., Jr.; Nagy, Joseph S.; and Yarkosky, Eugene F., 3,677,949.

Yashima, Yukio: *See—*
Yonemitsu, Eiichi; Isshiki, Tomiya; Suzuki, Tsuyoshi; and Yashima, Yukio, 3,678,107.

Yasuda, Hiroyuki; and Arai, Choji, to Kabushiki Kaisha Ideal. Umbrellas. 3,677,274, Cl. 135-24.000.

Yasui, Seimei; Hirooka, Masaaki; and Oshima, Teruo, to Sumitomo Chemical Company, Ltd. Sulfur-curable olefinic copolymers and method for producing the same. 3,678,018, Cl. 260-80.780.

Yasuoka, Yoshio; and Shirakami, Yoshiaki, to Sanyo Electric Co., Ltd. High frequency heating apparatus. 3,678,238, Cl. 219-10.550.

Yates, George, Jr., to Growth International Industries Corporation. Self-centering and venting closure. 3,677,430, Cl. 215-41.000.

Yazawa, Masahide; and Tani, Haruhisa, to Polymer Processing Research Institute Ltd. Method for winding up a thin layer material having a broad width. 3,677,484, Cl. 242-54.00r.

Yokozato, Junichi, to Zenza Bronica Kogyo Kabushiki Kaisha. Hood for a focusing screen of a camera. 3,677,162, Cl. 95-47.000.

Yonaites, Gary A.: *See—*
Yonaites, Rosemary C.; and Yonaites, Gary A., 3,677,596.

Yonaites, Rosemary C.; and Yonaites, Gary A. Caddy for disposable plastic bags. 3,677,596, Cl. 294-19.000.

Yonemitsu, Eiichi; Isshiki, Tomiya; Suzuki, Tsuyoshi; and Yashima, Yukio, to Mitsubishi Edogawa Kagaku Kabushiki Kaisha. Process for the production of oxalic acid. 3,678,107, Cl. 260-531.00r.

Yoshida, Hiroshi: *See—*
Oishi, Kazuo; Kurebayashi, Tokuhiro; Ando, Noriyoshi; Yamamoto, Noboru; and Yoshida, Hiroshi, 3,677,253.

Yoshida, Masaru: *See—*

Ito, Akihiko; Nakase, Yoshiaki; Kojima, Katsumi; Yoshida, Masaru; Iwai, Tadashi; Hayashi, Koichiro; and Okamura, Seizo, 3,677,922.
Yoshida, Susumu; Ohgoshi, Akio; Miyaoka, Senri; and Katagiri, Yoshiharu, to Sony Corporation. Cathode ray tube having divergent deflection plates for converging three beams. 3,678,318, Cl. 313-70.00c.
Yoshitomi Pharmaceutical Industries, Ltd.: *See*—
Nakanishi, Michio; Oe, Takanori; and Maruyama, Yutaka, 3,678,077.
Yost, De Witt M.: *See*—
Rowsam, Kenneth P.; and Yost, De Witt M., 3,677,887.
Young, Claude F.; and De Weese, Richard O., to Union Carbide Corporation. Tumble screen conveyor. 3,677,403, Cl. 209-308.000.
Young, Donald Allan, to Lucas, Joseph, (Industries) Limited. Pins for electrical connectors. 3,678,448, Cl. 339-217.00a.
Young, Donald G., to Dow Corning Corporation. Primer for adhesion of silicone rubber to metal. 3,677,998, Cl. 260-33.6ab.
Young, George Ralph, Jr., to American Chemical & Refining Company Incorporated. Adjustable frame for thin sheet electrodes. 3,677,929, Cl. 204-286.000.
Young, Herbert, to Kidde, Walter, & Company, Inc. Storage system. 3,677,202, Cl. 108-109.000.
Yugen Kaisha Tsukasa Sokken: *See*—
Hayakawa, Hideo, 3,677,085.
Yumoto, Hiroshi: *See*—
Nitda, Taro; Yumoto, Hiroshi; Tsuruoka, Takashi; Hammoto, Kazuko; Shomura, Takashi; and Ohashi, Takao, 3,678,159.
Zachaus, Eberhard: *See*—
Gottweis, Gert; Herrlich, Michael; Klas, Gunther; Schober, Joachim; Thiede, Peter; and Zachaus, Eberhard, 3,676,978.
Zaitsev, Valentin Ivanovich: *See*—
Scherban, Alexandr Nazarievich; Furman, Neonil Izrailevich; Sotnichenko, Boris Feodosievich; Belogolovin, Nikolai Stefanovich; Chopovsky, Jury Ivanovich; Sutormin, Jury Nikolaevich; Zaitsev, Valentin Ivanovich; Kot, Vladimir Ivanovich; Mikhailjuk, Nikolai Tarasovich; Denisenko, Sergei Andreevich; Chaschinov, Anatoly Vasilievich; Shaporev, Stepan Vasilievich; and Samoilenko, Svetlana Mikhailovna, 3,678,489.
Zajko, Michal: *See*—
Newstead, Charles; Cullen, John Lesley; and Zajko, Michal, 3,677,374.
Zally, William Joseph: *See*—
Field, George Francis; Sternbach, Leo Henryk; and Zally, William Joseph, 3,678;038.
Zenith Radio Corporation: *See*—
Adler, Robert, 3,678,401.
De Vries, Adrian J., 3,678,364.
Fiore, Joseph P., 3,676,914.
Kaplan, Sam H., 3,677,758.
Zenza Bronica Kogyo Kabushiki Kaisha: *See*—
Yokozato, Junichi, 3,677,162.
Ziegler, George William, Jr.; and Hughes, Donald Kent, to AMP Incorporated: Coaxial cable connector sub-assembly. 3,678,447, Cl. 339-177.00e.
Zierak, Stephen J.; and Monteiro, Arnold J., to Metal Bellows Corporation. Low cost rotary shaft coupling and method of making same. 3,677,031, Cl. 64-13.000.
Zimmerman, Robert L.; Dennis, Kent S.; and Moore, Eugene R., to Dow Chemical Company, The. Fabrication of shaped articles cross-linked by chemical addition reactions. 3,678,016, Cl. 260-78.40d.
Zinn, Mortimer H., to United States of America, Army. Signal and noise separation utilizing zero crossing electron tube and circuit. 3,678,321, Cl. 313-78.000.
Zippel, Bernd; and Schlieckmann, Alfred, to Zippel, Richard, & Co., KG. Mould filling apparatus. 3,677,681, Cl. 425-145.000.
Zippel, Richard, & Co., KG: *See*—
Zippel, Bernd; and Schlieckmann, Alfred, 3,677,681.
Zirnite, Richard N., to Johnson & Johnson. Adhesive tape. 3,677,788, Cl. 117-11.000.
Zjuzin, Sergei Alexeevich: *See*—
Nabiullin, Faat Khatovich; Buzova, Zoya Mikhailovna; Gertsik, Mikhailovich; and Zjuzin, Sergei Alexeevich, 3,677,824.
Zopff, Thomas E., to Burroughs Corporation. Dial type switch with improved leaf spring biased rotatable contact plate. 3,678,223, Cl. 200-11.00g.
Zukowski, Henry J. Surgical instrument illuminating endotracheal tube inserter. 3,677,262, Cl. 128-6.000.
Zwijsen, Wilhelmus Antonius Joseph Marie: *See*—
Blom, Dirk; Van Overbeek, Adrianus Johannes Wilhelmus Marie; and Zwijsen, Wilhelmus Antonius Joseph Marie, 3,678,404.
Zychal, Edward, to Zyco Manufacturing Inc. Method and apparatus for transferring a magnetic sound track to movie film. 3,677,860, Cl. 156-299.000.
Zyco Manufacturing Inc.: *See*—
Zychal, Edward, 3,677,860.

LIST OF DEFENSIVE PUBLICATIONS

APPLICANTS TO WHOM

DEFENSIVE PUBLICATIONS WERE ISSUED ON THE 18TH DAY OF JULY, 1972

Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O. G. 687.

Arnold, Robert L., and J. P. VanderKool, to Monsanto Co. Method of improving rubber to brass adhesion. T900,003, 7–18–72, Cl. 156—306.
Balle, Gerhard, W. Keberle, K. Kowalewski, and B. Zorn, to Farbenfabriken Bayer Aktiengesellschaft. Process for treating sheet materials with anionic aqueous Polyurethane dispersions. T900,008, 7–18–72, Cl. 260—29.4.
Baron, Donald J., and W. A. Snell, to United Aircraft Corp. Method of testing titanium alloys. T900,005, 7–18–72. Cl. 204—17.
Bloom, Melvin S., and A. R. Guevara. Sensitizers for light sensitive polymer compositions. T900,011, 7–18–72. Cl. 96—115.
Cossar, Bernard C.: *See*—
Reynolds, Delbert D., and Cossar. T900,001.
Davis, Thomas G., D. L. Nealy, and J. W. Reynolds. Process for removing metallic color producing contaminants from solutions of bis(beta-hydroxyethyl)terephthalate in ethylene glycol. T900,013, 7–18–72, Cl. 260—475.
Dunham, Kenneth R., and M. E. Yost. Ultraviolet absorptive masks. T900,009, 7–18–72, Cl. 96—115.
Du Pont de Nemours, E. I., and Co.: *See*—
Wielar, Jack B., II. T900,002.
Farbenfabriken Bayer Aktiengesellschaft: *See*—
Balle, Gerhard, Keberle, Kowalewski, and Zorn. T900,008.
Guevara, Alfredo R.: *See*—
Bloom, Melvin S., and Guevara. T900,011.
International Business Machines Corp.: *See*—
Perriens, Matthews P., and Williams. T900,006.
Keberle, Wolfgang: *See*—
Balle, Gerhard, Keberle, Kowalewski, and Zorn. T900,008.
Kowalewski, Karlheinz: *See*—
Balle, Gerhard, Keberle, Kowalewski, and Zorn. T900,008.
Lauderback, William H. Smoke suppressor. T900,004, 7–18–72, Cl. 23—2.
Monsanto Co.: *See*—
Arnold, Robert L., and VanderKool. T900,003.
Neal, Richard D. Acid modified polyester fibers dyed with basic dyestuffs. T900,007, 7–18–72, Cl. 8—168.
Nealy, David L.: *See*—
Davis, Thomas G., Nealy, and Reynolds. T900,013.
Perriens, Matthews P., and J. H. Williams, Jr., to International Business Machines Corp. Information storage and retrieval system and method. T900,006, 7–18–72, Cl. 340—172.5.
Reynolds, Delbert D., and B. C. Cossar. Aminomethylating agents and processes for preparing and using same. T900,001, 7–18–72, Cl. 260—244.
Reynolds, Jefferson W.: *See*—
Davis, Thomas G., Nealy, and Reynolds. T900,013.
Shuman, David C. Blue colloidal silver imaging system. T900,010, 7–18–72, Cl. 96—50.
Snell, William A.: *See*—
Baron, Donald J., and Snell. T900,005.
United Aircraft Corp.: *See*—
Baron, Donald J., and Snell. T900,005.
VanderKool, John P.: *See*—
Arnold, Robert L., and VanderKool. T900,003.
Wielar, Jack B., II, to E. I. du Pont de Nemours and Co. Optical fiber ribbon and method of manufacture. T900,002, 7–18–72, Cl. 350—96.
Williams, John H., Jr.: *See*—
Perriens, Matthews P., and Williams. T900,006.
William, John V. Photographic diffusion transfer elements, film units, and methods for processing same. T900,012, 7–18–72, Cl. 96—77.
Yost, Marshall E.: *See*—
Dunham, Kenneth R., and Yost. T900,009.
Zorn, Bruno: *See*—
Balle, Gerhard, Keberle, Kowalewski, and Zorn. T900,008.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 18TH DAY OF JULY, 1972

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Bailey, Charles R., to F. F. Murphy. Double refuse can holder. Re. 27,437, 7–18–72, Cl. 280—47.19.
Crosby, Stephen A. Tying implement and method. Re. 27,441, 7–18–72, Cl. 289—1.5.
Daal Specialties Ltd.: *See*—
Humphrey, Frederick H. Re. 27,438.
De Cecco, Angelo L., D. E. Piccone, and I. Somos, to General Electric Co. Semiconductor rectifier with improved turn-on and turn-off characteristics. Re. 27,440, 7–18–72. Cl. 317—235.
Eddy, Byron J.: *See*—
Jackson, Randolph H., Eddy, Mitchell, Johnson, Hall, and Hicks. Re. 27,439.
Fischer, Alfred, to Tenneco Chemicals, Inc. Metal salt drier compositions. Re 27,433, 7–18–72, Cl. 106—310.
General Electric Co.: *See*—
De Cecco, Angelo L., Piccone, and Somos. Re. 27,440.
Goodyear Tire & Rubber Co., The: *See*—
Jackson, Randolph H., Eddy, Mitchell, Johnson, Hall, and Hicks. Re. 27,439.
Hall, Charles G.: *See*—
Jackson, Randolph H., Eddy, Mitchell, Johnson, Hall, and Hicks. Re. 27,439.
Hicks, James E.: *See*—
Jackson, Randolph H., Eddy, Mitchell, Johnson, Hall, and Hicks. Re. 27,439.
Humphrey, Frederick H., to Daal Specialties Ltd. Buckle for a safety belt. Re. 27,438, 7–18–72, Cl. 24—230.
Jackson, Randolph H., B. J. Eddy, K. D. Mitchell, E. D. Johnson, C. G. Hall, and J. E. Hicks, to The Goodyear Tire & Rubber Co. Inclined moving walkway arrangement. Re. 27,439, 7–18–72, Cl. 198—16.
Johnson, Ernest D.: *See*—
Jackson, Randolph H., Eddy, Mitchell, Johnson, Hall, and Hicks. Re. 27,439.
Kyp, Robert J. Electric light bulb with oscillating filament. Re. 27,443, 7–18–72, Cl. 315—267.
McGraw-Edison Co.: *See*—
Weir, Henry J. Re. 27,442.
Mitchell, Kenneth D.: *See*—
Jackson, Randolph H., Eddy, Mitchell, Johnson, Hall, and Hicks. Re. 27,439.
Monsanto Co.: *See*—
Shelby, Richard K. Re. 27,435.
Murphy, F. F.: *See*—
Bailey, Charles R. Re. 27,437.
Pan American Petroleum Corp.: *See*—
Vincent, Renic P., and Wilder. Re. 27,434.
Piccone, Dante E.: *See*—
De Cecco, Angelo L., Piccone, and Somos. Re. 27,440.
Sawyer, Bruce A. Magnetic positioning device. Re. 27,436, 7–18–72, Cl. 246—29.
Shelby, Richard K., to Monsanto Co. Molding machines. Re. 27,435, 7–18–72, Cl. 425—167.
Somos, Istvan: *See*—
De Cecco, Angelo L., Piccone, and Somos. Re. 27,440.
Tenneco Chemicals, Inc.: *See*—
Fischer, Alfred. Re. 27,433.
Vincent, Renic P., and L. B. Wilder, to Pan American Petroleum Corp. Liquid percussion motor. Re. 27,434, 7–18–72. Cl. 173—73.
Weir, Henry J., to McGraw-Edison Co. Laundry feeding machine. Re. 27,442, 7–18–72. Cl. 38—143.
Wilder, Lawrence B.: *See*—
Vincent, Renic P., and Wilder. Re. 27,434.
Will, Guenther. Process for the production of porous plastics and products. Re. 27,444, 7–18–72. Cl. 260—2.5.

LIST OF PLANT PATENTEES

Burlingham, E. F., and Sons: *See*—
Pepin, Gerard W., and Funk. 3,239.
Duffett, William F.: *See*—
Jessel, Walter H., Jr., and Duffett. 3,236.
Funk, Cyril R., Jr.: *See*—
Pepin, Gerard W., and Funk. 3,239.
Jessel, Walter H., Jr., and W. F. Duffett, to Yoder Brothers, Inc. Chrysanthemum plant. 3,236, 7–18–72, Cl. 79.

Marshall, Cecil C., to Selected Glads, Inc. Gladiolus. 3,237, 7–18–72, Cl. 85.
Pepin, Gerard W., and C. R. Funk, Jr., to E. F. Burlingham and Sons. Bluegrass plant. 3,239, 7–18–72, Cl. 88.
Post Gardens, Inc.: *See*—
Smith, Spencer R. 3,240.
Selected Glads, Inc.: *See*—
Marshall, Cecil C. 3,237.
Walker, Donald J. and A. I. 3,238.
Smith, Spencer R., to Post Gardens, Inc. Azalea plant. 3,240, 7–18–72, Cl. 57.
Walker, Audrey I.: *See*—
Walker, Donald J. and A. I. 3,238.
Walker, Donald J. and A. I., to Selected Glads, Inc. Gladiolus. 3,238, 7–18–72, Cl. 85.
Yoder Brothers, Inc.: *See*—
Jessel, Walter H., Jr., and Duffett. 3,236.

LIST OF DESIGN PATENTEES

Ampex Corp.: *See*—
Larson, Orville W. 224,316.
Leman, Donald E. 224,315.
Matsuda, Hari K. 224,313.
Anderson, John P. Baby bath. 224,306, 7–18–72, Cl. D23—52.
Augustine James J. Game board. 224,327, 7–18–72. Cl. D34—5.
Automobiles Peugeot: *See*—
Tixier, Michel. 224,283.
Bagguley, Richard B.: *See*—
Mascia, Carmen T., and Bagguley. 224,291.
Basterra, Ignacio A. Fork or similar article of flatware. 224,343, 7–18–72, Cl. D54—12.
Basterra, Ignacio A. Fork or similar article of flatware. 224,344, 7–18–72, Cl. D54—12.
Beaudoin, Dale J., to Uniroiay, Inc. Tread for a pneumatic tire. 224,376, 7–18–72, Cl. D90—20.
Bergkvist, Hakan G. F. Coupling ring for drainage pipes. 224,303, 7–18–72, Cl. D23—3.
Berry, Morris J. Tote bag. 224,370, 7–18–72, Cl. D87—3.
Bettonica, Franco, to U.S. Philips Corp. Box for an electric shaver. 224,368, 7–18–72, Cl. D87—1.
Bloch, Jack, to Foster Grant Co., Inc. Pair of spectacles. 224,347, 7–18–72, Cl. D57—1.
Bloch, Jack, to Foster Grant Co., Inc. Pair of spectacles. 224,348, 7–18–72, Cl. D57—1.
Bloch, Jack, to Foster Grand Co., Inc. Pair of spectacles. 224,349. 7–18–72, Cl. D57—1.
Bloch, Roy W., to Ekco Products, Inc. Food packaging tray. 224,288, 7–18–72, Cl. D9—185.
Bloch, Roy W., to Ekco Products, Inc. Packaging container for comestibles or the like. 224,289, 7–18–72, Cl. D9—187.
Bogna, David L. Integral counter top and lavatory. 224,307, 7–18–72, Cl. D23—58.
Boucher, Raymond, and C. Voytko, to Hedstrom Co. Velocipede frame. 224,374, 7–18–72, Cl. D90—8.
Brett, James E., to Purex Corporation, Ltd. Float for sanitizing agent dispenser. 224,311, 7–18–72, Cl. D23—150.
Busch, Robert F., and W. K. Pope, to Uniroyal, Inc. Pneumatic tire tread and buttress combination. 224,379, 7–18–72. Cl. D90—20.
Cairo, Anthony C., to Simicon Co. Thermostat housing. 224,341, 7–18–72, Cl. D52—7.
Candela, Thomas D. Face mask. 224,282, 7–18–72. Cl. D2—234.
Canrad Precision Industries, Inc.: *See*—
Webb, Ronald C., and Lenz. 224,312.
Cicero, Edward L. Combined golf accessories and holder thereof. 224,328, 7–18–72, Cl. D34—5.
Clarke, Christopher H. Citrus fruit peeler. 224,372, 7–18–72, Cl. D89—1.
Clarkin, Edward J., to Nooter Corp. Cooling panel. 224,310, 7–18–72, Cl. D23—127.
Coizet, Roberto: *See*—
Martini, Alfredo, and Coizet. 224,338.
Continental Can Co., Inc.: *See*—
Mascia, Carmen T., and Bagguley. 224,291.
Cook, David C., Publishing Co.: *See*—
Frost, Marie H., and Odell. 224,325.
Coster, Theo M. S. Bottle or similar article. 224,287, 7–18–72, Cl. D9—157.
Data Collection Systems, Inc.: *See*—
Rosenow, Fred C. 224,353.
Davidson, Jack. Boat hull. 224,363, 7–18–72, Cl. D71—1.
Davis, Myron F., and W. Furlani, to International Business Machines Corp. Data processing unit. 224,320, 7–18–72, Cl. D26—5.
Davis, Wilton J.: *See*—
Roe, Richard C., and Davis. 224,284.
Design Elements, Inc.: *See*—
Marsalka, Joseph P., and Kennedy. 224,317.
Diebold, Inc.: *See*—
Terrell, William H. 223,367.
Dumm, Irving, III, and R. A. Wilson. Pallet making jig. 224,342, 7–18–72, Cl. D54—1.
Ekco Products, Inc.: *See*—
Bloch, Roy W. 224,288.
Bloch, Roy W. 224,289.
Engert, Heinz: *See*—
Tupaj, Manfred P., and Engert. 224,322.
Ewers, Ronald L., to Game Time, Inc. Seat for playground apparatus. 224,326, 7–18–72, Cl. D34—5.
Fagg, Everett A. E.: *See*—
Nelson, Robert A. 224,361.
Fedtro Inc.: *See*—
Kahn, Robert D. 224,318.
Foster Grant Co., Inc.: *See*—
Bloch, Jack. 224,347.
Bloch, Jack. 224,348.
Bloch, Jack. 224,349.
Frost, Marie H., and R. B. Odell, to David C. Cook Publishing Co. Animal figure hand puppet. 224,325, 7–18–72, Cl D34—2.
Fuji Shashin Film Kabushiki Kaisha: *See*—
Fukuda, Masahiro. 224,350.
Fukuda, Masahiro, to Fuji Shashin Film Kabushiki Kaisha. Camera. 224,350, 7–18–72, Cl. D61—1.
Furlani, Walter: *See*—
Davis, Myron F., and Furlani. 224,320.
Game Time, Inc.: *See*—
Ewers, Ronald L. 224,326.
Wormser, Robert S. 224,293.
General Electric Co.: *See*—
Seager, Richard H. 224,323.
Gerli, Eugenio, to Tecno S.p.A. Armchair. 224,285, 7–18–72, Cl. D6—21.
Goto, Kenjiro, to Mansei Kogyo Kabushiki Kaisha. Cigarette lighter. 224,339, 7–18–72, Cl. D48—27.
Halpern, Arthur, to M. D. Sales Co., Inc. Pin wheel toy or similar article. 224,331, 7–18–72, Cl. D34—15.
Hedstrom Co.: *See*—
Boucher, Raymond, and Voytko. 224,374.
Hernandez, Angel F. Tether toy. 224,332, 7–18–72, Cl. D34—15.
Hexacon Electric Co.: *See*—
Sylvester, Joseph A. 224,319.
Hjelmquist, Stig Gunnar. Bicycle exerciser. 224,329, 7–18–72, Cl. D34—5.
Hodge, Lynn H. Rear view mirror. 224,299, 7–18–72, Cl. D14—6.
Hodge, Lynn H. Rear view mirror. 224,300, 7–18–72. Cl. D14—6.
Honeywell Information Systems Inc.: *See*—
Schaus, Carl F. 224,314.
Hoyt, Earl E., to Van Kyk Research Corp. Office copier. 224,351, 7–18–72, Cl. D61—1.
Ideal Toy Corp.: *See*—
Rodemeyer, Donald J. 224,330.
International Business Machines Corp.: *See*—
Davis, Myron F., and Furlani. 224,320.
International Silver Co.: *See*—
Knope, William J. 224,345.
Kahn, Robert D., to Fedtro, Inc. Photo electric switch. 224,318, 7–18–72, Cl. D26—1.
Kelbish, Edward D. Pre-assembled modular housing structure. 224,295, 7–18–72, Cl. D13—1.
Kelbish, Edward D. Pre-assembled modular housing structure. 224,296, 7–18–72, Cl. D13—1.
Kelbish, Edward D. Pre-assembled modular housing structure. 224,297, 7–18–72, Cl. D13—1.
Kelly, Samuel P. Adjustable flower pot holder. 224,333, 7–18–72, Cl. D35—3.
Kennedy, John P.: *See*—
Marsalka, Joseph P., and Kennedy. 224,317.
Kermes, Constantine J., to Sperry Rand Corp. Lawn and garden tractor. 224,298, 7–18–72, Cl. D14—3.
Knope, William J., to International Silver Co. Spoon or similar article of flatware. 224,345, 7–18–72, Cl. D54—12.
Kokado, Kazuo. Umbrella runner. 224,371, 7–18–72, Cl. D88—3.
Kondo, Ryozo. Air-pump for aquarium. 224,354, 7–18–72, Cl. D65—1.
Kondo, Ryozo. Air-pump for aquarium. 224,355, 7–18–72, Cl. D65—1.
Kondo, Ryozo. Air-pump for aquarium. 224,356, 7–18–72, Cl. D65—1.
Kondo, Ryozo. Air-pump for aquarium. 224,357, 7–18–72, Cl. D65—1.
Kondo, Ryozo. Air-pump for aquarium. 224,358, 7–18–72, Cl. D65—1.
Kondo, Ryozo. Aquarium air pump or the like. 224,359, 7–18–72. Cl. D65—1.
Kondo, Ryozo. Aquarium air pump or the like. 224,360, 7–18–72. Cl. D65—1.
Krueger, Wallace F. Plural fluid control mixing and spray gun. 224,305, 7–18–72, Cl. D23—17.
Larson, Orville W., to Ampex Corp. Combined magnetic tape cassette transport and radio. 224,316, 7–18–72. Cl. D26—14.
Lauer, Donald G., C. C. Woodring, and J. A. Rinaldi, to J. C. Penney Co., Inc. Vanity sink. 224,308, 7–18–72, Cl. D23—58.
Leman, Donald E., to Ampex Corp. Magnetic tape cassette transport. 224,315, 7–18–72, Cl. D26—14.
Lenz, Gerald L.: *See*—
Webb, Ronald C., and Lenz. 224,312.
Lewis, G. B., Co.: *See*—
Mears, Fred. 224,369.
Lewis, Gerald D. Shoe horn. 224,365, 7–18–72, Cl. D86—10.
Lischeron, Joseph A. Bicycle cover. 224,373, 7–18–72, Cl. D90—6.
Mansei Kogyo Kabushiki Kaisha: *See*—
Goto, Kenjiro. 224,339.
Marsalka, Joseph P., and J. P. Kennedy, to Design Elements, Inc. Acoustic coupler. 224,317, 7–18–72, Cl. D26—14.
Martini, Alfredo, and R. Coizet. Table lamp. 224,338, 7–18–72, Cl. D48—20.

Mascia, Carmen T., and R. B. Bagguley, to Continental Can Co., Inc. Can or similar article. 224,291, 7–18–72, Cl. D9—216.
Matsuda, Hari, to Ampex Corp. Magnetic tape cassette transport. 224,313, 7–18–72, Cl. D26—14.
Matsushita Electric Industrial Co., Ltd.: *See*—
Nakamura, Yasunobu, Sumino, Sugihara, Ueda, and Terauchi. 224,346.
Maxemovich, Marco, to Uniroyal, Inc. Pneumatic tire tread and buttress. 224,375, 7–18–72, Cl. D90—20.
McCaul, James F., III, to Schokbeton Products Corp. Building frame. 224,292, 7–18–72, Cl. D13—1.
Mears, Fred, to G. B. Lewis, Co. Storage bin. 224,369, 7–18–72, Cl. D87—1.
Mikami, Tatsuya, to Tokyo Shibaura Electric Co., Ltd. Desk electronic calculator. 224,352, 7–18–72, Cl. D26—5.
Nakamura, Yasunobu, T. Sumino, O. Sugihara, K. Ueda, and M. Terauchi, to Matsushita Electric Industrial Co., Ltd. Television receiver. 224,346, 7–18–72, Cl. D56—4.
Nelson, Robert A., to Everett A. E. Fagg. Dolphin-shaped boat. 224,361, 7–18–72, Cl. D71—1.
Newman, James F., to Uniroyal, Inc. Pneumatic tire tread and buttress. 224,377, 7–18–72, Cl. D90—20.
Newman, James F., to Uniroyal, Inc. Pneumatic tire tread and buttress. 224,378, 7–18–72, Cl. D90—20.
Nocero, Rinzy. Combined knife sharpener and meat carving fork. 224,337, 7–18–72, Cl. D44—29.
Nooter Corp.: *See*—
Clarkin, Edward J. 224,310.
Odell, Russell B.: *See*—
Frost, Marie H., and Odell. 224,325.
Padilla, Victor J. Helmet. 224,281, 7–18–72, Cl. D2—232.
Penney, J. C., Co., Inc.: *See*—
Lauer, Donald G., Woodring, and Rinaldi. 224,308.
Pope, William K.: *See*—
Busch, Robert F., and Pope. 224,379.
Prehn, Fenton W. Shellfish meat pattie mold. 224,334, 7–18–72. Cl. D44—1.
Prehn, Fenton W. Die release for a shellfish meat pattie mold. 224,335, 7–18–72, Cl. D44—1.
Presto Plastics Corp.: *See*—
Shatan, David M. 224,336.
Purex Corp., Ltd.: *See*—
Brett, James E. 224,311.
Rebel Boat Co., Inc.: *See*—
Wilson, William H. 224,362.
Regie Nationale des Usines Renault, and Automobiles Peugeot: *See*—
Tixier, Michel. 224,283.
Rehrig, Houston. Bread tray. 224,366, 7–18–72, Cl. D87—1.
Rinaldi, Joseph A.: *See*—
Lauer, Donald G., Woodring, and Rinaldi. 224,308.
Robertson, John C., to The Stanley Works. Knife blade dispensing package. 224,290, 7–18–72. Cl. D9—191.
Rodemeyer, Donald J., to Ideal Toy Corp. Elastic-band-supporting frame for use in a game. 224,330, 7–18–72, Cl. D34—5.
Roe, Richard C., and W. J. Davis, to Sealy, Inc. Bed spring unit or similar article. 224,284, 7–18–72, Cl. D5—2.
Rosenow, Fred C., to Data Collection Systems, Inc. Tape printer or similar article. 224,353, 7–18–72, Cl. D64—10.
Rosfeld, Jack H., to Texize Chemicals, Inc. Bottle. 224,286, 7–18–72, Cl. D9—116.
Sales, M. D., Co., Inc.: *See*—
Halpern, Arthur. 224,331.
Sanders Associates, Inc.: *See*—
Williams, Allen R., Jr. 224,321.
Schaus, Carl F., to Honeywell Information Systems Inc. Panel for use on electronic equipment cabinets or the like. 224,314, 7–18–72, Cl. D26—5.
Schokbeton Products Corp.: *See*—
McCaul, James F. 224,292.
Schwartz, Howard L., to United Inns Mfg., Corp. Motel office building. 224,294, 7–18–72, Cl. D13—1.
Seager, Richard H., to General Electric Co. Portable tape player. 224,323, 7–18–72, Cl. D26—14.
Sealy, Inc.: *See*—
Roe, Richard C., and Davis. 224,284.
Shatan, David M., to Presto Plastics Corp. Saucer for a teabag or the like. 224,336, 7–18–72, Cl. D44—9.
Simicon Co.: *See*—
Cairo, Anthony C. 224,341.
Smith, Russell G., to Xomox Corp. Duplex strainer unit. 224, 304, 7–18–72, Cl. D23—4.
Sperry Rand Corp.: *See*—
Kermes, Constantine J. 224,298.
Wolff, Martin J. 224,309.
Stanley Works, The: *See*—
Robertson, John C. 224,290.
Sud-Atlas-Werke G.m.b.H.: *See*—
Tupaj, Manfred P., and Engert. 224,322.
Sugihara, Osamu: *See*—
Nakamura, Yasunobu, Sumino, Sugihara, Ueda, and Terauchi. 224,346.
Sumino, Tadashi: *See*—
Nakamura, Yasunobu, Sumino, Sugihara, Ueda, and Terauchi. 224,346.
Swan, Terry D. Snowmobile. 224,301, 7–18–72, Cl. D14—24.
Swirple, Walter. Disc dispenser. 224,340, 7–18–72, Cl. D52—2.
Sylvester, Joseph A., to Hexacon Electric Co. Electric soldering equipment matching instrument. 224,319, 7–18–72, Cl. D26—1.
Tecno S.p.A.: *See*—
Gerli, Eugenio. 224,285.
Terauchi, Makoto: *See*—
Nakamura, Yasunobu, Sumino, Sugihara, Ueda, and Terauchi. 224,346.
Terrell, William H., to Diebold, Inc. Pneumatic tube system carrier storage tray. 224,367, 7–18–72, Cl. D87—1.
Texize Chemicals, Inc.: *See*—
Rosfeld, Jack H. 224,286.
Tiller, James A. Bath tub. 224,302, 7–18–72, Cl. D23—55.
Tixier, Michel, to Regie Nationale des Usines Renault, and Automobiles Peugeot. Slider casing for safety belt. 224,283, 7–18–72. Cl. D2—408.
Tokyo Shibaura Electric Co., Ltd.: *See*—
Mikami, Tatsuya. 224,352.
Tupaj, Manfred P., and H. Engert, to Sud-Atlas-Werke G.m.b.H. Tape recorder. 224,322, 7–18–72, Cl. D26—14.
Ueda, Kazuhiro: *See*—
Nakamura, Yasunobu, Sumino, Sugihara, Ueda, and Terauchi. 224,346.
Uniroyal, Inc.: *See*—
Beaudoin, Dale J. 224,376.
Busch, Robert F., and Pope. 224,379.
Maxemovich, Marco. 224,375.
Newman, James F. 224,377.
Newman, James F. 224,378.
United Inns Mfg. Corp.: *See*—
Schwartz, Howard L. 224,294.
U.S. Philips Corp.: *See*—
Bettonica, Franco. 224,368.
Van Lelyveld, Maarten W. 224,380.
Van Kyk Research Corp.: *See*—
Hoyt, Earl E. 224,351.
Van Lelyveld, Maarten W., to U.S. Philips Corp. Dry shaver. 224,380, 7–18–72, Cl. D95—3.
Verifio Corp.: *See*—
Warner, Douglas J., and Wolf. 224,364.
Voytko, Charles: *See*—
Boucher, Raymond, and Voytko. 224,374.
Warner, Douglas J., and A. Wolf, to Verifio Corp. Automatic lung ventilator. 224,364, 7–18–72, Cl. D83—1.
Webb, Ronald C., and G. L. Lenz, to Canrad Precision Industries, Inc. Hand-Held ultraviolet light unit for dental use. 224,312, 7–18–72, Cl. D24—1.
Wiggins, William H. Tray and table combination. 224,324, 7–18–72, Cl. D33—14.
Williams, Alen R., Jr., to Sanders Associates, Inc. Keyboard operated display console. 224,321, 7–18–72, Cl. D26—5.
Wilson, Robert A.: *See*—
Dumm, Irving, III, and Wilson. 224,342.
Wilson, William H., to Rebel Boat Co., Inc. Boat. 224,362, 7–18–72, Cl. D71—1.
Wolf, Arnold: *See*—
Warner, Douglas J., and Wolf. 224,364.
Wolff, Martin J., to Sperry Rand Corp. Boot and shoe dryer. 224,309, 7–18–72. Cl. D23—77.
Woodring, Cooper C.: *See*—
Lauer, Donald G., Woodring, and Rinaldi. 224,308.
Wormser, Robert S., to Game Time, Inc. Comfort station shelter or similar article. 224,293, 7–18–72, Cl. D13—1.
Xomox Corp.: *See*—
Smith, Russell G. 224,304.

CLASSIFICATION OF PATENTS

ISSUED JULY 18, 1972

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2
202 3,676,879

CLASS 4
172.12 3,676,880

CLASS 5
63 3,676,881

CLASS 8
4 3,677,689
10 3,677,690
41 3,677,691
120 3,677,692
127.5 3,677,693
127.6 3,677,694
152 3,677,695

CLASS 9
14 3,676,882

CLASS 12
142MC 3,676,883

CLASS 15
1.7 3,676,884
3,676,885
83 3,676,886
104.8 3,676,887
245 3,676,888
320 3,676,889
328 3,676,893
339 3,676,890
346 3,676,891
359 3,676,892
362 3,676,894

CLASS 16
110 3,676,895
150 3,676,896

CLASS 17
32 3,676,897

CLASS 23
2 3,677,696
62 3,677,697
112 3,677,698
116 3,677,699
145 3,677,700
172 3,677,701
186 3,677,703
193 3,677,702
209.1 3,677,705
209.4 3,677,704
230B 3,677,707
230R 3,677,706
232R 3,677,708
254E 3,677,709
258.5 3,677,710
267A 3,677,711
273 3,677,712
277R 3,677,713
285 3,677,714
288E 3,677,716
288S 3,677,715
294 3,677,717
301R 3,677,718
325 3,677,719
357 3,677,720

CLASS 24
73PP 3,676,898
122.6 3,676,899
126L 3,676,900
191 3,676,901
230A Re.27,438
252HC 3,676,902
265WS 3,676,904
265 3,676,903

CLASS 27
6 3,676,905

CLASS 28
72FT 3,676,906

CLASS 29
1.21 3,676,907
25.16 3,676,914
110 3,676,909
116AD 3,676,908
182.2 3,677,721
182.8 3,677,722
194 3,677,723
202D 3,676,910
203H 3,676,912
203V 3,676,911
217 3,676,913
251 3,676,915
419 3,676,916
420.5 3,676,917
453 3,676,918
469 3,676,919
472.5 3,676,920
571 3,676,921
577 3,676,922
604 3,676,923
3,676,924
613 3,676,925
625 3,676,926
629 3,676,927

CLASS 30
228 3,676,928
3,676,929
257 3,676,930

CLASS 32
27 3,676,931

CLASS 33
126.7A 3,676,932
147L 3,676,933
169R 3,676,934
185R 3,676,935

CLASS 34
1 3,676,936
46 3,676,937

CLASS 35
35A 3,676,938
48R 3,676,939

CLASS 36
8.1 3,676,940

CLASS 37
2R 3,676,941

CLASS 38
143 Re.27,442

CLASS 40
124.2 3,676,942
130M 3,676,943
155 3,676,944

CLASS 42
1G 3,676,945
50 3,676,946
79 3,676,947

CLASS 43
42.45 3,676,948
124 3,676,949

CLASS 44
62 3,677,724
3,677,725
71 3,677,726

CLASS 46
14 3,676,950
114 3,676,951

CLASS 47
33 3,676,952
38.1 3,676,953

CLASS 48
206 3,677,727

CLASS 49
141 3,676,954
192 3,676,955
446 3,676,956

CLASS 51
118 3,676,957
163 3,676,958
165R 3,676,959
165.71 3,676,960
214 3,676,961
227R 3,676,962
320 3,676,963

CLASS 52
86 3,676,964
98 3,676,965
211 3,676,966
220 3,676,967
223R 3,676,968
233 3,676,969
262 3,676,973
385 3,676,970
603 3,676,971
638 3,676,972
716 3,676,974
743 3,676,975
747 3,676,976

CLASS 53
24 3,676,977
59R 3,676,978
112A 3,676,979
183 3,676,980

CLASS 55
30 3,676,981
95 3,676,982
192 3,676,983
193 3,676,984
317 3,676,985
459 3,676,987
472 3,676,986

CLASS 56
1 3,676,988
10.5 3,676,989

CLASS 57
81 3,676,990
140R 3,676,991
164 3,676,992

CLASS 58
23 3,676,993
68 3,676,994
76 3,676,995
90R 3,676,996
3,676,997
107 3,676,998

CLASS 60
13 3,676,999
39.28 3,677,000
51 3,677,001
52B 3,677,002
54 3,677,003
3,677,004
54.6A 3,677,005
54.6P 3,677,006
3,677,007
59T 3,677,008
97E 3,677,009
220 3,677,010
251 3,677,011
262 3,677,012
303 3,677,013

CLASS 61
36 3,677,014
45R 3,677,015
46 3,677,113
46.5 3,677,016
48 3,677,017
53.5 3,677,018

CLASS 62
9 3,677,019
10 3,677,020
55 3,677,021
56 3,677,022
58 3,677,023
64 3,677,024
81 3,677,025
115 3,677,026
3,677,027
200 3,677,028
305 3,677,029
353 3,677,030

CLASS 64
13 3,677,031
17A 3,677,032
28R 3,677,033

CLASS 65
19 3,677,728
30 3,677,729
36 3,677,730
102 3,677,731
133 3,677,732
268 3,677,733

CLASS 66
84 3,677,034
122 3,677,035
132R 3,677,036
147 3,677,037

CLASS 68
20 3,677,038
146 3,677,039
181R 3,677,040

CLASS 69
33 3,677,041

CLASS 70
70 3,677,042
92 3,677,043
456R 3,677,044

CLASS 71
28 3,677,736
34 3,677,734
66 3,677,735
90 3,677,737
97 3,677,738
118 3,677,739

CLASS 72
8 3,677,045
49 3,677,046
50 3,677,047
60 3,677,048
3,677,049
3,677,050
78 3,677,051
107 3,677,052
111 3,677,053
131 3,677,054
227 3,677,056
305 3,677,057
326 3,677,055
393 3,677,058
403 3,677,059
476 3,677,060

CLASS 73
1R 3,677,061
4R 3,677,062
7 3,677,063
17R 3,677,064
23 3,677,066
28 3,677,065
32 3,677,067
41 3,677,068
56 3,677,069
57 3,677,070
61.4 3,677,071
67 3,677,072
67.9 3,677,073
80 3,677,074
117.3 3,677,075
141R 3,677,078
144 3,677,076
146 3,677,077
147 3,677,079
155 3,677,080
3,677,081
181 3,677,082
194EM 3,677,083
197 3,677,084
204 3,677,085
205R 3,677,086
300 3,677,087
356 3,677,088
419 3,677,089
420 3,677,090
423A 3,677,091
432A 3,677,092
473 3,677,093
503 3,677,094
515 3,677,095

CLASS 74
5 3,677,097
5.12 3,677,098
89.2 3,677,099
112 3,677,101
143 3,677,102
217B 3,677,103
336 3,677,104
477 3,677,105
492 3,677,106
527 3,677,096
579R 3,677,107
625 3,677,108
660 3,677,100
796 3,677,109
813L 3,677,110

CLASS 75
1 3,677,740
28 3,677,741
68B 3,677,742
84.1 3,677,743
128T 3,677,744
153 3,677,745
171 3,677,746
3,677,747
3,677,748
211 3,677,749

CLASS 76
101R 3,677,111

CLASS 81
43 3,677,112

CLASS 82
2.5 3,677,114
24 3,677,115

CLASS 83
55 3,677,116
150 3,677,117
211 3,677,118
316 3,677,119
343 3,677,120
437 3,677,121
506 3,677,122
561 3,677,123

CLASS 84
258 3,677,124
271 3,677,125
312 3,677,126
402 3,677,127
422 3,677,128
453 3,677,129
471 3,677,130

CLASS 89
1.73 3,677,131
14B 3,677,132
27B 3,677,133
41E 3,677,134
42B 3,677,135

CLASS 90
62 3,677,136

CLASS 91
6 3,677,137
373 3,677,138
384 3,677,139
391 3,677,140
394 3,677,141

CLASS 92
60 3,677,142
241 3,677,143

CLASS 93
1R 3,677,144

CLASS 94
18 3,677,145

CLASS 95
1R 3,677,147
1.1 3,677,146
3,677,154
4.5R 3,677,148
10CE 3,677,151
10C 3,677,149
10R 3,677,150
11R 3,677,152
3,677,153
11.5R 3,677,156
3,677,157
11.5 3,677,158
31EL 3,677,159
40 3,677,160
44C 3,677,155
45 3,677,161
47 3,677,162
90.5 3,677,163

CLASS 96
1LY 3,677,766
1R 3,677,750
3,677,751
1.6 3,677,752
29 3,677,753
35.1 3,677,754
3,677,755
36 3,677,756
36.1 3,677,757
3,677,758
48 3,677,759
50PT 3,677,760
66.5 3,677,761
74 3,677,762
82 3,677,763
100 3,677,764
124 3,677,765

CLASS 98
40DL 3,677,165
40D 3,677,164
94 3,677,166

CLASS 99
6 3,677,767
83 3,677,768
86 3,677,769
134R 3,677,770
3,677,771
140N 3,677,773
140R 3,677,772
171B 3,677,774
174 3,677,775
234S 3,677,168
234 3,677,167
256 3,677,169
337 3,677,170
339 3,677,171
347 3,677,172
357 3,677,173
417 3,677,174

CLASS 100
35 3,677,175

CLASS 101
96 3,677,176
228 3,677,177
450 3,677,178

CLASS 102
24R 3,677,180
52 3,677,181
56 3,677,179
66 3,677,182
67 3,677,183
70.2P 3,677,184
78 3,677,185
83 3,677,186

CLASS 104
10 3,677,187
120 3,677,188
124 3,677,189
172B 3,677,190

CLASS 105
197D 3,677,363
248 3,677,191
368B 3,677,194
368R 3,677,192
3,677,193
369A 3,677,195
377 3,677,196
378 3,677,197
420 3,677,198

CLASS 106
1 3,677,776
15AF 3,677,777
39DV 3,677,785
47Q 3,677,778
58 3,677,779
90 3,677,780
100 3,677,781
288Q 3,677,782
292 3,677,783
309 3,677,784
310 Re.27,433

CLASS 108
55 3,677,199
58 3,677,200
3,677,201
109 3,677,202
111 3,677,203

CLASS 110
1 3,677,204

CLASS 112
2 3,677,205
79R 3,677,206
118 3,677,207
178 3,677,208
240 3,677,209
258 3,677,210

CLASS 113
121AA 3,677,211

CLASS 114
61 3,677,212

67A 3,677,213
218 3,677,214

CLASS 115

16 3,677,215
24.1 3,677,216
31 3,677,217

CLASS 116

70 3,677,218
80 3,677,219
118 3,677,220
135 3,677,221

CLASS 117

1.7 3,677,786
.2R 3,677,787
11 3,677,788
22 3,677,789
33.3 3,677,790
33.5CM 3,677,791
35V 3,677,792
38 3,677,793
45 3,677,794
46CG 3,677,795
56 3,677,802
62.1 3,677,798
70A 3,677,796
71M 3,677,797
93.1R 3,677,799
93.31 3,677,800
94 3,677,801
3,677,803
100A 3,677,804
102A 3,677,805
104R 3,677,806
105 3,677,807
105.3 3,677,808
119.6 3,677,809
138.8E 3,677,811
138.8F 3,677,810
139.5A 3,677,812
142 3,677,813
211 3,677,814
215 3,677,815
217 3,677,816
235 3,677,817

CLASS 118

7 3,677,222
10 3,677,223
63 3,677,224
70 3,677,226
415 3,677,227
422 3,677,228

CLASS 119

16 3,677,229
51 3,677,230
75 3,677,231
146 3,677,232
157 3,677,233

CLASS 122

240A 3,677,234

CLASS 123

8.35 3,677,235
32EA 3,677,236
32G 3,677,256
97B 3,677,237
117A 3,677,238
119DB 3,677,241
119A 3,677,239
119B 3,677,240
148E 3,677,253
3,677,254
3,677,255

CLASS 124

8 3,677,257

CLASS 125

23C 3,677,258

CLASS 126

194 3,677,259

CLASS 127

46R 3,677,818

CLASS 128

2.06A 3,677,260
2.1Z 3,677,261
6 3,677,262
24.1 3,677,263
62A 3,677,264
80C 3,677,265
132D 3,677,266
132 3,677,225
145.8 3,677,267
172.1 3,677,268
214C 3,677,242
214.4 3,677,243
3,677,244
218G 3,677,246
218S 3,677,245
221 3,677,247
227 3,677,248
290 3,677,249
348 3,677,250
419P 3,677,251
454 3,677,252

CLASS 131

134 3,677,269

CLASS 132

48R 3,677,270
79 3,677,271

CLASS 134

2 3,677,819
25A 3,677,820
42 3,677,821
93 3,677,272
127 3,677,273

CLASS 135

24 3,677,274

CLASS 136

83T 3,677,822
86C 3,677,823
175 3,677,824
202 3,677,825

CLASS 137

13 3,677,275
14 3,677,276
54 3,677,277
81.5 3,677,278
197 3,677,279
270 3,677,281
283 3,677,282
338 3,677,283
351 3,677,284
357 3,677,285
469 3,677,286
491 3,677,287
501 3,677,288
527.8 3,677,289
528 3,677,290
544 3,677,292
554 3,677,291
561 3,677,293
572 3,677,294
596.12 3,677,295
596.16 3,677,826
606 3,677,296
625.28 3,677,297
625.64 3,677,298

CLASS 138

26 3,677,299
42 3,677,300
92 3,677,301
106 3,677,302
109 3,677,303

CLASS 139

99 3,677,305
127P 3,677,304
188 3,677,306
353 3,677,307

CLASS 140

93.6 3,677,308
149 3,677,309

CLASS 141

1 3,677,310
3,677,311

CLASS 143

46F 3,677,312
68F 3,677,313

CLASS 146

49B 3,677,314
224 3,677,315
242 3,677,316

CLASS 148

6.14R 3,677,827
6.15R 3,677,828
6.35 3,677,829
12.7 3,677,830
12.9 3,677,831
31.5 3,677,832
32.5 3,677,835
33.2 3,677,833
36 3,677,834
171 3,677,836
175 3,677,837
187 3,677,838

CLASS 149

19 3,677,839
3,677,840
92 3,677,841
109 3,677,842
3,678,140

CLASS 150

28R 3,677,317

CLASS 152

356 3,677,318
361 3,677,319

CLASS 156

2 3,677,844
3 3,677,843
3,677,845
8 3,677,846
3,677,847
17 3,677,848
53 3,677,849
62.2 3,677,850
73 3,677,851
127 3,677,852
160 3,677,853
173 3,677,854
181 3,677,855
187 3,677,856
210 3,677,857
219 3,677,858
250 3,677,859
299 3,677,860
380 3,677,861
392 3,677,862
500 3,677,863
505 3,677,864
577 3,677,865
584 3,677,866

CLASS 157

1.1 3,677,320

CLASS 159

48 3,677,321

CLASS 160

135 3,677,322

CLASS 161

14 3,677,867
37 3,677,868
42 3,677,869
43 3,677,870
84 3,677,871
93 3,677,872
109 3,677,873
116 3,677,874
117 3,677,875
160 3,677,878
164 3,677,877
165 3,677,876
170 3,677,879
173 3,677,880
178 3,677,881
189 3,677,882
251 3,677,883
262 3,677,884

CLASS 162

45 3,677,885
72 3,677,886
140 3,677,887
164 3,677,888

CLASS 164

52 3,677,323
60 3,677,324
73 3,677,325
108 3,677,330
122 3,677,331
133 3,677,332
154 3,677,333

CLASS 165

1 3,677,326
3,677,327
11 3,677,334
12 3,677,335
47 3,677,328
105 3,677,329
3,677,336
3,677,337
111 3,677,338
162 3,677,339

CLASS 166

124 3,677,341
247 3,677,342
252 3,677,343
3,677,344
315 3,677,340
3,677,345
3,677,346

CLASS 169

1A 3,677,347

CLASS 172

2 3,677,348
285 3,677,349
789 3,677,350

CLASS 173

57 3,677,351
73 Re.27,434

CLASS 174

84R 3,678,174
92 3,678,175
94R 3,678,176
113C 3,678,177
152R 3,678,178

CLASS 175

7 3,677,352
25 3,677,353
76 3,677,354
215 3,677,355

CLASS 176

3 3,677,889
5 3,677,890
36R 3,677,891
40 3,677,892
68 3,677,894
78 3,677,893

CLASS 177

15BC 3,678,204
188 3,677,357
190 3,677,356

CLASS 178

4.1 3,678,179
5 3,678,180
5.2R 3,678,181
5.4SD 3,678,185
5.4ST 3,678,184
5.4R 3,678,182
5.8AF 3,678,183
6.6FS 3,678,186
6.6R 3,678,188
6.7R 3,678,187
3,678,189
6.8 3,678,190
7.2 3,678,195
7.5D 3,678,196
7.5E 3,678,191
7.83 3,678,192
18 3,678,193
22 3,678,198
68 3,678,194
69.5TV 3,678,199
69.5R 3,678,200

CLASS 179

1AT 3,678,202
1SA 3,678,201
6.3R 3,678,203
15AQ 3,678,205
18BC 3,678,207
18EB 3,678,197
18GE 3,678,208
18J 3,678,206
100.1A 3,678,209
100.2CA 3,678,210
3,678,219
100.2C 3,678,218
100.2P 3,678,211
3,678,216
100.2S 3,678,220
3,678,221
100.2T 3,678,214
3,678,217
100.2Z 3,678,212
3,678,213
3,678,215
175.31R 3,678,222

CLASS 180

6.48 3,677,362
44R 3,677,358
121 3,677,359
124 3,677,360
127 3,677,361

CLASS 181

36R 3,677,364
72 3,677,365

CLASS 182

70 3,677,366
136 3,677,367
139 3,677,368

CLASS 184

1.5 3,677,369

CLASS 187

31 3,677,370

CLASS 188

1C 3,677,371
73.3 3,677,372
73.6 3,677,373
138 3,677,375
329 3,677,374
341 3,677,376

CLASS 191

1A 3,678,226

CLASS 192

18B 3,677,377
54R 3,677,378
91R 3,677,379
105BA 3,677,380
106F 3,677,381

CLASS 193

35A 3,677,383
35B 3,677,382

CLASS 195

28R 3,677,895
31R 3,677,896
55 3,677,897
62 3,677,898
66R 3,677,899
3,677,900
3,677,901
3,677,902
103.5R 3,677,903
3,677,904

CLASS 197

16 3,677,384
19 3,677,385
53 3,677,386
98 3,677,387

CLASS 198

16 Re.27,439
3,677,388
31AB 3,677,389
33R 3,677,390
35 3,677,391
36 3,677,392
85 3,677,393
127 3,677,394
220DA 3,677,395

CLASS 200

11G 3,678,223
19M 3,678,224
38BA 3,678,225
38R 3,678,227
42T 3,678,228
3,678,229
50A 3,678,230
81R 3,678,231
84C 3,678,232
148B 3,678,234
166E 3,678,237
168G 3,678,235
169PB 3,678,236

CLASS 202

172 3,677,905

CLASS 204

13 3,677,906
16 3,677,907
38B 3,677,908
43 3,677,909
49 3,677,912
3,677,913
54R 3,677,910
59QM 3,677,911
59R 3,677,914
3,677,915
3,677,916
99 3,677,917
105R 3,677,918
113 3,677,919
159.15 3,677,920
159.19 3,677,921
159.21 3,677,922
180P 3,677,923
192 3,677,924
195R 3,677,925
224 3,677,928
243R 3,677,926
258 3,677,927
286 3,677,929
299 3,677,930
312 3,677,931

CLASS 206

1R 3,677,396
42 3,677,397
45.34 3,677,398
46AM 3,677,399
75 3,677,400

CLASS 208

108 3,677,932
109 3,677,933
323 3,677,934

CLASS 209

73 3,677,401
270 3,677,402
308 3,677,403

CLASS 210

3 3,677,935
15 3,677,936
19 3,677,937
31 3,677,938
36 3,677,939
44 3,677,940
67 3,677,404
71 3,677,405
75 3,677,406
83 3,677,407
169 3,677,408
195 3,677,409
198 3,677,410
393 3,677,411
440 3,677,412
502 3,677,413

CLASS 211

13 3,677,414
59 3,677,415
148 3,677,416

CLASS 212

145 3,677,417

CLASS 214

1BV 3,677,419
1QC 3,677,418
16.4A 3,677,420
3,677,421
17D 3,677,422
18R 3,677,423
77 3,677,424
85.1 3,677,425
138R 3,677,426
140 3,677,427
147G 3,677,428

CLASS 215

11C 3,677,429
41 3,677,430
43 3,677,431

CLASS 219

10.55 3,678,238
60A 3,678,239
69D 3,678,240
72 3,678,241
118 3,678,242
301 3,678,243
388 3,678,244
396 3,678,245
437 3,678,246
501 3,678,247
525 3,678,248
544 3,678,249

CLASS 220

3 3,677,432
4R 3,677,433
59 3,677,434
60R 3,677,435
97B 3,677,436

CLASS 221

7 3,677,437
63 3,677,438
251 3,677,439
279 3,677,440

CLASS 222

23 3,677,540
63 3,677,441
70 3,677,442
94 3,677,443
135 3,677,444
153 3,677,445
177 3,677,446
193 3,677,447
387 3,677,448

CLASS 224

4E 3,677,449
3,677,450
42.1F 3,677,451

CLASS 225

11 3,677,452
93 3,677,453
99 3,677,454

CLASS 226

49 3,677,455

CLASS 227

8 3,677,456
3,677,457

CLASS 229

27 3,677,458
52A 3,677,459
85 3,677,460

CLASS 232

15 3,677,461

CLASS 235

54R 3,677,462
58CW 3,677,463
60TK 3,677,464
61L 3,677,466
61.11A 3,678,251
61.11R 3,678,250
61.7R 3,677,465
78 3,677,467
92EV 3,678,252
92FL 3,678,253
92PK 3,678,254
144PN 3,677,468
145R 3,678,255
150.2 3,678,256
150.53 3,678,258
151.34 3,678,257
156 3,678,259

CLASS 238

10E 3,677,469

CLASS 239

15 3,677,470
85 3,677,471
230 3,677,472
251 3,677,473
587 3,677,474

CLASS 240

1.2 3,678,260
52 3,678,263
84 3,678,264
3,678,265
90 3,678,266
151 3,678,261

CLASS 241

20 3,677,475
21 3,677,476
31 3,677,477
82 3,677,478
183 3,677,479

CLASS 242

1.1R 3,677,480
18R 3,677,481
3,677,482
25R 3,677,483

54R 3,677,484
55.3 3,677,485
56R 3,677,505
67.4 3,677,486
71.2 3,677,487
129.72 3,677,489
163 3,677,490
3,677,491
164 3,677,492
191 3,677,493
194 3,677,494
197 3,677,495
199 3,677,496
3,677,497
207 3,677,498
210 3,677,499

CLASS 244

1SS 3,677,508
3.13 3,677,500
12B 3,677,501
13 3,677,502
23 3,677,503
42CC 3,677,504
103R 3,677,488
137 3,677,506
3,677,507

CLASS 248

187 3,677,509
441 3,677,510
448 3,677,511

CLASS 249

48 3,677,512

CLASS 250

41.9SB 3,678,267
43.5D 3,678,268
43.5R 3,678,262
3,678,269
49.5B 3,678,270
71R 3,678,272
71.5R 3,678,271
83R 3,678,273
83.3H 3,678,276
83.3R 3,678,277
83.6R 3,678,274
3,678,275
86 3,678,233
108R 3,678,278
203 3,678,279
213A 3,678,280
216 3,678,281
3,678,283
219FR 3,678,282

CLASS 251

148 3,677,513
3,677,514
149.7 3,677,515
174 3,677,516
366 3,677,517

CLASS 252

8.1 3,677,942
8.55R 3,677,941
46.7 3,677,943
48.4 3,677,944
49.6 3,677,945
51.5A 3,677,946
62.54 3,677,947
78 3,677,948
79.4 3,677,949
79.5 3,677,950
92 3,677,951
94 3,677,952
103 3,677,953
121 3,677,954
162 3,677,955
180 3,677,956
188.3 3,677,957
301.1R 3,677,958
301.2R 3,677,959
301.4F 3,677,960
316 3,677,961
345 3,677,962
358 3,677,963
364 3,677,964
403 3,677,965
408 3,677,966
3,677,967
431N 3,677,968
431R 3,677,969
431 3,677,970
455R 3,677,971
455Z 3,677,972
3,677,973
514 3,677,974
518 3,677,975

CLASS 254

93R 3,677,518
131 3,677,519
173 3,677,520
183 3,677,521

CLASS 259

4 3,677,522
69 3,677,523
72 3,677,524

CLASS 260

2EP 3,677,978
2H 3,677,976
2.2C 3,677,979
2.5AT 3,677,983
2.5HA 3,677,980
2.5R Re.27,444
3,677,982
2.5S 3,677,981
18S 3,678,002
21 3,677,984
27R 3,677,985
29.3 3,677,986
29.6WB 3,677,990
29.6H 3,677,989
3,677,991
29.6M 3,677,987
29.6S 3,677,988
32.8N 3,677,992
33.2SB 3,677,997
33.6SB 3,677,998
33.6A 3,677,993
37EP 3,677,995
37PC 3,678,079
37R 3,677,994
38 3,677,999
45.75N 3,678,000
3,678,001
46.5G 3,677,996
3,678,003
47CP 3,678,005
47EC 3,678,004
47EN 3,678,007
47R 3,677,977
3,678,006
51.5 3,678,103
65 3,678,008
75NH 3,678,011
75NP 3,678,009
75T 3,678,010
77.5AR 3,678,012
77.5CR 3,678,014
77.5R 3,678,013
78UA 3,678,015
78.4D 3,678,016
79.5B 3,678,017
80.78 3,678,018
3,678,019
3,678,020
80.81 3,678,021
88.7 3,678,022
89.5N 3,678,098
93.7 3,678,023
94.9GA 3,678,024
94.9E 3,678,025
112.5 3,678,026
3,678,027
186 3,678,028
210.5 3,678,029
211.5R 3,678,030
231CM 3,678,031
239BD 3,678,036
239E 3,678,035
239.1 3,678,032
3,678,037
239.3B 3,678,033
239.3D 3,678,038
3,678,043
239.55 3,678,034
239.6 3,678,039
240CA 3,678,042
240A 3,678,040
3,678,041
240F 3,678,044
240.4 3,678,045
244R 3,678,046
247.2B 3,678,048
248CS 3,678,049
248NS 3,678,047
250R 3,678,050
267 3,678,051
268R 3,678,052
272 3,678,053
279R 3,678,054
290R 3,678,055
293.52 3,678,056
293.54 3,678,057
3,678,058
295.5A 3,678,060
295.5B 3,678,059
296B 3,678,062
296R 3,678,061
3,678,063
306.7 3,678,064
307F 3,678,065
309.2 3,678,066
326C 3,678,071
3,678,073
326.5B 3,678,072
327M 3,678,074
3,678,075
330.5 3,678,076
332.3P 3,678,070
335 3,678,077
348R 3,678,078
396R 3,678,080
397.5 3,678,081
413 3,678,083
424 3,678,084
429CY 3,678,088
429R 3,678,085
429.9 3,678,086
435R 3,678,087
448.2N 3,678,089
465.3 3,678,090
3,678,091
468R 3,678,092
3,678,093
471R 3,678,094
473S 3,678,095
482R 3,678,067
484A 3,678,069
484R 3,678,068
3,678,096
486R 3,678,097
497R 3,678,099
502.4R 3,678,100
512R 3,678,101
514R 3,678,102
521R 3,678,104
524R 3,678,105
3,678,106
531R 3,678,107
563D 3,678,108
564R 3,678,109
567.6M 3,678,110
570 3,678,111
578 3,678,112
3,678,113
580 3,678,114
603HF 3,678,139
609F 3,678,115
619F 3,678,116
619R 3,678,117
641 3,678,118
666PY 3,678,119
668A 3,678,120
668B 3,678,121
671A 3,678,122
671R 3,678,123
680E 3,678,124
827 3,678,125
3,678,126
830P 3,678,127
837R 3,678,130
3,678,131
850 3,678,128
859PV 3,678,129
876B 3,678,134
876R 3,678,132
3,678,133
889 3,678,135
897C 3,678,136
944 3,678,137

CLASS 261

1 3,677,525
23A 3,677,526
76 3,677,527
87 3,677,528
129 3,677,529

CLASS 263

3 3,677,530
6R 3,677,531
19A 3,677,532
52 3,677,533

CLASS 264

3R 3,678,138
22 3,678,141
25 3,678,142
30 3,678,143
42 3,678,144
115 3,678,145
313 3,678,146
325 3,678,147

CLASS 266

20 3,677,534

CLASS 267

63 3,677,535

CLASS 270

31 3,677,536

CLASS 271

29 3,677,537
76 3,677,538

CLASS 272

1B 3,677,539
33R 3,677,541
82 3,677,543

CLASS 273

26D 3,677,544
67A 3,677,542
102.1C 3,677,545
102.2R 3,677,546
109 3,677,547
130R 3,677,548
135R 3,677,549
137R 3,677,550
183B 3,677,551
184B 3,677,552
186A 3,677,553

CLASS 274

3 3,677,554
4B 3,677,557
4C 3,677,556
4F 3,677,555

CLASS 277

138 3,677,558

CLASS 279

1Q 3,677,559
47 3,677,560

CLASS 280

11.35C 3,677,567
11.35T 3,677,566
21R 3,677,568
32.6 3,677,569
33.99A 3,677,570
36R 3,677,571
39 3,677,572
43.1 3,677,573
43.13 3,677,574
47.19 Re.27,437
124F 3,677,561
179A 3,677,562
425R 3,677,563
457 3,677,564
499 3,677,565

CLASS 285

3 3,677,575
43 3,677,576
137R 3,677,577
162 3,677,578
169 3,677,579
184 3,677,580
292 3,677,581

CLASS 287

49 3,677,582
3,677,584
52.06 3,677,583
87 3,677,585
3,677,586
3,677,587
189.36A 3,677,589
189.36F 3,677,588

CLASS 289

1.5 Re.27,441

CLASS 290

1 3,678,284
40 3,678,285

CLASS 291

3 3,677,590

CLASS 292

221 3,677,591
288 3,677,592
356 3,677,593

CLASS 293

67 3,677,594
73 3,677,595

CLASS 294

19R 3,677,597
19 3,677,596
64R 3,677,598
67DA 3,677,599

CLASS 296

27 3,677,600

CLASS 297

441 3,677,601

CLASS 299

31 3,677,602
3,677,603
67 3,677,604

CLASS 303

6C 3,677,605
3,677,606
10 3,677,607
21BE 3,677,609
21F 3,677,608
3,677,610
84A 3,677,611

CLASS 307

38 3,678,286
88LC 3,678,287
113 3,678,288
149 3,678,289
202 3,678,291
205 3,678,290
207 3,678,292
214 3,678,293
230 3,678,294
231 3,678,296
235 3,678,295
251 3,678,297
270 3,678,298
275 3,678,299
288 3,678,300
289 3,678,301
299 3,678,302

CLASS 308

5 3,677,612
135 3,677,613

CLASS 310

3R 3,678,303
8 3,678,304
8.1 3,678,305
8.5 3,678,309
11 3,678,306
22 3,678,307
36 3,678,308
40MM 3,678,310
156 3,678,311
185 3,678,312
236 3,678,313
268 3,678,314

CLASS 312

108 3,677,614
346 3,677,615

CLASS 313

27 3,678,315
69C 3,678,316
69R 3,678,317
70C 3,678,318
78 3,678,321
201 3,678,322
231 3,678,323
236 3,678,324
271 3,678,319
346 3,678,325

CLASS 315

3.6 3,678,326
5.39 3,678,327
12 3,678,328
13R 3,678,329
3,678,330
27TD 3,678,331
27R 3,678,332
31 3,678,333
111 3,678,334
267 Re.27,443

CLASS 317

3 3,678,336
4 3,678,337
11A 3,678,335
18R 3,678,338
58 3,678,339
61 3,678,340
61.5 3,678,341
100 3,678,342
3,678,343
137 3,678,344
230 3,678,345
234R 3,678,346
235R 3,677,280
3,678,347
235 Re.27,440
3,678,348
243 3,678,349
262A 3,678,350

CLASS 318

61 3,678,351
138 3,678,352
203R 3,678,355
211 3,678,353
245 3,678,357
254 3,678,358
3,678,359
294 3,678,354
332 3,678,360
341 3,678,356
473 3,678,361

CLASS 320

1 3,678,362
24 3,678,363

CLASS 321

7 3,678,367
8R 3,678,365
3,678,366
11 3,678,368
69R 3,678,369

CLASS 323

4 3,678,370
6 3,678,371
45 3,678,372
75N 3,678,373
90 3,678,374

CLASS 324

29 3,678,375
54 3,678,376
55 3,678,377
61R 3,678,378
73 3,678,379
83A 3,678,380
95 3,678,381
140R 3,678,382
154R 3,678,383
158F 3,678,385
158R 3,678,384
174 3,678,386

CLASS 325

4 3,678,387
3,678,388
38R 3,678,389
46 3,678,390
55 3,678,391
392 3,678,392
410 3,678,393
423 3,678,394
3,678,397
446 3,678,395
474 3,678,396

CLASS 328

48 3,678,398
134 3,678,399

CLASS 329

117 3,678,364

CLASS 330

4 3,678,400
5.5 3,678,401
9 3,678,402
13 3,678,403
22 3,678,404
26 3,678,405
29 3,678,406
35 3,678,407
207P 3,678,408

CLASS 331

94.5 3,678,409
3,678,410
3,678,411
112 3,678,412

CLASS 332

9R 3,678,413

CLASS 333

7 3,678,414
9 3,678,415
17 3,678,416
22R 3,678,417
26 3,678,418
70S 3,678,419
73S 3,678,433
95R 3,678,420

CLASS 334

15 3,678,421

CLASS 335

112 3,678,422
154 3,678,423
206 3,678,424
207 3,678,425
234 3,678,426
284 3,678,436
304 3,678,427

CLASS 336

84 3,678,428
170 3,678,429

CLASS 337

159 3,678,430
185 3,678,431
201 3,678,432

CLASS 338

196 3,678,434
263 3,678,435

CLASS 339

18C 3,678,437
29B 3,678,438
46 3,678,439
61R 3,678,440
94R 3,678,441
111 3,678,442
119L 3,678,443
130C 3,678,444
143R 3,678,445
177E 3,678,446
3,678,447
217S 3,678,448
225 3,678,449
226 3,678,450
258R 3,678,451

CLASS 340

3R 3,678,452
15 3,678,453
15.5R 3,678,454
63 3,678,455
87 3,678,456
107 3,678,457
3,678,458
166R 3,678,459
167R 3,678,460
172.5 3,678,461
3,678,462
3,678,463
3,678,464
3,678,465
3,678,466
3,678,467
3,678,468
3,678,469
3,678,470
3,678,471
3,678,483
173CA 3,678,473
173LT 3,678,472
173SP 3,678,476
173R 3,678,474
3,678,477
174SP 3,678,475

CLASSIFICATION OF PATENTS

174TF	3,678,478		3,678,507		3,677,627	85	3,677,642	474	3,677,667	246	3,678,166
	3,678,479	347NT	3,678,502	128	3,677,628	103	3,677,650		CLASS 418	248	3,678,167
174.1C	3,678,481		3,678,506	225	3,677,629	126	3,677,651	45	3,677,668	250	3,678,168
174.1E	3,678,480	392	3,678,508		CLASS 353	183	3,677,652		CLASS 424	263	3,678,169
	3,678,482	408	3,678,512	15	3,677,630	256	3,677,653	1	3,678,148	283	3,678,170
174.1H	3,678,484	409	3,678,509	83	3,677,631		CLASS 401	3	3,678,151	300	3,678,171
177R	3,678,485	410	3,678,510		CLASS 355	63	3,677,654	5	3,678,152	306	3,678,172
227	3,678,486	414	3,678,513	2	3,677,634		CLASS 408	8	3,678,149	329	3,678,173
236	3,678,487	420	3,678,511	3	3,677,632	1	3,677,655	12	3,678,150		CLASS 425
	3,678,488		CLASS 346	7	3,677,633	76	3,677,656	52	3,678,153	6	3,677,669
237R	3,678,489	29	Re.27,436	11	3,677,635	241G	3,677,657		3,678,154	62	3,677,670
244E	3,678,490		CLASS 350	18	3,677,636		CLASS 415		3,678,155	78	3,677,671
253C	3,678,491	3.5	3,677,616	45	3,677,637	108	3,677,658	68	3,678,156		3,677,672
258B	3,678,492		3,677,617	74	3,677,638	111	3,677,659	71	3,678,157		3,677,673
269	3,678,493	16	3,677,618	76	3,677,639	172	3,677,660	94	3,678,158	107	3,677,674
279	3,678,494	110	3,677,619	78	3,677,640	199	3,677,661	116	3,678,159	109	3,677,675
323	3,678,495	145	3,677,620	83	3,677,641		CLASS 416	117	3,678,160	119	3,677,676
	3,678,496	157	3,677,621	91	3,677,643	183	3,677,662	122	3,678,161	129	3,677,677
324A	3,678,497	163	3,677,622	96	3,677,644		3,677,663	180	3,678,162	145	3,677,678
	3,678,498	321	3,677,623		CLASS 356		CLASS 417	203	3,678,163	167	3,677,679
336	3,678,499		CLASS 352	2	3,677,645	310	3,677,664	204	3,678,164	192	3,677,680
347AD	3,678,500	73	3,677,624	4	3,677,646	410	3,677,665	211	3,678,165	314	Re.27,435
	3,678,501	91	3,677,625	28	3,677,647	424	3,677,666			393	3,677,682
	3,678,505	109	3,677,626	40	3,677,648					450	3,677,683
347DA	3,678,504			74	3,677,649					452	3,677,684
347DD	3,678,503									457	3,677,685
										468	3,677,686
											3,677,687
											3,677,688

CLASSIFICATION OF DESIGNS

D 2—	232 224,281	D14—	3 224,298		224,320		224,332		224,348	D86—	10 224,365
	234 224,282		6 224,299		224,321	D35—	3 224,333		224,349	D87—	1 224,366
	408 224,283		224,300		224,352	D44—	1 224,334	D61—	224,350		224,367
D 5—	2 224,284		24 224,301	14	224,313		224,335		224,351		224,368
D 6—	71 224,285	D23—	4 224,304		224,315		9 224,336	D64—	10 224,353		3 224,370
D 9—	116 224,286		17 224,305		224,316		29 224,337	D65—	1 224,354	D88—	224,371
	157 224,287		43 224,303		224,317	D48—	20 224,338		224,355	D89—	1 224,372
	185 224,288		52 224,306		224,322		27 224,339		224,356	D90—	6 224,373
	187 224,289		55 224,302		224,323		77 224,309		224,357		8 224,374
	191 224,290		58 224,307	D33—	224,324	D52—	2 224,340		224,358		20 224,375
	216 224,291		224,308	D34—	2 224,325		7 224,341		224,359		224,376
D13—	1 224,292		127 224,310		5 224,326	D54—	1 224,342		224,360		224,377
	224,293		150 224,311		224,327		12 224,343	D71—	224,361		224,378
	224,294	D24—	1 224,312		224,328		224,344		224,362		224,379
	224,295	D26—	224,318		224,329		224,345		224,363	D95—	3 224,380
	224,296		224,319		224,330	D56—	4 224,346	D83—	224,364		
	224,297		5 224,314	15	224,331	D57—	1 224,347				

CLASSIFICATION OF PLANTS

P. —	57	3,240	P. —	79	3,236	P. — 85	3,237	P. —	3,238	P. —	88	3,239

DEFENSIVE PUBLICATIONS APPLICATIONS

[Notice of Dec. 16, 1969, 869 O.G. 6877]

8—	168 T900,007		77 T900,012		T900,009	204—	1T T900,005		244R T900,001	340—	172.5 T900,006
23—	2C T900,004		115R T900,011	156— 306	T900,003	260—	29.4UA T900,008		475PR T900,013	350—	96B T900,002
96—	50 T900,010										

GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

(U.S. States, Territories and Armed Forces, the Commonwealth of Puerto Rico, and the Canal Zone)

Alabama	1	Kentucky	21	Oregon	41
Alaska	2	Louisiana	22	Pennsylvania	42
American Samoa	3	Maine	23	Puerto Rico	43
Arizona	4	Maryland	24	Rhode Island	44
Arkansas	5	Massachusetts	25	South Carolina	45
California	6	Michigan	26	South Dakota	46
Canal Zone	7	Minnesota	27	Tennessee	47
Colorado	8	Mississippi	28	Texas	48
Connecticut	9	Missouri	29	Utah	49
Delaware	10	Montana	30	Vermont	50
District of Columbia	11	Nebraska	31	Virginia	51
Florida	12	Nevada	32	Virgin Islands	52
Georgia	13	New Hampshire	33	Washington	53
Guam	14	New Jersey	34	West Virginia	54
Hawaii	15	New Mexico	35	Wisconsin	55
Idaho	16	New York	36	Wyoming	56
Illinois	17	North Carolina	37	U.S. Air Force	57
Indiana	18	North Dakota	38	U.S. Army	58
Iowa	19	Ohio	39	U.S. Navy	59
Kansas	20	Oklahoma	40		

(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

1 :	3,677,010	3,677,273	3,677,706	3,678,411		3,678,220	3,677,196
	3,677,168	3,677,280	3,677,708	3,678,431		3,678,260	3,677,211
	3,677,449	3,677,282	3,677,711	3,678,437		3,678,285	3,677,214
	3,677,538	3,677,285	3,677,781	3,678,438		3,678,288	3,677,226
	3,677,839	3,677,288	3,677,795	3,678,440		3,678,357	3,677,290
	3,677,867	3,677,298	3,677,841	3,678,441	10 :	3,676,902	3,677,322
	3,678,088	3,677,302	3,677,875	3,678,445		3,677,530	3,677,331
	3,678,249	3,677,308	3,677,889	3,678,450		3,677,802	3,677,348
	3,678,291	3,677,310	3,677,890	3,678,459		3,677,845	3,677,350
4 :	3,676,976	3,677,329	3,677,895	3,678,462		3,677,908	3,677,358
	3,677,022	3,677,336	3,677,903	3,678,471		3,678,109	3,677,362
	3,677,923	3,677,341	3,677,904	3,678,473		3,678,117	3,677,370
	3,677,935	3,677,343	3,677,916	3,678,476		3,678,136	3,677,395
5 :	3,678,147	3,677,352	3,677,921	3,678,479		3,678,171	3,677,400
6 :	Re.27,436	3,677,393	3,677,971	3,678,480	12 :	3,676,895	3,677,407
	3,676,880	3,677,401	3,677,976	3,678,481		3,676,922	3,677,415
	3,676,899	3,677,430	3,678,000	3,678,482		3,677,065	3,677,416
	3,676,912	3,677,432	3,678,001	3,678,492		3,677,247	3,677,418
	3,676,934	3,677,437	3,678,006	3,678,493		3,677,284	3,677,431
	3,676,948	3,677,445	3,678,044	3,678,507		3,677,294	3,677,434
	3,676,950	3,677,463	3,678,099	3,678,513		3,677,351	3,677,451
	3,676,954	3,677,469	3,678,130	3,677,067	8 :	3,677,379	3,677,456
	3,676,972	3,677,472	3,678,131	3,677,344		3,677,414	3,677,457
	3,676,989	3,677,474	3,678,174	3,678,313		3,677,424	3,677,461
	3,677,001	3,677,488	3,678,190	3,678,466		3,677,475	3,677,489
	3,677,008	3,677,494	3,678,191	3,676,881	9 :	3,677,529	3,677,495
	3,677,011	3,677,506	3,678,201	3,677,109		3,677,635	3,677,511
	3,677,017	3,677,507	3,678,219	3,677,123		3,677,637	3,677,540
	3,677,020	3,677,508	3,678,247	3,677,130		3,677,701	3,677,541
	3,677,025	3,677,509	3,678,251	3,677,165		3,677,830	3,677,545
	3,677,043	3,677,512	3,678,256	3,677,202		3,677,853	3,677,551
	3,677,044	3,677,513	3,678,264	3,677,218		3,678,382	3,677,555
	3,677,062	3,677,528	3,678,269	3,677,286	13 :	3,677,203	3,677,561
	3,677,071	3,677,532	3,678,277	3,677,392		3,677,389	3,677,578
	3,677,074	3,677,533	3,678,283	3,677,422		3,677,655	3,677,592
	3,677,077	3,677,543	3,678,289	3,677,468		3,677,700	3,677,596
	3,677,079	3,677,581	3,678,290	3,677,547		3,677,827	3,677,614
	3,677,117	3,677,612	3,678,298	3,677,570	17 :	Re.27,435	3,677,627
	3,677,139	3,677,618	3,678,308	3,677,597		Re.27,439	3,677,630
	3,677,146	3,677,620	3,678,323	3,677,823		Re.27,443	3,677,683
	3,677,159	3,677,623	3,678,330	3,677,828		3,676,894	3,677,684
	3,677,167	3,677,626	3,678,333	3,677,835		3,676,914	3,677,735
	3,677,172	3,677,642	3,678,348	3,677,929		3,676,923	3,677,739
	3,677,195	3,677,652	3,678,360	3,677,936		3,676,945	3,677,743
	3,677,204	3,677,653	3,678,381	3,677,949		3,676,982	3,677,746
	3,677,221	3,677,654	3,678,388	3,677,950		3,677,003	3,677,747
	3,677,223	3,677,656	3,678,389	3,677,957		3,677,016	3,677,748
	3,677,224	3,677,661	3,678,391	3,678,129		3,677,054	3,677,758
	3,677,248	3,677,666	3,678,395	3,678,135		3,677,061	3,677,775
	3,677,260	3,677,669	3,678,397	3,678,181		3,677,121	3,677,778
	3,677,263	3,677,680	3,678,409	3,678,187		3,677,169	3,677,783

3,677,786
3,677,791
3,677,832
3,677,856
3,677,891
3,677,893
3,677,945
3,677,973
3,677,995
3,678,004
3,678,082
3,678,087
3,678,104
3,678,116
3,678,120
3,678,122
3,678,176
3,678,208
3,678,235
3,678,241
3,678,255
3,678,271
3,678,295
3,678,324
3,678,336
3,678,344
3,678,364
3,678,375
3,678,376
3,678,386
3,678,401
3,678,412
3,678,422
3,678,423
3,678,457
3,678,467
3,678,512
18 : 3,677,002
3,677,030
3,677,058
3,677,111
3,677,140
3,677,166
3,677,191
3,677,192
3,677,198
3,677,313
3,677,333
3,677,364
3,677,372
3,677,470
3,677,505
3,677,574
3,677,583
3,677,607
3,677,610
3,677,972
3,677,992
3,678,065
3,678,153
3,678,229
3,678,356
3,678,436
3,678,444
3,678,490
19 : 3,677,135
3,677,229
3,677,231
3,677,316
3,677,569
3,677,588
3,677,608
3,678,228
20 : 3,676,929
3,677,033
3,677,177
3,677,517
3,677,548
3,677,737
21 : 3,676,888
3,676,905
3,676,951
3,677,170
3,677,289
3,677,390
3,677,876
3,677,984
3,677,998
3,678,230
3,678,240
22 : 3,677,188
3,677,215
3,677,356
3,677,448
3,677,692
3,677,742
3,677,969
3,677,970
3,678,024
3,678,113
23 : 3,677,201
3,677,283
3,677,439
24 : 3,677,000
3,677,082
3,677,132

3,677,173
3,677,178
3,677,184
3,677,185
3,677,186
3,677,213
3,677,276
3,677,278
3,677,417
3,677,438
3,677,447
3,677,500
3,677,503
3,677,523
3,677,554
3,677,589
3,677,657
3,677,667
3,677,787
3,677,829
3,677,939
3,677,974
3,678,086
3,678,199
3,678,204
3,678,468
3,678,509
25 : 3,676,901
3,676,911
3,676,917
3,676,937
3,676,938
3,676,946
3,676,960
3,676,983
3,677,005
3,677,031
3,677,070
3,677,092
3,677,101
3,677,110
3,677,120
3,677,131
3,677,150
3,677,176
3,677,261
3,677,296
3,677,435
3,677,444
3,677,460
3,677,497
3,677,521
3,677,568
3,677,576
3,677,593
3,677,629
3,677,695
3,677,717
3,677,753
3,677,776
3,677,817
3,677,831
3,677,843
3,677,874
3,677,884
3,677,888
3,677,906
3,677,979
3,677,993
3,678,008
3,678,038
3,678,079
3,678,101
3,678,103
3,678,141
3,678,170
3,678,194
3,678,205
3,678,210
3,678,242
3,678,253
3,678,276
3,678,296
3,678,310
3,678,373
3,678,387
3,678,416
3,678,426
3,678,432
3,678,435
3,678,451
3,678,491
3,678,499
3,678,500
26 : 3,678,503
3,676,903
3,676,920
3,676,958
3,676,962
3,676,963
3,676,968
3,676,986
3,677,007
3,677,023
3,677,052
3,677,053

3,677,075
3,677,093
3,677,095
3,677,099
3,677,105
3,677,115
3,677,138
3,677,154
3,677,175
3,677,193
3,677,194
3,677,197
3,677,240
3,677,262
3,677,301
3,677,320
3,677,383
3,677,452
3,677,453
3,677,519
3,677,522
3,677,559
3,677,606
3,677,616
3,677,617
3,677,639
3,677,672
3,677,675
3,677,722
3,677,730
3,677,792
3,677,807
3,677,810
3,677,820
3,677,859
3,677,872
3,677,877
3,677,907
3,677,912
3,677,913
3,677,951
3,677,952
3,677,991
3,677,996
3,678,016
3,678,055
3,678,083
3,678,112
3,678,125
3,678,126
3,678,223
3,678,328
3,678,392
27 : 3,676,892
3,676,941
3,676,979
3,677,127
3,677,161
3,677,335
3,677,436
3,677,446
3,677,544
3,677,582
3,677,591
3,677,643
3,677,767
3,677,769
3,678,221
3,678,439
3,678,458
28 : 3,677,687
29 : 3,676,916
3,676,992
3,677,064
3,677,268
3,677,369
3,677,454
3,677,579
3,677,638
3,677,726
3,677,741
3,677,771
3,677,911
3,677,944
3,677,988
3,678,067
3,678,090
3,678,430
31 : 3,676,942
32 : 3,678,189
3,678,446
33 : 3,677,112
3,677,258
3,677,647
34 : 3,676,897
3,676,924
3,676,928
3,676,975
3,677,048
3,677,049
3,677,050
3,677,063
3,677,066
3,677,084
3,677,088
3,677,182

3,677,219
3,677,225
3,677,228
3,677,242
3,677,245
3,677,366
3,677,367
3,677,371
3,677,388
3,677,404
3,677,408
3,677,413
3,677,510
3,677,525
3,677,537
3,677,571
3,677,628
3,677,651
3,677,659
3,677,698
3,677,705
3,677,710
3,677,714
3,677,724
3,677,725
3,677,768
3,677,772
3,677,788
3,677,794
3,677,799
3,677,804
3,677,815
3,677,842
3,677,848
3,677,865
3,677,866
3,677,919
3,677,943
3,677,955
3,677,963
3,677,985
3,677,990
3,678,010
3,678,013
3,678,019
3,678,029
3,678,035
3,678,036
3,678,039
3,678,049
3,678,051
3,678,052
3,678,059
3,678,060
3,678,062
3,678,066
3,678,068
3,678,070
3,678,071
3,678,078
3,678,084
3,678,092
3,678,094
3,678,106
3,678,111
3,678,119
3,678,137
3,678,148
3,678,166
3,678,168
3,678,172
3,678,173
3,678,178
3,678,180
3,678,182
3,678,200
3,678,218
3,678,236
3,678,258
3,678,287
3,678,292
3,678,321
3,678,326
3,678,343
3,678,379
3,678,383
3,678,393
3,678,396
3,678,398
3,678,402
3,678,403
3,678,405
3,678,406
3,678,407
3,678,418
3,678,420
3,678,425
3,678,463
3,678,464
3,678,478
3,678,501
35 : 3,677,822
3,677,931
3,678,061
3,678,275
36 : Re.27,433

3,676,883
3,676,887
3,676,891
3,676,904
3,676,919
3,676,940
3,676,955
3,676,967
3,676,971
3,676,974
3,676,977
3,677,019
3,677,024
3,677,028
3,677,034
3,677,059
3,677,069
3,677,072
3,677,096
3,677,097
3,677,129
3,677,133
3,677,144
3,677,148
3,677,152
3,677,157
3,677,160
3,677,164
3,677,171
3,677,205
3,677,232
3,677,234
3,677,250
3,677,252
3,677,264
3,677,269
3,677,270
3,677,338
3,677,347
3,677,377
3,677,378
3,677,399
3,677,403
3,677,419
3,677,443
3,677,455
3,677,462
3,677,478
3,677,487
3,677,490
3,677,491
3,677,498
3,677,499
3,677,536
3,677,594
3,677,601
3,677,631
3,677,632
3,677,633
3,677,634
3,677,636
3,677,641
3,677,691
3,677,718
3,677,732
3,677,738
3,677,745
3,677,750
3,677,752
3,677,754
3,677,763
3,677,770
3,677,790
3,677,796
3,677,798
3,677,800
3,677,801
3,677,836
3,677,837
3,677,844
3,677,847
3,677,851
3,677,864
3,677,879
3,677,905
3,677,930
3,677,948
3,677,956
3,677,959
3,677,964
3,677,965
3,678,011
3,678,015
3,678,045
3,678,048
3,678,056
3,678,072
3,678,076
3,678,080
3,678,081
3,678,089
3,678,095
3,678,100
3,678,108
3,678,144
3,678,149

3,678,150
3,678,151
3,678,165
3,678,169
3,678,196
3,678,209
3,678,211
3,678,212
3,678,222
3,678,259
3,678,286
3,678,293
3,678,331
3,678,341
3,678,349
3,678,351
3,678,352
3,678,362
3,678,367
3,678,370
3,678,410
3,678,442
3,678,455
3,678,475
3,678,487
3,678,488
3,678,495
3,678,508
3,678,511
37 : 3,677,206
3,677,239
3,677,412
3,677,481
3,677,644
3,677,868
3,678,263
3,678,338
3,678,371
3,678,469
3,678,484
39 : 3,676,890
3,676,910
3,676,930
3,676,933
3,676,987
3,677,012
3,677,015
3,677,038
3,677,039
3,677,046
3,677,057
3,677,089
3,677,118
3,677,124
3,677,125
3,677,128
3,677,249
3,677,255
3,677,259
3,677,334
3,677,337
3,677,360
3,677,391
3,677,423
3,677,440
3,677,477
3,677,534
3,677,563
3,677,590
3,677,609
3,677,650
3,677,688
3,677,704
3,677,721
3,677,733
3,677,749
3,677,756
3,677,759
3,677,779
3,677,869
3,677,882
3,677,887
3,677,917
3,677,947
3,677,958
3,677,975
3,678,017
3,678,047
3,678,097
3,678,118
3,678,154
3,678,156
3,678,164
3,678,266
3,678,268
3,678,279
3,678,340
3,678,428
3,678,434
3,678,465
3,678,474
3,678,486
40 : Re.27,434
3,676,939
3,676,949
3,676,973

3,676,981
3,677,014
3,677,081
3,677,113
3,677,119
3,677,180
3,677,311
3,677,342
3,677,427
3,677,465
3,677,580
3,677,933
3,677,982
3,677,987
3,677,994
3,678,069
3,678,134
3,678,452
3,678,454
3,678,494
41 : 3,677,216
3,678,025
3,678,496
42 : Re.27,440
3,676,884
3,676,885
3,676,943
3,676,944
3,676,956
3,676,993
3,677,029
3,677,073
3,677,116
3,677,122
3,677,200
3,677,212

3,677,243
3,677,244
3,677,265
3,677,309
3,677,326
3,677,332
3,677,394
3,677,405
3,677,409
3,677,429
3,677,433
3,677,485
3,677,535
3,677,552
3,677,619
3,677,658
3,677,662
3,677,663
3,677,673
3,677,674
3,677,703
3,677,716
3,677,814
3,677,834
3,677,860
3,677,878
3,677,883
3,677,894
3,677,900
3,677,953
3,677,968
3,677,978
3,678,007
3,678,020
3,678,022

3,678,028
3,678,032
3,678,037
3,678,043
3,678,098
3,678,110
3,678,133
3,678,139
3,678,143
3,678,145
3,678,163
3,678,183
3,678,202
3,678,237
3,678,261
3,678,339
3,678,346
3,678,355
3,678,358
3,678,368
3,678,372
3,678,385
3,678,447
43 : Re.27,437
44 : 3,677,812
45 : 3,677,187
3,677,235
3,677,825
3,678,121
46 : 3,677,305
47 : 3,676,935
3,677,174
3,677,233
3,677,476
3,677,719

3,677,805
3,677,937
3,678,031
3,678,244
48 : 3,676,926
3,676,947
3,676,966
3,677,009
3,677,080
3,677,108
3,677,143
3,677,189
3,677,230
3,677,292
3,677,340
3,677,345
3,677,346
3,677,353
3,677,355
3,677,368
3,677,375
3,677,376
3,677,520
3,677,564
3,677,575
3,677,924
3,677,927
3,677,932
3,677,941
3,677,961
3,678,105
3,678,123

3,678,216
3,678,257
3,678,273
3,678,400
3,678,414
3,678,417
3,678,433
3,678,461
3,678,470
3,678,505
49 : 3,677,425
3,677,566
3,677,702
50 : 3,677,840
51 : 3,676,907
3,676,952
3,677,042
3,677,179
3,677,183
3,677,441
3,677,584
3,677,734
3,677,736
3,677,897
3,678,233
3,678,254
3,678,453
53 : 3,676,913
3,677,086
3,677,808
3,677,818
3,678,158
3,678,374
54 : 3,676,969
3,677,803

3,677,983
3,677,989
3,678,073
3,678,085
3,678,096
3,678,140
3,678,278
55 : Re.27,441
3,676,886
3,676,915
3,677,209
3,677,251
3,677,266
3,677,272
3,677,281
3,677,295
3,677,317
3,677,420
3,677,421
3,677,450
3,677,467
3,677,480
3,677,516
3,677,524
3,677,565
3,677,595
3,677,602
3,677,854
3,677,858
3,677,861
3,678,225
3,678,246
3,678,265
3,678,359
3,678,363
3,678,366
3,678,427
56 : 3,676,965
3,677,137
3,677,406

Design Patents

1 : 224,292
224,374
5 : 224,362
6 : 224,281
224,301
224,306
224,307
224,311
224,342
224,353
224,363
224,364
224,365

224,366
224,372
9 : 224,309
224,345
12 : 224,294
224,332
13 : 224,302
17 : 224,284
224,288
224,289
224,291
224,313
224,315

224,316
224,325
224,327
25 : 224,320
224,347
224,348
224,349
26 : 224,293
224,299
224,300
224,321
224,326

224,340
224,341
224,375
224,377
224,378
224,379
29 : 224,310
34 : 224,290
224,308
224,319
224,330
224,351

36 : 224,376
224,282
224,295
224,296
224,297
224,314
224,318
224,323
224,328
224,331
224,336
224,337

224,369
224,370
39 : 224,304
224,305
224,317
224,367
42 : 224,298
224,312
45 : 224,286
48 : 224,333
53 : 224,334
224,335

Plant Patents

34 : 3,239
36 : 3,240
39 : 3,236
42 : 3,238

Defensive Publications Applications

[Notice of Dec. 16, 1969, 869 O.G. 6877]

9 : T900,005
10 : T900,002
36 : T900,001
T900,009
T900,010
T900,011
39 : T900,003
47 : T900,012
T900,007
T900,013
48 : T900,004
51 : T900,006

U.S. GOVERNMENT PRINTING OFFICE: 0—1972

OFFICIAL GAZETTE of the UNITED STATES PATENT OFFICE

July 25, 1972 Volume 900 Number 4

CONTENTS

	Page
Patents and Trademark Notices	
Registration to Practice	1224
Bulky Specimens in Trademark and Service Mark Applications	1224
Patent Suits	1224
Patent Notices	
Certificates of Correction for the Week of July 25, 1972	1226
Dedications	1226
Disclaimers	1226
Patents Available for Licensing or Sale	1227
Condition of Patent Applications	1229
Defensive Publications	1230
Plant Patents Granted	1236
Patents Granted	
General and Mechanical	1237
Chemical	1442
Electrical	1530
Design Patents Granted	1618
Index of Patentees	PI 1
Indices of Applicants of Defensive Publications and Plants, and Designs	PI 49
Classification of	
Patents	PI 53
Designs, Plants, and Defensive Publications	PI 56
Geographical Index of Residence of Inventors	
Patents	PI 57
Designs, Plants, and Applicants of Defensive Publications	PI 59

The following are mailed under direction of the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402, to whom all subscriptions should be made payable and all communications addressed:

THE OFFICIAL GAZETTE (PATENTS SECTION), issued weekly, subscription $89.00 per annum, foreign mailing $22.25 additional; single copies $2.00 each.

THE OFFICIAL GAZETTE (TRADEMARK SECTION), issued weekly, subscription $17.00 per annum, foreign mailing $4.25 additional; single copies 40 cents each.

CIRCULARS OF GENERAL INFORMATION concerning PATENTS or TRADEMARKS, price 15 cents each.

PRINTED COPIES OF PATENTS are furnished by the Patent Office at 50 cents each; PLANT PATENTS in color, $1.00 each; copies of TRADEMARKS and DESIGN PATENTS at 20 cents each. Address orders to the Commissioner of Patents, Washington, D.C., 20231.

Printing authorized by Section 11(a)3 of Title 35, U.S. Code P.O.

PATENT OFFICE NOTICES

Registration to Practice

The following list contains the names of former examiners who are applying for registration to practice before the Patent Office on the basis of 4 years or more service in the Examining Corps.

Information tending to affect the eligibility of said applicants on moral, ethical, or other grounds should be furnished the Commissioner of Patents on or before August 11, 1972.

Brodmerkel, Alexander S., 431 N.W. 26th Court, Pomano Beach, Fla. 33064
Fichter, Richard E., 13117 Poplar Tree Road, Fairfax, Va. 22030
Jarvis, William L., 5921 Old Sawmill Road, Fairfax, Va. 22030
Kassenoff, Melvyn M., 3 Shelley Terrace, West Orange, N.J. 07052
Melton, David R., 2500 Topsfield Road, #509, South Bend, Ind. 46614
La Point, Arthur L., 14708 Lindsey Lane, Silver Spring, Md. 20906
Levy, Harry, 346 McLean Place, Hillside, N.J. 07205
Litman, Mark A., 1400 S. Joyce St., #A–1106, Arlington, Va. 22202
Schwartz, Raphael H., 3750 Galt Ocean Drive, #909, Fort Lauderdale, Fla. 33308

LUTRELLE F. PARKER,
June 29, 1972. *Chairman, Committee on Enrollment.*

Bulky Specimens in Trademark and Service Mark Applications

Many of the applications which are being received in the Trademark Application Section contain specimens which are too bulky to be placed inside the application file. The handling and storing of these bulky specimens is taking more time and space than can be justified. The trademark rules do not provide for filing bulky specimens, and applicants and attorneys are requested to adhere to the precise provisions of the rules.

Trademark Rule 2.56 requires that specimens be of a material suitable for being placed in a file, be capable of being arranged flat (preferably not more than one inch in thickness), and not be larger than 8½ x 13 inches. If specimens of this character cannot be furnished, Trademark Rule 2.57 provides that facsimiles in the nature of photographs or similar reproductions be filed. Facsimiles must not be larger than 8½ x 13 inches and should clearly and legibly show the mark and all matter used in connection therewith.

In order to reduce the quantity of bulky specimens and to avoid the possibility of delay in examination due to bulky specimens, the following procedure has been adopted:

When specimens cannot be fitted into the file, the Trademark Application Section forwards the specimens to the Examiner separate from the file and attaches to the file two copies of a form which is a pre-examination memorandum pointing out that the bulky specimens are not acceptable and that proper specimens should be filed promptly. Upon receipt of the file and the forms, the Examiner mails one copy of the form to the applicant, or applicant's attorney if there be one, and places the other copy in the file. The Examiner will then destroy four of the bulky specimens, retaining one until proper specimens or facsimiles are received. Failure to furnish proper specimens as requested in the memorandum may delay the process of examination of the application.

ROBERT GOTTSCHALK,
June 16, 1972. *Commissioner of Patents.*

Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

2,594,256, C. E. Compton, MINING MACHINE HEAD; **2,874,955,** same, ROTARY MINING MACHINE CUTTER HEAD WITH REAR HELICALLY EXTENDING TRANSVERSE OPENING; **2,719,708,** same, PAN GUIDEWAY FOR ROTARY MINING HEAD, filed Dec. 21, 1964, U.S. Ct. of App., 4th Cir., W. Va. (Fairmont), Doc. 803–F, *Charles E. Compton et al.* v. *Metal Products, Inc.* Opinion, because of misuse of Compton patents in the Joy-Compton and Joy-Polan agreements, we reverse the district court's decision to enforce the plaintiffs' rights under the Patents Nos. 2,594,256, 2,784,955 and 2,719,708. Plaintiffs are entitled to no accounting for past damages. The district court will withhold its injunction until misuse has abated. REVERSED, decided Dec. 17, 1971.

2,719,708. (See 2,594,256.)

2,729,146, K. Wandel, IMPELLERS FOR PULP DISINTEGRATING MACHINES; **3,319,897,** Craig, Combs, Hilbert, Kemper and Tahar, WASTE DISPOSAL UNIT, filed June 21, 1968, D.C. Md. (Baltimore), Doc. 19618–C, *Somat Corporation* v. *The University of Maryland and Wascon Systems, Inc.* Complaint dismissed upon defendants' motion. Stipulation of counsel filed dismissing the complaint between plaintiff and defendants, Feb. 29, 1972.

2,784,955. (See 2,594,256.)

2,803,105, Stoddard and Seem, APPARATUS FOR PROCESSING TEXTILE YARNS; **2,803,106,** same, METHODS OF PROCESSING TEXTILE YARNS; **2,803,109,** same, METHOD OF PROCESSING THERMOPLASTIC YARNS; **3,001,912,** same, METHOD OF PROCESSING STRETCH YARN AND YARNS PRODUCED THEREBY; **3,077,724,** same, APPARATUS FOR PROCESSING YARNS; **3,472,011,** Scragg and Sutton, TREATMENT OF ARTIFICIAL YARNS AND THREADS, filed June 28, 1971, D.C., S.D. Fla. (Miami), Doc. 71–1026–C–JLK, *Celanese Corp. et al.* v. *Leesona Corp. et al.*

2,803,106. (See 2,803,105.)

2,803,109. (See 2,803,105.)

2,903,445. (See D. 171,963.)

2,925,665, T. R. Smith, CLOTHES DRIER WITHOUT CASING; **2,958,138,** A. T. Ashby, CLOTHES DRIER WITH STATIONARY COWLING; **2,958,139,** T. R. Smith, CLOTHES DRIER; **D. 211,602,** same, LAUNDRY MACHINE, filed Nov. 23, 1970, D.C., N.D. Ill. (Chicago), Doc. 70c2946, *The Maytag Company* v. *The Hoover Company.* By stipulation, cause dismissed, each party to bear its own costs, Oct. 12, 1971.

2,958,138. (See 2,925,665.)

2,958,139. (See 2,925,665.)

2,980,982. (See 3,214,899.)

3,019,497, Horton, Ashbrook and Feagin, MAKING FINE GRAINED CASTINGS; **3,157,926,** same; **3,250,948,** R. C. Feagin, same, filed Mar. 1, 1972, D.C. Oreg. (Portland), Doc. C–72–168, *Howmet Corporation* v. *Precision Castparts Corp.* Same, filed Apr. 13, 1971, D.C., S.D. Fla. (Miami), Doc. 71–566–C–CA, *Howmet Corporation* v. *Aircraft Casting, Inc.* By stipulation, complaint and all counterclaims are dismissed, Dec. 21, 1971.

3,035,438, R. B. Hale, TEST APPARATUS FOR INTERNAL COMBUSTION ENGINES; **Re. 26,162,** B. F. W. Heyer, ENGINE PARAMETER ANALYZER, filed Jan. 14, 1972, D.C., N.D. Ill. (Chicago), Doc. 72c124, *Applied Power Industries, Inc.* v. *Sun Electric Corporation.*

3,077,724. (See 2,803,105.)

3,001,912. (See 2,803,105.)

3,126,692, Weygandt and Weygandt, MACHINE FOR HARVESTING BERRIES AND SIMILAR PRODUCE FROM THEIR PLANTS; **3,439,478,** J. R. Orton, METHOD OF HARVESTING GRAPES OR THE LIKE; **3,439,982,** same, GRAPE HARVESTING MACHINE, filed Aug. 16, 1971, D.C., E.D. Wash. (Yakima), Doc. 2753, *Chisholm-Ryder Company, Inc.; Raymond M. Weygandt and Raymond A. Weygandt* v. *Leslie V. Smith and Orchard Master, Inc.*

3,157,926. (See 3,019,497.)

3,213,303. (See D. 219,950.)

3,214,899, Wininger and Dyer, CORDAGE PRODUCT; **2,980,982,** Casta, Le Boeuf and Lefevre, FIBROUS ARTICLE, filed June 21, 1971, D.C., N.D. Ala. (Birmingham), Doc. 71–545–E, *Eastman Kodak Co.* v. *Indian Head, Inc.* Order on motion of parties and by consent of parties dismissing action without prejudice, Dec. 8, 1971.

3,251,234. (See Re. 25,834.)

3,250,948. (See 3,019,497.)

3,265,602, Ely, Burley and Clement, FEP-FLUOROCARBON TUBING; **Re. 27,028,** same, filed June 18, 1971, D.C. Del. (Wilmington), Doc. 4161, *Fluorodynamics, Inc.* v. *Pentube Plastics Company.* Stipulated case dismissed without prejudice, Feb. 2, 1972.

3,308,491, W. R. Spence, CUSHION STRUCTURE; **3,548,420,** same, filed Dec. 23, 1971, D.C., N.D. Ill. (Chicago), Doc. 71c3085, *Stryker Corp.* v. *Minnesota Mining and Mfg. Co.*

3,319,897. (See 2,729,146.)

3,359,116. (See 3,378,375.)

3,378,375, L. L. Little, METHOD OF PREPARING ACIDIFIED DAIRY PRODUCTS; **3,359,116,** same, PROCESS OF MAKING SOUR CREAM TYPE PRODUCTS AND CREAM CHEESE, filed Dec. 1, 1971, D.C. Del. (Wilmington), Doc. 4285C, *Diamond Shamrock Corporation* v. *The Battelle Development Corporation.*

3,393,272, Vickery and Fisher, CARBON DIOXIDE LASER SYSTEMS FOR THE EMISSION OF COHERENT RADIATION, filed Mar. 1, 1972, D.C., N.D. Ill. (Chicago), Doc. 72c527, *Semi-Elements, Inc., Joseph V. Fisher, Laverne B. Fisher* v. *Motorola Semiconductor Products, Inc.*

3,406,618, B. Bowman, METHOD OF MANUFACTURING BRICKS, TILES, COBBLESTONES AND THE LIKE DIRECTLY ON THE GROUND TO BE COVERED, filed Jan. 21, 1972, D.C., C.D. Calif. (Los Angeles), Doc. 72–149–MML, *Bomanite Corporation* v. *Edward F. Shea, Jr.*

3,439,478. (See 3,126,692.)

3,439,482. (See 3,126,692.)

3,449,129, Reimus and Saporito, CONCENTRATION PROCESS, filed June 11, 1969, D.C. Del. (Wilmington), Doc. 3725, *Struthers Scientific & International Corporation* v. *General Foods Corporation.* Dismissal on consent of the parties, Feb. 23, 1972.

3,450,212, A. G. Sylvester, MULTIPLE TOOTH SUBSOIL PLOW, filed Jan. 17, 1972, D.C., W.D. Okla. (Oklahoma City), Doc. 72–39–C, *Cline Industries, Inc.* v. *James Harrison, doing business as Harrison Manufacturing Co.* On motion of plaintiff, case dismissed with prejudice, Jan. 31, 1972. Same, filed Feb. 8, 1972, D.C., W.D. Okla. (Oklahoma City), Doc. 72–86–C, *Cline Industries, Inc.* v. *James Harrison, doing business as Harrison Manufacturing Co.*

3,472,011. (See 2,803,105.)

3,472,939, Petrocci, Prodo, Shay and Wakeman, SYNERGISTIC BLENDS OF MICROBIOCIDAL QUATERNARY AMMONIUM COMPOUNDS; **3,525,793,** MICROBIOCIDAL QUATERNARY AMMONIUM COMPOUNDS CONTAINING SYNERGISTIC BLENDS OF ALKYL GROUPS, filed Dec. 2, 1971, D.C.N.J. (Newark), Doc. C–1800–71. *Millmaster Onyx Corporation* v. *Lonza Inc.*

3,480,410, J. Hummer, WC-CrC-Co SINTERED COMPOSITE, filed Jan. 10, 1972, D.C., N.D. Ill. (Chicago), Doc. 72c72, *Fansteel, Inc.* v. *Carmet Co., GTE Sylvania and Federal-Mogul.*

3,487,221, L. M. Frank, LIGHT ACTIVATED TRIGGER FOR PHOTOGRAPHIC FLASH SYSTEM, filed Mar. 3, 1972, D.C., N.D. Ill. (Chicago), Doc. 72c572, *The Lasa Co.* v. *Honeywell, Inc.*

3,511,206, O. C. Woodruff, FISHING RIG, filed Feb. 17, 1972, D.C., W.D. Okla. (Oklahoma City), Doc. 72–104–C, *Jamajo Industries, Inc.* v. *Speegle-Horaney, Inc.*

3,514,834, E. G. Back, Jr., METHOD FOR SECURING AN ELONGATED METAL MEMBER TO A FLAT METAL SHEET, filed Feb. 15, 1972, D.C. Conn. (New Haven), Doc. 14894, *Airtex Corporation* v. *Fine Line Brazing, Inc.*

3,524,272, C. A. Elwell, SOUND REPRODUCER AND STEREOSCOPE COMBINATION, filed Feb. 18, 1972, D.C., C.D. Calif. (Los Angeles), Doc. 72–366–RJK, *Reuben Klamer et al.* v. *GAF Corporation et al.*

3,525,793. (See 3,472,939.)

3,536,190, Hirsch and Koster, PROTECTIVE PACKAGE AND METHOD OF MAKING SAME, filed Feb. 15, 1972, D.C., S.D.N.Y., Doc. 72–C–686, *Stanley Hirsch* v. *Wilcox & Gibbs.*

3,548,420. (See 3,308,491.)

3,614,937, D. A. Schulman, PONTOON STRUCTURE, filed Feb. 25, 1972, D.C. Minn. (Minneapolis), Doc. 4–72–C–133, *David A. Schulman, doing business as Dase Company* v. *Huck Finn, Inc. et al.*

3,623,223. (See D. 219,950.)

Re. 25,834, Glezer and Reed, ADJUSTABLE INDUCTANCE UNIT; **3,251,234,** A. A. Valdettaro, VHF-UHF TELEVISION TUNER, filed Mar. 2, 1970, D.C.N.J. (Newark), Doc. 70–C–1857, *Alps Electric Co., Ltd. and Sanuo Electric Co., Inc.* v. *Sarkes Tarzian, Inc.* Stipulation, order dismissed with prejudice, Mar. 26, 1971.

Re. 26,162. (See 3,035,438.)

Re. 27,028. (See 3,265,602.)

D. 171,963, L. Blum, RAIL; **2,905,445,** same, ORNAMENTAL RAIL STRUCTURES, filed Aug. 7, 1968, D.C. Kans. (Wichita), Doc. W–4037, *Blumcraft of Pittsburgh et al.* v. *Architectural Art Mfg., Inc. and Wenzel W. Thom.* Opinion and order sustaining defendants' motion for summary judgment, Jan. 7, 1972.

D. 203,780, D. W. Beck, FOLDING BOAT PROPELLER, filed Feb. 23, 1972, D.C., C.D. Calif. (Los Angeles), Doc. 72–394–FW, *Marteo Engineering Corp. and David W. Beck* v. *Michigan Wheel Co., Inc., Ren Ludlan, James Franco and Dennis Arey, doing business as AAA Propeller Co.*

D. 211,602. (See 2,925,665.)

D. 219,950, J. E. Edgell, CORDLESS ELECTRIC GRASS SHEAR; **3,623,223,** Edgell and Maniero, CORDLESS ELECTRIC GRASS SHEAR; **3,213,303,** Riley and Neuhardt, CORDLESS DIRECT CURRENT MOTOR DEVICE UTILIZING PERMANENTLY-MAGNETIC TUBULAR SEGMENTS, filed Nov. 30, 1971, D.C., N.D. Ill. (Chicago), Doc. 71c2859, *H. K. Porter Company, Inc.* v. *The Black & Decker Manufacturing Company.*

D. 221,219, T. Winrow, SOFA, filed Nov. 12, 1971, D.C., M.D. Fla. (Jacksonville), Doc. 71–914–C, *Futorian Corporation* v. *Madison House, Inc.* Consent decree filed for plaintiff, Feb. 8, 1972.

Certificates of Correction for the Week of July 25, 1972

D. 223,115	3,619,293	3,640,481	3,651,066
D. 223,116	3,621,099	3,640,522	3,651,078
Re. 27,225	3,622,085	3,640,576	3,651,087
3,518,435	3,622,467	3,640,758	3,651,107
3,540,213	3,622,584	3,640,942	3,651,169
3,541,273	3,623,578	3,641,015	3,651,170
3,544,769	3,624,013	3,641,442	3,651,293
3,547,800	3,624,086	3,641,471	3,651,313
3,550,264	3,624,307	3,642,236	3,651,420
3,558,688	3,624,623	3,642,440	3,651,449
3,563,167	3,625,287	3,642,591	3,651,696
3,563,699	3,625,453	3,642,705	3,652,018
3,566,786	3,625,609	3,642,873	3,652,560
3,567,937	3,625,749	3,642,947	3,652,619
3,569,688	3,626,045	3,643,678	3,652,680
3,577,579	3,626,238	3,643,759	3,652,945
3,582,911	3,627,214	3,643,845	3,653,146
3,586,436	3,627,687	3,643,863	3,653,506
3,586,556	3,627,764	3,644,074	3,653,512
3,587,189	3,628,140	3,644,224	3,653,547
3,587,242	3,628,586	3,644,256	3,653,656
3,587,954	3,628,878	3,644,312	3,654,088
3,588,409	3,629,173	3,644,350	3,654,169
3,590,288	3,629,298	3,644,522	3,654,181
3,592,326	3,629,328	3,644,710	3,654,229
3,592,738	3,629,721	3,644,723	3,654,386
3,593,945	3,629,833	3,645,047	3,654,546
3,594,909	3,630,318	3,645,375	3,655,099
3,594,938	3,630,842	3,645,680	3,655,333
3,596,758	3,630,846	3,645,824	3,655,431
3,596,784	3,630,944	3,645,920	3,655,538
3,597,599	3,631,008	3,646,055	3,655,736
3,597,834	3,631,075	3,646,229	3,655,781
3,598,128	3,631,691	3,646,289	3,657,327
3,598,397	3,631,722	3,646,486	3,658,035
3,599,169	3,632,359	3,646,563	3,658,530
3,599,320	3,633,160	3,646,572	3,658,536
3,599,376	3,633,321	3,646,577	3,658,566
3,599,494	3,633,328	3,646,854	3,658,639
3,599,537	3,633,558	3,646,964	3,658,702
3,600,317	3,634,270	3,647,205	3,658,880
3,600,418	3,634,289	3,647,288	3,658,906
3,600,430	3,634,397	3,647,315	3,658,939
3,600,825	3,634,455	3,647,629	3,659,135
3,601,070	3,634,500	3,647,712	3,660,164
3,601,829	3,634,839	3,647,749	3,660,229
3,601,841	3,634,843	3,647,804	3,660,476
3,602,404	3,635,822	3,648,048	3,660,937
3,602,516	3,635,976	3,648,149	3,660,967
3,607,666	3,636,143	3,648,179	3,661,289
3,608,631	3,637,659	3,648,216	3,661,852
3,609,134	3,637,758	3,649,038	3,661,465
3,609,477	3,637,825	3,649,500	3,662,013
3,610,363	3,637,832	3,649,584	3,662,092
3,614,703	3,638,503	3,649,821	3,662,196
3,615,433	3,638,661	3,650,020	3,662,552
3,615,581	3,639,010	3,650,119	3,662,620
3,616,359	3,639,260	3,650,603	3,663,352
3,616,935	3,639,481	3,650,681	3,663,620
3,617,437	3,639,487	3,650,709	
3,618,074	3,639,587	3,650,994	
3,618,530	3,640,430	3,651,046	

Dedications

2,913,274.—*Winfred M. Brooks*, West Orange, and *Sigurd M. Moberg*, Pompton Plains, N.J. LOOP SEAL. Patent dated Nov. 17, 1959. Dedication filed Feb. 9, 1972, by the assignee, *E. J. Brooks Company*.

Hereby dedicates to the Public the term thereof remaining after Oct. 1, 1970.

3,130,509.—*Winfred M. Brooks*, West Orange, N.J. TAG. Patent dated Apr. 28, 1964. Dedication filed Feb. 9, 1972, by the assignee, *E. J. Brooks Company*.

Hereby dedicates to the Public the term thereof remaining after Oct. 1, 1970.

3,291,493.—*Richard W. Blair*, Arlington Heights, Ill. END-FACE SEAL. Patent dated Dec. 13, 1966. Dedication filed Mar. 16, 1972, by the assignee, *Chicago Rawhide Manufacturing Company*.

Hereby dedicates to the Public the entire term of said patent.

3,291,494.—*Seymour A. Hatch*, Forest Park, *James P. Morley*, Morton Grove, and *Richard W. Blair*, Arlington Heights, Ill. END FACE SEAL ASSEMBLY. Patent dated Dec. 13, 1966. Dedication filed Mar. 16, 1972, by the assignee, *Chicago Rawhide Manufacturing Company*.

Hereby dedicates to the Public the entire term of said patent.

3,445,155.—*Francis C. Sturrock*, Skokie, Ill. MECHANISM FOR RELATIVE ADJUSTMENT OF AXIALLY SPACED LENS ELEMENT. Patent Dated May 20, 1969. Dedication filed Apr. 14, 1972, by the assignee, *Bell & Howell Company*.

Hereby dedicates to the Public the remainder of the term of said patent.

Disclaimers

3,108,159.—*Charles F. Mattke*, Fanwood, N.J. SPACE SAVER DIAL. Patent dated Oct. 22, 1963. Disclaimer filed Feb. 11, 1972, by the assignee, *Bell Telephone Laboratoris, Incorporated*.

Hereby enters this disclaimer to claims 1 through 7 of said patent.

3,164,129.—*Preston D. Rigterink*, Holland, Mich. AUTOMATIC NEST GUARD. Patent dated Jan. 5, 1965. Disclaimer filed Feb. 17, 1972, by the assignee, *U.S. Industries, Inc.*

Hereby enters this disclaimer to claims 11, 12 and 13 of said patent.

3,270,053.—*Earl Reeder*, Nutley, and *Leo Henryk Sternbach*, Upper Montclair, N.J. 2-(α-HALO-LOWER ALKANOYL-AMINO)-BENZOPHENONES. Patent dated Aug. 30, 1966. Disclaimer filed Feb. 15, 1972, by the assignee, *Hoffmann-La Roche Inc.*

Hereby enters this disclaimer to claim 1 of said patent.

3,360,913.—*Charles G. Burton*, Lewiston, N.Y. GRAPE HARVESTER. Patent dated Jan. 2, 1968. Disclaimer filed Feb. 17, 1972, by the inventor, the assignee, *Chisholm-Ryder Company, Inc.*, assenting.

Hereby enters this disclaimer to claims 1 and 2 of said patent.

3,405,559.—*Elbert Marston Moffatt*, Glastonbruy, Conn. PRESSURE TRANSDUCER. Patent dated Oct. 15, 1968. Disclaimer filed Jan. 17, 1972, by the assignee, *United Aircraft Corporation*.

Hereby enters this disclaimer to claim 6 of said patent.

3,434,681.—*Victor G. Bockelmann*, El Centro, Calif. PARACHUTE CANOPY DEFLATION APPARATUS. Patent dated Mar. 25, 1969. Disclaimer filed Jan. 26, 1972, by the assignee, *United States of America as represented by the Secretary of the Navy*.

Hereby enters this disclaimer to claims 1, 2 and 3 of said patent.

3,498,535.—*Hugo A. Panissidi*, Peekskill, N.Y. ENCODER CARRY MECHANISM. Patent dated Mar. 3, 1970. Disclaimer filed Apr. 10, 1972, by the assignee, *International Business Machines Corporation*.

Hereby enters this disclaimer to claims 1 and 2 of said patent.

3,532,827.—*James C. Ewin*, Holmdel, N.J. SCANNER ARRANGEMENT FOR IDENTIFYING CIRCUITS CHANGING THEIR STATES, STORING THE TIMES OF SUCH CHANGE, AND DETERMINING THE CHARACTER OF THE CHANGE IN A COMMUNICATION SWITCHING SYSTEM. Patent dated Oct. 6, 1970. Disclaimer filed Feb. 23, 1972, by the assignee, *Bell Telephone Laboratories, Incorporated*.

Hereby enters this disclaimer to claims 9 and 10 of said patent.

3,578,238.—*Joseph F. Schillinger*, Chicago, and *Thomas B. Moser*, Glen Ellyn, Ill. CONTAINER WHICH COMPLETELY ENCLOSES ARTICLES. Patent dated May 11, 1971. Disclaimer filed Apr. 3, 1972, by the assignee, *Weyerhaeuser Company*.

Hereby enters this disclaimer to claims 7 and 8 of said patent.

3,581,702.—*Theodore J. Moberg*, Hartford, Wis. TRIM AND TILT MECHANISM FOR OUTBOARD PROPULSION UNIT. Patent dated June 1, 1971. Disclaimer filed Feb. 10, 1972, by the assignee, *Chrysler Corporation*.

Hereby enters this disclaimer to claims 1 through 16, inclusive, of said patent.

3,585,361.—*Samuel R. Rosen*, Lorain, *Alan B. Reighard*, Bay Village, and *Julius S. Drozek*, Lorain, Ohio. SUPPLY SYSTEM FOR HEATING AND DISPENSING MOLTEN THERMOPLASTIC MATERIAL. Patent dated June 15, 1971. Disclaimer filed Jan. 6, 1972, by the assignee, *Nordson Corporation*.

Hereby enters this disclaimer to claims 1 and 2 of said patent.

3,612,548.—*Herbert E. Tracy*, Alhambra, Calif. MECHANICAL SEAL SPRING HOLDER. Patent dated Oct. 12, 1971. Disclaimer filed Mar. 27, 1972, by the assignee, *Borg-Warner Corporation*.

Hereby enters this disclaimer to claims 1 to 4 inclusive, of said patent.

3,615,541.—*Hubert Nerwin*, Rochester, N.Y. SLIDE TRANSPARENCY UNIT FOR IN CAMERA PROCESSING. Patent dated Oct. 26, 1971. Disclaimer filed Feb. 14, 1972, by the assignee, *Eastman Kodak Company*.

Hereby enters this disclaimer to claims 1 and 2 of said patent.

3,616,553.—*Francis H. Holland*, Billings, Mont. ELEVATING BELT LOADER AND EXCAVATION APPARATUS. Patent dated Nov. 2, 1971. Disclaimer filed Mar. 21, 1972, by the inventor.

Hereby disclaims the portion of the term of the patent subsequent to Sept. 29, 1987.

Patents Available for Licensing or Sale

D. 216,903. FOLDABLE EXERCISING BICYCLE. Carl W. Rubel, 2402 State Highway 20, Marysville, Calif., 95901.

2,995,619. SYSTEM OF TELEVISION TRANSMISSION AND PHOTOGRAPHIC REPRODUCTION OF THE TELEVISED IMAGE. Samuel Freeman, 13 Birchwood Court E., Syosset, N.Y., 117,791.

3,151,864. SEESAW WITH SPRINKLER. Stanley Sundusky, 10721 Wadsworth Ave., Garfield Heights, Ohio, 44125.

3,225,761. FATIGUE SUPPORT. Robert Swenson, 120 Poinciana Drive, Martinez, Ga., 30907.

3,603,594. GOLF GAME. William D. Kelley. Correspondence to: Robert M. Phipps, 21679 Canterbury St., Grosse Ile, Mich., 48138.

3,631,388. ENGINE OIL AND WATER TEMPERATURE AUDIO WARNING SYSTEM. Raymond K. Strong, Strong's Engine Audio Warning Systems, P.O. Box 3536, Fremont, Calif., 94538.

3,635,433. ARTICLE-HOLDING APPARATUS. Malcolm J. Anderson, 42—43 149th St., Flushing, N.Y., 11355.

3,642,095. MUFFLER. Kabushiki K. F. Kogyo, Tokyo, Japan. Correspondence to: Michael S. Striker, 360 Lexington Ave., New York, N.Y., 10017.

3,652,508. VISCOSITY STABLE ALIPHATIC POLYURETHANE COMPOSITIONS AND METHOD OF PREPARATION THEREOF. Donald L. Segur et al. Correspondence to: Henry B. Townsend, General Latex and Chemical Corporation, Research Center, High St., North Billerica, Mass., 01862.

3,663,971. BATHTUB. Andre Bonbote, Switzerland. Correspondence to: Stevens, Davis, Miller & Mosher, 1911 Jefferson Davis Highway, Suite 600, Crystal Mall 1, Arlington, Va., 22202.

3,666,936. SHADOW BOX. Ernst H. Janke, 8467 Everglade Drive, Sacramento, Calif., 95826.

3,667,757. BOARD GAME APPARATUS. Eugene P. Holmberg, 18155 Schoenborn St., Northbridge, Calif., 91324.

The following 2 patents are offered by: Langa & Kohne, % Sanford Patent Trust, 109 Wailuku Townhouse Bldg., Wailuku, Maui, Hawaii, 96793.

3,468,344. SINGLE CONTROL DUAL FLOW VALVE.

3,491,790. DIVERTER VALVE.

The following 2 patents are offered by: Harold M. Shaw, Sr., 205 Molart Ave., Winston-Salem, N.C., 27104.

3,285,135. ELECTRIC DRILL ATTACHMENT FOR ROUTING.

3,620,331. MOVABLE SUSPENSION DEVICE.

General Motors Corporation is prepared to grant non-exclusive licenses under the following patent upon reasonable terms.

Applications for license may be addressed to: The Director, Patent Section, General Motors Building, 3044 West Grand Blvd., Detroit, Mich., 48202.

3,496,023. HIGH DENSITY CELL.

General Electric Company is prepared to grant non-exclusive licenses under the following 11 patents upon reasonable terms to domestic manufacturers.

Applications for license under the following patent may be addressed to: Division Patent Counsel, Switchgear Equipment Business Div., General Electric Company, 6901 Elmwood Ave., Philadelphia, Pa., 19142.

3,632,929. OPERATING MECHANISM FOR A MULTIPLE INTERRUPTER UNIT CIRCUIT BREAKER.

Applications for license under the following 2 patents should be addressed to: Patent Counsel, Contractor Equipment Division, General Electric Company, 41 Woodford Ave., Plainville, Conn., 06062.

3,463,967. PANELBOARD LOAD CENTER.

3,524,104. PARALLEL ASSISTED CIRCUIT INTERRUPTION DEVICE WITH INTERLOCK.

Applications for license under the following 8 patents may be addressed to: Patent Counsel, LSTG-I & MT Divisions, General Electric Company, 1 River Road, Bldg. No. 28, Schenectady, N.Y.

3,426,587. RUPTURE TEST SPECIMEN AND COUPLING THEREFOR.

3,496,139. EPOXY RESINS WITH REACTION PRODUCT OF A POLYSILOXANE AND AN AMINE.

3,622,524. COMPOSITIONS OF EPOXY RESINS CURED WITH ORGANOTIN COMPOUNDS.

3,623,324. ELECTROHYDRAULIC SPEED CONTROL SYSTEM FOR CROSS COMPOUND TURBINE POWER PLANTS.

3,630,273. AIR COOLED CONDENSER.

3,630,635. TURBINE CASING WITH RAISED HORIZONTAL JOINT.

3,652,881. GENERATOR VENTILATION DOME AND COOLING CASING CONSTRUCTION.

3,652,888. 2-POLE, 45-SLOT, 3-CIRCUIT DYNAMOELECTRIC MACHINE WINDING PATTERN.

The RCA Corporation offers to grant non-exclusive licenses on reasonable terms and conditions under the following 35 patents.

Inquiries respecting licenses should be addressed to: RCA Corporation, Staff Vice President Domestic Licensing, 1133 Avenue of the Americas, New York, N.Y., 10036.

3,659,334. HIGH POWER HIGH FREQUENCY DEVICE.

3,660,667. IMAGE SENSOR ARRAY IN WHICH EACH ELEMENT EMPLOYS TWO PHOTOTRANSISTORS ONE OF WHICH STORES CHARGE.

3,660,818. ELECTRO-OPTICAL MEMORY.

3,661,311. RECORD MEDIUM GUIDE.

3,661,444. COMPOUNDED LIQUID CRYSTAL CELLS.

3,661,570. MAGNETIC HEAD MATERIAL METHOD.

3,661,580. PHOTOGRAPHIC METHOD FOR PRODUCING A CATHODE-RAY TUBE SCREEN STRUCTURE.

3,661,581. METHOD FOR PHOTODEPOSITING SMALLER SIZE IMAGE SCREEN AREAS FOR CATHODE RAY TUBE FROM LARGER SIZE MASK APERTURES.

3,661,641. METHOD OF REMOVING POLYURETHANE RESIN PROTECTIVE COATING.

3,662,051. AUTOMATIC RECORD MOLDING APPARATUS AND METHOD.

3,662,270. VHF/UHF INTERLOCK CIRCUIT.

3,662,289. FREQUENCY MODULATION BY LIGHT IMPINGEMENT ON A SOLID STATE OSCILLATOR.

3,662,454. METHOD OF BONDING METALS TOGETHER.

3,663,276. METHOD OF ADJUSTING THE RESISTIVITY OF THICK-FILM SCREEN-PRINTED RESISTORS.

3,663,744. SELECTIVE TINT CORRECTION CIRCUITS.

3,663,745. COMPENSATED TELEVISION MATRIX AMPLIFIERS.

3,663,862. METHOD OF REBUILDING AN EVACUATED ELECTRON TUBE.

3,663,887. MEMORY SENSE AMPLIFIER INHERENTLY TOLERANT OF LARGE INPUT DISTURBANCES.

3,663,907. BEAM CONVERGENCE EXCITER FOR SHADOW MASK COLOR PICTURE TUBE.

3,663,997. METHOD FOR MAKING A KINESCOPE COMPRISING PRODUCTION AND TREATMENT OF A TEMPORARY MASK.

3,664,298. MANIFOLD FOR FOUNTAIN-TYPE LIQUID DISPENSER.

3,664,894. METHOD OF MANUFACTURING SEMICONDUCTOR DEVICES HAVING HIGH PLANAR JUNCTION BREAKDOWN VOLTAGE.

3,665,254. SEMICONDUCTOR DIODE.

3,665,256. HEAT DISSIPATION FOR POWER INTEGRATED CIRCUITS.

3,665,317. SEQUENTIAL AGC SYSTEM FOR SIGNAL RECEIVER.

3,665,339. SELF-PULSED MICROWAVE OSCILLATOR.

3,665,504. CHECKING AN AUTOMATIC TESTING SYSTEM.

3,665,570. METHOD FOR MONITORING THE CAPACITANCE OF A CAPACITOR WHILE ADJUSTING ITS CAPACITANCE.

3,666,153. TAPE PLAYER WITH FAST TAPE WINDING MECHANISM.

3,666,359. CORRELATION PEAK DETECTOR IN OPTICAL SPATIAL FILTERING SYSTEM.

3,666,527. METHOD OF ELECTROLESS DEPOSITION OF METALS WITH IMPROVED SENSITIZER.

3,666,573. METHOD FOR MAKING TRANSISTORS INCLUDING GAIN DETERMINING STEP.

3,667,007. SEMICONDUCTOR ELECTRON EMITTER.

3,667,008. SEMICONDUCTOR DEVICE EMPLOYING TWO-METAL CONTACT AND POLYCRYSTALLINE ISOLATION MEANS.

3,667,060. BALANCED ANGLE MODULATION DETECTOR.

PATENT EXAMINING CORPS

R. A. WAHL, Assistant Commissioner
Deputy Assistant Commissioner (Vacant)

CONDITION OF PATENT APPLICATIONS AS OF JULY 5, 1972

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	6-14-71
GENERAL ORGANIC CHEMISTRY, GROUP 120—I. MARCUS, Director. Heterocylic; Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	5-21-71
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—L. J. BERCOVITZ, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	8-02-71
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. P. KENT, Director. Coating: Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	7-01-71
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—Director (Vacant). Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	3-01-71
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS AND RELATED ELEMENTS, GROUP 210—N. ANSHER, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Miscellaneous.	7-26-71
SECURITY, GROUP 220—R. L. CAMPBELL, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	4-07-71
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	9-01-71
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—W. L. CARLSON, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	9-20-71
PHYSICS, GROUP 280—Director (Vacant). Photography; Sound and Lighting; Indicators and Optics; Measuring and Testing; Geometrical Instruments.	5-05-71
DESIGNS, GROUP 290—R. L. CAMPBELL, Director. Industrial Arts: Household, Personal and Fine Arts.	2-05-71
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—A. BERLIN, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vechicles and Appurtenances; Railways and Railway Equipment; Brakes; Rigid Flexible and Special Receptacles and Packages.	7-16-71
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus: Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders Woodworking; Tools; Cutlery; Jacks.	6-01-71
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—A. RUEGG, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	8-02-71
HEAT, POWER AND FLUID ENGINEERING, GROUP 340—M. M. NEWMAN, Director. Power Plants; Combustion Engines; Fluid Motors; Pumps; Turbines; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Vaporizing; Temperature and Humidity Regulation; Machine Elements; Power Transmission; Fluid Handling; Lubrication; Joint Packing.	7-16-71
CONSTRUCTIONS, SUPPORTS, TEXTILES, CLEANING, GROUP 350—T. J. HICKEY, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Receptacles; Supports; Cabinet Structures; Centrifugal Separations; Cleaning; Coating; Pressing; Agitating; Foods; Textiles; Apparel and Shoes; Sewing Machines; Winding and Reeling.	6-01-71

Expiration of patents: The patents within the range of numbers indicated below expire during July 1972, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,712,131 to 2,714,200, inclusive
Plant Patents..... Numbers 1,404 to 1,407, inclusive

DEFENSIVE PUBLICATIONS

PUBLISHED JULY 25, 1972

Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O.G. 687. The abstracts of Defensive Publication applications are identified by distinctly numbered series and are arranged chronologically. The heading of each abstract indicates the number of pages of specification, including claims and sheets of drawings contained in the application as originally filed. The files of these applications are available to the public for inspection and reproduction may be purchased for 30 cents a sheet.

Defensive Publication applications have not been examined as to the merits of alleged invention. The Patent Office makes no assertion as to the novelty of the disclosed subject matter.

T900,014
SEPARATION OF N-ISOPROPYLACRYLAMIDE FROM SULFURIC ACID SOLUTIONS THEREOF

Hans K. Dietl, Rte. 8, Seneca Road 37664, and Alan E. Lewis, 814 Afton St. 37660, both of Kingsport, Tenn.

Filed Sept. 25, 1970, Ser. No. 75,423
Int. Cl. C07c *103/00*
U.S. Cl. 260—561 N
1 Sheet Drawing. 11 Pages Specification

N-isopropylacrylamide is produced by reaction between acrylonitrile and isopropyl alcohol in concentrated sulfuric acid. In order for the n-isopropylacrylamide to be used in various industrial processes it must be isolated from its sulfuric acid solution. This may be accomplished by (1) dilution of the solution with water, (2) extracting the n-isopropylacrylamide content of the dilute solution with an organic solvent for n-isopropylacrylamide such as methylene chloride or chloroform, and (3) evaporating off the solvent from the n-isopropylacrylamide-solvent solution, whereby pure n-isopropylacrylamide is obtained.

T900,015
PROCESS FOR PREPARING TRIMETHYL-HYDROQUINONE

John G. Thweatt, Rte. 11 37462, and Fred H. Rash, 510 Whispering Way 37663, both of Kingsport, Tenn.

Filed Oct. 1, 1970, Ser. No. 77,377
Int. Cl. C07c *39/08, 69/16*
U.S. Cl. 260—621 R
No Drawing. 9 Pages Specification

Process for preparing trimethylhydroquinone by contacting 2,6,6-trimethylcyclohex-2-ene-1,4-dione with an acylating agent in the presence of an acid catalyst. Trimethylhydroquinone diester is formed first, which may be hydrolyzed by treatment with aqueous acid or base. When the hydrolysis mixture cools, trimethylhydroquinone may be separated therefrom.

T900,016
HOT MELT CARPET BACKING ADHESIVES AND ARTICLE OF MANUFACTURE AND PROCESS

James E. Dickert and William D. McGillen, both of Box 511, Kingsport, Tenn. 37462

Continuation of abandoned application Ser. No. 790,871, Jan. 13, 1969. This application Oct. 14, 1970, Ser. No. 80,796
Int. Cl. C08d *9/12;* **C08f**
U.S. Cl. 260—27
No Drawing. 15 Pages Specification

Hot melt carpet backing adhesives comprising a blend of from about 20 to about 60 parts of amorphous polypropylene, from about 10 to about 50 parts of polyethylene having a melt index of from about 10 to about 350 and from about 10 to about 50 parts of tackifying material including polyterpene resins, tall oil rosins, wood rosins, hydrogenated wood rosins, rosin esters and hydrocarbon resins. These adhesives have been found to greatly improve the manufacture of carpets and the carpet structure itself.

T900,017
STRIPPABLE COATING COMPOSITION

Travis L. Gordy, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.

Continuation of application Ser. No. 780,260, Nov. 29, 1968. This application Mar. 22, 1971, Ser. No. 126,978
Int. Cl. B65b *33/00, 33/04*
U.S. Cl. 117—6
No Drawing. 16 Pages Specification

Compositions are described which are useful for providing a strippable protective coating on various substrates (e.g. automobile moldings). The compositions comprise petroleum wax, ethylene-isobutyl acrylate copolymer, ethylene-vinyl acetate copolymer and a rosin ester. Suitable ethylene-isboutyl acrylate copolymers contain about 20 to about 32 weight percent isobutyl acrylate and have a melt index of about 0.5 to about 260. Suitable ethylene-vinyl acetate copolymers contain about 18 to about 29 percent by weight vinyl acetate and have a melt index of from about 0.5 to about 250. Suitable rosin esters are the glycerol and pentaerythritol ester of rosins such as pale wood rosin, hydrogenated rosin and polymerized rosin. The substrate can be made of aluminum, anodized aluminum, painted aluminum, stainless steel, vinyl, acrylonitrile-butadiene-styrene (ABS) polymer or various combinations of these materials. The various materials can be present in the following amounts (parts by weight): petroleum wax—30 to 60; ethylene-isobutyl acrylate copolymer—15 to 40; ethylene-vinyl acetate copolymer—10 to 40; rosin esters—5 to 20.

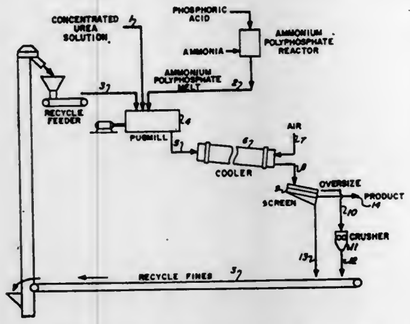
T900,018
UREA-AMMONIUM POLYPHOSPHATE PRODUCTION

Robert G. Lee, 109 Augusta St., Florence, Ala. 35630, and Robert D. Mitchell, 102 Oak Hill Ave., Sheffield, Ala. 35660

Filed Apr. 1, 1971, Ser. No. 130,236
Int. Cl. C05b *15/00*
U.S. Cl. 71—29
1 Sheet Drawing. 16 Pages Specification

Pugmill (or blunger) granulation process for the production of high-analysis fertilizers composed of urea and ammonium polyphosphate. Concentrated urea solution (95–100%) and anhydrous molten ammonium polyphosphate are granulated in a pugmill in the presence of recycled solids. The moisture content of the product is sufficiently low to eliminate the need for a dryer in the process. The urea solution is sprayed onto the recycle in the pugmill upstream from the ammonium polyphosphate melt, allowing the urea to be overcoated with the melt and preventing subsequent dusting off of urea. The points of entry of the urea solution and the melt into the pugmill are separated by a minimum of 12 inches to prevent hydrolysis of the urea by the melt which results in foaming and gas evolution. Solid urea may also be used with the ammonium polyphosphate melt, which is produced from either electric-furnace or wet-process superphosphoric acid or, alternatively, from merchant-grade wet-process acid by the direct process utilizing the heat

of reaction of ammonia with the acid to form polyphosphate. Other fertilizer materials such as ammonium sulfate, potassium chloride, or micronutrient sources may be incorporated by adding them to the pugmill during granulation.

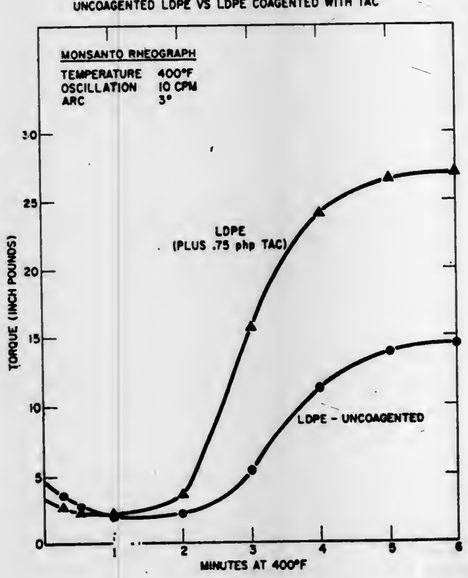


FLOWSHEET OF UREA-AMMONIUM POLYPHOSPHATE PILOT PLANT

T900,019
POLYETHYLENE

John J. Murphy, Jr., 719 Springfield Ave., Cranford, N.J. 07016; Winthrope C. Smith, 430 Kimball Turn, Westfield, N.J. 07090; and William D. Marsh, 91 Cranford Ave., Cranford, N.J. 07016

Filed Apr. 19, 1971, Ser. No. 135,207
Int. Cl. C08f *27/00, 29/04*
U.S. Cl. 260—878 R
2 Sheets Drawing. 17 Pages Specification

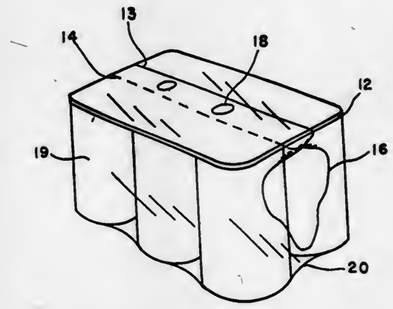


Peroxide cured polyethylene homo- and copolymers having improved physical properties, i.e. greatly reduced void formation and increased cure rate and state, are prepared by incorporation of minor amounts of EPDM's and/or coagents such as triallyl cyanurate, trimethylol propane trimethacrylate, ethylene dimethacrylate, m-phenylene bis maleimide, etc. These cured polymers are useful as electrical insulators, e.g. for high voltage wire and cable.

T900,020
SLEEVE-WRAPPED PACKAGE AND METHOD OF PREPARING SAME

John Quincy Britt and William Owrey Griffiths, Greenville, and Milton Albert Howe, Jr., Spartanburg, S.C., assignors to W. R. Grace & Co., Duncan, S.C.

Continuation of application Ser. No. 786,028, Dec. 23, 1968. This application Apr. 21, 1971, Ser. No. 136,164
Int. Cl. B65d *65/16, 71/00, 85/62*
U.S. Cl. 206—65 S
4 Sheets Drawing. 7 Pages Specification



A package comprising at least one article enclosed in an open ended sleeve of shrinkable material can be prepared by overlapping the opposed ends of a sheet of film to form a tube or sleeve in which the article is positioned, the ends of the tube extending beyond the ends of the article. Only that portion of the seam which is adjacent to a lateral surface of the article is sealed. After the partial sealing, the tubing is heat shrunk about the article leaving the end openings of the tube reduced in size. The portions of the seam adjacent the ends of the article which have not been sealed terminate in the periphery of the openings and form convenient tear tabs.

T900,021
METHOD FOR PREPARING FIRE RETARDANT POLYESTER FIBERS

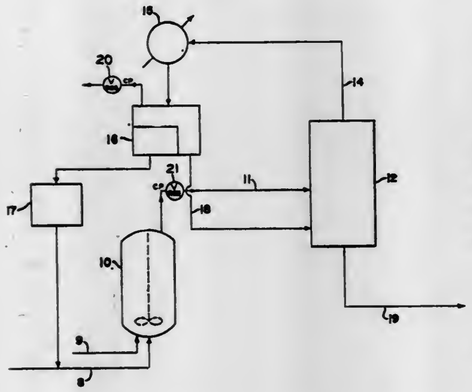
John R. Caldwell, 404 Colonial Heights Road 37663, and Winston J. Jackson, Jr., 4408 Green Springs Circle 37664, both of Kingsport, Tenn.

Continuation-in-part of application Ser. No. 790,870, Jan. 13, 1969. This application May 11, 1971, Ser. No. 142,356
Int. Cl. B32b *27/36;* **C09k** *3/28*
U.S. Cl. 117—136
No Drawing. 24 Pages Specification

Disclosed is a process for preparing fire retardant polyester fibers comprising applying to the surface of the polyester fiber an organic bromine compound that does not chemically react with the polyester and subsequently heating the fiber in a temperature range of about 175 to about 220° C. to diffuse the organic bromine compound into the fiber. Advantageously, the toughness of the fiber is reduced not more than 30.0% by this process and the organic bromine compound is retained in the fiber after laundering and dry cleaning. Poly(ethylene terephthalate) and poly(1,4-cyclohexylenedimethylene terephthalate)

fibers are particularly desirable polyester fibers. Tris(2,3-dibromopropyl) phosphate is a particularly desirable organic bromine compound.

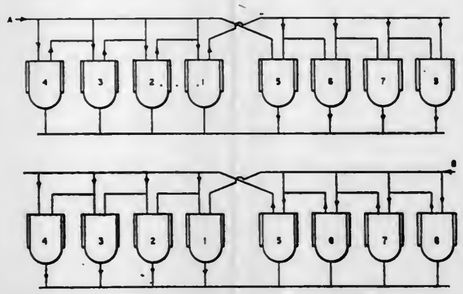
T900,022
POLYMERIZATION PROCESS
Charles R. Johnson and Warren E. Jones, Akron, Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio
Continuation of application Ser. No. 655,929, July 25, 1967. This application May 13, 1971, Ser. No. 143,170
Int. Cl. C08f 1/74
U.S. Cl. 260—80.7
1 Sheet Drawing. 8 Pages Specification



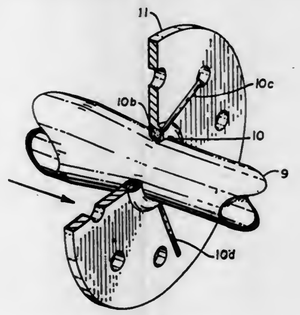
The process of continuous solution of polymerization, in the substantial absence of water, of 1,3-butadiene alone, with either isoprene or styrene, or all three materials together which comprises the steps of continuously introducing this material, a lithium catalyst, 1,2-butadiene as a modifier and an inert solvent such as hexane into at least one reactor wherein the polymerization of the material takes place. Transferring the polymerized material, solvent and unreacted modifier in the substantial absence of water directly to means for vaporizing volatile material whereat an amount of solvent and modifier is vaporized overhead. The amount of solvent and modifier vaporized is enough to increase the concentration of the polymerized material in the solvent at least 5%. The vaporized solvent and modifier is condensed and recycled into the reactor along with the continuous introduction of the monomeric material. The amount of 1,2-butadiene recycled is at least 50% of the unreacted 1,2-butadiene. The polymerized material is removed in the solvent from the vaporizing means.

T900,023
CHLOROPRENE POLYMERIZATION PROCESS
Edwin Benjamins, Montague, Mich., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed May 25, 1971, Ser. No. 146,728
Int. Cl. C08d 1/09, 3/14
U.S. Cl. 260—92.3
1 Sheet Drawing. 14 Pages Specification

Chloroprene is polymerized in aqueous emulsion by an improved process involving (1) initiating and conducting part of the polymerization in one reaction zone in which the polymerizaton is carried out in a continuous manner and (2) completing the polymerization in a second reaction zone in which the polymerization is carried out in a batchwise manner. The continuous zone consists of at least two agitated, confined, interconnected reaction vessels and the batch zone consists of at least an equal number of similarly defined vessels having volumes approximately equal to those of the continuous zone. Advantages of the improved process relative to a completely continuous process are increased productive capacity, better control of the polymer viscosity, and greater access to the polymerization equipment for purposes of cleaning. Relative to a completely batch process the improved process has the advantage of permitting more accurate control of conversion of monomer to polymer.



T900,024
EXTRUSION APPARATUS FOR MANUFACTURE OF THERMOPLASTIC PIPE
Edward R. Hollander, Jr., 124 Bloomingdale Pike, Apt. 27, Kingsport, Tenn. 37660
Filed June 1, 1971, Ser. No. 148,566
Int. Cl. B29d 23/04
U.S. Cl. 18—14 A
1 Sheet Drawing. 10 Pages Specification

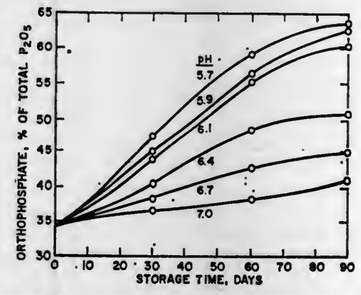


Improved apparatus for the manufacture of plastic pipe and tubing including a forming die, a sizing plate, a water cooling bath contained in a closed chamber wherein a partial vacuum is maintained, the improvement which consists in provision of a hollow tubular cooling element attached to or unitary with the sizing plate around the entire rim of the sizing orifice to form a chamber through which a coolant is continuously circulated. This element is particularly characterized by presenting a smooth, cooled, rounded edge circular sizing orifice to prevent formation of defects in the outer surface of the pipe which might otherwise arise from adhesion of the molten plastic to the metal surface of the sizing orifice, or from irregularities in the surface of an unrounded orifice, thus eliminating the need for employment of any type of lubricant at the sizing orifice.

T900,025
POLYTETRAMETHYLENE ETHER GLYCOL
Melvin C. Baker, 377 Howard Drive, Youngstown, N.Y. 14174, and Arthur O. Rogers, 981 Escarpment Drive, Lewiston, N.Y. 14092
Continuation-in-part of application Ser. No. 78,619, Oct. 6, 1970. This application June 17, 1971, Ser. No. 154,217
Int. Cl. C07c 43/00
U.S. Cl. 260—615 B
No Drawing. 12 Pages Specification

Method of preparing a polytetramethylene ether glycol which provides viscosity stability to spandex fiber spinning solutions and good power to resulting spandex fibers which are the reaction product of polytetramethylene ether glycol, p,p'-methylenediphenyl diisocyanate, ethylene diamine and optionally 1,3-cyclohexylene diamine which comprises adding to substantially pure tetrahydrofuran an amount of methyltetrahydrofuran selected from the group consisting of 2-methyltetrahydrofuran and 3-methyltetrahydrofuran sufficient that the resulting polytetramethylene ether glycol, when depolymerized, is analyzed to contain 100 to 1000 parts per million of methyltetrahydrofuran, and polymerizing the resulting mixture to polytetramethylene ether glycol having a molecular weight of 750 to 4000.

T900,026
SUSPENSIONS
Thomas M. Jones, 208 Stephenson Court, Sheffield, Ala. 35660
Continuation-in-part of application Ser. No. 741,099, June 28, 1968. This application June 21, 1971, Ser. No. 154,772
Int. Cl. C05b 7/00
U.S. Cl. 71—34
1 Sheet Drawing. 57 Pages Specification



AMMONIUM POLYPHOSPHATE SALT SUSPENSION FERTILIZER
EFFECT OF pH ON HYDROLYSIS OF POLYPHOSPHATES TO ORTHOPHOSPHATE DURING STORAGE AT 100°F.

Ammonium polyphosphate fertilizers are limited in grade and only short-term storage is feasible because crystals grow to large sizes during storage and high viscosities develop. High viscosities decrease the ability of the suspensions to flow. Large crystals settle and plug up valves and spray nozzles. Either large crystals or high viscosity makes transfer through pipe line and disbursement to the soil difficult. Crystal growth and increase in viscosity during storage were retarded by control of acid concentration (polyphosphate level), product concentration, and pH to produce an abundance of small seed crystals that remain as the equilibrium phase despite hydrolysis of polyphosphate. With acid of 76 to 78 percent P_2O_5 content, ammoniation to pH 5.0 to 5.4 resulted in monoammonium phosphate ($NH_4H_2PO_4$) as the equilibrium phase. Ammoniation to pH 6.3 to 7.0 resulted in a diammonium phopshate [$(NH_4)_2HPO_4$] as the equilibrium phase. Typical products were 11–45–0 (pH 5.2) or 13–41–0 and 14–44–0 (pH 6.4). Higher acid concentrations or ammoniation in the pH range 5.6 to 6.0 resulted in unstable crystal phases. Satisfactory high-grade, three-component suspensions with good storage properties may also be produced by this procedure.

T900,027
PRODUCTION OF UREA-AMMONIUM SULFATE
Horace C. Mann, Jr., 1942 Holiday Drive, Florence, Ala. 35630
Filed June 21, 1971, Ser. No. 155,133
Int. Cl. C05c 9/00
U.S. Cl. 71—28
3 Sheets Drawing. 19 Pages Specification

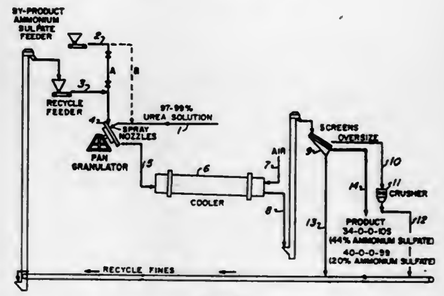


Fig. 3
FLOW DIAGRAM OF GRANULATION PILOT PLANT FOR PRODUCTION OF UREA-AMMONIUM SULFATE

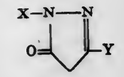
A process for the production of urea-ammonium sulfate granules from urea and ammonium sulfate by several granulation methods. The proportion of ammonium sulfate in the mixture was varied from 15 to 70 percent by weight resulting in products containing from 42 to 29 percent N and 3 to 17 percent S, respectively. Unexpectedly, the urea-ammonium sulfate mixture in these proportions were fluid enough at 250° to 325° F. to be prilled and granulated by conventional meahs. Typical grades made in continuous-type pilot-plant work were 40–0–0–4S, 34–0–0–9S, and 30–0–0–13S. Most granulation was carried out by oil prilling or in a pugmill but any type of granulation method, such as air prilling or in drum or flaker, likely would be feasible. With use of 99.5 percent urea solution and solid ammonium sulfate, no drying step would be required. The presence of the ammonium sulfate increased the strength of the granules significantly.

No caking occurred when unconditioned 30–0–0–9S prills were stored in bulk for 6 months. Unconditioned product of 40–0–0–4S grade caked in 3 months but storage for this period was satisfactory when 2 percent by weight of kaolin clay conditioner was used. The critical relative humidity of these products was in the range 55 to 60 percent at 86° F.

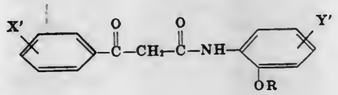
T900,028
METHOD FOR PROTECTING PHOTOGRAPHIC FILM AGAINST ALDEHYDES
Kent R. Rush, Rochester, N.Y. 14626
Filed July 1, 1971, Ser. No. 159,028
Int. Cl. G03c 1/76
U.S. Cl. 96—74
No Drawing. 38 Pages Specification

Adverse sensitometric effects resulting from contamination of color photographic elements containing silver

halide emulsion layers with aldehyde vapor prior to exposure and processing can be substantially reduced or eliminated by incorporating into non-light sensitive layers as aldehyde scavengers certain 1,3-disubstituted pyrazolones or benzoylacet-o-alkoxyanilides exemplified by compounds of the formulae



or



wherein

X is an aryl group;
Y is a carbonamido group;
R is an alkyl group;

either one of X' or Y' is defined as a hydrogen atom, the other then being defined as a substituent group having the formulae

—NH—CO—A—O—R_1 or —NH—CO—R_2

wherein A is a linear or branched alkylene group; and R_1 and R_2 are defined as an aryl group.

Such aldehyde scavengers in the photographic elements reduce color fog on color processing.

T900,029
COLOR DIFFUSION TRANSFER PROCESS
Charles R. Barr, Kodak Park Works, Rochester, N.Y. 14626
Filed July 6, 1971, Ser. No. 160,132
Int. Cl. G03c 7/00
U.S. Cl. 96—3
No Drawing. 44 Pages Specification

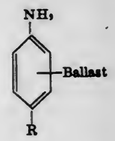
A color diffusion transfer process is described wherein:

(A) a photographic element comprising a support having thereon at least one photosensitive silver halide emulsion layer containing
  (a) a nondiffusible coupler capable of reacting with an oxidized aromatic primary amine to release a diffusible dye or dye precursor, and
  (b) a nondiffusible aromatic primary amine, is exposed;
(B) the photographic element is then treated with a silver halide developing agent to effect development and thereby oxidize the developing agent;
(C) the oxidized developing agent then cross-oxidizing the amine;
(D) the oxidized amine then reacting with the nondiffusible coupler to release a diffusible dye or dye precursor imagewise as a function of the imagewise exposure of each emulsion layer; and
(E) at least a portion of each of the imagewise distributions of diffusible dye or dye precursor diffusing to a dye image-receiving layer to provide a transfer image.

Preferred nondiffusible couplers have the formula:

DYE-LINKING GROUP-BALLASTED COUPLER

Preferred nondiffusible amines have the formula:



wherein R can be (1) OR¹ wherein R¹ is H or a hydrolyzable moiety, or (2)



wherein R^2 and R^3 are each H or alkyl.

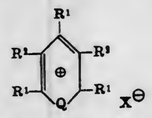
The nondiffusible coupler and nondiffusible amine could also be combined into a single compound.

T900,030
LIGHT-SENSITIVE COMPOSITIONS AND PHOTOGRAPHIC ELEMENTS
David A. Thomas, 19 St. Thomas Drive, Hatch End, Pinner, Middlesex, England, and Colin Holstead, 59 Kindersley Way, Abbotts Langley, Hertfordshire, England
Filed July 6, 1971, Ser. No. 160,160
Claims priority, application Great Britain, Oct. 15, 1970, 49,106/70
Int. Cl. G03c 5/24
U.S. Cl. 96—48
No Drawing. 23 Pages Specification

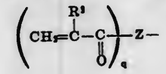
Light-sensitive compositions including a polymer of the type (e.g. polymers including acryloylpeptide units as described in Canadian Pat. 786,748 and polymers derived from a polyol and an unsaturated polycarboxylic acid as described in Canadian Pat. 837,083) that is reactable with a sensitizer when exposed to light in combination with a sensitizing amount of naphthalene sensitizer having ortho diazo and oxo substituents at the 1,2 or the 2,1 positions of the naphthalene nucleus and further having an alkoxysulfonyl group, the terminal carbon atom of which is trihalo (preferably chloro and bromo) substituted, and wherein the sulfonyl moiety is bonded directly to the naphthalene nucleus at the 4 or the 5-position, are advantageous in the preparation of positive-working photolithographic materials. Desirable such naphthalene sensitizers include such materials as 2-diazo-1,2-dehydro-1-oxo-5 [(2',2',2'-tribromoethoxy) sulfonyl] naphthalene and 2-diazo-1,2-dehydro-1-oxo-5 [(2',2',2'-trichloroethoxy) sulfonyl] naphthalene. The light-sensitive compositions can be coated on support materials to prepare composite photographic elements which can be processed by contact with aqueous alkaline solutions. The processed elements have utility as photolithographic printing masters and photoresists for etching operations.

T900,031
NOVEL PYRYLIUM SALTS AND USES THEREFOR
Constantine C. Petropoulos and Joseph A. Arcesi, both of Kodak Park, Rochester, N.Y. 14650
Filed Nov. 1, 1971, Ser. No. 194,487
Int. Cl. G03g 5/06
U.S. Cl. 96—1.5
No Drawing. 25 Pages Specification

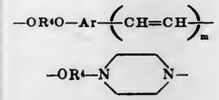
Vinyl substituted pyrylium salts are useful as sensitizers in electrophotographic systems and in photopolymerizable systems as either sensitizers, initiators or photopolymerizable monomers. The salts can be represented by the formula:



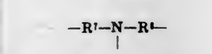
wherein at least one of the R^1 groups is an acrylic group appended to the pyrylium nucleus through a linking group, said R^1 group preferably having the structure:



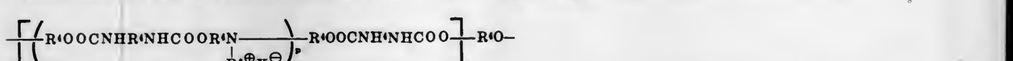
wherein q is 1 or 2, R^3 is hydrogen or a methyl group and —Z— is a divalent or trivalent linking group selected from



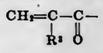
and



wherein each R^7 and R^8 independently has the structure:



wherein the linking group is attached to the



group through its terminal oxygen atom and to the pyrylium nucleus at the other end; m and n are each 0 or 1; p is 0 to 4; R^4 is an alkylene group having 2 to 10 carbon atoms; R^6 is a 2- or 4-pyrylium or thiapyrylium nucleus; Ar is an arylene group; the remaining R^1 groups are hydrogen, alkyl or aryl, preferably aryl, or are taken together with an adjacent R^2 group to represent the atoms necessary to complete a fused aromatic ring system; each R^2 is a hydrogen atom or is taken together with an adjacent R^1 to form a fused aromatic ring system; Q is —S— or —O—; and $X^\ominus$ is an anion. Representative pyrylium salts useful in this invention and having the above structure include:

2,6-diphenyl-4-[(4,2-methacryloyloxyethoxy)phenyl] pyrylium perchlorate.
2,6-diphenyl-4-[4-(2-methacryloyloxyethoxy)phenyl] pyrylium perchlorate.
2,6-diphenyl-4-(4-methacrylamidophenyl)thiapyrylium perchlorate.
4-[4-(2-methacryloyloxyethoxy)styryl]flavylium perchlorate.
2,6-diphenyl-4-[4-(2-methacryloyloxyethoxy)phenyl] thiapyrylium perchlorate.
2,6-diphenyl-4-[4-(2-methacryloyloxyethyl)piperazinyl] pyrylium perchlorate.
4-[N,N-bis(2-methacryloyloxyethyl)amino]-2,6-diphenyl pyrylium perchlorate.
4-[N,N-bis(5,12-diaza - 19 - methylene - 3,14,17 - trioxa-4,13,18-trioxoeicosyl)amino]-2,6-diphenylpyrylium perchlorate.
4,4' - [21,38 - (2,57-dimethylene-9,16,21,25,33,38,43,50-octaaza-4,17,18,24,35,41,52,55-octaoxa-3,8,17,26,34,42,51,56-octaoxooctapentacontylene)]bis(2,6-diphenylpyrylium perchlorate).

PLANT PATENTS

GRANTED JULY 25, 1972

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

3,241

AFRICAN VIOLET

Hermann Holtkamp, 5–7 Werther Strasse, 19 Postfach, 4243 Isselburg, Germany

Original application Oct. 7, 1968, Ser. No. 765,700. Divided and this application Oct. 7, 1970, Ser. No. 79,000

Int. Cl. A01h *5/00*

U.S. Cl. Plt.—69 **1 Claim**

A hybrid violet of a descendant of a cross between the *Saintpaulia ionantha* and *Saintpaulia shumensis* species which has permanent new characteristics including strength of stem, fast and vigorous growth, profuse flowering, uniform bouquet, prolonged blooming period, resistance to disease, reliability in initiating new plantlets, retention of flowers past maturity on their respective stems, reliability in new plants retaining characteristics of the parent and pronounced uniformity throughout the life cycle.

3,242

ALMOND TREE

Frederic W. Anderson, Merced, Calif., assignor to Arthur Bright, Le Grand, Calif.

Filed Feb. 4, 1971, Ser. No. 112,835

Int. Cl. A01h *5/00*

U.S. Cl. Plt.—30 **1 Claim**

An almond tree which is of large size, vigorous, open to dense, spreading to medium, abundant of foliage with large to medium size leaves, heavy of bloom with the blooming period two to three days after the Nonpareil (unpatented), and a regular bearer with heavy to medium productivity of large to medium size well-sealed nuts about the size of the IXL and Peerless (both unpatented), well distributed on the tree, and in harvest after the Nonpareil but before the Mission (unpatented) and about with the Ne Plus Ultra (unpatented).

3,243

ROSE PLANT

Herbert C. Swim and O. L. Weeks, Ontario, Calif., assignors to O. L. Weeks, doing business as Weeks Wholesale Rose Grower, Ontario, Calif.

Filed Mar. 11, 1971, Ser. No. 123,478

Int. Cl. A01h *5/00*

U.S. Cl. Plt.—11 **1 Claim**

1. A new and distinct variety of rose plant of the hybrid tea class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of an especially well-branched, tall and symmetrical plant habit, exceptionally good, heavy and semi-glossy foliage which clothes the plant well and which has excellent resistance to powdery mildew, heavy stems of sufficient strength to hold all blooms erect, with a consequent pleasing complement to the attractive foliage, large flowers which are borne both singly and in clusters of 2 to 4 flowers, with an occasional cluster of 5 flowers, a distinctive, attractive and unusual coral-orange flower color, and a moderate and pleasing tea flower fragrance.

3,244

ROSE PLANT

Herbert C. Swim and O. L. Weeks, Ontario, Calif., assignors to O. L. Weeks, doing business as Weeks Wholesale Rose Grower, Ontario, Calif.

Filed Mar. 11, 1971, Ser. No. 123,479

Int. Cl. A01h *5/00*

U.S. Cl. Plt.—11 **1 Claim**

1. A new and distinct variety of Rose Plant of the hybrid tea class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of a well-branched, symmetrical and tall plant habit, unusually strong and long cutting stems, better than average foliage substance and resistance to powdery mildew, a habit of bearing the flowers singly, with almost complete absence of cluster blooms, a medium to very large flower size of double and high-centered form, and a distinctive, attractive and unusual flower color, with the outside surface of the petals blending from medium pink to delicate pink and then to cream color at the base, and the inside surface of the petals being strong pink at their outer edges, blending to pale pink and then to cream color at the base, and the center of the fully opened flower having a most unusual brownish-lavender shade.

PATENTS

GRANTED JULY 25, 1972

GENERAL AND MECHANICAL

3,678,514

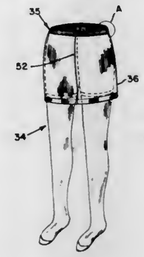
COMBINATION GARMENTS AND METHOD OF MAKING SAME

Sam C. Safrit, Winston-Salem, N.C., assignor to Hanes Corporation, Winston-Salem, N.C.

Filed Jan. 21, 1970, Ser. No. 4,707

Int. Cl. A41d *1/06, 1/14;* **A41b** *9/04*

U.S. Cl. 2—212 **31 Claims**



A combination garment and method of making same wherein a pair of tubularly knit blanks each having integrally knit leg, panty and cover portions are secured together by a continuous seam or integrally formed, and the cover portions are turned outwardly and downwardly over the panty and leg portions to form outerwear garments attached to conventional innerwear garments.

3,678,515

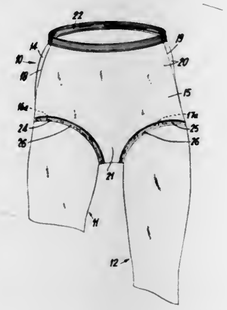
PANTY-HOSE

Nicholas Wehrmann, North Wilkesboro, N.C., assignor to Ithaca Textiles, Inc., Ithaca, N.Y.

Filed Sept. 2, 1970, Ser. No. 68,996

Int. Cl. A41b *9/04*

U.S. Cl. 2—224 R **11 Claims**



A unitary piece of knit fabric forms the main body portion and the crotch portion of a panty having at opposite sides, respectively, two vertical seams extending from the upper to the lower edge of the main portion, the two panty portions being integral (without any interconnecting seam) and defining leg openings; and an elastic waist band may be seamed to the main body portion along its upper edge. A pair of stockings of knit fabric are joined at their upper ends by expandible seams to the panty around the respective leg openings. The panty fabric offers substantially greater resistance to lateral stretch than the stocking fabric, whereby the panty effectively resists downward displacement on the wearer's body under the increased tension created in the garment incident to bending movements of the wearer.

3,678,516

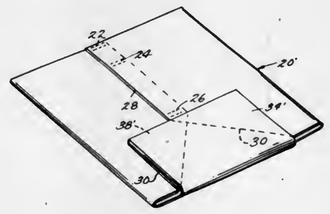
AUTOMATED PRODUCTION OF MEN'S BOXER SHORTS

Leonard N. Backer, Westport, Conn., assignor to Burlington Industries, Inc., Greensboro, N.C.

Filed Aug. 10, 1970, Ser. No. 62,556

Int. Cl. A41b *9/02*

U.S. Cl. 2—224 R **6 Claims**



Simplified men's boxer shorts made by folding an elongated web of sheet material so that the side edges overlap to form a tube, severing a section from the tube, securing together portions of the overlapped section edges to define a fly front, folding back the overlapped edges below the fly to form flaps, securing a separate crotch patch to edge portions of the flaps and to the back end edge of the section between the flaps, and securing an elastic waist band to the section. In an alternative embodiment of one-piece construction the tube is cut so that the crotch patch is integral with the back end edge.

3,678,517

KNEE JOINT FOR PROSTHETIC APPLIANCE

Edwin Ehbrecht, 3429 Etzenborn 24, Germany

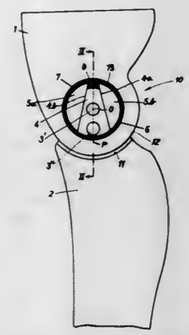
Filed Jan. 21, 1971, Ser. No. 108,480

Int. Cl. A61f *1/04, 1/08*

U.S. Cl. 3—27 **9 Claims**

An artificial leg with a thigh member and a shank member has an upwardly converging wedge fixedly secured to the shank member in a bearing cylinder rigid with the thigh member with interposition of two freely movable brake segments between the flanks of the wedge and the cylinder wall. When the weight of the user rests on the appliance, the cylinder is lowered so that the wedge spreads the brake seg-

ments to rigidify the limb; when the weight is off, a spring raises the cylinder relatively to the wedge which thereupon



releases the brake segments from their cylinder-engaging position, thus allowing the shank to swing with reference to the thigh.

3,678,518
BUNK BED ASSEMBLY
Stanley Litkewycz, Detroit, Mich., assignor to Lear Siegler, Inc., Detroit, Mich.
Filed Oct. 26, 1970, Ser. No. 80,003
Int. Cl. A47c *19/20*
U.S. Cl. 5—9 **10 Claims**

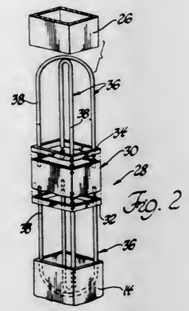
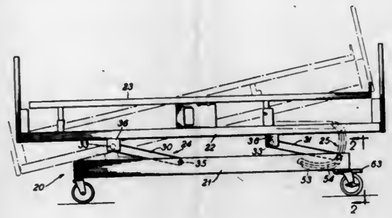


FIG. 2

A bunk bed assembly including a lower bed having a plurality of hollow support posts and an upper bed having a plurality of hollow support posts. A column means is disposed between a pair of posts of the respective beds and as a first end abutting a support post of the lower bed and a second end abutting a support post of the upper bed. A pair of U-shaped elements having a pair of legs and an interconnecting base with the legs thereof attached to the column means extend from each end of the column means and into the adjacent support posts.

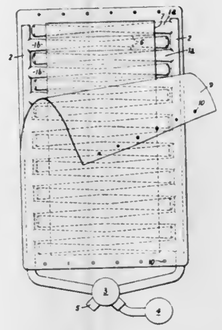
3,678,519
HOSPITAL BED
Robert J. Szucs, Midlothian, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.
Filed March 17, 1970, Ser. No. 20,182
Int. Cl. E03d *1/34*
U.S. Cl. 5—62 **1 Claim**

A hospital bed having a fixed frame and a movable frame, means for moving the movable frame in parallel relationship to the fixed frame and means for obtaining at least one



Trendelenburg position of the bed regardless of the relationship of the movable frame relative to the fixed frame.

3,678,520
ALTERNATING PRESSURE PADS FOR BED PATIENTS
Ronald James Peter Evans, Bushey Heath, England, assignor to Talley Surgical Instruments Limited, Hertfordshire, England
Filed Dec. 14, 1970, Ser. No. 97,868
Claims priority, application Great Britain, March 13, 1970, 12,082/70
Int. Cl. A61g *7/10*; A47c *27/08*
U.S. Cl. 5—91 **8 Claims**

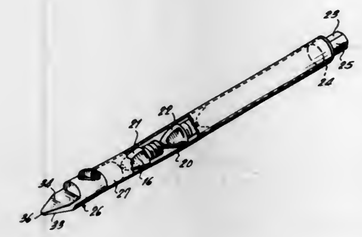


An air cell for use in an alternating pressure pad has a tube with its wall of flexible sheet material and at least the outermost half of the length of that tube, considered in the direction outwardly longitudinally from the longitudinal center of the tube, having its width increasing towards the remote end of the tube, a preferred form having the tube composed of two similar frusto-conical portions joined at their smaller ends.

3,678,521
COMPOUND TOOL FOR USE IN TEXTILE PAINTING
Francis W. Andrews, Clarcona; Philip S. Sussman, Orlando, both of Fla., and Sidney D. Barlow, Mount Vernon, N.Y., assignors to Mark-Tex Corporation, Englewood, N.J.
Filed Oct. 6, 1970, Ser. No. 78,485
Int. Cl. B25f *1/00*
U.S. Cl. 7—1 G **7 Claims**

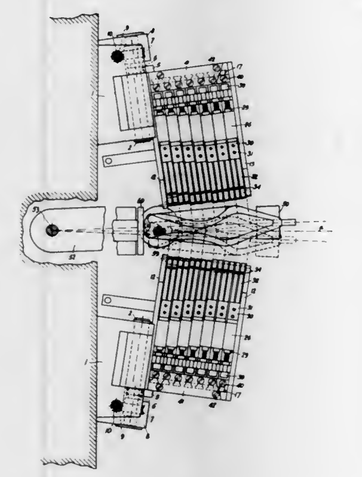
A compound tool is used in connection with painting on tex-

tile sheets. It consists of a hollow body portion adapted to contain replacement tips for ball point color applying devices, a



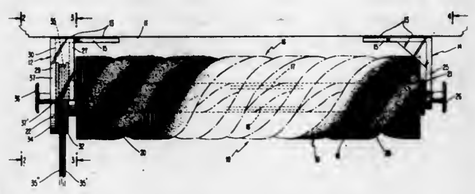
wrench-like opening for the removal and replacement of such tips, and a spatula-like portion for the blending of the ink applied to the textile material.

3,678,522
SHAPING MACHINE FOR SHOE UPPERS
Karel Bumbatek, and Ladislav Olser, both of Gottwaldov, Czechoslovakia, assignors to Zavody presneho strojirenstvi Gottwaldov narodni podnik, Gottwaldov, Czechoslovakia
Filed Feb. 3, 1971, Ser. No. 112,121
Claims priority, application Czechoslovakia, April 28, 1970, 2920
Int. Cl. A43d *21/12*
U.S. Cl. 12—8.1 **5 Claims**



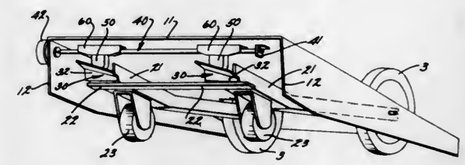
A shaping machine for shoe uppers over lasts, comprising stretching bands, where the stretching force of said stretching bands is for each wiping unit adjusted independently from the adjustment of the force pressing the lasting margin against the midsole in the course of their cementing, whereby the distance and relative height of each wiping unit with respect to the midsole is adjustable. A universal application of this machine for any kind and shape of shoes is thus achieved.

3,678,523
BRUSHING DEVICE
William F. Enchelmaier, 16 Oak Place, North Caldwell; Harvard W. K. Enchelmaier, 24 Kingwood Drive, Great Notch, and William J. Enchelmaier, 2 North Terrace, North Caldwell, all of N.J.
Filed May 27, 1970, Ser. No. 41,029
Int. Cl. A46b *13/08*; A61h *7/00*
U.S. Cl. 15—21 D **13 Claims**



A brushing device having a manually driven brush rotatable about its longitudinal axis. The brush is oscillated by means of a pull cord wrapped around a pulley which is drivingly connected to the brush, at least one span of the pull cord extending directly from the pulley to be grasped by a hand of the operator. Preferably the cord has two such spans, which extend from opposite sides of the pulley, and which are engaged and pulled by the respective hands of the operator. Some of the disclosed embodiments of the device are particularly adapted for use as bathing aids. In certain disclosed embodiments, the brush remains in a fixed axial position. In other embodiments, the brush, which is mounted vertically, is free for vertical travel throughout a limited range under the influence of the pulls on the said spans of the pull cord. In yet another embodiment, wherein the device is disposed vertically, the brush oscillating cords may selectively be pulled either horizontally or vertically.

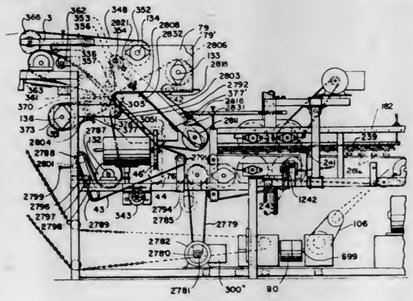
3,678,524
HEAVY DUTY VACUUM CLEANER
Wilfred C. Nise, Spring Lake, and Dale E. Lowder, Muskegon, both of Mich., assignors to Clark Floor Machine Company Division of Studebaker Corporation, Muskegon, Mich.
Filed March 19, 1970, Ser. No. 20,909
Int. Cl. A47l *11/00, 5/34*
U.S. Cl. 15—49 **17 Claims**



A first frame is supported by wheels and a second frame is pivotally connected at one of its ends to the first frame on the axis of rotation of those wheels. Also secured to the first frame are a rotating horizontal-axis brush and other conventional features of a sweeper with vacuum. The free end of the second frame is supported by casters. Wedges are mounted at either side and on the top of the free end of the second frame. A threaded shaft is mounted on the first frame such that it passes over those wedges and carries blocks which engage the inclined surface of the wedges. The blocks travel across these inclined surfaces when the shaft is rotated, since they are restrained by channels from rotation with the shaft. The travel

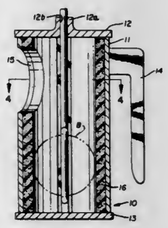
of the blocks adjusts the spacing between the first and second frames to raise and lower the first frame and its equipment with respect to the surface being treated while the angular relationship between the second frame and the floor remains substantially unchanged.

3,678,525
MACHINE FOR BRUSHING AND STACKING CARTON BLANKS
Allen H. Lloyd, Terrace Park, Ohio, and William J. Beckman, Fort Thomas, Ky., assignors to Tech-Art, Inc., Milford, Ohio
Filed Aug. 17, 1970, Ser. No. 64,211
Int. Cl. A46b *13/02*
U.S. Cl. 15—77 **9 Claims**



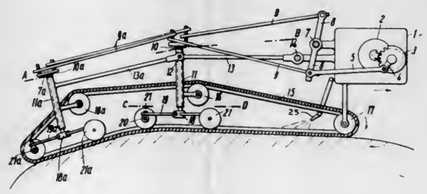
A machine which spreads carton blanks on a belt conveyor and brushes loose bits of paperboard from upper and lower faces of the carton blanks and edges of the carton blanks. The carton blanks are counted and then stacked on an elevator which is gradually lowered as a stack of carton blanks builds up on the elevator. The stack is then advanced onto a discharge conveyor where an outer carton can be placed over the stack of carton blanks. Finally, the stack and the outer carton are inverted on a turntable and the outer carton with the stack of carton blanks thereinside is discharged from the machine.

3,678,526
PORTABLE BALL WASHER
Charles R. Burkholder, 2944 Clearfield Ave., Akron, Ohio
Filed Dec. 10, 1970, Ser. No. 96,869
Int. Cl. A63b *47/04*
U.S. Cl. 15—97 R **2 Claims**



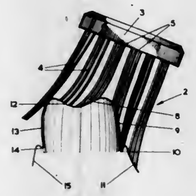
A portable ball washer which includes a hollow, cylindrical body having closed top and bottom ends and a through aperture in its wall of substantially the same dimensions as those of a golf ball. The inside of the washer is coated with foam material which has good water-retention qualities, and the device is also provided with a ball-receiving means which consist of an elongate stem having a gripping nandle on one end and a ball-receiving ring on the other. The ball-receiving means are reciprocal along the longitudinal axis of the body, so that the ring can be brought into registry with the aperture to receive the ball, following which the ball can be moved up and down in the body for washing purposes. The device also includes ways which engage portions of the ring to guide it during reciprocation of the ball-receiving means.

3,678,527
DEVICE FOR AUTOMATICALLY CLEANING VEHICLES
Gotfried Ries, Kriegstr 236, 75 Karlsruhe, Germany
Filed Nov. 4, 1970, Ser. No. 86,860
Claims priority, application Germany, Nov. 8, 1969, P 19 56 315.6
Int. Cl. B60s *3/06*
U.S. Cl. 15—99 **11 Claims**



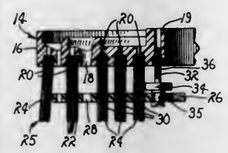
A device for automatically washing vehicles, such as motor vehicles and the like, consisting of a frame member supporting a plurality of adjacent endless belts having washing elements which rotate toward the vehicle. The washing elements move upwardly and downwardly in cooperation with the contoured surfaces of the vehicle and laterally reciprocate with respect to each other over the vehicle surfaces.

3,678,528
TOOTH BRUSH
Johan Arend Frederik Halje, Koninginneweg 33, Haarlem, Netherlands
Filed May 5, 1970, Ser. No. 34,555
Claims priority, application Netherlands, May 7, 1969, 6906990
Int. Cl. A46b *9/04*
U.S. Cl. 15—167 R **1 Claim**



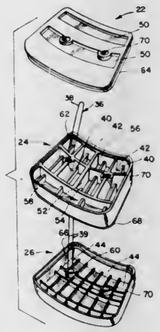
A toothbrush in which the length of the bristles varies with the longer bristles located on the outside and the shorter ones on the inside so as to define a longitudinal groove having a width about equal to half the clinical crown level and a depth about equal to half the width of the groove.

3,678,529
ADJUSTABLE BRUSH
John A. Woods, 517 W. San Gabriel, and Marvin G. Beck, 2004 N. Maple Ave., both of Fresno, Calif.
Filed July 6, 1970, Ser. No. 52,216
Int. Cl. A46b *13/02, 13/04*
U.S. Cl. 15—180 **4 Claims**



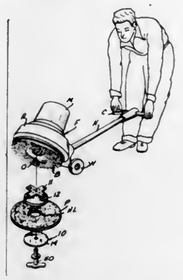
An adjustable brush particularly suited for use with machines adapted to employ rotary cleaning brushes, characterized by a plurality of concentrically related, annular arrays of tufts of bristles extended from a base plate and substantially terminating in a common plane. A particular feature of the brush resides in a provision of support plate selectively positioned between said base plate and said plane, including therewithin a multiplicity of annular arrays of tuft-receiving openings, and operatively suspended from said base plate by a plurality of screw-threaded studs adapted to be digitated for repositioning the support plate relative to the plane, whereby the trim length, or effective length of the bristles and, consequently their flexibility, selectively is varied.

3,678,530
ROTARY BRUSH PLASTIC BRISTLE HOLDER AND MOUNTING MEANS
John P. Horton, Bernardsville, and Troy S. Sulser, Union, both of N.J., assignors to Danline Manufacturing Company, Kenilworth, N.J.
Filed Oct. 2, 1970, Ser. No. 77,586
Int. Cl. A46b *13/02*
U.S. Cl. 15—180 **11 Claims**



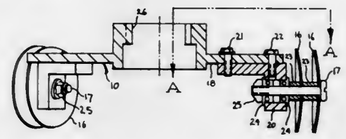
Disposable hollow plastic holders secure bent wire bristles in rotary brooms such as gutter brooms. Bristle bends are completely enclosed; bottom slots in the holders direct the bristles outward and downward. Holders are constructed in three sections bonded together to form smooth outer surfaces. Several holders are slid radially inward into inverted "T" shaped bars under a permanent plate. After all holders have been slid into place, an encircling retaining collar is dropped over the holders and is bolted to the plate.

3,678,531
ADAPTER FOR FLOOR MAINTENANCE MACHINES
Theodore Hill, Atlanta, Ga., assignor to B. J. Powell, Decatur, Ga., a part interest
Filed Feb. 17, 1971, Ser. No. 116,147
Int. Cl. A47l *11/14, 13/28*
U.S. Cl. 15—230.19 **8 Claims**



An adapter for floor maintenance machine to secure an accessory pad to the brush carried by the machine. The adapter includes a mounting bracket attached to the backing plate of the brush within the central opening in the bristles, a circular support plate carried by the mounting bracket in an adjustably spaced position with respect to the bracket and a circular clamping plate adapted to fit over the support plate to clamp the accessory pad between the support plate and clamping plate. A plurality of pins may be provided for extending through the accessory pad to selectively lock same against radial movement with respect to the brush and a venting means may be provided for supplying air to the brush and a venting means may be provided for supplying air to the motor of the maintenance machine.

3,678,532
ROTATING DISC SCRAPER
Reed L. Boyd, c/o John E. Wagner, Attorney at Law, 1041 E. Green St., Suite 202, Pasadena, Calif.
Filed April 6, 1970, Ser. No. 25,647
Int. Cl. B23c *7/00, 5/20*
U.S. Cl. 15—236 **7 Claims**

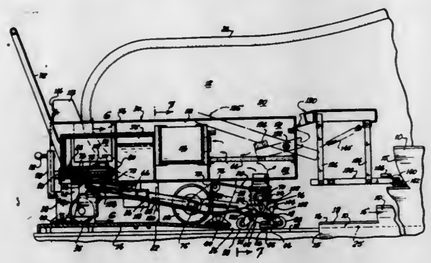


This disclosure involves a scraper having freely rotating disc-shaped cutters with their axes of rotation in the plane of a flat, circular common holder; each cutter's axis of rotation being at an angle from radial lines extending from the center of the holder, about which the holder is rotationally driven. The disc-shaped cutters are of thin cross section so that the disc edges easily cut into tough or gummy surfaces as they are driven in circular patterns by the holder.

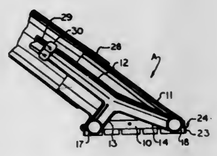
3,678,533
ESCALATOR CLEANING APPARATUS
Phillip Cravitz, Burbank, Calif., assignor to Arnold B. London, Beverly Hills, Calif.
Division of Ser. No. 464,485, June 16, 1965, Pat. No. 3,584,329. This application Aug. 7, 1970, Ser. No. 62,109
Int. Cl. A47l *7/00*
U.S. Cl. 15—302 **4 Claims**

An apparatus mounted on wheels incorporating brush means and spray means to clean the flights of an operating

escalator has guide means to engage the fixed balustrades of the escalator for accurate positioning of the apparatus and has means to immobilize the apparatus for a cleaning operation. In response to such immobilization, a self-aligning vacuum nozzle and brush carriage is lowered into operating position. A yieldingly extensible forward structure makes guiding contact with front surfaces of descending flights of steps to brush the front and top surfaces thereof.



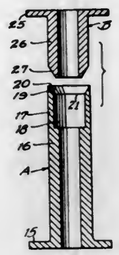
3,678,534
VACUUM CLEANER HEAD WITH SUPERSONIC GAS JETS
Jack H. Hilbig, Chula Vista, Calif., assignor to Rohr Corporation, Chula Vista, Calif.
Filed July 6, 1970, Ser. No. 52,209
Int. Cl. A47l 9/08
U.S. Cl. 15—345 **8 Claims**



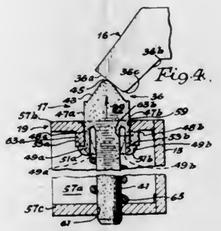
A vacuum cleaner head has a high pressure gas line mounted therein said gas line having a plurality of orifices therein through which are emitted jets of a selected gas, such as air, at supersonic speeds. The jets are so directed that shock waves produced by the jet streams and the jet streams themselves impinge upon a surface being cleaned so as to dislodge from such surface stubborn dirt particles for removal by a vacuum line communicating with the interior of the head.

3,678,535
SECTIONAL SANDWICH PANEL INSERT WITH FRICTIONAL TELESCOPIC COUPLING
James F. Charles, La Palma, Calif., assignor to Shur-lok Corporation, Santa Ana, Calif.
Filed Nov. 27, 1970, Ser. No. 93,266
Int. Cl. B65d 7/44
U.S. Cl. 16—2 **10 Claims**

A grommet-like insert for sandwich panels consists of two tubular sections, one having a male tip forced into a counterbore in a female skirt on the end of the other section so as to expand the skirt past its elastic limit and into the plastic deformation range, thereby providing a high load bearing capacity. The strength of the coupling is increased by work-hardening which occurs in the expansion of the skirt with a limited compression of the male tip. The diameter of the expanded skirt is substantially increased, and its tip cooperates with the opposed grommet head to grip the panel skin between them to provide high shear resistance.



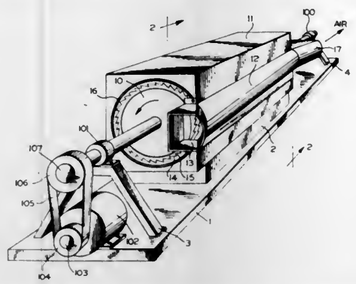
3,678,536
HINGE LATCH
Carl H. Little, Jamestown, N.Y., assignor to Weber-Knapp Company, Jamestown, N.Y.
Filed Jan. 12, 1970, Ser. No. 2,150
Int. Cl. E05d 11/10
U.S. Cl. 16—144 **11 Claims**



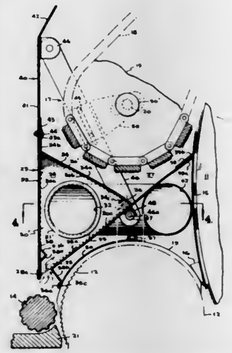
A hinge latch for attachment of a door to a cabinet including a pair of hinge parts mounted one on each of the door and cabinet and joined by a hinge pin, a strike carried on one of the hinge parts, and a resiliently biased keeper movably mounted within a keeper mounting assembly carried on the other of the hinge parts; the keeper cooperating with the strike to latch the door in closed position. The keeper is formed of a plastic material and characterized by a construction including a head portion shaped to define a generally wedge-shaped cam surface engageable by said strike and deformable leg portions adapted to secure the keeper in assembled relation within the keeper mounting assembly.

3,678,537
CARD COVER WITH FIBER CONVEYING AIR FLOW CHANNEL
Philip L. Rhodes, Chalmette, and Roger S. Brown, New Orleans, both of La., assignors to The United States of America as represented by the Secretary of Agriculture
Filed June 26, 1970, Ser. No. 50,218
Int. Cl. D01g 15/12
U.S. Cl. 19—98 **2 Claims**

A card cover less carding surfaces, comprising an air-flow channel of regular cross-section disposed transverse the carding surface of a card cylinder, axially parallel and radially open thereto. The channel of the card cover when supplied with a stream of air from an external air-flow inducing means acts to move fiber in a helical path across and around on operating card cylinder.



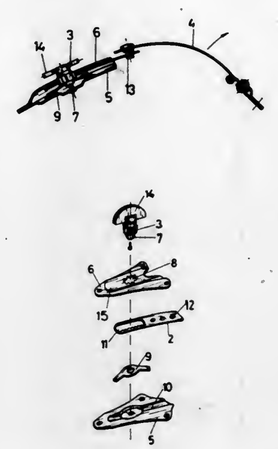
3,678,538
SUCTION MANIFOLD FOR THE LICKERIN SECTION OF A CARDING MACHINE
Donald A. Sloan, Winston-Salem, N.C., assignor to The Bahnson Company, Winston-Salem, N.C.
Filed Aug. 28, 1970, Ser. No. 67,914
Int. Cl. D01g 15/76
U.S. Cl. 19—107 **17 Claims**



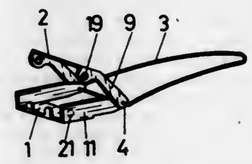
A suction manifold assembly to be disposed above the lickerin cover of a carding machine between the latter and the flats chain bight thereabove, defining a plenum chamber of triangular vertical cross-section spanning the width of the carding machine. A first suction intake slot is provided at the lower corner of the plenum chamber above the feed roll and an extension of the lower wall of the plenum chamber defines with another wall thereof a V-shaped trough having another suction intake slot at its apex to collect trash falling from the flats chain bight.

3,678,539
FASTENER PARTICULARLY FOR SKI OR MOUNTAINEERING BOOTS
Josef Graup, Klingenweg, 8260 Stein am Rhein, Switzerland
Filed Sept. 21, 1970, Ser. No. 73,877
Claims priority, application Austria, Oct. 3, 1969, A 9361/69
Int. Cl. A44b 21/00; A43c 11/00
U.S. Cl. 24—68 **3 Claims**

Fasteners for boots have a clip overlapping one of the side parts of the boot and engageable with a rack that is secured to the other side part of the boot, the rack being moveable across the tongue portion of the boot by turning of a gear mating with the rack to bring the engaged clip into a boot tightening position. The fasteners are particularly useful for ski and mountaineering boots.



3,678,540
STRAP HOLDER CONSISTING OF TWO ELEMENTS
Josef Graup, Klingenweg, 8260 Stein am Rhein, Switzerland
Filed Feb. 25, 1970, Ser. No. 14,117
Claims priority, application Austria, March 3, 1969, A 2069/69
Int. Cl. A43c 11/14
U.S. Cl. 24—70 SK **2 Claims**

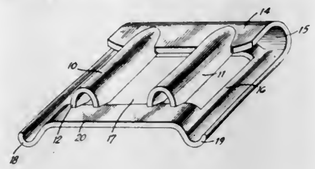


Clasp for a strap in buckle-type fasteners for ski or mountain boots has first and second elements hinged together at one end to interlock at the other end with the end of the strap and a third element hinged to at least one of the first or second elements for engagement with the closure lever of the fastener.

3,678,541
BUCKLE CLOSURE FOR PLASTIC STRAPPING
Harold Lefkowitz, Levittown, N.Y., assignor to Delta Strapping Industries, Inc., Woodside, L.I., N.Y.
Filed June 1, 1970, Ser. No. 41,984
Int. Cl. A44b 11/00
U.S. Cl. 24—74 **1 Claim**

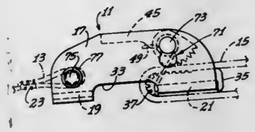
A buckle used as a strapping closure includes two parallel tapered prongs holding the strap. The prongs have adjacent open ends while their other ends are firmly connected to a

curved gusset. The gusset is integral with a frame having a central opening. The prongs extend across the opening and are



supported upon a ledge of the frame. The frame has curved U-shaped downwardly extending edges which are parallel to the prongs.

3,678,542
CAM BUCKLE
Ernest Prete, Jr., Woodland Hills, Calif., assignor to Ancra Corporation, El Segundo, Calif.
Filed June 17, 1970, Ser. No. 47,050
Int. Cl. A44b *11/12*; A43c *11/00*
U.S. Cl. 24—191 **3 Claims**



A buckle for fastening belts or straps, such as those used in cargo handling, comprising a substantially U-shaped frame providing a seat for a removable pressure plate having a serrated surface across a large portion of the face thereof. A cam, having a similarly serrated face thereon is biased toward the face of the pressure plate by a spring acting between a cam lever and the frame, so as to hold a strap between the pressure plate and the cam face. The cam may be pivoted away from the pressure plate against the force of the spring by the cam lever which is pivoted on a pin mounted within the frame. The shank of the pin may be upset at one end thereof so as to produce a rivet which becomes firmly held within an aperture in the frame. The aperture is formed within a depression on one of the legs of the U-shaped frame which causes the cam lever to be offset from the leg a sufficient distance to preclude the leg from obstructing the pivotal motion of the lever. Alternatively, the pin may extend through opposite keyhole slots in the legs of the frame. With the smaller portions of the slots at the upper ends thereof, the biasing spring acting on the cam causes the cam to force the pin upwards into the slot to maintain it within the frame.

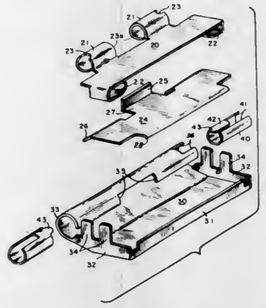
3,678,543
CONTROLLED PERSONAL DESCENT DEVICE
Edwin L. Hobbs, 10 Lance Court, Moraga, Calif.
Filed May 20, 1970, Ser. No. 39,078
Int. Cl. G01n *3/00*
U.S. Cl. 24—230 **2 Claims**

A device for use with a rope to lower persons or objects in a controlled descent down a rope at various speeds or even a complete stop, consisting of a metal article having an elongated member upon which the rope is wound several turns and an open passage located above a post upon which a portion of



the rope may be looped. The device having an enclosed opening for attachment to a harness or other fitting.

3,678,544
END ATTACHMENT FOR WATCH BANDS
Stephen F. Bert, West Warwick, R.I., assignor to Textron, Inc., Providence, R.I.
Filed April 30, 1971, Ser. No. 139,000
Int. Cl. A44c *5/18*
U.S. Cl. 24—265 B **13 Claims**

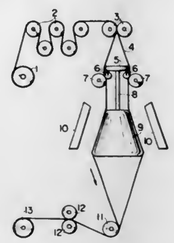


An end attachment for watch bands which permits use of a watch band with wrist watches having different spacings between their attachment lugs and which also may be quickly converted for use with watches which are either (i) rectangular when viewed from the top or (ii) round when viewed from the top. Also means for attaching an end attachment to a watch band which permits the end attachment to be quickly removed for repair or for substitution of another end attachment or for adjustment of the length of the watch band.

3,678,545
APPARATUS FOR STRETCHING A TUBULAR FILM OF THERMOPLASTIC SYNTHETIC POLYMERIC RESIN
Hiroyuki Hino; Hiroyoshi Asakuno, both of Ichiharashi, and Tetsuya Yamada, Chibashi, all of Japan, assignors to Chisso Corporation, Osaka, Japan
Filed June 15, 1970, Ser. No. 46,047
Claims priority, application Japan, June 21, 1969, 44/49076
Int. Cl. B29d *7/24*; D06c *5/00*
U.S. Cl. 26—55 **4 Claims**

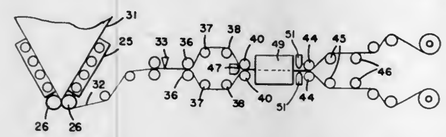
A suspended internal mandrel apparatus for stretching a tubular film of a thermoplastic resin which comprises a mandrel, a member extending upwardly from said mandrel to which two

spaced apart interior rolls are attached, and two exterior rolls disposed beneath said interior rolls and in abutting and sup-



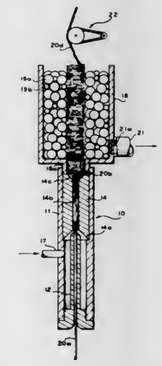
porting relationship therewith, said interior rolls, and exterior rolls and said member serving as the sole support means for said mandrel.

3,678,546
APPARATUS FOR HEAT-SETTING BIAXIALLY STRETCHED FILMS OF THERMOPLASTIC MATERIALS
Tomoyuki Matsugu; Ryota Notomi, and Teruchika Kanoh, all of Fuji, Japan, assignors to Kohjin Company, Limited, Tokyo, Japan
Division of Ser. No. 819,549, April 28, 1969, Pat. No. 3,577,497. This application Aug. 26, 1970, Ser. No. 67,008
Int. Cl. B29c *17/10*; B29d *23/04*
U.S. Cl. 26—63 **6 Claims**



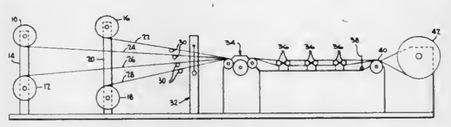
Apparatus for simultaneously heat-setting of a pair of flat, biaxially oriented films formed of thermoplastic material.

3,678,547
YARN TEXTURING
Richard C. Newton, Greenville, S.C., assignor to Phillips Petroleum Company
Filed Nov. 6, 1970, Ser. No. 87,476
Int. Cl. D02g *1/12*
U.S. Cl. 28—1.6 **15 Claims**



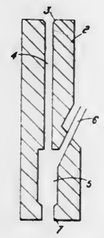
Yarn is textured by passage at an elevated temperature into a zone of turbulence. The resulting textured yarn is passed through a chamber which contains a plurality of stacked members, such as balls or rods. These members exert a force on the yarn to produce a confined wad. Fluid employed to produce the turbulence zone is separated from the textured yarn in the chamber.

3,678,548
LEASING APPARATUS AND METHOD
Louis Largeron, and Roger Raquin, both of Arches, France, assignors to Societe Lorraine de Preparation Textile, Arches, France
Filed Nov. 12, 1970, Ser. No. 88,551
Int. Cl. D02h *9/00*
U.S. Cl. 28—40 **10 Claims**



Apparatus for forming a lease on a plurality of superposed sheets of warp yarns including a reed frame carrying a plurality of hooked dents with adjacent dents separating the warp yarns into groups, and a control system connected with the reed frame to move the hooked dents in a serpentine path through each group of warp yarns to capture and separate alternate ones thereof to form a lease. A method of forming a lease on a plurality of superposed sheets of warp yarns including positioning each one of the warp yarns of each sheet between adjacent ones of a plurality of dents to form a group of warp yarns and simultaneously moving the hooked dents around every other one of the warp yarns in each group to form a lease.

3,678,549
PROCESS FOR THE MANUFACTURE OF HIGH-BULK YARN
Michel Buzano, Villeurbanne, France, assignor to Societe Rhodiaceta, Paris, France
Filed March 17, 1969, Ser. No. 807,540
Claims priority, application France, March 18, 1969, 69144240
Int. Cl. D02g *1/16*
U.S. Cl. 28—72.12 **11 Claims**

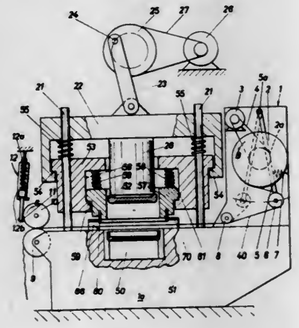


A high-bulk yarn having interlaced filaments substantially free from loops, and preferably having spherical knops affecting the yarn as a whole, is made by subjecting a continuous filament (or less preferably a staple fiber) yarn to the action of a turbulent fluid in a suitable nozzle, into which the yarn is fed non-axially so that it rubs against one wall thereof. If desired more than one yarn can be employed, making a single composite yarn. The invention includes also a nozzle, preferably having its yarn input opening flared to provide for the necessary friction of the yarn against the side of the nozzle.

3,678,550
APPARATUS FOR SEPARATING BLANKS FROM PLASTIC SHEETS

Gerhard Zubike, Geroldswil; Paul Brandli, Aurich, and Max Spalti, Zurich, all of Switzerland, assignors to Zubike & Brandli AG, Zurich, Switzerland

Division of Ser. No. 819,404, April 25, 1969, Pat. No. 3,623,289. This application March 16, 1971, Ser. No. 124,786
Claims priority, application Switzerland, Aug. 14, 1968, 12230/68; Nov. 5, 1968, 16434/68
Int. Cl. B23p 23/00, 19/00
U.S. Cl. 29—33 K 17 Claims

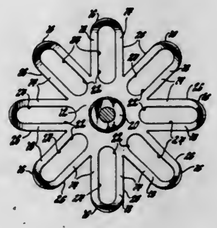


Mirrors for use by dentists or for similar purposes are produced by clamping a blank of strongly light-reflecting synthetic thermoplastic material between annular male and female mirror frame portions. Such clamping step is carried out simultaneously with separation of the blank from a web of sheet material which is maintained in a flattened and stretched condition and is weakened in the zone around the blank by a welding electrode which softens the material of the web and penetrates into the thus softened material by being biased toward a supporting surface located opposite the electrode. The male mirror frame portion serves as a means for tearing the blank from the weakened zone and for simultaneously moving the marginal portion of the thus separated blank against the internal surface of the female mirror frame portion.

3,678,551
BLENDING DEVICE

Alex J. Pietroski, Madison Heights, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed March 30, 1970, Ser. No. 23,790
Int. Cl. B23d 71/00
U.S. Cl. 29—78 2 Claims

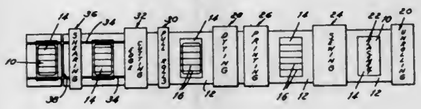


A blending device for soft filler material including a support member with a plurality of continuous cutting edges thereon. One form of the device includes a harder member with a hemispherical portion having a plurality of continuous cutting edges thereon formed by the intersection of a plurality of openings through the member. The hemispherical portion of the member minimizes ditching or edge cutting in the surface being worked on.

3,678,552
METHOD OF FORMING AN INSERT

Kurt J. Hertz, Oak Park, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Oct. 23, 1970, Ser. No. 83,573
Int. Cl. B68g 13/02
U.S. Cl. 29—91.1 9 Claims

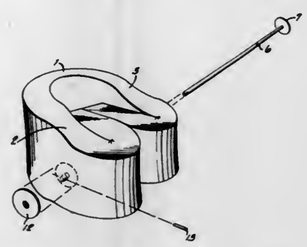


An insert, which may have a facing sewn to the lateral edges thereof to form a seat cover, is formed in a processing method initiated by positioning an insert blank on a backing material. The insert blank is sewn to the backing material. An outline pattern for the sewing operation which joins the facing and the insert blank is printed on the exposed surface of the insert blank. Some of the discardable material lying outside the outline sewing pattern on the insert blank is cut-off thereby forming the insert. In a subsequent operation, the facing is sewn to the insert by an operator who employs the outline pattern as a guide. In this sewing operation, any excess material is removed from the insert.

3,678,553
PLASTIC FOAM FURNITURE

Marc S. Hermelin, c/o Sidney B. Ring P. O. Box 6825, Brentwood, Mo.

Filed March 13, 1969, Ser. No. 80,701
Int. Cl. B68g 7/00, 11/04
U.S. Cl. 29—91.1 5 Claims

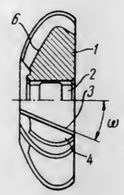


A method of preparing an article of furniture which comprises (1) shaping a layer of plastic foam to the desired contour on an essentially two dimensional plane; (2) bending and/or rolling said contoured layer of foam so as to yield an article of furniture of the desired shape on an essentially three dimensional plane and (3) maintaining said three dimensional shape by suitable positioning means; and to the articles of furniture formed by this method.

3,678,554
PROFILE FLAT TOOTH MILLING CUTTER

Leonid Antipovich Ezhov; Yankel Veniaminovich Kudevitsky, and Ljudmila Pavlovna Belyaeva, all of Leningrad, U.S.S.R., assignors to Leningradsky Metallichesky Zavod Imeni XXII Siezda KPSS, Leningrad, U.S.S.R.

Filed April 27, 1970, Ser. No. 32,033
Int. Cl. B26d 1/12
U.S. Cl. 29—103 3 Claims



The present invention relates to cutting tools, and more specifically to a flat tooth profile milling cutter one end of the cutting edge of which is located closer to the milling cutter rotation axis than the other points of this cutting edge.

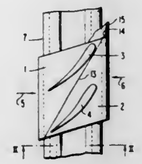
The milling cutter can be most efficiently used, according to the invention, for machining curvilinear surfaces of vanes of steam and gas turbines, chip grooves of taps, and other cutting tools.

According to the invention each tooth of the milling cutter is inclined with respect to the milling cutter rotation axis at the same angle of 15–45°, as a result of which the rank angles of each tooth along its cutting edge, in planes normal to the cutting edge profile are positive.

3,678,555
METHOD FOR CONNECTING COOLED OR UNCOOLED ROTOR BLADES TO THE BLADE RIM OF AN ASSOCIATED DISC

Wolfgang Hansen, Krailling near Starnberg, Germany, assignor to Motoren-und Turbinen-Union Munchen GmbH, Munich, Germany

Filed Nov. 16, 1970, Ser. No. 89,561
Claims priority, application Germany, Nov. 15, 1969, P 19 57 614.8
Int. Cl. B23k 1/20; B23p 1/26
U.S. Cl. 29—156.8 R 10 Claims

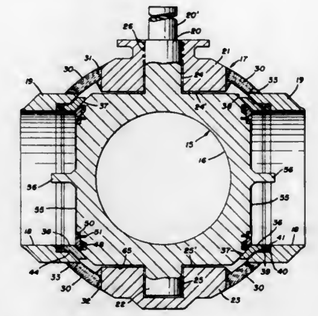


A method for connecting cooled or uncooled rotor blades to the disc rim of an associated disc, especially for gas turbine engines with a high shaft speed, in which each rotor blade is provided with a triangular segment — as related to the plane of the disc rim surface — forming the blade root. For assembly, two segments having collars on opposite sides bent so as to embrace the face edges of the disc rim are placed onto the rim from both sides in such a manner that the longest faces of the two segments will coincide and contact each other on the surface of the blade rim. The segments then will be welded together in this area, forming a pair of blades which encloses the surface of the disc rim as well as its edges.

3,678,556
METHOD OF MAKING WELDED BALL VALVE

Homer J. Shafer, P.O. Box 83, Mansfield, Ohio

Division of Ser. No. 680,633, Nov. 6, 1967. This application June 23, 1970, Ser. No. 49,144
Int. Cl. B21d 53/00; B21k 29/00; B23p 15/26
U.S. Cl. 29—157.1 R 4 Claims

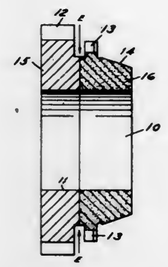


A ball valve structure comprising a valve element having an integral stem and a surface formed spherically around the stem axis, making housing parts welded in a longitudinal plane passing through said stem axis to form a tubular domed housing around the ball with the stem bearing located within and welded to the housing, flow tubes welded in the ends of said tubular housing in accurate alignment with the flow port in the ball and embodying valve seating rings in sealing contact with improved resilient ring seals on the ball, said sealing rings and retaining means therefor insertable through the flow tubes after welding.

3,678,557
METHOD FOR MAKING GEAR

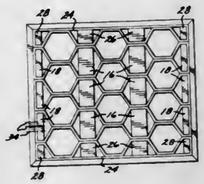
Michael R. Howard, Essex, England, assignor to Ford Motor Company, Dearborn, Mich.

Division of Ser. No. 22,965, March 26, 1970, Pat. No. 3,626,779. This application March 8, 1971, Ser. No. 121,915
Int. Cl. B21d 53/28; B23p 15/14; B21h 5/00; B29d 15/00; B21k 1/30
U.S. Cl. 29—159.2 5 Claims



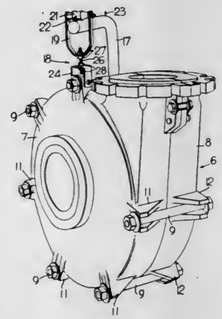
A method for making a gear formed from wrought or cast and powdered metal, particularly a transmission gear, having gear teeth designed to engage a driving or driven gear and having clutch teeth designed to couple the gear for rotation with a rotatable shaft. Gear manufacturing method includes forming a first gear part with gear teeth from wrought or cast metal, forming a second part from powdered metal and joining the two parts together.

3,678,558
METHOD OF FABRICATING CELLULAR STRUCTURES
Carl K. Fredericks, San Diego, Calif., assignor to Corlite Corporation, San Diego, Calif.
Filed June 24, 1970, Ser. No. 49,287
Int. Cl. B23p 15/12
U.S. Cl. 29—160 9 Claims



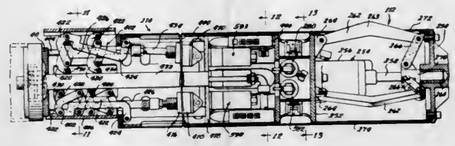
A method of making cellular, honeycomb-like structures by utilizing cooperating mandrels and rams to deform and shape relatively collapsible material into a cellular array. The material is suitably secured to retain the tensioned state produced by the cooperation of the mandrels and rams, and a plurality of the structural members thus formed is stacked, and a perimetrical frame is attached to the outermost walls of the cells of the outermost structural members. The frame maintains the tensioned state of the cellular array, so that the mandrels can be removed from the array. Various sizes and configurations of rams and mandrels may be used to provide cellular arrays of different or composite configurations.

3,678,559
LIFTING DEVICE FOR DISASSEMBLING AND REASSEMBLING PUMP PARTS
Juris Zilkalns, Lachine, Quebec, Canada, assignor to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.
Filed Oct. 2, 1970, Ser. No. 77,413
Int. Cl. B23p 19/00
U.S. Cl. 29—200 D 3 Claims



A split casing pump is provided with a bracket which pivotally supports a lifting bar. The casing half which is desired to be removed is attached to a hanger which rolls on the lift bar. After the casing half is released from the stationary portion of the pump, it is swung out of the way on the bar so that the wearing parts of the pump can be replaced. For reassembly, the removed casing half is rotated back to its original position; and because the hanger can be rolled on the lift bar, it can be eased into proper bolting position.

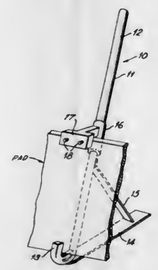
3,678,560
INTERNAL PIPE SEALING SYSTEM
Raymond J. Dufour, Wheaton, Ill., and James J. Grimm, Columbus, Ohio, assignors to Northern Illinois Gas Company, Aurora, Ill.
Filed May 6, 1970, Ser. No. 35,140
Int. Cl. F16l 55/16
U.S. Cl. 29—235 13 Claims



An internal pipe sealing system comprising a sealing device and seal installation equipment. The sealing device is constructed of an outer elastic sealing member and an inner expandable retainer member.

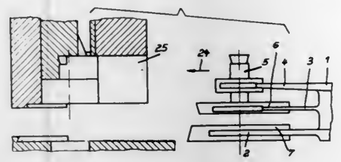
The seal installation equipment includes a seal installation tool designed to be pulled through the inside of a pipe and comprises a joint locator, a seal expander, and a seal magazine-loader. The seal magazine-loader carries a plurality of sealing devices and forwards them one at a time to the seal expander. The seal expander has a plurality of radially-expandable shoes and upon energization, these shoes move outwardly against the retainer member until the sealing member is pressed into sealing engagement with the pipe and retainer member moves to a locking position. The movement of the tool installation assembly through the pipe and the actuation of the seal magazine-loader and seal expander is controlled remotely at a control panel located above ground.

3,678,561
JIFFY VEHICLE BRAKE TESTER PAD REMOVAL TOOL
William J. Mautz, Sr., 9 N. Circus Ave., Clearwater, Fla.
Filed April 6, 1970, Ser. No. 26,017
Int. Cl. B23p 19/04; A47g 29/00; B66f 3/00
U.S. Cl. 29—267 1 Claim



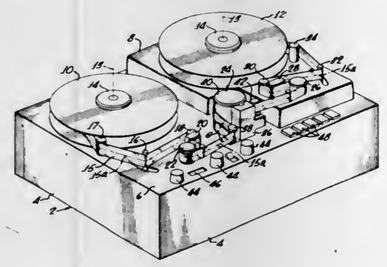
A tool for lifting and removing a pad from rollers for cleaning or servicing purposes, the device comprising an elongated bar with a lower hook at the bottom thereof, the upper end of the bar forming a handle, a slideable sleeve, a longer bar supporting a top hook, and the lower portion of the bar being mounted upon a base having one end thereof secured by a brake to an intermediate portion of the bar.

3,678,562
METHOD AND DEVICE FOR EXCHANGING TOOLS ON MACHINES HAVING RECIPROCATING MOVEMENT
Berthold Leibinger, Gerlingen, Germany, assignor to Trumpf & Co., Stuttgart-Weilindorf, Germany
Filed Oct. 22, 1970, Ser. No. 82,992
Claims priority, application Germany, Nov. 3, 1969, P 19 55 193.0
Int. Cl. B23p 17/00, 19/04
U.S. Cl. 29—400 16 Claims



In a method for exchanging tool sets to a machine having a reciprocating movement and including locking means for the parts of each tool set, the tool parts, in advance of insertion into the machine, are positioned and releasably retained in a tool holder. The tool holder, carrying the parts, is then inserted into the machine and the locking means are operated to lock the tool parts in the machine while the tool parts are still in the holder. The holder is then released from the tool parts and withdrawn from the machine. The holder includes adjustably superposed forked arms, each engageable with a respective tool part, with each arm of the fork having releasable detent means cooperable with the associated tool part. Either the arms of the fork or the releasable detent means may be resilient to provide for ready engagement of the holder with the tool parts and ready disengagement therefrom.

3,678,563
HELICAL SCANNING ASSEMBLY FOR VIDEO TAPE MACHINE
Alexander R. Maxey, Newark, Calif., assignor to Echo Science Corporation
Division of Ser. No. 738,250, June 19, 1968, Pat. No. 3,516,146. This application March 19, 1970, Ser. No. 24,975
Int. Cl. B23q 17/00
U.S. Cl. 29—407 1 Claim

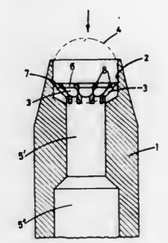


A scanning assembly for a helical-wrap, drum-type, video tape machine includes entry and exit tape guides and a drum assembly interconnected by a bracket. The drum assembly includes upper and lower cylindrical male guides which butt against an elongate reference way on the bracket to align the axis of the drum assembly. The entry and exit guides are each mounted on the bracket oblique to the drum assembly axis by a pin which extend from the guide into an oversize bore in the bracket and is held in place by adhesive.

3,678,564
METHOD OF PRODUCING HIGH RESOLUTION IMAGES AND STRUCTURE FOR USE THEREIN
John A. Roberts, North Chelmsford, and Alwyn H. King, Sherborn, both of Mass., assignors to Brunswick Corporation
Division of Ser. No. 701,760, Jan. 30, 1968, Pat. No. 3,556,636. This application Sept. 10, 1970, Ser. No. 70,952
Int. Cl. G03c 5/00
U.S. Cl. 29—419 1 Claim

A method of producing high resolution images formed of a plurality of small images produced by passing radiation through a collimated hole structure having substantially rectilinear small cross section passages. The collimated hole structure is provided with a high aspect ratio of passage length to passage cross section to provide a high resolution in the individual images produce thereby. A mask may be formed on one surface of the collimated hole structure having an opening exposing preselected ones of the collimated hole structure passages for producing a composite image defining a preselected pattern corresponding to the opening.

3,678,565
METHOD OF MAKING A BALL POINT PEN OR A REFILL THEREFOR
Georg Linz, Nuremberg, and Lothar Sommer, Katzwang, both of Germany, assignors to Firma Georg Linz, Nuremberg, Germany
Filed Feb. 5, 1971, Ser. No. 112,943
Claims priority, application Germany, July 10, 1970, P 20 34 274.9
Int. Cl. B23p 11/00
U.S. Cl. 29—441 3 Claims

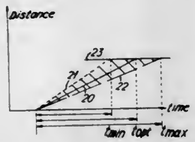


This invention relates to a method of manufacturing ball point pens. In the method the ball is force-fitted into the ball housing with a force sufficient to cause a narrowing of the feed ducts for supplying writing medium from the reservoir to the ball such that at least a part of each duct has a maximum cross-sectional area of 2,000 μ^2, preferably, 1,000 μ^2.

3,678,566
FRICTION WELDING
Colin R. G. Ellis, Newton, and Rodger H. Lilly, Comberton, both of England, assignors to The Welding Institute, Cambridge, England
Filed July 13, 1970, Ser. No. 54,342
Claims priority, application Great Britain, July 16, 1969, 35,790/69
Int. Cl. B23k 27/00
U.S. Cl. 29—470.3 15 Claims

In a friction welding process, the rate of axial shortening of the workpieces due to burn-off during their relative rotation under axial pressure is measured and used as a guide to the

quality of the weld. Deviation between the desired and actual burn-off rates may be used to adjust the axial pressure to



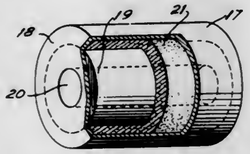
reduce this deviation. As an alternative, the speed of relative rotation may be adjusted instead of the axial pressure.

3,678,567

PRODUCTION OF CLAD METAL ARTICLES

Charles E. Manilla; Harold H. Honaker, both of Huntington, and David O. Gothard, Ona, all of W. Va., assignors to The International Nickel Company, Inc., New York, N.Y.

Division of Ser. No. 630,987, Apr. 14, 1967
Filed June 18, 1970, Ser. No. 57,896
Int. Cl. B22f 3/24
U.S. Cl. 29—420.5 **22 Claims**



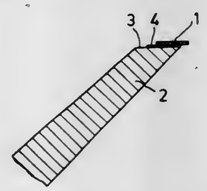
Production of clad stock, e.g., bar, tubing, pipe, etc., wherein the cladding is prepared by pressing metal powders to desired form, the green form is sintered and coextruded hot with the core or basis material. Highly corrosion resistant cladding metals can be applied to core or basis materials of iron-group metals including common structural materials and high recovery of the cladding material is obtained. Clad tubes having a cladding of 50 percent nickel-50 percent chromium alloy on substrates of steels, nickel alloys, including nickel-chromium alloys, etc., can readily be produced for use in applications requiring resistance to severe corrosive conditions at various temperatures.

3,678,568

METHOD OF SECURING DIAMOND BY BRAZING

Wilhelmus Franciscus Knippenberg, and Gerrit Verspui, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed June 29, 1970, Ser. No. 50,851
Claims priority, application Netherlands, July 2, 1969, 6910115
Int. Cl. B23k 31/02
U.S. Cl. 29—473.1 **4 Claims**



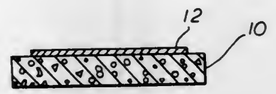
Method of securing diamond by means of brazing with a brazing filler consisting of an alloy of aluminum and silicon which contains from 8 to 18% by weight of silicon.

3,678,569

METHOD FOR FORMING OHMIC CONTACTS

William Otto Glesfeldt, Milwaukee, and Roy Lee Pinnow, Wauwatosa, both of Wis., assignors to Globe-Union Inc., Milwaukee, Wis.

Division of Ser. No. 794,020, Jan. 27, 1969. This application July 15, 1970, Ser. No. 55,012
Int. Cl. B23k 31/02
U.S. Cl. 29—473.1 **9 Claims**



An ohmic contact may be formed on the surface of a semiconductive device such as a reduced barium titanate by applying to the surface of a semiconductor a layer of a composition containing a reducible composition of nickel and indium and then firing the device at a liquified temperature under reducing conditions.

3,678,570

DIFFUSION BONDING UTILIZING TRANSIENT LIQUID PHASE

Daniel F. Paulonis, Killingworth; David Scott Duvall, Middletown, and William A. Owczarski, Cheshire, all of Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed April 1, 1971, Ser. No. 130,149
Int. Cl. B23k 31/02, 35/24
U.S. Cl. 29—498 **1 Claim**



Diffusion bonding is effected utilizing a thin alloy interlayer which melts at the desired diffusion bonding temperature forming a transient liquid phase and which subsequently resolidifies at temperature as a result of constituent interdiffusion, continued heat treatment providing a homogeneous solid-state diffusion bond.

3,678,571

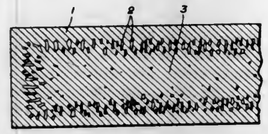
METHOD FOR THE PRODUCTION OF SHEETS

Rudolf Schoffmann, Linz, Austria, assignor to Vereinigte Oster-reichische Eisen-und Stahlwerke Aktiengesellschaft, Linz, Austria

Filed April 27, 1970, Ser. No. 32,230
Claims priority, application Austria, May 9, 1969, A 4445/69
Int. Cl. B23p 25/00
U.S. Cl. 29—527.6 **4 Claims**

The disclosure proposes a method for the production of sheets from the slabs cut from a bar of unkilled steel cast by the continuous casting method, wherein the cast bar, after it has solidified completely and as soon as its cross section has an equalized temperature in the range of 900° to 1,200° C., preferably 1,000° to 1,100° C., is shaped in one step so as to reduce its cross section by about 10 to 20 percent, whereupon

it is shorn to length, and the slabs are then heated to rolling temperature and shaped in a plurality of passes. Owing to this



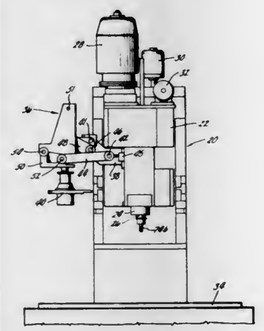
method the bubble wreath which is characteristic for unkilled steel slabs is eliminated so that the heat transition from the surface to the core is improved.

3,678,572

TOOL CHANGER

William R. Mello, Wethersfield, and James A. Warren, Simsbury, both of Conn., assignors to Colt Industries Operating Corp., New York, N.Y.

Filed May 15, 1970, Ser. No. 37,531
Int. Cl. B23g 3/157
U.S. Cl. 29—568 **11 Claims**



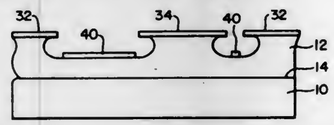
A tool changer for a machine tool interchanges a new and an old tool between a storage magazine and the machine tool spindle. The magazine selectively rotates to a transfer position for a particular tool. A transfer slide clamps and moves the new tool from the magazine to a receptacle of a transfer plate. The plate is swung in an arc to a position beneath the spindle where it is rotatively moved to unload and load the spindle with the old and new tools, respectively, then swing back through a return arc to return the old tool to its transfer position at the magazine.

3,678,573

SELF-ALIGNED GATE FIELD EFFECT TRANSISTOR AND METHOD OF PREPARING

Michael C. Driver, Trafford, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed March 10, 1970, Ser. No. 18,226
Int. Cl. B01j 17/00; H01g 13/00
U.S. Cl. 29—571 **3 Claims**



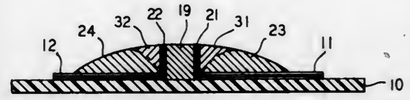
This disclosure relates to a high frequency field effect transistor with and accurately aligned gate contact disposed between source and drain contacts. The device consists of a substrate having a substantially flat upper surface, a layer of lightly doped semiconductor material having its bottom surface disposed on the surface of the substrate and a metal layer disposed on the upper surface of the layer of semiconductor material. An aperture is formed through the metal layer into the layer of semiconductor material. The gate contact is disposed within the aperture while the metal layer around the periphery of the aperture form the source and drain contacts.

3,678,574

ACOUSTICALLY ABSORBENT MOUNTING METHOD FOR OPTICAL MODULATOR

Martin Robert Biazzo, Holmdel; Bernard George King, Rumson, both of N.J., and William Charles Gormley Ortel, New York, N.Y., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Division of Ser. No. 780,347, Dec. 2, 1968, Pat. No. 3,614,201. This application Nov. 9, 1970, Ser. No. 87,850
Int. Cl. H01s 4/00
U.S. Cl. 29—592 **7 Claims**



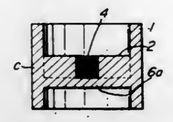
Acoustical ringing which results from piezoelectric effects in an electro-optical modulator is suppressed by mounting the modulator crystal between massive, acoustically absorbent, support members which also provide an electric circuit interface for applying electric signals to the modulator. Solder provides such an absorbent mounting for a lithium tantalate electro-optical modulator crystal. Both solder support members are applied during the same heating interval and permitted to cool simultaneously. In one embodiment the solder application is accomplished in a first step wherein mounds of solder are applied adjacent to the crystal at a first temperature and in a second step wherein additional solder is applied at a lower temperature between the crystal and the solder mounds.

3,678,575

MANUFACTURING METHOD OF A MAGNETRON ANODE

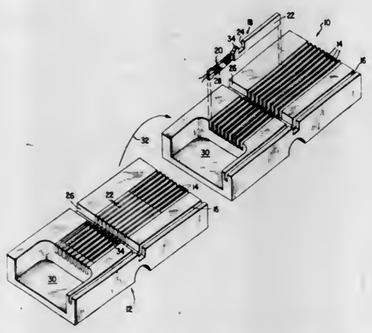
Masamoto Akeyama, Kokubunji, and Sohji Takahashi, Kodaira, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed March 10, 1970, Ser. No. 18,168
Int. Cl. H01p 11/00
U.S. Cl. 29—600 **4 Claims**



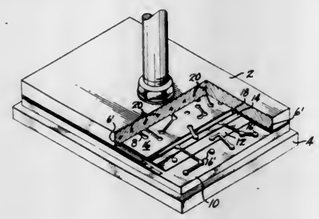
A method for manufacturing an anode structure used for a magnetron from metal stock, by which the peripheral wall and the inner vanes of the anode are integrally constructed, the said method comprising three steps, that is: the step of forming a primary workpiece consisting of a thick cylindrical wall and a thick disk-like part closing the cylinder in its axially mid portion, the step of forming a secondary workpiece from the primary workpiece by a warm extruding process so that the secondary workpiece has a plurality of radial vanes integral with the cylindrical wall and extending radially inward from the wall, and a step of removing the remaining portion of the disk-like part bridging the bottom ends of the vanes.

3,678,576
METHOD OF MANUFACTURING MULTIPLE TRACK, SINGLE GAP MAGNETIC HEADS
Richard E. Braun, St. James; Lionel G. Hopkins, Lake Grove; Neil J. Sheehan, Carle Place, and Edward J. Sanchez, Long Island, all of N.Y., assignors to Magnetic Head Corporation, Hauppauge, N.Y.
Filed June 25, 1971, Ser. No. 156,809
Int. Cl. G11b 5/42; H01f 7/06
U.S. Cl. 29—603 3 Claims



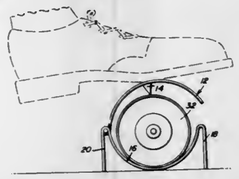
Two sub-assemblies, each comprising an identical, elongate compound housing and a plurality of similarly arranged elongate compound cores, are joined in face-to-face engagement with opposite end portions of the compound cores of one sub-assembly forming magnetic circuits, including an air gap, with opposite end portions of the compound cores of the other sub-assembly. Separation of the joined sub-assemblies substantially perpendicular to the plane of their face-to-face engagement at a position intermediate the opposed end portions of the combination cores results in the formation of two complete head assemblies.

3,678,577
METHOD OF CONTEMPORANEOUSLY SHEARING AND BONDING CONDUCTIVE FOIL TO A SUBSTRATE
Walter Weglin, and Charles W. Wildebour, both of Seattle, Wash., assignors to Jerobee Industries, Inc., Redmond, Wash.
Continuation-in-part of Ser. No. 225,482, Sept. 24, 1962, abandoned. This application Sept. 25, 1969, Ser. No. 861,206
Int. Cl. H41m 3/08
U.S. Cl. 29—625 3 Claims



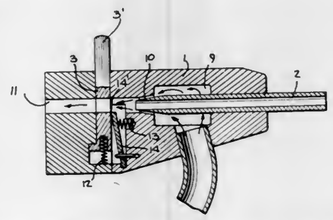
A method is disclosed for manufacturing a composite structure such as a printed circuit board comprised of a pattern of foil strips bonded to an underlying support. Initially, the method comprises the step of placing a continuous uninterrupted layer of die material face-to-face with a flat integral base in a press. A sheet of foil is arranged opposite the foregoing assembly in the press, with a layer of unactivated adhesive material interposed between the foil and the base, and the foil is stamped directly against the opposite face of either the layer of die material or the base, while the layer of die material is compressible in relation to the base without undergoing substantial lateral deformation. The stamping operation is carried out with a stamp having a raised surface thereon which is substantially flat and corresponds in profile width and outline with the pattern of strips, and with a stroke which displaces those portions of the die material lying relatively opposite the surface of the stamp, but which does not compress those portions of the adhesive and die material relatively surrounding the outline of the surface. As a result, shear forces are generated between the respective stamped and unstamped die portions without activating the unstamped adhesive portions. The shear forces separate the pattern of strips from the unstamped foil, and the strips are bonded to either the layer of die material or the base, depending on the level at which the stamp's stroke is bottomed in the assembly. Since the unstamped adhesive material is unactivated, the unstamped foil and adhesive material is easily relatively removed from the assembly to expose the pattern of strips.

3,678,578
AEROSOL CAN PUNCHER
Frank J. Patton, Jr., Route 6 Box 104, Frankfort, Ind., and Danny J. Gardner, 2121 Suffolt Lane, Indianapolis, Ind.
Filed April 2, 1970, Ser. No. 25,076
Int. Cl. B67b 7/24
U.S. Cl. 30—10 4 Claims



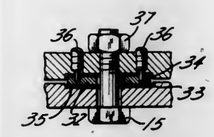
A cradle frame supports a horizontally disposed aerosol can. A curved plate is hingedly mounted to the cradle frame and attaches a punch thereon. After an aerosol can is placed on the cradle frame the plate is moved downwardly thereby driving the punch through the wall of the aerosol can which results in relatively slow venting of the gas in the can.

3,678,579
YARN CONTROL APPARATUS
Valter Slavik, Wattwil, Switzerland, assignor to Heberlein & Co. AG, Wattwil, Switzerland
Filed March 2, 1971, Ser. No. 120,257
Claims priority, application Switzerland, March 6, 1970, 3304/70
Int. Cl. B26b 13/00; B65h 54/02
U.S. Cl. 30—131 5 Claims



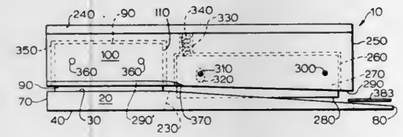
Device draws yarn end by suction into receiver and expels same by fluid pressure, or releases same by cutting action, for transfer to bobbin, or the like.

3,678,580
SCROLL SHEARS OR THE LIKE
William Duffy, Jamesburg, N.J., assignor to J. Wiss and Sons Co., Newark, N.J.
Filed Sept. 21, 1970, Ser. No. 74,087
Int. Cl. B26b 13/28
U.S. Cl. 30—267 10 Claims



Scroll shears or snips with an offset cutting edge with relation to the flank of the shear, in order to obtain clearance to scroll slightly to the right, while retaining full maneuverability to the left. An adjustable ride or hardened washer interposed between the cutting blades of the shears to facilitate adjustment of clearance after grinding.

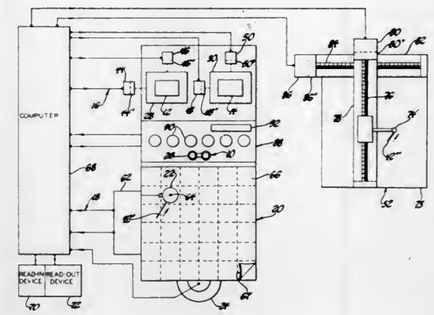
3,678,581
PAPER CUTTING APPARATUS
Berthelemi J. Bolduc, 30 Bennett St., Fords, N.J.
Filed July 14, 1970, Ser. No. 54,724
Int. Cl. B26b 29/00
U.S. Cl. 30—294 13 Claims



Cutting apparatus comprises upper and lower members, between which a cutting blade is located and between which a web to be cut is inserted. The lower member which supports the web is shaped to provide minimal wear and friction, and the upper member, rearwardly of the blade, is shaped to insure separation of the cut portions of the web so that the cutting operation is performed safely and easily without the web becoming jammed between the two members.

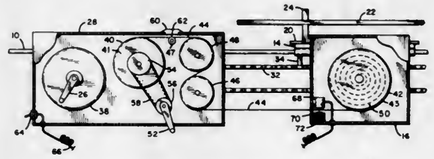
3,678,582
PHOTOGRAMMETRIC APPARATUS
Uuno V. Helava, Southfield, and Robert B. Forrest, Union Lake, both of Mich., assignors to The Bendix Corporation
Filed March 17, 1971, Ser. No. 125,238
Int. Cl. B43l 13/16
U.S. Cl. 33—20 D 15 Claims

Photogrammetric apparatus wherein a pair of stereophotographs have their images projected into the apparatus's optical system so as to form a stereomodel therein, which is visually observable through the optical system's binocular viewer. Relative movement of the optical system's measuring markers and the stereomodel is detected by moving a scanner device over the planar surface of a grid device, which serves as an encoder and develops command signals corresponding to the coordinates of a selected relative position of the scanner device and the grid device. A computer then from the command signals develop control signals for casing a servo system to move the stereophotographs so that the markers and the stereomodel assume a relative position corresponding to the coordinates selected by the scanner device. The scanner



device can also simultaneously plot a reproduction of the contour of the stereomodel being traced in any desired scale. Additionally, an XY plotter or coordinatograph can plot another reproduction of the same contour in a still different scale.

3,678,583
WORK POSITIONER
Ralph W. Gundersen, St. Paul, Minn., assignor to Power Drive Corporation, St. Paul Park, Minn.
Filed Jan. 18, 1971, Ser. No. 107,064
Int. Cl. G01b 3/10
U.S. Cl. 33—125 10 Claims

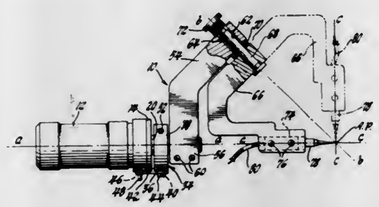


A remote work positioning and measuring apparatus adapted to be mounted on a variety of stock handling machines. A slidable work engaging carriage is moved along the working surface by a hand crank. A tape measure extends between the slidable carriage and the frame of the machine, being wound onto spring-loaded reels at both ends. A hand crank allows the tape to be shifted from one reel to another unless an electromagnetic lock is activated to lock the tape with respect to the movable carriage.

3,678,584
MEASURING PROBE ASSEMBLY
Richard F. Dolan, Mount Clemens, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Aug. 13, 1970, Ser. No. 63,566
Int. Cl. G01b 5/00, 3/00
U.S. Cl. 33—169 R 3 Claims

A measuring probe assembly includes a hollow annular housing adapted to be mounted on a carrier of a coordinate measuring instrument. One end of a shaft is received within the housing and ball bearing assemblies mount the shaft for rotational movement with respect to the housing about a first axis. A drag member is keyed to the housing adjacent one end thereof and includes spaced leg portions that adjustably frictionally engage the other end of the shaft, which extends out-

wardly of the housing, and thus vary the freedom of rotation of the shaft about the first axis. A first arm has one end secured to the other end of the shaft for rotational movement therewith about the first axis. The other end of the first arm supports a second arm, adjacent one end thereof, for rotational movement about a second axis which intersects the first axis at an angle of 45°. A thumb screw adjustably varies the frictional drag between the first and second arms to vary the freedom of rotation of the second arm about the second axis.



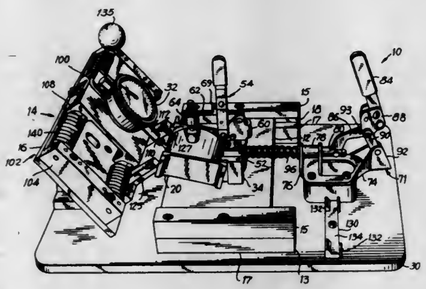
The other end of the second arm supports a null indicator which includes a probe slidably mounted with respect to the second arm along a third axis that intersects the first and second axes at the intersection thereof at an angle of 45° with respect to the second axis. With the probe in the null position, the tip of the probe is coincident with the intersection of the axes and rotation of the first and second arms to orient the probe in different positions constantly maintains the tip of the probe at the intersection thus constantly fixed with respect to the housing.

3,678,585

BOW GAUGE FOR TURBINE ENGINE VANES

Charles Dabrush, and Irving Strauss, both of Mouscy, N.Y., assignors to Chromalloy American Corporation, West Nyack, N.Y.

Filed Jan. 15, 1970, Ser. No. 3,185
Int. Cl. G01b 3/20, 5/20
U.S. Cl. 33—174 P 14 Claims



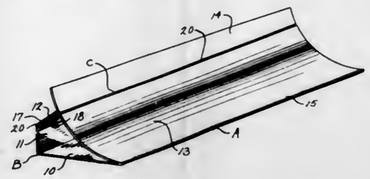
A measuring instrument for determining variations in the bow of a turbine engine vane adjacent to its trailing edge. A dial gauge is slidably mounted on the instrument and has an operating stem whose contact wheel perpendicularly engages the top surface of the trailing edge section of the vane. The contact wheel is adapted to move along a straight line which theoretically lies in the flat tangent plane of the vane airfoil at its trailing edge. The actual vane surface is bowed from this theoretical line and the dial gauge will accordingly indicate variations in the vane bow, above and below this tangent plane.

3,678,586

CARPET-TRIMMING TEMPLATES

Russell W. Weber, 8820 W. Spokane St., Milwaukee, Wis.

Filed May 14, 1971, Ser. No. 43,331
Int. Cl. B43l 7/00
U.S. Cl. 33—174 G 6 Claims



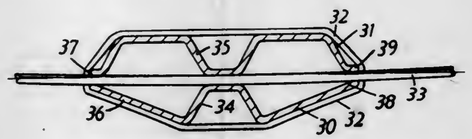
A template promoting the accurate cutting and laying of wall-to-wall carpeting or other floor covering which template is rested on the floor beneath the outer edge portion of the carpet with the template back abutting the wall and with the carpet resting on the upwardly angled front face of said template, said template front face having a longitudinal knife-receiving slot therein whereby a cutting tool can be used to sever the carpet portion thereabove, the distance between the template forward edge and said knife-receiving slot being the same as the distance from said template forward edge to the wall, whereby the carpet edge will fit snugly in abutting relation against said wall.

3,678,587

PROFILE TRANSFERRING DEVICE

Ernest Francis Madden, Goring-By-Sea, England, assignor to William A. Drucker, New York, N.Y.

Continuation of Ser. No. 776,727, Nov. 18, 1968, Pat. No. 3,419,965, which is a continuation of Ser. No. 534,958, Feb. 25, 1966, abandoned, which is a continuation of Ser. No. 360,623, April 17, 1964, abandoned, which is a continuation of Ser. No. 184,172, April 2, 1962, abandoned. This application Jan. 26, 1971, Ser. No. 109,936
Int. Cl. G01b 5/20
U.S. Cl. 33—175 7 Claims



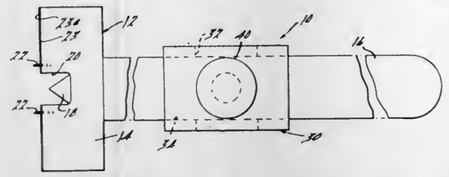
A profile transferring device comprises a body composed of two portions each of which includes a pair of connected projecting walls, the body portions being disposed in superposed relationship with the free edges of the respective walls of each portion being spaced and defining an opening along each longitudinal side of the body, the walls of one portion being inclined towards the other portion, a pair of end pieces being disposed one at each end of the body and engaged with the body portions to retain the body portions in superposed relationship, one of said body portions including between its walls a longitudinal ridge which is a fixed integral part of said body portion, the apex of the ridge being positioned in the direction towards the other body portion beyond the plane containing the free edges of the walls of said other body portion, a plurality of resilient linear rods being disposed through the body and projecting at each end through the openings, said rods being in side by side relationship and abutting on said ridge apex and on said free edges of said other body portion so as to be flexed and frictionally held in said body.

3,678,588

WALL OUTLET BOX LOCATER

Raymond O. Isola, P.O. Box 175, Glennie, Mich., and Norman R. Isola, 5142 Field Road, Clio, Mich.

Filed March 5, 1971, Ser. No. 121,436
Int. Cl. G01b 5/14
U.S. Cl. 33—180 R 7 Claims



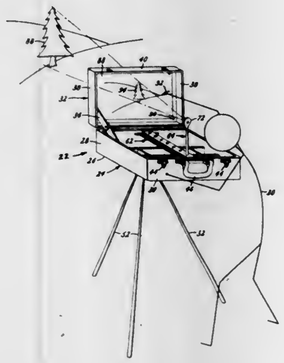
A wall outlet box locater apparatus for use where gypsum and other type wall board panels are used to cover walls in a structure comprising: a T-square shaped member, a lip member extending across the top head portion of the T-square member, and a sliding box shaped member positioned for movement of the leg of the T-square member and with said box shaped member capable of being fixed in various positions for the purpose of tracing a cut out area in the wall panel.

3,678,589

APPARATUS FOR DRAWING IN PERSPECTIVE

Robert J. Baier, 3960 W. Chester Pike, Newtown Square, Pa.

Filed Dec. 18, 1970, Ser. No. 99,345
Int. Cl. B43l 13/16
U.S. Cl. 33—277 7 Claims



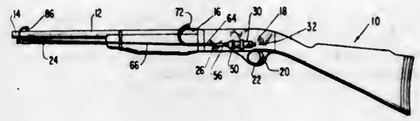
Apparatus to aid in the drawing of pictures in perspective. A portable case includes a box for carrying various items of sketching equipment and a top having a transparent window hinged to the box for pivotal movement between a closed position and an upright position. A sight is used to view a distant object through the window. A platform for the sight is removably mounted to the box and provides for positioning of the sight at selected distances from the window in order to obtained varying degrees of perspective. After a sheet of transparent material has been removably mounted on the window, one can draw thereon an image of a distant object in proper perspective with the aid of the sight.

3,678,590

MEANS FOR ILLUMINATION OF GUN SIGHTS AND THE LIKE

Norman G. Hayward, Rte. 3, Box 119 G, Manassas, Va.

Filed Aug. 18, 1970, Ser. No. 64,674
Int. Cl. F41g 1/00, 1/32, 11/00
U.S. Cl. 33—241 2 Claims



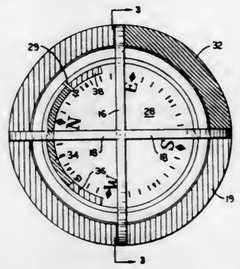
A series of light conductive fibers are operatively associated with a source of light and are arranged to define alignable sighting means for effective aiming of a weapon in conditions of reduced light.

3,678,591

SAILING CONDITIONS INDICATOR FOR SAILBOATS

Stanley A. Selig, Jr., 6607 E. 38th St., Indianapolis, Ind.

Filed Sept. 19, 1969, Ser. No. 859,295
Int. Cl. G01c 17/02
U.S. Cl. 33—263 9 Claims



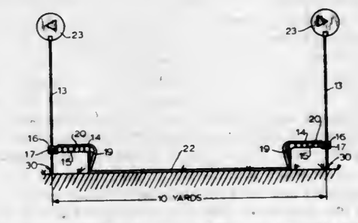
A compass card is provided with a 90° band of green, bordered by a 30° band of red at each end of the green. A relative position indicator has a 90° band of green on its mounting ring, the remaining 270° being red. Intersecting arch bars are secured to the ring and border the margins of the green band, the ring being affixed to the sailboat around the compass, the arches disposed over the compass, and the compass lubber line and color bands being visible at all times, the lubber line being adjustable around the compass axis.

3,678,592

FOOTBALL SIDELINE CHAIN MARKER

Paul C. Williamson, 2018 Dartmouth Drive, Durham, N.C.

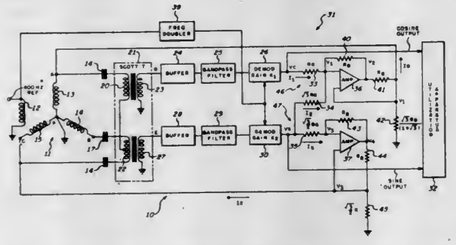
Filed Jan. 15, 1971, Ser. No. 106,693
Int. Cl. G01c 15/00; G01b 3/10
U.S. Cl. 33—289 4 Claims



A pole and chain apparatus for measuring first downs in

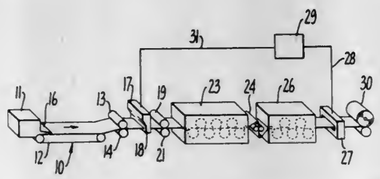
football incorporates a pair of poles each of which at its ground engaging end mounts an integral chain support structure adapted to stride the ball and to which a respective end of the chain is attached and which structure allows the measuring pole during close first down situations to be sued in alignment with the football axis.

3,678,593
COMPASS SYSTEM AND COMPONENTS THEREFOR HAVING AUTOMATIC FIELD CANCELLATION
Donald H. Baker, and Frank H. Kallo, both of Phoenix, Ariz., assignors to Sperry Rand Corporation
Filed Dec. 26, 1968, Ser. No. 787,143
Int. Cl. G01c *17/30*
U.S. Cl. 33—355 **3 Claims**



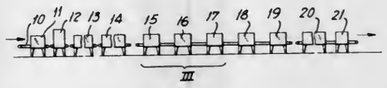
A compass system utilizing a flux valve responsive to the earth's magnetic field in which the earth's field vector sensed by pick-up windings is resolved into component values that are converted to proportional DC currents from an infinite impedance current source that is independent of the load of the pick-up windings, these currents being fed back into the flux valve in a direction to cancel the earth's field vector whereby to drive the flux valve output towards null.

3,678,594
PAPER MAKING SYSTEM AND APPARATUS
David J. Goerz, Jr., Menlo Park, and Erik W. Stephansen, Foster City, both of Calif., assignors to Bechtel International Corporation
Filed Dec. 16, 1970, Ser. No. 98,685
Int. Cl. B01k *5/00*
U.S. Cl. 34—1 **3 Claims**



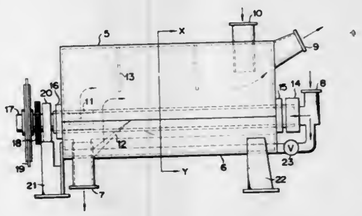
This invention relates to the control of the viscosity of the water in a traveling sheet or web as it advances through a manufacturing operation as in a paper making process. For example, microwave energy can be applied to the water wet web to raise the temperature of the water in the traveling web and so reduce the viscosity of the water. Thereafter the web is passed through a press section which reduces the water content of the web. If reduction in the water content of the web is not required, then the web can be cooled to increase the viscosity of the water so less water is removed in the press section. Preferably and in accordance with this invention, application of the microwave energy or cooling of the web is selectively effected in a plurality of zones, the total width of the zones covering the width of the traveling web. Moisture measuring means are provided downstream from the press section to determine the moisture content in each of the several zones across the width of the traveling web. This means emit signals which are applied to controllers relating to the output of each waveguide means and each cooling means in the several zones across the width of the sheet to change the output of each of the waveguide means or each of the cooling means to the sheet proper. In this manner, it is possible to effect more uniform drying of the sheet for the tendency is for the edges of the sheet to dry more readily than the middle portion of the sheet.

3,678,595
METHOD OF DRYING ARTICLES BEING SURFACE-COATED
Kurt Gunnar Fagerstrom, Alingsas, Sweden, assignor to Aktiebolaget Electrolux, Stockholm, Sweden
Filed Sept. 9, 1970, Ser. No. 70,726
Claims priority, application Sweden, Sept. 9, 1969, 12385/69
Int. Cl. F26b *7/00*
U.S. Cl. 34—13.4 **4 Claims**



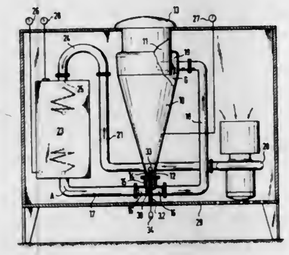
Wooden articles, to which a film of material like paint, lacquer and putty is applied, are repeatedly subjected to periods of surface heating at temperatures between 100° to 300°C. Between successive heating periods the articles are maintained in an atmosphere below 50°C. The surface heating periods are relatively short and between 5 and 15 seconds long to promote heating of the film in its entirety without heating the wood to an elevated temperature which is detrimental.

3,678,596
CONTINUOUS SLURRY DRYER
Kazunori Kubo, 722-3, Nabaube, Oaza, Ube-shi, Yamagrichiken, Japan
Filed Nov. 24, 1970, Ser. No. 92,450
Claims priority, application Japan, Nov. 28, 1969, 44/95186
Int. Cl. F26b *17/20*
U.S. Cl. 34—68 **4 Claims**



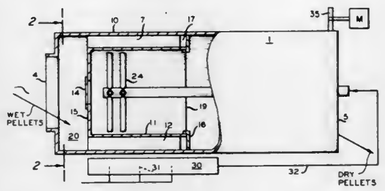
This invention relates to an agitating type of dryer for continuously drying high-density slurries with high efficiency. This type of dryer is provided with a large number of paddles radially disposed on a pair of hollow shafts to transport and agitate high-density slurries to be dried in the machine. These shafts rotate in predetermined opposite directions while the paddles are engaging with each other. Each shaft is disposed within a horizontal cylindrical vessel with a jacket. Hot gas passes through the hollow shafts and the jacket, respectively in the direction of slurry flow. Two co-currents of exhaust gas are then combined to pass through the vessel now in the reverse direction until the gas is exhausted from an exhaust port at the front end of the vessel. This type of dryer is capable of drying the high-density slurries which the prior art dryers found it difficult to dry effectively.

3,678,597
APPARATUS FOR TREATMENT OF GRANULATED FOODS
Hans Stuhlmann, Duesseldorf, and Werner Stuhlmann, Wuppertal-Elberfeld, both of Germany, assignors to Firma Battenfeld Maschinenfabriken GmbH, Meinerzhagen, Germany
Filed March 8, 1971, Ser. No. 121,988
Claims priority, application Germany, March 10, 1970, P 20 11 278.1
Int. Cl. F26b *19/00*
U.S. Cl. 34—48 **6 Claims**



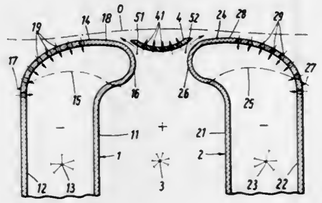
An apparatus for treating granular material, such as plastic granulate or the like, developed as a circulation drier acting on the treatment material with high air temperature and brief time of heating in the manner of a heat shock, comprising a funnel-shaped storage container in which the material treated is contained having an upper filling opening and a lower outlet portion having a lower outlet opening, and a T-member having horizontal disposed branches and a vertical connection branch, the lower outlet portion of the container being operatively connected to the vertical connection branch for discharge of the material from the container, into the T-member. A pressure air blower is operatively connected to a line being connected downstream to one of the horizontal disposed branches of the T-member. An automatically controlled heating device is operatively interposed between the air blower and the one end of the horizontal disposed branch of the T-member, and a conveyor line is connected to the other horizontal disposed branch of the T-member and operatively to the lower outlet portion of the storage container. The conveyor line is connected downstream to an annular channel of approximately U-shaped cross section with the opening of the U towards the bottom, and constituting an air separator, the annular channel extending concentrically around the upper filling opening in the inside of the storage funnel. An outlet valve is disposed in the center of the lower outlet opening in the storage container and controllable from the outside and extends in a vertical direction downwardly and outwardly through the horizontal branch portion of the T-member, and, an air guide web is substantially disposed in a plane in the front portion of the T-member, and a common heat storage insulated housing is provided.

3,678,598
DUAL-DRUM DRYER
Francisco K. Quiles, Salamanca, Guanajuato, Mexico, assignor to Phillips Petroleum Company
Filed June 19, 1970, Ser. No. 47,253
Int. Cl. F26b *11/02*
U.S. Cl. 34—128 **5 Claims**



A dual-drum rotating dryer having an annular passageway between the drums through which the material being dried is caused to pass as it progresses through the dryer, the dryer being comprised of an outer drum and an inner drum positioned therein.

3,678,599
APPARATUS FOR A NON-CONTACTING STABILIZATION OF A WEB WHICH IS MOVED IN ITS LONGITUDINAL DIRECTION
Hilmar Vits, Langenfeld, Germany, assignor to Vits Maschinenbau GmbH
Filed Sept. 28, 1970, Ser. No. 75,949
Claims priority, application Germany, Oct. 9, 1969, P 19 51 002.2
Int. Cl. F26b *13/00*
U.S. Cl. 34—156 **6 Claims**

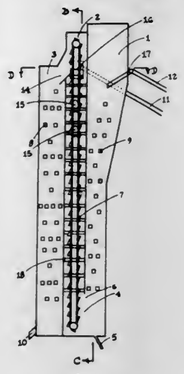


In a process for a non-contacting directional control of a web, which is stabilized in a floating state and moves through a treating space, a treating fluid is supplied to said web and the treating fluid is flowed against the rear surface of a guiding surface element which is airfoil-shaped in cross section. Said rear surface is convex toward the web. The treating fluid is sucked from the space between said guiding surface element and said web. This process is adapted to separate a boundary layer from that surface of the web which faces the guiding surface element, and to suck off also said boundary layer.

3,678,600
PRECIPITATING SAND AND GRAVEL ANTI-POLLUTION DRYER FOR ASPHALT PLANTS
Kenneth S. Darby, R.D. #1, Falls, Pa.
Filed Jan. 20, 1971, Ser. No. 108,057
Int. Cl. F26b *17/12*
U.S. Cl. 34—167 **1 Claim**

A drying apparatus having a chamber for condensing hot

gases and steam on incoming sand and gravel aggregate. The resultant warm wet aggregate washes dust from the exhausting

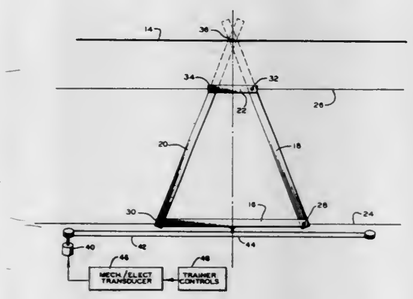


air of the dryer. A great reduction in fuel consumption and air pollution by reclaiming heat energy from the steam given off when drying aggregates.

3,678,601
VISUAL TEACHING AIR FOR FIXED-BASE VEHICLE TRAINER

Robert A. McKnight, Binghamton, N.Y., assignor to The Singer Company, New York, N.Y.

Filed Nov. 10, 1969, Ser. No. 875,374
Int. Cl. B64g 7/00; G09b 9/08
U.S. Cl. 35—12 N 5 Claims

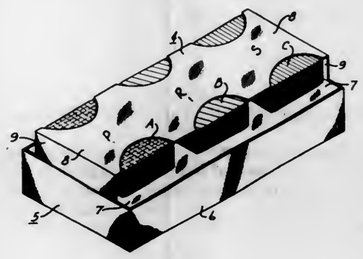


A simplified, mechanical system for arrangement forwardly of the trainee station in a fixed-base vehicle trainer, such as a light aircraft trainer, to enhance training value by providing a visual stimulus related to real-world conditions. Mechanical members are arranged to define a vertically disposed outline which conforms to the apparent shape of an assumed, fixed, horizontally disposed object, such as a runway, when viewed in perspective. Means are provided for moving the mechanical members in accordance with simulated movement of the trainer, thereby giving a visual impression of changes in the trainee's assumed positional viewpoint with respect to the fixed object, as represented by the shape of the outline defined by said mechanical members.

3,678,602
VOCABULARY BUILDING GAME CARDS AND HOLDER

Anthony A. Alam, 148 Richard Drive, Aliquippa, Pa.

Continuation-in-part of Ser. No. 754,030, Aug. 20, 1968, abandoned. This application Jan. 28, 1970, Ser. No. 6,432
Int. Cl. A63f 1/10
U.S. Cl. 35—35 J 4 Claims

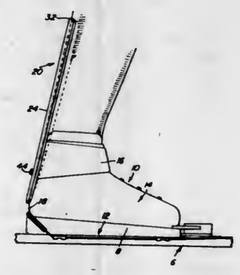


The present invention comprises a vocabulary building card game wherein two or more sets or decks of cards bear word parts which have word definitions such as roots and affixed of the same type respectively are employed. Each card also bears on the reverse side the definition of its respective root or affix. A dealing rack or holder is provided to receive the decks of cards in respective selection positions and is adapted to permit withdrawal of the cards without previous exposure of the word part displayed thereon. The holder is marked at the different selection positions to indicate which particular word part deck is there positioned.

3,678,603
SKI BOOT WITH PRESSURE COMPENSATING BRACE

Jack B. Kaufman, Box 1122, and Raymond G. Held, Box 714, both of Ruidoso, N. Mex.

Filed Feb. 9, 1971, Ser. No. 113,870
Int. Cl. A43b 00/00
U.S. Cl. 36—2.5 AL 6 Claims



A ski boot whose heel embracing counter is provided with upstanding extension means which equalizes stress and strain and increases backward pressure such as is necessarily applied while initiating and completing an intended turn and which is controllably helpful when skiing in deep-powdery snow. It comprises a contoured leg contacting brace which functions to stabilize the over-all boot so that pressure imposed stress is distributively transferred from the leg to boot and to the usual binding and ski. It is so designed and uniquely attached that it does not impose discomforting pressure on the boot-enclosed ankle or foot. The lower end portion is firmly bracketed on the counter of the boot and the upper portion braced against leg.

3,678,604
SHOE AND FASTENING THEREFOR

Beth Levine, New York, N.Y., assignor to Herbert Levine, Inc., New York, N.Y.

Filed June 25, 1971, Ser. No. 156,905
Int. Cl. A43b 3/12
U.S. Cl. 36—11.5 8 Claims

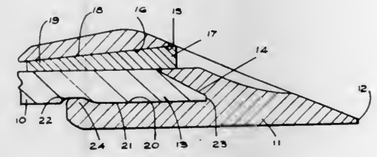


A shoe including means for engaging the forward portion of the foot and including a single, elongated strap extending out from the inside of the shoe at the sole, for being wrapped around the leg of the wearer a number of times, the strap being elastic to stretch as the wearer's leg moves.

3,678,605
TOOTH MOUNTING MEANS FOR EARTH WORKING IMPLEMENTS

Derek Arthur Prime, Doveridge, England, assignor to J. C. Bamford Excavators Limited, Rocester, Uttoxeter, England

Filed Feb. 3, 1970, Ser. No. 8,236
Claims priority, application Great Britain, Feb. 3, 1970, 7,743/69
Int. Cl. E02f 9/28
U.S. Cl. 37—141 T 12 Claims



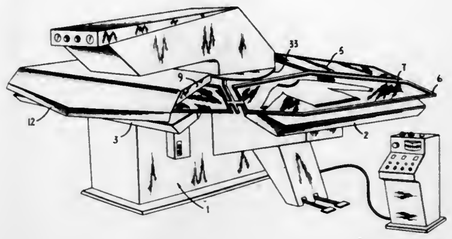
An excavator bucket or similar earth working implement having an earth engaging blade, a tooth removably mounted on the blade and there being releasable clamping means such as a wedge or engageable pin engaged between the tooth and the blade at a position spaced inwardly from the edge to secure the tooth to the blade or other implement.

3,678,606
APPARATUS FOR PRESSING AND HEATING TEXTILE ARTICLES

Henry Renaut, 40, rue Boucher de Perthes, 59 Roubaix, France

Continuation-in-part of Ser. No. 810,528, March 26, 1969, abandoned. This application Nov. 10, 1970, Ser. No. 88,464
Claims priority, application France, April 2, 1968, 6819068
Int. Cl. D06f 71/08; D06c 15/00
U.S. Cl. 38—22 16 Claims

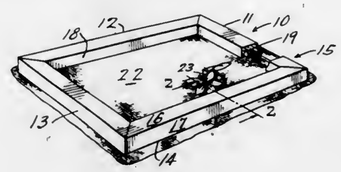
An apparatus for pressing and heating textile articles comprises a plurality of support members indexable about a central axis. The support members are positioned successively at each of a plurality of work stations. Means are provided for lifting the support members from stationary supports provided at each work station prior to the indexing of the support members.



3,678,607
FRAME FOR STRETCHING AND MOUNTING A NEEDLECRAFT PROJECT

Joseph M. Tabor, Toledo, and Ted C. Betker, Bowling Green, both of Ohio, assignors to General Mills Fun Group, Inc., Toledo, Ohio

Filed March 22, 1971, Ser. No. 126,599
Int. Cl. D06c 3/08
U.S. Cl. 38—102.91 5 Claims



A frame usable first for stretching a fabric during the preparation of a needlecraft project and then for mounting the finished project. The frame has a main border member which defines an opening across which the fabric is stretched. The border member has two grooves in its back side which extend around the opening. A retainer strip of proper cross section is adapted to be forced into either of the grooves with a web of the fabric; first into the outer groove during preparation and then into the inner groove for mounting and display of the finished project.

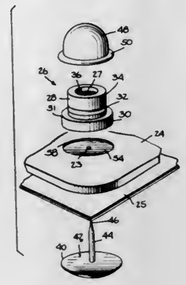
3,678,608
LABEL ATTACHMENT MEANS

Arthur J. Minasy, Woodbury, N.Y., assignor to Knogo Corporation, Westbury, N.Y.

Continuation-in-part of Ser. No. 6,004, Feb. 7, 1970, which is a division of Ser. No. 599,922, Dec. 7, 1966. This application Oct. 23, 1970, Ser. No. 83,477
Int. Cl. G09f 3/08
U.S. Cl. 40—20 R 9 Claims

A label attachment arrangement comprising a tack-like ele-

ment whose shank passes through a label and an article of merchandising, the shank being encased by and interlocked in

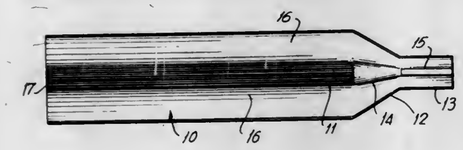


a button, and means for preventing the removal of the button by unauthorized persons.

3,678,609
SAFETY PLUG FOR FIREARMS

Joseph Fazio, 7204 Grand Ave., Maspeth, N.Y.

Filed June 25, 1970, Ser. No. 49,668
Int. Cl. F41c 27/00
U.S. Cl. 42—1 N 6 Claims

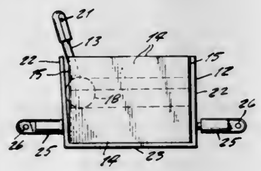


A safety plug for insertion into the chamber of a firearm, such as a pistol, shotgun, or rifle, constructed from a single piece of flexible material and adapted for frictionally engaging the chamber walls of the firearm. In a preferred embodiment, the invention includes a plug having longitudinal ribs which engage the walls of the chamber while permitting the chamber and barrel to be ventilated.

3,678,610
MARINER'S LOOM

Philip J. Klemkowski, Jr., 1146 Hull St., Baltimore, Md.

Filed July 20, 1970, Ser. No. 56,332
Int. Cl. A01k 91/00
U.S. Cl. 43—43.12 3 Claims



A device for giving a spots fisherman an improved control over his fishing line, the device controlling the dead fall effect when a bait is pulled from a stationary pin on an outrigger pole. The device comprises a main body having a longitudinally extending Z-shaped compartment or groove along one side thereof, the groove having one end of a slideable pin retained therein. The main body is fitted with a U-shaped clip having flexible, resilient tongues to close the opposite ends of the Z-shaped groove. Upon excessive breach pressure against the tongue at either end of the clip, the pin, which has an opening through which the fishing line passes, will breach outwardly of the device.

3,678,611
FISHING TACKLE CARRIER

Charles R. Files, 998 Martin St., Glen Ellen, Calif.

Filed Aug. 6, 1970, Ser. No. 61,632
Int. Cl. A01k 97/08
U.S. Cl. 43—26 2 Claims

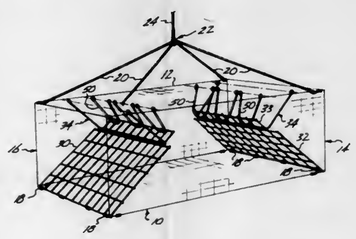


A fishing tackle carrier which has a floating container with removable caps at the ends and a compartment with a hinged cover containing superimposed trays for lures and other fishing tackle. The carrier remains buoyant even through the central compartment is open for access to the trays.

3,678,612
COLLAPSIBLE TRAP FOR CRUSTACEANS

Roger L. Hendrickson, Rte. 1, Bradshaw Road, Mt. Vernon, Wash.

Filed May 28, 1970, Ser. No. 41,230
Int. Cl. A01k 69/08
U.S. Cl. 43—66 4 Claims

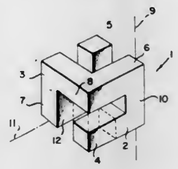


An assembly of panels, edge-hinged together, provides a collapsible cage having opposed mouth openings. Inside each mouth, a ramp panel defines an entry passage terminating at a restricted gullet which, preferably, is gated.

3,678,613
BLOCK SET

Winfried Geymeier, 37, Chemin de Pallin, Pully 1009 Lausanne, Switzerland

Filed May 27, 1970, Ser. No. 40,926
Int. Cl. A63h 33/08
U.S. Cl. 46—25 5 Claims

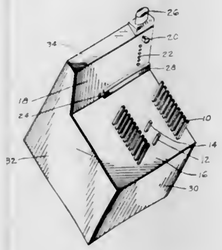


A block set having a plurality of individual units, each unit consisting of two identically proportioned U-shaped elements joined together at one leg of each element so that the exterior dimensions of the unit are in the form of a cube.

3,678,614
TOY COMPUTER CAPABLE OF LIMITED COMPUTATION AND SIMULATING LARGE COMPUTER

Norman Eugene Nagel, 6412 Weber Circle, Huntington Beach, Calif.

Filed Dec. 7, 1970, Ser. No. 95,776
Int. Cl. A63h 33/30
U.S. Cl. 46—39 3 Claims



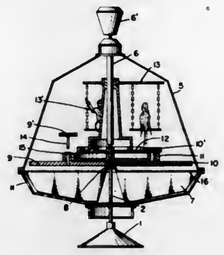
A toy computer is presented which contains a keyboard providing for input and operation with two numbers or characters, simulates the internal computation like a real computer by a series of flashing lights, and produces the answer at one location on a panel. The two characters are input by depressing two keys, but the answer is not produced until a compute knob is turned, and a short cycle of flashing lights has occurred.

3,678,615
TOY TOPS

Peter Balleis, Hermann-Lons-Str. 55, D-8502 Zirndorf near Nuernberg, Germany

Filed Dec. 5, 1969, Ser. No. 882,556
Claims priority, application Germany, Dec. 18, 1968, G 68 11 982.4-74.2
Int. Cl. A63h 1/06
U.S. Cl. 46--68 3 Claims

A toy top comprising a top body which is induced to rotate about an upstanding shaft by means of a spin imparting rod. A figure carrier rotatably mounted within the top body. A transmission gear for imparting rotation to the figure carrier when the top body is rotated. The transmission gear consisting of a pinion secured to the top body and rotatable about the shaft, pairs of first and second gearwheels rotatably mounted at diametrically opposite ends of the bearing carrier, the first

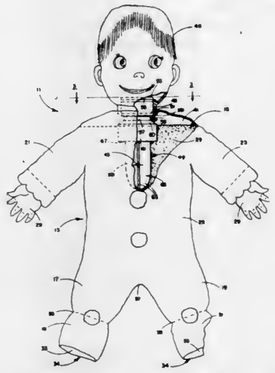


gearwheels meshing with the pinion and the second gearwheels meshing with teeth on the figure carrier.

3,678,616
DOLL

Adolph E. Goldfarb, Tarzana; Judith D. Strader, and George C. Strader, both of San Dimas, all of Calif., assignors to Mattel, Inc., Hawthorne, Calif.

Filed Jan. 18, 1971, Ser. No. 107,016
Int. Cl. A63h 3/00
U.S. Cl. 46—151 7 Claims



A doll comprised of a body formed of a flexible material such as cloth and filled with a solid particulate filler. The body has an opening at the top thereof between the arms with a separate head inserted therein, the head having a solid extension emanating downwardly therefrom into the caVity of the body within the filler material. The dimensions of the doll are such so that it has a low center of gravity, enabling the doll to be readily self-standing on its own feet.

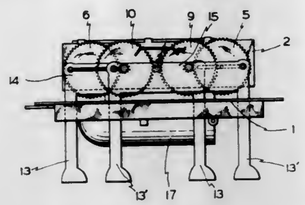
3,678,617
DEVICE OF WALKING LEGS FOR A TOY ANIMAL

Yoshiro Nomura, 17-5, 2-chome, Kuramae, Taito-ku, Toyko, Japan

Filed Sept. 11, 1969, Ser. No. 856,974
Claims priority, application Japan, Nov. 4, 1968, 43 96190
Int. Cl. A63h 11/10
U.S. Cl. 46—149 1 Claim

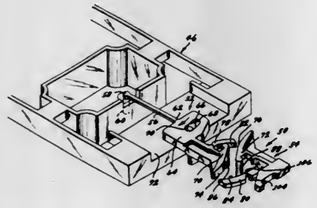
This invention relates to a device of walking legs for a toy animal which walks by eight legs but appears to walk in a regular manner by four legs. This invention comprises a mechanical frame installed in the space consisting of a body supporting

frame and a covering frame modeled after an animal, a pair of front and rear rotating axes piercing traversely through said mechanical frame and having a pair of cranks attached to each of both ends of said two rotating axes, respectively, four moving plates having a pair of front and rear legs, respectively, and



each said moving plate pivoted on said front and rear cranks and a prime mover transmitting rotation to said rotating axes by means of intermediate transmission gears. When said prime mover is made to start, said rotating axes rotate and then four moving plates move before and behind and up and down so that the toy animal walks by steps as in regular manner.

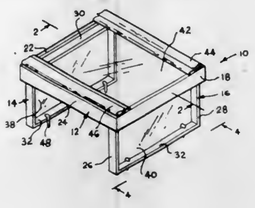
3,678,618
TOY COUPLING APPARATUS AND METHOD FOR UNCOUPLING SAME
Janos Beny; LC James Kingsbury, and David L. Scribner, all of Manhattan Beach, Calif., assignors to Mattel, Inc., Hawthorne, Calif.
Filed April 13, 1971, Ser. No. 133,653
Int. Cl. A63h 17/26
U.S. Cl. 46—221 **9 Claims**



A toy train coupling apparatus where the train is movable over a flat surface rather than conventional rails. The coupling apparatus includes two coupling elements, each having a hook part, a depending pin, a flexible detent and a flexible elongated arm. The arm allows the hook part to pivot in response to engagement forces while limits are placed on the coupling element to restrain motion during disengagement. The arms and detents flex to provide biasing forces helping to cause engagement, while the detents also help to cause disengagement. External forces are applied longitudinally to cause engagement; external forces are applied to cause disengagement.

3,678,619
PLANT COVER
William C. Carlson, Box 7, R.R. 1, Burnsum, Minn.
Filed Aug. 31, 1970, Ser. No. 68,402
Int. Cl. A01g 13/04
U.S. Cl. 47—29 **4 Claims**

The plant cover has a rectangular top frame and first and second rectangular side frames pivotally interconnected so that they can be substantially orthogonally positioned. In such position, the side frames act as sides and legs which hold the top frame above the ground. When not in use, the side frames fold into the top frame. The top frame and side frames are covered with a material substantially transparent to actinic



rays, so that the structure can be erected and placed over a plant to protect the plant from frost or otherwise enclose the region around the plant.

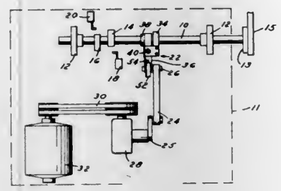
3,678,620
PACKAGE
Albert John Veges, Leidsestraat 83, Hillegon, Netherlands
Filed June 23, 1970, Ser. No. 49,043
Claims priority, application Netherlands, April 3, 1970, 7004806
Int. Cl. A01g 9/02
U.S. Cl. 47—37 **5 Claims**

A package of plastics material adapted to hold a number of bulbs or tubers arranged at a certain interspace and suitable to be placed integrally the soil for planting said bulbs or tubers. The package comprises a top opening and a bottom opening for the growing stalk and roots, respectively.

3,678,621
HORTICULTURAL METHOD FOR GIVING SEEDS, PLANTS AND HARVESTED ITEMS HYGROSCOPIC CHARACTER DURING ARID CONDITION
Robert M. Reams, Rte. 2, Apex, N.C.
Continuation-in-part of Ser. No. 794,799, Jan. 28, 1969. This application July 1, 1970, Ser. No. 51,657
Int. Cl. A01h 5/04; A01n 3/02, 5/00
U.S. Cl. 47—58 **34 Claims**

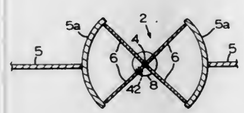
A hygroscopic character, i.e. the ability to take up and retain water, is given seeds, bulbs and plants during arid growing conditions and to cut leafy vegetables, cut trees, cut flowers and the like after being cut by the method of applying a material in powder or solution form selected from the group comprising magnesium carbonate, sodium citrate, magnesium chloride, magnesium pyrophosphate and citric acid, with magnesium carbonate being preferred.

3,678,622
SAFETY REVERSE FOR AUTOMATIC PARKING GATES
Harold L. Miller, 946 Lakepointe, Grosse Pointe Park, Mich.
Filed Aug. 11, 1970, Ser. No. 62,816
Int. Cl. E05f 15/04
U.S. Cl. 49—28 **7 Claims**



An improved automatic drive mechanism for automobile parking lot gates incorporating a reversing mechanism to immediately raise the gate if the gate strikes an object as it is lowering. An electrical interlock prevents the gate from raising when it has reached its final horizontal position.

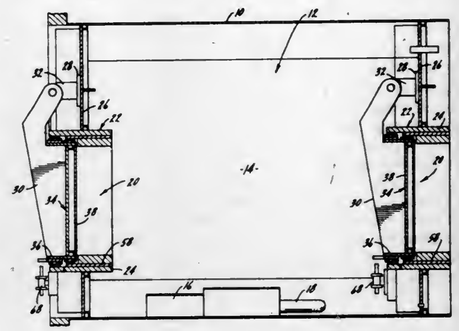
3,678,623
CONTROL SYSTEM FOR REVOLVING DOOR
Keith T. Jenkins, Weston, Ontario, Canada, assignor to C. J. Rush Limited, Scarborough, Ontario, Canada
Filed June 26, 1970, Ser. No. 50,281
Int. Cl. E05d 15/02
U.S. Cl. 49—43 **10 Claims**



An electronic control system for a revolving door, in which four cams, one for each door leaf, rotate with the door and open a single fixed position switch each time the door is in a quarter-close position. When the door is pushed from the quarter-close position, the switch closes, energizing a circuit which controls a motor to rotate the door for a timed interval. During the timed interval the circuit renders ineffective the periodic opening and closing of the position switch as the door rotates. After the timed interval, the first time the door passes a quarter-close position, the actuation of the position switch causes the circuit to switch the motor to drive the door at low speed and the next switch actuation, 90 degrees later, stops the door in a quarter-close position.

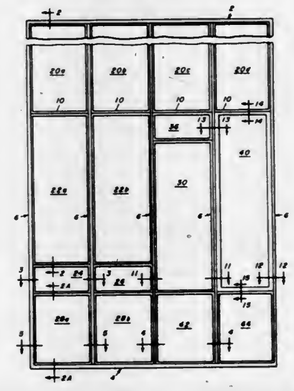
3,678,624
DOOR WITH DOUBLE-INFLATABLE SEAL AND PRESSURE CHAMBER
Vincent A. Bicicchi, Lombard, Ill., assignor to W. J. Woolley Co., River Forest, Ill.
Filed Oct. 12, 1970, Ser. No. 79,745
Int. Cl. E06b 7/00
U.S. Cl. 49—68 **1 Claim**

A door seal structure for use with a door frame having a door movably attached thereto. The seal structure includes a pair of spaced inflatable seals mounted on the periphery of the door and positioned for sealing contact with the door frame when expanded under the influence of a suitable pressure



fluid. There is a space between the inflatable seals and means for pressurizing the space to provide a pressure barrier between the seals.

3,678,625
BUILDING WALL ASSEMBLY
Lawrence T. Vance, Pittsburgh, Pa., assignor to Engineered Products, Inc., Pittsburgh, Pa.
Filed Nov. 23, 1970, Ser. No. 92,001
Int. Cl. E06b 3/38
U.S. Cl. 49—381 **8 Claims**



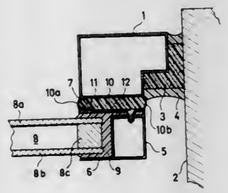
A building wall assembly including hollow mullions which are adapted to receive recessed framing elements to provide maximum exposure of panel surfaces including decorative panels and both fixed and movable window panels or panes. The mullions are so configurated as to be assembled from two mullion elements which permit relative longitudinal sliding movement between the mullion parts responsive to thermally induced expansion and contraction. Each mullion forming element has a generally Z-shaped web portion and flanges extending in the same direction from opposed ends thereof. Framing elements, which are to a major extent recessed within the exterior of the mullion walls, are secured thereto by fastening means. A fastener clips or glazing bead is received within the framing elements. Compressible gasket means are secured within the framing elements and the fastener clip in order to compressibly engage opposed marginal portions of a fixed panel to sealingly secure the same in position.

A ventilating window structure incorporating a form of the mullion and frame elements described above. The window having a movable frame member provided with a web-like body portion, outwardly directed flanges defining an outwardly open channel for receipt of hinge means and corner joining means. A glazing bead received within recesses in the body portion of the movable frame element. A rearwardly disposed inwardly directed flange having a glazing strip receiving recess with a gasket or glazing strip secured therein. The glazing bead having a glazing strip receiving opening and a glazing strip disposed therein. The marginal portions of the window pane secured in compressible engagement between the glazing strips.

A rotating window structure having a movable frame member, a mullion as described above and an inwardly open channel shaped fixed frame member. The movable frame member having a tubular body with an inwardly projecting flange and glazing bead receiving openings securing a glazing bead in position. Glazing strips received within the inwardly projecting flange and the glazing bead to secure the window pane to the movable frame.

A compressible gasket or glazing strip element having an anchoring section, a compressible body portion and outer legs. The anchoring section having a resilient pilot section for assisting in introducing the gasket element into a recess. The body section is tubular and a rod-like connecting sector is interposed between the anchoring section and the tubular body section. Angularly rearwardly disposed resilient outer legs are connected with said tubular body section and project farther rearwardly than said tubular body section.

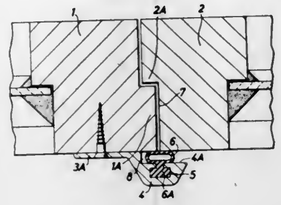
3,678,626
WINDOW FITTING
Rolf Rainer Heikel, Bembalentie 3, Kauniainen, Finland
Filed April 3, 1970, Ser. No. 25,501
Int. Cl. E05d 7/00
U.S. Cl. 49—402 **4 Claims**



A window fitting consisting of a metal frame attached to the wall and a metal sash with at least two glass panes attached to the frame, the sash being fitted inside the frame so that the opening of the sash is mainly congruent with the opening of the frame and with a heat insulating gasket fitted between the frame and the sash around the entire opening.

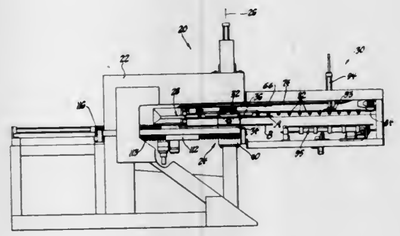
3,678,627
SEALS FOR DOUBLE DOORS AND THE LIKE
Bernard Dixon, Harpenden, England, assignor to Bernard Dixon and Partners Limited, London, England
Filed June 19, 1970, Ser. No. 47,679
Claims priority, application Great Britain, June 24, 1969, 31,876/69
Int. Cl. E06b 7/16
U.S. Cl. 49—485 **4 Claims**

The disclosed invention concerns seals for double doors or windows, i.e. those which have stiles which meet edge-to-edge in the closed situation, in which a strip-like fitting on one door overlaps the other when closed and thus elastically deforms



and presses a sealing strip against the coplanar surfaces of the adjacent stiles; the seal strip is formed so that it can roll laterally to accommodate uneven surfaces.

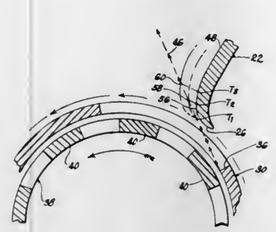
3,678,628
APPARATUS FOR CUTTING AND GRINDING GLASS
Harold A. McMaster, Woodville, Ohio, assignor to Guardian Industries Corporation, Detroit, Mich.
Division of Ser. No. 702,978, Feb. 5, 1968, Pat. No. 3,574,976. This application Feb. 17, 1971, Ser. No. 116,018
Int. Cl. B24b 7/00, 9/00
U.S. Cl. 51—5 **43 Claims**



An apparatus for sizing a sheet of material comprising positioning means for disposing a sheet in a predetermined position relative to an axis, cutting means for cutting a predetermined peripheral pattern in the sheet relative to said axis, and grinding means for grinding the edge of the sheet while the sheet is in said predetermined position relative to said axis.

3,678,629
CENTRIFUGAL BLASTING WHEEL AND BLADE THEREFOR
Raymond M. Leliaert, South Bend, Ind., assignor to Wheelabrator-Frye Inc., Mishawaka, Ind.
Filed March 19, 1970, Ser. No. 21,160
Int. Cl. B24c 3/00
U.S. Cl. 51—9 **7 Claims**

A centrifugal blasting wheel is provided with throwing blades which have throwing surfaces curved at their inner ends to provide a surface for initial contact with particulate material being thrown. The surfaces are thus traveling in a plane substantially corresponding to the plane to which the particulate material is being propelled onto the blades in order



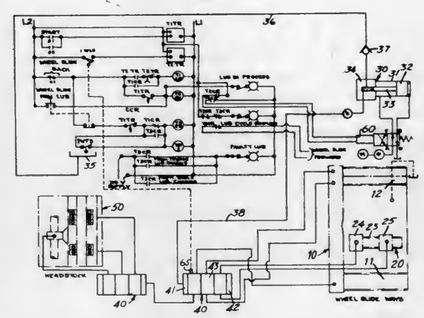
to effect a smoother and more efficient transfer of material to the surface of the blades.

3,678,630
HONING APPARATUS
Karl Borcherding, Bad Nenndorf, Germany, assignor to Hermann Heye, Obernkirchen Allee, Germany
Filed June 26, 1970, Ser. No. 50,096
Claims priority, application Germany, July 2, 1969, P 19 33 575.2
Int. Cl. B24b 5/36, 19/00
U.S. Cl. 51—58 **8 Claims**

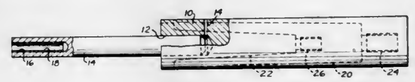
A honing apparatus in which honing tools and a workpiece slide on each other in a composite rotary and oscillatory movement, has honing tools resiliently biased into engagement with the workpiece whereby a very smooth surface is quickly obtained.

3,678,631
CO-ORDINATED PERIODIC LUBRICATION SYSTEM FOR MACHINE TOOLS
Winslow C. Payne, Worcester, and Gerard M. Trottier, Millbury, both of Mass., assignors to The Warner & Swasey Company, Cleveland, Ohio
Filed June 29, 1970, Ser. No. 50,713
Int. Cl. B24b 49/00
U.S. Cl. 51—165.77 **10 Claims**

The combination of a cyclically operative periodically actuated bearing assembly and/or bearing surface lubricating system with a machine tool lubricated thereby including component parts thereof relatively movable about or along bearing assemblies and/or coacting bearing surfaces according to a predetermined machining cycle by feeding means responsive to signals from automatic cyclically operative control means therefore, including means operative to actuate the periodic lubricating system responsive to selected signals from the control means to the feeding means so that periodic operation of the lubricating system is co-ordinated with the relative movement of component parts of the machine tool, and monitoring means activated periodically with the lubricating system and operative to interrupt the machining cycle whenever the lubricating system fails to complete its operating cycle.

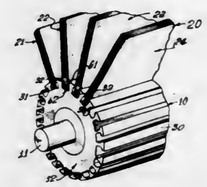


3,678,632
QUILL FOR MACHINE TOOLS
William C. Eversole, Latrobe, and James W. Heaton, Greensburg, both of Pa., assignors to Kennametal Inc., Labrobe, Pa.
Filed Nov. 26, 1969, Ser. No. 880,063
Int. Cl. B24b 41/00
U.S. Cl. 51—168 **7 Claims**



The invention discloses a quill arrangement for a machine tool in which the machine end of the quill is formed of steel and the tool end of the quill is formed of a cemented metal carbide having a high degree of stiffness relative to steel.

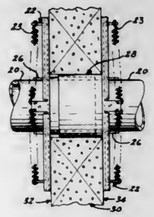
3,678,633
ABRASIVE PACK WITH ANCHOR ASSEMBLY
Aleck Block, Los Angeles, Calif., assignor to Merit Abrasive Products, Inc., Compton, Calif.
Continuation-in-part of Ser. No. 643,101, June 2, 1967, Pat. No. 3,548,551. This application Dec. 7, 1970, Ser. No. 95,630
Int. Cl. B24d 13/04
U.S. Cl. 51—337 **9 Claims**



An abrasive pack and anchor assembly for mounting, in plurality, on an axial hub to provide an abrasive drum. The hub is

of the type having a substantially cylindrical surface, with substantially longitudinal slots recessed into said surface, each of said slots receiving one of said packs. The abrasive pack of the invention is a laminar assembly of abrasive strips having a length substantially the length of the slotted hub. The base portions of said strips are bonded together by adhesive, and preferably, are compressed to form a relatively solid base structure having a flat planar base surface adapted to seat on the bottom of the slot. The base structure of the pack is transversely pierced at longitudinally spaced intervals by transverse apertures. A reusable anchor member is comprised of a retainer bar seating on one sidewall of said base structure; with short transverse bar members extending laterally of said retainer bar, and integral therewith, at longitudinal spacing corresponding to the spacing of said apertures in the base structure of said pack. When said anchor member is assembled to one of said laminar packs, and drawn longitudinally into one of said hub slots, the abrasive pack assembly is retained in position in said slot.

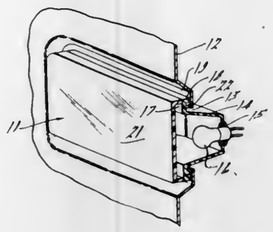
3,678,634
FIRE ISOLATION AND INSULATING APPARATUS
Eugene H. Wise, Saugus, and James J. Blumenkranz, Hollywood, both of Calif., assignors to R & G Sloane Manufacturing Company, Inc., Los Angeles, Calif.
Filed Aug. 4, 1970, Ser. No. 61,253
Int. Cl. F16k *13/00, 17/00*
U.S. Cl. 52—1 **17 Claims**



Apparatus for closing off and insulating a plastic article such as a pipe section extending through a fire-resistant wall or floor to prevent the spread of fire by the progressive burning of the pipe section. The apparatus generally includes a slidably movable gate, preferably metal, which seals the walls of the plastic pipe section to interrupt it when it softens in the presence of fire and before it ignites, and baffle or screen the pipe section, thereby insuring against the spread of fire via the pipe section, such as from the hot side to the cold side of the fire-resistant wall or floor. Such apparatus may be installed on either or both sides of the wall or floor through which the plastic pipe section passes.

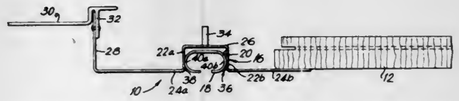
3,678,635
ASSEMBLY HAVING INTEGRAL SEALING MEANS
Louis D. Vagi, Inkster, and Maurice M. Westerdale, Dearborn, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.
Filed March 26, 1971, Ser. No. 128,426
Int. Cl. B60q *1/32*
U.S. Cl. 52—28 **4 Claims**

An assembly of an accessory base member to a panel having an aperture therein, the aperture being concealed beneath the base member. The base member has a continuous peripheral flange adapted to abut the panel and an integral continuous flexible skirt located between the flange and the aperture edge. With the base member mounted on the panel, the flexible skirt deforms against the panel to provide a compression



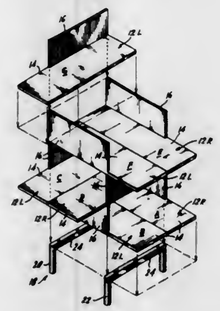
seal between the base member and the panel. The compression seal prevents entry of water and dust into the vehicle body through the aperture.

3,678,636
SUPPORTS FOR CURTAINS, VENETIAN BLINDS, AND THE LIKE
Seymour Cohen, 21 Newport Drive, Plainview, N.Y.
Filed July 22, 1970, Ser. No. 57,066
Int. Cl. A47h *1/14;* **E04b** *5/55*
U.S. Cl. 52—39 **7 Claims**



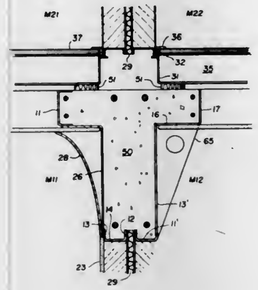
A support for curtains, Venetian blinds, and the like. The support is fixedly carried by any structural element of a building or the like and is formed with a receiving portion capable of receiving an element such as a track for carrying window shades, curtains, and the like. At the receiving portion of the support is a structure for responding to introduction of an element such as a track or the like into the receiving portion so as to releasably hold the element in the receiving portion.

3,678,637
BUILDING CONSTRUCTION SYSTEM
Arthur Klipfel, 1134 Massachusetts, Cambridge, Mass.
Filed Feb. 17, 1970, Ser. No. 11,945
Int. Cl. E04h *9/06*
U.S. Cl. 52—79 **8 Claims**



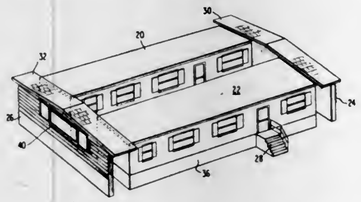
A building construction system composed of individual prefabricated structural units which are of a size that can be manufactured at a factory and transported on conventional roadways and then assembled in stacked position to provide a multistoried structure. The individual units are paired together to provide an enlarged open expanse on one floor of the resulting building and arranged such that their exterior walls transfer the loads of units mounted above them to manageable and convenient support columns.

3,678,638
BUILDING CONSTRUCTION OF MODULAR UNITS WITH SETTABLE MATERIAL THEREBETWEEN
George Mougin, New York, N.Y., assignor to Sodeteg, Inc., New York, N.Y.
Filed Dec. 24, 1970, Ser. No. 101,341
Int. Cl. E04h *9/06*
U.S. Cl. 52—79 **32 Claims**



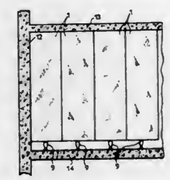
Modular units, forming room units are built up of panel structures having an L or U-shaped channel extending around the panel structure and forming the frame, with at least one panel secured to the side legs of the channel. The channel reinforces the panels and forms a mold of sufficient strength to hold poured concrete therein. Such modular units are placed adjacent each other, preferably with a polystyrene separating sheet therebetween, and concrete is poured in the open faced channels to form vertical columns and horizontally extending beams. After hardening, additional units can be placed on top of the thus formed column and beam structure, the weight of the upper modular units, or of the top structure being carried by the columns and beams and not by the walls of the modular units. Preferably, reinforcing rods which may be welded to the channels are incorporated in the columns and beams.

3,678,639
MOBILE HOME ARRANGEMENT
Leon J. Panitz, Baltimore, Md., assignor to Park Planning Inc., Baltimore, Md.
Filed Aug. 24, 1970, Ser. No. 66,201
Int. Cl. E04h *3/00*
U.S. Cl. 52—79 **1 Claim**



The mobile home arrangement enables the configuration of two or more mobile home sites to give the appearance of a single conventional dwelling by positioning the mobile homes on a pad or support and providing vertical walls located at each end of the mobile homes and in between the two homes, with said walls being constructed in such a manner as to give the combined homes the attractive appearance of a permanent conventional dwelling. The mobile homes may be easily moved on or off of said support pad by a simple removal and reinstallation of the walls or the walls may be movable in whole or in part to allow for the movement of the mobile homes.

3,678,640
PARTITION-WALLS FORMED OF PREFABRICATED ELEMENTS
Jean-Claude Tillie, Marcq en Baroeul, France, assignor to Tramex S.A.
Filed Sept. 23, 1970, Ser. No. 74,803
Claims priority, application France, Sept. 25, 1969, 6932656
Int. Cl. E04b *2/10, 1/10*
U.S. Cl. 52—238 **10 Claims**

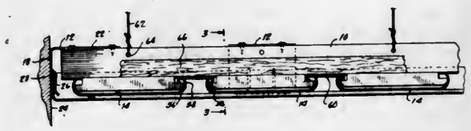


A prefabricated partition-wall element constituted by a parallelepiped-shaped plate of relatively great length as compared to its width, and comprising a rigid and resistant core covered with apparent facings of smooth coatings whose dimensions are equal to the largest dimensions of the element, said core being provided on its narrow faces and all along its periphery with sunk and raised portions provided in the material of the core and intended to ensure the binding with the adjacent elements subsequent to interposition of a binder.

ERRATUM

For Class 52—311 see:
Patent No. 3,678,651

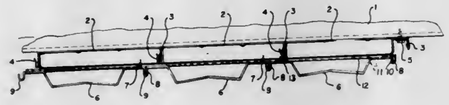
3,678,641
CEILING SUSPENSION SYSTEM
James A. Englund, Middlesex, and Stephen Popek, Roselle, both of N.J., assignors to Alcan Aluminum Corporation, Cleveland, Ohio
Filed Sept. 9, 1970, Ser. No. 70,649
Int. Cl. E04b *5/56;* **E04f** *13/12*
U.S. Cl. 52—484 **2 Claims**



A ceiling suspension system comprising a plurality of stringers having panel receiving and holding slots. The stringers are supported at opposite ends by wall carried trim brackets. Closure strips may be used to close the gap between adjoining panels. Panels having in-turned edges are seated in the stringer

slots. Each trim bracket has a resilient tongue in one wall thereof for receiving and holding an edge trim member. In addition, the trim brackets restrict the lateral movement of the stringer and aid in the alignment of the panels.

3,678,642
INSULATED WALL PANEL
Harley D. Scott, Wexford, Pa., assignor to Elwin G. Smith & Company, Inc., Pittsburgh, Pa.
Filed June 3, 1970, Ser. No. 43,080
Int. Cl. E04d *3/361*
U.S. Cl. 52—588 **4 Claims**



This invention relates to an insulated wall panel assembled at the factory with a subgirt attached to a liner element fastening to a girt of such construction that the wall panels may be locked together by a plurality of male and female elements thereof extending either at right angles to, or parallel to the wall panels. The subgirt has a guide channel for a slide bar for holding the elements together to prevent horizontal movement or pulling away from the building as the result of negative wind loads.

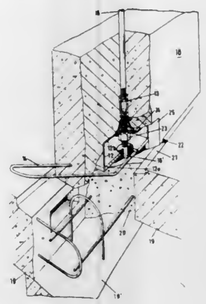
3,678,643
PLASTIC SHEETS FOR CONCRETE REINFORCING MESH
Alfred V. Schwarz, Ste. 15-819 St. Paul Ave., Winnipeg 10, Manitoba, Canada
Filed June 18, 1970, Ser. No. 47,192
Int. Cl. E04c *5/16*
U.S. Cl. 52—686 **1 Claim**



Foamed plastic sheets interlock to form a continuous slab which is laid on the road bed or the like prior to pouring concrete to seal the concrete from the road bed. Chairs or the like are formed on the upper surface of the sheets to support reinforcing mesh at the required height above the sheets.

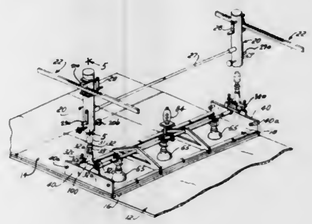
3,678,644
METHOD OF GAINING PRE-CAST CONCRETE PANELS
Norman Wakefield, Leatherhead; Stuart John Alexander, London; James Francis Morrish, Gerrards Cross; William Beck, Warlingham; Raymond Sturgis Groves, Fetcham, and Michael J. Harvey, Orpington, all of England, assignors to Wates Limited, London, England
Division of Ser. No. 799,164, Feb. 14, 1969, Pat. No. 3,566,560. This application Sept. 8, 1970, Ser. No. 70,415
Int. Cl. E04b *1/41, 1/48;* **B32b** *31/06*
U.S. Cl. 52—747 **4 Claims**

Two similar, rectangular, pre-cast, concrete, vertical wall panels disposed one above the other are joined together by a joint including a horizontal plate and a vertical attachment bar. The plate is the bottom wall of a short tube extending widthwise of the lower horizontal edge of the upper panel and is anchored in this panel by means of two oblique anchoring members fixed to the plate and embedded in the panel. The



bar is embedded in the lower panel and its upper end zone projects through a central aperture in the plate. A nut screwed on this zone bears downwardly on the plate via a radially slotted washer.

3,678,645
TILE PLACING MACHINE
Juan J. Valdes, 884 43rd St., Apt. 9C, Brooklyn, N.Y.
Filed Oct. 28, 1970, Ser. No. 84,800
Int. Cl. E04f *21/20, 21/22*
U.S. Cl. 52—749 **5 Claims**

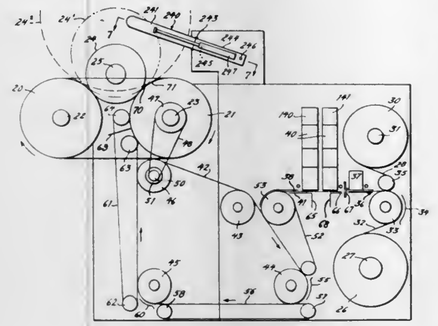


A system for use in applying similarly sized tiles to a prepared bed of adhesive or cement which includes a collector means to apply pressure to a plurality of tiles arranged in a row to imbed them in the adhesive and force applying means comprising extendible pistons movably supported on guide tracks above the tile collector means to be extended to apply pressure to the collector means.

3,678,646
WRAPPING ROTATING ROLLS OF SHEET MATERIAL
William Russell Clark, Jenkintown, Pa., assignor to Eddystone Machinery Company, Chester, Pa.
Filed July 29, 1970, Ser. No. 59,275
Int. Cl. B65b *11/04, 61/00*
U.S. Cl. 53—14 **13 Claims**

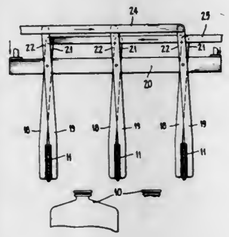
To a roll of sheet material which is rotating on one or more drums of a cloth winder, a piece of paper is fed from below into the space between the roll of sheet material and a drum on which it is being wound, the roll being pressed against the

drum. Overlapping the forward edge of the piece of paper is adhesive tape with the adhesive directed toward the roll of sheet material, and this adheres to the roll. The piece of paper



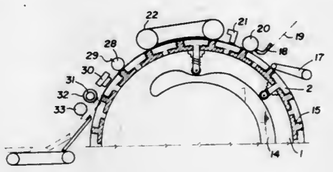
is fed to surround the roll, and the rearmost edge of the piece of paper has adhesive tape overlapping it with the adhesive directed toward and bonding with a previous turn or wrap of the paper.

3,678,647
PACKAGING OF BOTTLES OR OTHER ARTICLES
Henry M. Corderoy, Gladesville, New South Wales, Australia, assignor to A.C.I. Operations Pty. Limited, Melbourne, Victoria, Australia
Filed May 14, 1970, Ser. No. 37,207
Claims priority, application Australia, May 15, 1969, 55076/69
Int. Cl. B65b *61/00*
U.S. Cl. 53—14 **10 Claims**



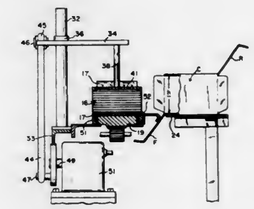
The present invention relates to an improved method and apparatus for packing bottles or the like in cartons. Bottles or the like are arranged in columns and rows in open containers and partition strips are inserted therebetween. The partition strip material is delivered in continuous length to one or a plurality of partition inserting stations whereupon the material is cut off at the desired length, collected by mechanical fingers and inserted downwardly between the rows and columns of bottles or the like. The partition strips at one station are inserted transversely to the partition strips at the next immediate station, the subsequently inserted strips serving to force the first-mentioned strips downwardly between the columns or rows of partitions. This invention provides for tight packages with little or no risk of breakage as a result of relative vibration between the packed bottles.

3,678,648
APPARATUS FOR THE PRODUCTION OF A VACUUM PACKAGE
Gerhard Leuschner, Ottendorf-Okrilla; Peter Pietsch, and Gunter Kadner, both of Dresden, all of Germany, assignors to Veb Kombinat Nagema, Dresden, Germany
Filed Jan. 14, 1971, Ser. No. 106,461
Int. Cl. B65b *31/02*
U.S. Cl. 53—112 A **5 Claims**



In an apparatus for the production of vacuum packages, comprising a drum having serially arranged mold cavities on its surface, is provided a cover means extending over at least two serially arranged mold cavities.

3,678,649
PACKAGING APPARATUS
David Clancy, Canaan, Conn., assignor to Colgate-Palmolive Company, New York, N.Y.
Filed July 13, 1970, Ser. No. 54,241
Int. Cl. B65b *63/02*
U.S. Cl. 53—124 D **16 Claims**

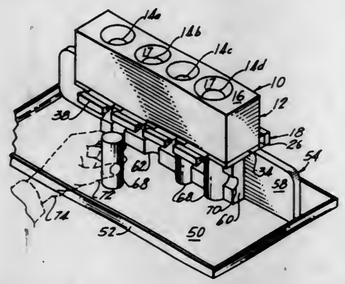


Packaging apparatus comprises an intermittently moving conveyor mounting a succession of open top open side trays each containing a stack of packages and a carton filling station where a reciprocable pusher is actuated in synchronism with the conveyor to push the stack of packages into an aligned carton. The package stack in each receptacle is tamped and compacted to a lesser effective height particularly along the front and rear side edges prior to moving that receptacle into the filling station for facilitating entry of the stack into a carton and ensuring proper closure of the carton end flaps.

3,678,650
APPARATUS FOR PACKAGING COINS
William E. Green, Jr., Rockdale County, near Conyers, Ga., assignor to The Citizens and Southern National Bank, Atlanta, Ga.
Filed June 22, 1970, Ser. No. 48,186
Int. Cl. B65b *35/02, 5/00*
U.S. Cl. 53—159 **4 Claims**

Coins of different amounts are separated by size and then stacked by hand on top of a movable support beneath which is placed a coin package which may be a plastic tube or wound paper tube. The number of coins is determined by the height of the stack to the top of the selected mark and excess coins are removed quickly by scooping out of a depression. A solid

block of plastic may be molded or drilled with a line of vertical bores each representing a coin of a different size (and amount) and the height of the bore determines the number of coins. The block is attached to a base made from plastic or wood and on top of a frame with semi-circular, vertical grooves complimentary to a coin tube and in which tubes are



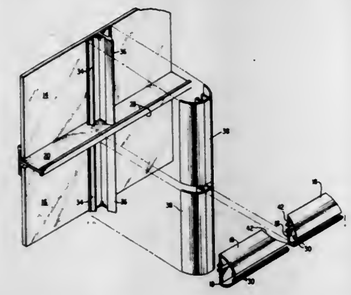
placed beneath the respective bore, but separated by a sliding release plate in which there is a hole corresponding with the respective bore. A saucer-shaped depression leads to each bore whereby excess coins are scooped out. Coins are stacked by hand in each bore until the proper height is reached and then the respective plate is moved by hand to release the coins to the respective tube.

3,678,651

FALSE MUNTIN ASSEMBLY

Glen Elton Hicks, Statesboro, Ga., assignor to Rusco Industries, Incorporated, Los Angeles, Calif.

Filed Oct. 8, 1970, Ser. No. 79,176
Int. Cl. E06b *3/30, 3/02*
U.S. Cl. 52—311 **9 Claims**



A false muntin assembly for a window having a sash, a windowpane defining at least one light, and a glazing bead for the windowpane, which divides the windowpane into at least two lights and comprises a rigid aluminum base member overlaying the windowpane, a semi-rigid vinyl cover having the appearance of a muntin, and snap fit locking means engaging the vinyl cover onto the aluminum base. Openings formed in the glazing bead and a lip formed on the sash firmly lock the false muntin onto the windowpane without need of any additional clips or fasteners. In one embodiment, a pair of false muntins divide the window into four lights; in a second embodiment, a true muntin divides the window into two lights and the false muntin further subdivides the window into four lights.

ERRATUM

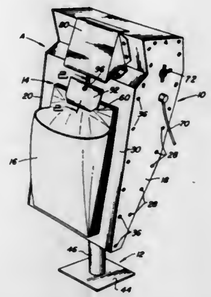
For Class 53—255 see:
Patent No. 3,678,660

3,678,652

BAG OPENING APPARATUS

Anton Z. Panasewicz, Parma, Ohio, assignor to Dura-Pak, Inc., Cleveland, Ohio

Filed Dec. 28, 1970, Ser. No. 101,554
Int. Cl. B65b *43/36*
U.S. Cl. 53—385 **6 Claims**



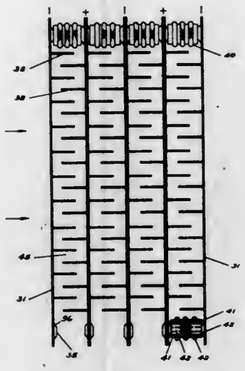
Apparatus for opening plastic bags of the type including opposed side walls of different lengths joined along their lateral sides and one end to define an open ended bag with a tab adjacent the open end. The apparatus disclosed includes a frame assembly with a support surface that can be adjusted to different orientations. The support surface is associated with means for engaging and holding a wicket member that extends through the tabs of a stack of the bags. An air blower is carried by the frame assembly and an air outlet is arranged to direct the air stream across the stack of bags to cause the top bag to be expanded open. Additionally, a resiliently mounted tongue or baffle is carried on the support surface between the air outlet and the stack of bags to maintain the tabs down and assist in directing air into the top bag.

3,678,653

ELECTROSTATIC PRECIPITATOR

Elmer W. Buschman, Louisville, Ky., assignor to Kenneth Buschman, Fairport, N.Y. and William R. Price, Louisville, Ky., part interest to each

Filed May 11, 1970, Ser. No. 36,244
Int. Cl. B03c *3/45*
U.S. Cl. 55—2 **14 Claims**



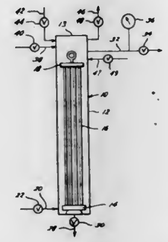
Discloses an electrostatic precipitator of the two chamber type and specifically, a parallel plate electrostatic cell for the precipitation chamber of said precipitator. The parallel plate electrostatic cell is made up of a plurality of identical modular electrode units in the form of louvered plates, having reinforcing ribs and projecting vanes which are mounted so that the vanes of one plate are interleaved with the vanes of an oppositely charged plate and so that the plates are in parallel and insulated relationship one to the other. The projecting vanes form a plurality of open air passages and a plurality of electrostatic fields across said open air passages.

3,678,654

PROCESS FOR SEPARATION OF DISSOLVED HYDROGEN FROM WATER BY USE OF PALLADIUM AND PROCESS FOR COATING PALLADIUM WITH PALLADIUM BLACK

George M. Low, Deputy Administrator of the National Aeronautics and Space Administration with respect to an invention of, and Charles F. Albright, 12512 Kenney Drive, Granada Hills, Calif.

Filed July 17, 1970, Ser. No. 55,806
Int. Cl. B01d *59/10*
U.S. Cl. 55—16 **8 Claims**



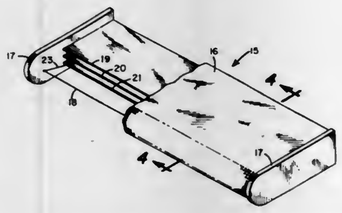
Dissolved gaseous hydrogen in water is separated from the water by placing the water in contact with a thin metallic film of palladium or palladium-silver alloy, both sides of which film have been coated with palladium black. The other side of the film has less pressure than the partial pressure of the hydrogen dissolved in the water. The hydrogen dissolved in the water permeates the film and passes to the other side of it. Preferably the palladium black is applied to the metallic film by etching the film, rubbing palladium chloride powder on the film, reducing the palladium chloride to palladium black by exposing it to gaseous hydrogen, depositing additional palladium black from a palladium chloride solution and rubbing the palladium black coating to remove excess black and provide a tightly bonded adherent coating.

3,678,655

ELECTROSTATIC PRECIPITATOR CELL FOR DESK OR TABLETOP AIR PURIFIER

Ronald N. Rose, 1237 E. Fifth St., St. Paul, Minn.

Filed June 3, 1969, Ser. No. 829,943
Int. Cl. B03c *3/38*
U.S. Cl. 55—128 **6 Claims**



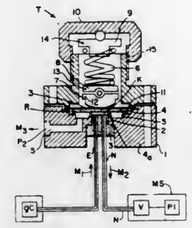
An electronic air purifier having the ionizing chamber and the collecting plates all formed into an integral cell which may be easily removed from the main housing of a desk or tabletop air purifier for cleaning, repair or replacement.

3,678,656

SEPARATING DEVICE FOR MIXTURES OF GASEOUS OR VAPOROUS SUBSTANCES, ESPECIALLY FOR SEPARATING A CARRIER GAS FROM A FRACTION TO BE ANALYZED IN A COMBINED GASCHROMATOGRAPH AND MASS-SPECTROMETER

Curt Brunnee, Birkenweg 24, 2820 Platjenwerbe, and Hans-Joachim Bultemann, Schloesparkstrasse 57, 2800 Bremen, both of Germany

Filed April 6, 1970, Ser. No. 25,919
Claims priority, application Germany, April 17, 1969, P 19 19 460.6
Int. Cl. B01d *53/02*
U.S. Cl. 55—197 **8 Claims**



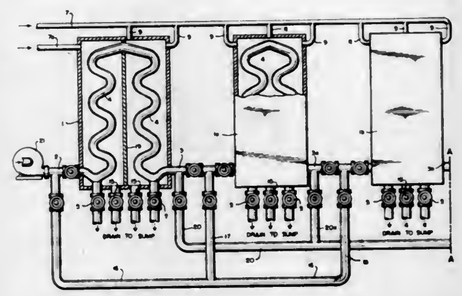
This invention relates to a device for separating mixtures of gasses or vapors. The device utilizes a separating chamber having an inlet for admitting the mixture by viscous flow. The chamber has two outlets, one of which permits molecular flow and the other of which permits viscous flow. Separation occurs when the lower molecular weight fraction of the mixture predominantly leaves the chamber through the outlet permitting molecular flow while the higher molecular weight fraction leaves through the viscous flow outlet. The device may be employed, for example, to separate the helium carrier gas from a hydrocarbon where the mixture is eluted from a gas chromatograph and it is desired to concentrate the hydrocarbon for analysis by mass spectrometry.

3,678,657

FLUID POLLUTION ERADICATOR SYSTEM INCLUDING AN AIR BUBBLE SCRUBBING UNIT

Edith A. Hale, 310 E. 44th St., New York, N.Y.

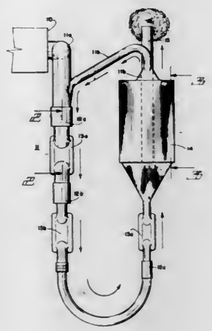
Continuation-in-part of Ser. No. 656,447, July 27, 1967, abandoned. This application Jan. 7, 1970, Ser. No. 1,148
Int. Cl. B01d *50/00*
U.S. Cl. 55—222 **5 Claims**



A fluid pollution eradication and air bubbling system having a cooling condenser unit for removing vapor, a baffle plate

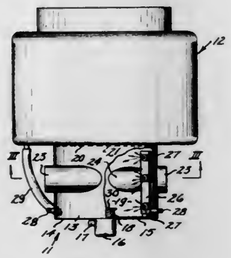
unit for removing solid impurities, and a fluid scrubbing and neutralizing unit. The baffle unit contains removable baffle plates with air foils which are coated with a sticky substance for removing the impurities from the fluid while in a state of turbulence and the fluid scrubbing and neutralizing unit comprises a series of bubbling tanks for scrubbing, neutralizing and deodorizing the polluted fluid. Preferably an alternate bubbling unit is provided whereby the first unit may be shut down completely for repair or cleaning purposes.

3,678,658
AIR POLLUTION CIRCULATION DEVICE
Thomas F. Bayze, 731 W. Tennessee, Tucson, Ariz.
Filed June 22, 1970, Ser. No. 48,123
Int. Cl. B01d *50/00*
U.S. Cl. 55—230 **1 Claim**



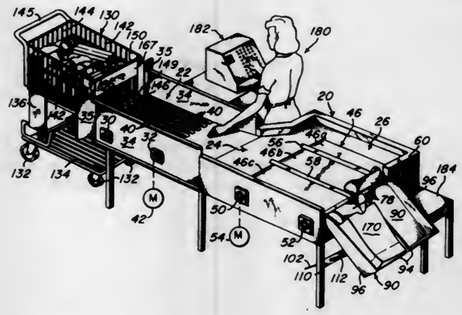
An apparatus for treating and purifying combustion products from exhaust gases before they are admitted to atmosphere by recirculation of the gases during which time they are washed and rewashed, dried and redried until solid contaminants and water soluble substances are removed from the gases.

3,678,659
PRIMARY COLLECTOR AND MANIFOLD
Arthur C. Schouw, 700 S. McMillan St., Owosso, Mich.
Filed Sept. 10, 1969, Ser. No. 856,656
Int. Cl. B01d *47/06*
U.S. Cl. 55—238 **3 Claims**



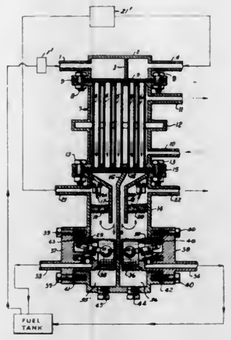
A primary collector for separators in which a manifold is located on the intake side of a separator and in the induced flow to the separator. Tangential entries are provided into the cylindrical manifold to achieve a swirling entrainment. Selected scrubbing provisions are provided and an axial drain allows removal of separated material.

3,678,660
UNLOAD, CHECK, AND BAG APPARATUS FOR SUPERMARKETS
Malcolm E. Musser, P.O. Box 386, Jackson Center, Ohio
Filed June 29, 1970, Ser. No. 50,467
Int. Cl. B65b *39/00, 67/04*
U.S. Cl. 53—255 **12 Claims**



Apparatus for checking out articles of merchandise in a supermarket type of operation. A checkout counter includes mechanism for unloading a basket-cart. The checkout counter also includes a conveyor belt having a plurality of sections. The checkout clerk moves each article checked to one of the sections of the conveyor belt. The conveyor belt moves the articles to a discharge position, at which the articles fall into one or more bags or sacks.

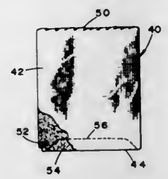
3,678,661
MULTIPLE STAGE VAPOR CONDENSING UNIT
Edwin R. Davis, 2020 Beverly Plaza, Apt. 213, Long Beach, Calif.
Filed Sept. 10, 1970, Ser. No. 71,053
Int. Cl. B01d *50/00*
U.S. Cl. 55—269 **7 Claims**



A multiple stage vapor condensing unit including a housing formed with respective high and low pressure condensing chambers which feed into respective high and low pressure demister chambers. Disposed beneath the respective demister chambers are respective fluid collection chambers. Vapor condensing means is disposed in the respective vapor condenser chambers and demister means is disposed in the respective demister chambers whereby vapor from a fuel tank may be fed through the low pressure condenser chamber to the low pressure demister chamber to condense a portion of

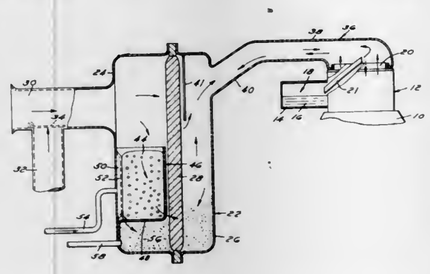
such vapor and collect the resulting fluid in the low pressure fluid collection chamber. The vapor emitting from the low pressure demister chamber may then be compressed and fed through the high pressure condenser chamber to the high pressure demister chamber where additional vapor is condensed to produce fluid for collection in the high pressure fluid chamber.

3,678,662
FILTER FOR MOISTURE AND OIL VAPOR
George A. Grote, Glen Rock, Pa., assignor to National Bank and Trust Company of Central Pennsylvania, Administrator, d.b.n.c.t.a. of the Estate of Willard C. Beach, deceased, and Administrator c.t.a. of the Estate of Mary B. Beach, Hanover, Pa.
Filed May 14, 1970, Ser. No. 37,125
Int. Cl. B01d *53/14*
U.S. Cl. 55—387 **3 Claims**



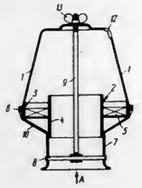
A filter system to absorb and separate water and oil vapors from gases comprising a cylindrical container connectable in a supply line for said gases and containing at least one filter unit comprising a seamless cylindrical sleeve formed from textile material having a predetermined uniform porosity, the diameter of said sleeve being slightly greater than the inner diameter of said container so that when the filter unit is supported between porous supporting means within said sleeve the periphery of the sleeve will smoothly and tightly engage the inner surface of the container and thereby prevent channeling and bypassing of gases between the sleeve and the inner surface of the container during use.

3,678,663
AIR CLEANER REMOTE FROM ENGINE AND HAVING INTEGRATED FUEL VAPOR ADSORPTION MEANS
Gunnar W. Hansen, Ypsilanti, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed Sept. 2, 1970, Ser. No. 68,839
Int. Cl. B01d *53/04*
U.S. Cl. 55—387 **4 Claims**



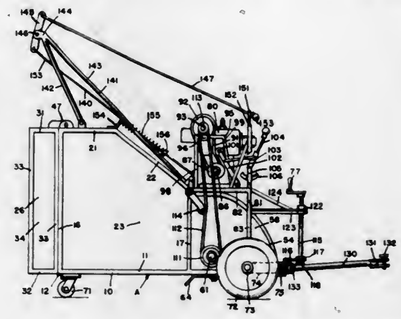
The engine air cleaner is positioned remote from but connected to the engine in essentially a side-by-side relationship. The air cleaner is vertically disposed to define a lower reservoir that traps excess fuel vapors flowing thereinto from the carburetor, and contains a vapor adsorption means to store the vapors and subsequently return them to the engine.

3,678,664
INERTIA-TYPE AIR CLEANER
Sholom Yakovlevich Rubinshtein, ulitsa Kozlova, 51/2, kv. 22; Mikhail Artemievich Babin, ulitsa Kropotkina, 67, kv. 1; Anatoly Lvovich Gutman, ulitsa Enisseiskaya, 6, kv. 14; Viktor Dmitrievich Naumenko, ulitsa Vaneeva, 14, kv. 16; Evgeny Mikhailovich Orlov, ulitsa Kozlova, 2, kv. 2; Vladimir Alexandrovich Pressman, 2-oi Dolgobrodsky pereulok, 10, kv. 8, all of Minsk; Veniamin Evseevich Maev, Leninsky prospekt 60/6, korpus 8, kv. 62, and Fedor Alexeevich Bondarenko, 1 Botkinsky Proezd, 6, kv. 98, both of Moscow, all of U.S.S.R.
Filed Jan. 27, 1970, Ser. No. 6,252
Int. Cl. B01d *45/12*
U.S. Cl. 55—449 **2 Claims**



An inertia-type air cleaner is provided with a housing having an open end. A centrifugal deflector blade structure has an external ring positioned against the open end of the housing. An outlet conduit has an open end positioned against the ring from the side thereof remote from the housing. A laterally extending member is secured internally of the outlet conduit and is connected with a tightening rod which, when tightened from outside the housing, effects compression of the external ring of the centrifugal deflector blade structure between the respective opposing open ends of the housing and the outlet conduit. The outlet conduit is provided with openings in the side wall thereof through which air enters the cleaner.

3,678,665
PORTABLE LAWN RAKING DEVICES
Rudi G. Stanke, Minneapolis, Minn., assignor to Johnson Hydraulic Equipment Co., Minneapolis, Minn.
Filed Aug. 9, 1971, Ser. No. 170,078
Int. Cl. A01d *51/00*
U.S. Cl. 56—13.4 **8 Claims**



A tractor drawn wheel supported housing having sides, a front and a bottom and open at the top and back, a closure for the housing having a rear wall structure and an upper wall structure connected together and closing the open top and

back of the housing and hingedly connected to the side walls at the upper and rearward portions of the same, said housing having an arcuate bottom along which the outer end of the upper wall structure travels to eject the matter collected in the receiving compartment of the housing and a rotary rake at the forward portion of the housing directing the matter picked up through an opening between the bottom and top of the housing into the receiving compartment of the housing. Closure operating means serves to move the closure from closing position to ejecting position.

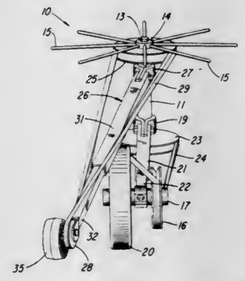
Applicant's device is extremely simple in construction and can be manually operated and dumped by the operator while seated on the seat of a power driven garden tractor, by which it is hauled.

3,678,666

BRANCH GUIDE FOR A BERRY HARVESTING MACHINE

Paul Holzmann, Rte. 3, Box 151, South Haven, Mich.

Filed March 26, 1971, Ser. No. 128,316
Int. Cl. A01d 73/00, 73/00
U.S. Cl. 56—119 6 Claims



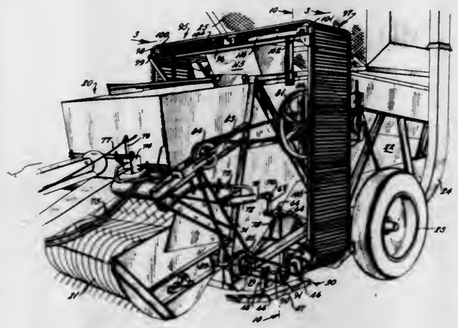
A branch guide is mounted in front of the harvesting machine and comprises a combination of a forwardly-inclined conveyor and rotating, circumferentially spaced tines. The conveyor picks up and elevates berry-laden branches in engagement with the tines which, in turn, deflect the branches into the harvesting machine.

3,678,667

LOOSE PEANUT RECOVERY APPARATUS

William R. Long, Tarboro, N.C., assignor to Long Mfg. N.C. Inc., Tarboro, N.C.

Filed Aug. 2, 1971, Ser. No. 168,296
Int. Cl. A01d 45/24
U.S. Cl. 56—130 14 Claims



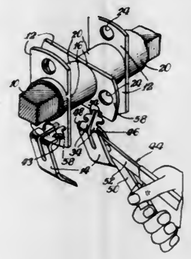
Apparatus for gathering loose peanuts from the ground during the harvesting of the peanut crop so that a substantial portion of the crop, which previously had been lost, can be recovered. The apparatus includes a sweep assembly for removing peanuts from the ground and transferring the same to a peanut recovery unit which raises the peanuts to a higher elevation and discharges the same into a receptacle.

3,678,668

MOWER BLADE AND CONNECTION THEREFOR

Carl W. Mott, Lake Ozark, Mo., assignor to Mott Corporation, LaGrange, Ill.

Continuation-in-part of Ser. No. 54,246, July 13, 1970, abandoned. This application Sept. 25, 1970, Ser. No. 75,347
Int. Cl. A01d 55/22
U.S. Cl. 56—294 17 Claims



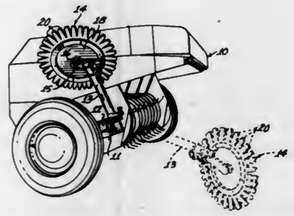
A connection for attaching a mower blade directly to a lug provided on a mower shaft. The blade comprises a pair of resilient fingers cooperating with an opening provided in the lug. The opening in the lug may be circular or non-circular having a long and a short dimension. The long dimension of the non-circular opening is such that when the blade is turned to the long dimension and the fingers are compressed, the fingers will pass through the opening. The short dimension is such that when the blade is turned to such short dimension, the blade cannot be compressed sufficiently to be removed from the opening of the lug. The blade may be removed from the circular opening, regardless of the position of the blade in the opening, by compressing the blade. To connect the blade to the lug of the shaft, the fingers of the blade are gripped in a tool and compressed, and the compressed fingers are then inserted into the opening in the lug. Notches provided in the edges of the fingers are aligned with the margin of the opening in the lug, and the fingers are then released so that the notches loosely engage the lug to retain the blade on the lug. By a converse operation the blade may be removed from the lug.

3,678,669

SWEEPER ATTACHMENT FOR HARVESTING MACHINERY

Henry J. Czajkowski, 301 24th Ave., Yuma, Ariz.

Filed Sept. 28, 1970, Ser. No. 75,942
Int. Cl. A01d 43/02
U.S. Cl. 56—314 1 Claim



A sweeper wheel having resilient fingers positioned on its periphery which is adjustably mounted on the free end of a support arm extending laterally out from the front end of a harvesting machine wherein said sweeper wheel axle is mounted in a plate which provides for predetermined arcuate adjustment of the sweeper wheel relative to its support arm.

ERRATUM

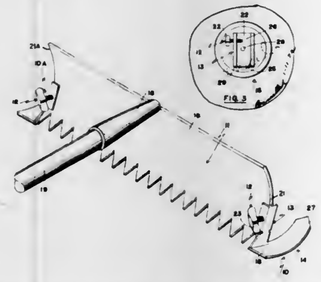
For Class 56—327 see:
Patent No. 3,678,677

3,678,670

ATTACHMENT FOR RAKES

Rudolf Welz, Box 28, Group 515, R.R. #5, Winnipeg, Manitoba, Canada

Filed June 2, 1971, Ser. No. 149,184
Int. Cl. A01d 7/00
U.S. Cl. 56—400.14 1 Claim



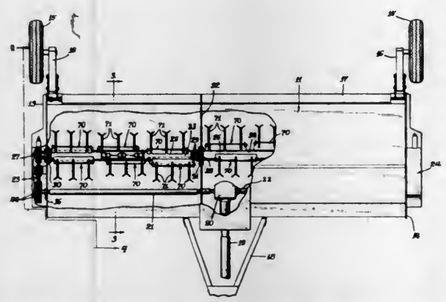
An attachment including a shoe is detachably securable to each end of toothed or blade-type rake and is adjustable to control the penetration of the raking element in the soil or grass.

3,678,671

FLAIL SHREDDER

Thomas J. Scarnato, Barrington; James J. Dryan, Chicago; Craig M. Lawler, Downers Grove, and Robert Sorensen, Glen Ellyn, all of Ill., assignors to International Harvester Company, Chicago, Ill.

Continuation of Ser. No. 781,332, Dec. 5, 1968, abandoned. This application Feb. 26, 1971, Ser. No. 119,373
Int. Cl. A01d 49/00
U.S. Cl. 56—505 11 Claims



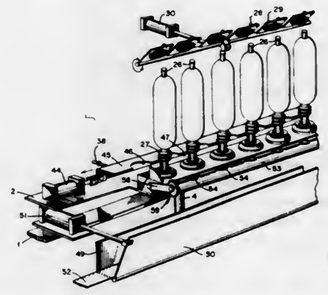
A flail mower having a pair of coaxial rotors with units of multiple pairs of flail knives swingably mounted thereon in a helicoidal pattern wherein the knives of each unit are selectively accessible for quick removal, a rotor housing having an interior rotor-supporting partition disposed off center to fall between crop rows and said housing having a tear-drop configuration providing increasing clearances in the direction of flail knife rotation and crop flow, the rotors being driven by a tension-correcting belt drive arrangement effective to dampen shock loading, wherein the helicoidal pattern of knives in combination with the tear-drop housing configuration and the belt drive arrangement yield mower power output characteristics that demand minimal power input which together with the off-center arranged partition maximize field efficiency.

3,678,672

QUILL OR BOBBIN SPINNING AND WINDING FRAME WITH SEMI-AUTOMATIC DOFFING AND DONNING

Charles David Brissey, and Marvin Nathaniel Trotter, both of Anderson, S.C., assignors to J. P. Stevens & Co. Inc., New York, N.Y.

Filed Feb. 1, 1971, Ser. No. 111,463
Int. Cl. D01h 9/00
U.S. Cl. 57—52 22 Claims



A spinning frame or a ring twister frame with semi-automatic doffing and donning is provided with a doffing bar on the usual ring rail with projections which in one position of the doffing bar are opposite each wound bobbin. The ring rail is pneumatically lowered when the bobbins are fully wound to a position just below the normal starting position and the doffing bar moved so that the projections are underneath the bottom ends of the bobbins. The pneumatic cylinder used to bear down the rail is double acting, and when the doffing cycle is manually started raises the ring rail to a position high enough to lift the wound bobbins off their spindles. At the same time, a wall is tilted, forming a chute into which the bobbins fall, and a conveyor in the bottom of the chute carried them to a full bobbin container. In the case of spinning frames, there is carried on the ring rail a donning tube with holes opposite each spindle, and before initiating the doffing cycle the operator fills these holes with empty cores or bobbins upside down. The next actuation pneumatically brings the donning tube over the rings in the ring rail and causes the tube to rotate 180°. The empty bobbins fall down onto the spindles and then the ring rail is borne down again to normal position for starting winding. This produces a slack on the traversing chain and a pneumatic cylinder rewinds this to starting position. When the starting button is pushed, winding starts as usual.

3,678,673

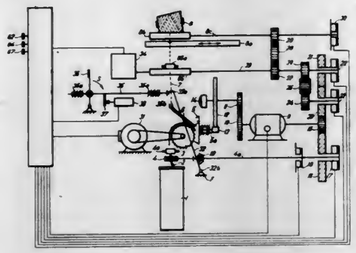
DEVICE FOR THE MASS SPINNING-IN OF SPINNING UNITS IN SPINDLELESS SPINNING MACHINES

Miloslav Prochazka, Nachod; Karel Seidl, Cerveny Kostelec, and Bedrich Casenek, Nachod, all of Czechoslovakia, assignors to Elitex Zavody textilniho Strojirenstvi, Liberec, Czechoslovakia

Filed July 27, 1970, Ser. No. 58,228
Claims priority, application Czechoslovakia, Aug. 8, 1969, 5506-69
Int. Cl. D01h 1/12
U.S. Cl. 57—58.95 13 Claims

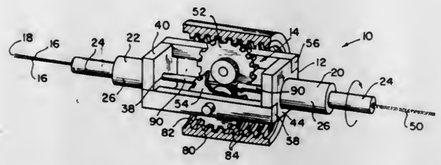
A spindleless spinning machine having electrically operable fiber feed, spinning and yarn withdrawing mechanisms. The

devices is provided with a primary source of electric current and circuit means for synchronously operating the mechanism. An auxilliary power generator is mechanically



connected to the mechanism to produce an electric current independent of the primary source. Means connecting the auxiliary source to the circuit control means to provide power to operate the mechanisms in the absense of the primary source.

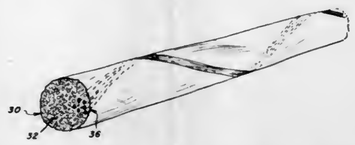
3,678,674
CONTINUOUS TWISTER PIPE CLEANER MACHINE
John M. De Voe, Nashville, Tenn., assignor to United States Tobacco Company, Nashville, Tenn.
Filed July 13, 1970, Ser. No. 54,482
Int. Cl. D01h 7/92
U.S. Cl. 57—77.42 **5 Claims**



In a machine for making pipe cleaners having a twisting mechanism for rotating and twisting wires about each other to lock short cotton strands or fibrils therebetween, the twisting mechanism has a rotatably mounted frame which extends through a generally cylindrical stationary worm gear having an internal spiral thread configuration; the frame rotatably mounts a pair of generally circular gripping members positioned in vertically spaced relation with respect to each other having cooperating peripheral walls forming a purchase therebetween which is adapted to engage the wires and the fibrils; spur gears rotatably mounted in the frame and drivingly connected to the gripping members are adapted to engage the internal thread configuration of the stationary worm gear to rotate the gripping members during rotation of the frame whereby the wires and fibrils are drawn through the frame and twisted about each other to lock the fibrils therebetween.

3,678,675
ANTISTATIC FABRIC
William G. Klein, 13 Washburn Ave., Wellesley Hills, Mass.
Filed April 20, 1970, Ser. No. 29,822
Int. Cl. D02g 3/04, 3/12
U.S. Cl. 57—140 BY **19 Claims**

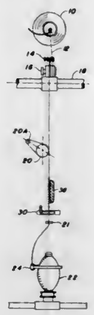
A fine heterogeneous hybrid spun yarn is blended from electrostatically conductive staple fibers and electrostatically non-conductive staple fibers so that the yarn is electrostatically conductive only over short distance lengths. When used in pile fabrics, such as carpets, the fine y yearn is introduced with at least some of the carpet facing yarns during the carpet making operations. The resultant carpet structure substantially eliminates electrostatic shock to a human walking across the carpet and approaching a ground such as a light switch, radio, or another person. Such a carpet provides control for



the generation of static electricity and does not constitute a dangerous floor covering.

The unique heterogeneous hybrid spun blended yarn is achieved by process techniques completely contrary to accepted blending practices.

3,678,676
HEAT SETTING TRAPPED PRE-INSERTED TWIST
Ronald E. Rothwell, Colonial Heights, and Charles W. Beringer, Richmond, both of Va., assignors to Allied Chemical Corporation, New York, N.Y.
Filed May 27, 1969, Ser. No. 828,180
Int. Cl. D02g 1/02, 1/04
U.S. Cl. 57—157 TS **5 Claims**

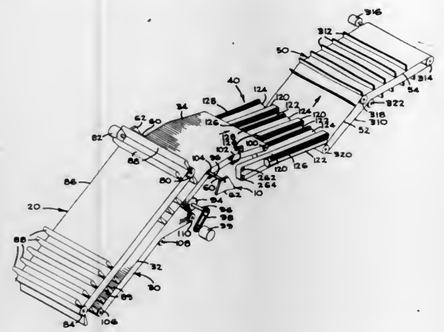


Continuous thermoplastic yarns having ribbon-like cross sections are textured in a continuous operation, wherein drawing thereof may also occur, by trapping twist possessed by said yarns in a heat-setting zone through the use of slotted guide elements or pins which may be opposed in close proximity or the yarn may be wrapped around a single stationary pin to prevent the twist escaping from the heat-setting zone. A predetermined amount of twist may be inserted prior to start-up of the process by pre-inserting the desired number of turns per inch or allowed to build up to the desired level as a result of the twist in yarn unwinding from a supply package.

3,678,677
DE-VINING MELONS
Rodney D. Miller, and John K. Nielsen, both of San Jose, Calif., assignors to FMC Corporation, San Jose, Calif.
Filed Aug. 13, 1970, Ser. No. 63,370
Int. Cl. A01g 19/00
U.S. Cl. 56—327 **19 Claims**

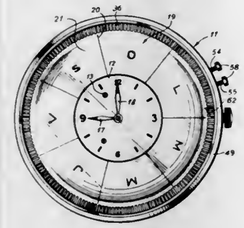
In a once-over field harvesting operation, melons and attached vines are gathered. The melons and their vines are dropped onto a parallel roll de-viner assembly having a trough conveyor that runs axially along cooperating vine removal and pinch rollers that grip the vines from the sides of the fruit and

direct them downwardly between adjacent lanes. The roller assembly is independently pivoted on the frame to adjust its angle of inclination which is selected to minimize melon



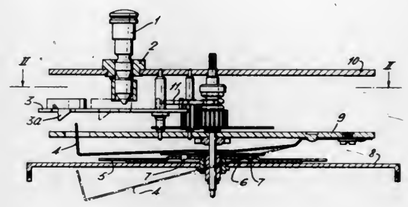
bounce. The pinch rollers are mounted for a limited radial motion in order to clear clumps of vines passing between the pinch rollers and the vine removal rollers beneath them.

3,678,678
REMINDER CLOCK
Alfonso O. Macedo, Hidalgo 135, Queretaro, Qro., Mexico
Filed Aug. 28, 1970, Ser. No. 67,848
Claims priority, application Mexico, April 2, 1970, 118,356
Int. Cl. G04b 23/06
U.S. Cl. 58—16.5 **8 Claims**



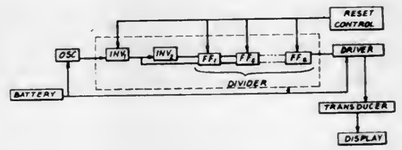
A reminder clock including a mechanism adapted to any conventional type of clock, comprising a gear-train driven by one of the normal members of the clock to which it is adapted, such as the hour hand axle, which by means of a pinion coupled thereto, through said gear-train, finally drives an inner gear with a shift ratio reduced into a scale depending upon the days wanted to be included in the schedule. At the periphery of the face of the reminder clock, there are included a plurality of slots wherein there are located a corresponding number of contacts positionable at will to operative or inoperative positions by the action of several bolts capable of being depressed, each of which coincides with different parts of the contacts and are located in a movable outer rim. An electric circuit is provided to produce an audible signal when the contacts in operative position are engaged by a contact of the circuit. The inner gear can be fastened to a face movable around the conventional face and including at the periphery thereof the positionable contacts which in due time can contact the circuit contact. Alternatively the face with the positionable contacts is fixed to or integral with the conventional face, and the inner gear synchronously shifts the circuit contact so that it can opportunely connect the now stationary positionable contacts.

3,678,679
ALARM CLOCKS AND WATCHES
Admond K. Lee, and Kwok-Ming Wong, both of Kowloon, Hong Kong, assignors to Eastern Time Limited, Kowloon, Hong Kong
Filed July 7, 1970, Ser. No. 52,845
Claims priority, application Great Britain, June 26, 1969, 32,386/69
U.S. Cl. 58—21.15 **4 Claims**



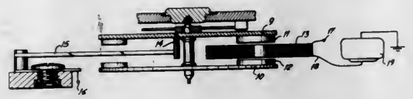
An alarm clock or watch which includes a hammer pivotally mounted for reciprocal movement intermittently to engage a gong to produce an audible noise, and a trip member and a switch member each independently movable between a respective first position at which it intercepts the hammer to prevent or restrict movement of the hammer and a respective second position at which it does not so prevent or restrict movement of the hammer, the trip member being resiliently mounted and the hammer having an angled face at a portion which can contact the trip member whereby if the trip member is moved from its second position to its first position when the hammer is in a position such that the trip spring in its first position lies between the hammer and the rest position of the hammer and when, if the switch member is moved to its first position, the angled face of the hammer can cam the trip member out of the path of the hammer to permit the hammer to return to a rest position without damage to the trip member or the hammer.

3,678,680
AN ELECTRONIC TIMEPIECE
Kinji Fujita, Nagano, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan
Filed Feb. 24, 1971, Ser. No. 118,333
Claims priority, application Japan, Feb. 3, 1970, 45/17120
Int. Cl. G04c 3/00, 9/00
U.S. Cl. 58—23 R **4 Claims**



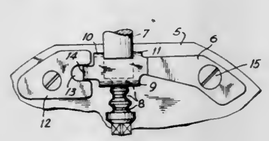
A resetting apparatus for an electronic timepiece wherein a frequency divider circuit having a logic circuit incorporating complimentary MOST is provided with a control means for resetting said divider circuit which is also connected to the input amplifier of said divider circuit to cut said input amplifier off.

3,678,681
MECHANICALLY SWITCHED ELECTRIC TIMEPIECE
Toshiaki Saito, and Toshihiko Oki, both of Suwa, Japan, assignors to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan
Filed July 27, 1971, Ser. No. 166,499
Claims priority, application Japan, July 29, 1970, 45/66014
Int. Cl. G04c 3/04, 23/12
U.S. Cl. 58—28 A 11 Claims



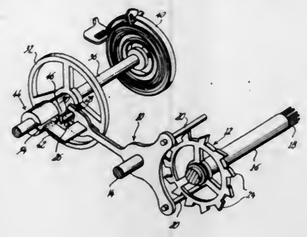
An electric timepiece switched by a mechanical contact point including a pair of spaced balance wheels having at least two pairs of permanent magnets mounted thereon in spaced facing relation. Coil means are fixedly mounted between said two balance wheels. Mechanical contact means are provided including actuating means mounted on said balance wheels for closing a circuit between said coil and an electric source during a certain range of one reciprocation of said balance wheels to apply a driving energy to said magnet.

3,678,682
STRUCTURE FOR POSITIONING A WATCH STEM
Mamoru Miyasaka; Hirohisa Kurita, and Hideo Furihata, all of Shimosuwa-Machi, Japan, assignors to Kabushiki Kaisha Suwa Seikosha, Toyko, Japan
Filed July 28, 1971, Ser. No. 166,798
Claims priority, application Japan, July 31, 1970, 45/66508
Int. Cl. G04b 19/24, 37/06
U.S. Cl. 58—58 2 Claims

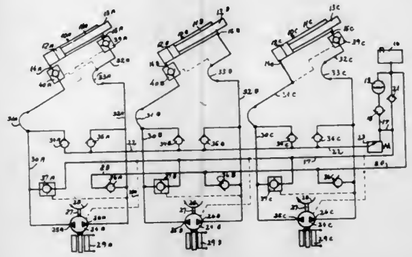


A watch stem having annular grooves thereon is precisely positioned by means of a leaf spring held at one end to a base plate. Proximate the other end of the leaf spring a tab bent toward the base plate seats in one of the annular grooves. Second and third tabs span the watch stem in a diametral direction and prevent motion of the watch stem in a direction transverse to the axis. A fourth tab is positioned by the walls of a notch in a member fastened to the base plate. The leaf spring is thereby prevented from moving in a direction parallel to the axis of the stem.

3,678,683
ONE-PIECE ROLLER-IMPULSE MEMBER FOR TIMEPIECE ESCAPEMENT
Edward F. Cielaszyk, Oglesby, Ill., assignor to General Time Corporation, Phoenix, Ariz.
Filed Feb. 26, 1971, Ser. No. 119,265
Int. Cl. G04b 15/08
U.S. Cl. 58—122 2 Claims
A one-piece safety roller and impulse member for a timepiece escapement control is disclosed. The combination element is a low coefficient of friction engineering plastic and serves the control purpose of two separate elements heretofore used in the art of timepiece lever escapements to which this invention pertains.

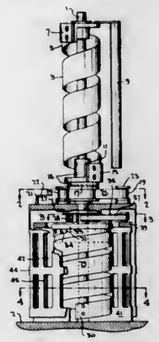


3,678,684
HYDRAULIC SYSTEMS
Leif Erik Sorensen, Roma, Italy, assignor to Anstalt Fur Elektrohydraulische Anlagen, Vaduz, Liechtenstein
Filed Sept. 30, 1970, Ser. No. 76,760
Claims priority, application Denmark, Oct. 6, 1969, 5297/69
Int. Cl. F02b 73/00
U.S. Cl. 60—19 11 Claims

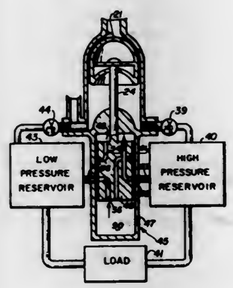


This invention relates to a hydraulic system for example for use in an earth moving machine, an excavator, a jib crane, or a corresponding machine for contracting activities, comprising at least one hydraulic double acting hydraulic motor, each being controlable and reversible through a control device, and a pump unit powered by a prime mover, for example a diesel engine or an electric motor, for providing the required hydraulic effect.

3,678,685
SOLAR ENERGY POWERED HELIOTROPE
George M. Low, Deputy Administrator of the National Aeronautics and Space Administration with respect to an invention of, and Ralph Crawford, Cupertino, Calif.
Filed Sept. 25, 1970, Ser. No. 75,431
Int. Cl. F03g 7/06, 7/02
U.S. Cl. 60—23 12 Claims
This invention relates to a solar energy powered heliotrope which functions in a passive, stored energy manner to orient a solar array towards the sun. A bimetallic motor element is activated by solar energy to generate a work output. A constant torque spring assembly coupled to the motor element stores useful energy as a function of the work output. A bimetallic sensing element detects misorientation between the solar array and the sun. An escapement mechanism is actuated by the sensing element whenever misorientation between the solar array and the sun is detected; the escapement mechanism automatically and incrementally releases the stored energy to rotate the solar array in discrete increments until it is oriented towards the sun.

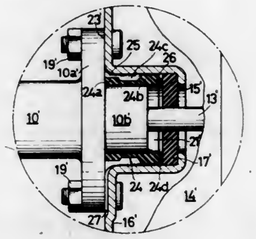


3,678,686
MODIFIED STIRLING CYCLE ENGINE-COMPRESSOR HAVING A FREELY RECIPROCABLE DISPLACER PISTON
Keith E. Buck, Alamo, Calif., assignor to The United States of America as represented by the United States Atomic Energy Commission
Division of Ser. No. 744,204, July 11, 1968, Pat. No. 3,597,766. This application Feb. 20, 1970, Ser. No. 12,986
Int. Cl. F03g 7/06
U.S. Cl. 60—24 2 Claims



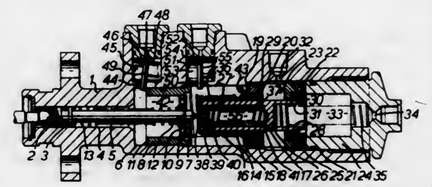
A modified Stirling cycle engine operable as a compressor and having its displacer piston directly connected to a reversing piston to which high and low pressures are alternately applied at opposite ends for reciprocably driving the pistons. In one embodiment, the reversing piston is mounted in a double acting compression cylinder which acts as an oscillating spring to drive the pistons whereby energy to sustain oscillation of the reversing piston within the compression cylinder is supplied directly from the displacer piston. In another embodiment, the pistons are driven by high and low pressure gases alternately applied from respective reservoirs to opposite sides of the reversing piston through valves operated by the reversing piston. The modified Stirling cycle engine is capable of unattended operation over a period of years in an inaccessible location and therefore, is especially well suited for supplying motive power for an artificial heart pumping system.

3,678,687
SEALING MEANS BETWEEN MASTER CYLINDER AND BRAKE BOOSTER
Shigeru Watabe, Kariya, and Atsushi Ohmi, Nagoya, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya City, Aichi Pref., Japan
Filed Oct. 23, 1970, Ser. No. 83,535
Claims priority, application Japan, Oct. 24, 1969, 44/101531
Int. Cl. F15b 7/06; F16j 15/56
U.S. Cl. 60—54.6 P 4 Claims



A sealing member for preventing liquid entrance into the master cylinder housing from the clearance of the connecting portion between the master cylinder housing and the brake booster housing, said sealing member being formed in a tubular shape and fitted on a sleeve of the master cylinder housing, comprising an axial projection normally making contact with the booster housing, and an air compensating slot.

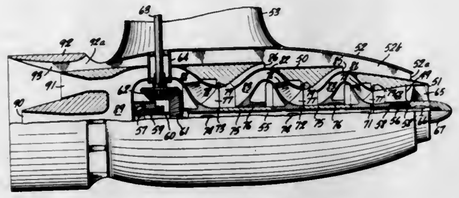
3,678,688
HYDRAULIC BRAKING SYSTEMS FOR VEHICLES
Brian Ingram, Balsall Common, England, assignor to Girling Limited, Birmingham, England
Division of Ser. No. 18,039, March 10, 1970, Pat. No. 3,618,320. This application Dec. 15, 1970, Ser. No. 98,327
Claims priority, application Great Britain, March 28, 1969, 16,377/69
Int. Cl. F15b 7/00, 11/08
U.S. Cl. 60—54.6 R 6 Claims



In a power operated master cylinder, two tipping valves control the inlet and outlet ports for the pressure fluid and the stems of the tipping valves are engaged by a follower resiliently connected to the positively actuated piston, the follower being guided in the cylinder bore.

3,678,689
SUBMERGED MULTISTAGE PUMP USABLE AS PROPULSION UNIT
Samford P. Ishiwata, 305 E. 86th St., New York, N.Y.
Filed Sept. 4, 1970, Ser. No. 69,800
Int. Cl. B63h 11/00; F02k 1/00, 1/24
U.S. Cl. 60—221 10 Claims
A submerged pump comprising a plurality of coaxial impellers arranged in series in an elongated casing having an inlet at

one end and an outlet at the other and providing a pump chamber for each impeller and connecting passageways between the pump chambers, has additional inlets opening from the exterior of the casing into the connecting passageways between successive pump chambers. The velocity of liquid being pumped is increased by successive im-



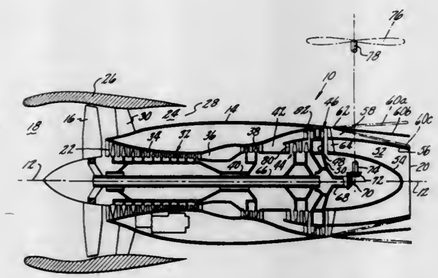
pellers and the volume of the liquid is increased by the liquid drawn in through the additional inlets. When used as a submerged propulsion unit the pump is of streamlined configuration and is surrounded by a shroud. Forward and reverse propulsion are selectively provided by directing the pump discharge to rearwardly or forwardly directed nozzles. The pump can also be used as a bow-thruster in a vessel.

3,678,690

CONVERTIBLE COMPOSITE ENGINE

Herbert N. Shobet, Norwalk; Joseph L. Magri, and Edward R. Primachuk, both of Shelton, all of Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed July 10, 1970, Ser. No. 53,713
Int. Cl. F02c 7/02
U.S. Cl. 60—226 **17 Claims**



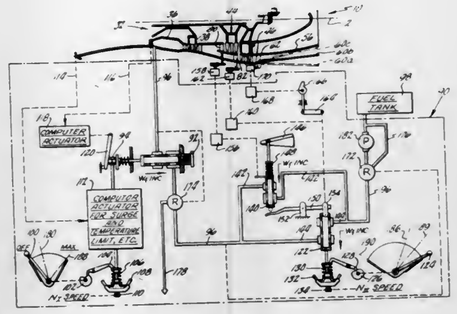
A convertible composite engine capable of either shaft horsepower or thrust generation and split-powered operation in which partial thrust and partial shaft horsepower is generated. The engine is concentric about a single centerline and includes two coaxial free turbines, one driving a load such as bypass fan and the other a shaft horsepower take-off, such as is commonly used to drive a helicopter rotor drive shaft. A single gas generator provides compressed and heated gases to the coaxial free turbines with the total amount of gases provided determined by the total power required from the two free turbines and the split of gas flow through each free turbine determined by the position of the variable inlet guide vanes at the inlet to each turbine.

3,678,691

CONVERTIBLE COMPOSITE ENGINE CONTROL

Herbert N. Shobet, Norwalk, and Joseph L. Magri, Shelton, both of Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed July 10, 1970, Ser. No. 53,721
Int. Cl. F02k 1/18
U.S. Cl. 60—239 **17 Claims**



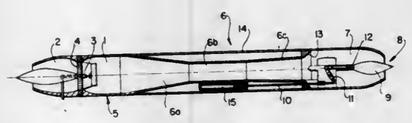
A control for a convertible composite engine having variable area inlet free turbines driven by a gas generator so that the composite engine is capable of powering a vehicle, such as a flight vehicle, in more than one mode of operation. The control includes provisions for regulating fuel flow to the gas generator in response to the requirements of one of the free turbines and to position the variable geometry inlet thereto in response to fuel flow and also includes provisions for simultaneously regulating fuel flow to the gas generator in response to the power requirements of the other free turbine and varying the area of the variable geometry inlet thereto in response to fuel flow, and still further includes apparatus for positioning a variable area exhaust nozzle operatively associated with one of the free turbines.

3,678,692

PULSATION POWER UNIT

Georg Heise, Ailingen, Germany, assignor to Dornier A.G., Friedrichshafen/Badensee, Germany

Filed Sept. 14, 1970, Ser. No. 72,046
Claims priority, application Germany, Dec. 22, 1969, P 19 64 226.3
Int. Cl. F02k 7/04
U.S. Cl. 60—247 **8 Claims**



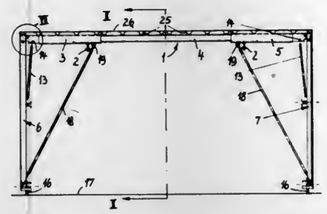
This invention relates to an improvement in a pulsation power unit comprising an inlet, valve means, injection means, a combustion chamber and a combustion cowl, the improvement comprising additional cowl means of larger diameter at the end of the combustion cowl, said additional cowl means having a variable gas outlet cross-section.

3,678,693

TUNNEL FORMWORK

Wolfgang Markewitz, Hilden, and Dieter Bolduan, Lintorf, both of Germany, assignors to Hunnebeck GmbH, Dusseldorf, Postfach, Germany

Filed June 2, 1970, Ser. No. 42,670
Claims priority, application Germany, June 3, 1969, P 19 28 196.0
Int. Cl. E21d 15/14
U.S. Cl. 61—45 C **14 Claims**



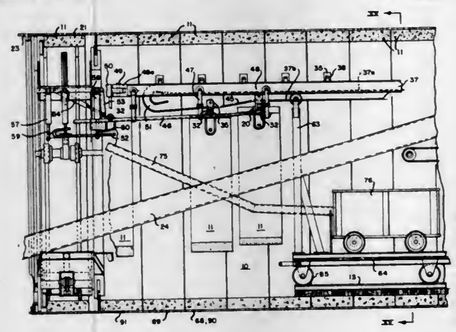
A tunnel formwork of the type comprising a horizontal formwork portion and two vertical formwork portions both of which are resistant to bending. The vertical formwork portions are movable relative to the horizontal formwork portion. Each vertical formwork portion is connected to the horizontal portion by guides. At least two guides are arranged in the area of the junction points between adjacent formwork portions, and at least two guides connect the lower region of the vertical formwork portions with the central area of the horizontal portion. The formwork portions are so designed as to be secured in at least one position.

3,678,694

METHODS AND APPARATUS FOR INSTALLING TUNNEL LINERS

John C. Haspert, Arcadia, Calif., assignor to Commercial Shearing & Stamping Company

Filed July 10, 1970, Ser. No. 53,818
Int. Cl. E01g 5/00
U.S. Cl. 61—84 **14 Claims**



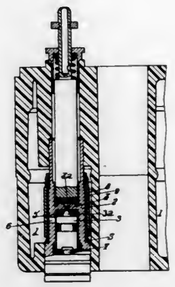
A tunnel lining apparatus and method for installing tunnel liner segments behind a tunnel boring machine having a trailing tail shield is provided in which tunnel liner segments are delivered on a haulage car to a transfer point and transferred to a mobile rail which moves forward into the tunnel as the tunnel boring machine advances and delivers liner segments to a support erector machine within the tail shield which support erector machine pulls the segments into place to form an annular ring and then pushes the completed ring into position as a part of the completed liner after which grout is pumped behind the completed ring.

3,678,695

FUEL RESERVOIRS, ESPECIALLY FOR GAS-LIGHTERS

Jacques Lambert, Paris, France, assignor to Flaminaire Marcel Quercia, Paris, France

Filed Dec. 1, 1970, Ser. No. 94,031
Claims priority, application France, Dec. 2, 1969, 6941532
Int. Cl. F17c 7/02
U.S. Cl. 62—50 **8 Claims**



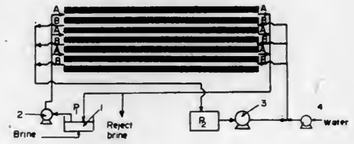
The fuel reservoir in which the fuel is stored in its liquid phase comprises a regulating device for the flow-rate of the fuel. The supply of liquid fuel to the regulating device occurs through an absorbent tube. The device is especially useful for gas-lighters.

3,678,696

FRACTIONAL SOLIDIFICATION PROCESS WITH HEAT REUSE BY THE APPLICATION OF PRESSURE

Chen Yen Cheng, 2443 So. Kramerig St., Denver, Colo., and Sing-Wang Cheng, No. 83, Chang-An E. Rd. Section 1, Taipei, Formosa, China /Taiwan

Filed March 11, 1968, Ser. No. 712,297
Int. Cl. B01d 9/00
U.S. Cl. 62—58 **10 Claims**

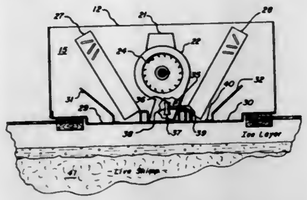


A fractional solidification process for separating relatively pure water from an aqueous solution, separating a solution into its components and purifying an impure substance by the so-called progressive freezing operation in which a feed solution is circulated through a conduit and is cooled through the conducting surface of the conduit. The improvement comprises of the followings:

1. Heat reuse is achieved by taking advantage of the change of melting point of a substance due to the application of pressure.
2. A unified freezer-melter which contains two sets of conduits, A-conduits and B-conduits, is used. A-conduits and B-conduits are in heat exchange relation through a metallic conductor and each set of these conduits are used alternately as a freezer and a melter. For separation of water, a high pressure is applied during the melting operation, and for the separation of other substances, a high pressure is applied during the freezing operation to create the temperature difference for heat transfer which is required in the heat reuse.

3,678,697
REFRIGERATION AND COOLING DEVICE FOR SHRIMP BOATS

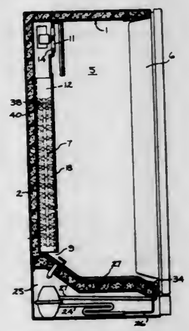
Charles Merton Anderson, Mankato, Mich., assignor to Year-A-Round Cab Corp., Mankato, Mich.
Filed Nov. 16, 1970, Ser. No. 89,749
Int. Cl. F25d 23/06
U.S. Cl. 62—274 4 Claims



A refrigeration system for maintaining high humidity within a zone being cooled and including an enclosure which confines components of the refrigeration system, the enclosure having an inlet port and an outlet port communicating with the zone being cooled. Compressor means are provided having a supply of refrigerant along with means for receiving and delivering said supply of refrigerant into said system at an increased pressure. Evaporator means are confined within said enclosure and disposed between said inlet and outlet ports and communicating with said zone being cooled, with blower means being disposed adjacent the evaporator for circulating air through said zone being cooled. Receptacle means are disposed adjacent the evaporator for receiving and retaining condensate from said evaporator and venturi means are disposed within the flow of air from said evaporator, with the venturi having an inlet nozzle and an outlet nozzle and a throat, with a conduit communicating between said receptacle and said throat for drawing condensate from said receptacle and discharging said condensate into the air flow through said outlet nozzle at a point adjacent said outlet port.

3,678,698
SIDE-BY-SIDE REFRIGERATOR INCLUDING LOW COST EVAPORATOR MEANS

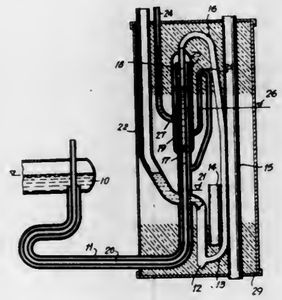
Robert B. Gelbard; Gerald F. Dodge, III, both of Louisville, and Howard D. F. True, Jr., Fern Creek, all of Ky., assignors to General Electric Co.
Filed Dec. 11, 1970, Ser. No. 97,108
Int. Cl. F25d 21/06
U.S. Cl. 62—276 3 Claims



A side-by-side combination refrigerator containing a liner defining a freezer compartment and a low cost vertically extending evaporator mounted on the rear wall of the freezer compartment. The evaporator is a single bank serpentine tube having horizontally extending fins and is folded so that adjacent return bends contact one another, these return bends being held in contact by a tie wire. Low costs means are provided for supporting the evaporator, a cover plate separating the evaporator from the storage portion of the freezer compartment and a radiant heater defrost means on the liner walls.

3,678,699
ABSORPTION

Hans Johann Gustav Holleitner, Solna, Sweden, assignor to Aktiebolaget Electrolux, Stockholm, Sweden
Filed Sept. 25, 1970, Ser. No. 75,368
Claims priority, application Sweden, Sept. 29, 1969, 13401/69
Int. Cl. F25b 15/10
U.S. Cl. 62—277 4 Claims



In an absorption refrigeration system employing an inert gas, refrigerant vapor expelled from solution in a generator normally is conducted from the vapor space of the generator through a main vapor line to a condenser in which the vapor is liquefied and from which liquid refrigerant is conducted to an evaporator to produce useful refrigeration. Frost accumulating on the evaporator is melted by expelled vapor which is diverted from the main vapor line through a U-shaped liquid trap and flows directly to the evaporator when the liquid trap is empty.

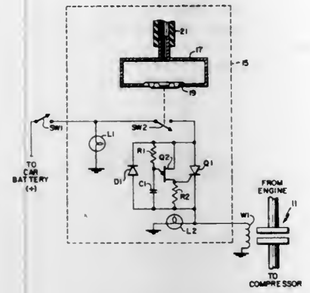
Defrosting is effected during the interval of time it takes for a definite quantity of liquid to collect in the trap, such liquid resulting from condensation of expelled refrigerant vapor in one arm of the trap in communication with the vapor space. Defrosting is again initiated after sufficient liquid continues to collect in the trap for all of the liquid to be removed therefrom by siphon action.

The one arm in horizontal cross-section is of annular form having spaced inner and outer upright walls, the inner wall being defined by a vapor conduit forming a part of the main vapor line and the outer wall being defined by a mantle which is disposed about the vapor conduit and in communication with the vapor space at its upper end.

3,678,700
COMPRESSOR CLUTCH WITH TIME DELAY CONTROL

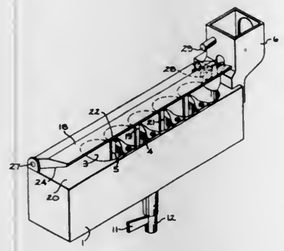
Robert A. Bosich, 356 Winchester St., Newton Highlands, Mass.
Continuation-in-part of Ser. No. 868,473, Oct. 22, 1969, abandoned. This application Feb. 16, 1971, Ser. No. 115,415
Int. Cl. F25b 27/00
U.S. Cl. 62—323 2 Claims

Apparatus is disclosed which automatically disengages a secondary load on an automobile engine, e.g. an air-conditioner compressor, during periods of full throttle operation by deenergizing an electromagnetic clutch in response to a drop in intake manifold vacuum below a predetermined level. Switching hysteresis and a delay upon re-energization are employed to prevent rapidly repeated operation.



3,678,701
ICE MAKER

John M. Powell, Charlestown, Ind., and Lauren L. Frazier, Louisville, Ky., assignors to General Electric Company
Filed Dec. 16, 1970, Ser. No. 98,635
Int. Cl. F25c 1/04
U.S. Cl. 62—353 7 Claims



An ice maker of the type comprising a mold including a plurality of interconnected cavities and ejecting means for raising interconnected ice pieces from the cavities includes means for severing the ice connections between the ice pieces during ejection thereof.

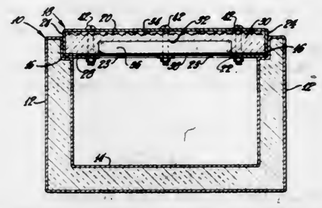
3,678,702
NOZZLE CONSTRUCTION FOR ICE MAKER

Phillip H. Turner, Inver Grove Heights, and John B. Lyman, Bloomington, both of Minn., assignors to Whirlpool Corporation, Benton Harbor, Mich.
Filed May 22, 1970, Ser. No. 39,776
Int. Cl. F25c 1/14
U.S. Cl. 62—354 7 Claims

A nozzle construction for an ice maker provides a restricted passageway to compact particulated ice product into a solidified columnar-shaped extrudate and is particularly characterized by a liner made of material having a low thermal conductivity, thereby to provide a surface which improves the lubricity relative to the ice product moving therethrough.

3,678,703
COLD STORAGE CARTON

Edward Cornish, and Harold R. Liebherr, both of Maupee, Ohio, assignors to Cornish Containers, Inc.
Filed July 20, 1970, Ser. No. 56,327
Int. Cl. F25d 3/08
U.S. Cl. 62—371 9 Claims



Container for holding material during storage or transportation in which the separable, insulated cover contains a body of heat-absorbing substance thermally exposed to the interior of the container through a heat-conducting inside face of the cover, the cover being capable of being formed from a single piece of fiberboard or other sheet material.

3,678,704
DEVICE FOR TRANSPORTING THERMAL ENERGY AT TEMPERATURES LYING BELOW THE λ-TEMPERATURE OF HELIUM

Frans Adrianus Staas, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Oct. 13, 1970, Ser. No. 80,407
Claims priority, application Netherlands, Oct. 16, 1969, 6915652
Int. Cl. F25b 19/00
U.S. Cl. 62—514 2 Claims

A device for transporting thermal energy at temperatures lying below the λ -temperature of helium between a cooled ^{4}He container having a temperature lower than that of the λ -point and a place to be cooled or a further container; the device comprises a pipe which has one end in communication with said container and the other end which is brought in ther-

mal contact with the article to be cooled or debouches in the further container, the pipe comprising a sintered superleak



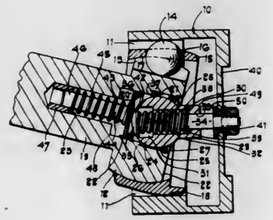
which extends throughout the length of the pipe and covers a part of the cross-section thereof.

3,678,705
ADJUSTABLE FRAME FOR ORNAMENT
Irving Korwin, 153 Woodhollow Lane, New Rochelle, N.Y.
Filed May 21, 1970, Ser. No. 39,263
Int. Cl. A44c *15/00*
U.S. Cl. 63—18 **2 Claims**



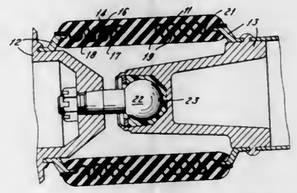
An article of jewelry in which a resilient frame has disconnected ends and has a connecting member secured to one such end. The frame is adapted to secure an ornamental element such as a coin therewithin. The outer surface of the other end and inner surface of the connecting member are knurled. The knurled surfaces can mesh at varying positions, whereby the frame may accommodate ornamental elements of various sizes.

3,678,706
UNIVERSAL JOINTS
Brian William Shirley, and Philip Hutchinson, both of Birmingham, England, assignors to G.K.N. Birfield Transmissions Limited, Birmingham, England
Filed Nov. 20, 1970, Ser. No. 91,561
Claims priority, application Great Britain, Nov. 20, 1969, 56,739/69
Int. Cl. F16d *3/20*
U.S. Cl. 64—7 **8 Claims**



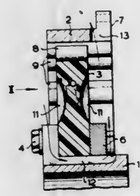
In a plunging constant velocity universal joint the inner member is formed with a bore containing bearing means having bearing surfaces centered on the joint center, a location member is contained in the bore and has a part-spherical outer surface engaging the bearing means. Resilient means or travel limiting means act between the location member and the outer member of the joint.

3,678,707
BELLOWS FLEXIBLE JOINT
George Ulics, Plymouth, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed Sept. 22, 1970, Ser. No. 74,430
Int. Cl. F16d *3/06*
U.S. Cl. 64—11 B **7 Claims**



A flexible joint for transferring torque including a generally cylindrical metal bellows member interconnecting a pair of rotatable end members. The cross sectional shapes of the convolutions comprise circular arcs; each convolution adjoins the adjacent convolution at a point of inflection.

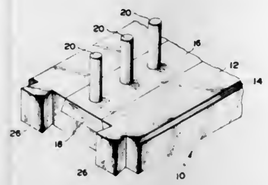
3,678,708
FLEXIBLE COUPLINGS
Lothar Ernst, Unna, and Werner Ruggen, Holzwickede, both of Germany, assignors to Maschinenfabrik Stromag G.m.b.H., Unna, Germany
Filed April 22, 1971, Ser. No. 117,678
Claims priority, application Germany, April 24, 1970, P 20 20 179.0
Int. Cl. F16d *3/58*
U.S. Cl. 64—11 R **25 Claims**



A flexible coupling including a first coupling member, a second coupling member and a flexible torque-transmitting member for transmitting torques from one of the coupling members to the other. The flexible torque-transmitting member is provided with impeller-like surface elements to establish a flow of ambient air cooling the coupling when rotating.

3,678,709
LOOP STITCHING DEVICE OF RIGID STANDARD LENGTH, OR ADJUSTABLE LENGTH, SLIDABLY MOUNTED IN STANDARD BASE
Carmen D. T. Nowicki, 3118 Dakota, N.E., Albuquerque, N. Mex., and Maurine P. Grammer, 1508 Ridgecrest Dr. S.E., Albuquerque, N. Mex.
Filed March 11, 1970, Ser. No. 18,580
Int. Cl. D04b *5/00, 3/00*
U.S. Cl. 66—4 **1 Claim**

A knitting device for therapeutic, teaching or recreational purposes in which pegs are mounted on a standard rigid base, or on a slidable member engaging a standard base, the rigid base having a series of round pegs extending upwardly therefrom with ends finished at right angles, or the slidable



member having a series of round pegs extending upwardly therefrom, and said standard base having dovetailed extensions or apertures mating adjacent dovetailed members for adjusting the length of the loop stitching device.

3,678,710
NEEDLE OPERATING MEANS IN KNITTING MACHINES
Daniel William Fredrick Gostelow, Luton, England, assignor to The Bentley Machine Development Company Limited, Leicester, England
Filed Feb. 17, 1970, Ser. No. 12,032
Claims priority, application Great Britain, Feb. 25, 1969, 10,028/69
Int. Cl. D04b *9/10, 15/68*
U.S. Cl. 66—14 **2 Claims**

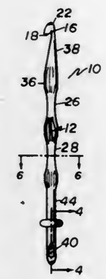


Controlling means is provided for a knitting machine needle comprising a needle holder having a shank part in a recess in which there is positioned a rockable element provided with an operating butt displaced from its fulcrum, said element engaging the shank part for two-way transmission of movements to it and so arranged that its rocking movements bring its operating butt into and out of active position.

3,678,711
GUIDE BAR SHOGGING MECHANISM FOR A WARP KNITTING MACHINE
Harald Schneider, and Cornel Wicha, both of Augsburg, Germany, assignors to Karl Mayer Textilmaschinenfabrik GMBH, Obertshausen Offenbach, Germany
Filed Jan. 15, 1971, Ser. No. 106,661
Claims priority, application Germany, Jan. 21, 1970, P 20 02 5.687
Int. Cl. D04b *23/00, 27/00*
U.S. Cl. 66—86 **10 Claims**

The guide bars of a warp knitting machine are moved longitudinally in response to stored information scanned by a programming device and converted to electrical control signals. A cam follower linked with each guide bar is engaged alternatively by two cams which are moved in a direction toward and away from the cam follower in response to the control signals. The cam follower moves back and forth between the faces of the two cams in synchronization with the main machine drive.

3,678,712
COMBINED CROCHETING AND LOOPING NEEDLE
Richard L. Singleton, Wichita, Kans., assignor to Loopco, Wichita, Kans.
Filed April 8, 1970, Ser. No. 26,690
Int. Cl. D04b *3/02*
U.S. Cl. 66—118 **4 Claims**

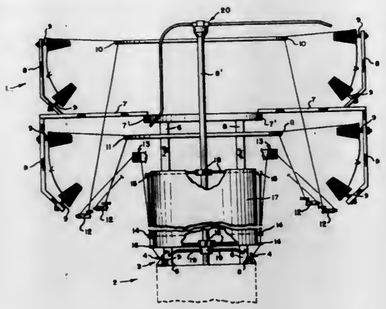


A sewing needle having an eye at one end and a crochet hook at the other end. Yarn is passed through the eye which serves its customary function during the making of loops and which serves as a yarn guide and yarn feed control during the making of crochet stitches. The relationship of the hook and the eye is such that the needle can be used to form successively loop and crochet stitches and vice versa. The needle is also provided with an annular stop means for limiting the size of loop formation, such stop means being frictionally adjustable on the needle in its spacing from the eye.

3,678,713
CREEL STRUCTURE FOR CIRCULAR KNITTING MACHINES
Terrence R. Woodford, Aiken, S.C., assignor to Institute of Textile Technology, Charlottesville, Va.
Filed July 29, 1969, Ser. No. 845,713
Int. Cl. D04b *15/40, 15/48, 35/14*
U.S. Cl. 66—132 R **9 Claims**

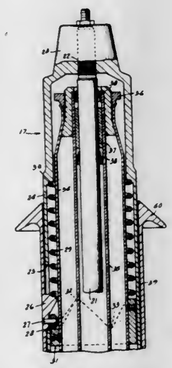
A circular knitting machine having an improved creel with the various thread receiving and dispensing elements arranged

to minimize detrimental lint and fly accumulation. The creel includes a plurality of brackets adapted to support supply



cones of yarn at an angle to the vertical and at a position laterally outwardly of the main knitting area of the machine.

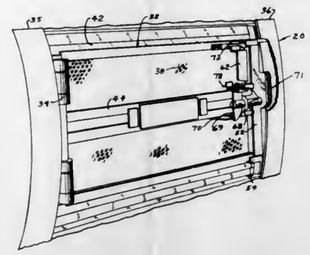
3,678,714
AGITATOR WITH RECIPROCATING DEVICE
Gordon J. Krolnick, Benton Harbor, Mich., assignor to Whirlpool Corporation, Benton Harbor, Mich.
Filed Feb. 23, 1971, Ser. No. 118,125
Int. Cl. D06f *39/14*
U.S. Cl. 68—131 **7 Claims**



A washing machine assembly of the vertical axis type, including an agitator assembly which oscillates about a stationary vertical axis, in combination with a second agitator which is coupled to the main agitator for oscillation therewith, together with means operating between the main agitator and the other agitator to effect a vertical reciprocation of the latter during oscillation.

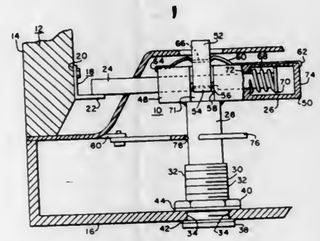
3,678,715
DOOR CONSTRUCTION FOR WASHER-EXTRACTOR DRUM
Stanley T. Funk, Cincinnati, Ohio, assignor to McGraw-Edison Company, Elgin, Ill.
Filed June 10, 1971, Ser. No. 151,650
Int. Cl. D06f *39/14*
U.S. Cl. 68—143 **12 Claims**

A door construction for a rotatable drum of a washer-extractor type machine, where the door is hinged to the circumferential drum wall and is aligned when closed with the drum wall, a full width locking blade is carried on the door and is



adapted to be moved to underlie the drum wall to hold the door closed, and a camming handle is carried on the door for moving the locking blade.

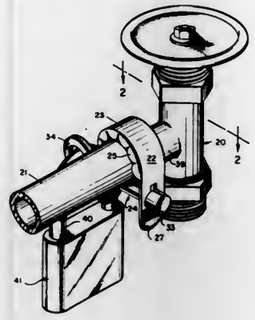
3,678,716
LATCH MECHANISM FOR REFRIGERATORS FREEZERS AND THE LIKE
William R. Cobb, Galloway, Ohio, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed March 11, 1971, Ser. No. 123,307
Int. Cl. E05b *65/10, 65/52*
U.S. Cl. 70—92 **9 Claims**



The invention provides a latching mechanism intimately associated with a locking body so that the movement of the latching mechanism in a swinging direction as actuated by unlocking of the locking body by a key permits opening of a freezer or refrigerator door, while a release is also provided for the latching mechanism which is available within the refrigerator or freezer that causes sliding, telescoping movement of the latch bolt to permit opening of the refrigerator or freezer door from interiorly of the compartment thereof.

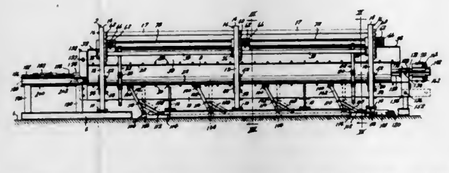
3,678,717
COUPLING GUARD DEVICE
Randell C. Eaton, 4 Virginia Lane, Westport, Conn.
Filed Nov. 27, 1970, Ser. No. 93,007
Int. Cl. E05b *73/00;* **F16l** *35/00*
U.S. Cl. 70—232 **5 Claims**

A coupling guard device for substantially enclosing and retaining a conventional hose coupling or the like and capable of being locked in such enclosing and retaining relation to prevent unauthorized tampering with or disengagement of the coupling. In one embodiment, the guard comprises a flanged U-shaped guard member having slots in its side legs arranged to allow a retaining member to be engaged and locked in the engaged position by an ordinary padlock thus permitting disconnection of the coupling only by authorized persons provided with the padlock key. In another embodiment, the flanged guard member is engaged upon the U-shaped shackle



of a padlock so the body of the lock serves as the retaining member.

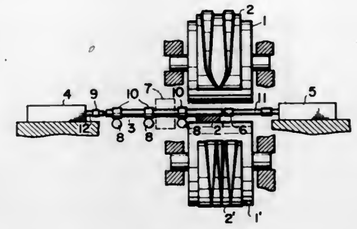
3,678,718
PIPE PERFORATING MACHINE
William A. Brown, 2021 Hart St., and Eugene P. Earnest, 203½ W. Wyatt Earp Bldg., both of Dodge City, Kans.
Filed Dec. 4, 1970, Ser. No. 95,254
Int. Cl. B21d *31/02;* **B23b** *3/06,*
U.S. Cl. 72—71 **17 Claims**



A machine for perforating a cylindrical pipe consisting of a frame operable to support said pipe between diametrically opposed pairs of shear blades carried by said frame and extending longitudinally of said pipe, a head carried by said frame for powered movement through said pipe parallel to the axis thereof, and a pair of cutter wheels carried rotatably by said head on axes transverse to said pipe and having rolling engagement with the interior of said pipe respectively in alignment with one of said pairs of shear blades, each of said wheels having a series of angularly spaced cutter teeth projecting radially outwardly therefrom by a distance greater than the wall thickness of said pipe, each of said teeth being operable, as said wheel rolls through said pipe, to cooperate with the associated shear blades to cut a pair of short parallel slits longitudinally in the pipe wall, and to offset outwardly the wall section between said slits.

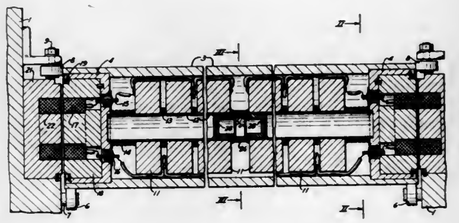
3,678,719
SUPPORT SYSTEM FOR A CROSS-ROLLING MACHINE FOR SHAPING ROD-LIKE WORKPIECES
Hidehiko Tsukamoto, and Nobutaka Maeda, both of Hiroshima, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 22, 1970, Ser. No. 100,656
Claims priority, application Japan, Dec. 22, 1969, 44/102532
Int. Cl. B21b *19/02*
U.S. Cl. 72—95 **5 Claims**

A support system for supporting a rod-like workpiece in a cross-rolling machine includes a fluid pressure control piston having a rod member with a rotatable chuck for supporting one end of the rod-like workpiece and a second fluid pressure-controlled piston which has a rod member provides a centering means for holding the opposite end of the workpiece. The



workpiece is shiftable axially with the rod members on rollers and it is centered over the roller by rings which extend around each roller and define a passage therewithin over each roller for the guiding of the workpiece.

3,678,720
ROLLER LEVELER AND METHOD OF LEVELING
Clyde W. Dickey, State College, and Ray A. Bland, Pittsburgh, both of Pa., assignors to Sutton Engineering Company, Pittsburgh, Pa.
Filed Aug. 13, 1970, Ser. No. 63,408
Int. Cl. B21d *1/02*
U.S. Cl. 72—160 **10 Claims**

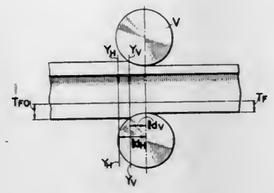


In a roller leveler a roll is rotatably supported in a position to be engaged by an elongated workpiece traveling through the leveler. The roll has a hollow cylindrical body, inside of which there are ferroelectric transducers close to its inner surface. These transducers are driven electrically to vibrate the roll body radially in all directions at ultrasonic frequencies to relieve residual stresses in the workpiece passing across the roll.

3,678,721
METHOD OF ROLLING SHAPED STEEL MEMBERS HAVING FLANGES
Kanichi Kishikawa; Takeo Kuwata; Kentaro Kinoshita, all of Kitakyushu; Takao Tsuchiya, and Yoshiro Kamogawa, both of Sakai, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan
Filed Dec. 2, 1969, Ser. No. 881,378
Claims priority, application Japan, Dec. 10, 1968, 43/90428
Int. Cl. B21b *13/10*
U.S. Cl. 72—225 **1 Claim**

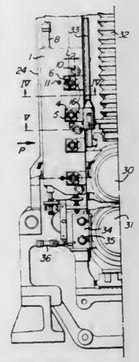
A method of rolling shaped steel members having flanges by a universal rolling mill, wherein the biting point of the web of the to-be-rolled material by horizontal rolls of said universal

rolling mill precede that of the flange of the material by its vertical rolls, such precedence being adjusted by the ratio



between the diameter of the vertical rolls and the horizontal rolls and/or the reduction schedule of each rolling pass.

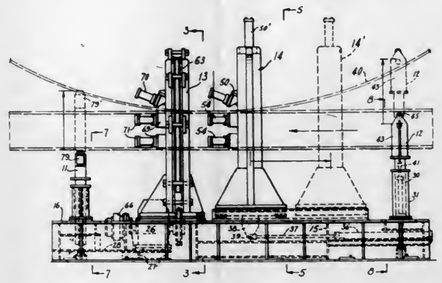
3,678,722
ROLLING MILL
Tetsuji Taniguchi; Kakichi Fukui; Shiro Imai; Masahiro Hayashi, and Koichi Seki, all of Hitachi-shi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Nov. 12, 1969, Ser. No. 875,635
Claims priority, application Japan, Nov. 13, 1968, 43/82538
Int. Cl. B21b *31/08*
U.S. Cl. 72—238 **5 Claims**



A rolling mill having thrust keeper plates for preventing axial movement of the rolls, said thrust keeper plates being shiftable in the direction perpendicular to the roll axis and said thrust keeper plate being mounted on a roll housing by means of a wedge mechanism whereby the plates can be remotely actuated.

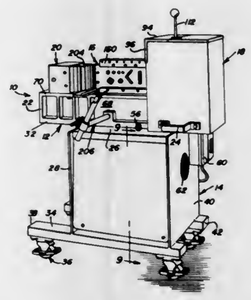
3,678,723
T-BAR TWISTER
Emerson J. Teapes, Erie, Pa., assignor to Eriez Manufacturing Company, Erie, Pa.
Filed Feb. 12, 1970, Ser. No. 10,819
Int. Cl. B21d *11/14*
U.S. Cl. 72—299 **6 Claims**

This disclosure shows a machine for bending and/or twisting a beam. The machine has a frame with a guide for the beam at each end. A twisting device in the form of a rotatable drum is supported on the frame and clamped to the beam and a calibrated scale is fixed to the frame to measure the amount of twist. A carriage is movably supported on the machine frame



and can be clamped to the beam to advance the beam along the frame and to bend it.

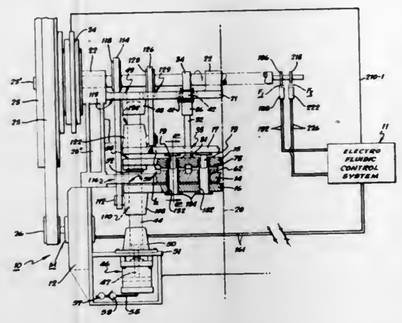
3,678,724
HYDRAULICALLY OPERATED METAL FORMING MACHINE
Guthrie B. Stone, Honeoye, and William F. Holmes, Springwater, both of N.Y., assignors to Springwater Manufacturing Co., Inc.
Filed Jan. 9, 1970, Ser. No. 1,805
Int. Cl. B21d *43/28*; B21k *27/06*; B26d *5/08*
U.S. Cl. 72—324 **20 Claims**



An elongated machine bed pivotally displaceable between vertical and horizontal positions on a movable base. A reciprocable blade is slidably mounted on the bed for advancement toward a die block adjustably positioned on the bed for punching and bending operations. A fixed blade in sliding contact with the moving blade is utilized for shearing operations.

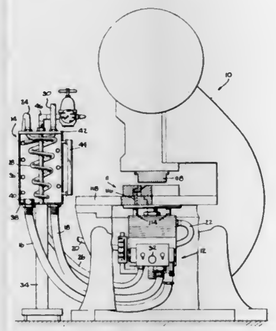
3,678,725
CONTAINER FORMING APPARATUS
Cornelis Langewis, Walnut Creek, Calif., assignor to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.
Filed Oct. 19, 1970, Ser. No. 81,854
Int. Cl. B21d *45/00*
U.S. Cl. 72—344 **13 Claims**

Container forming press comprised of a combined punch, drawing die, and stripper means for effecting the formation of and ejection of a container from the press during a full cycling of the same. The press further includes an improved electrofluidic control system connected to the punch and drawing die means which operates to detect malformed containers and



to stop the apparatus so that the malformed containers can be removed.

3,678,726
HYDRAULIC SYSTEM
Bernard L. Hoffman, Trenton, N.J., assignor to Fredrick A. Krause Associates, Inc., Frenchtown, N.J.
Filed April 1, 1970, Ser. No. 24,567
Int. Cl. B21d *29/14*
U.S. Cl. 72—351 **4 Claims**

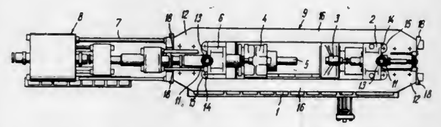


This invention relates to a hydraulic system characterized by a combination pressure and utilization means unit assembly, and a dual low pressure hydraulic piping system between the pressure unit and a hydraulic fluid reservoir, thereby providing continuous circulation of hydraulic fluid during operation.

3,678,727
STRETCH-DRAW TUBING PROCESS
Robert G. Jackson, 11020 Dunklin Drive, Apt. 312, St. Louis, Mo.
Filed Aug. 27, 1970, Ser. No. 67,476
Int. Cl. B21c *37/06*
U.S. Cl. 72—367 **5 Claims**

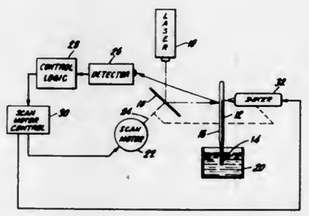
Metallic tubing is drawn under tri-axial stress. A tube which has the capability of cold work is used as a starting material. The tube is stretched longitudinally under cold working conditions without restraint against reduction in diameter and in cross section into the plastic range but below the point of necking to reduce its diameter. Then the tube is drawn with tools which subject it to force inwardly on two axes at right angles to the longitudinal axis and at right angles to one another under cold working conditions into the plastic range. The cold worked condition of the tube is retained during the stretching and drawing.

3,678,728
FRAMEWORK STRUCTURE FOR A HYDRAULIC PRESS
Leonid Alexandrovich Efimov, ul. Khmeleva, 18, kv. 77; Lev Mikhailovich Shtin, prospekt Ordzhonikidze, 3, kv. 49; Vladimir Mikhailovich Sinitsky, ul. 40 let Oktyabrya, 9, kv. 39; Sergei Grigorievich Khirdzhiev, ul. Mashinostroitelei, 51, kv. 38; Petr Alexeevich Pylaikin, ul. Kirovogradskaya, 79, kv. 29; Ljudmila Sergeevna Satovskaya, prospekt Ordzhonikidze, 3, kv. 77; Nikolai Feodosovich Grebnev, ul. Kirovogradskaya, 63, kv. 18; Mikhail Grigorievich Rasselkin, ul. Lomonosova, 19, kv. 7; Konstantin Yakovlevich Kalugin, ul. Uralskikh rabochikh, 69, kv. 2; Boris Stepanovich Somov, ul. Krasnykh partizan, 3, kv. 22, all of Sverdlovsk, and Valdimir Mikhailovich Baranchikov, ul. Oktyabrskaya, 12, kv. 48, Kamensk Uralsky, Sverdlovskaya obl., all of U.S.S.R.
Filed Sept. 12, 1969, Ser. No. 857,361
Int. Cl. B21j *9/02*
U.S. Cl. 72—455 **6 Claims**



A framework, for a hydraulic press, comprising closed parallel frames receiving loads through cross bars of the press. The frames include longitudinally and laterally extending members, the crossbars bearing on the latter by means of partly cylindrical projections which mate with complementary recesses in the laterally extending members. Cooperating centering parts are provided as are wedges which are inserted between the crossbars and frame.

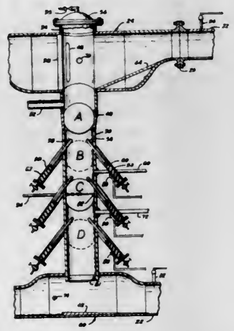
3,678,729
AUTOMATIC THERMOMETER CALIBRATION SYSTEM
James D. Geis, Cheshire; John H. Troll, Ridgefield; Harry Gluz, South Norwalk, and Cole H. Baker, Stratford, all of Conn., assignors to Iris Corporation, Hamden, Conn.
Filed Aug. 3, 1970, Ser. No. 60,596
Int. Cl. G01k *19/00*
U.S. Cl. 73—1 F **13 Claims**



A system for automatically calibrating and classifying measuring instruments such as mercury clinical thermometers, by accurately determining the distance between two reference points established by two known reference parameters. The detection of the reference points is made by scanning a laser

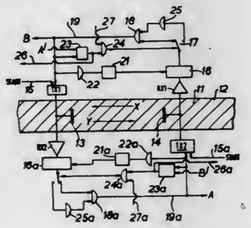
beam over the mercury column and detecting the change in the reflection characteristic of the beam at the upper level of the column.

3,678,730
METER PROVING SYSTEM
Maurice L. Barrett, Jr., 5514 Airline Drive, Houston, Tex.
Filed July 9, 1970, Ser. No. 53,543
Int. Cl. G01f 25/00
U.S. Cl. 73—3 23 Claims



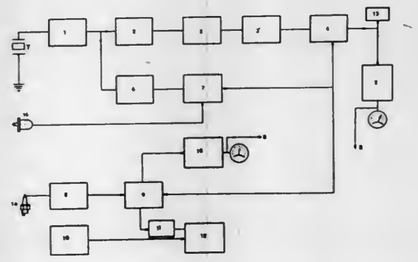
A flow measuring system including a known volume loop, a ball transfer interchange connecting between the inlet and outlet of the loop, said interchange including a plurality of ball stations and means for establishing pressure differentials on balls in said interchange to positively move balls through said interchange. A method of transferring balls from the outlet of a power loop to the inlet of the power loop by establishing pressure differentials between opposite sides of the ball to be moved while supporting another ball in the interchange to maintain such pressure differential.

3,678,731
APPARATUS FOR MEASURING THE FLOW VELOCITY OF FLUIDS
Frank Herbert Wells, Abingdon, England, and Cyril Norman Davey, deceased, late of Newbury, England (by Catherine Margaret Davey, administratrix), assignors to United Kingdom Atomic Energy Authority, London, England
Filed Sept. 29, 1967, Ser. No. 870,377
Claims priority, application Great Britain, Oct. 4, 1968, 47,310/68
Int. Cl. G01p 5/00
U.S. Cl. 73—194 A 6 Claims



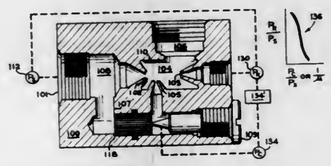
The apparatus comprises two ultrasonic transducers spaced apart and arranged in the line of flow to be measured. The transducers are connected to act as both transmitters and receivers. The time of travel of a pulse of ultrasound in the direction of flow is compared with the time of travel of a pulse of ultrasound in the reverse direction. The fluid paths traversed are thus identical, but the pulses are slightly separated in time.

3,678,732
DEVICE FOR THE SIMULTANEOUS AND QUANTITATIVE DETECTION OF THE DETONATION AND PREIGNITION
Virgilio Arrigoni; Franco Sezzi, both of San Donato Milanese, and Bruno Gaetani, Milan, all of Italy, assignors to Snam Progetti S.p.A., Milan, Italy
Filed March 11, 1970, Ser. No. 18,422
Claims priority, application Italy, March 11, 1969, 13915 A/69
Int. Cl. G01m 15/00
U.S. Cl. 73—35 4 Claims



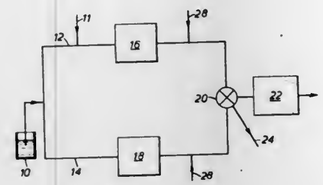
A system for simultaneously and quantitatively measuring the detonation and preignition in an internal combustion engine by evaluating the pressure variations in an engine cylinder for a given time after peak pressure in the cylinder and by evaluating a signal having frequency proportional to engine speed for a period between the occurrence of an ignition signal and peak pressure.

3,678,733
FLUIDIC VISCOMETER
Albert Blatter, Southfield, Mich., assignor to The Bendix Corporation
Filed Sept. 24, 1970, Ser. No. 75,058
Int. Cl. G01n 11/00
U.S. Cl. 73—54 5 Claims



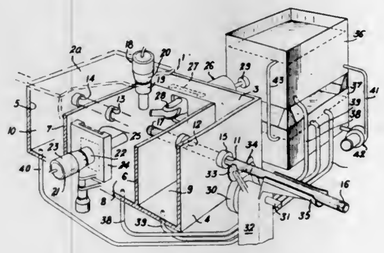
A fluidic viscometer is disclosed herein which includes a proportional fluidic amplifier and associated circuit means operative to provide an output pressure signal related to the viscosity of the fluid passing through the fluidic device. Fluidic from a pressure source enters a pressure port in the device and also, after passage through a laminar resistor, a control port whence it interacts with the pressure port stream. The pressure recovered from the combined stream is then related to the supply pressure or control pressure to indicate the viscosity of the fluid.

3,678,734
ANALYSIS OF FLUIDS
Douglas Mitchell, Tarrytown, N.Y., assignor to Technicon Instruments Corporation, Tarrytown, N.Y.
Filed Oct. 1, 1970, Ser. No. 77,073
Int. Cl. G01n 11/00
U.S. Cl. 73—61.1 R 9 Claims



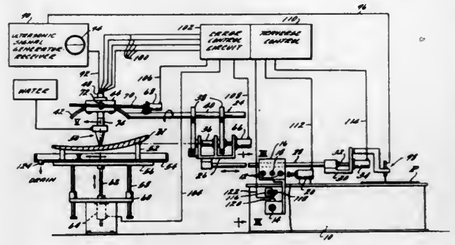
Automatic apparatus is described for the analysis of two or more constituents of interest present in widely varying concentrations in liquid samples by a common analytical device or detector selective with respect to such constituents. The liquid samples are directed successively along the apparatus as in initial stream, which is divided into two or more streams. The two or more streams are differentially diluted and reacted, so as to be accommodated by the common detector, prior to being passed alternatively and in succession to the common detector.

3,678,735
INSTALLATION FOR ULTRASONIC TESTING
Gilbert Boulanger, and Alain Samoel, both of Les Lavandes, rue Leon Mure, 4 Manoeque, France, assignors to Commissariat A L'Energie Atomique, Paris, France
Filed April 26, 1971, Ser. No. 137,182
Claims priority, application France, April 30, 1970, 7016042
Int. Cl. G01n 29/00
U.S. Cl. 73—67.7 8 Claims



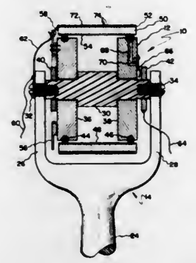
The installation comprises an unsealed measuring vessel in which the level of water employed for ultrasonic energy transmission is maintained constant by a supply system which prevents air bubbles and turbulence within the vessel. The supply system comprises a constant-level supply tank and a leakage-retention tank connected to each other by means of two pipes respectively for overflow and for continuous discharge through a pump. A mechanism is provided for displacing elements to be tested within the vessel.

3,678,736
MACHINE WITH IMPROVED OPERATING HEAD TRAVERSING WORKPIECES WITH CURVED SURFACES
Harley E. May, Cincinnati, Ohio, assignor to General Electric Company
Filed Aug. 3, 1970, Ser. No. 60,690
Int. Cl. G01n 24/00
U.S. Cl. 73—67.8 S 10 Claims



An ultrasonic inspection machine is disclosed. The ultrasonic transducer is mounted in an operating head which is pivoted in two planes to maintain it perpendicular to the surface of a cambered blade as the head is traversed lengthwise and widthwise over the blade surface. The support for the blade is raised and lowered to maintain a desired spacing between it and the head as the latter is traversed.

3,678,737
TUBULAR TRANSDUCER AND DRY COUPLANT THEREFOR
Darrow L. Miller, Los Angeles, Calif., assignor to North American Rockwell Corporation
Filed June 12, 1969, Ser. No. 832,568
Int. Cl. G01n 29/00
U.S. Cl. 73—71.5 5 Claims

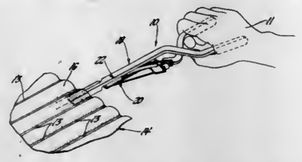


A probe for nondestructive testing to identify internal structural defects comprises a tubular piezoelectric element adapted for low frequency vibration while moving in rolling contact over a workpiece surface. A dry adhesive couplant forms a mechanical bond between the piezoelectric element and the workpiece surface, and is also useful with disc-type probes known to the prior art, especially when the adhesive is coated with a layer of minute glass beads.

3,678,738
TEST DEVICE FOR TRIM ASSEMBLIES
Warren L. Jubelt, East Detroit, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Aug. 6, 1970, Ser. No. 61,682
Int. Cl. G01n 3/00
U.S. Cl. 73—88 B 1 Claim

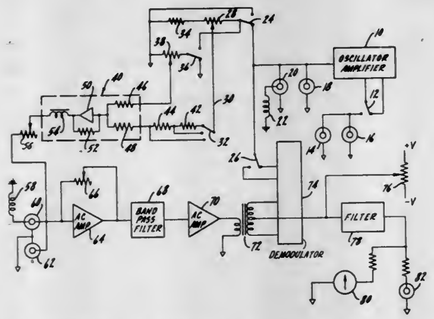
A hand-operated test device for nondestructively determining the bond strength between individual layers of a fabricated

trim assembly having substantially parallel bond lines formed thereon. The test device includes a pair of overlapping arms pivotally interconnected in a scissors fashion and having each arm formed at one end with a probe section and at the other end with a handle. One arm is provided with a leaf spring and



gauge so that upon insertion of the probe end of the test device into a pocket located between the bond lines, a squeezing action applied to the handles results in a movement of one handle relative to the other of an amount indicated by the gauge so as to provide a reading of the bond strength between the individual layers of the trim assembly.

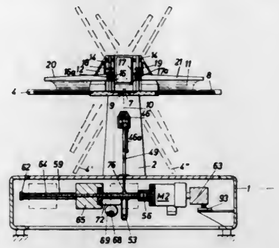
3,678,739
SOIL STRAIN GAGE
Orrin H. Grangaard, Jr., Saint Paul, Minn., and Ernest T. Selig, Williamsville, N.Y., assignors to Bison Instruments, Inc., Minneapolis, Minn.
Filed Oct. 5, 1970, Ser. No. 77,986
Int. Cl. G01b *7/18*
U.S. Cl. 73—88.5 R **4 Claims**



An instrument for measuring deformation between two spaced points within a given medium including a pair of spaced coils positioned within the medium. A source of alternating current provides a signal for one coil and there are means connected to the other coil for measuring the induced current or voltage. Such induced current or voltage is compared against a reference, first before a deforming force is applied to the medium to establish a predetermined relationship between the reference signal and the induced signal, and then after or during the period when a deforming force is applied to measure any change in the relationship between the coils which provides an indication of deformation of the medium.

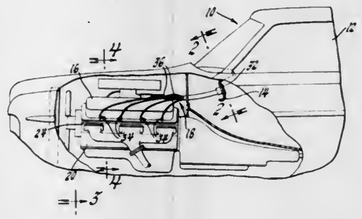
3,678,740
BOOK SHEET TESTING APPARATUS
Adolf Schmid, Weilhausen, and Rudolf Kuhni, Frauenfeld, both of Switzerland, assignors to Martini-Buchbindereimaschinenfabrik AG, Frauenfeld, Switzerland
Filed June 4, 1970, Ser. No. 43,383
Claims priority, application Switzerland, July 26, 1969, 11375/69
Int. Cl. G01n *3/32*
U.S. Cl. 73—93 **17 Claims**

Apparatus for testing the strength of connections between the rear edges of sheets and the backs of books comprises an oscillatable table which supports a book in open position and has a slot through which the selected sheet extends downwardly to be engaged by a gripper. Dynamic testing takes place in response to oscillation of the table, and static testing



takes place in response to exertion upon the selected sheet of a variable tensional stress which is transmitted by way of the gripper. Both testing operations are terminated in automatic response to extraction of the selected sheet from the back of the book.

3,678,741
ENGINE COMBUSTION MONITOR
Harvey A. Burley, Warren, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed March 24, 1971, Ser. No. 127,447
Int. Cl. G01m *15/00*
U.S. Cl. 73—116 **2 Claims**

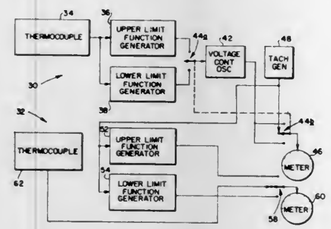


In a preferred embodiment, a combustion monitor for an engine, including a sealed plug for each engine cylinder retaining a quartz viewing window and adapted to receive a fiber optic light transmitting element. Fiber optic elements extend from the sealed plugs of each cylinder to a remotely located viewing panel where they are spacedly arranged in an easily observed position such that the engine operator may observe and compare the intensity and color of light caused by combustion in the various engine cylinders and thereby judge their operating condition. Alternative arrangements for the sealed plug include one version in which cyclic passage of the piston ring over the viewing window surface maintains it free from engine deposits.

3,678,742
TOLERANCE CHECKING SYSTEM
Vernon C. Westcott, Lincoln; Byron E. Blanchard, Lexington; Paul A. Davis, Cochituate, and Stephane Prevot, Lexington, all of Mass., assignors to Trans-Sonics, Inc., Lexington, Mass.
Filed Oct. 5, 1970, Ser. No. 77,864
Int. Cl. G01m *15/00*
U.S. Cl. 73—117.3 **11 Claims**

A tolerance checking system enables one to quickly verify whether or not a given primary parameter is within tolerance limits which are functions of one or more other secondary

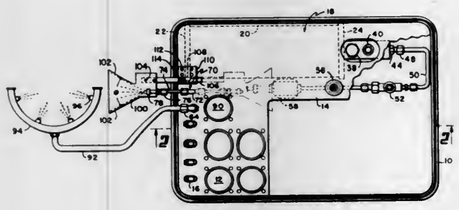
parameters. The system measures the values of the secondary parameters and uses these as inputs to function generators to generate corresponding upper and lower limit values of the primary parameter. The outputs of the function generators are connected to a meter by way of a three-position switch, with the upper limit output being applied to the meter when the switch is in its upper position and the lower limit output being fed to the meter in the lower switch position. Another sensor which measures the actual value of the primary parameter is



connected to the meter when the switch is in its middle position.

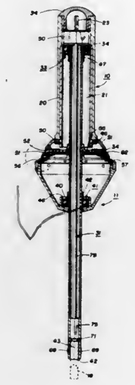
In order to check whether the primary parameter is within the allowable limits, the operator sets the switch in the middle position so that the actual value of the primary parameter is shown in the meter. Then he flips the switch to the upper and lower positions. The directions of movement of the meter pointer when the switch is actuated indicate whether the primary parameter is within tolerance limits.

3,678,743
FIELD TEST UNIT FOR A GAS TURBINE FUEL INJECTION SYSTEM
Neal J. Maresca, San Francisco, Calif., and Orrin J. Winton, Bridgeport, Conn., assignors to Avco Corporation, Stratford, Conn.
Filed Feb. 16, 1971, Ser. No. 115,185
Int. Cl. G01m *15/00*
U.S. Cl. 73—119 A **1 Claim**



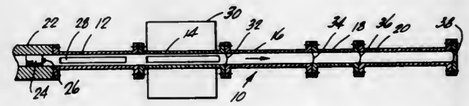
A unit is disclosed for field testing the nozzle manifold and fuel starting nozzles of a gas turbine engine. A portable case has a tank that is filled with fuel and pressurized to a predetermined level. The output of the tank is connected to the engine fuel nozzle manifold to test fuel distribution from the main nozzles. The engine starting nozzles are placed on a protractor nozzle support assembly to determine visually their spray pattern.

3,678,744
TORQUE MEASURING HAND SCREWDRIVER
Raymond J. Blattner, Chicago, Ill., assignor to Dresser Industries, Inc., Dallas, Tex.
Filed Nov. 14, 1969, Ser. No. 876,927
Int. Cl. G01l *5/24*
U.S. Cl. 73—139 **7 Claims**



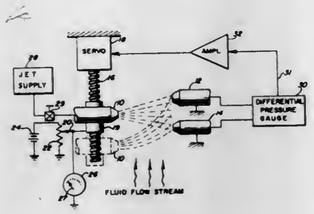
A torque measuring hand screwdriver in which applied torque is transmitted to the drive bit by means of a torque bar extending axially continuous between the gripping handle and bit support. The bar end connections permit an axial floating to accommodate linear contraction concomitantly with twist. A scale gauge calibrated in torque units registers measured twist as applied torque.

3,678,745
BALLISTIC COMPRESSION DECELERATOR
Robert N. Teng, Torrance, Calif., assignor to McDonnell Douglas Corporation
Filed Nov. 12, 1970, Ser. No. 88,879
Int. Cl. G01n *17/00*
U.S. Cl. 73—167 **6 Claims**



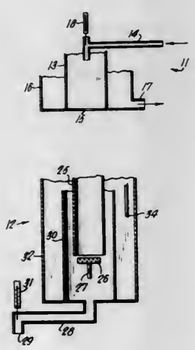
Projectiles are recovered from free-flight for analysis of flight effects on the projectile. Recovery is accomplished by converting kinetic energy into controlled heat of compression which is dissipated in several stages. Shock compression is used during supersonic velocities of the projectile and adiabatic compression is used during sonic and subsonic velocities. Decelerator tubes having diaphragms within them are precharged to high pressure in front of the projectile to minimize the decelerating distance. The final diaphragm may or may not break depending upon the adiabatic pressure buildup.

3,678,746
FLUIDIC SENSOR FOR FLUID STREAM VELOCITY
Victor B. Corey, Bellevue, Wash., assignor to Sundstrand Data Control, Inc.
Filed June 10, 1970, Ser. No. 45,029
Int. Cl. G01f 1/00
U.S. Cl. 73—194 R 17 Claims



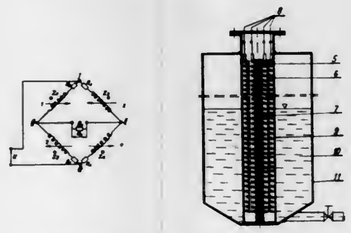
A method and apparatus for determining the velocity of a fluid flow stream. A fluid jet source is disposed opposite a pair of fluid pressure detectors so that the jet stream equally intersects both detectors when the velocity of the fluid flow stream is zero. Means are provided for relatively laterally displacing the jet with respect to the detectors, and for sensing the pressure difference at the detectors, in order to indicate the velocity of the moving fluid flow stream.

3,678,747
APPARATUS AND METHOD FOR MEASURING STEAM AND CONDENSATE FLOWS
John C. Urbas, 3415 Francheville, Quebec 10, Quebec, Canada
Filed April 23, 1971, Ser. No. 136,941
Int. Cl. F16h 15/08
U.S. Cl. 73—194 R 15 Claims



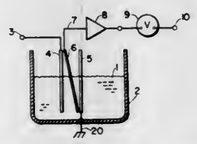
A metering apparatus for measuring steam and condensate flow rate comprising water storing means for supplying a substantially constant flow rate of water at an outlet thereof and a level metering chamber having a mixing chamber therein for receiving the supply of constant flow rate of water. The mixing chamber is provided with adjustable drain means whereby the level of water in the mixing chamber can be adjusted and maintained substantially constant. Means are further provided for introducing steam and condensate in the mixing chamber whereby the steam condensates with the water thereby increasing the water level in the mixing chamber causing overflow in the metering chamber. Indicating means are provided in the metering chamber for measuring the overflow from the mixing chamber whereby the steam and condensate flow rate is measured.

3,678,748
ELECTRICAL SENSING DEVICE FOR MEASUREMENT OF LIQUID METAL
Jan Dziedzic, U1, Pazinskiego 3 C M 5, Warsaw, Poland
Continuation-in-part of Ser. No. 779,776, Nov. 29, 1968, abandoned. This application June 18, 1970, Ser. No. 47,470
Claims priority, application Poland, Dec. 2, 1967, P 123,861
Int. Cl. G01f 23/26
U.S. Cl. 73—290 R 5 Claims



Sensing device for sensing the level of molten liquid in which four legs of a Wheatstone bridge are wound on two concentric tubes, two opposite legs being spirally wound in pairs along the length of each tube; core material within each two leg windings is ferromagnetic or non-magnetic.

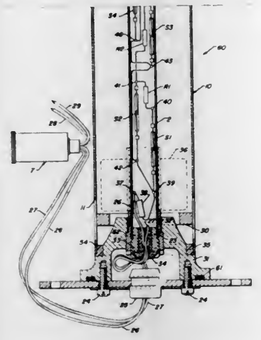
3,678,749
FLOATLESS FLUID LEVEL GAUGE
Patrick D. Harper, 901 St. Andrews Way, Bel Air, Md.
Filed Feb. 25, 1970, Ser. No. 14,132
Int. Cl. G01f 23/24
U.S. Cl. 73—304 R 20 Claims



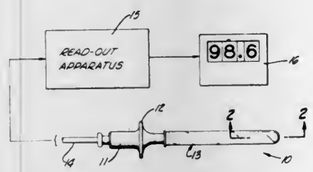
A floatless, electrical, fluid level gauge is disclosed in which fluid level indication is derived from the voltage appearing at the center tap of a resistive voltage divider network. The elements of said voltage divider network comprise two volumes of the fluid to be gauged.

3,678,750
LIQUID LEVEL INDICATOR SYSTEM
Emanuel J. DiNoia, Briar Cliff Manor, N.Y., and Theodore R. Breunich, Stamford, Conn., assignors to Universal Oil Products Company, Des Plaines, Ill.
Filed Aug. 13, 1970, Ser. No. 63,348
Int. Cl. G01f 23/12
U.S. Cl. 73—313 8 Claims

A liquid level indicator system in which a liquid in a tank raises or lowers a float containing angularly positioned magnetic elements according to the level of the liquid present in the tank. The float is co-axially positioned about a vertical tube containing a plurality of reed switches longitudinally aligned and connected in parallel. The magnetic element of the float closes the reed switches at or near the level at which the float is located, thereby short circuiting resistances in an electrical circuit in proportion to the amount of liquid present in the tank. The electric current in the circuit operates a liquid level indicator gauge.



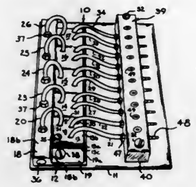
3,678,751
THERMOMETER PROBE
Carver A. Mead, 2036 Pasadena Gein Road, Pasadena, Calif., and Stephen Kurtin, 536 S. Euclid Ave., Pasadena, Calif.
Filed July 1, 1970, Ser. No. 59,790
Int. Cl. G01k 7/22; H01c 7/04
U.S. Cl. 73—362 AR 5 Claims



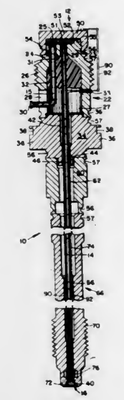
Extending from a handle grip is an elongated hollow metal tube with an outer open end. The interior cavity of the tube contains a quantity of foamed plastic, the outer end of which is generally conically shaped and extends beyond the open tube end. A thermistor is located at the tip of the foamed plastic cone and a thin coating of rigid cementitious material is provided over the exposed end of the plastic, metal tube and side portions of the thermistor to secure the thermistor into a fixed position. A removable plastic envelope or sheath is received over the tube and exposed thermistor, with the thermistor bottoming against the inner tube end wall.

3,678,752
TESTING MEANS FOR FLUIDIC CIRCUIT ELEMENTS
Robert C. Dellert, Normal, Ill., assignor to General Electric Company
Filed July 6, 1970, Ser. No. 52,450
Int. Cl. G01l 19/00
U.S. Cl. 73—389 11 Claims

A device, for use in checking the pressure of the fluid flow through each of the fluidic circuit elements of a pure fluid logic system, including a modularized read out bar having discrete compartments for each fluid line to be monitored, each compartment of the read out bar including an input port for connection to a suitable port of a given fluidic circuit element and an output port for connection to a suitable operating component of the device desired to be controlled by the given fluidic circuit element, and each compartment of the modularized read out bar further including an access port communicating with the interior of the compartment into which port a pressure sensing probe may be inserted to take a reading of the pressure of the fluid flowing through the compartment from the aforesaid suitable port of the given fluidic circuit element.



3,678,753
PRESSURE TRANSDUCER
Gerard Eggleston, Danvers, and Bosworth, George, Holbrook, both of Mass., assignors to Microdot, Inc., Westwood, Mass.
Filed July 28, 1970, Ser. No. 58,817
Int. Cl. G01l 9/04
U.S. Cl. 73—393 18 Claims

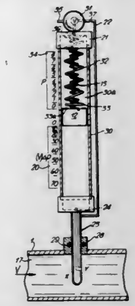


A pressure transducer with a diaphragm coupler at one end and a sensing device at the other end connected by a capillary tube. The sensing device includes a cap having a deformable surface to which a strain gauge arrangement is attached, and defining, with an upper portion of the transducer, a thin sensor compartment whereby a liquid filling the capillary tube and sensor compartment will transmit a pressure exerted against the diaphragm coupler to the deformable surface of the cap.

3,678,754
FLOW MEASURING DEVICE
Ilan Amir, and Anthony Peranio, both of Haifa, Israel, assignors to Technion Research and Development Foundation Limited
Filed Dec. 11, 1969, Ser. No. 884,343
Claims priority, application Israel, Dec. 16, 1968, 31,278
Int. Cl. G01l 7/16
U.S. Cl. 73—419 7 Claims

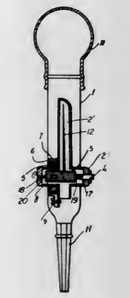
A device for measuring the velocity of a fluid flowing in a closed pipe said device comprising a hollow conduit with a

pressure port at each end and a spring loaded piston loosely fitted in said conduit, each of said pressure ports connecting to



a Pitot tube having two pressure openings one of said pressure openings facing upstream and the other downstream of said fluid flowing in the closed pipe.

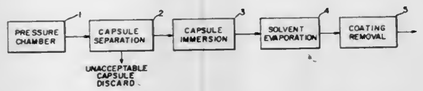
3,678,755
HYDROMETER
Antonion Vilas Llucia, Roger de Flor St. No. 218, Barcelona, Spain
Filed Feb. 24, 1970, Ser. No. 13,492
Claims priority, application Spain, March 1, 1969, 146,144
Int. Cl. G01c 9/08; G01n 9/16
U.S. Cl. 73—454 **1 Claim**



An improved hydrometer having a tubular receptacle with a suction bulb at one extremity and an entrance mouthpiece for electrolyte at the opposite extremity. The interior of the receptacle has a body operatively arranged to remain submerged in the suctioned liquid, the body being fitted with a horizontal arm that passes outwardly of the tube. The arm is provided with a perpendicular axis at its free extremity solidly connected to a needle or pointer. The pointer assembly is housed within a hermetic case or box disposed at the side of the tube and in communication with the electrolyte in the tube.

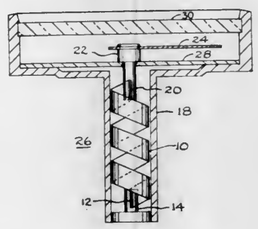
3,678,756
CAPSULES AND METHOD FOR TESTING CAPSULES FOR WALL INTEGRITY
Edward W. Merrill, Cambridge, Mass., assignor to Hans W. Estin, Leonard W. Crankhite, Jr. & William W. Welbach Trustees of The Charles River Foundation
Filed Sept. 23, 1969, Ser. No. 860,196
Int. Cl. G01m 3/32
U.S. Cl. 73—49.3 **10 Claims**

Capsules having a cross-linked permeable continuous elastomeric shell are tested for leaks and for wall strength by a process in which gas or vapor is suddenly formed within the capsule to inflate acceptable capsules but to split, explode, or leave uninflated capsules with defective, weak, or leaking elastomeric shells. Methods useful for sudden formation of gas are: previous long exposure of the capsules to an inert gas at high pressure followed by sudden release of external pressure, incorporation of a solid vaporizable core around which the elastomeric shell is formed followed by subsequent rapid vaporization of the core, and formation of the elastomeric



shell around a core that contains a significant quantity of vaporizable solvent held therein by capillary forces, when the core is microporous, or by solvation energy in the case of cross-linked polymeric materials. The acceptable inflated capsules are then separated from the unacceptable capsules on the basis of size or density. The acceptable capsules can be filled with a solid material such as a drug by immersing the capsules in a solution of the solid material to effect effusion of the solution into the capsule and subsequently evaporating the solvent from the capsules.

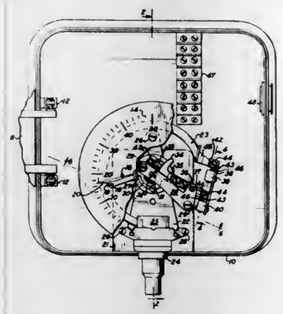
3,678,757
BIMETALLIC ELEMENTS
Robert L. Snyder, Rochester, N.Y., assignor to American Standard Inc., New York, N.Y.
Division of Ser. No. 703,861, Feb. 8, 1968, Pat. No. 3,591,353.
This application July 6, 1970, Ser. No. 60,977
Int. Cl. G01k 5/66
U.S. Cl. 73—363.5 **1 Claim**



A thermosensitive element comprising a first layer and a second layer of a non-cubic metal having a high degree of crystallographic orientation in which the directions of crystallographic orientation are at right angles to each other.

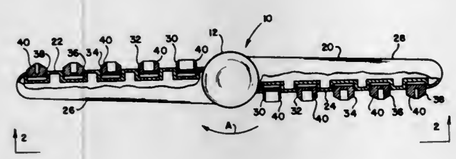
3,678,758
PRESSURE INDICATING AND LIMITING INSTRUMENT
Charles R. Lawrence, Broken Arrow, Okla., assignor to Frank W. Murphy Manufacturer, Inc., Tulsa, Okla.
Filed July 23, 1971, Ser. No. 151,592
Int. Cl. G01k 7/04
U.S. Cl. 73—411 **11 Claims**

A pressure gauge utilizes a Bourdon tube and associated mechanical linkage to indicate pressure on a calibrated dial between predetermined limits. High pressure and low pressure limit switches are fixedly secured to a carrier having lost motion connections with the Bourdon tube and said linkage. Adjustable high pressure and low pressure stops on the face of the instrument positively interrupt the movement of the instrument pointer and thereby lock said linkage. Continued expansion or contraction of the Bourdon tube utilizes said lost motion connections with said switch carrier to operate the



high pressure and low pressure limit switches in proper sequence. The principle of operation is also adaptable to Bourdon tube temperature gauges.

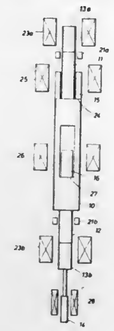
3,678,759
ROTATING CUP PARTICLE SIZING SAMPLING APPARATUS
Richard F. Schneeberger, Snyder, N.Y., assignor to Cornell Aeronautical Laboratory, Inc., Buffalo, N.Y.
Filed Jan. 22, 1971, Ser. No. 108,817
Int. Cl. G01n 1/22, 15/02
U.S. Cl. 73—432 PS **15 Claims**



A pair of rotating arms having a plurality of aerosol particle collection cups of various entrance areas fixed to the leading edges of the arms at various radially spaced points, the cups can be interchanged to vary the speed and collection efficiencies whereby particle size distributions can be calculated according to impaction theories.

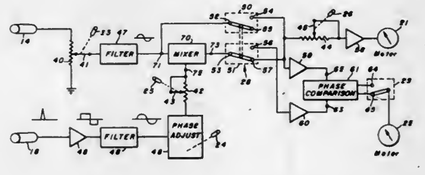
3,678,760
MAGNETIC SUSPENSION DENSIMETER INCLUDING MEANS TO VARY FLOAT VOLUME AND WEIGHT
Jean-Loup Bonnet, Verrieres-Le-Buisson, France, assignor to Schlumberger Technology Corporation, New York, N.Y.
Filed Feb. 19, 1970, Ser. No. 116,847
Claims priority, application France, Feb. 19, 1970, 7005884
Int. Cl. G01n 9/08
U.S. Cl. 73—453 **11 Claims**

An illustrative embodiment of the present invention includes methods and apparatus for making in situ determinations of the density or specific gravity of fluids in a well borehole. A magnetically suspendable float type densimeter carried on a sonde is suspended in the borehole and a series of three measure currents to the suspension coils made. A first measure of the float together with an internal and an external inertia block is combined with second and third measures made with only the internal inertia block and then only the external inertia block influencing the measure current. The



three measure current signals are then combined to derive a signal proportional to the fluid density which may be recorded as a function of borehole depth.

3,678,761
METHOD AND APPARATUS FOR DETERMINING UNBALANCE
Bobby J. Blackburn, Columbus, Ohio, assignor to IRD Mechanalysis, Inc., Worthington, Ohio
Filed Jan. 12, 1970, Ser. No. 2,100
Int. Cl. G01m 1/28
U.S. Cl. 73—457 **4 Claims**

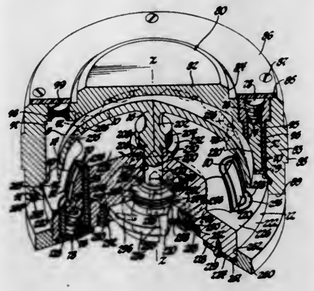


A method and apparatus for determining the amount and location of corrective weight required to compensate unbalance in a vehicle wheel and tire without removing the wheel and/or tire from the vehicle. The wheel and tire are maintained out of contact with the ground and are turned at conventional highway speeds. An index tape is applied to the tire rim. Two separate spinnings of the wheel are required: one with a known trial weight affixed to the wheel rim, and one with the wheel and tire in their normal condition. Two meters are provided which are calibrated to indicate the amount of unbalance compensating weight required at the wheel rim and the angular position of the compensating weight relative to the index tape. The method and apparatus are applicable to other rotatable bodies.

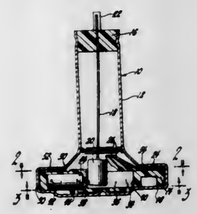
3,678,762
BELL GYRO AND METHOD OF MAKING SAME
Richard E. Denis, Beverly, Mass., assignor to General Motors Corporation, Detroit, Mich.
Filed Oct. 6, 1969, Ser. No. 863,857
Int. Cl. G01p 9/04
U.S. Cl. 73—505 **10 Claims**

A bell-like rotation sensor comprised of a platform base having a post supporting forcer electrodes, a bell-like high-Q

member supported by the post and a bore therethrough telescoping the post and forcer electrodes, a platform housing telescoping the outer periphery of the bell and supporting sensor electrodes adjacent thereto. The atmosphere surrounding the bell is evacuated, and the peripheries of the base and housing adjacent the electrodes are relieved to reduce damping on the bell sides. Means are provided for adjusting the azimuth position of the bell sides relative to the forcer electrodes and for locking and sealing the bell to the platform base. The platform housing is adjustable in azimuth relative the bell and platform base and is sealable thereto.



3,678,763
ACCELERATION SENSOR
Rodney A. Brooks, Bayside, and Vincent A. Orlando, Greendale, both of Wis., assignors to General Motors Corporation, Detroit, Mich.
Filed Aug. 23, 1971, Ser. No. 173,806
Int. Cl. G01p 15/02; H01h 35/14
U.S. Cl. 73—514 **2 Claims**

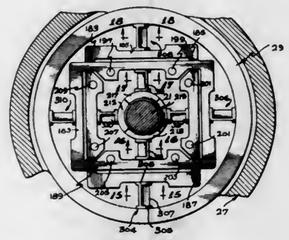


A sensor includes a cylindrical mass of predetermined weight supported on a deflectable rod and movable within a sector shaped recess including angularly diverging walls defining an included angle 2θ. The mass is located in unactuated position in tangential engagement with the walls adjacent their proximal ends by an axial magnet having its axis coplanar with a bisector of the included angle. The magnet applies a preload force F_p to the mass along a bisector of the included angle. When an impulse force F_I greater than a predetermined amplitude and time is applied to the mass within the predetermined included angle of response 2α max, the mass will move with generally uniform sensitivity to actuated position in engagement with a deflectable spring contact finger in accordance with with:

$$\frac{F_I}{F_P} > \frac{\mu \sin \theta + \cos \theta}{\cos (\alpha - \theta) - \mu \sin (\alpha - \theta)}$$

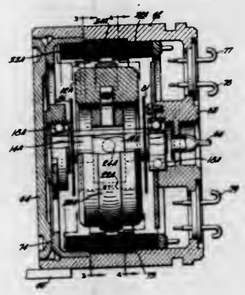
where μ is the coefficient of friction between the mass and one of the walls of the recess and α is the angle of the vector of F_I with respect to the bisector of 2θ. In order to achieve generally uniform sensitivity to applied impulse forces within the predetermined included angle of response 2α max, F_I/F_P is determined for various values of θ and λ up to λ max and θ is then selected to approach F_I/F_P equalling a constant with a minimum range or deviation, such as $F_I/F_P \geq 0.9$ and ≤ 1.1 for each value of α up to α max.

3,678,764
GYROSCOPE HAVING VIBRATING GIMBALS
Harold F. Erdley, and Stanley F. Wyse, both of Los Angeles, Calif., assignors to Litton Systems, Inc., Beverly Hills, Calif.
Filed Nov. 20, 1967, Ser. No. 684,270
Int. Cl. G01c 19/22
U.S. Cl. 74—5 **46 Claims**



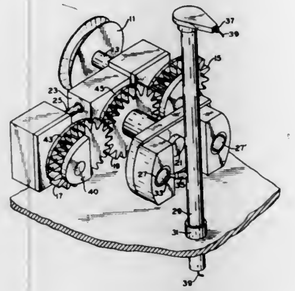
A gyroscope in which the rotor is supported with respect to its driving shaft by a plurality of intermediate gimbals in which each intermediate gimbal is torsionally attached to the rotor and to the driving shaft, the attachments being positioned, the spring constants being adjusted, and the moments of inertia of the gimbals being adjusted to allow the rotor to be a free rotor while eliminating rectification torques, caused by oscillatory inputs on the shaft, from the rotor.

3,678,765
MAGNETICALLY-TUNED RESONANT GYROSCOPE
Irwin M. Feldman, Plainview, N.Y., assignor to Ambac Industries, Incorporated, Garden City, N.Y.
Filed Dec. 15, 1969, Ser. No. 884,807
Int. Cl. G01c 19/24
U.S. Cl. 74—5.46 **8 Claims**



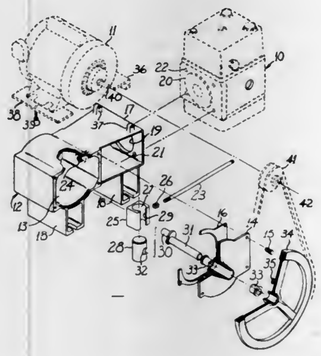
A "tuned" gyroscope having spring restraints, which is tuned to resonance by a restoring torque produced by hysteresis motor windings which also spin the gyro rotor.

3,678,766
DRIVE FOR IN-SLOT WINDING MACHINE
Eugene E. Geber, Ossian, Ind., assignor to Industra Products, Inc., Ft. Wayne, Ind.
Filed Sept. 30, 1970, Ser. No. 76,697
Int. Cl. F16h 21/00
U.S. Cl. 74—23 **12 Claims**

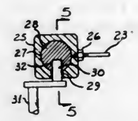


A mechanical drive arrangement is disclosed for converting rotary motion of one shaft into a combined rotary and axial motion of a second shaft, the latter motion being particularly useful in an automatic stator in-slot winding machine. The drive arrangement has first and second non-circular gears constrained to rotate about fixed axes, a source of energy rotatably driving one of those axes or shafts, and a third gear rotatable about a movable axis and adapted to mesh with each of the first and second gears, the third gear axis being movable parallel to itself in a plane, and a ball and socket linkage between an eccentric point on the third gear and the driven shaft.

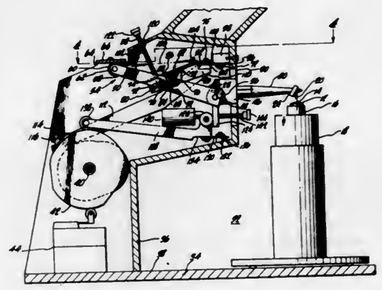
3,678,767
PISTON PUMP ACTUATING MECHANISM
Andrew Gordon Lennon, Dollard des Ormeaux, Quebec, Canada, assignor to Crane Canada Limited, Montreal, Quebec, Canada
Filed Nov. 25, 1970, Ser. No. 92,663
Claims priority, application Canada, Oct. 26, 1970, 096584
Int. Cl. F16h 21/18
U.S. Cl. 74—50 **2 Claims**

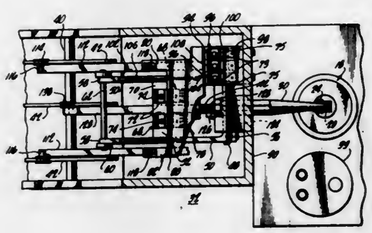


A driving block is rigidly secured to and reciprocable with a pump piston rod. The driving block has a sliding block reciprocable therein, and a crank of a crankshaft is rotatable in the sliding block to convert rotary motion of the crankshaft into reciprocating movement of the piston rod. The sliding and driving blocks are shaped and arranged so that the rigid connection of the piston rod to the driving block is all that is needed to guide the driving block in its movement.



3,678,768
RECIPROCATING DRIVE APPARATUS
Momtaz Nosshi Mansour, Pasadena, Calif., assignor to United Corporation, Monrovia, Calif.
Division of Ser. No. 746,229, July 19, 1968, Pat. No. 3,601,304. This application Oct. 28, 1970, Ser. No. 84,783
Int. Cl. F16h 25/08
U.S. Cl. 74—54 **7 Claims**



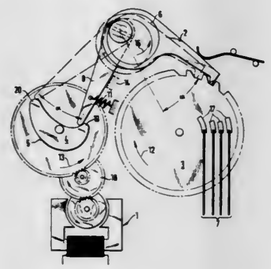


A wire bonder having a housing, a manipular workpiece mounting post secured to the housing and a bonding tip reciprocally movable relative to the mounting post. The bonding tip is secured in a holder connected to an ultrasonic transducer and the assembly is in turn operatively engaged with a drive mechanism for reciprocating the bonding tip which includes a first linkage which is secured to a first leaf spring flexibly attached to the housing. Flexibly attached to the first linkage by a second leaf spring is another linkage, one end of which movably engages a planar surface of the housing and another end of which mounts the transducer and tip assembly.

3,678,769
ECCENTRIC AND KNEE LEVER DRIVE FOR MECHANICAL CONTROL ELEMENTS

Walter K. Holzer, Meersburg, Germany, assignor to Holzer Patent AG, Zug, Switzerland

Filed Oct. 19, 1970, Ser. No. 81,968
Claims priority, application Germany, Oct. 27, 1969, P 19 54 023.9
Int. Cl. F16h *27/02*
U.S. Cl. 74—118 **5 Claims**

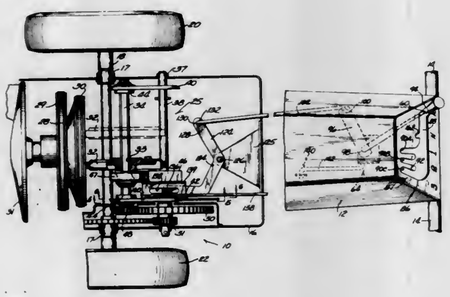


A device for the gradual movement of a mechanical control element as a cam disk or roller having an energy accumulator that can be charged by an engine and which upon discharge moves the control element by mechanical means.

3,678,770
SINGLE LEVER CONTROL

Edward W. Enters, Fredonia; Warren H. Price, Sheboygan; John W. Davies, III, and Lynn E. Hochwitz, both of Plymouth, all of Wis., assignors to Gilson Bros. Co., Plymouth, Wis.

Filed Sept. 22, 1970, Ser. No. 74,282
Int. Cl. F16h *15/08*; **G05g** *9/02*
U.S. Cl. 74—197 **17 Claims**

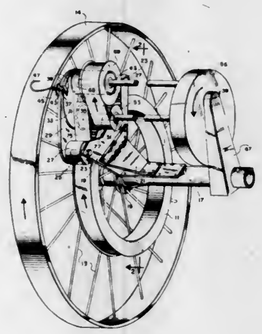


Disclosed herein is a single lever control for varying the speed and direction of rotation of drive wheels in a vehicle such as a snow thrower and for also clutching and declutching the drive train to the drive wheels. The control lever is supported on the vehicle handling bar assembly for movement about first and second axes and is guided for movement by a guide track having forwardly and rearwardly extending slots with appropriate indicia for the various forward speeds and reverse. Movement of the control lever about the first axis in a slot transverse to the direction of movement of the vehicle, actuates a speed control rod linkage to axially shift a rubber friction wheel on a spline shaft to change the position of engagement of the friction wheel with respect to the drive disc to vary the speed of the vehicle drive wheels. Forward movement of the control lever about the second axis, and from the transverse slot into one of the various fore and aft slots, moves a clutch linkage to swing the friction wheel into engagement with the friction disc. Toggle links in the clutch linkage provide a "feel" to the operator, a mechanical advantage to assist clutching and declutching and maintain the friction wheel in engagement in the forward positions.

3,678,771
TWO-SPEED DRIVE SYSTEM

John L. Burch, Decatur, Ala., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration

Filed Dec. 31, 1970, Ser. No. 103,091
Int. Cl. F16h *9/00*
U.S. Cl. 74—217 R **8 Claims**



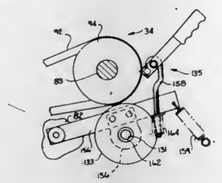
A two-speed drive system for driving an independently driven vehicle wheel comprising a relatively large wheel sprocket attached to the vehicle wheel. A drive belt passes around the large wheel sprocket and one of a pair of smaller, selectively interchangeable, motor-driven wheels. The two smaller wheels are of the same diameter but rotate at different speeds and are mounted on a plate that may be temporarily released through a latching pawl for rotation of 180° so that the two wheels change places. No external force is required to rotate the plate, when released, since one of the smaller wheels turning in contact with the drive belt causes the plate to rotate rather then the drive belt and large wheel sprocket. When the drive belt is engaging both of the smaller wheels simultaneously during the shifting phase, the normally slower turning wheel is permitted to turn faster through a ratchet mechanism.

3,678,772
REVERSE DRIVE FOR A FORAGE HARVESTER CUTTING REEL

Poul K. Pedersen, Blue Ball; Robert A. Wagstaff, and Thomas W. Waldrop, both of New Holland, all of Pa., assignors to Sperry Rand Corporation, New Holland, Pa.

Filed April 29, 1971, Ser. No. 138,510
Int. Cl. F16h *9/04*; **A01d** *75/08*
U.S. Cl. 74—220 **5 Claims**

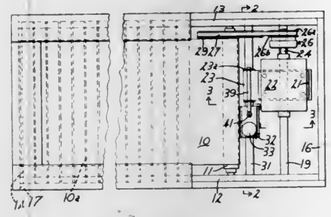
The cutting reel of a forage harvester is driven in the forward chopping direction by the main input drive through a detachable coupling and in the reverse blade sharpening direction by the main input drive by a reversing drive bridging the detached coupling.



3,678,773
VARIABLE SPEED DRIVE

Royal E. Rohrbach, Bessemer, and Royce W. Ray, Leeds, both of Ala., assignors to Fitness Industries, Inc.

Filed Dec. 22, 1970, Ser. No. 100,753
Int. Cl. F16h *55/52*
U.S. Cl. 74—230.17 A **2 Claims**

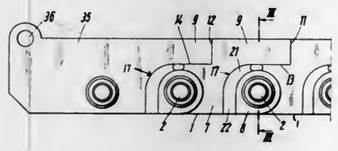


A variable speed drive comprising a drive motor mounted in a frame for pivotal movement by means of a reversible motor and screw drive unit operatively connected to the drive motor. A shaft to be driven is mounted parallel to the shaft of the drive motor and power is transmitted from the drive motor to the shaft to be driven through a belt and variable speed pulley, preferably of the type in which the diameter of the pulley decreases as the motor shaft is moved away from the shaft to be driven, and vice versa.

3,678,774
TRANSMISSION DEVICE

Theo Patrignani, Paris, France, assignor to Manufacture des Machines du Haut-Rhin Corporation, Mulhouse, France

Filed Sept. 28, 1970, Ser. No. 75,814
Claims priority, application France, Oct. 1, 1969, 6933477
Int. Cl. F16g *13/02*
U.S. Cl. 74—250 R **6 Claims**

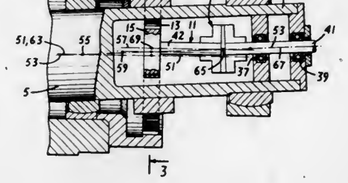


A transmission device in the form of a selectively rigidified chain which can transmit substantial forces both in tension and compression. The successive links of the chain have at least two parallel main plate members connected by transverse pivot pins, each one of such plates or members presenting a projection with an active transverse forward face and an active transverse rear face, such faces being adapted to engage the active transverse rear and forward faces, respectively, of the neighboring links when the part of the chain incorporating such links is extended along a straight line. Each plate member of the links of the chain is constituted by a single plate pierced by two holes for the reception of pivot pins which connect it to the neighboring links; a first part of such plate, situated in the vicinity of one of such holes, is located in a first plane and presents in such first plane a prolongation forming the said projection. The second part of the plate, situated at the location of the other hole, is also plane, but is offset laterally from the first portion of the plate through a distance which is equal to the thickness of the plate. Successive links are connected by having the second parts of the plate members of one link telescoped within the first parts of the next adjacent link, a pivot pin extending through the aligned holes in the first and second plate members of the links.

3,678,775
APPARATUS FOR TRANSMITTING ROTATIONAL POWER TO A ROLL

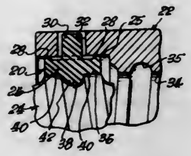
Erik Danielsson, Karlstad, Sweden, assignor to Aktiebolaget Karlstad Mekaniska Werkstad, Karlstad, Sweden

Filed Oct. 20, 1970, Ser. No. 82,447
Claims priority, application Sweden, Oct. 21, 1969, 14406/69
Int. Cl. F16h *57/00*
U.S. Cl. 74—410 **3 Claims**



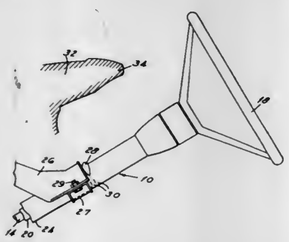
Rotational power is transmitted to a roll of the type having a cylindrical, hollow shell rotatably mounted on a stationary, central through-shaft by a gear system composed of an internally spur gear affixed to the shell, a pair of pinion gears mounted for rotation by self-aligning bearings carried on shafts affixed to the through-shaft of the roll and an external spur gear positioned within a cavity in the main shaft. The pinion gears partially project through openings formed in walls that define a cavity in the shaft, and the axis of each pinion gear shaft is oriented parallel to the shell of the roll in a plane that is perpendicular to the plane along which the shell and shaft will deflect when loaded. The external spur gear is connected to a drive shaft that is composed of two portions connected to each other by a universal coupling, the portion of the drive shaft carrying the external spur gear thus being mounted for articulation relative to the main power input shaft. The elements of the gear system are maintained in parallel relation to each other and in proper mesh, regardless of the extent of deflection of the shell and through-shaft of the roll under load.

3,678,776
SEALING AND WIPING MEANS FOR BALL SCREW ACTUATOR
Donald S. Patterson, Corona, Calif., assignor to Sargent Industries, Inc., Los Angeles, Calif.
Filed Sept. 21, 1970, Ser. No. 74,032
Int. Cl. F16h 55/22, 57/04
U.S. Cl. 74—459 23 Claims



A resiliently deformable elastomeric ring seats in a non-rotary manner in a continuous inner circumferential channel of a nut of a ball screw actuator to cooperate with the screw of the actuator as a wiper and sealing means. The channel is wider than the ring to permit slight axial shift of the ring and the ring has at least one continuous narrow outer circumferential sealing rib in contact with the bottom of the channel that yields sufficiently under radial compression to compensate for the range of clearances afforded by the given tolerances of the nut and screw to insure that the body of the ring will not be radially compressed to a destructive degree.

3,678,777
ENERGY ABSORBING STEERING CONTROL SYSTEM
Ralph A. Olsen, Grosse Pointe Woods, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed Nov. 16, 1970, Ser. No. 89,890
Int. Cl. B62d 1/18
U.S. Cl. 74—492 10 Claims



An energy absorbing steering column for a motor vehicle having a tubular jacket with a plastically deformable, bendable section. The column is constructed to absorb energy by angularly displacing the upper column portion and buckling the bendable section when an impact force is exerted on the steering wheel.

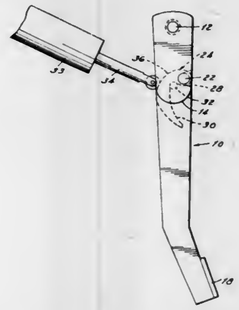
3,678,778
ADJUSTABLE STEERING COLUMN
Donald W. Groves, Birmingham, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed Sept. 21, 1970, Ser. No. 73,826
Int. Cl. B62d 1/18
U.S. Cl. 74—493 8 Claims

An adjustable steering wheel mechanism particularly suitable for commercial vehicles and having a movable steering wheel support that moves along an axis extending at an acute angle to the axis of the steering shaft. A spring pressed locking



bolt mechanism secures the steering wheel support in any one of several positions as selected and adjusted by the vehicle operator.

3,678,779
VARIABLE RATIO BRAKE PEDAL
Francis L. Janoel, Dearborn Heights, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed Nov. 12, 1970, Ser. No. 88,773
Int. Cl. G05g 1/04
U.S. Cl. 74—516 7 Claims

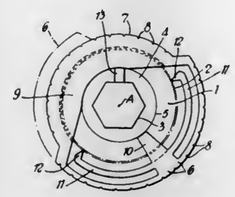


A variable ratio brake pedal assembly including a foot operated pedal lever, a brake applying means and an intermediate crescent-shaped lever interposed between the pedal lever and the brake applying device. The intermediate lever has cam surfaces that engage both the brake applying device and the foot operated pedal lever whereby a change in effective mechanical advantage ratio occurs as force is transmitted from the pedal lever through the intermediate lever to the brake applying device when the pedal lever pivots and the intermediate lever is angularly displaced.

3,678,780
CAM ASSEMBLY
Ivor Ponting, Essex, England, assignor to Electrical Remote Control Company Limited, Essex, England
Filed Aug. 26, 1970, Ser. No. 67,097
Claims priority, application Great Britain, Aug. 24, 1969, 42,754/69
Int. Cl. F16h 53/00
U.S. Cl. 74—568 R 8 Claims

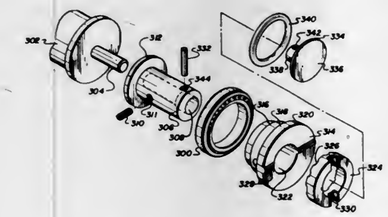
A cam assembly includes a generally cylindrical central body formed with an external ring of teeth and encircled by

two identical annular members each having two inwardly directed pawls resiliently engaging the teeth at circumferentially spaced locations. The annular members have profiled outer peripheral control surfaces for co-operating



with a cam follower extending across both surfaces. To adjust the overall control surface, the annular members are manually turned about the body axis, the pawls riding over the teeth, and then the annular members are clamped to the body, while the pawls hold the annular members in position.

3,678,781
ADJUSTABLE THROW ECCENTRIC
Roderick G. Rohrberg, Torrance, and Don E. Harvey, Inglewood, both of Calif.
Filed March 23, 1970, Ser. No. 21,672
Int. Cl. G05g 1/00
U.S. Cl. 74—571 M 5 Claims



A portable carriage adapted to be mounted on a tubular workpiece is used to perform cutting operations followed by in-place welding operations on such workpiece using two subassemblies interchangeably mounted on the carriage, one for cutting and one for welding. The carriage is rotatable around the stationary workpiece or may be held stationary while the workpiece rotates. After preliminary trimming, fusion welding is progressively accomplished in a circular path to join the abutting ends of the workpiece components.

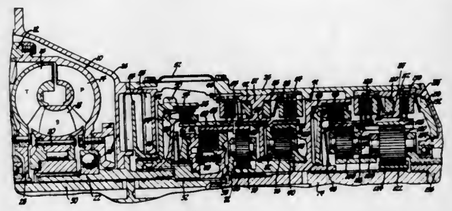
3,678,782
VISCOUS RUBBER DAMPERS
Hidemasa Aoki, 12-5, Nishigotanda 8-Chome, Shinagawa-ku, Tokyo-to, Japan
Filed July 28, 1970, Ser. No. 58,784
Claims priority, application Japan, Nov. 15, 1969, 44/108011
Int. Cl. F16f 15/12
U.S. Cl. 74—574 4 Claims

In a damper comprising a mounting disc, annular rubber rings secured to the opposite sides of the mounting disc, a dish shaped outer inertia mass member accommodating the mounting disc and the annular rubber rings, and an outer inertia mass member closing the opening of the outer inertia mass member and a viscous fluid filled in a spaced defined between inner and outer mass members, the dish shaped outer inertia



mass member is provided with a flange which is folded inwardly onto the outer peripheral surface of the inner inertia mass member.

3,678,783
POWER TRANSMISSION
John J. O'Malley, Livonia, Mich., and Marion D. Smith, Indianapolis, Ind., assignors to General Motors Corporation, Detroit, Mich.
Filed June 1, 1970, Ser. No. 41,928
Int. Cl. F16h 57/10; B60k 17/28
U.S. Cl. 74—759 4 Claims

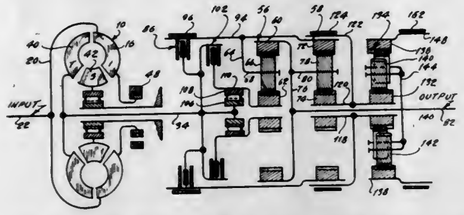


The torque converter is operatively connected to first and second planetary gearsets forming a front drive unit controlled by a plurality of friction-drive-establishing devices to produce three forward and one reverse drive. The front gear unit is drivingly connected to third and fourth planetary gearsets forming a rear unit controlled by a plurality of friction-drive-establishing devices to produce at least three different speed ratios in the rear unit. The units can be combined to provide a large overall ratio change and a large selection of relatively, evenly-steeped, forward ratios between the lowest and the highest ratio. By providing for reverse gear in the front gear unit, a plurality of reverse drive ratios can be obtained by changing the gear ratio of the rear unit.

3,678,784
AUTOMOTIVE TRANSMISSION MECHANISM HAVING FOUR FORWARD DRIVING SPEED RATIOS
George E. Lemieux, Livonia, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed Oct. 29, 1970, Ser. No. 85,014
Int. Cl. F16h 3/44, 57/10
U.S. Cl. 74—759 6 Claims

A four-speed ratio power transmission for use in an automotive vehicle driveline including two simple planetary gear units and a compound planetary gear unit, the reaction element for the simple planetary gear units serving as a power input element for the compound planetary gear unit whereby a split torque delivery path is established through said transmission during low speed ratio operation, said input element for the

compound planetary gear unit serving as a reaction element during second speed ratio operation, the compound planetary

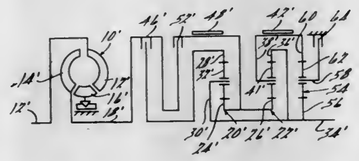


gear unit being situated in a separate housing whereby the transmission structure may be converted to a three-speed ratio transmission.

3,678,785
FOUR SPEED RATIO POWER TRANSMISSION MECHANISM FOR AUTOMOTIVE VEHICLES

Hans J. Stahlberg, Aborneweg, Germany, assignor to Ford Motor Company, Dearborn, Mich.

Filed April 19, 1971, Ser. No. 135,258
Claims priority, application Germany, May 14, 1970, P 20 23 639.9
Int. Cl. F16h 57/10
U.S. Cl. 74—759 **2 Claims**



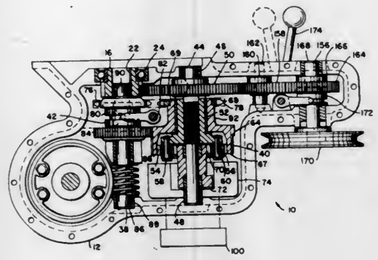
A four-speed ratio power transmission mechanism adapted to be used in an automotive vehicle driveline comprising a Simpson type planetary gear system and a simple planetary gear unit situated between the low speed ratio reaction element of the Simpson gear system and the power output shaft whereby the torque multiplication achieved during low speed ratio operation is augmented to provide an increased low torque ratio, the elements of the additional simple planetary gear unit and the elements of the Simpson gear system having a large degree of interchangeability, wherein a minimum number of clutch and brake control members are required and the manufacturing cost penalty due to the additional torque multiplication ratio is slight.

3,678,786
VARIABLY CONTROLLED PLANETARY DRIVE STRUCTURE AND METHOD

Otto E. Szekely, Palm Beach, Fla., assignor to Power Flo Products Incorporated, Hialeah, Fla.

Filed Oct. 12, 1970, Ser. No. 79,875
Int. Cl. F16h 3/44, 37/06, 1/38
U.S. Cl. 74—782 **6 Claims**

The planetary drive structure includes a variable speed transmission by which the drive structure speed is universally variable in both forward and reverse directions. The drive structure also includes selectively engageable power takeoff structure. The variable speed feature of the transmission is effected by means of a sun gear and a ring gear having planet gears positioned therebetween and means for varying the resistance to rotation of the sun gear. The means for varying the resistance to rotation of the sun gear may be hydraulically or electrically energized and includes selectively operable accessory drive structure. The method of the invention includes the step of varying the speed of a hydraulic transmission in planetary drive structure in both forward and reverse directions

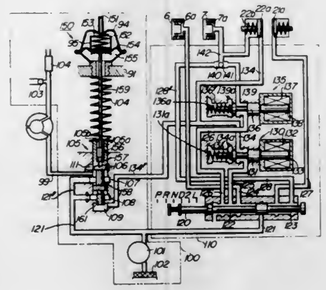


substantially universally over the range of speeds thereof, selectively actuating accessories through the variable speed transmission and selectively actuating power takeoff means with the planetary drive structure.

3,678,787
HYDRAULIC CONTROL SYSTEM FOR AUTOMATIC TRANSMISSION

Shin Ito, and Seitoku Kubo, both of Toyota-shi, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota-shi, Japan

Filed April 3, 1970, Ser. No. 25,403
Claims priority, application Japan, July 29, 1969, 44/60157
Int. Cl. B60k 21/02
U.S. Cl. 74—864 **3 Claims**

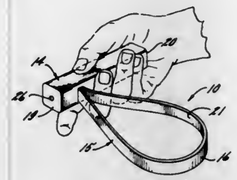


A hydraulic control system for an automatic transmission including a transmission gear system provided with hydraulic servos for the brake bands or the clutches, wherein, in addition to a pressure regulator valve for controlling pressure oil applied to said servos and shift valves for establishing low and high forward drive ratios, a diaphragm mechanism is provided to additionally apply the engine intake manifold vacuum to the pressure regulator valve so that said drive ratios are varied by the operation of said shift values and at the same time the action of the engine suction applied to the pressure regulator valve is changed through the associated oil passages to vary the control action of the pressure regulator valve to thereby smooth out the shifts.

3,678,788
CONTAINER TOP OPENER

Leo F. Matti, 3605 Guilford Rd., Rockford, Ill.

Filed Oct. 2, 1970, Ser. No. 77,543
Int. Cl. B67b 7/00; B25b 13/52
U.S. Cl. 81—3.43 **2 Claims**

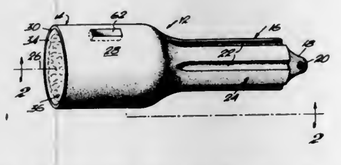


An opener including a loop with both ends fastened to the side of an elongated handle at a position spaced between one end of the handle and its center, so that the loop can be bent in either direction lengthwise of the handle and used to cinch the handle against a lid to be turned therewith to screw the lid loose from a container.

3,678,789
FUSE REMOVAL TOOL

George E. Wilson, 1125 N.W. 143rd Street, Miami, Fla.

Filed Feb. 24, 1970, Ser. No. 13,687
Int. Cl. B25b 13/52, 13/06
U.S. Cl. 81—64 **1 Claim**

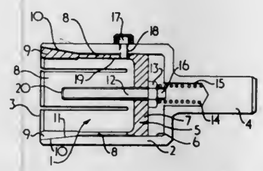


A tool for removing fuses from an electrical control box which includes a handle and a socket, the socket being sized to nest in snug engagement about the head of a fuse and liner means within the socket of friction-producing material in response to an axial pressure of the tool directed towards the fuse so that the tool may be employed to remove the fuse by rotating the tool about its longitudinal axis.

3,678,790
MACHINE TOOLS

Raymond A. Riley, Bulkington near Nuneaton, England, assignor to The Dunlop Company Limited, London, England

Filed June 2, 1970, Ser. No. 42,835
Claims priority, application Great Britain, June 5, 1969, 28,420/69
Int. Cl. B23b 25/00
U.S. Cl. 82—38 **7 Claims**

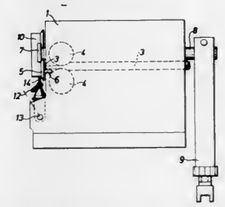


A loading device for a machine tool in which a workpiece holder is arranged to be mounted on a machine tool, the workpiece holder having releasable gripping means associated therewith for retaining the workpiece. The gripping means is provided with a tapering surface arranged to provide, in conjunction with a cooperating tapering surface on the workpiece holder, a sticking-taper wedging action to grip the workpiece on axial movement of the workpiece into or over the gripping means. The gripping means is also arranged to permit the workpiece to be withdrawn therefrom solely by an axially directed extracting force applied to the workpiece, of which the following is a specification.

3,678,791
APPARATUS FOR CUTTING ANNULAR ELASTIC BANDS

Anders Karl Oskar Eriksson, Bromma, and Jan Folke Wallenius, Taby, both of Sweden, assignors to AB Svensk Industris Konstruktions-och berakningskontor Sikob, Solna, Sweden

Filed Aug. 31, 1970, Ser. No. 68,157
Claims priority, application Sweden, Aug. 29, 1969, 12035/69
Int. Cl. B26d 7/06
U.S. Cl. 83—95 **4 Claims**

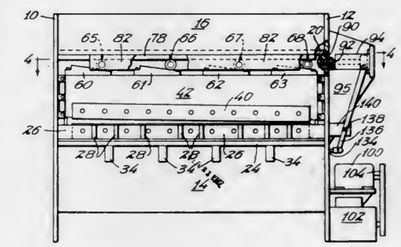


An apparatus for cutting annular elastic bands from a rubber tube and comprising a knife-blade, a counter-knife, a mechanism for moving said knife-blade, said knife-blade during the cutting operation forming an angle with the counter-knife, and a means for flattening an end portion of the rubber tube and indexing said end portion beyond the counter-knife. The mechanism for moving the knife-blade displaces the knife-blade in the longitudinal direction of the knife edge so that an elastic deformation of the tube in the longitudinal direction of the counter-knife is substantially eliminated. A loop is formed at the edge of the flattened tube initially cut through by the knife-blade which loop is placed around a finger during the finishing of the cutting operation.

3,678,792
METAL PLATE SHEARS

Frank Dvorak, Box 134, Cosmos, Minn.

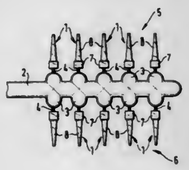
Filed Dec. 15, 1970, Ser. No. 98,414
Int. Cl. B26d 5/08, 7/02
U.S. Cl. 83—459 **10 Claims**



A metal plate shears for cutting large sheets of metal in which four rollers are hydraulically slid between a guide way

and four inclined ramps so as to force a cutting blade downward through a large metal plate. A high leverage hydraulic clamp serves to hold the plate in place during the shearing operation. The edge of the lightweight cutting blade is kept straight by a unique truss arrangement mounted on the side of the blade.

3,678,793
MOUNTING FOR A PLURALITY OF PLECTRUMS
Rainer Schutze, Muhltalstrasse 128, Heidelberg, Germany
Filed Oct. 26, 1970, Ser. No. 83,852
Claims priority, application Germany, Aug. 27, 1970, G 70 32 033.1
Int. Cl. G10c *1/06*; G10d *3/16*
U.S. Cl. 84—258 **4 Claims**



A mounting for a plurality of plectrums comprises an elongated support body and integrally connected therewith by means of tearable webs at least one row of plectrums forming a unitary structure with the body.

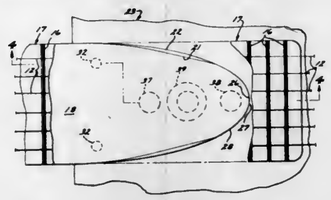
3,678,794
RESONATOR FOR STRINGED INSTRUMENT
Michael Tansky, 541 Olive Ave., Long Beach, Calif.
Filed May 15, 1969, Ser. No. 825,019
Int. Cl. G10d *1/02*
U.S. Cl. 84—275 **10 Claims**



A resonator panel is supported in the sound box of a violin, and has a pair of discs on opposite sides of the sound post which resonate in response to resonance of the belly and the back of the sound box.

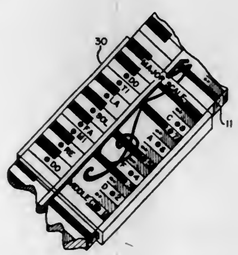
3,678,795
NECK MOUNTING FOR A STRING INSTRUMENT
George W. Fullerton, Fullerton, Calif., assignor to Earthwood, Incorporated, Costa Mesa, Calif.
Filed Nov. 15, 1971, Ser. No. 198,536
Int. Cl. G10d *3/00*
U.S. Cl. 84—293 **10 Claims**

The present invention relates to a string type musical instrument; and more particularly relates to a neck mounting for attaching the instrument neck to the instrument body. The various problems associated with this mounting are discussed and



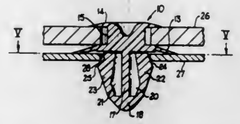
the disclosure teaches how an improved neck mounting may be achieved to overcome these problems.

3,678,796
MUSIC SLIDE RULE
Vito Puopolo, 23 West Street, Norwood, Mass.
Filed Oct. 12, 1970, Ser. No. 79,897
Int. Cl. G09b *15/02*
U.S. Cl. 84—471 **1 Claim**



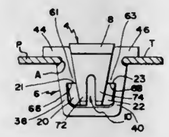
A device consisting of a rule and transparent slides with the rule inscribed with the great staff and keys of a piano, while the slides may have the various notes of a major scale, triad, etc., inscribed thereon such that the notes simultaneously appear on the great staff and keyboard.

3,678,797
FASTENER
Clifford A. Seckerson, Iver Heath, England, assignor to TRW Inc., Cleveland, Ohio
Filed July 2, 1970, Ser. No. 51,878
Claims priority, application Great Britain, July 3, 1969, 33,692/69
Int. Cl. F16b *13/04*, *19/00*
U.S. Cl. 85—5 R **8 Claims**



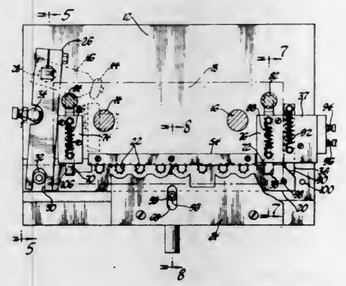
A resilient fastener comprising a head and a shank which is mountable in a workpiece formed with a circular aperture. The shank comprises a substantially flat and rigid stem, which is integral with the head and which extends lengthwise of the shank in a plane containing the longitudinal axis of the shank. Extending lengthwise of the shank on opposite sides of the stem are two resilient tongues each of which is joined to the stem along one longitudinal edge and each of which has a free longitudinal edge which is flexible towards the stem in a plane perpendicular to the plane of the stem. Preferably, an outwardly projecting rib is provided extending lengthwise along the free longitudinal edge of each tongue and each rib is shouldered adjacent the head.

3,678,798
FASTENING DEVICE
Clarence R. Van Niel, North Olmsted, Ohio, assignor to Eaton Corporation, Cleveland, Ohio
Filed Dec. 29, 1969, Ser. No. 888,232
Int. Cl. F16b *13/04*
U.S. Cl. 85—81 **5 Claims**



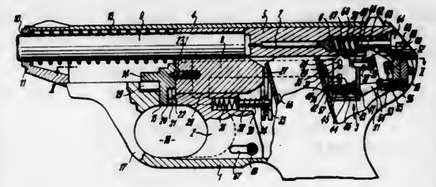
A fastening device for insertion through an aperture in a support member including a deformable body adapted for mounting with the support member. A plunger member is initially integrally mounted on the body member. The body member includes an opening therein and the plunger member is mounted in superposed relation on the body member adapted for insertion into the opening. The plunger member includes cam-like locking members disposed adjacent the integral connection between the body member and plunger member. Cam-like projections are disposed within the opening in the body member for snap-action interlocking engagement with the locking members. The plunger member has a configuration generally complementary to a portion of the opening to effectuate a tight seating engagement of the plunger member within the body member in the installed position of the device.

3,678,799
AMMUNITION RELOADER
Robert A. Leich, Southfield, Mich., assignor to Camdex, Inc., Detroit, Mich.
Filed June 29, 1970, Ser. No. 50,548
Int. Cl. F41f *11/02*, *11/04*
U.S. Cl. 86—26 **19 Claims**



Cartridge reloading apparatus of the type having a plurality of spaced stations where operations are performed on cartridges which move linearly and intermittently between stations under control of a shuttle bar. The shuttle bar is caused to move in a generally rectangular path to intermittently advance the cartridges. A cam pivots a crank arm connected to the shuttle bar to move the shuttle bar against the bias force of a spring to the advanced position. A second lobe on the cam restrains the return of the shuttle bar to the initial position to eliminate excessive noise and vibration. Locater holes are disposed in the shuttle bar and the base of the apparatus to periodically check the position of the shuttle bar relative to the work stations. A threaded shank carrying a roller bearing is provided to urge the shuttle bar into engagement with the cartridges but is easily removed to permit manual withdrawal of cartridges from the shuttle bar.

3,678,800
SELF-LOADING PISTOL WITH COCKING TRIGGER
Alex Seidel; Tilo Moller, both of Oberndorf/Neckar, and Helmut Weidle, Beffendorf, all of Germany, assignors to Firma Heckler & Koch GmbH, Oberndorf, Germany
Filed Sept. 17, 1969, Ser. No. 858,641
Claims priority, application Germany, Sept. 18, 1969, P 17 28 248.3
Int. Cl. F41c *19/14*
U.S. Cl. 89—147 **14 Claims**

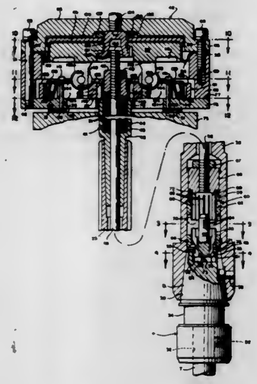


A self-loading pistol includes a spring-loaded firing pin located within a breech assembly and having a downwardly projecting nose engageable with a sear coupled to a trigger and movable generally parallel to the breech for at least part of its movement to displace the firing pin within the breech and thereafter to release the striker pin on continuing movement of the trigger thereby firing the shot. The pistol may also be provided with a catch pawl having a stop face which catches and releases the nose part when the pistol is arranged for continuous firing. In this case however the pistol must be fitted to a shoulder support which embodies means co-acting with the catch pawl to allow it to come into the operative position so that continuous firing is only possible when the shoulder support is in position.

3,678,801
QUICK TOOL CHANGE MECHANISM FOR MACHINE TOOLS
Robert Z. Hague, Oradell; Howard H. Loucks, S. Hackensack, and Alfred J. Mastropole, Saddle River, all of N.J., assignors to Moog, Inc., East Aurora, N.Y.
Filed March 16, 1970, Ser. No. 19,703
Int. Cl. B23c *5/26*
U.S. Cl. 90—11 D **17 Claims**

A selectively operable mechanism is provided for manually changing quickly tool holders on the spindle of a machine

tool. The operator uses one hand to grasp the tool holder at the spindle, either the one being removed or a replacement,

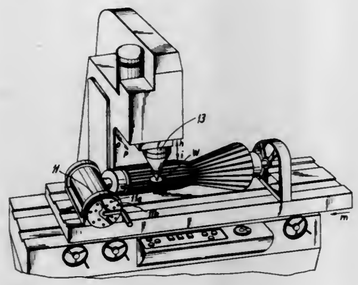


and with his other hand operates a control to effect either a release from or securement to the spindle of the tool holder.

3,678,802
ARRANGEMENT OF COOLING CHAMBERS FOR ROCKET ENGINE COMBUSTION CHAMBERS

Karl Butter, Munich, Germany, assignor to Messerschmitt-Bolkow-Blohm Gesellschaft mit beschrankter Haftung, Ottobrunn near Munich, Germany

Filed Aug. 21, 1969, Ser. No. 852,121
Claims priority, application Germany, Aug. 21, 1968, P 17 51 938.9
Int. Cl. B23c 3/28; F02k 11/00
U.S. Cl. 90—11 C **1 Claim**

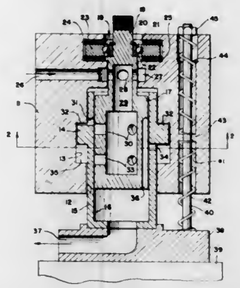


Longitudinally extending coolant channels are formed by means of a cutting tool in a monolithic tubular wall section used as the convergent-divergent thrust nozzle for a rocket engine combustion chamber. The width of the channels at particular locations along their length is established in inverse relationship to the amount of heat to be removed from the combustion chamber at that location. In forming the coolant channels their side wall planes are established and radial planes of the tubular wall section are formed in parallel relationship with the side wall planes. The cutting tool is aligned in the radial planes and then is displaced laterally into the side wall planes for cutting the channels. The number of passes required for the cutting operation depends on the width of the tool and the width of the channel which varies over the length of the combustion chamber.

3,678,803
HYDRAULIC SONIC OSCILLATOR

Otto K. Schwenzfeier, Chula Vista, Calif., assignor to Shell Oil Company, New York, N.Y.

Filed Aug. 25, 1969, Ser. No. 852,839
Int. Cl. F15b 2/02, 11/08
U.S. Cl. 91—39 **6 Claims**

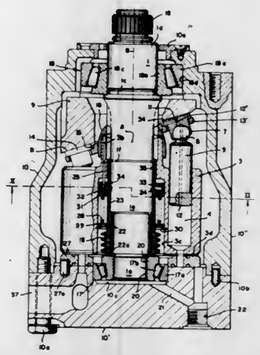


There is disclosed a linear hydraulic oscillator in which the control valve is positioned in the center of a double-acting piston directly adjacent the pressure chambers to provide a short circuit flow of pressurized fluid directly to and from the pressure chambers.

3,678,804
AXIAL-PISTON MACHINE

Walter Heyl, Klein-Umstadt, Germany, assignor to Linde Aktiengesellschaft, Wiesbaden, Germany

Filed Aug. 31, 1970, Ser. No. 68,254
Claims priority, application Germany, Sept. 8, 1969, P 19 45 434.3
Int. Cl. F01b 13/04
U.S. Cl. 91—507 **9 Claims**

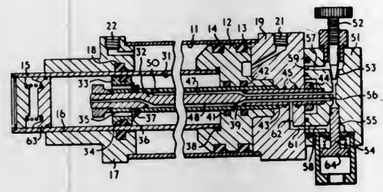


An axial-piston machine in which the cylinder drum is rotatably entrained with a shaft extending through this drum while means enables relative axial displacement of shaft and drum. A stack of BELLEVILLE washers is seated against the lower shaft bearing and acts via a plurality of angularly spaced pins on a swivel cap which, in turn, engages a disk holding the piston shoes against an inclined control surface surrounding the axis of the shaft. The cylinder drum is applied by a further spring against a fluid-distribution surface, this spring being seated at least in part against a perforated disk through which the force-transmitting pins or rods extend.

3,678,805
PNEUMATIC CYLINDER ASSEMBLIES

Henry Walter Weyman, Waterworks Road, Worcestershire, England

Filed Oct. 22, 1970, Ser. No. 83,098
Claims priority, application Great Britain, Nov. 25, 1969, 57492
Int. Cl. F15b 15/22
U.S. Cl. 92—11 **3 Claims**

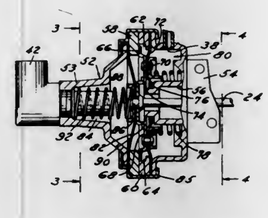


A pneumatic cylinder assembly incorporating hydraulic damping, said assembly comprising a pneumatic cylinder, a pneumatic piston slidable within said cylinder and a pneumatic piston rod operatively connected to said pneumatic piston, and a hydraulic damping cylinder assembly incorporating a hydraulic cylinder arranged within the pneumatic piston rod, a hydraulic piston within said hydraulic cylinder and a hydraulic piston rod operatively connected to said hydraulic piston and secured to an end wall of said pneumatic cylinder remote from said pneumatic piston rod.

3,678,806
DUAL DIAPHRAGM DISTRIBUTOR

Frank M. Kittredge, Temperance, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Division of Ser. No. 858,567, Sept. 11, 1969, Pat. No. 3,599,614. This application Sept. 18, 1970, Ser. No. 29,360
Int. Cl. F01b 19/00
U.S. Cl. 92—48 **8 Claims**



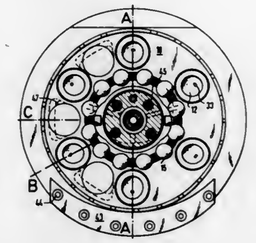
A vacuum motor having two independently mounted and movable flexible diaphragms mounted in a common housing and partitioning the housing into fluid chambers, one of the diaphragms having a limited movement and at times limiting the movement of the other diaphragm, the other being connected to a means to be actuated.

3,678,807
PISTON MOTOR WITH SWASH-PLATE ENGINE ASSEMBLY

Hermann Ernst Robert Papst, Karl-Maier Strasse 1, St. Georgen, Black Forest, Germany

Filed Dec. 29, 1969, Ser. No. 888,382
Int. Cl. F01b 3/00
U.S. Cl. 92—70 **20 Claims**

The invention deals with a basic improvement of piston motors with swash-plate engine assembly by achieving through a novel construction of the swash-plate engine assembly both an even distribution of the piston forces (combustion pressure peaks) on the hitherto very variably stained bearing elements between the wobble ring and swash plate as well as a considerable reduction of the mass.forces, which, if followed by an increased useful life, makes possible considerably higher operational r.p.m.'s, therefore also a higher specific weight (unit power) than in the case of the arrangements known



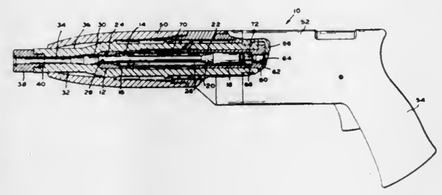
hitherto. The advantageous shaping of the bearing elements likewise contributes to this.

The arrangement according to the invention of the shaft with the swash plates, inclusive of the most simple and spatially compact conditions, will not permit the combustion forces to act either on the housing walls for the purpose of sound radiation nor on the shaft bearing, not will it permit them to reach the outside via the connecting shaft.

3,678,808
ENERGY DISSIPATING MECHANISMS

Yung Shing Hsu, Lewiston, Idaho, and Raymond V. Pomeroy, Portland, Oreg., assignors to Omark Industries, Inc., Portland, Oreg.

Continuation of Ser. No. 796,980, Feb. 6, 1969, abandoned. This application Dec. 9, 1970, Ser. No. 96,633
Int. Cl. F01b 11/02
U.S. Cl. 92—85 **5 Claims**

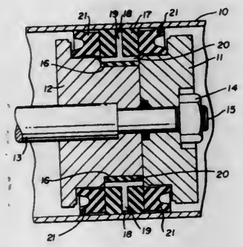


Energy dissipating mechanisms 10 (FIGS. 1 and 2) and 110 (FIG. 3) include stops 12 and 112 of hard metal having long, cylindrical bores 14 and 114 at the entrance ends of frustoconical die portions 16 and 116 and serving to receive and guide enlarged heads 18 and 118 of plungerlike members 20 and 120 having softer, extrudable, frustoconical portions 22 and 122. The stop 112 is free to float laterally in a counterbore 142 in a separable muzzle 127 attached to a barrel 132.

3,678,809
VENTED PISTON BEARING FOR HYDRAULIC PISTON AND CYLINDER ASSEMBLIES

Kingsley A. Doutt, Alpena, Mich., assignor to Scovill Manufacturing Company, Waterbury, Conn.

Filed Feb. 16, 1970, Ser. No. 11,663
Int. Cl. F01b 31/00; F16j 9/00
U.S. Cl. 92—86 6 Claims

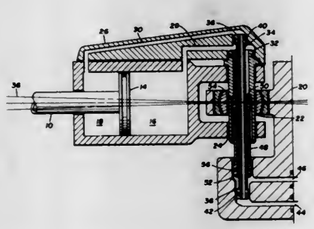


A vented piston bearing for hydraulic piston and cylinder assemblies wherein the piston bearings comprise annular members carried on the pistons and engageable with the cylinder wall. The piston bearing is provided with a plurality of transverse openings therein extending to the areas in which the piston seals are located and the piston bearing is provided with a plurality of radially positioned vent passageways communicating with the transverse openings. Hydraulic fluid passing the piston seals is thereby vented through the piston bearing rather than extruding the piston seals from their normal locations.

3,678,810
ROTATIONAL COUPLING

Lloyd H. Holmes, Arlington, and William D. Sundland, Dallas, both of Tex., assignors to LTV Electrosystems, Inc., Greenville, Tex.

Filed June 4, 1970, Ser. No. 43,433
Int. Cl. F01b 15/04; F16l 47/00, 39/00
U.S. Cl. 92—119 7 Claims

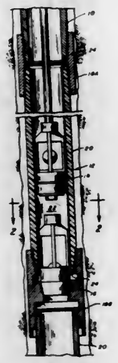


A concentric arrangement of two transfer tubes provides dual fluid flow channels between a supporting housing and a movable actuator. Each of the two transfer tubes is flexibly sealed both in the supporting housing and the movable actuator. The two concentric transfer tubes thus provide a rotational coupling between the fixed support and an actuator having rotational freedom about more than a single axis.

3,678,811
OIL WELL PUMP WORKING BARREL

James T. Penwell, Rte. 1, Box 45, Chelsa, Okla.

Filed May 28, 1970, Ser. No. 41,367
Int. Cl. F04b 39/12
U.S. Cl. 92—169 3 Claims

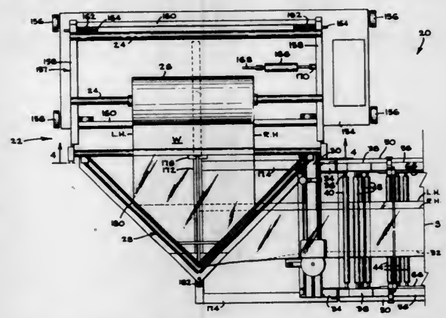


A pumping well working barrel includes an outer polyvinyl chloride sleeve and an inner liner of stainless steel.

3,678,812
BAG MACHINE

Robert J. Wech, Pinecrest Road R.R. 5, Green Bay, Wis.

Division of Ser. No. 760,048, Sept. 16, 1968. This application Sept. 1, 1971, Ser. No. 176,900
Int. Cl. B31b 37/26
U.S. Cl. 93—20 3 Claims



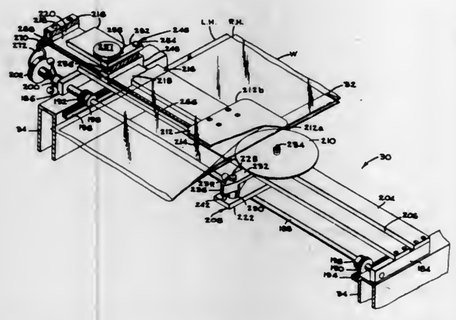
The bag machine of the present disclosure is of the type which can produce bags made of various thermoplastic sheet material and can be adapted to make side weld or bottom weld bags. The following description will, however, be confined to the production of side weld bags.

A roll of plastic web is mounted on an unwind stand and traverses a folding board constraining the web to fold along its longitudinal median or along a line spaced from and parallel to the longitudinal median in the event it is desired to produce wicketed bags having a lip with a pair of holes in which is inserted a U-shaped wire called a wicket. Downstream of the folding board a gusseter is provided to produce a fold which permits greater expansion at the bottom of the bag. The folded and gusseted web thence comes under the influence of a reciprocating transversely disposed seal and cutter bar which divides the web, at longitudinally spaced intervals, to produce individual bags. The bags are then transported to a table which is provided with devices for arranging the bags into a stack.

3,678,813
BAG MACHINE

Robert J. Wech, Pinecrest Road, R.R. 5, Green Bay, Wis.

Division of Ser. No. 760,048, Sept. 16, 1968. This application Sept. 1, 1971, Ser. No. 176,898
Int. Cl. B31b 37/26
U.S. Cl. 93—20 6 Claims



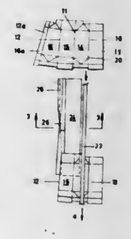
The bag machine of the present disclosure is of the type which can produce bags made of various thermoplastic sheet material and can be adapted to make side weld or bottom weld bags. The following description will, however, be confined to the production of side weld bags.

A roll of plastic web is mounted on an unwind stand and traverses a folding board constraining the web to fold along its longitudinal median or along a line spaced from and parallel to the longitudinal median in the event it is desired to produce wicketed bags having a lip with a pair of holes in which is inserted a U-shape wire called a wicket. Downstream of the folding board a gusseter is provided to produce a fold which permits greater expansion at the bottom of the bag. The folded and gusseted web thence comes under the influence of a reciprocating transversely disposed seal and cutter bar which divides the web, at longitudinally spaced intervals, to produce individual bags. The bags are then transported to a table which is provided with devices for arranging the bags into a stack.

3,678,814
METHODS AND APPARATUS FOR FOLDING SHEETS

Jacob Teunis Teunissen Van Manen, Johannesburg, South Africa, assignor to Conical Containers Company (Proprietary) Limited, Johannesburg, South Africa

Filed May 19, 1971, Ser. No. 144,783
Claims priority, application South Africa, May 19, 1970, 70/3381
Int. Cl. B31b 1/26
U.S. Cl. 93—49 M 8 Claims

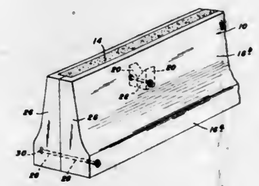


A method for folding a moving sheet along a fold line which is angled relatively to the direction of movement of the sheet is disclosed. The moving sheet is passed and folded over a round rod having its longitudinal axis parallel to the direction of movement of the sheet. An apparatus for carrying out this method is also disclosed.

3,678,815
CONCRETE STRUCTURAL MEMBER

George C. Younker, 301 Nittany Drive, Monroeville, Pa.

Filed Aug. 27, 1970, Ser. No. 67,396
Int. Cl. E01c 23/16
U.S. Cl. 94—1.5 16 Claims

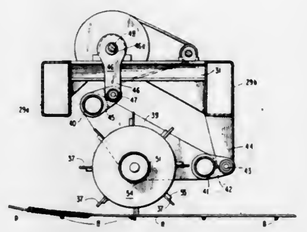


A concrete structural member and method of forming same is disclosed. The member, which may be used in forming roadway and bridge guard rails, median barriers and the like, includes a pair of identically shaped, pre-cast, outer face members or shells spaced from each other with their inner faces confronting each other. The outer surface of each shell has a contour which, when the members are together, defines the desired structural shape. A core of solid material, such as concrete, is bast between the shells to thereby form a composite integral structure with the shells.

3,678,816
APPARATUS FOR INSTALLING REINFORCING IN PLASTIC CONCRETE

Michael I. Hudis, Brookfield, Wis., assignor to Rex Chainbelt Inc., Milwaukee, Wis.

Filed April 13, 1970, Ser. No. 27,702
Int. Cl. E01c 19/00
U.S. Cl. 94—39 10 Claims

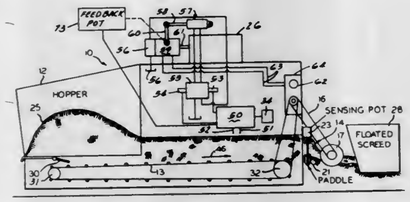


A concrete roadway paving machine is provided with several transversely arranged freely rotatable paddle wheels which oscillate vertically and ride over the mesh or rod reinforcing to depress the same into the plastic concrete to the desired depth. Where lateral positioning of longitudinal rods is required, the paddles or blades are provided with notches or teeth having related angular edges whereby the oscillation progressively shifts the rods to their correct positions.

3,678,817
MATERIAL CONTROL SYSTEM FOR A FINISHING MACHINE

Earl D. Martenson, North Aurora, and James J. Gebhardt, Jr., Lisle, both of Ill., assignors to Barber-Greene Company, Aurora, Ill.

Filed Jan. 27, 1969, Ser. No. 794,026
Int. Cl. E01c 19/48
U.S. Cl. 94—46 26 Claims

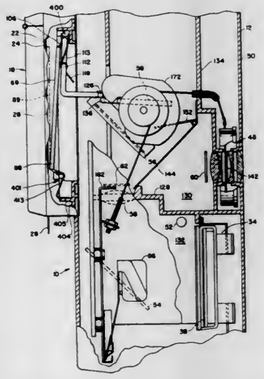


A machine including a hopper for receiving a quantity of material which is to be delivered to the road surface, a conveyor for moving the material from the hopper along the axis of the machine to a pre-work station, a flow control gate associated with the hopper to control the amount of material delivered to the conveyor, a sensor connected to the machine and positioned at the pre-work station for sensing the material demanded at the pre-work station in relation to the actual amount of material being delivered to the pre-work station, a circuit connected between the sensing means and the delivery means for controlling either the speed of the conveyor or the gate associated with the hopper for controlling the amount of material delivered to the pre-work station in accordance with the amount present.

3,678,818
PHOTOGRAPHIC APPARATUS INCLUDING REMOVABLE VALIDATION PLATE

Donald E. Moodie, Nashua, N.H., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Oct. 5, 1970, Ser. No. 78,033
Int. Cl. G03b 17/24
U.S. Cl. 95—1.1 26 Claims

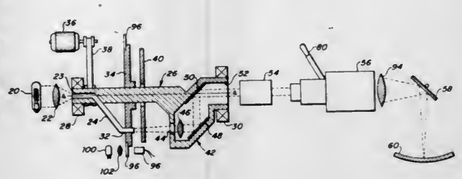


A removably mounted indicia unit in a camera system for making identification cards, adapted both to form an image of a subject on a sheet of photographic material and to reproduce indicia of the indicia unit, such as a validating signature, on the same sheet of photographic material. The indicia unit has a substantially light transparent plate carrying the indicia and is located at the rear of the camera. The indicia unit, in assembly in the camera system, uses a nesting assembly at one end of the unit and a resilient snap-in assembly at the other end of the unit. In illustrative embodiment, the indicia is in combination in a system for recording images of two scenes on mutually exclusive areas of a sheet of photographic material, in which system the indicia unit includes substantially light transparent polarizer filter elements as a part of the system for recording images of two scenes on mutually exclusive areas of a sheet of photographic material. In the illustrative combination, an actuating system is adapted to displace the indicia unit into and out of overlying contact with the photographic material.

3,678,819
PHOTOCOMPOSITION DEVICE

Frank R. Gruber, North Wilmington, Mass., assignor to The Imagex Corporation, Ft. Lauderdale, Fla.

Filed Sept. 2, 1970, Ser. No. 68,851
Claims priority, application Great Britain, Sept. 4, 1969, 43,938/69
Int. Cl. B41b 17/00
U.S. Cl. 95—4.5 R 8 Claims



The device is a photocomposition system in which a font of transparent characters is disposed along a circular path in a plane and a light pipe is mounted for rotation with one end of the pipe on the axis of rotation and the other end positioned to trace out a path parallel to the font of characters. A periscopic system is mounted for fixed rotation with the light pipe, one end of the periscope being positioned to the side of the font opposite the light pipe, the other end being on the axis of rotation. The optical system is provided for varying the magnification of images from the axial end of the periscope, while providing continuous base line adjustment for the magnified characters.

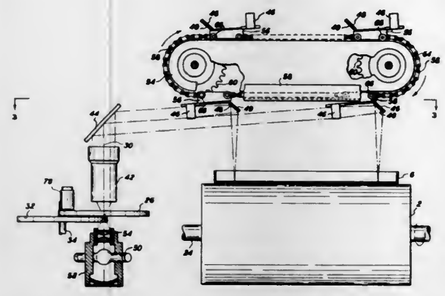
3,678,820
OPTICAL SYSTEM FOR PROJECTION RECORDING APPARATUS

Philip L. Chen, Penfield, N.Y., and Louis F. Paradysz, East Randolph, Vt., assignors to Xerox Corporation, Stamford, Conn.

Continuation-in-part of Ser. No. 791,044, Jan. 14, 1969, abandoned. This application Nov. 19, 1970, Ser. No. 91,156
Int. Cl. B41b 21/22
U.S. Cl. 95—4.5 3 Claims

An alphanumeric recording system wherein a character disc having transparent character images thereon is rotated through an exposure zone so that selected characters may be projected by the energization of a flash lamp. The projected image is collimated and directed to a recording zone through which move lens-mirror units at a constant speed to intercept the projected image and focus it onto a photoreceptive recording medium. The character disc rotates at a rate such

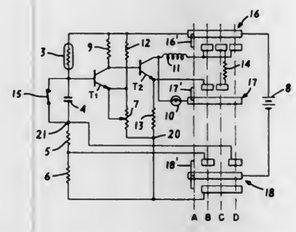
that with the slits therein associated with respective characters inter-character spacing is assured. Dead time in the recording process is eliminated by the use of the collimated projected character image and plural interception of that image.



3,678,821
WARNING DEVICE FOR AN ELECTRONICALLY CONTROLLED CAMERA SHUTTER

Kiyoshi Kitai, Tokyo, Japan, assignors to Kabushiki Kaisha Hattori Tokeiten, Tokyo, Japan

Filed April 13, 1970, Ser. No. 27,819
Int. Cl. G03n 17/20, 9/62
U.S. Cl. 95—10 CE 11 Claims

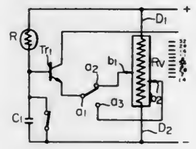


A warning device is provided for use with a camera having a variably settable iris aperture and an electronically controlled shutter mechanism. The warning device provides a warning signal indicative of either an overexposure or underexposure condition for each particular iris aperture setting. The warning device comprises a warning lamp which is sequentially placed in a plurality of different electric circuits in response to the movement of a sequential switching mechanism. The movement of the sequential switching mechanism is coordinated with the movement of the release lever of the camera shutter mechanism so that an indication of either an overexposure or underexposure condition is given prior to the actuation of the release lever.

3,678,822
SHUTTER MECHANISM CONTROL CIRCUITRY

Hiroshi Ueda, Nara; Kintaro Yata, Ikeda, and Motonobu Matsuda, Sakai, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed June 2, 1970, Ser. No. 42,726
Claims priority, application Japan, June 10, 1969, 44/45545; June 10, 1969, 44/45546
Int. Cl. G03b 7/08
U.S. Cl. 95—10 CT 9 Claims



At least two timing circuits, one of which is responsive to the light intensity of the object and another of which is set at a fixed delay, are actuated simultaneously to control the opening and closing of a shutter or curtain mechanism in a through-the-lens type measuring system. One of the timing circuits is used to open the shutter mechanism and another timing circuit controls the closing of the shutter mechanism. A third timing circuit may be added which has a constant delay equal to that of the another timing circuit and actuates the shutter opening mechanism after an elapsed time interval. The three timing circuits are connected in a series-parallel manner to effect the proper addition and subtraction of their respective time intervals.

3,678,823
ELECTRONIC SHUTTER FOR THROUGH-THE-LENS CAMERA HAVING INTERCHANGEABLE LENSES OF DIFFERING APERTURE

Takayoshi Sato, Tokyo, Japan, assignor to Kabushikikaisha Copal, Tokyo, Japan

Filed Nov. 5, 1970, Ser. No. 87,148
Claims priority, application Japan, Nov. 14, 1969, 44/91711
Int. Cl. G03b 7/08, 9/62
U.S. Cl. 95—10 CT 6 Claims

An electronically controlled shutter for a through-the-lens camera which is designed for use with interchangeable lenses of differing maximum aperture. The shutter includes an integrating circuit having a light sensitive device and a capacitor, connected to the base of a transistor, which is gated on for a reference time interval proportional to the intensity of received light. To compensate for lenses having a different maximum aperture, the circuit includes a resistor having a sliding tap, connected to the emitter of the transistor, and which is physically moved by a pin on the interchangeable lens. Thus, the bias on the transistor is altered to compensate for the different exposure calculation required by each lens.

3,678,824
PHOTOGRAPHIC APPARATUS WITH INDICATING MEANS FOR SELECTED EXPOSURE TIME AND APERTURE SIZE

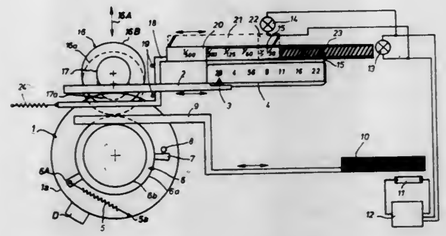
Helmut Durr, Karnickelplatz 12, Munich, Germany

Filed Dec. 22, 1970, Ser. No. 100,674

Claims priority, application Germany, Dec. 23, 1969, P 19 64 689.0

Int. Cl. G01j *1/44*

U.S. Cl. 95—10 CE **14 Claims**



A camera wherein a setting ring is rotatable by hand to select a desired aperture size and simultaneously moves a pointer with reference to an *f*-stop scale. An exposure time scale is movable along the *f*-stop scale together with a filter which influences the admission of light to a photoelectric receiver in an exposure time selecting circuit which causes a lamp to light up when the exposure time is too long for the making of exposures with the camera held by hand. The filter is also moved in response to rotation of the setting ring to thus influence the selection of exposure time as a function of the selected aperture size. If the user wishes to determine that exposure time which is automatically selected in response to selection of a particular aperture size, the exposure time scale is moved with the filter until the lamp lights up. The graduations of the exposure time scale then register with appropriate graduations of the *f*-stop scale and the user can look through the view-finder window to see that graduation of the exposure time scale which registers with the graduation representing the selected aperture size.

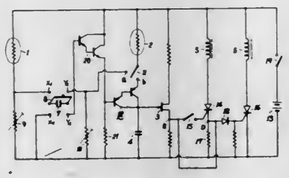
3,678,825
AUTOMATIC EXPOSURE CONTROLS FOR CAMERAS

Tsukumo Nobusawa, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo-to, Japan

Continuation-in-part of Ser. Nos. 11,405, Feb. 16, 1970, and Ser. No. 839,535, July 7, 1969. This application May 19, 1971, Ser. No. 144,869

Int. Cl. G03b *7/08, 9/62*

U.S. Cl. 95—10 CT **10 Claims**



A camera for determining automatically the exposure time during which a shutter of the camera remains open. The camera has external photosensitive units respectively receiving light which is external to the camera objective and which has passed through the camera objective into the interior of the camera. A differential circuit interconnects these photosensitive units for correcting the output of the external unit according to the light received by the internal unit. An oscillator circuit is connected to the external photosensitive unit to be operated thereby, and this oscillator circuit produces pulses with intervals therebetween. Each interval will be determined by the external photosensitive unit as corrected by the internal photosensitive unit and the differential circuit. A pair of electromagnets are provided for respectively opening and closing the camera shutter, and a control circuit is connected between the oscillator circuit and these electromagnets to bring about opening and closing of the shutter in response to one pulse and closing of the shutter in response to the next pulse of the oscillator circuit.

3,678,826
SYSTEM FOR CONTROLLING A CAMERA SHUTTER

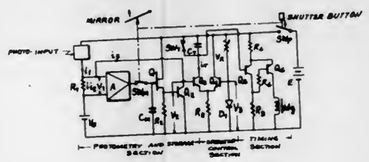
Chiharu Mori, Tokyo, and Katsumi Ota, Fukuoka, both of Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo-to, Japan

Filed June 10, 1971, Ser. No. 151,647

Claims priority, application Japan, June 16, 1970, 45/52140

Int. Cl. G03b *7/08*

U.S. Cl. 95—10 CT **8 Claims**



A system for controlling a shutter of a single lens reflex camera of the type which measures light which has first passed through the camera objective. A photosensitive unit which has a constant current characteristic is provided for measuring light from the object which has passed through the objective. The photoelectric current of this unit provides for a control transistor a collector current which is substantially equal to the photoelectric current, so that the control transistor will have a base-emitter voltage corresponding to the collector current and thus to the intensity of the light received by the photosensitive unit. This base-emitter voltage is then used in the subsequent determination of an exposure. A holding circuit is provided for maintaining the base-emitter voltage of the control transistor, and an amplifier is electrically connected with the holding circuit and forms with the latter and with the transistor and photosensitive unit a closed loop automatic control circuit.

3,678,827
MEANS FOR ADJUSTING CAMERA LOW-LIGHT SIGNAL IN ACCORDANCE WITH FILM EXPOSURE LATITUDE

John H. Eagle, deceased, late of Irondequoit, N.Y.; by Lee A. Eagle, executrix, Irondequoit, N.Y., and Lincoln Rochester Trust Company, executor, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

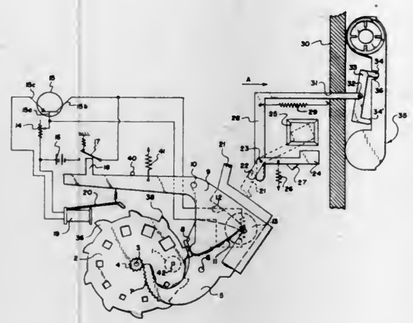
Filed June 20, 1969, Ser. No. 835,316

Int. Cl. G03b 7/*12*

U.S. Cl. 95—10 CD **2 Claims**

A device is provided for adjusting a camera low-light-signal mechanism in accordance with the exposure latitude of film

received in the camera. The device senses an exposure-latitude code on the film cartridge and adjusts the low-light-



signal mechanism to energize the low-light signal only when appropriate for film of the indicated exposure latitude.

3,678,828
EXPOSURE CONTROL DEVICE FOR A CAMERA

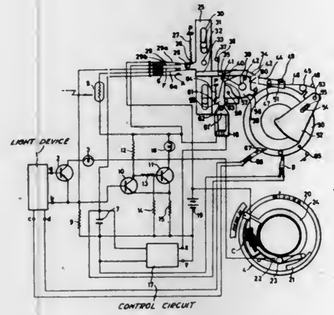
Yukio Mashimo, Tokyo, and Mitsuo Ishikawa, Kawasaki, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 22, 1970, Ser. No. 82,874

Claims priority, application Japan, Oct. 27, 1969, 44/85827

Int. Cl. G03b *17/18, 17/20*

U.S. Cl. 95—11 R **12 Claims**



An exposure control device for a camera comprising: an electronic shutter control device for shutter actuation, a brightness indicator circuit for indicating and warning insufficient brightness of an object being photographed, and exposure measuring circuit connectable to said brightness indicator circuit and flash ready indicator for a flash exposure, whereby an indicator in said brightness indicator circuit instructs a camera operator to use a flash device and said flash indicator assures camera operator to get a correct flash exposure.

3,678,829
AUTOMATIC FLASH SELECTION DEVICE FOR CAMERAS

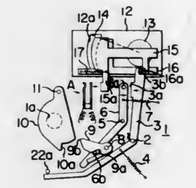
Hirokazu Kaneko, Tokyo, Japan, and Ricoh Co., Ltd., Tokyo, Japan

Filed Dec. 17, 1970, Ser. No. 98,991

Claims priority, application Japan, Dec. 18, 1969, 44/101259

Int. Cl. G03b *15/03, 7/08, 7/14*

U.S. Cl. 95—11 R **1 Claim**



An automatic flash selection device for use with fully automatic exposure setting cameras comprising an exposure meter pointer, stopper plate and a coacting detector plate which are displaced in response to the actuation of the shutter release, a distance proportional to the angle of rotation of the pointer in that the plates are blocked during their displacement by the pointer when its angle of rotation is less than a predetermined angle, but are displaced to the full length of their strokes when the angle is beyond a predetermined angle; a pivoted first lever coupling the detector plate and the shutter stop mechanism; a pivoted intermediate lever rotated by the first lever and coupled to the shutter speed selection lever; a focusing cam operated by the focusing mechanism and a pivoted third lever abutting the intermediate lever and the shutter stop mechanism. When there is adequate light on the subject, the first lever controls the shutter stop mechanism in response to the proportional displacement of the detector plate. However, when there is insufficient light, the detector and stopper plate will pass through their full displacement; rotating the first and intermediate levers through a greater range, such that the third lever is disconnected from engagement with the intermediate lever and switches control of the shutter stop mechanism from the first lever to the focusing cam, while the stopper plate actuates a warning light in the flash equipment and the shutter speed selection lever is moved to a position causing the shutter speed mechanism to be operated at a low shutter speed. Thus, when the flash is to be used, the shutter stop mechanism is under the control of the focusing mechanism and the shutter speed is appropriately lowered.

3,678,830
PHOTOGRAPHIC APPARATUS

Irving Erlichman, Wayland, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

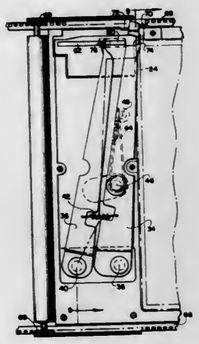
Filed Jan. 2, 1970, Ser. No. 318

Int. Cl. G03b *17/52*

U.S. Cl. 195—13 R **22 Claims**

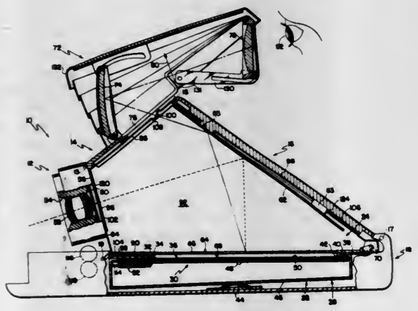
A processing chamber drives an element for engaging an exposed film unit to move the exposed film unit from an exposure position to an intermediate position. At least one relatively thin pivotable arm operates a slide carrying a pick element, the arm being actuated by a translationally reciprocable processing chamber during the initial portion of its travel. An

exposed film unit is thereby transported from an exposure position to a position where the exposed film unit engages



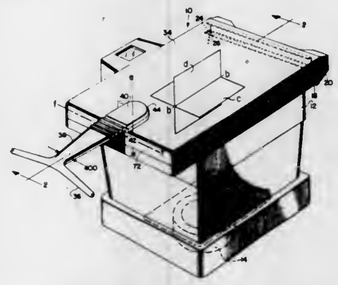
pressure-applying members that distribute a processing composition across the exposed photosensitive element.

3,678,831
COMPACT FOLDING REFLEX CAMERA
James G. Baker, Middlesex, Mass., assignor to Polaroid Corporation, Cambridge, Mass.
Filed May 10, 1971, Ser. No. 141,552
Int. Cl. G03b *17/50*
U.S. Cl. 95—13 **17 Claims**



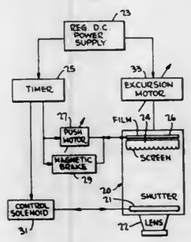
A compact, folding reflex camera formed by a plurality of housing sections and a thin walled, light opaque, flexible envelope, coupled together for relative movement between folded and extended positions. When the camera is extended, the envelope forms a chamber, within the extended housing sections, having openings therein through which light is selectively transmitted during viewing and exposure modes of operation. In the viewing mode of operation, one of the openings functions as part of the camera's optical system by forming an entrance pupil for a viewing device, mounted on one of the housing sections, which is adapted to permit viewing of an image formed within the chamber.

3,678,832
PHOTOGRAPHIC APPARATUS HAVING A HANDLE FOR EFFECTING FILM PROCESSING
Milton S. Dietz, Lexington, and Frederick M. Finnemore, North Reading, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.
Filed Sept. 25, 1970, Ser. No. 75,565
Int. Cl. G03b *17/50*
U.S. Cl. 95—13 **28 Claims**



Photographic apparatus effective for spreading a processing fluid across a sheet of photographic material as said sheet is manually withdrawn through an opening of the apparatus includes a handle which precludes relative motion of the apparatus housing with respect to the handle around an axis parallel to a preferred direction of film withdrawal so as to maintain a fixed orientation around this axis to facilitate grasping of film portions prior to withdrawal while providing other rotational degrees of freedom of the housing for self-alignment of it in the direction of withdrawal. The handle is a torsion-resistant member having a hand grip at one end and pivotally affixed at its other end to the housing by a pivot shaft located close to a longitudinal axis of the housing which extends through the opening, and the handle includes a hinge positioned intermediate the hand grip and the pivot shaft and disposed with its hinge axis perpendicular to the pivot shaft axis. Additionally, the pivotal motion of the handle is restrained so as to invitingly extend it from the housing, and the handle includes an integral self-locking arrangement for attachment to the housing.

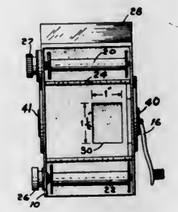
3,678,833
COMPRESSED PARALLAX PHOTOGRAPHY
Sam L. Leach, Palos Verdes Peninsula, Calif., assignor to Pid Corporation, Beverly Hills, Calif.
Filed April 17, 1968, Ser. No. 721,984
Int. Cl. G03b *35/10*
U.S. Cl. 95—18 **8 Claims**



A method and apparatus is disclosed which utilizes a novel compressed parallax photographic technique to create pictorial parallax panoramagrams having an illusion of depth. A

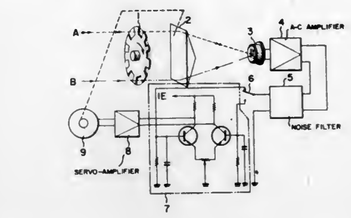
traversing camera having an objective lens means and an optically transparent lenticular screen disposed above the film is caused to traverse an arcuate path about the object to be photographed. The arcuate excursion distance is greatly enlarged over the distances utilized in prior art techniques and the camera, rather than continuously photographing the object throughout the arcuate excursion, photographs the object only at sampled locations along its arc of excursion. The film in the camera is advanced only when the camera is taking a photographic sample. The inventive technique is such that a much greater degree of parallax can be obtained without any loss of resolution and fidelity of the photographic image.

3,678,834
REVERSIBLE FILM CAMERA WITH SELECTABLE EXPOSURE SIZES
Dominic S. Melillo, 129 Marmora Road, Parsippany, N.J.
Filed June 4, 1971, Ser. No. 149,943
Int. Cl. G03b *17/14*
U.S. Cl. 95—36 **12 Claims**



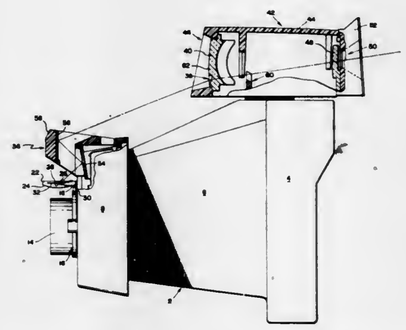
A camera and film are adapted to provide an increased number of exposures of selectable sizes. A plurality of fixed aperture internal masks provide selected image frame sizes and permit exposures along two separate rows across the width of the film. The paper film leader and spools are symmetrical to permit reversal of a roll of film after completing the first row of exposures. The roll is then reinserted for successive winding of the second row from the opposite end. External viewing masks of different sizes corresponding to the internal masks are provided. Two separate film advancing controls with automatic stop means may be mounted on opposite sides of the camera to accommodate selection of four different sizes and numbers of exposures. An interchangeable crank handle may be used to engage the winding mechanism from either side to advance the film, and exposure counters on both sides of the camera indicate the advance of each frame along each row of the film corresponding to the selected size.

3,678,835
AUTOMATIC FOCUSING DEVICE FOR CAMERAS AND THE LIKE
Yoshiyuki Takishima, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Aug. 12, 1970, Ser. No. 63,059
Claims priority, application Japan, Aug. 20, 1969, 44/65819
Int. Cl. E01c *19/12, 19/48, 23/06*
U.S. Cl. 95—44 R **11 Claims**



Automatic focusing device for a camera has a chopper and a separator. The chopper is located in front of a deflecting device for directing two different light beams on a common photoelectric effect element. The separator is to separate into two signals the output of the photoelectric effect element which are amplified by a single AC amplifier. The separator is synchronized with the chopper.

3,678,836
RANGING AND FOCUSING METHOD AND APPARATUS
Milton S. Dietz, Lexington, Mass., assignor to Polaroid Corporation, Cambridge, Mass.
Filed June 29, 1970, Ser. No. 50,635
Int. Cl. G03b *13/20*
U.S. Cl. 95—45 **46 Claims**

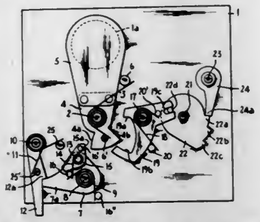


A fluid-filled chamber **24** connected to the housing of the camera and is provided with a bubble **28**, globule, or the like, moveably disposed therein. The viewfinder of the camera is provided with a fiducial mark which is brought into alignment with that portion of the subject intersecting the plane on which the photographer is standing. This action will cause a tilting of the camera from a horizontal position, effecting movement of the bubble, globule, or the like, with respect to a reference. The distance between the bubble, globule, or the like, and such reference is varied by adjusting the focus of the camera such that the camera will be properly focused when the reference and the bubble, globule, or the like, are coincident. In one embodiment, the reference line is mounted in the chamber and a cam **16**, mounted on the lens, pivots the chamber as the lens is focused. In another embodiment, the cam is replaced with a spiral reference mark so that the reference mark moves as the lens is focused. In another embodiment, for a reference point, plural contacts are positioned partially within the chamber and an electrically conductive globule is in the chamber. When the globule touches both contacts, a circuit is closed and a small light in the viewfinder is energized to indicate correct focus.

3,678,837
EXPOSURE TIME CONTROL DEVICE FOR A CAMERA SHUTTER MECHANISM

Kiyoshi Kitai, 54 Tomihisa-cho, Shinjuku-ku, Tokyo, Japan

Filed April 13, 1970, Ser. No. 27,679
Int. Cl. G03b 9/10
U.S. Cl. 95—59 11 Claims

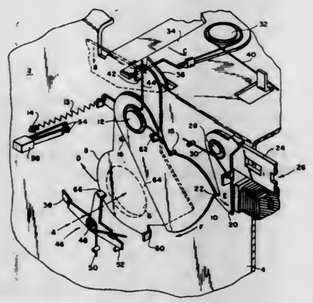


A camera having a shutter sector movable over and away from a shutter opening is provided with a variably settable holding means to releasably hold the opening is provided with a variably settable holding means to releasably hold the shutter sector in an open position away from the shutter opening for a preselected time duration. The shutter sector is always moved through nearly the same distance to effect an opening of the shutter opening regardless of the exposure time desired. The holding means comprises a lever which is moved into releasable engagement with the shutter sector by the shutter sector itself during its movement to the open position. The lever is moved out of engagement with the shutter sector after a predetermined time period by the action of a biasing spring afterwhich the shutter sector is rapidly moved over the shutter opening. The time duration in which the lever releasably holds the shutter sector in the open position is variable set in accordance with the desired exposure time.

3,678,838
RESILIENT STOP FOR A PHOTOGRAPHIC SHUTTER

Peter Huschle, Marktplatz, and Helmut Ettischer, Ruit/Wurtt, both of Germany, assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 19, 1970, Ser. No. 65,036
Int. Cl. G03b 9/10
U.S. Cl. 95—59 3 Claims

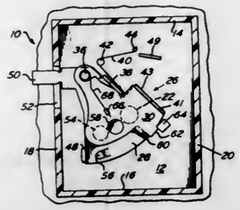


Shutter mechanism for a photographic camera in which a shutter blade is opened by a spring loaded impact driver controlled by a shutter release lever. When the blade is driven open it strikes a resilient stop which absorbs the impact energy of the shutter blade and returns the shutter blade softly for engagement by a latch device. The impact energy imparted by the blade to the resilient stop can be employed for various functions, such as the actuation of a switch in an electronic timing circuit that controls shutter speed.

3,678,839
INEXPENSIVE CAMERA

David E. Michaelis, Levittown, Pa., assignor to Plastics Development Corporation of America, Philadelphia, Pa.

Filed July 15, 1970, Ser. No. 55,128
Int. Cl. G03b 9/26
U.S. Cl. 95—60 8 Claims

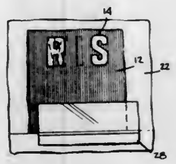


An inexpensive camera is disclosed utilizing a simple shutter on a housing made from a material such as injected molded plastic. The housing lacks a back wall so that the film cassette will temporarily provide a back wall for the housing. The shutter comprises a first member and a second member which rotate together from a rest position to a cocked position at which point the second member is released from the first member and returns to its rest position.

3,678,840
NON-OPAQUE, LIGHT-FILTERING PHOTOTYPOGRAPHIC FONT

Henry Goldman, 35 Cypress Lane, Orangeburg, N.Y.

Filed Feb. 9, 1971, Ser. No. 113,991
Int. Cl. G03b 9/06
U.S. Cl. 95—85 4 Claims



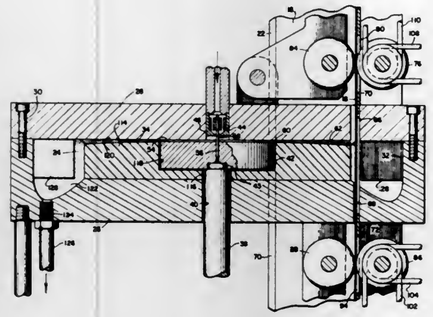
A phototypographic font of image characters comprising a non-opaque, light-filtering background area and a series of clear image characters formed in the non-opaque background area.

3,678,841
SYSTEM FOR PROCESSING PHOTOGRAPHIC MATERIAL

Edward F. Burke, Jr., Reading, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed April 24, 1970, Ser. No. 31,630
Int. Cl. G03d 5/04
U.S. Cl. 95—89 R 24 Claims

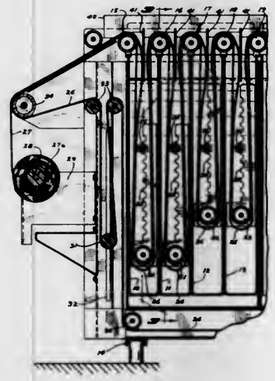
A disc is mounted for rotation within a processing chamber which terminates in a toroidal fluid collecting chamber. Processing fluid is fed onto the spinning disc from which it is discharged radially in an atomized spray. A sheet of exposed photographic material is advanced through the processing chamber and the fluid spray generated therein while being disposed concentrically of the rotating disc. Air movement within the processing chamber is suppressed by a pair of members extending radially from the disc in closely spaced relationship on respective sides of the fluid spray and by baffle plates positioned around the fluid collecting chamber. Two pairs of cooperating rollers positioned on each side of the processing chamber serve to advance the sheet of material through that chamber while maintaining its proper alignment.



3,678,842
METHOD AND APPARATUS FOR PROCESSING PHOTOGRAPHIC PRINTS

Norman C. Reid, Minneapolis, Minn., and Pako Corporation, Minneapolis, Minn.

Filed June 6, 1969, Ser. No. 831,022
Int. Cl. G03d 3/12
U.S. Cl. 95—94 R 2 Claims

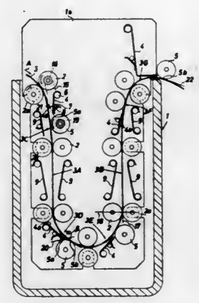


This disclosure relates to a method and apparatus for processing photographic prints which embodies a mechanism for quickly and easily varying the time of submersion of the paper in the individual developer solution tanks and which permits substantially uniform tensioning of the paper by providing means for automatically adjusting the drive friction between the paper and the driving rollers.

3,678,843
APPARATUS FOR DEVELOPING STRIPS OF PHOTOGRAPHIC FILM

Roland Kohler; Hans-Dieter Frick; Harald Fengler, and Erwin Geyken, all of Munich, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Nov. 21, 1969, Ser. No. 878,653
Claims priority, application Germany, Nov. 22, 1968, P 18 10 257.3
Int. Cl. G03d 3/12
U.S. Cl. 95—94 R 8 Claims

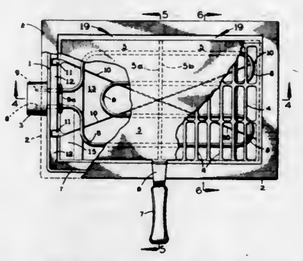


The leader of a strip of photographic film which is to advance along one or more arcuate sections of a path extending through the developing solution in a tank is first engaged by a stationary guide surface which is adjacent to the convex side of an arcuate path section and directs the front edge of the leader against the periphery of a driven guide roller which thereupon directs the leader into the nip between a pair of advancing rollers.

3,678,844
FOOD COOKING GRILL

Edward M. Marshall, 8107 S.W. 72 Ave. Apt. 102 E, Miami, Fla.

Filed July 8, 1971, Ser. No. 160,632
Int. Cl. A47j 37/06
U.S. Cl. 99—340 6 Claims

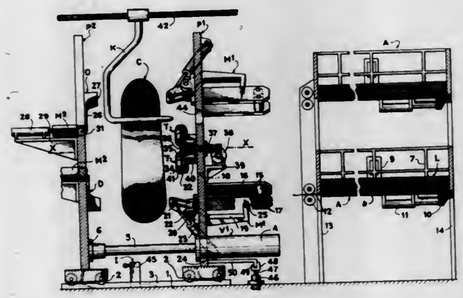


An electric grill having an enclosed casing with a foraminated grill plate in the upper end thereof with a detachable electric heating element thereunder including one or a pair of manually operable flat skillet plates for weighting food on the grill plate and cooking certain food on the top thereof. A slot at the rear of the grill plate for holding each skillet plate at two predetermined clearance angles and for holding the skillet plate in a substantially upright idle position, including a drip pan in the casing slidably positioned under the grill plate a predetermined distance from the heating element.

3,678,845
MACHINE FOR TYING UP COILS OF FILAMENT SUCH AS WIRE

Xavier Francois, Longwy-Bas; Roland Jean Venet, and Pierre Prioretti, both of Herserange, all of France, assignors to Union Siderurgique du Nord et de L'est DeLa France Par Abreviation Usinor, Paris, France

Continuation-in-part of Ser. No. 841,500, July 14, 1969, abandoned. This application May 17, 1971, Ser. No. 144,068
Claims priority, application France, July 17, 1968, 159474; July 17, 1968, 159475
Int. Cl. B65b 13/28
U.S. Cl. 100—4 8 Claims

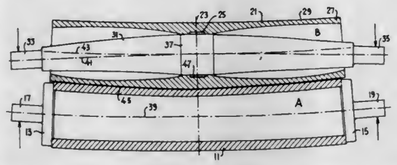


Machine for tying up a coil of metal wire and the like by means of a tie. The tie is folded about a cross-section of the coil and the end portions of the tie are bent into a hair-pin shape and the desired tension is imparted to the tie by acting on the hair-pin shaped portions. Thereafter, the hair-pin shaped portions are twisted by a twisting device, the twisting progressing in a direction from the coil cross-section to the free ends of the tie. A plurality of ties may be arranged around the coil, put under tension and twisted by a plurality of tying units. The twisted portions of the tie are disposed inside the coil.

3,678,846
ROLL PRESS COMPRISING TWO DISSIMILAR ROLLS WITH EQUAL DEFLECTION CHARACTERISTICS

Lars Gstaf Bjorkegren, Lambergagatan 27A, 652 21 Karlstad, Sweden

Filed March 5, 1970, Ser. No. 16,891
Claims priority, application Sweden, March 7, 1969, 3141/1969
Int. Cl. B30b 3/04
U.S. Cl. 100—155 R 4 Claims

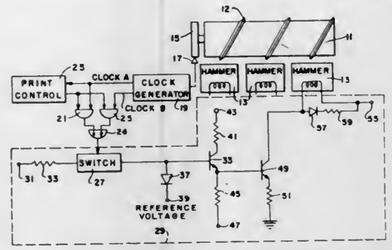


In a pair of rolls for pressing a running web, one roll has a shell supported at its ends and the other roll has a shell supported at the middle of its length by being connected to a through shaft, whereas its end portions are free of said shaft. The wall thicknesses of the shells vary along their lengths in a definite mutual relation in order to make the rolls equally flexible. Wen the first-mentioned roll has a shell of uniform thickness, the thickness of the shell of the other roll first decreases and then increases when following the shell from the middle towards the ends.

3,678,847
HAMMER FIRING SYSTEM FOR A HIGH SPEED PRINTER

Charles B. Pear, Jr., Greenlawn, and Joseph A. Ross, Fort Salonga, both of N.Y., assignors to Potter Instrument Company, Inc., Plainview, N.Y.

Filed June 25, 1970, Ser. No. 49,767
Int. Cl. H01f 7/12
U.S. Cl. 101—93 C 14 Claims

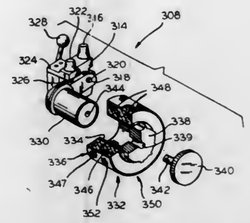


In a high speed printer the hammers are fired by first applying a firing pulse to the hammer and then applying a damping pulse to the hammer as the hammer is rebounding. The damping pulse cancels out the kinetic energy of the hammer and brings it more quickly to rest each time the hammer is fired. The firing circuit comprises a transistor having the hammer coil connected in the collector circuit thereof and a resistance in the emitter circuit thereof. When the hammer is fired the transistor is initially driven into saturation. When the transistor comes out of saturation, negative feedback provided by the resistance in the emitter circuit maintains the firing pulse current constant to the end of the firing pulse.

3,678,848
INKING PAD AND USE THEREOF

Gerhard K. Roser; Eugene J. Rebechini, both of Mount Prospect, and Guy M. Vosburg, Park Ridge, all of Ill., assignors to Weber Marking Systems, Inc., Arlington Heights, Ill.

Filed Aug. 25, 1969, Ser. No. 852,567
Int. Cl. B41l 27/26; B41f 31/24; B41k 1/42
U.S. Cl. 101—125 9 Claims

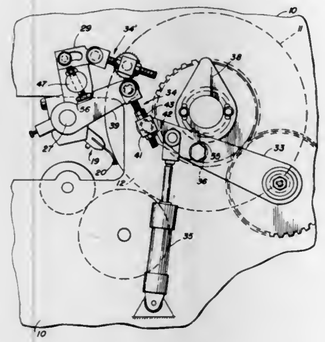


An inking pad is formed of a porous mat of glass fibers bonded with a thermosetting resin binder, the mat providing an ink reservoir which disperses ink contained therein to the surface thereof. The pad preferably also includes a cloth cover on the surface of the mat providing an inking surface on the pad. An ink applicator constitutes the inking pad and ink contained therein. An inking pad unit includes a holder for the inking pad, having structure for mounting in an inking device. An inking device includes the inking pad and means for mounting the inking pad for transmitting ink to a surface to be inked. A method of supplying ink to a surface evenly and with controlled flow of ink involves placing a surface to be inked in inking relation to the inking pad containing ink.

3,678,849
DOCTOR BLADE OSCILLATABLE BETWEEN PLATE CYLINDER AND INK TRANSFER ROLL

Ray D. Musgrave, Glenview, Ill., assignor to Western Printing Machinery Co., Schiller Park, Ill.

Filed Oct. 2, 1970, Ser. No. 77,441
Int. Cl. B41f 9/10, 9/16
U.S. Cl. 101—157 9 Claims

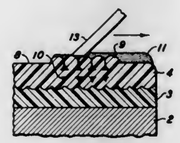


An oscillating doctor blade used in a rotary intaglio printing press having a transfer roller, a form roller and a printing plate cylinder adjacent the transfer roller, for conserving ink by scraping the excess ink off the etched or engraved surface of the printing plate and then swinging the ink-gathering face of the doctor blade so as to carry the excess ink into direct contact with the adjacent transfer roller for immediately feeding back the ink into the press inking train for use in the next inking and printing operation.

3,678,850
POROUS PRINTING PLATE PREPARED FROM PARTICULATE PHOTOSENSITIVE RESINOUS MATERIAL

Robert W. Gundlac, Victor, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Filed May 2, 1966, Ser. No. 546,823
Int. Cl. B41m 1/10; G03f 7/02
U.S. Cl. 101—170 20 Claims

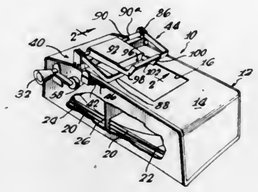


This application pertains to a porous printing plate prepared from particulate photosensitive resinuous material. Upon exposure to actinic radiation in an imagewise manner, the melting temperature of the exposed areas of the photosensitive resin is increased so that when the final plate is heat treated, the image areas maintain their porous properties. Ink is then applied and as a result of capillary action transferred upon contact from the image areas to a copy sheet.

3,678,851
IMPRINTING ATTACHMENT FOR AUTOGRAPHIC REGISTERS

Donald J. Steidinger, Barrington, and Donald H. Koepke, Elgin, both of Ill., assignors to Uarco Incorporated

Filed Jan. 12, 1970, Ser. No. 2,335
Int. Cl. B41f 3/46, 3/20
U.S. Cl. 101—260 13 Claims

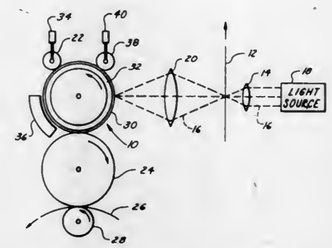


An improvement is autographic registers of the type having an open writing table area, a storage area for a supply of continuous stationery and means for advancing the continuous stationery over the writing table for writing multiple copies of a transaction and for further advancing the stationery beyond the writing table to permit separation of a written form from the remainder thereof, characterized by the provision of a card impression assembly including a card carrier slide mounted for insertion and retraction from one side of the register to place a card over the writing table and under the stationery near the forward end of the writing table, and an impression roller assembly pivotally mounted on the register over the writing table area for movement to a position in engagement with the stationery and away therefrom, the assembly including a laterally movable impression roller for transfer of the image of raised characters on a card-like element held in the slide to the several plies of stationery in the writing table area when the card carrier slide is inserted into the register.

3,678,852
PRINTING AND COPYING EMPLOYING MATERIALS WITH SURFACE VARIATIONS

Julius Feinleib, Birmingham; Peter H. Kloee, Troy, and Stanford R. Ovshinsky, Bloomfield Hills, all of Mich., assignors to Energy Conversion Devices, Inc., Troy, Mich.

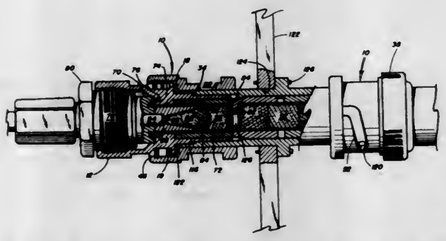
Filed April 10, 1970, Ser. No. 27,390
Int. Cl. B41n 1/14; B41m 5/02
U.S. Cl. 101—465 15 Claims



A printing plate is coated with an amorphous semiconductor material capable of being switched between a generally amorphous or disordered state and a crystalline or more ordered state in response to light. In the crystalline or more ordered state the surface of the material is rough or grainy, while in the generally amorphous or disordered state the surface of the material is smoother. Solutions adhere to the rough sur-

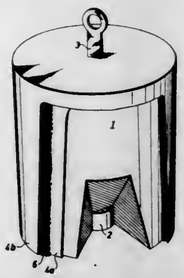
face of the material and do not adhere to the smooth surface. Ink may be fixed directly to the material or transferred to a document or offset roller. The material may be cleaned and reset into one of its states in preparation for recording another image.

3,678,853
QUICK DISCONNECT EXPLOSIVE CONNECTOR ASSEMBLY
Earl E. Kilmer, College Park, Md., assignor to The United States of America as represented by the Secretary of the Navy
Filed June 12, 1970, Ser. No. 57,848
Int. Cl. F42b 3/10
U.S. Cl. 102—27 R **4 Claims**



Apparatus for transferring a shock wave front from one detonating cord to another including quick-disconnect end connectors adapted to provide the respective ends of the cords with a quick-disconnect capability and a central interconnector having quick-disconnect mating end portions. Each detonating cord is attached to its respective end of the interconnector which itself might extend through an intervening obstruction. The central interconnector includes a cylindrical housing enclosing an explosive transfer lead composed of hexanitrostilbene explosive.

3,678,854
FLARE BODY
Ragnar Per-Olof Davidson, Karlskoga, Sweden, assignor to Aktiebolaget Bofors, Bofors, Sweden
Filed June 6, 1969, Ser. No. 831,167
Claims priority, application Sweden, June 10, 1968, 7796/68
Int. Cl. C06d 1/10
U.S. Cl. 102—37.8 **9 Claims**



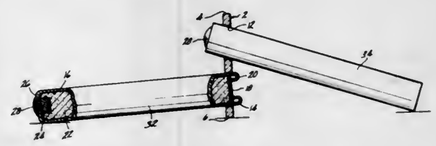
A flare has a cylindrical body composed of a solid combustible flare composition. One of the end walls of the body is covered with a non-combustible and heat-resistant covering and the side wall of the body is encompassed with a non-combustible and highly heat-resistant wire netting along its entire length. The netting ends substantially flush with the other end wall of the body. Ignition of the flare composition is started at this other end wall. The wire netting prevents direct access of combustion flames to the side wall of the body thereby impeding premature burning at localized areas of the side wall. It also provides a multitude of passages for the flow of fresh combustion air to the burning composition so that the same is gradually and uniformly consumed whereby the luminous efficiency of the flare is markedly increased.

3,678,855
PRACTICAL JOKE SMOKE BALLS OR LIKE DEVICES AND METHOD OF MAKING SAME
Bernard J. Semel, 1441 Okie St. N.E., Washington, D.C.
Continuation-in-part of Ser. No. 685,194, Nov. 22, 1967. This application July 17, 1969, Ser. No. 842,568
Int. Cl. C06d 1/10
U.S. Cl. 102—37.2 **1 Claim**



A practical joke smoke ball item of the pyrotechnic type having an impact and pressure-resistant casing containing a smoke-producing charge and open aperture means which initially accommodate at least one ignition fuse, said aperture means subsequently serving as a smoke emission port or chimney of the smoke ball during combustion of said charge.

3,678,856
SUPPORT MEANS FOR FUSEES
Aldo J. Barocca, and Ralph H. Benedict, both of Godfrey, Ill., assignors to Olin Mathieson Chemical Corporation
Filed June 30, 1969, Ser. No. 837,513
Int. Cl. C06d 1/04
U.S. Cl. 102—37.4 **1 Claim**

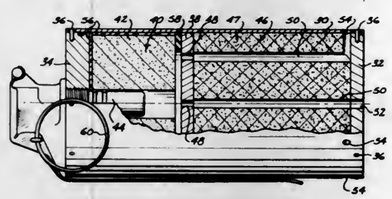


A support for a fusee comprising a rigid paperboard member having two apertures therein. The support will serve to hold the fusee in an upright position inclined with respect to an axis perpendicular to the supporting surface, in a position substantially horizontal with respect to the plane of the supporting surface, or can be used to interconnect a plurality of fusees to provide for sequential burning thereof.

3,678,857
AEROSOL DISSEMINATOR
Robert W. Evans, Herndon; Richard C. Grimm, Triangle, and Myron A. Olstein, Fairfax, both of Va., assignors to The Susquehanna Corporation, Fairfax, Va.
Filed Feb. 26, 1971, Ser. No. 119,281
Int. Cl. F42b 5/20
U.S. Cl. 102—39 **16 Claims**

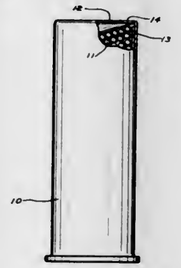
An embodiment of the invention disclosed herein shows a two-compartment disseminator for generating aerosols of smoke, poisons, gases, and other lethal and non-lethal agents. One disseminator compartment houses the propellant and the other compartment houses the agent. A bulkhead separates

the two compartments. Sonic nozzles are formed in this bulkhead. The gases generated by propellant combustion are vented through these nozzles at sonic velocity into passageways formed in the solid agent. The agent is eroded,



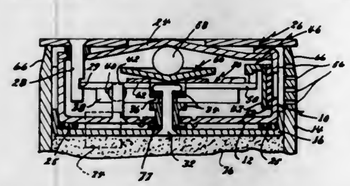
finely atomized and vaporized by the gases and expelled through exit orifices. The vaporized agent now condenses into minute particles to form with the gas an aerosol having long-term effectiveness. Close control of agent concentrations and dissemination time is also achieved.

3,678,858
ALL PLASTIC POLYCARBONATE SHOT SHELL WITH STAR CRIMP
George L. Herter, and Glen L. Mittelsteadt, both of Waseca, Minn., assignors to Herter's Inc., Waseca, Minn.
Filed July 31, 1969, Ser. No. 846,512
Int. Cl. F42b 5/30
U.S. Cl. 102—43 P **1 Claim**



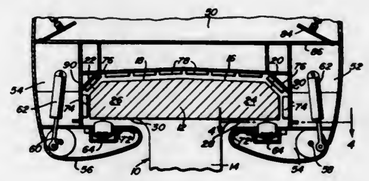
A plastic molded one piece shot shell case entirely of plastic and with the open mouth end reduced in thickness by molding and formed in a star crimp to close the case and confine the shot and powder.

3,678,859
TWO STAGE IMPACT FUZE
Jerry J. Wesson, Winter Park, and Thomas W. Boulter, Maitland, both of Fla., assignors to The United States of America as represented by the Secretary of the Air Force
Filed Oct. 6, 1970, Ser. No. 90,184
Int. Cl. F42c 5/00
U.S. Cl. 102—76 R **10 Claims**



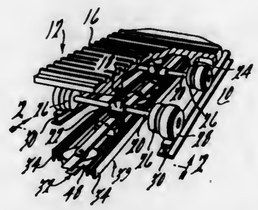
A two-stage omni-directional impact fuze having a firing pin assembly and a rotor containing a detonator. A pressure actuated locking arm assembly allows for the rotation of the rotor to the first stage arming position, while the removal of a wind tab allows for the rotation of the rotor to the second stage or fully armed position. In this position under impact in any direction a spherical weight located adjacent to the firing pin assembly causes movement thereof against the detonator and subsequent detonation of the fuze. It is this pressure actuation in conjunction with two-stage arming and omni-directional impact detonation which makes this fuze extremely safe and reliable in operation.

3,678,860
TRACK LOCKING DEVICE FOR AIR CUSHION VEHICLES
John Van Veldhuizen, Rte. 2 Box 54, Unionville, Tenn.
Filed July 6, 1970, Ser. No. 52,257
Int. Cl. B61b 13/08
U.S. Cl. 104—23 FS **4 Claims**



An air propelled vehicle including one or more lengthwise arranged and/or articulated cars each defining a longitudinally extending and downwardly opening channel for embracingly receiving a monorail therein of the type including a transversely enlarged upper horizontal portion including opposite side longitudinally extending undersurface portions. Each of the cars includes means for pumping air downwardly into the channel defined thereby in order to form a cushion of air between the upper surface of the monorail and the undersurface of the car. Also, each of the cars includes lower opposite side skirt portions defining the lower opposite side extremities of the corresponding channel and which are supported from the car for swinging movement inward beneath the opposite side longitudinally extending undersurface portions of the monorail, thereby locking each car against upward movement relative to the monorail. Finally, each of the inwardly swingable skirt portions includes roller means which project upwardly therefrom when the skirt portions are swung inwardly and are rollingly engageable with the opposite side longitudinally extending undersurface portions of the monorail.

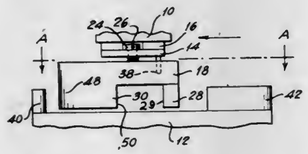
3,678,861
CONVEYOR
Dimitry Holbert, Oak Park, Mich., assignor to Standard Alliance Industries, Inc., Chicago, Ill.
Filed Aug. 13, 1970, Ser. No. 63,392
Int. Cl. B61b 13/00
U.S. Cl. 104—172 **5 Claims**



A conveyor chain for conveyor cars and the like having a plurality of rollers for engagement with guide rails for the

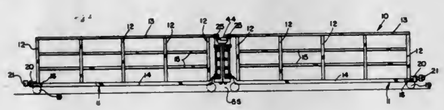
chain and a plurality of members carried by the chain having at least one substantially flat surface extending laterally of the chain adapted to be engaged by a chain driving member.

3,678,862
OVERHEAD ACCUMULATION CONVEYORS
John M. Leach, P.O. Box 341, Port Jefferson, N.Y.
Filed Jan. 27, 1971, Ser. No. 110,030
Int. Cl. B65g *17/42*
U.S. Cl. 104—172 S 4 Claims



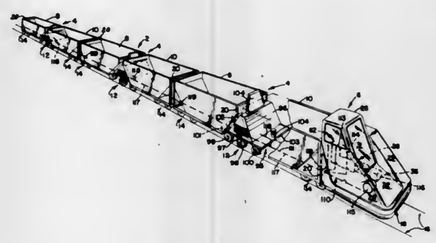
This invention relates to power and free accumulation conveyors in which an element of the power conveyor when it overtakes an unrestrained halted element of the free conveyor automatically connects for movement with said free element and also releases said free element when said free element contacts a stop placed in its path or another free element which has been stopped in its path, for example, in an accumulation area. The driving dog, which is mounted on the power element, is pivotable about a vertical axis to override selective dogs on the free element through a camming mechanism.

3,678,863
ARTICULATED RAILWAY CAR
William L. Pringle, Grosse Pointe Shores, Mich., assignor to Pullman Incorporated, Chicago, Ill.
Filed Aug. 21, 1970, Ser. No. 65,830
Int. Cl. B61d *3/10*; B61f *3/12*; B61g *5/02*
U.S. Cl. 105—4 R 12 Claims



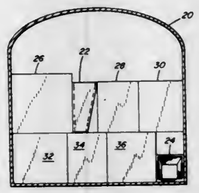
An articulated railway car comprises a pair of bodies connected to each other by means of an articulated structure. The bodies each include an upright truss-like frame of relatively high and narrow configuration. The frames are provided at their outermost ends with horizontal stabilizing members which support the truss on wheeled structures. The narrow truss is the primary supporting member of each body and provides the cargo support with cargo directly connected to and suspended from the truss frames. An articulating structure between adjacent ends of the bodies is provided for further stabilizing the truss frame and comprises a pair of back-to-back rocking members provided at their lower ends with segmental center plates for connection to the center plate of a 4-wheel truck. The rocking members extend vertically substantially the full height of the truss frames and are connected at their upper ends by a cushioning cylinder. Resilient devices bias the rocking members in a back-to-back contiguous relation during normal operation.

3,678,864
ARTICULATED MOTORIZED TRUCK TRAIN
Jack E. Gutridge, Dyer, Ind., assignor to Pullman Incorporated, Chicago, Ill.
Continuation-in-part of Ser. No. 712,167, March 11, 1968, abandoned. This application Dec. 16, 1970, Ser. No. 98,811
Int. Cl. B61c *3/00*; B61f *3/06*, *19/04*
U.S. Cl. 105—4 R 27 Claims



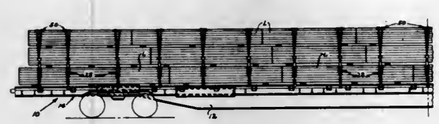
A dispersed power train arrangement comprising a series of interconnected pairs of railroad cars, each pair being articulatedly connected with another pair by a power unit mounted on trucks between each pair of cars to define a freight unit, the free end of one car removably receiving a control cab unit or pod which is cushion mounted on one end of the car to absorb vibrational shocks, the pod having its structural collision member resiliently or spring suspending a cab containing the operator controls and seat, the controls being couplable with each of the power units of each of a series of pairs of cars defining the power train whereby an operator located in the cab may operate each power unit to drive the cars or may brake the cars. Alternately the dispersed power train arrangement comprises a pair of flat deck railway cars articulatedly connected with one another through the power unit or module mounted on trucks, the front end of the front car having a control pod mounted thereon with successive containers mounted on the flat deck by the control pod or the control pod may be replaced by a container and actually be located on top of the power unit or module. In all of the dispersed power train arrangements, one end of a car is supported by its own trucks and the other end is supported by the trucks of the power unit or module trucks.

3,678,865
CARGO BOLSTER
Wallace D. Van Etten, Star Rte. Box 517, Eustis, Fla.
Filed March 16, 1970, Ser. No. 19,658
Int. Cl. B61d *45/00*; B60p *7/10*
U.S. Cl. 105—369 B 2 Claims



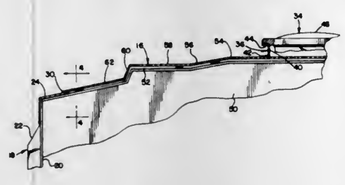
A hollow cargo bolster, preferably of a truncated pyramid-like shape, is provided for holding cargo in place within the confines of the cargo space. The bolster is constructed of a resilient material which is semi-compressible, has grip, and a low-weight per unit volume, such as expanded polyvinyl chloride. Stop means are provided on the inner surface of the hollow bolster near the top to accommodate stacking and storage.

3,678,866
METHOD AND MEANS FOR SECURING LADING ON RAILWAY FLAT CARS
Walter E. O'Leary, Creve Coeur; Duane V. Thornton, St. Charles; James C. Hammonds, St. Charles, and Roy R. Dare, St. Charles, all of Mo., assignors to ACF Industries, Incorporated, New York, N.Y.
Filed Oct. 13, 1970, Ser. No. 80,284
Int. Cl. B60p *7/10*; B61d *45/00*
U.S. Cl. 105—369 A 9 Claims



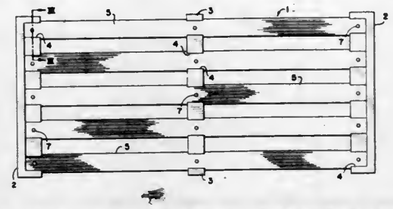
A railway flat car for carrying loads, such as lumber, on the deck of the car with resiliently anchored banding providing tie-downs to secure the loads onto the deck so that a minimum travel or shifting of the loads longitudinally along the deck is obtained when the loads settle and impact forces are exerted against the car. The banding is arranged in an endless double loop over the load with the free ends of the bands positioned over the upper surface of the load for tensioning and securement. The double loop permits the banding to slip longitudinally about its anchor points thereby to provide a mechanical advantage and permitting a relatively high initial tensioning to be obtained with conventional tensioning equipment without the use of power tools. Various means are employed to reduce any pretensioning in the banding upon removal of the banding and unloading the flat car.

3,678,867
ROOF STRUCTURE FOR RAILWAY CARS
Floyd J. Brinks, Hobart; Lucian P. Day, Jr., Highland, and Jerry L. Jones, Michigan City, all of Ind., assignors to Pullman Incorporated, Chicago, Ill.
Filed May 7, 1970, Ser. No. 35,368
Int. Cl. B60d *39/00*
U.S. Cl. 105—377 5 Claims



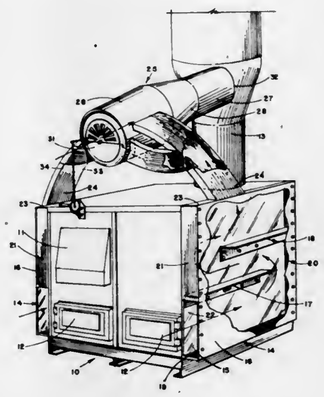
A rigid self supporting car roof structure including abutting full car width sheets having stiffening offset portions spaced transversely of the sheet and extending the entire length of the car. These substantially vertical stiffening portions are connected to substantially horizontal portions of the roof at their upper and lower ends thereby forming Z-shaped bending beams in such connection to give the roof internal strength both along its length to resist coupler forces, and in a transverse direction to prevent bulging of the side walls from cargo within the car.

3,678,868
PALLET
Kashichi Hirota, Tokyo, Japan, assignor to Kyowa Denki Kagaku Kaisha, Tokyo, Japan
Filed March 18, 1970, Ser. No. 20,497
Claims priority, application Japan, April 3, 1969, 44/30456
Int. Cl. B65d *19/18*
U.S. Cl. 108—51 4 Claims



A pallet composed of at least two parallel spaced transverse members and a plurality of longitudinal members extending across said transverse members on both the upper side and the lower side thereof. Each of the longitudinal members is connected to the transverse members, with each of trapezoidal cross-sectional portions thereof being fitted in each of complementary dovetail grooves formed in the upper and lower surfaces of each transverse member, and being secured therein by means of a fastener.

3,678,869
AIR HEATER AND EXHAUST GAS DILUTING APPARATUS FOR INCINERATOR
Vernon D. Bowman, Kettering, Ohio, assignor to Bowman Enterprises, Inc., Baltimore, Md.
Filed Sept. 25, 1970, Ser. No. 75,419
Int. Cl. F23g *5/00*
U.S. Cl. 110—8 R 3 Claims

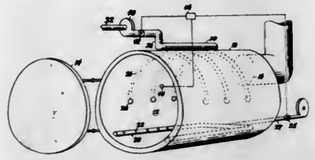


An air heater and exhaust gas diluting apparatus for incinerator in which one or more of the outer walls of the incinerator are formed with spaced wall plates with baffle plates positioned to form a tortuous air passage between the spaced wall plates, duct means connected between the tortuous air passage and the exhaust gas chamber of said incinerator and fan means associated with the duct to draw air through the tortuous passage to heat the same and discharge the same into the exhaust gas chamber to add heat thereto and dilute the exhaust gases therein.

3,678,870
SLUDGE BURNER

Lubertus Bakker, Wellsville, N.Y., assignor to The Air Preheater Company, Inc., Wellsville, N.Y.

Filed May 20, 1971, Ser. No. 145,144
Int. Cl. F23g 5/00
U.S. Cl. 110—8 R 8 Claims

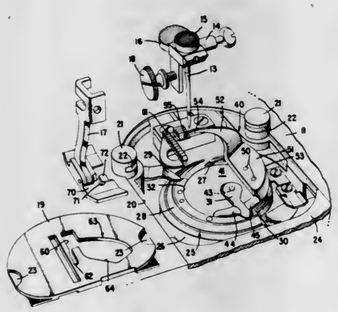


An incinerator that is particularly adapted to burn sludge type materials alone or in combination with the usual solid wastes.

3,678,871
OVEREDGING DEVICE FOR SEWING MACHINES

Karl H. Killinger, and Stanley J. Ketterer, both of Jamesburg, N.J., assignors to The Singer Company, New York, N.Y.

Filed April 23, 1971, Ser. No. 136,672
Int. Cl. D05b 1/20
U.S. Cl. 112—162 7 Claims



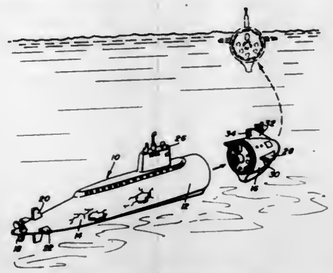
A lockstitch sewing machine is disclosed having a mechanism whereby overedge stitches may be formed in the work fabric being sewn. A thread guiding insert accommodated in the lockstitch loop taker bobbin case directs each needle thread loop through an apertured throat plate and about the edge of a fabric being stitched for penetration of the thread loop by the sewing machine needle on a subsequent needle reciprocation.

3,678,872
EMERGENCY UNDERWATER ESCAPE VEHICLE

Luigi Migliaccio, and Edward P. Migliaccio, both of 78 Wayne Ave., Paterson, N.J.

Filed Sept. 14, 1970, Ser. No. 71,652
Int. Cl. B63g 8/40
U.S. Cl. 114—16.7 14 Claims

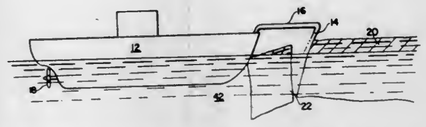
A submarine construction of generally conventional overall configuration but differing from the usual submarine construction in that it includes a forward end portion which is removably attached to the remainder of the submarine and includes its own propulsion motor, control station and torpedo tubes. The removable front or forward section is designed to be utilized as an escape vessel should the rear end portion of the submarine be severely damaged and the rear bulkhead of the forward end portion and the opposing bulkhead include registered, sealed and openable hatches whereby communication between the main submarine hull and the forward end portion of the submarine may be established.



3,678,873
METHOD AND APPARATUS FOR CUTTING ICE

John D. Bennett, Denton, Tex., assignor to Sun Oil Company, Dallas, Tex.

Filed Oct. 2, 1970, Ser. No. 77,483
Int. Cl. B63b 35/12
U.S. Cl. 114—42 10 Claims

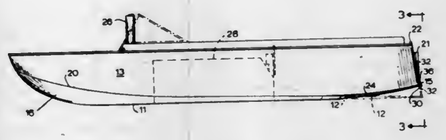


Removing ice encroaching an offshore platform from an ice floe or ice located in the path of a vessel, by making a pair of cuts in the ice parallel to the direction of travel of the vessel or ice floe, with each cut angled from vertical so that the cross-sectional area of the bottom surface of the ice being removed is larger or smaller than the cross-sectional area of the top surface of the ice being removed. The ice section being removed is then broken from the remaining ice mass by forward movement of the vessel or pressure of the ice floe against the offshore platform. An additional cut can be made between and parallel to the pair of parallel cuts, to make two ice sections in order to facilitate forcing of the severed ice aside to a point beneath or on top of the ice mass when the ice sections are broken from the remaining ice mass. These cuts can be made with mechanical saws or high pressure nozzles utilizing high pressure fluids.

3,678,874
CONVERTIBLE BOAT

John W. Flink, 1690 Mulberry Lane, San Jose, Calif.

Filed June 15, 1970, Ser. No. 46,231
Int. Cl. B63b 1/28
U.S. Cl. 114—66.5 P 7 Claims

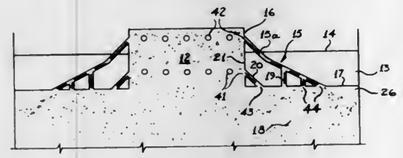


This invention relates to a boat hull provided with improved flap or vane means at the stern portion of the hull for use in converting the hull in an expeditious and simplified fashion from one type of boat hull to another type of boat hull, such as a sailboat hull to a hydroplane hull and vice versa.

3,678,875
TRIMMING PIPE SYSTEM FOR FREE-FLOWING CARGOES

George Thomas Richardson Campbell, and Kimio Ohta, both of Tokyo, Japan, assignors to Algoship International Limited, Nassau, Bahamas

Filed June 25, 1970, Ser. No. 49,734
Claims priority, application Canada, April 24, 1970, 19749/70
Int. Cl. B63b 25/08
U.S. Cl. 114—73 11 Claims

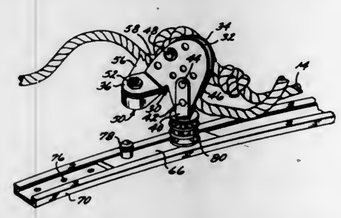


A cargo vessel adapted for the carriage of free-flowing cargo loaded through hatch opening and a series of open ended cargo trimming pipes extending from the walls of the hatches and into the holds of the vessel at points remote from the cargo hatches, the cargo trimming pipes form structural members for the support of the hatch coamings and upper wing tanks through which the trimming pipes pass.

3,678,876
JIB SHEET APPARATUS FOR SAILBOATS

Hobart L. Alter, Capistrano Beach, Calif., assignor to Coast Catamaran Corporation, San Juan Capistrano, Calif.

Filed Feb. 16, 1971, Ser. No. 115,530
Int. Cl. B63b 21/04; B63h 9/04
U.S. Cl. 114—102 10 Claims



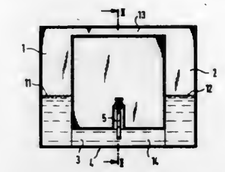
A jib sheet apparatus for a sailboat that includes a pair of cleat-block units mounted on opposite sides of the sailboat. Each cleat-block unit is tiltably resiliently supported above its mounting point on the boat. A jib sheet has its opposite ends dead-ended on the cleat-block units, with the bight portions of the jib sheet travelling through such units and being releasably secured to such units by the cleat member thereof.

3,678,877
PASSIVE STABILIZATION TANKS

Denis D. A. Cusper, Geneva, Switzerland, assignor to Maierform Holding S.A., Geneva, Switzerland

Filed June 30, 1970, Ser. No. 51,316
Int. Cl. B63b 43/06
U.S. Cl. 114—125 11 Claims

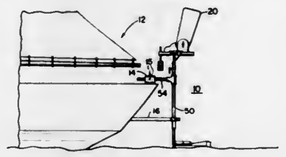
The present invention consists in a passive stabilizing tank installation for damping components in the movement of a floating body, comprising two partially filled tanks which are connected by ducts for the passage of liquid and of air above the liquid in the tanks, between the tanks, the ducts being provided with frequency regulating duct means with a regulating device in the form of a slide or rotary valve with a full plate and bypass duct means, a second regulating valve in the form of a plate or slide with an opening being provided for adjusting the natural tank damping, both in the regulating duct means and also in the bypass duct means or in at least one duct serving for air movement between the tanks.



3,678,878
SELF-STEERING ARRANGEMENT

Robert Alan Ross-Clunis, 1410 W. 4th St., Los Angeles, Calif.

Filed Feb. 24, 1970, Ser. No. 13,477
Int. Cl. B63h 25/08
U.S. Cl. 114—144 R 19 Claims



A self-steering arrangement for sailboats comprising a counterbalanced vane pivoted on a horizontal axis and coupled by cables to the trim tab of an auxiliary rudder. The vane is pivotable about a second horizontal axis orthogonal to the first to accommodate variations in wind force. The vane is also pivotable about a vertical axis relative to its mounting to permit it to be aligned with the apparent wind direction relative to the course desired for the boat. The entire arrangement is so mounted that the rudder portion may be withdrawn out of the water to permit conventional maneuvering, and is readily mountable and demountable on a boat without disturbing the normal operation thereof.

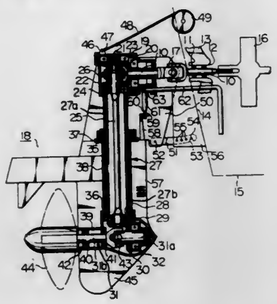
3,678,879
INBOARD-OUTBOARD DRIVE FOR WATERCRAFT

Yoshiro Morimoto, Fujisawa, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Feb. 19, 1971, Ser. No. 116,963
Claims priority, application Japan, Feb. 24, 1970, 45/15756
Int. Cl. B63h 1/04, 25/42
U.S. Cl. 115—35 4 Claims

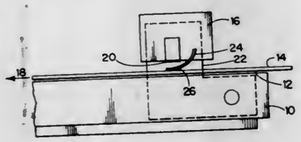
A propulsion unit for an inboard-outboard drive of a watercraft having a power source mounted therein which propulsion unit includes a horizontal drive shaft operatively connected to the power source, a vertical drive shaft, a first gear means connecting the vertical drive shaft to the horizontal drive shaft, a horizontal propeller shaft provided with a propeller, a second gear means connecting the propeller shaft to the vertical drive shaft and a universal joint carried by one of the two horizontal shafts and having a center lying on the

axis of the vertical drive shaft. The propulsion unit further includes housing means which is disposed outboard of the watercraft and enclosing movable parts, the housing means including a first housing member and a second housing member one of which is associated with the universal joint to be freely



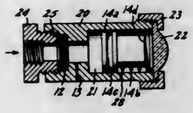
rotatable about the axis of the vertical drive shaft for thereby steering the watercraft, and the first housing member supporting at one end said first gear means and at the other end said second gear means whereby a reaction torque produced by the gear means is absorbed by said first casing member.

3,678,880
COMBINATION CARD HOLD DOWN AND AUDIBLE INDICATOR-KEYTAPE
Stephen M. Richardson, 36 Birch St., Needham, Mass., and Edward P. Grenda, 36 Austin St., Boston, Mass.
Filed June 16, 1970, Ser. No. 46,678
Int. Cl. G08b 3/00
U.S. Cl. 116—67 **4 Claims**



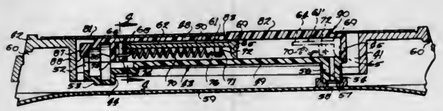
In a mark sense card reader having a read head with light sensitive elements therein, a card hold down device for maintaining a card passing under the read head in a flat position to prevent distortion, said hold down giving an audible indication when the card has passed the head by contacting the card supporting surface.

3,678,881
DEVICE FOR INDICATING CONTAMINATION OF A FLUID SUPPLY TO A FLUIDIC CIRCUIT
Jeffrey N. Shinn, Scotia, N.Y., assignor to General Electric Company
Filed March 27, 1970, Ser. No. 23,254
Int. Cl. G01l 19/12
U.S. Cl. 116—70 **16 Claims**



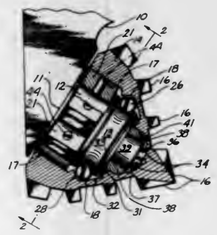
A fluid flow filter having filter hole openings of a selected size or of size smaller than the smallest fluid opening in a fluid circuit being monitored by the contamination-indicating device is serially connected with a fluid flow restrictor for bypassing a small portion of the supply fluid. A pressure-sensitive indicator is connected to the juncture of the filter output and restrictor for indicating the pressure state at the juncture. A high pressure state indicates negligible contamination of the fluid whereas a low pressure state indicates substantial contamination thereof.

3,678,882
COMBINATION ALARM AND FILTER BYPASS DEVICE FOR A SUCTION CLEANER
Daniel J. Kinsella, Bloomington, Ill., assignor to National Union Electric Corporation, Greenwich, Conn.
Filed May 28, 1971, Ser. No. 147,837
Int. Cl. G01d 21/00
U.S. Cl. 116—114 AD **14 Claims**



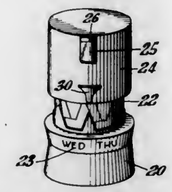
A combined alarm and filter bypass device for use with a suction cleaner wherein the device is compact in size and of a simplified construction. The housing of the device is of a shallow, generally box-like configuration which permits the device to be installed in various locations in or on the casing of an associated cleaner and which facilitates the visibility thereof from the exterior of the casing. The reduced size of the device also minimizes interference with other components of the cleaner.

3,678,883
WORN BEARING INDICATOR
John F. Fischer, Los Alamitos, Calif., assignor to Smith International Incorporated, Newport Beach, Calif.
Filed March 25, 1970, Ser. No. 22,609
Int. Cl. G01d 21/00
U.S. Cl. 116—114 Q **20 Claims**



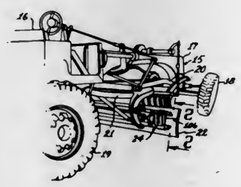
An earthboring drill or the like having cutters mounted on bearings including a plurality of bearing segments is described. An insert is provided within at least a portion of the segments with a clearance from the original bearing surface of an amount just equal to acceptable wear of the segment, so that when the segment wears down the insert has substantial contact with adjacent bearing surfaces to provide a remotely sensible signal indicative of bearing wear. In one embodiment, the insert is formed of tungsten carbide or other similar hard material that causes the bearing to jam or lock, thereby increasing torque on the drill bit, which is sensed by the driller. In another embodiment, a mobile marker, such as a liquid radioactive material or dye, enclosed in a frangible container employed as the insert, and the release of dye or radioactive material when the insert contacts a bearing wall provides an indication of bearing wear.

3,678,884
DISPENSING AND RECORDING CONTAINER
Carl L. Robbins, Evansville, Ind., assignor to Mead Johnson and Company, Evansville, Ind.
Filed Dec. 28, 1970, Ser. No. 101,761
Int. Cl. G09f 9/00
U.S. Cl. 116—121 **9 Claims**



A dispenser-container for use in dispensing oral contraceptive capsules or the like and for automatically recording each time a capsule is dispensed. The container consists of a cylindrical bottle and a cap. The bottle is provided with an inset track and markings showing the days of the week on its outer surface. The cap is provided with lugs which engage the tract, and with an indicator. The cap is twisted in the counterclockwise direction and then raised to the open position, and lowered for the closed position. An opening in the side wall of the cap facilitates the dispensing of the capsule after the cap is raised. Each time the cap is closed the indicator advances to the marking for the next day.

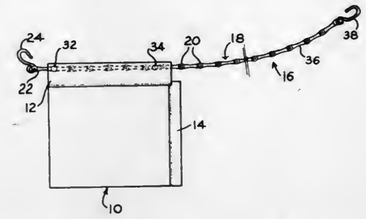
3,678,885
SLOPE AND GRADE METER
William K. Ferguson, 2526 E. North Lane, Phoenix, Ariz.
Filed May 17, 1971, Ser. No. 143,848
Int. Cl. G09f 9/00
U.S. Cl. 116—124 **9 Claims**



A device for use on construction equipment of the type having an earth moving tool positionably mounted thereon. The meter includes a first indicator for indicating the desired position at which the tool must be held to form a desired slope or grade. A second indicator is provided which indicates the actual tool position so that by comparing the desired and the actual position indications an operator is able to move the tool accordingly.

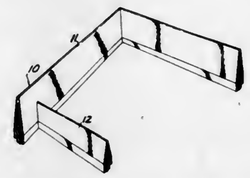
3,678,886
WARNING FLAG AND MOUNTING CARRIER THEREFOR
James W. Tibbet, 1595 Lampman Road, Gold Hill, Oreg.
Filed Feb. 16, 1971, Ser. No. 115,468
Int. Cl. G09f 17/00
U.S. Cl. 116—173 **7 Claims**

The invention relates to signal flags and mounting carriers therefor. A flag including two angularly related hems is adapted to receive in one of the hems, and to be attached to a flexible and elastic carrier, the carrier being adapted to be wrapped around an over-length vehicle carried load, to have the active length secured under tension and any surplus length correspondingly looped out of harm's way. The same flag may be mounted, if desired, on a rigid mounting carrier which comprises a hollow post. A flag spreading spring carried by the upper end of the post is received in the second hem of the flag.



The spring can be folded down and may have a hook at the free end thereof caught in a perforation formed in the post when the flag and carrier are to be stored. Snap fasteners provided on the first hem of the flag may be detachably secured through complementary fasteners to either form of mounting carrier.

3,678,887
TEMPLATE-MASH
Sam E. Smith, 121 Tillman Lane, Athens, Ga.
Division of Ser. No. 733,869, June 3, 1968, Pat. No. 3,552,987.
This application May 11, 1970, Ser. No. 48,714
Int. Cl. B05c 11/12
U.S. Cl. 118—504 **4 Claims**

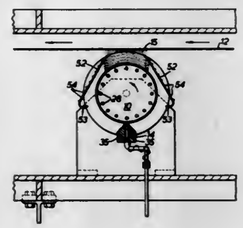


The template has its outer boundry walls of greater height than the inner dividing walls. The width of the dividing wall is determined by the desired width of the pattern separation lines. Both the outer walls and the dividing walls are taped upwardly to prevent color particles from lodging on the template. The under surfaces of the template are formed either concave or with depending flanges so as to prevent the template from picking up any appreciable amount of liquid plastic when it is removed. The template is flexible so as to conform to irregularities in the surface to be coated.

3,678,888
MATERIAL DEPOSITING APPARATUS
Gordon Idris Davies, Killay, Swansea, and Terence Williams, Penllergaer, Glamorgan, both of Wales, assignors to The British Iron and Steel Research Association, London, England
Filed Feb. 25, 1970, Ser. No. 13,941
Claims priority, application Great Britain, Feb. 28, 1969, 10,984/69
Int. Cl. C23c 13/12
U.S. Cl. 118—48 **2 Claims**

The invention concerns an apparatus for depositing volatilizable non-thermosetting material on to a substrate. A cylindrical surface is rotated towards and away from the substrate and a feeder head spaced apart from the surface

deposits the material thereover. Substantially the whole of the cylindrical surface is heated so that material deposited

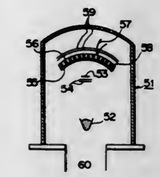


thereon and moved towards the substrate on rotation of the surface will be vaporized and deposited on the substrate.

3,678,889
REFLECTOR ASSEMBLY FOR REFLECTING THE VAPORS OF HIGH TEMPERATURE VOLATILE MATERIALS

Yoshio Murakami, and Takasi Yamazaki, both of Yokohama, Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed Feb. 8, 1971, Ser. No. 113,306
Claims priority, application Japan, Feb. 6, 1970, 45/9982; Feb. 17, 1970, 45/14975
Int. Cl. C23c *13/08*
U.S. Cl. 118—49 **12 Claims**



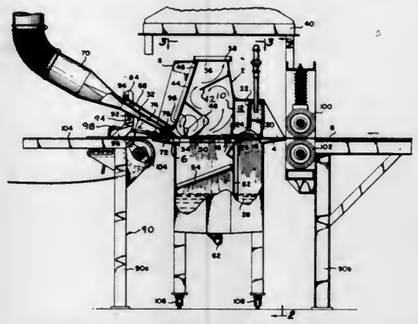
A vapor reflector assembly disposed in a vapor deposition chamber comprises a thin, fluorinated resin film coated onto a support body and means to heat said film to an elevated temperature.

3,678,890
PANEL COATING APPARATUS

Alvin T. Ehrensing, Corona, Calif., and Clement R. Taylor, Boise, Idaho, assignors to Boise Cascade Corporation, Boise, Idaho

Filed Dec. 9, 1970, Ser. No. 82,904
Int. Cl. B05c *11/00*
U.S. Cl. 118—63 **18 Claims**

Apparatus for coating with a liquid a continuously travelling horizontal panel having a uniform or irregular surface, characterized by the provision of housing means including a flood coating compartment in which a massive quantity of liquid coating is deposited to a given depth upon the upper surface of the travelling panel, and an air doctoring compartment in which a large volume of high pressure air is angularly directed on the panel in a direction opposite to the direction of panel travel. The excess liquid coating in both compartments is directed laterally off the longitudinal edges of the panel and is

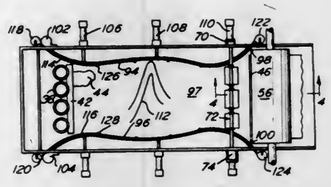


collected by gravity in collector means arranged in the bottom of the housing beneath said compartments.

3,678,891
COATING APPARATUS

Karl M. Rosenberg, Philadelphia, Pa., assignor to Flo-Tech Corp., Wilmington, Del.

Filed Jan. 12, 1970, Ser. No. 2,212
Int. Cl. B05c *3/04*
U.S. Cl. 118—402 **11 Claims**



The apparatus comprises a tank for retaining a pool of supporting liquid, a dispensing device associated with the tank for placing pigmented material on the surface of the pool, a roller for conveying a substrate to be coated into surface contact with the pool to lift the pigmented material from the pool, and selectively operable manipulating devices arranged to provide a desired pattern on the pigmented material of the pool. Manipulating devices comprise wave-generators, undulating tank side walls, and devices for accelerating and decelerating the substrate, each providing a characteristic visual effect in the finished product.

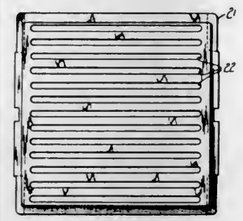
3,678,892
PALLET AND MASK FOR SUBSTRATES

Albert R. Fairchild, Winston-Salem, N.C., assignor to Western Electric Company, Incorporated, New York, N.Y.

Division of Ser. No. 732,965, May 29, 1968, Pat. No. 3,577,325. This application May 19, 1970, Ser. No. 48,670
Int. Cl. C23c *13/08*
U.S. Cl. 118—504 **2 Claims**

A pallet and a mask for use in the manufacture of thin film components are machined from a block of high density fine grain pressed graphite to the desired size and shape. The graphite pallet and mask are plated with a flash of copper so that the copper may be dissolved or reacted with an acid to release the layer of precious metals which accumulate during repeated use of the pallet and mask. Thin film substrates are

placed in the pallet and covered by the mask. In use, the assembled pallet and mask are inverted such that gravity forces



the substrates against the mask to insure that the metal is deposited only on the desired areas of the substrate.

3,678,893
IMPROVED DEVICE FOR SUPPORTING SEMICONDUCTOR WAFERS

Harvey W. Bell, III, San Jose, Calif., assignor to Stewart-Warner Corporation, Chicago, Ill.

Division of Ser. No. 719,174, April 5, 1968, Pat. No. 3,553,037. This application May 1, 1970, Ser. No. 43,659
Int. Cl. B05c *11/12*
U.S. Cl. 118—500 **1 Claim**



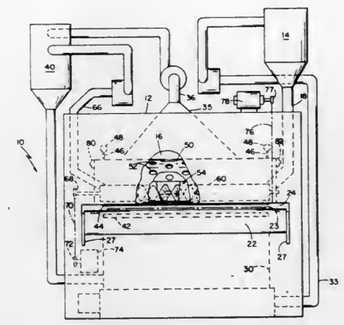
A supporting device for semiconductor wafers to be used during deposition and diffusion process steps by which the wafers are oriented at an upward sloping angle in the direction of gas flow. The wafers are loaded on the devices so that the surfaces at which the semiconductor devices are being fabricated are facing downward and towards the downstream end to thereby provide an even gas flow across the face of each wafer and prevent the deposit on the desired surfaces of any contaminants which might be knocked loose from the interior surface of the reaction tube.

3,678,894
FLOCKING

David I. Walsh, Barrington, R.I., assignor to Indev, Inc., Pawtucket, R.I.

Filed Dec. 24, 1969, Ser. No. 887,986
Int. Cl. B05c *5/00*
U.S. Cl. 118—624 **12 Claims**

A flocking apparatus for applying flock fibers to an article travelling therethrough comprising an article support, a flock distributor comprising a rotary drum having peripheral apertures arranged in a predetermined pattern, mounted above the article support for rotation about an axis parallel to the article support and transverse to the path of travel of said article, and spaced from the article support by a distance greater than the thickness of said article, a flock supply arranged to supply flock to the interior of the drum, means for rotating the drum at a selected peripheral speed related to the linear speed of the article and in a direction such that the part of the drum adjacent the article is moving in the same horizontal direction as

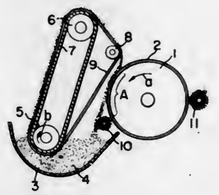


the article beneath, and means for establishing an electrostatic field between the flock distributor and the article.

3,678,895
MAGNETIC CASCADE DEVELOPMENT DEVICE FOR DRY PROCESS ELECTROPHOTOGRAPHY

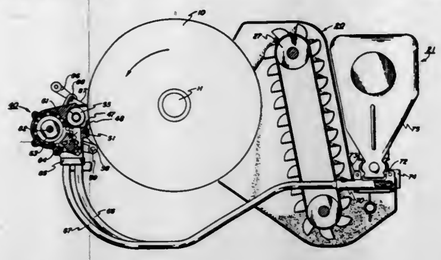
Wasaburo Ohta, Yokohama; Kazuhiko Kasuya, and Masayuki Yamauchi, both of Kawasaki, all of Japan, assignors to Kabushiki Kaisha Ricoh, Tokyo, Japan

Filed March 13, 1970, Ser. No. 19,360
Claims priority, application Japan, March 15, 1969, 44/19813
Int. Cl. B05c *5/00*
U.S. Cl. 118—637 **6 Claims**



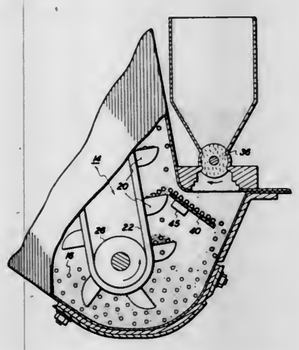
Cascade development device for a dry process electrophotography includes a magnetic endless belt trained around a pair of rollers and a non-magnetic endless roller partially wrapped over the magnetic belt along its going pass and trained around a guide roller spaced apart from the upper one of the pair of rollers and adjacent to the upper end of an development of an electrophotographic recording medium in such a manner that the non-magnetic belt may be separate from the magnetic belt adjacent to the upper one of the pair of rollers. The developer is entrained and transported upon the non-magnetic belt and is freed from the magnetic field when the belts are separated so that the developer may be freely cascaded. Mixing means is provided for mixing the returned developer and guide roller oscillating means is also provided so as to uniformly cascade the developer.

3,678,896
CONVEYOR SYSTEM
Robert E. Hewitt, Ontario, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed Jan. 28, 1971, Ser. No. 110,435
Int. Cl. G03g *13/00*
U.S. Cl. 118—637 2 Claims



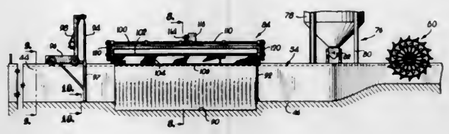
Apparatus for use in an automatic xerographic reproducing apparatus for cleaning residual toner material from the photoconductive surface after the image has been transferred to a final support material for returning the residual toner to a xerographic developing station via a chain conveyor of improved construction for reuse in the xerographic process.

3,678,897
DEVELOPER MIXING APPARATUS
Robert E. Hewitt, Ontario, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed Jan. 28, 1971, Ser. No. 110,489
Int. Cl. G03g *13/00*
U.S. Cl. 118—637 4 Claims



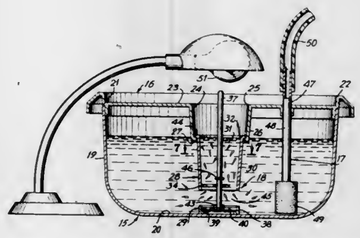
Improved cascade apparatus for developing electrostatic images wherein a latent electrostatic image supported on a moving member is developed by cascading a flow of developer material including a magnetic carrier component and an electroscopic toner component through a development zone. A toner dispenser dispenses toner material to supplement that portion consumed during development. The dispensed toner material is received onto a chute which directs the toner material into a predetermined location in the sump of the developer housing. A bucket conveyor moves developer material upwardly in the housing and spillage from the buckets is directed along the chute to combine with the dispensed toner material and also to prevent the dispensed toner material from clinging on the chute. A magnetic field producing member is positioned on the chute adjacent the path of the bucket conveyor to control the direction of flow of the spillage and to pull excess developer material from the buckets.

3,678,898
METHOD AND APPARATUS FOR RAISING AND HARVESTING FISH
William R. Gross, P.O. Box 510, El Dorado, Kans.
Filed May 4, 1970, Ser. No. 34,244
Int. Cl. A01k *61/00*, *63/00*
U.S. Cl. 119—3 14 Claims



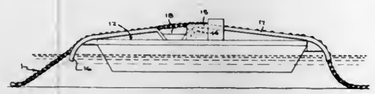
A method and apparatus for raising and harvesting fish utilizes a closed loop for confining a body of water and a paddle wheel to create an artificial current in the body of water of sufficient magnitude to induce fish in the water to swim against the current. Feeding mechanism disposed adjacent the paddle wheel is operable to introduce feed into the water. The artificial current created by the paddle wheel induces fish in the water to swim against the current and toward the food supply. A plurality of air-gathering buckets on the paddle wheel aerate the water to assure an adequate supply of oxygen for the fish. A portion of the closed loop defines an open ended container which is periodically operated to confine a number of fish when the latter have gathered to partake of the food. The container has a curved surface defining its bottom and rotatable structure is disposed longitudinally of the container for rotation over the curved surface to remove any fish confined within the container.

3,678,899
SHRIMP HATCHERY
David D. Lovitz, Short Hills, N.J., assignor to Sternco Industries, Inc., Harrison, N.J.
Filed April 1, 1971, Ser. No. 130,321
Int. Cl. A01k *61/00*
U.S. Cl. 119—2 11 Claims



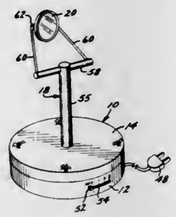
A hatchery for producing baby shrimp to be used as fish food in home aquariums. A water container has a removable cover with a central aperture from which an annular wall extends downwardly into the interior of the container, the bottom of the wall releasably supporting a two-part pick-up cup comprising a housing and therebelow a separable closure trap attached to a hand manipulable stem extending up through said housing, said annular wall and cover aperture. The assembly is placed under a light, and the closure trap permitted to drop to the base of the container, thereby leaving a space between the housing and the trap. Shrimp eggs that were placed in the partially filled container hatch, and the baby shrimp, attracted to the light seen through the bottom of the housing, swim toward the light, through said space and up into the housing, whereafter the stem is raised to lift the closure trap into engagement with the bottom of the housing, thereby trapping the shrimp. The two-part pick-up cup is then lifted out of the container and transferred to an aquarium, the shrimp being released, for use as fish food, by lowering the stem to separate the trap from the housing and dipping the separated trap into the aquarium water.

3,678,900
PROCESS AND CULTCH FOR CULTIVATING AND HARVESTING SHELLFISH
Claudine Marie Kolesa, 2207 S. Washington Ave., Titusville, Fla.
Filed July 17, 1970, Ser. No. 55,727
Int. Cl. A01k *61/00*
U.S. Cl. 119—4 9 Claims



A process for cultivating and harvesting shellfish, particularly oysters, wherein a continuous, permanent cultch is progressively formed by inserting one ring through another to provide a series of interlocked loops or links, and the cultch is laid on the bottom of a waterway to collect spat and hold the spat during growth to mature oysters. The oysters are harvested by raising the cultch progressively, removing marketable oysters, and returning the cultch progressively to the waterway bottom following oyster removal. A cultch laying barge and a harvesting barge are disclosed schematically.

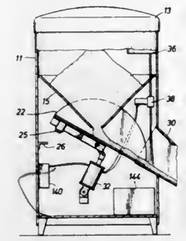
3,678,901
ROTATING BIRD PERCH
William J. Dulle, 1036 E. 6th Ave., Long Beach, Calif.
Filed Dec. 30, 1970, Ser. No. 102,660
Int. Cl. A01k *31/12*
U.S. Cl. 119—26 5 Claims



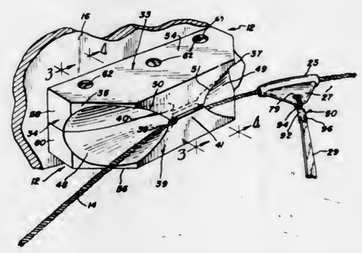
A rotating bird perch having a platform which is rotatably mounted to a base and which mounts a bird support to which is attached one or more mirrors. The mirror rotates with the bird support so that a bird on the support is exposed to changing images in the mirror. The rate of rotation of the platform can be varied.

3,678,902
TIMED ANIMAL FEEDER
Arthur P. Ruth, 2302 Brookmere, Houston, Tex.
Filed July 21, 1972, Ser. No. 56,923
Int. Cl. A01k *5/02*
U.S. Cl. 119—51.11 5 Claims

A timed animal feeder which is responsive to sunrise and sunset to trigger the distribution of animal feed. In one embodiment, the feed bin has an open hole at its bottom which accumulates a predetermined charge of feed on a trough. When the sensor notes sunrise or sunset, the trough is tipped and aligned with a chute extending out of the equipment for dumping the animal feed. The trough is then rocked back to its original position and another charge or accumulation of animal feed on the trough is collected for the next feeding. If water is required for the feed, a water dispenser is operated simultaneously. In another embodiment, occurrence of sunrise or sunset triggers into operation a motor rotated slinger which is positioned beneath the feed bin having a hole at its bottom. A charge of animal feed is accumulated on the slinger and when the motor is driven, the food is slung out of the equipment. The end of rotation permits an accumulation of an additional charge of animal feed on the slinger.



3,678,903
ANIMAL RUN LEASH GUIDE ASSEMBLY
Natty P. Ferraro, 236 Valley Road, Cary, Ill.
Filed Oct. 2, 1970, Ser. No. 77,686
Int. Cl. A01k *03/00*
U.S. Cl. 119—120 7 Claims

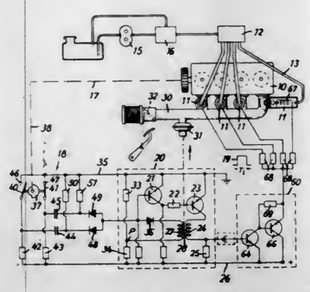


A leash guide assembly for confining the movement of a tethered animal to a limited area, but enabling controlled movement within the area along the guide assembly in opposite directions. A plurality of stationary retaining blocks provide a mount for an endless cable which defines the boundaries of the limited area. A traveler member having a hole therethrough is slidably secured along the cable and has a flange to which the tethered animal is secured. Each of the retaining blocks includes a pair of opposing resilient jaws defining a passageway within which the cable is retained, the resilient jaws being capable of spreading to permit the flange of the traveler to pass quickly and smoothly therebetween. A pair of inwardly turned lips on the jaws retains the cable in the passageway as the traveler passes therethrough.

3,678,904
ELECTRICALLY CONTROLLED FUEL INJECTION ARRANGEMENTS

Hermann Scholl; Norbert Rittmannsberger, both of Stuttgart; Willi Gansert, Korwestheim, and Herbert Arnold, Oberriexingen, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed July 17, 1970, Ser. No. 55,882
Int. Cl. F02m 51/00
U.S. Cl. 123—32 EA 14 Claims

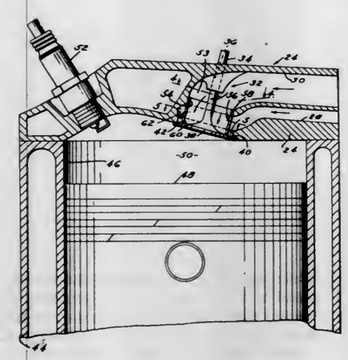


A monostable multivibrator generates pulses having lengths dependent on the pressure in the intake manifold of the engine, which pulses trigger an npn silicon power transistor into conduction to provide current to respective ones of the control windings of the fuel injection spray valves, which windings are connected through the emitter of the power transistor.

3,678,905
INTERNAL COMBUSTION ENGINE DUAL INDUCTION SYSTEM

Roy E. Diehl, Livonia, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed June 29, 1970, Ser. No. 50,619
Int. Cl. F02b 75/18; F01l 3/00; F02b 75/02
U.S. Cl. 123—52 M 10 Claims

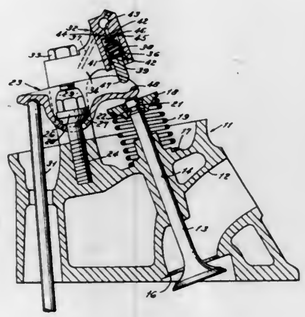


An internal combustion engine having a cylinder head positioned over the end of a combustion chamber with the cylinder head having primary and secondary induction passages positioned therein. An induction valve, including a valve stem and a valve head, is reciprocably mounted within the cylinder head and a tube is preferably press fitted in a bore in the cylinder head. The primary induction passage communicates with the exterior of this tube and the secondary passage communicates with the interior of the tube. This tube extends to a position closely adjacent to, or in engagement with, the head of the induction valve when the valve is in the closed position, thereby providing a good seal between the primary and secondary induction passages when the induction valve is closed.

3,678,906
DAMPED VALVE TRAIN SYSTEM

Louis L. Repko, Detroit, and Richard C. Ronzi, Southfield, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Dec. 4, 1970, Ser. No. 95,220
Int. Cl. F01l 1/16, 1/18
U.S. Cl. 123—90.47 14 Claims

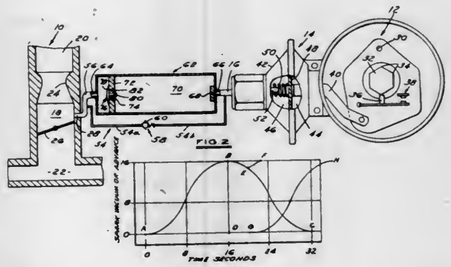


A valve train having a damping means acting on one of the valve train elements prior to valve closing to reduce "valve toss" or "bounce" characteristically present at exceptionally high engine speeds. The damping means may comprise a hydraulic or pneumatic device having a collapsible chamber from which flow is restricted and which reduces the velocity of the valve train elements just prior to valve closing.

3,678,907
ENGINE SPARK TIMING SYSTEM

Richard D. Vartanian, Dearborn, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed July 30, 1970, Ser. No. 59,500
Int. Cl. F02p 5/04
U.S. Cl. 123—117 A 8 Claims



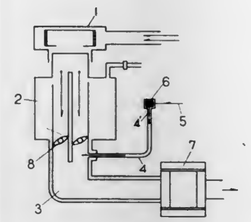
A mechanical apparatus between the carburetor spark port and distributor servo includes a main one-way check valve is parallel flow relationship with a vacuum reservoir, the reservoir containing an orifice at the servo end and a one-way orificed check valve at the spark port end, the reservoir provid-

ing a quick recovery of the engine spark timing setting after rapid acceleration followed by deceleration and reacceleration conditions of operation, to improve fuel economy, the main check valve quickly lowering the spark advance setting during rapid accelerations, and the orifices providing a delayed spark advance during light accelerations.

3,678,908
METHOD AND APPARATUS FOR INCREASING OUTPUT OF CAR ENGINE AND PURIFYING EXHAUST GAS

Akio Ito, 518, Odo, Saitama-ken, Yono-shi, Japan

Filed March 19, 1970, Ser. No. 21,038
Int. Cl. F02m 23/00
U.S. Cl. 123—119 D 5 Claims

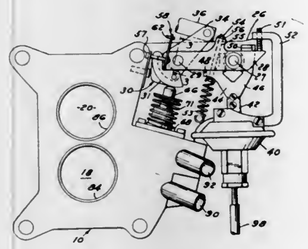


A method and apparatus for increasing the output of an internal combustion engine characterized in that in the fuel system of the internal combustion engine consisting of an air cleaner, a carburetter and a manifold, there is provided a secondary air pipe halfway between said carburetter and manifold so as to allow intake of a suitable amount of secondary air, and a weak radioactive material (for example a natural radioactive ore) is disposed at the inlet of said air pipe so as to apply weak radiation to the air taken in through said pipe.

3,678,909
EXHAUST GAS RECIRCULATION CONTROL MECHANISM

Thomas D. Barker, Detroit, and William K. Ojala, Dearborn Hts., both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Dec. 21, 1970, Ser. No. 100,112
Int. Cl. F02m 25/06
U.S. Cl. 123—119 A 18 Claims

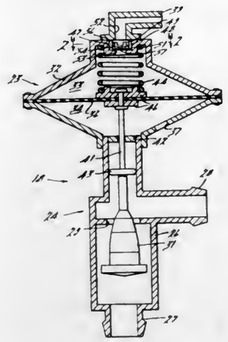


A lever is mounted pivotally on a spacer located between the carburetor and the intake manifold of a reciprocating internal combustion engine and a cam is mounted pivotally on the lever. The cam positions a poppet-type valve that determines exhaust gas recirculation rate. A vacuum motor responding to intake manifold pressure acts on the lever to position the cam indirectly and carburetor throttle linkage is connected directly to the cam.

3,678,910
CONTROL VALVE FOR POSITIVE CRANKCASE VENTILATION SYSTEM

N. William Marlett, Dearborn Heights, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed March 31, 1971, Ser. No. 129,833
Int. Cl. F02f 9/00; F02m 25/06
U.S. Cl. 123—119 B 6 Claims

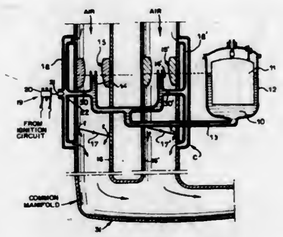


A control valve for a positive crankcase ventilation system of an internal combustion engine. The valve includes a pressure differential decay means which retards valve modulation during accelerations from low speeds, thereby minimizing the leaning effect that the positive crankcase ventilation system otherwise would have on the combustible mixture.

3,678,911
SWITCHING-OFF DEVICE FOR INTERNAL COMBUSTION ENGINE FED BY A DUAL-BODY CARBURETOR

Jean-Pierre Soubis, La Celle Saint Cloud, France, assignor to Chrysler France, Paris, France

Filed June 29, 1970, Ser. No. 50,626
Claims priority, application France, July 16, 1969, 6924230
Int. Cl. F02m 11/02; F02b 77/08
U.S. Cl. 123—127 5 Claims



Modern high-performance combustion engines have the drawback of continuing to run at idling speed during a certain period when switched off. A known method used to avoid this phenomenon consists in shutting off the arrival of gasoline into the idling circuit of the carburetor.

According to the invention when the internal combustion engine is fed by a dual-body carburetor, it is provided with only one member for stopping the feeding with fuel on only one of the two idling tubes of the carburetor and actuated simultaneously with the switching off of the engine ignition circuit.

3,678,912
INSTALLATION IN INTERNAL COMBUSTION ENGINES FOR PREVENTING THE ESCAPE OF FUEL OUT OF THE MIXTURE FORMATION SYSTEM INTO THE ATMOSPHERE

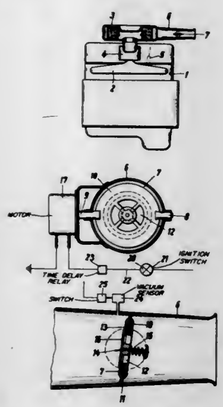
Paul Hensler, Munchingen, Germany, assignor to Firma Dr.-Ing. h.c. F. Porsche K.G., Stuttgart-Zuffenhausen, Germany

Filed April 9, 1970, Ser. No. 26,863

Claims priority, application Germany, April 11, 1969, P 19 18 382.5

Int. Cl. F92m *17/34, 37/00*

U.S. Cl. 123—136 **17 Claims**



An installation for internal combustion engines to prevent the escape of fuel out of the mixture formation system into the atmosphere, in which combustion air is taken out of the atmosphere by way of a suction pipe with an air filter connected to its inlet and is enriched with fuel, prior to the entry into the combustion spaces, by means of a fuel-feed installation, whereby a closure valve is arranged on the inlet side of the air filter and is actuated by an adjusting device adapted to be automatically engaged in dependence on at least one operating condition of the internal combustion engine.

3,678,913
CURRENT GENERATOR AND ELECTRONIC IGNITION CIRCUIT

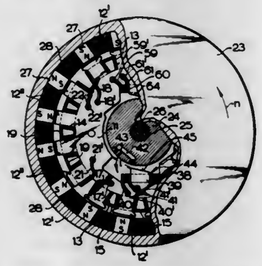
Kurt Zimmermann, Boblingen, and Georg Gemander, Nurnberg, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed July 2, 1970, Ser. No. 51,767

Claims priority, application Germany, July 25, 1969, P 19 37 827.9

Int. Cl. F02p *3/06*

U.S. Cl. 123—149 D **13 Claims**



Generator comprises a stator with armature and charge windings on its outer circumference and at least one control winding on its inner circumference, and a rotor with magnets of alternating polarity for inducing currents into the armature and charge windings. The rotor hub has a magnet for inducing a control voltage across the control winding, which voltage operates a thyristor for controlling the discharge of a capacitor charged by the charge winding, the capacitor discharging through the primary of a spark coil.

3,678,914
RUBBER MOUNTED SUMP

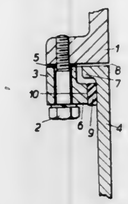
Nicholas Martin F. Vulliamy, Peterborough, England, assignor to Perkins Engines Limited, Peterborough, England

Filed March 19, 1970, Ser. No. 20,948

Claims priority, application Great Britain, March 28, 1969, 16,286/69

Int. Cl. F02f *7/00*

U.S. Cl. 123—195 C **9 Claims**



A peripheral frame is bolted to the engine block of an internal combustion engine and, by means of a peripheral elastomeric interlay mounts a cover on the engine block. Interfitting flanges on the frame and cover are spaced from each other in a manner that allows a metal-to-metal abutment of the engine block and cover and support the cover in case of a mechanical failure of the interlay. The interlay is disposed between the interfitting flanges and provides damping of audio frequency vibrations emanating from the engine while at the same time providing an effective seal between the engine block and the cover.

3,678,915
TRUING DEVICE FOR GRINDING WHEEL WITH ROTATING CUP-SHAPED TRUING CUTTER

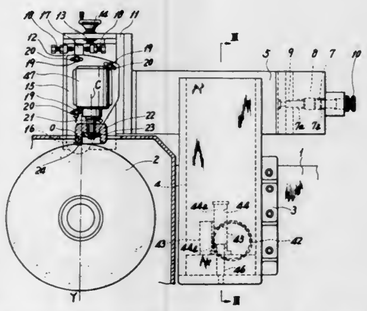
Makoto Kikuchi, Kariya, Japan, assignor to Toyoda Machine Works, Limited, Kariya-shi, Japan

Filed Feb. 5, 1971, Ser. No. 112,911

Claims priority, application Japan, Feb. 11, 1970, 45/11783

Int. Cl. B24b *53/14*

U.S. Cl. 125—11 CD **9 Claims**



A cup-shaped truing cutter device is provided which precisely forms various selective contours, such as a flat, concave, or convex contour, on the peripheral surface of a grinding wheel according to the radial inclination of the axis of the device in the vertical dividing plane passing through the grinding wheel normal to the axis of the wheel. The cup-shaped truing cutter is tangentially fed to thereby precisely true the peripheral surface of any grinding wheel by a constant crowning amount without relation to the grinding wheel diameter under the constant inclination of the axis thereof.

3,678,916
APPARATUS FOR DRESSING SIDE SURFACES OF GRINDING WHEELS

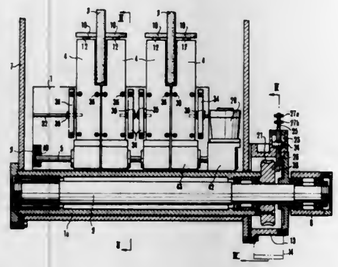
Tsuneji Fujii, Kariya, Japan, assignor to Toyoda Koki Kabushiki Kaisha, Kariya-shi, Japan

Filed March 1, 1971, Ser. No. 119,496

Claims priority, application Japan, March 30, 1970, 45/30465

Int. Cl. B24b *53/14*

U.S. Cl. 125—11 CD **8 Claims**



In apparatus for dressing side surfaces of a grinding wheel, there are provided a base swung in a plane parallel to the side surfaces of the grinding wheel, a pair of rotary dressing tools journalled by a pair of supporting members mounted on the base on both sides of the grinding wheel, and a drive mechanism for rotating the dressing tools. In addition, there are further provided adjusting means for moving the supporting members and the rotary dressing tools toward and away from the side surfaces of the grinding wheel without the necessity of operating the drive mechanism.

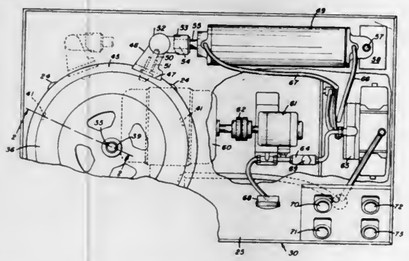
3,678,917
DEVICE FOR TENSIONING AN ANNULAR SAWBLADE

David L. Bender, Henrietta, and Richard L. Lane, Penfield, both of N.Y., assignors to Kayex Corporation, Rochester, N.Y.

Continuation-in-part of Ser. No. 809,498, March 24, 1969, abandoned. This application Oct. 12, 1970, Ser. No. 79,912

Int. Cl. B28d *7/00*

U.S. Cl. 125—12 **5 Claims**



A device for tensioning in a radial direction an annular sawblade contained in an assembly comprising a plurality of annular rings. The sawblade is retained in the assembly by a mount ring, a tension ring and a lock ring. The assembly is fixed in position in the device by means of the mount ring. The tension ring is coupled to a torque-producing means whereby, when the tension ring is rotated relative to the mount and lock rings, an annular extension on the tension ring will be moved axially and into engagement with the surface of the sawblade. The force applied to the surface of the sawblade by the annular extension will cause an annular deformation in the form of a rib to be produced which results in the sawblade being tensioned in a radial direction.

3,678,918
RECIPROCATING SAW

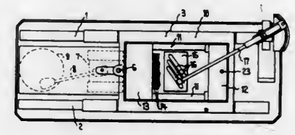
Alfred Stauffer, Steffisburg, Switzerland, assignor to Maschinenfabrik Meyer & Burger A.G., Bern, Switzerland

Filed Aug. 10, 1970, Ser. No. 62,521

Claims priority, application Switzerland, Aug. 25, 1969, 12840/69

Int. Cl. B28d *1/02*

U.S. Cl. 125—16 R **10 Claims**



A reciprocating saw having a holding frame and detachably inserted therein a separate tension frame equipped with sawblades and supported in the holding frame in a fixed position by straightening means. With the machine there are associated preferably at least two tension frames, which at will may be inserted in the machine and prepared apart from the same for later use therein, respectively.

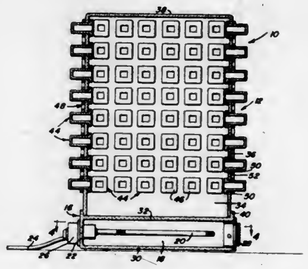
3,678,919
CLAY AREA HEATER

Carlo M. Marchesi, 31 Winter St., Lynn, Mass.

Filed Oct. 16, 1970, Ser. No. 81,372

Int. Cl. F24c *1/08*

U.S. Cl. 126—92 R **8 Claims**

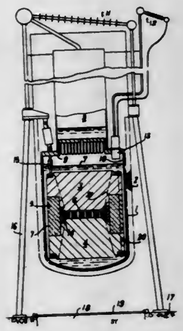


In combination with an underlying heating unit, an enlarged chamber defining housing incorporating peripheral walls having multiple rows of hollow outwardly extending projections which internally communicate with the chamber. The device is constructed of baked clay and capable of storing and radiating heat over extended periods of time.

3,678,920
RADIOISOTOPE HEAT SOURCE BOILER FOR POWER GENERATORS

Michel Cohen, Paris; Pierre Lavigne, Grenoble, and Robert Sauvagnac, Antony, all of France, assignors to Commissariat A L'Energie Atomique, Paris, France

Filed June 9, 1970, Ser. No. 44,804
Claims priority, application France, June 17, 1969, 6920188
Int. Cl. G21c 15/18
U.S. Cl. 126—344 10 Claims

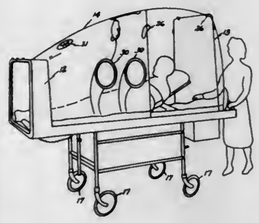


The boiler essentially comprises a vessel of revolution having an external heat-insulating covering and a radioisotope source which is housed within the vessel. The source is constituted on the one hand by two blocks of revolution formed of material which is capable of providing a good biological shield. A peripheral recess is formed in each block in order to accommodate a tightly-fitting annular member, said member being constructed of material having a radioactive absorption coefficient which is higher than that of the blocks. The source is constituted on the other hand by a charge of radioelements formed by a series of clad radioactive plates arranged in stacks. The complete radioisotope source unit is immersed in a cooling liquid. The top end-wall of the boiler proper constitutes the hermetic cover of the vessel. A safety member which is welded to the upper block and to the cover ensures falling of the vessel and of the radioisotope source in the event of dangerous overheating.

3,678,921
PORTABLE ISOLATOR

Thomas Breadgord, Erie, and Karl Kereluk, Fairview, both of Pa., assignors to American Sterilizer Company, Erie, Pa.

Filed Sept. 19, 1969, Ser. No. 862,153
Int. Cl. A61b 19/00
U.S. Cl. 128—1 R 11 Claims

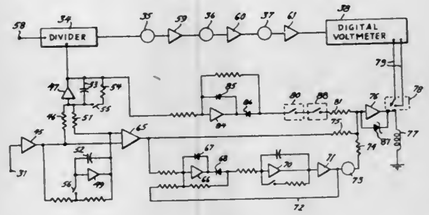


This specification discloses a portable enclosure for protecting the contents of the enclosure, for example, patients, from the surrounding environment. The enclosure has a wheeled stretcher base on which is mounted a frame which contains life support equipment. The main frame has spaced U-shaped rods having their lower ends attached to the floor and a rigid door frame supported on one end of the frame. An X-ray floor is supported on the frame. A flexible transparent bag with reinforced bottom is supported on the floor, and the end of the bag is clamped to the door frame. A stretcher slide is supported in the bag above the first floor. The first floor is X-ray penetrable providing a space for air to circulate between the two floors. A stretcher slides on the top floor and is of a length suitable to support a large man. The stretcher support is hinged at its center so that a patient can be lifted to a sitting position. An X-ray film support is attached to the lower part of the upswinging half of the stretcher. An X-ray camera may be supported on top of the door frame and outside the cover and the patient X-rayed through the cover. A swinging door is supported in the door frame through which the patient and stretcher may be removed from the enclosure. The door frame has means for attaching it to the door of a clean room or the like into which the patient is to be transferred. An inlet for sterile air is provided in the floor of the enclosure.

3,678,922
DILUTION METHOD AND APPARATUS FOR MEASUREMENT OF FLUID FLOW RATE

Charles M. Philips, Philadelphia, Pa., and Miguel E. Sanmarco, San Francisco, Calif., assignors to Temple University, Philadelphia, Pa.

Filed Jan. 14, 1971, Ser. No. 106,340
Int. Cl. A61b 5/02
U.S. Cl. 128—2.05 F 10 Claims



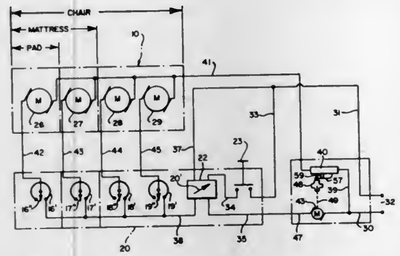
A dilution technique for measuring fluid flow rate within a circulating fluid system is disclosed, comprising continuous processing of a response signal following injection of an injectate into the fluid system, the process being terminated at a cut off point which is determined in terms of the peak of the response signal. The cut off point of the response signal is determined to compensate for error normally introduced due to recirculation. Apparatus is disclosed for carrying out the steps of the process, comprising an integrator-divider for processing the response signal, a peak detector and comparator for terminating the signal processing at the cut off point, and a lock in amplifier to hold the computed result during the period of recirculation. The method and apparatus for particularly applicable to thermal dilution and dye dilution measurements of blood flow rate.

3,678,923
PULSATING VIBRATORY MASSAGING APPLIANCE

Norman Oetinger, Buffalo, N.Y., assignor to American Massage Sales and Manufacturing Corporation, Silver Creek, N.Y.

Filed June 11, 1970, Ser. No. 45,419
Int. Cl. A61h 1/00
U.S. Cl. 128—33 6 Claims

A vibratory appliance such as a chair, mattress or pad adapted to be placed in contact with a person's body to provide an intermittent vibratory massaging action including at least one vibration producing device mounted on the appliance for imparting a vibratory motion thereto, and electro-

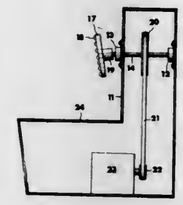


mechanical control means for cyclically interrupting the vibratory motion so as to cause the vibratory appliance to produce an intermittent or pulsating vibratory motion.

3,678,924
MASSAGING APPARATUS

Shinichiro Fujimoto, 8 Hannancho Naka 6-chome, Abeno-ku, Osaka-shi, Osaka-fu, Japan

Filed July 10, 1970, Ser. No. 53,875
Int. Cl. A61h 7/00
U.S. Cl. 128—46 1 Claim



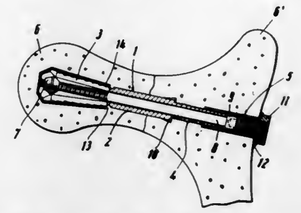
An operating mechanism for a massaging apparatus comprising a driving shaft revolved through a pulley with movement of a belt driven by an electric motor, said driving shaft having a slightly curved front end which is secured through bearing to a pressing plate having formed on its surface a plurality of round projections, wherein rotation of said driving shaft is transmitted to said pressing plate through bearing not in the form of rotation but in the form of swinging motion which changes inclination of said pressing plate such that through variation of said inclination, the round projections on the surface of said pressing plate are rubbingly pressed alternately against a desired part of human body so as to produce excellent massotherapeutical effect.

3,678,925
CONNECTOR FOR FRACTURED BONES

Artur Fischer, Altheimer Str. 219, Tumlingen, Germany, and Jean-Nicolas Muller, Strassburg, France, assignors to said Fischer, by said Muller

Filed Oct. 1, 1970, Ser. No. 77,267
Claims priority, application Germany, Oct. 3, 1969, P 19 49 922.0; Dec. 29, 1969, P 19 65 350.0
Int. Cl. A61f 5/04
U.S. Cl. 128—92 BB 6 Claims

A sleeve is to be inserted into a fractured bone bridging the fracture thereof. The leading end portion is then to be located in one bone fragment and the open trailing end portion is to communicate with the exterior of the other bone fragment. An expander screw is threaded into the sleeve and has a head which bears exclusively upon an annular shoulder provided on the sleeve. The front end of the expander screw serves, by its configuration or by cooperation with an expander element, for

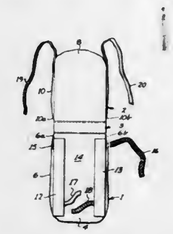


expanding the leading end of the sleeve so as to retain it in the bone fragment in which it is located. A cap screw is threadedly connected with and closes the trailing end portion of the sleeve, bearing upon the other bone fragment and thereby drawing the two fragments together via the intermediary of the sleeve.

3,678,926
SUPPORT PILLOW

Martha L. Strittmatter, 1532 Glenbeck Ave., Apt. #3, Dayton, Ohio

Filed Sept. 16, 1970, Ser. No. 72,704
Int. Cl. A61f 5/40
U.S. Cl. 128—94 9 Claims



A pillow to support a limb of a patient comprising first and second pillow sections joined in end-to-end relationship by a flexible web. The first pillow section has a pair of elongated, flexible, rail-like members affixed to its upper surface and defining a longitudinally extending, limb-receiving channel thereon. The first pillow section is provided with means to retain the patient's limb within the channel. The second pillow section at is free end, is provided with means for attaching it to a portion of the patient's body adjacent the limb to be supported.

3,678,927
INTRA UTERINE DEVICE AND INJECTOR THEREOF

Samuel Soichet, 1088 Park Ave., New York, N.Y.

Continuation-in-part of Ser. No. 713,825, March 18, 1968, Pat. No. 3,507,274. This application Jan. 26, 1970, Ser. No. 5,466The portion of the term of this patent subsequent to April 21, 1987, has been disclaimed.
Int. Cl. A61f 5/46
U.S. Cl. 128—130 1 Claim

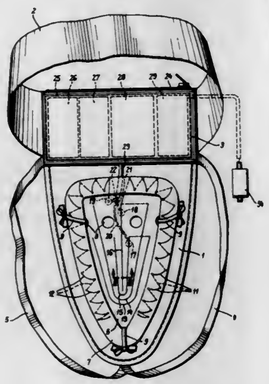
The present disclosure relates to an intra uterine device and a means for injecting the device into the uterine cavity with assurance that there will be no harm to the interior tissues and with the further assurance that it will be properly injected without injury to the user and with assurance that it will be in proper position.

The intra uterine device consists of two outwardly springing inert metal wires, such as chromium alloy wires, nickel alloy wires, or preferably stainless steel wires turned inwardly at



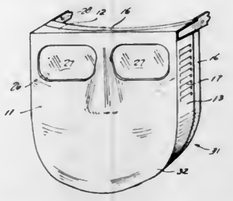
their outer ends to form loops, or ended with a small engagement, which tend to spring apart and are joined at their base portions to form a Y-shaped structure.

3,678,928
HYGIENIC DEVICE FOR DETECTING UNINTENTIONAL URINATION
Alexander Moses, 89 Berkinshaw Crescent, Don Mills, 404, Ontario, Canada
Filed Feb. 19, 1970, Ser. No. 12,631
Claims priority, application Germany, Feb. 25, 1969, P 19 09 261.6; Feb. 25, 1969, P 19 09 262.7
Int. Cl. A61b *19/00*
U.S. Cl. 128—138 **16 Claims**



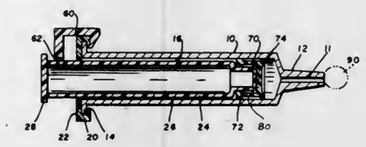
A hygienic device for detecting unintentional urine flow comprises an alarm device, an electronic device for operating the alarm device and batteries all of which are supported preferably in a waist belt to which is attached a cap closely fitting around the urine outlet of a patient wearing the device, and urine sensing electrodes and stimulator electrodes disposed in the cap for triggering the alarm device and for supplying stimuli to the patient, a position sensitive switch being provided arranged to switch off the device automatically when the patient assumes an upright position. The alarm device may emit an audible sound, and an overriding switch may be provided for manual control of the device.

3,678,929
FACE MASK
Judy G. Buscher, 5226 B St., Omaha, Nebr.
Filed March 2, 1970, Ser. No. 15,705
Int. Cl. A62b *23/02*
U.S. Cl. 128—146.6 **5 Claims**



A face mask adapted to be worn over the face of a wearer and covering at least the eyes and the nose of the wearer thus protecting the eyes and lungs from pollutants, the mask comprising, a frame held in position by a pair of bows extending to beyond the ears of the wearer and having glass covered opening through which the wearer can see, inlet openings formed in the frame and covered by detachably secured filters for filtering air inhaled by the wearer and to permit partial exhausting of the air from the mask during exhalation, and an exhaust opening formed in the mask having an exhaust valve mounted thereover to provide an additional outlet for exhaust purposes only.

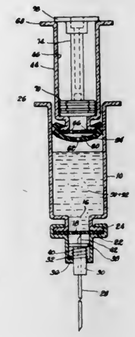
3,678,930
INTERMIXING SYRINGE
Boris Schwartz, 400 Park Ave., Patterson, N.J.
Filed Jan. 19, 1971, Ser. No. 107,645
Int. Cl. A61m *5/18, 5/22*
U.S. Cl. 128—218 M **11 Claims**



An intermixing syringe provides for the isolated storage of two components prior to their being mixed which is usually just before injection of the product. This syringe has an outer barrel and a hollow plunger slidable therein with the barrel portion forward of the piston providing one chamber of determined size and the plunger provides the other chamber. The plunger is provided with and carries on its forward end a piston having spaced, ring-like sealing surfaces. The plunger is a closed hollow cylinder having apertures at its forward end and in its outer wall near its rear end. Tear members are attached to the plunger at these apertures to seal and make these apertures fluid tight. In the piston is formed a fluid passageway extending from the interior of the piston to the outer piston surface. The barrel has a smooth straight-bored inner surface and is absent any undercuts.

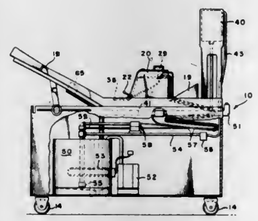
3,678,931
SYRINGE
Milton J. Cohen, 7111 Connecticut Ave., Chevy Chase, Md.
Filed June 9, 1970, Ser. No. 44,742
Int. Cl. A61m *5/00*
U.S. Cl. 128—220 **11 Claims**

A syringe formed of inner and outer tubular members with the inner member adapted to be telescoped within the outer member and sealed therefrom by a sealing assembly comprising a disc member having at least one opening therethrough communicating with the inner tubular member and a flexible seal having a disc portion having openings therethrough, with the openings in the disc member being laterally offset from the opening in the disc portion, while the outer member is formed



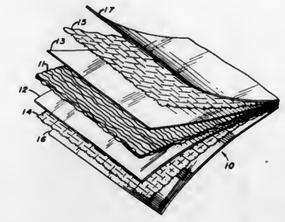
with a rupturable seal having an injection needle in alignment therewith for rupture in use with the inner tubular member adapted to contain a liquid carrier and the outer tubular member adapted to carry a solid medicant to be taken up with the carrier for injection whereby the materials are freshly mixed immediately prior to injection.

3,678,932
SELF-CONTAINED INTERNAL HYDROTHERAPY APPARATUS
Rose Marie Hudson, Washington, D.C., assignor to Hudall Corporation, Bethesda, Md.
Filed March 6, 1970, Ser. No. 17,074
Int. Cl. A61m *3/00*
U.S. Cl. 128—227 **7 Claims**



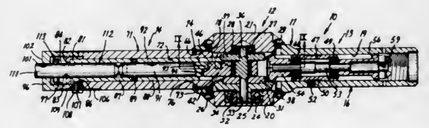
A self-contained internal hydrotherapy apparatus for treatment of human patients comprising a mobile cabinet having a generally planar top surface designed to accommodate a reclining patient, a treatment system capable of infusing a desired treating solution into the body orifices and additionally externally cleansing the rectal and genital areas of the patients body, a self-contained waste disposal system, a self-contained fresh water system and an internal electrical system. The applicator elements of the treatment system are removable from the cabinet for treatment of patients confined in bed.

3,678,933
SURGICAL SPONGE OR BANDAGE
Francis C. Moore, and Leon A. Perkinson, both of Indianapolis, Ind., assignors to Moore-Perk Corporation, Indianapolis, Ind.
Filed July 17, 1970, Ser. No. 55,842
Int. Cl. A61f *13/00*
U.S. Cl. 128—296 **12 Claims**



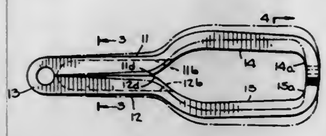
Layers of thin thermoplastic film are brought into contact with opposite surfaces of superposed layers of absorbent material, such as sheets of fibrous crepe paper of facial quality, rayon fibers, or flexible polyurethane foam. The layers of plastic film are covered with a loosely-woven cotton scrim or gauze (or with spun-bonded nylon). Additional layers of the thin plastic film may then cover the exterior surfaces of the scrim layers. The multi-layer article thus formed is then compressed and heated to melt the plastic films. The melted plastic bonds the scrim to the paper, separating as it melts to communicate the absorbent paper core with the exterior of the pad and to gather itself about the threads of the scrim in wrapping, covering engagement. The resultant pad is highly absorbent upon contact with a liquid, yet the absorbed liquid will not "bleed" back from the pad thus making it highly desirable as a surgical sponge or bandage.

3,678,934
POWER OSTEOTOME
Wayne N. Warfield, and Russell K. Eaton, both of Kalamazoo Township, Kalamazoo County, Mich., assignors to Stryker Corporation, Kalamazoo, Mich.
Filed Aug. 13, 1970, Ser. No. 63,460
Int. Cl. A61b *17/14, 17/16;* **F16h** *57/02*
U.S. Cl. 128—317 **8 Claims**



A handpiece has an elongated tubular housing which is connectable at one end either to an air motor or to a sheath for a motor driven cable and which is adapted for supporting a tool, such as an osteotome or a saw blade at the other end thereof. Between these two are located an input drive mechanism, a crank mechanism and an output driven mechanism whereby the rotational force of the motor or cable is converted into a reciprocation for driving the osteotome or the saw.

3,678,935
CIRCUMCISION CLAMP
Harry Brownstein, 2311 Avenue J, Brooklyn, N.Y.
Filed Sept. 25, 1970, Ser. No. 75,468
Int. Cl. A61b *17/12, 17/08*; A44b *21/00*
U.S. Cl. 128—325 8 Claims



Circumcision clamps of the "dorso-ventral" type, which are characterized by pairs of mating elongated jaws for clamping the prepuce or foreskin and which are positioned transversely of the glans penis in the dorsal-ventral direction when used in a circumcision operation, are disclosed. The clamps are one-piece structures which can be made in either reusable or disposable form. The two jaws of each such clamp are interconnected at one end by a solid hinge integral therewith which normally biases them into their open state, and at their other ends have respective preferably laterally offset arms integral therewith and extending generally longitudinally therefrom for a sufficient distance to provide the leverage required to enable the jaws to be pressed together into their closed state against the force of the hinge and with sufficient force to crush and produce at least almost complete hemostasis in a prepuce clamped between the jaws. At their free ends, the arms are provided with interengageable hooks or ratchet elements to enable the respective jaws to be locked in their closed position. In the use of such a clamp, the plane of the jaws should be oriented oblique to the axis of the penis, in conformity with the physical shape of the glans, to enable a greater amount of the prepuce and mucosa to be cut off dorsally of the glans than ventrally thereof and to avoid cutting unnecessarily into the frenulum. To make the operator cognizant of this requirement and to facilitate such use, the clamp is preferably made with the plane of the jaws oriented oblique to the plane of the arms.

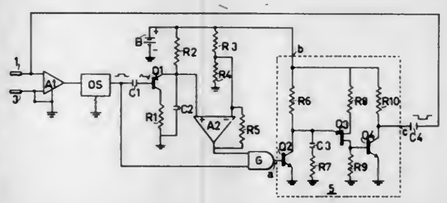
This abstract is not to be taken either as a complete exposition or as a limitation of the present invention, however, the full nature and extent of the invention being discernible only by reference to and from the entire disclosure.

3,678,936
ICE BAG FOR TREATING ATHLETES
Wayne A. McCormick, P.O. Box 35, Dewitt, Portsmouth, N.Y.
Filed Dec. 3, 1969, Ser. No. 881,684
Int. Cl. A61f *7/00*
U.S. Cl. 128—402 1 Claim



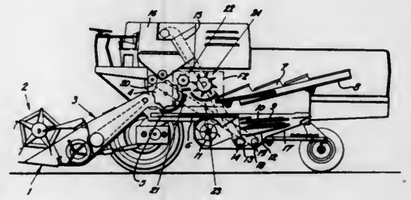
In one embodiment of this invention two sleeves of rubberized flannel are disposed one within the other with their opposite ends fastened together but spaced from one another along their lengths so that they form a hollow jacket for holding cracked or crushed ice. The arm or leg to be treated is inserted into this jacket. The rubber sides of the inner and outer sleeves face one another so that the jacket is water-impervious. A zipper-closed opening in the outer sleeve permits easy insertion of ice into the jacket and removal of ice and water therefrom. An elastic strap attached at one end, and snap fastened at its other end to the outside of the outer sleeve and adapted to be wound helically around the jacket allows some pressure to be applied to the ice pack. For treating other parts of the body, which cannot be inserted into a jacket a roll for holding ice may be formed from rubberized fabric and wrapped around the torso, thigh, or other part to be treated and the elastic strap or straps are drawn tight.

3,678,937
DEMAND CARDIAC PACER WITH INTERFERENCE PROTECTION
Addison D. Cole, Natick, and Roger S. Smith, North Andover, both of Mass., assignors to Adcole Corporation, Waltham, Mass.
Filed June 1, 1970, Ser. No. 41,880
Int. Cl. A61n *1/34*
U.S. Cl. 128—419 P 17 Claims



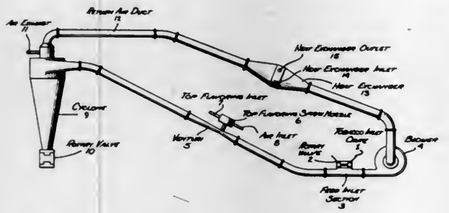
A demand cardiac pacer comprising a relaxation oscillator for applying hart-stimulating pulses to a pair of electrodes at a rate somewhat less than the lowest rate of natural heartbeats, and a timing circuit for measuring the interval between voltage pulses on the electrodes produced either by the oscillator, by natural heart signals, or by noise signals, for disabling the oscillator when natural heart pulses are received at a rate in the normal range, and for enabling the oscillator in the presence of noise signals above a certain frequency range.

3,678,938
SEPARATOR DEVICE FOR COMBINE HARVESTERS
Frans J. De Coene, Zedelgem, Belgium, assignor to Clayson N.V., Zedelgem, Belgium
Filed July 27, 1970, Ser. No. 58,376
Claims priority, application Belgium, July 30, 1969, 49,351
Int. Cl. A01f *12/22*
U.S. Cl. 130—27 E 11 Claims



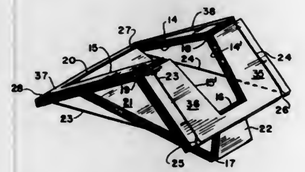
A conventional combine having a threshing cylinder and concave is provided with a beater and a separating concave and cylinder to the rear of the beater and in front of conventional straw walkers.

3,678,939
METHOD OF TREATING TOBACCO WITH FLAVORANTS IN A PNEUMATIC SYSTEM
Robert L. Key, III, and Melvin G. Christy, both of Durham, N.C., assignors to Liggett & Meyers Incorporated, New York, N.Y.
Continuation-in-part of Ser. No. 778,383, Nov. 25, 1968, Pat. No. 3,548,838. This application Nov. 13, 1970, Ser. No. 89,296
Int. Cl. A24b *03/12, 15/04*
U.S. Cl. 131—144 3 Claims



This disclosure is directed to a continuous method of applying additives to tobacco in a closed system. The product obtained does not require the customary bulking operation. In carrying out the method the tobacco, which is at a temperature of between 130°–180° C, is fed into a pneumatic system and carried by air blown within the conduit of the system to a point downstream from the feedin at which point flavoring solution is dispersed within the tobacco mass. The tobacco is then separated from the air mass and the air, which is reduced in temperature to about 50° to 70° C., is then recirculated in the conduit to come into contact with a fresh supply of hot tobacco.

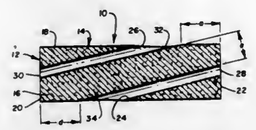
3,678,940
SMOKING PIPE HOLDER
Sigmar E. Sobczak, 3750 N. Mozart St., Chicago, Ill.
Filed Feb. 9, 1971, Ser. No. 114,003
Int. Cl. A24f *13/22*
U.S. Cl. 131—260 11 Claims



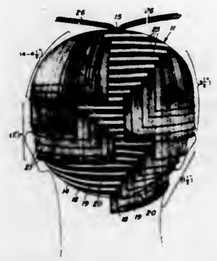
A holder for smoking pipes having relatively movable parts hinged together, and foldable to an extended configuration, providing a base and above it a recess for retaing the bowl of a pipe in upright position with the pipe stem extending out of the recess, and also operable to a flattened configuration for convenient portability in a pocket of the smoker.

3,678,941
TOBACCO SMOKE FILTER ELEMENT AND METHOD FOR MAKING
Ronald L. Dixon, Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed April 5, 1971, Ser. No. 131,326
Int. Cl. A24d *01/04*; A24f *07/04, 13/06*
U.S. Cl. 131—261 B 11 Claims

Tobacco smoke filter element comprising a porous filter body having an outer wall surface and two end wall surfaces and being adapted to be provided with an overwrap. The porous filter body is provided with two elongated chambers, each chamber being enclosed along its length by the porous filter body and extending from the surface of the outer wall into the filter body and through the surface of an end wall different from that end wall surface through which the other elongated chamber extends, thereby resulting in smoke flow patterns which cause the smoke particles to flow both axially and traversely through the filter body; and the method for forming the elongated chambers in the filter element.



3,678,942
METHOD OF MAKING PRECUT AND PRESET WIG AND PRECUT AND PRESET WIG
Dominic C. Abbott, Pittsburgh, Pa., and Godfrey Chen, Kowloon, Hong Kong, assignors to Abbott Tresses, Inc., Pittsburgh, Pa., by said Dominic C. Abbott
Continuation of Ser. No. 823,480, May 9, 1969, abandoned. This application Sept. 4, 1970, Ser. No. 69,984
Int. Cl. A41g *3/00*
U.S. Cl. 132—5 14 Claims

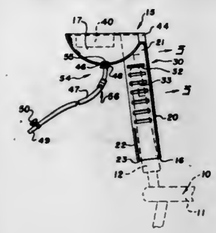


An already machine made wig is cut and set as desired and styled as necessary for a desired effect. The wefts are each removed from the wig foundation and their length and location recorded. The length of hair on each weft and the sections therealong is also recorded for each weft. The character of the curl and set for each weft so removed is also recorded for each weft and any variation of the sections therealong. Then wefts of hair are made up according to the recordings of the length of the weft and the length of the hair in the sections therealong. A set is applied to each weft according to the record for each weft. Each weft is attached to a wig foundation in accordance with the recordings of locations. The wig can then be further styled as desired by combing and is ready for wear.

3,678,943
PORTABLE HAIR WASHING AND COLORING UNIT
Leona M. Neel, 2884 5th St., and Leo J. Hagel, 416-1207 Douglas St., both of Victoria, British Columbia, Canada
Filed May 13, 1971, Ser. No. 143,041
Int. Cl. A45d *19/06*
U.S. Cl. 132—9 3 Claims

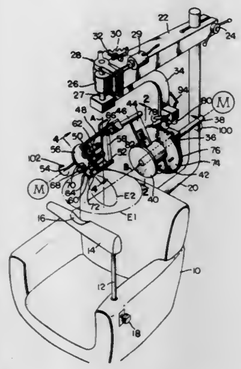
Apparatus for caring for the hair while in a seated position

and having a base attachable to the back of a chair and a wash basin projecting rearwardly of the upper end of the base. The



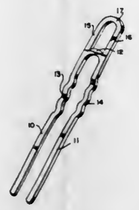
base is provided with means whereby the unit can be adjusted vertically and there is a neckrest to support the back of the neck of the seated person.

3,678,944
HAIR CUTTING APPARATUS
Ronald G. Berry, 135 E. Woodland, Fort Wayne, Ind.
Filed Aug. 20, 1970, Ser. No. 65,472. The portion of the term of this patent subsequent to March 16, 1988, has been disclaimed.
Int. Cl. A45d *24/36*
U.S. Cl. 132—45 R **19 Claims**



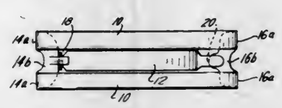
The specification discloses a hair cutting apparatus having a cutting head in which a comb element is presented generally tangentially to the head with the teeth pointing upwardly. A clipper is swingable over the comb element on the side facing away from the head while a rake is swingable in timed relation to the comb element on the side of the comb element facing the head to control the length to which the hair is cut. A support framework for the cutting head causes it to move in succession in angularly related vertical planes passing through the vertical axis of the head from a lower region of the head up to about the center of the top of the head and then back down. During upward movement of the cutting head, the clipper and rake operate while the cutting head advances step by step while downward movement of the cutting head is a continuous motion with the clipper and rake resting in an idle position. A prerecorded program is employed to control all of the motions of the apparatus.

3,678,945
DEVICE FOR HOLDING MODERN ATTRACTIVE HAIRDOS
Diane Greenslit Reynoir, and Penelope Brodtmann Deleaderni-er, both of New Orleans, La., assignors to Rendel, Inc., New Orleans, La.
Filed Feb. 1, 1971, Ser. No. 111,584
Int. Cl. A45d *8/00*
U.S. Cl. 132—46 R **1 Claim**



The device has prongs for entering a mass of hair, for instance a twist, and a handle for thereupon levering the device over through approximately 180° to spread the twist over the mass of hair at the back of the head and thereupon to drive the very long prongs into the mass of hair to bind and hold the twist to the back of the head and unify such twist with the mass of hair at the back of the head.

3,678,946
DUAL BARRETTES
Norman Katz, West Hempstead, N.Y., assignor to H. Goodman & Sons, Inc., Kearny, N.J.
Filed June 21, 1971, Ser. No. 154,818
Int. Cl. A45d *8/28*
U.S. Cl. 132—48 R **11 Claims**



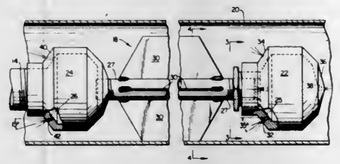
The disclosed barrettes have two entirely separate face elements that are interconnected by supports, such that the interconnections are concealed in the wearer's hair. The visual effect is of two separate barrettes, with their relationship nearly preserved during wear. A single tongue is sufficient for "both barrettes".

3,678,947
EYELINER
Joseph R. Ehrlich, New York, N.Y., assignor to Melvin J. Davidson and Bernard M. Zitomer, New York, N.Y.
Continuation-in-part of Ser. No. 831,069, June 6, 1969, Pat. No. 3,605,764. This application July 16, 1970, Ser. No. 55,550
Int. Cl. A45d *40/26*
U.S. Cl. 132—88.7 **16 Claims**



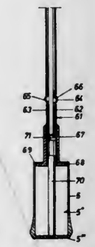
An eyeliner consisting of a marker-type applicator with a substantially rigid tip and a coloring matter of low viscosity dispersions of carbon particles in an aqueous medium. The carbon particles are of substantially 0.2 micron or less, do not settle out in the capillaries of the parallelly-oriented fibers of the ink reservoir and pen tip, and are smaller than the diameters of the capillaries of the fibers used in the marker-type applicator. The small-size particles pass between the fibers of the fibrous members of the applicator without clogging the capillaries. The use of such ultra-fine particle size dispersions in such markers permits the making of finer and more accurate lines around the eye than with brush-type applicators.

3,678,948
PIPE CLEANING APPARATUS
Robert H. Hedges, Lima, Ohio, assignor to Rockwell Manufacturing Company, Pittsburgh, Pa.
Filed Feb. 26, 1970, Ser. No. 14,316
Int. Cl. B08b *9/04*
U.S. Cl. 134—167 C **6 Claims**



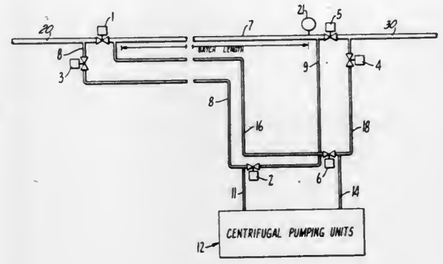
Apparatus for cleaning pipes such as sewer lines and the like in which the cleaning action is effected by jets of water issuing from a self-propelled cleaning tool nozzle assembly. The cleaning tool assembly includes axially spaced forward and rear nozzles from which rearwardly directed jets of water are emitted and a runner or guide structure located between the nozzles and adapted to guide the tool assembly as it is propelled through the pipe. The water jets emitted from the forward nozzle are directed rearwardly at a greater angle relative to the axis of the assembly than the water jets emitted from the rear nozzle.

3,678,949
HANDLE FOR COLLAPSIBLE UMBRELLA
Heinz Weber, Rhineland, Germany, assignor to Telesco Brophey Limited, Montreal, Quebec, Canada
Filed Nov. 19, 1970, Ser. No. 90,967
Claims priority, application Germany, Nov. 19, 1969, P 19 58 143.2
Int. Cl. A45b *9/02*
U.S. Cl. 135—20 **3 Claims**



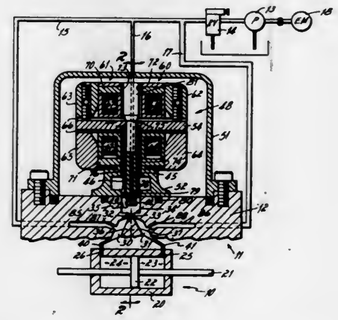
An umbrella having a telescopic stick and a hollow open-ended handle at one end thereof, the handle is axially movable relative to the stick. Dome ribs are hinged to the crown at the other end of the stick and a support structure is articulated between the dome ribs and runners sliding on the stick. When the umbrella is collapsed, the main runner fits within the handle, the dome ribs extend on the outside of the handle and the folded ends of the support structure project into the open end of the handle above the runner.

3,678,950
METHOD AND APPARATUS FOR PUMPING SLUGS OF COOL SLURRY WITHOUT PASSING SLURRY THROUGH THE PUMPING STATION
Harold E. Ragsdale, San Mateo, Calif., assignor to Bechtel International Corporation
Filed Dec. 3, 1970, Ser. No. 94,831
Int. Cl. F04f *1/06*
U.S. Cl. 137—1 **3 Claims**



A slurry is drawn into a main pipeline by pumping liquid ahead of it to draw the slurry into the main pipeline. The liquid in the main pipeline is simultaneously forced into a second pipeline to force a slug of slurry ahead of it. When the main pipeline is completely filled with slurry, a slug of liquid is drawn from the first pipeline and is forced into the main pipeline to force the slug of slurry on into the second pipeline.

3,678,951
METHOD AND APPARATUS FOR IMPROVED JET PIPE VALVE
James L. Coakley, Camarillo, Calif., assignor to Abex Corporation, New York, N.Y.
Filed June 15, 1970, Ser. No. 46,244
Int. Cl. F15b *5/00*; **G05d** *16/00*
U.S. Cl. 137—14 **18 Claims**

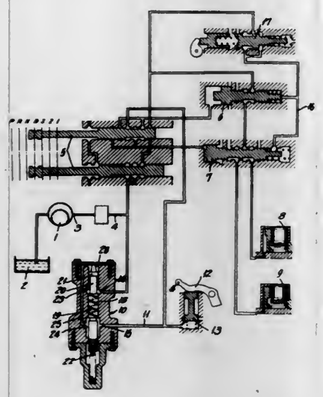


A method and apparatus for increasing the load flow characteristic of a jet pipe valve. The practice of the method and the apparatus is operable to inject fluid under preasure into the two output load channels of the valve so as to amplify the rate of flow through the jet pipe output channels.

3,678,952
PRESSURE FLUID CIRCUIT IN AUTOMATIC TRANSMISSION APPARATUS

Sadanori Nishimura, Tokyo, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 22, 1969, Ser. No. 868,405
Claims priority, application Japan, Oct. 22, 1968, 43/76473
Int. Cl. G05d *13/38*
U.S. Cl. 137—53 3 Claims

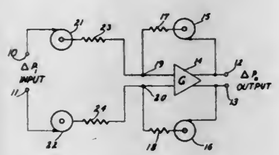


A pressure fluid circuit in an automatic transmission comprises a line pressure circuit connected to the discharge opening of a pump and to an orifice controlled by a valve which in turn is connected to a governor circuit containing a leak valve controlled by centrifugal force corresponding to the speed of the output shaft of the transmission. The valve is constructed to provide a flow resistance such as a throttling effect which is varied by a slide valve member in response to the pressure in the governor circuit in order that the pressure can remain substantially constant and never drop below a minimum pressure necessary to operate the clutches of the transmission.

3,678,953
FLUIDIC LEAD-LAG FREQUENCY RESPONSIVE CIRCUIT

Willis A. Boothe, Scotia, N.Y., and Anthony J. Healey, State College, Pa., assignors to General Electric Company

Filed March 16, 1971, Ser. No. 124,807
Int. Cl. F15c *1/16, 4/00*
U.S. Cl. 137—81.5 14 Claims

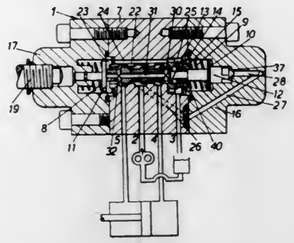


The circuit includes a high gain fluidic amplifier device in a forward circuit portion and a vortex fluidic device in a negative feedback circuit portion connected around the forward circuit. The vortex device may be a passive component utilizing only a control fluid input from the amplifier output, or may be an active component utilizing both the control (tangential) fluid input and a power fluid (radial) input supplied from a source of constant pressurized fluid.

3,678,954
CONTROL VALVE

Fritz Ostwald, Buchschlag; Alfred Bender, Noan, and Gerhard Hofheim, Taunus, all of Germany, assignors to ITT Industries, Inc., New York, N.Y.

Filed Sept. 9, 1970, Ser. No. 70,804
Claims priority, application Germany, Sept. 9, 1969, P 19 45 578.8
Int. Cl. F15b *15/06*
U.S. Cl. 137—106 6 Claims

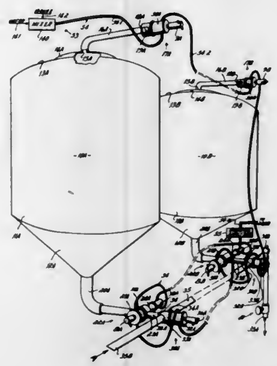


A hydraulic control valve assembly having a valve slide and positioning device for successively positioning the valve against spaced abutments by means of an actuator piston.

3,678,955
ASEPTIC STORAGE AND VALVING SYSTEM

Philip E. Nelson, West Lafayette, Ind., assignor to Purdue Research Foundation, Lafayette, Ind.

Filed May 26, 1970, Ser. No. 40,550
Int. Cl. F16k *51/00*
U.S. Cl. 137—238 6 Claims

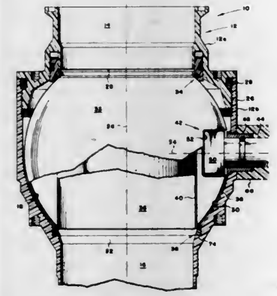


A plurality of storage tanks for bulk storage of materials under aseptic conditions in which valves associated with the tanks have chambers filled with liquid chemical sterilant surrounding movable valve actuators for preventing the influx, via the valve actuators, of contaminants to the material stored in the tanks. The chemical sterilant is unheated to prevent the transfer of heat from the sterilant to the stored material. The sterilant chambers are connected serially to form a cascade between a source of fresh sterilant and a chemical analyzer, with the chambers which become more contaminated in use being connected in the cascade more remote from the fresh sterilant supply. The sterilant chambers are recharged with fresh sterilant by a flow of fresh sterilant from the supply through the cascade, which flow is terminated when the sterilant leaving the last chamber of the cascade upon analysis by the chemical analyzer has reached a sterile level indicating that the fresh sterilant has propagated through the cascaded chambers successively flushing the chambers in the cascade of inactive, or stale, sterilant and replenishing the chambers with fresh sterilant. Each sterilant chamber is provided with an inlet passage and an outlet passage located at the bottom and top of the chambers, respectively, such that fresh sterilant enters the bottom of the chamber, forcing inactive, or stale, sterilant from the chamber through the top, insuring complete recharging of the entire chamber with fresh sterilant.

3,678,956
REDUNDANT SEAL BALL VALVE

Joseph A. Ebin, Los Angeles, Calif., assignor to Lockheed Aircraft Corporation, Burbank, Calif.

Filed Dec. 21, 1970, Ser. No. 100,320
Int. Cl. F16k *5/16*
U.S. Cl. 137—242 5 Claims

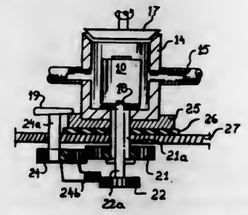


A ball valve, primarily for low pressure applications, such as a toilet waste valve for large passenger aircraft, wherein the fluid passing through the open valve may contain solid objects which could damage conventional valve ball seals. The valve embodies a novel redundant wiper-seal construction for the valve inlet, or both the valve inlet and outlet, having a resilient wiper ring with an end wiping surface, and a resilient seal ring softer and more resiliently compliant than the wiper ring, fixed within a concentric seal groove in the wiping surface between its radially inner and outer edges, such that the wiping surface has a wiping face at the inner side of the ring for wiping contact with the valve ball to shield the softer seal ring against contact by any solid objects entering the valve. The valve also embodies a unique hollow thin-walled valve ball construction.

3,678,957
DISHWASHER DEVICE CAUSING AN APERIODICAL WATER FLOW

Sven Gustaf Nord, 51016 Skene, Sweden

Filed Oct. 14, 1969, Ser. No. 866,340
Int. Cl. F16k *11/07*
U.S. Cl. 137—268 5 Claims

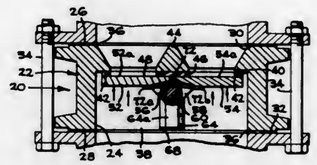


A device adapted for use in a dishwasher and which device causes an intermittent water flow from one or more spray arms of the device. The intermittent water flow is caused by a special form of a detergent container placed inside of the sprinkling device and a good washing result is achieved by an arrangement by which the sprinkling device may be tilted during its rotation.

3,678,958
CHECK VALVE

Lawrence E. Satterwhite; Alton M. Williamson, and George R. Shindler, all of Houston, Tex., assignors to FMC Corporation, San Jose, Calif.

Filed Sept. 16, 1970, Ser. No. 72,961
Int. Cl. F16k *15/00*
U.S. Cl. 137—512.1 17 Claims

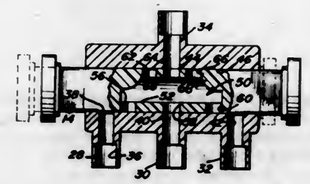


A flapper or wafer-type check valve with two half-disc flapper or wafer closure elements pivotally mounted in the valve body by hinges on a shaft extending transversely of the valve's flow passage, and shaft guides that removably but securely retain the shaft in the valve body while facilitating limited movement of the shaft parallel to the flow passage axis. The curved and straight peripheries of the flappers close against a seat on the valve body comprising an annular shoulder extending into the flow passage and a transverse rib that extends across the flow passage parallel to the shaft. When opening from a closed position, the flappers first lift off the seat in the area of the hinges before they begin to pivot about the shaft, and as the flappers close they come to rest against the hinge area of the seat without sliding or rubbing against it, thereby avoiding wear of the seat. In addition, several different systems for securing the shaft guides to the valve body are disclosed, as are valves with resilient seats mounted on the flappers, on the valve body, and also valves with non-resilient seats.

3,678,959
HAND OPERABLE SELECTOR VALVE

Richard B. Liposky, 69 Dwellington Drive R.D. #3, Valencia, Pa.

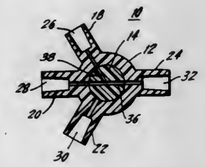
Filed July 30, 1970, Ser. No. 59,468
Int. Cl. F16k *3/00, 11/06*
U.S. Cl. 137—625.11 10 Claims



A tubular casing having a longitudinally extending passageway therein receives a valving member. Three inlet ports are formed along one side of the casing. An identical number of orifices are formed in a confronting face of the valving member. The spacing between orifices is such that only one of the inlet ports communicates with a respective orifice in any particular position. The central portion of the valv-

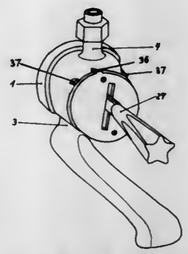
ing member includes a chamber which communicates with the orifices. A plurality of orifices are formed along an oppositely disposed face of the valving member in relation to an outlet port. Thus, in any particular position of the valving member selective communication between one of the inlet ports and the outlet port can be effected.

3,678,960
STOP COCK
Saul Leibinsohn, 11 Hagardom St., Rishon Lezion, Israel
Continuation of Ser. No. 714,644, March 20, 1968, abandoned. This application June 8, 1970, Ser. No. 48,807
Int. Cl. F16k *11/08, 5/02*
U.S. Cl. 137—625.47 1 Claim



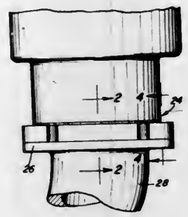
A stop cock type of device for selectively interconnecting a plurality of fluid-carrying ducts in a variety of configurations. The device includes a plurality of outstanding ports which selectively communicate with a rotatable central hub provided with a predetermined configuration of annular passageways which make possible the selection of any one of the variety of flow configurations depending upon the angular position of the valve with respect to the ports.

3,678,961
MIXING VALVE
Manfred Groeche, Gneisenaustr. 33, 2000 Hamburg 20, Germany
Filed March 13, 1970, Ser. No. 19,282
Claims priority, application Germany, March 22, 1969, P 19 14 694.2
Int. Cl. F16k *11/00*
U.S. Cl. 137—636.2 11 Claims



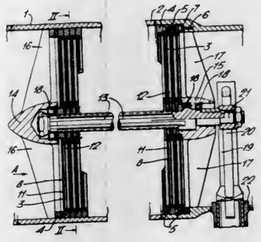
A mixing valve with a single operating handle enabling independent control of the discharge volume, the mixing ratio and the discharge direction of two miscible liquids. The mixing valve comprises a first valve member mounted in a valve housing for rotary movement relative to an adjacent fixed valve disc provided with two eccentric feeding passages for the miscible liquids, said first valve member having a transverse bore communicating with an internal inlet passage which in turn communicates dependent on the rotary position with one or both of the feed passages, a second valve member movable within said transverse bore between positions connecting said inlet passage to any one or none of two discharge lines, and an operating handle adapted to independently adjust the positions of both valve members.

3,678,962
UNIVERSAL FOUR BARREL CARBURETOR ADAPTER
Boyd J. Pierce, Jr., 2506 S. Main St., High Point, N.C.
Filed Feb. 22, 1971, Ser. No. 117,407
Int. Cl. F15d *1/02*
U.S. Cl. 138—39 11 Claims



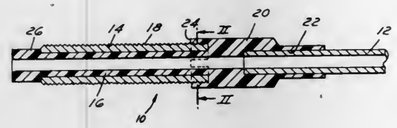
A thick flat plate of substantially constant thickness for disposition between the mounting flanges of a four barrel carburetor and an associated intake manifold. The plate includes a central generally square but slightly trapezoidal opening formed therethrough and the opening is beveled toward one side of the plate. An insert plate (a plurality of selectively usable insert plates may be provided) including beveled peripheral edges is receivable within the opening formed in the first mentioned or body plate with corresponding sides of the plates coplanar. The insert plate has four apertures formed therethrough and the apertures through the insert plate may either be cylindrical or tapered, as desired. Furthermore, the corner portions of the adapter or body plate are provided with first and second sets of counterformed bores for adapting the body plate for securing various four barrel carburetors to various intake manifolds.

3,678,963
LIQUID FLOW CONTROL DEVICES
Colin Betts, Altrincham, and Alfred Edward Collinson, Warrington, both of England, assignors to United Kingdom Atomic Energy Authority, London, England
Filed Oct. 20, 1970, Ser. No. 82,416
Claims priority, application Great Britain, Oct. 22, 1969, 51,873/69
Int. Cl. F15d *1/02*
U.S. Cl. 138—41 3 Claims



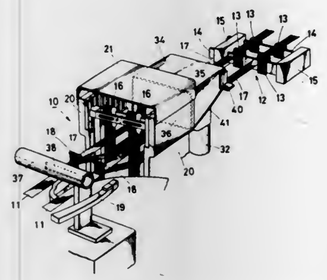
An adjustable, cavitation suppressing, flow impedance for use in liquid flow systems comprising a series of thin barriers spaced in the direction of flow, each barrier having an abundance of penetrations and being associated with means for altering the effective area each barrier presents to the liquid flow.

3,678,964
ADJUSTABLE GUIDE CONNECTOR FOR BOWDEN CABLE
David Andrews, Welling, England, assignor to Ford Motor Company, Dearborn, Mich.
Filed Oct. 1, 1970, Ser. No. 77,154
Claims priority, application Great Britain, Feb. 6, 1970, 5,896/70
Int. Cl. F16c *1/10*
U.S. Cl. 138—103 1 Claim



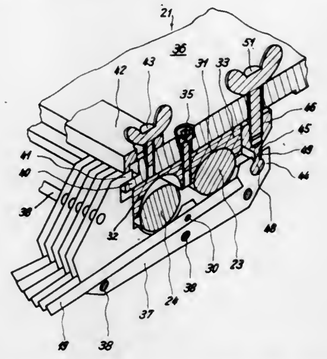
An adjustable connector for connection to the guide conduit of a Bowden cable is described. The adjustable connector comprises a tube and a liner mounted within the tube. The liner extends beyond one end of the tube to form a thickened portion having an opening into which the cable guide conduit is inserted and bonded to the liner. Means are described for preventing axial and rotational movement of the tube relative to the liner. In use, the core of the Bowden cable passes through the tube and liner assembly.

3,678,965
PNEUMATIC CLEANING APPARATUS FOR TEXTILE MACHINERY
Yasuo Yamada, 4024 Mikkaichi, Kurobe-shi, Toyama-ken, Japan
Filed Dec. 18, 1970, Ser. No. 99,357
Claims priority, application Japan, Dec. 24, 1969, 44/123273
Int. Cl. D03j *1/00*; D03d *49/00*
U.S. Cl. 139—1 C 4 Claims



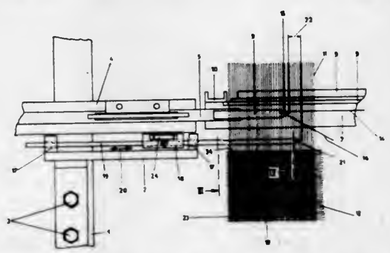
A pneumatic cleaning apparatus for textile machinery is disclosed for removing fly and fiber dust from operative components and parts of the machines. There are provided a plurality of suction openings communicating with a suction device for taking up and conducting away with suction air currents the lint and fly emanating particularly from local areas of a warp stop motion, harnesses and reeds, thereby improving the quality of the woven product.

3,678,966
REED TOOTH ARRANGEMENT ON A WAVE-TYPE LOOM
Edgar H. Strauss, Ruti, Zurich, Switzerland, assignor to Ruti Machinery Works, Ltd., Ruti/ZH, Switzerland
Filed March 26, 1970, Ser. No. 22,851
Claims priority, application Switzerland, April 11, 1969, 5518/69
Int. Cl. D03d *47/26*
U.S. Cl. 139—12 7 Claims



A reed tooth arrangement for use on a wave-type loom, which comprises a plurality of sheet-like guide elements for preventing lateral bending of the reed teeth located therebetween; carrier means for supporting said guide elements, each of said elements having a first retaining portion for mounting on the carrier, said retaining portions registering with each other in the longitudinal direction of the arrangement, and each of the guide elements also having a second retaining portion, said second retaining portion defining an opening that narrows towards the outside and said openings registering with each other in the longitudinal direction of the arrangement; and support means secured to said carrier, said support means having a rod-shaped portion that is pushed through said openings transversely of the guide elements and that is swingably mounted within the openings.

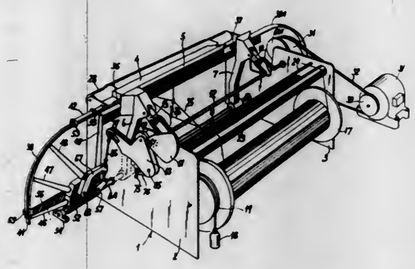
3,678,967
SHEDDING MOTION FOR A WEAVING MACHINE
Othmar Bruhwiler, and Anton Egloff, both of Brugg, Switzerland, assignors to Georg Fischer AG Brugg, Brugg, Switzerland
Filed Sept. 11, 1970, Ser. No. 71,578
Claims priority, application Switzerland, Dec. 4, 1969, 18047/69
Int. Cl. D03c *13/00*
U.S. Cl. 139—35 3 Claims



The present invention refers to a shedding motion in a weaving machine with filling insertion from a filling yarn

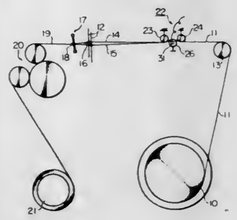
supply package outside of the warp shed, whereby the end of each pick is pulled out over at least some of the width of the shed and beyond the cloth selvage by a withdrawing carrier.

3,678,968
SHUTTLELESS LOOM
Yves Juillard, Mulhouse, France, assignor to Societe Alsacienne de Constructions Mecaniques de Mulhouse, Mulhouse, France
Filed Dec. 18, 1969, Ser. No. 886,298
Claims priority, application France, Dec. 24, 1968, 68180332
Int. Cl. D03d 47/18
U.S. Cl. 139—127 R **2 Claims**



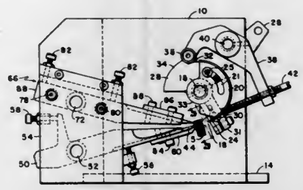
In a shuttleless loom having a reed-carrying frame pivotable about an axis, two opposed needles, one for inserting a weft thread halfway into the shed and the other for picking up the weft thread and drawing it through the second half of the shed; each needle is connected to one end of a flexible ribbon slidable in an arcuate guide which is integral with and substantially in the plane of the reed-carrying frame, and the center of the guide is adjacent the pivot axis of the frame. The other end of the ribbon is connected to a control arm on a shaft which remains perpendicular to the plane of the guide and passes through the center of the latter, and the shaft is oscillated in synchronism with the frame through a rotary shaft of the loom.

3,678,969
METHOD AND APPARATUS FOR DETECTING MISPICK IN LOOM
Miyuki Gotoh, Tokyo, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan
Filed Dec. 15, 1970, Ser. No. 98,428
Int. Cl. D03d 51/18, 51/34
U.S. Cl. 139—370 **8 Claims**



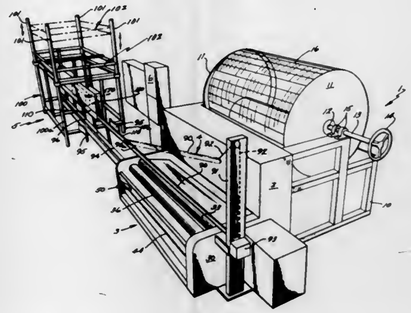
A method for detecting the so-called "mispick" in a loom and a weft detector for a loom adapted to determine whether a required length of weft is properly picked into a warp shed, by detecting a temporary rise in the warp tension caused by the weft upon beating. The weft detector comprises a warp tension sensor for detecting the temporary rise during beating and a control circuit connected to the warp tension sensor for stopping the operation of the loom upon detection of the mispick, that is, in the absence of the temporary raise in the warp tension.

3,678,970
LOOPING AND HOOKING MACHINE
Milton H. Dammel, 832 Denier Place, Cincinnati, Ohio
Filed Jan. 11, 1971, Ser. No. 105,171
Int. Cl. B21f 35/02
U.S. Cl. 140—103 **10 Claims**



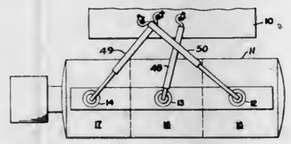
A spring looping and hooking machine is provided with a bayonet on a rotatable shaft mounted between independently adjustable bending sheaths rotatable to provide the bayonet with a circular motion. The rotatable shaft also carries a cam which serves to drive a spring clamping bar for fixing the spring on a knife edge during the hook or loop forming operation. The forming of the hook or loop is accomplished by the bayonet and sheaths bending over a pair of jaws. Each of the supports for the knife edge and the jaws are rotatably and linearly adjustable.

3,678,971
APPARATUS AND METHOD FOR CAGE ROLLING AND WELDING
Alfred A. Nordgren, Holland, Mich., assignor to W.E. Dunn Mfg. Co., Holland, Mich.
Filed July 15, 1970, Ser. No. 55,071
Int. Cl. B21f 15/08, 33/00
U.S. Cl. 140—107 **56 Claims**



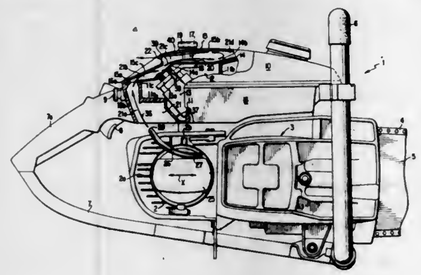
A storage crib is provided for a roll of wire fabric which is fed beneath a shear, to a cage forming assembly which forms the fabric into a concrete pipe reinforcing cage in such a manner that it encircles a boom extending over the forming rollers. When a cage is formed, the boom can be elevated, thus extracting the formed cage from the forming apparatus. The cage is then conveyed down the boom to a welding conveyor by which it is conveyed on a beam past a welding apparatus. The welding apparatus engages and holds a pair of juxtaposed circumferential wires and then travels with the cage as the wires are welded together. Upon completion of the weld, the wires are disengaged and the welding apparatus travels in the opposite direction towards the next pair of juxtaposed circumferential wires. The beam is supported by a plurality of supports which can be disengaged from the beam such that the cage can travel past each support as it travels towards the egress end of the welding apparatus.

3,678,972
FLUID TRANSFER DEVICE
Henry A. Swindler, Palo Alto, Calif., assignor to Parker-Hannifin Corporation, Cleveland, Ohio
Filed March 24, 1970, Ser. No. 22,201
Int. Cl. B67d 5/00
U.S. Cl. 141—387 **6 Claims**



A device for transferring two or more different liquids from a bulk supply to a tank truck having a compartment for each liquid. The device includes two or more loading booms, each pivoted at one end for both horizontal and vertical swinging motion. Each boom carries a delivery conduit and a dispensing head for a given liquid. The booms are pivoted at different vertical heights so that one may swing horizontally over the other as necessary for registering any dispensing head with the filler opening for any compartment in the truck. The booms and delivery conduits carried thereby are in telescopic sections so as to be extendible and power operation is provided for extension, horizontal swinging and vertical swinging of each boom. Means is also provided for recovering vapor displaced from the tank truck. The dispensing head is spring loaded into tight sealing engagement with the tank filler opening.

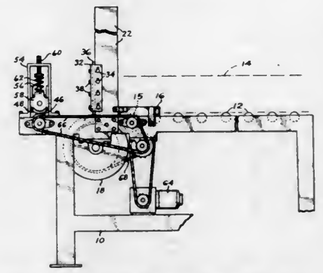
3,678,973
METHOD AND APPARATUS FOR HEATING CARBURETOR AIR AND FLUSHING AN AIR FILTER IN A CHAIN SAW
Wendell Harold Loop, Prineville, Oreg., assignor to McCulloch Corporation, Los Angeles, Calif.
Filed Jan. 27, 1971, Ser. No. 110,043
Int. Cl. B27b 17/02; F02m 31/04
U.S. Cl. 143—32 R **14 Claims**



A method and apparatus for preheating air passing to the carburetor of a chain saw engine and concurrently flushing a carburetor air filter.

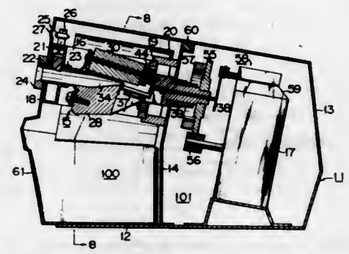
A method and apparatus for utilizing a stream of exhaust gas, generated by a chain saw engine, by directing said stream, as a free flow, through air toward a preselected location on a chain saw.

3,678,974
VENEER TENDERIZING APPARATUS
John C. O'Brien, deceased, late of Vancouver, Wash. (by Violet D. O'Brien, executrix), assignor to Jack-O-Line Corporation
Filed May 6, 1970, Ser. No. 35,194
Int. Cl. B27d 5/00
U.S. Cl. 144—2 R **10 Claims**



Wood veneer tenderizing apparatus incises wood veneers across the grain to render them flexible and limp for subsequent application in the manufacture of plywood. The apparatus includes an incising assembly comprising an incising roll and a drive roll rotatably mounted in axially aligned cooperating relation. Metering feed means feed the wood veneers to the incising assembly one at a time from the bottom of a stack of wood veneers. As they pass through the assembly, the veneers are incised with a plurality of surface incisions in a pattern determined by the pattern of incising elements on the incising roll.

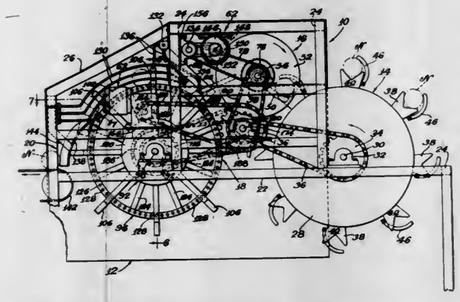
3,678,975
ELECTRIC PENCIL SHARPENER
Masakazu Imanishi; Kenzi Kondou, and Itsu Sugiura, all of Nagoya, Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan
Filed March 2, 1970, Ser. No. 15,797
Claims priority, application Japan, March 6, 1969, 44/2044
Int. Cl. B43l 23/02
U.S. Cl. 144—28.5 **12 Claims**



An electric pencil sharpener including a pencil holding unit provided with a start switch, a motor circuit to which there are connected an electric motor and rotating sharpening mechanism operated by said motor, detecting means for detecting the sharpened condition of a pencil, switching means actuated by said detecting means whereby, upon completion

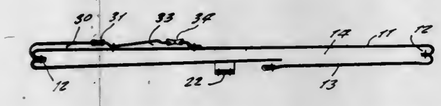
of the sharpening of the pencil to a desired first degree, a lamp is illuminated, and upon completion of sharpening to a second sharper degree, the switching means is operated to open the circuit of the motor to stop it with the lamp remaining illuminated, thereby indicating the end of the sharpening so as to prevent the pencil from being excessively sharpened. A flywheel is coupled to the rotating sharpening mechanism to prevent immediate ceasing of rotation thereof upon opening of the motor circuit.

3,678,976
ONION PEELING APPARATUS
Gerald J. Orlowski, Calumet Park, Ill., assignor to Korlow Corporation
Filed June 19, 1970, Ser. No. 47,763
Int. Cl. A23n 7/00
U.S. Cl. 146—43 R **17 Claims**



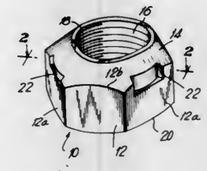
An apparatus for peeling onions. A rotating inlet conveyor is provided for introducing whole onions with their skin, and flower and root portions thereon to cutters which remove the flower and root portions end from each onion. Means then transfer the onion to a rotary member which simultaneously conveys the onions to a discharge point and peels them. During the transfer from the inlet conveyor to the conveying-peeling means, the outer peripheries of the onions are scribed to a limited depth of penetration. When the onion is transferred to the conveying means, pressurized air is directed against the scribed outer periphery of the onion to force the skin from the outer surface of the onion. The severed and peeled onion is finally transferred to a discharge station for further processing.

3,678,977
OVER ARM CARRYING BAG
Emma F. Baumgartner, 8925 Fairmount Road, Novelty, Ohio
Filed March 18, 1970, Ser. No. 20,535
Int. Cl. A45c 13/26
U.S. Cl. 150—30 **4 Claims**



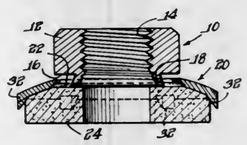
An improved lady's handbag which is adaptable as a shopping bag and a carrier for other personal objects, the device comprising a bag assembly having several different pockets each of which is adaptable for different uses, and the assembly being made of fabric material so that it may be draped over a lady's forearm with a handle on the underside thereof so that the lady may grasp the same and retain it securely against theft or loss.

3,678,978
LOCKNUT
James R. Davis, Bloomfield Hills, and Arthur B. Blum, Utica, both of Mich., assignors to Standard Pressed Steel Co., Jenkintown, Pa.
Continuation of Ser. No. 765,876, Oct. 8, 1968. This application March 10, 1970, Ser. No. 17,045
Int. Cl. F16b 39/12
U.S. Cl. 151—21 **10 Claims**



A locknut having a polygonal body portion with a frustoconical crown extension at one end. A plurality of indentations are provided in selected flat surfaces of the body portion to form a corresponding number of locking regions in the bore of the nut. Each indentation is curved so that the ends of the indentation are deeper than the crest. As a result, the locking regions also are curved but flatter than the initial curvature of the bore, whereby added contact is provided between the locking regions and a mating male member.

3,678,979
SEALING WASHER
Lowell L. Bjorklund, Elgin, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.
Filed Dec. 17, 1969, Ser. No. 885,902
Int. Cl. F16b 39/26
U.S. Cl. 151—37 **1 Claim**

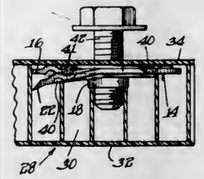


The present invention relates generally to fastener units consisting of a rotary threaded fastener such as a nut, and a combined spring washer and sealing washer adjacent the clamping surface of the nut, said combined washers being tiltable with respect to the fastener axis. The fastener unit disclosed herein comprises a nut and a combined spring washer and sealing washer adjacent the clamping surface the nut, said spring washer having an aperture sufficiently larger than the maximum diameter of the fastener threads to permit tilting of the washer with respect to the axis. The washers are secured against unauthorized axial separation from the nut.

3,678,980
PANEL INSERT DEVICE
Charles E. Gutshall, Roselle, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.
Filed March 26, 1970, Ser. No. 22,811
Int. Cl. F16b 37/04
U.S. Cl. 151—41.7 **9 Claims**

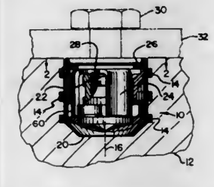
The present invention relates generally to insert devices for panels and more particularly to insert devices for installation in light weight panels such as panels composed of a honeycomb core bounded by skin sheets. The embodiments of the present invention disclosed in the drawings include a sheet

metal fastener member having an annular body which is partially severed transversely. A portion of the body adjacent one side of the body severance is deflected axially to provide an entering helical lead and panel rupturing edge. The annular



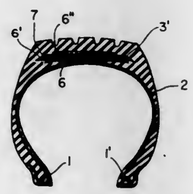
body has an internally threaded extrusion, and a thermoplastic adhesive is attached to the body which, when heated, will form a band between the fastener body and a complementary honeycomb core.

3,678,981
FASTENER INSERT HAVING A REPLACEABLE NUT
Ernest Heyworth, Fullerton, Calif., assignor to Tridair Industries, Redondo Beach, Calif.
Filed Oct. 5, 1970, Ser. No. 78,066
Int. Cl. F16b 39/02
U.S. Cl. 151—41.76 **1 Claim**



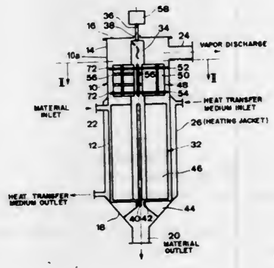
A fastener insert for a carrier part where the insert provides a "floating" characteristic for an easily replaceable internal nut so that the nut is self-adjusting; for example, to compensate for the misalignment of parts.

3,678,982
PNEUMATIC RADIAL TIRE
Shigeo Watanabe; Toshiyuki Sogi, and Tsuneo Mukai, all of Tokyo, Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan
Filed Aug. 22, 1969, Ser. No. 852,377
Claims priority, application Japan, Aug. 27, 1968, 43/60865
Int. Cl. B60c 9/20
U.S. Cl. 152—361 **5 Claims**



A pneumatic radial tire for use in large vehicles having a carcass ply consisting of layers of rubber coated cords extending in radial directions of the tire between beads on both sides, and a reinforcing breaker in a crown encircling the carcass ply in circumferential directions. At least one organic, natural or synthetic cord layer wider than adjacent metal cord layers is arranged between the metal cord layers forming a breaker.

3,678,983
THIN FILM APPARATUS
Fritz Widmer, Fallanden, and Janos Miklos Gorbel, Zurich, both of Switzerland, assignors to Luwa AG, Zurich, Switzerland
Filed June 8, 1970, Ser. No. 44,197
Claims priority, application Switzerland, June 11, 1969, 8888/69
Int. Cl. B01d 1/22
U.S. Cl. 159—6 W **9 Claims**

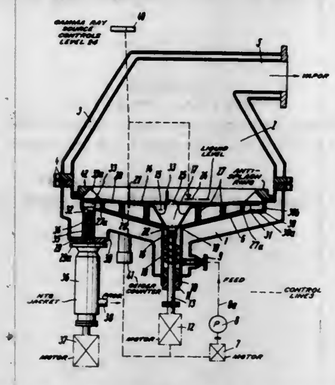


A thin film apparatus of the type embodying an approximately vertical treatment compartment or chamber and with which merges at the upper end thereof a separation compartment possessing a rotor equipped with vanes or blades as well as two ring members which are spaced in axial direction from one another. The ring members surround the cross section of the separation compartment which is swept over by the rotor. Radially extending droplet collecting ridges, grooves or the like are provided at the aforementioned rotor blades or vanes, these droplet collecting ridges opening between both of the ring members. According to important aspects of the invention, the ring members are rigidly connected for rotation with the vane rotor and possess an internal diameter which essentially corresponds to the diameter of the rotor, and furthermore, the ring members partially bound the liquid-throughpassage means disposed externally of the rotor.

3,678,984
REACTION VESSEL FOR CHEMICAL AND PHYSICAL REACTIONS OF VISCOUS MASSES
Paul Rolf Stehning, Thuringerstrabe 2, 6391 Gravenwiesbach, Germany
Filed Nov. 16, 1970, Ser. No. 89,810
Int. Cl. B01d 1/00; B01f 7/16; B01d 9/00; B01f 15/00; C10b 7/00; C08g 17/00
U.S. Cl. 159—25 A **13 Claims**

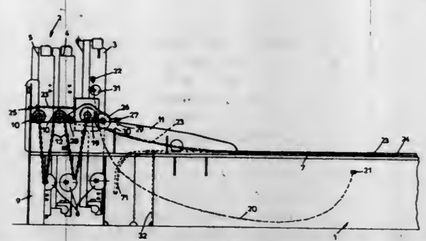
A reaction vessel comprises an annular, vertical container with a frusto-conical base through which mass to be treated is passed radially outwards a rotatable stirring mechanism. The stirring mechanism is composed of a vertical shaft with radial arms from which stirring blades depend into close proximity with the base of the container. The stirring blades are spaced along the arms, and annular dividing walls attached to the base extend into the spaces between the arms, the dividing walls

having openings at the bottom thereof for outward flow of mass. The container has an outer ring with an overflow wall in



front thereof and a discharge opening is provided in the bottom of the ring. The arms carry a scraper which travels in the ring.

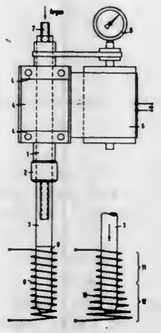
3,678,985
DEVICE FOR CLOSING A HATCH OR THE LIKE
Henri Kummerman, Geneva, Switzerland, assignor to MacGregor Comarain S.A., Ville D'Avray, France
Filed Dec. 12, 1969, Ser. No. 884,469
Claims priority, application France, Dec. 13, 1968, 178124
Int. Cl. E05f 15/18, 15/00
U.S. Cl. 160—188 **2 Claims**



A hatch construction comprising a plurality of interconnected cover sections tiltable in an upright stowing position in a stowage space adjacent to the hatch, the endmost cover section, which is remotest from said stowage space, being automotive, stationary chain means loosely extending alongside the hatch and stowage space and secured to a fixed point at each end thereof to engage a driving pulley provided on said automotive cover section and at least on loose guiding pulley supported by the rotary shaft of said driving pulley, said chain means passing between said pulleys and embracing them at least partially.

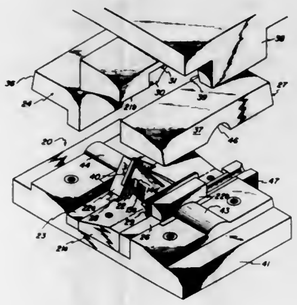
3,678,986
METHOD FOR MANUFACTURING HOMOGENEOUS BODIES FROM SEMICONDUCTOR ALLOYS
Gerhard Oesterhelt, Nuraberg, and Eugen Szabo De Buca, Erlangen, both of Germany, assignors to Siemens-Schuckertwerke Aktiengesellschaft, Berlin and Erlangen, Germany
Continuation of Ser. No. 751,006, July 25, 1968, abandoned, which is a continuation of Ser. No. 504,896, Oct. 24, 1965, abandoned. This application April 27, 1970, Ser. No. 29,771
Claims priority, application Germany, June 5, 1965, 597497
Int. Cl. B22d 27/02
U.S. Cl. 164—51 **1 Claim**

In a method of manufacturing a homogeneous, fissure-free body from a semiconductor alloy having a negative coefficient of expansion in the region of its melting point and contained in an upright tube having a closed bottom and solidified in the tube after having been in a molten condition therein, the step of rotating the tube about its axis at a speed producing cavitation in the molten alloy at least during solidification of the molten alloy therein.



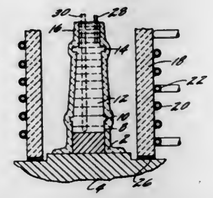
In an apparatus for carrying out the foregoing method, there is provided an elongated tubular container adapted to contain the alloy in molten condition and during solidification thereof, means operatively connected to the container for rotating the latter about its axis at a speed producing cavitation in the molten alloy, and a high-frequency coil surrounding at least part of the container and having an axis coinciding at least substantially with the axis of the tubular container.

3,678,987
ELASTOMERIC MOLD LINING FOR MAKING WAX REPLICA OF COMPLEX PART TO BE CAST
Paul H. Kydd, Scotia, NY, assignor to General Electric Company
Filed Dec. 28, 1970, Ser. No. 101,497
Int. Cl. B22c 7/02
U.S. Cl. 164—45 **3 Claims**



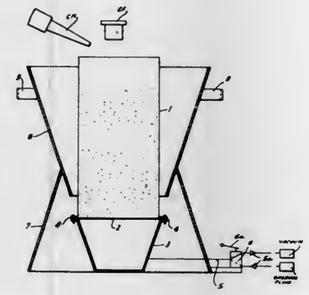
Molding of the wax replica of a complex part preparatory to casting the part from metal is accomplished with an oversize mold cavity containing an elastomeric liner element bearing (on the inside face thereof) a negative of the surface of the complex part.

3,678,988
INCORPORATION OF DISPERSOIDS IN DIRECTIONALLY SOLIDIFIED CASTINGS
John K. Tien, Rocky Hill, and Stephen M. Copley, Madison, both of Conn., assignors to United Aircraft Corporation, East Hartford, Conn.
Filed July 2, 1970, Ser. No. 51,793
Int. Cl. B22d 27/02
U.S. Cl. 164—49 **7 Claims**



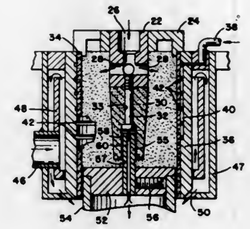
Inert particles are uniformly dispersed within a molten alloy while it is being directionally solidified in a mold to cause a uniform dispersion within the casting, the dispersion being produced by ultrasonic waves within the molten alloy during solidification.

3,678,989
APPARATUS FOR MAKING CASTINGS
Erich Krzyzanowski, Frankenthal, Upper Palatinate, Germany, assignor to Grunzweig & Hartmann Aktiengesellschaft, Ludwigshafen, Germany
Division of Ser. No. 795,570, Jan. 31, 1969, Pat. No. 3,581,802. This application Nov. 13, 1970, Ser. No. 89,355
Claims priority, application Germany, Feb. 3, 1968, P 16 08 846.9
Int. Cl. B22c 7/00, 9/22
U.S. Cl. 164—246 **7 Claims**



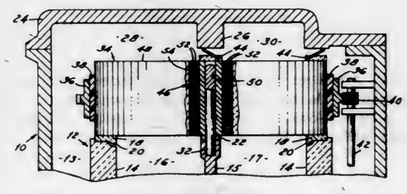
An apparatus for making castings. A body of granular material is confined in a container and a stream of gaseous fluid is introduced into the bottom of the container to impart to the granular material a state at least approaching fluidization. Into the thus agitated granular material a form is introduced consisting of a material which is subject to consumption on contact with a molten metal. Admission of gaseous fluid is terminated to permit settling and compacting of the granular material about the form. Molten metal is introduced into the form to assume the configuration of the same while simultaneously consuming the form. Gaseous fluid is then again admitted into the container to agitate the granular material for facilitating removal of the finished casting therefrom.

3,678,990
APPARATUS FOR CONTINUOUS CASTING OF HOLLOW BAR
Andrew Lawrie Fabens, Jr., Shaker Hts., Ohio, assignor to Truline Casting Company, Wickliffe, Ohio
Continuation-in-part of Ser. No. 5,694, Jan. 26, 1970, abandoned. This application Nov. 3, 1971, Ser. No. 195,649
Int. Cl. B22d 11/08
U.S. Cl. 164—274 **28 Claims**



Apparatus for casting a hollow bar which includes a mold having a mandrel therein and means for distributing molten material to the mold inlet in an area between the mold and the mandrel. Initially a starting plug closes the mold outlet to prevent leakage of the molten material and provides means to join the plug and solidified melt. After the molten material freezes in the annulus around the mandrel, the starting plug is lowered at a controlled rate to draw the solidified hollow bar from the mold outlet as additional molten material is fed through the inlet. An air inlet into the hollow of the cast bar prevents the formation of a vacuum within the hollow. Further, means are provided for cooling the mold to quickly freeze the molten material as it is fed into the mold.

3,678,991
GAS TURBINE CERAMIC REGENERATOR
Joab J. Blech, Oak Park, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed Oct. 29, 1970, Ser. No. 85,018
Int. Cl. F28d 19/04
U.S. Cl. 165—9 **3 Claims**

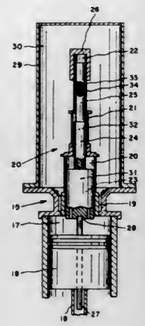


Gas conducting passages extend through the solid ceramic hub of a rotating disc type ceramic regenerator. An inorganic cement bonds the hub to the main heat transfer portion of the regenerator. The passages in the hub reduce thermal expansion differences between the hub and the main portion, reduce the rotating mass of the regenerator and increase gas flow and heat transfer. Small amounts of the material used to make the main heat transfer portion of the regenerator can fill the passages.

3,678,992
THERMAL REGENERATOR

Alexander Daniels, Briarcliff Manor, N.Y., assignor to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 6, 1970, Ser. No. 61,706
Int. Cl. F28d 17/00
U.S. Cl. 165—10 14 Claims

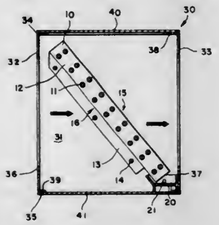


A thermal regenerator having a matrix of a plurality of hollow, carbon, micro-spheres which are permeable to and contain a gas such as helium; the matrix having low heat conductivity between the carbon spheres, but high heat capacity of the helium which increases as temperatures decrease from 40° K. to about 9° K.

3,678,993
HEAT EXCHANGE COIL AND HOUSING THEREFOR

Larry J. Pierce, Clarksville, Tenn., assignor to The Trane Company, La Crosse, Wis.

Filed Oct. 23, 1970, Ser. No. 83,495
Int. Cl. F24f 13/02; F25b 39/02
U.S. Cl. 165—76 5 Claims



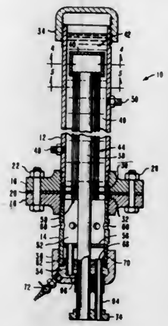
A heat exchange coil housing structure providing interchangeable side, top and bottom panels whereby the shifting of panels allows for airflow in a plurality of different directions without repositioning the heat exchange coil.

3,678,994
NOVEL CONDENSER

Yusuf M. Zhumkhawala, Los Angeles, Calif., assignor to Food Protein Concentrates, Inc., Culver City, Calif.

Filed March 9, 1970, Ser. No. 17,584
Int. Cl. F28b 9/10
U.S. Cl. 165—111 9 Claims

This patent describes a novel gravity return condenser apparatus adapted for the condensation of vapors and the return of the condensate to the source of the vapors while providing for the elimination from the condenser of non-condensible vapors. More particularly, the novel condenser of this patent comprises a vertical casing having a closed upper end, an internal riser duct located within the casing and extending through the major portion of the length of said casing to form an annular space between the outer surface of the duct and the inner surface of the casing, within the upper portion of said annular space, a vertical tube bundle, above the upper end of said duct and said tube bundle a header which serves to distribute vapors rising upwardly in said duct over the upper end of said tube bundle, supporting means for said tube bundle comprising a transverse plate carried by said casing into which the tubes of said tube bundle are fixed at their lower ends, means for passing cooling fluids into said casing, around the exterior of said tube bundle, duct and header and out of

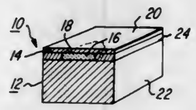


said casing, below said plate a vapor space comprising an annular space between the outer surface of said duct and the inner surface of said casing, the lower end of said tube bundle communicating with said vapor space, a second transverse plate carried by said casing forming the lower extremity of said vapor space, means associated with said vapor space for permitting the passage of uncondensed vapor to the exterior of said casing, below said second plate a condensate trap comprising an annular space between the outer surface of said duct and the inner surface of said casing, a first condensate passage means communicating said vapor space with said trap, a second condensate passage means communicating said trap with the exterior of said casing, the upper extremity of said second condensate passage means being above the lower extremity of said first condensate passage means.

3,678,995
SUPPORT FOR ELECTRICAL COMPONENTS AND METHOD OF MAKING THE SAME

Jacques Roger Collard, Trenton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed June 22, 1970, Ser. No. 47,981
Int. Cl. H01l 1/12
U.S. Cl. 165—185 4 Claims



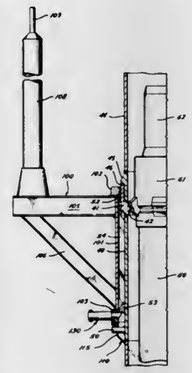
A heat conducting support on which an electrical component can be mounted so as to conduct heat generated by the component away from the component. The support includes a substrate of good heat conducting material and a diamond body embedded in the substrate with a surface of the diamond body being flush with a surface of the substrate. A metal film extends over the surface of the substrate and the diamond

body and is strongly adhered to the substrate. An electrical component can be mounted on and secured to the metal film over the diamond body. The support is formed by placing the diamond body on the surface of a plate of the material of the substrate and coating the surface of the plate around the diamond body with additional material of the substrate. The coating contacts the peripheral edge of the diamond body to secure the diamond body to the substrate and extends to the surface of the diamond body. A metal film can then be deposited on the surface of the diamond body and the coating.

3,678,996
WELL COMPLETION AND APPARATUS

David P. Herd, Houston, Tex., assignor to Rockwell Manufacturing Company, Houston, Tex.

Continuation of Ser. No. 743,782, July 10, 1968, abandoned.
This application Oct. 12, 1970, Ser. No. 80,192
Int. Cl. E21b 7/12
U.S. Cl. 166—.5 16 Claims



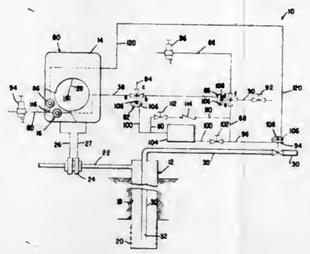
A guide base and method of installing the same for underwater wells. The guide base comprises a tubular guide hub having structural support members radially projecting therefrom to which are affixed a plurality of vertical guide columns with cables extending upwardly therefrom. Near the top of the tubular hub is a support ring which seats on a support shoulder affixed to the conductor casing head of an underwater well. An orientation pin projects radially from the conductor casing to which it is affixed below the casing head. Above the pin a latch ring is affixed to the conductor having a downwardly facing slightly tapered surface. Longitudinal ribs are affixed at regular intervals around the conductor between the latch ring and the support shoulder affixed to the casinghead. Affixed to the bottom of the tubular guide hub by a bolted flanged joint is an orientation sleeve. The lower end of the sleeve is formed by cutting a left-hand helix and a right-hand helix so that they intersect in a lower tip and an apex near the flanged joint. At the apex a vertical pin slot is provided. A hold down latch assembly is provided on the tubular guide hub which has a latch member laterally engageable with the conductor latch ring when the orientation pin and pin slot are fully engaged. The guide base is installed after the conductor casing and its riser have been installed and after further drilling has proceeded.

3,678,997
AUTOMATIC DEWATERING OF GAS WELLS

Francis M. Barchard, Edmonton, Alberta, Canada, assignor to The Singer Company, New York, N.Y.

Filed March 31, 1971, Ser. No. 129,827
Int. Cl. E21b 43/00
U.S. Cl. 166—53 16 Claims

An automatic gas well dewatering system which operates to eject water from the well whenever the differential pressure across an orifice plate in the gas discharge line decreases below a predetermined low pressure value. The said dewatering system includes fluid activated control valves disposed in control loop lines to continuously cycle the control valves between open and closed positions. One of the control valves

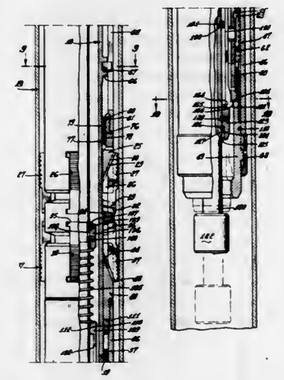


intermittently opens a liquid discharge line connected to a tubing carried in the well casing for discharging liquid from the well. The said dewatering system will continue to cycle and eject water from the well so long as the differential pressure across the orifice plate remains below a predetermined high pressure value.

3,678,998
RETRIEVABLE WELL PACKER

Darryl W. Cockrell, and Rudy B. Callihan, both of Houston, Tex., assignors to Baker Oil Tools, Inc., Commerce, Calif.

Filed July 20, 1970, Ser. No. 56,626
Int. Cl. E21b 23/06, 33/129
U.S. Cl. 166—123 35 Claims



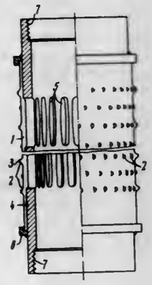
A well packer lowered in a well casing and having a main body carrying expanders and initially retracted slips for anchoring the body to the casing against both up and down movement therein, the body also carrying an initially retracted packing thereon expandable against the casing, the slips and packing being expanded outwardly against the casing by moving the body upwardly, and an upper device surrounding the body downwardly against the upper portion of the expander slip and packing combination, the upward force or movement of the body being transmitted to the slip and packing combination through a coupling structure releasably connecting the body to the lower portion of combination. When the packer is to be released from the casing a retrieving tool engages and releases the coupling structure, removing the upward force of the body on the lower portion of the expander slip and packing combination, an upward pull on the tool then moving

the body upwardly to effect retraction of the slips and packing from the casing.

3,678,999
FILTER FOR WATER-TAKING WELLS

Ivan Vladimirovich Kulikov, Pushkinsky proezd, 4b, kv. 17, Tula, U.S.S.R.; Vasily Semenovich Borisov, Yasny proezd, 30, korpus 1, kv. 38, Moscow, U.S.S.R.; Viktor Georgievich Treschev, deceased, late of Pervomaiskaya ulitsa, 2, kv. 14, Tula, U.S.S.R.; by Zinaida Mikhailovna Trescheva, administratrix, Pervomaiskaya ulitsa, 2, kv. 14, Tula, U.S.S.R.; by Vera Viktorovna Trescheva, administratrix, Pervomaiskaya ulitsa, 2, kv. 14, Tula, U.S.S.R., and Dmitry Viktorovich Treschev, administrator, Pervomaiskaya ulitsa, 2, kv. 14, Tula, U.S.S.R. (by Zinaida Mikhailovna Trescheva, acting administratrix)

Filed Jan. 30, 1970, Ser. No. 7,105
Int. Cl. E21b 43/08
U.S. Cl. 166—236 6 Claims



A filter for water wells comprises a casing mounted on an apertured inner frame, the casing having conical or pyramidal external projections, the top of each projection being provided with a hole for water passage. The edges of the holes in the projections are sharp pointed and of different height to promote formation of cavities in the surrounding soil at the holes during pumping of water.

3,679,000
SECONDARY OIL RECOVERY METHOD USING N-SULFOHYDROCARBON-SUBSTITUTED ACRYLAMIDE POLYMERS AS VISCOSITY INCREASING AGENTS

Paul Richard Kaufman, Parkersburg, W. Va., assignor to The Lubrizol Corporation, Wickliffe, Ohio

Continuation-in-part of Ser. No. 15,241, Feb. 27, 1970, abandoned, which is a continuation-in-part of Ser. No. 831,227, June 6, 1969, abandoned. This application Dec. 4, 1970, Ser. No. 95,352
Int. Cl. E21b 43/22
U.S. Cl. 166—273 16 Claims

Polymers of N-sulfohydrocarbon-substituted acrylamides, especially 2-acrylamido-2-methylpropanesulfonic acid, are useful for controlling the viscosity of aqueous media used in water-flooding operations for secondary petroleum recovery. The preferred polymers are homopolymers and copolymers with acrylic acid or acrylamides.

3,679,001
WELL DRILLING METHOD

Gilman A. Hill, 6200 Plateau Drive, Littleton, Colo.

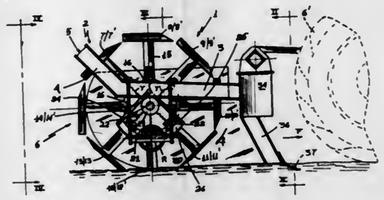
Filed March 2, 1970, Ser. No. 15,850
Int. Cl. E21b 21/04, 33/138
U.S. Cl. 166—292 3 Claims

A well drilling fluid comprises a solution having dissolved therein a relatively small quantity of potassium silicate or, for some applications, sodium silicate or a mixture of sodium silicate and potassium chloride. The body of the fluid may be water or a presently available mud or other drilling fluid with which the silicate is compatible. The fluid on reaching shale sections along the well bore acts to stabilize the shale and prevent its swelling, dispersing or sloughing.

3,679,002
APPARATUS FOR PULLING ROW CROPS

Keith Douglas Bradbury, Juramento 3361, 7°, "B", Buenos Aires, Argentina

Filed Dec. 3, 1969, Ser. No. 881,937
Claims priority, application Argentina, Dec. 17, 1968, 218576
Int. Cl. A01d 25/04
U.S. Cl. 171—56 1 Claim



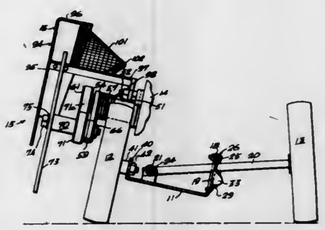
A harvester of row-crops attachable to and powered by a tractor, comprising a harvesting-grasper for pulling row crops from the ground.

A plurality of pivoted levers are equipped each with a grasper blade. Through cam action the relating grasper blades enter the soil, are moved together to grasp the crop plants, lift them out of the ground and discharge them.

3,679,003
LAWN EDGE TRIMMING MACHINE

Donald E. Wadsworth, 88 N. W. 165th St., Miami, Fla.

Filed June 17, 1970, Ser. No. 46,956
Int. Cl. A01b 45/00
U.S. Cl. 172—15 11 Claims



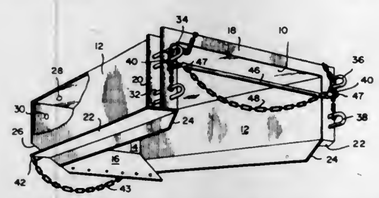
A lawn edge trimming machine or edger is described wherein cutter blade height is controlled by relative angular adjustment of an opposed pair of handle grip members used by the operator in propelling the machine. The cutter adjustment mechanism includes coaxial pivotal means surrounding the take-off shaft and carrying a rocker arm rotatively supporting the cutter blade for belt connection with the drive shaft, the arrangement being such that the rotative axis of the cutter blade is in the vicinity of that of the ground wheel at the same side of the machine, for simplicity and compactness of structure, for improved performance, and for enhanced maneuverability. A protective cover guard surrounding the cutter blade assembly provides maximum protection against flying objects propelled by the cutter blade, while at the same time, being comprised partly of wire mesh screening, affording a

view of the rotating cutter blade to the operator during use of the machine. Foot-pedal controlled means is provided for converting the machine between vertical and oblique planes of operation of the cutter blade, for correspondingly different modes of cutter operation.

3,679,004
DRAG SCRAPER FOR DREDGING SILT

Henry Albert Loy, 87 N. 11th West, Provo, Utah

Filed July 15, 1970, Ser. No. 54,910
Int. Cl. E02f 3/60
U.S. Cl. 172—26.5 10 Claims

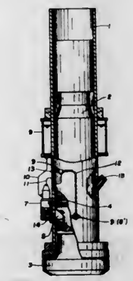


The invention includes a scraper and its combination with a catamaran. The scraper has a top wall, side and rear walls, an open front and bottom, a blade adjacent to the rear wall and an outwardly extending support shoe secured to each side wall adjacent and parallel to but spaced from its bottom edge. The top and side walls are reinforced by flanges at the front end where hooks are secured for a chain to pull the scraper forwardly. Water escape openings are provided in top and side walls. The catamaran comprises two spaced floats and lifting mechanism so that the scraper used in combination therewith can be lifted into the space between the floats and lowered into contact with the silt at the bottom of a body of water.

3,679,005
DIESEL HAMMER

Kohsaku Inaba; Seisaku Yoshida, both of Tokyo; Shoji Matsuura, and Tsukasa Murakami, both of Yokohama, all of Japan, assignors to Ishikawajima-Harima Jukogyo Kabushiki Kaisha, Tokyo-to, Japan

Filed Oct. 19, 1970, Ser. No. 82,041
Claims priority, application Japan, Oct. 24, 1969, 85078; Oct. 24, 1969, 44/85079; Oct. 24, 1969, 44/85080
Int. Cl. E02d 7/12
U.S. Cl. 173—128 5 Claims

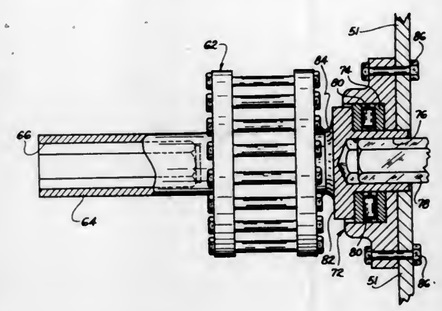


The present invention provides a diesel hammer having as major structural parts a cylinder whose upper end is opened, a ram slidably fitted into said cylinder, an anvil fitted into the lower end of said cylinder, and a fuel tank, a fuel pump and nozzles mounted upon the outer surface of said cylinder. A port is formed through said cylinder so as to deliver the air under pressure from the cylinder to said fuel pump and to deliver the fuel in said fuel tank to said nozzles.

3,679,006
POWER TRAIN FOR HORIZONTAL EARTH BORING MACHINE

Albert R. Richmond, West Salem, Ohio, assignor to The Richmond Manufacturing Company, Ashland, Ohio

Filed Oct. 30, 1970, Ser. No. 85,600
Int. Cl. E21c 1/14
U.S. Cl. 173—152 8 Claims



A portable earth boring machine adapted for horizontal boring of shafts for the insertion of pipelines in installations where excavation from the surface is undesirable. The machine is characterized by a novel rugged thrust plate and boring assembly located in the power train of the apparatus between the boring auger and the frame of the machine so as to isolate the gear reduction unit from excessive axial thrust force encountered in boring operations.

3,679,007
SHOCK PLASMA EARTH DRILL

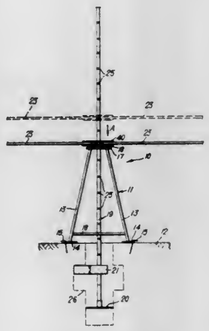
Louis Richard O'Hare, 2700 Indiana N.E., Albuquerque, N. Mex.

Filed May 25, 1970, Ser. No. 40,339
Int. Cl. E21b 7/00
U.S. Cl. 175—16 2 Claims



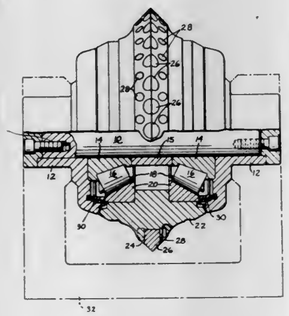
The repeated discharge of a high voltage large capacitance condenser bank across the gap of a physically strong, specially designed, water immersed electrode produces an explosive shock wave moving downward and outward to produce a hole into which the electrode and connected piping can repeatedly fall producing a deep hole in earth or rock. The conduction of current to the electrode gap is accomplished by a very high voltage - very high amperage switch operated either remotely and manually or automatically.

3,679,008
PILE BORER
Wilson Chong, 54 Norbrook Drive, Kingston, Jamaica
Filed Sept. 8, 1970, Ser. No. 70,116
Int. Cl. E21b 9/30
U.S. Cl. 175—220 5 Claims



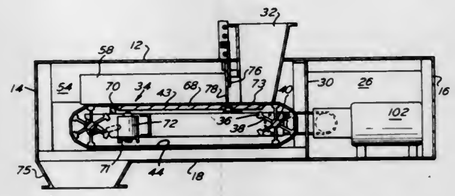
A manual pile borer includes a manually rotatable shaft the lower end of which is provided with an auger above which is a bulb-making device. The bulb-making device carries a weight and is such that as the shaft is rotated in a given angular sense the device is inoperative and closed but is rendered operative to open the device when the shaft rotates in the opposite sense, so that the bulb performs a spading action in response to manual rotation of the shaft.

3,679,009
ROTARY CUTTER FOR EXCAVATION, ESPECIALLY FOR USE WITH RAISE BORING AND TUNNEL BORING MACHINES
Robert D. Goodfellow, Bedford, Pa., assignor to Kennametal Inc., Latrobe, Pa.
Filed Feb. 2, 1971, Ser. No. 111,922
Int. Cl. E21b 9/22; E21c 13/01, 13/12
U.S. Cl. 175—374 9 Claims



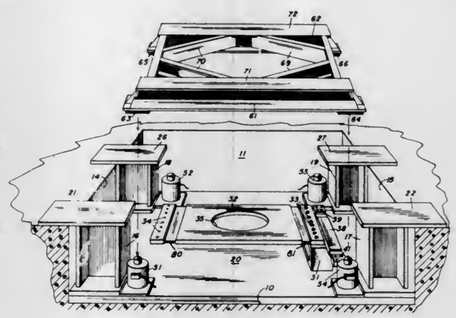
The specification discloses a rotary cutter in which a central support is mounted in a yoke or other supporting structure and which central support rotatably carries a cutting element having a central annular rib in which is mounted hard wear resistant inserts, such as cemented metal carbide inserts.

3,679,010
DIGITALLY CONTROLLED MASS FLOW FEEDER AND WEIGHT INTEGRATOR
Kenneth W. Bullivant, Glassboro, N.J., assignor to K-Tron Corporation, Glassboro, N.J.
Filed Aug. 10, 1970, Ser. No. 62,397
Int. Cl. B65g 69/00; G01g 11/04, 11/14
U.S. Cl. 177—16 14 Claims



The speed of a conveyor belt is digitally controlled using a stepping or pulse motor drive for the belt so that belt speed corresponds to a preset mass flow value.

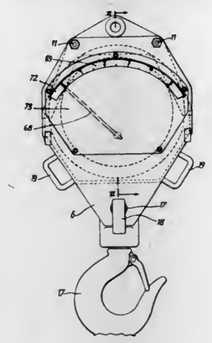
3,679,011
WEIGHING SCALE ASSEMBLY
Ira M. Hawver, 4200 Emland Drive, Topeka, Kans.
Filed Feb. 2, 1971, Ser. No. 111,920
Int. Cl. G01g 3/08, 3/14, 19/04
U.S. Cl. 177—134 10 Claims



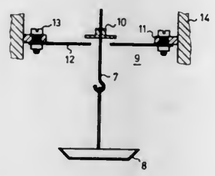
A scale assembly for determining the weight of a load carried by a railway car or the like while the vehicle is in motion. The assembly includes cells onto which the load is applied by a weighbridge which is restrained from moving longitudinally or laterally of the path of movement of the vehicle so that the true vertical load applied to the weighbridge is imposed on the load cells.

3,679,012
ASSEMBLY OF BLOCK PULLEYS PROVIDED WITH A LOAD MEASURING SYSTEM
Georges Haulotte, Rue de la Chambotte, (73), Barberaz, France
Filed May 13, 1971, Ser. No. 142,986
Claims priority, application France, May 14, 1970, 7017582
Int. Cl. G01g 19/14, 3/08; B66c 1/40
U.S. Cl. 177—147 7 Claims

An assembly of pulleys having a reception groove for a flexible pulley-block strap, comprising cheeks, cross-pieces connecting said cheeks, one at least of said pulleys being rotatably mounted between said cheeks on an axis fixed relative to said cheeks, one at least of said pulleys being rotatably mounted between said cheeks and movable in its own plane under the action of the force exerted by the flexible strap on said movable pulley, an elastic system acting on said movable pulley in opposition to said force exerted by the flexible strap on said movable pulley, and a mobile control element carried by one of said cheeks and operatively connected to said movable pulley.



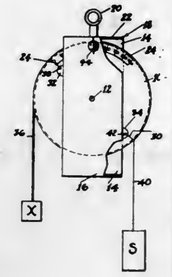
3,679,013
WEIGHING APPARATUS WITH DAMPING MEANS
Hans Menzi, Staefa, Switzerland, assignor to Mettler Instrumente AG, Zurich, Switzerland
Filed March 30, 1971, Ser. No. 129,339
Claims priority, application Switzerland, May 12, 1970, 7014/70
Int. Cl. G01g 21/10
U.S. Cl. 177—184 7 Claims



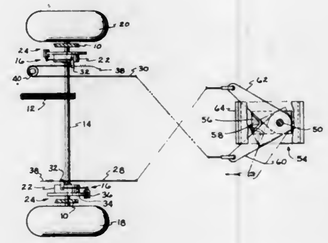
Damping means for weighing apparatus of the type including an axially reciprocable suspension member for suspending a weighing pan from a balance beam, characterized in that the damping means is arranged to produce a damping effect on the suspension member only when said suspension member is at a damping position intermediate its end limits of travel.

3,679,014
BALANCE
Edward H. Leonard, 184 Holden St., Holden, Mass.
Filed July 21, 1971, Ser. No. 164,714
Int. Cl. G01g 1/04, 23/24, 23/28
U.S. Cl. 177—216 7 Claims

A self-adjusting balance comprising a stirrup supporting a rotatable disk at its center. The front face of the disk is graduated in degrees from 0° to 90°, the graduations continuing on the reverse face from 90° to 0°. At the rim of the disk there are two slots, at diametrically opposite 0° marks, to accommodate cords, one to be connected to a weight to be measured and the other to a standard weight, the weight to be measured being connected to the cord in the front face 0° slot with the cord lying circumferentially against a portion of the rim of the disk to the point where this cord hangs free and vertical, the standard weight being connected to the cord in the diametrically opposite slot, this cord hanging free and vertical.



3,679,015
CONTROL FOR A DIFFERENTIALLY STEERED VEHICLE
Joe E. Shriver, Leganon, Ohio, assignor to Sperry Rand Corporation, New Holland, Pa.
Filed Sept. 28, 1970, Ser. No. 76,117
Int. Cl. B62d 11/08
U.S. Cl. 180—6.2 5 Claims

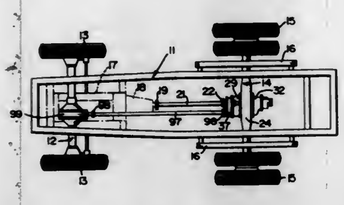


A control mechanism for disengaging the clutch and applying the brake to the wheels on one side of a differentially steered vehicle. The mechanism includes two control cables, each of the control cables being connected to the clutch and brake assembly within the drive line for the drive wheels on one side of a differentially steered vehicle. In the drive line illustrated each control cable will, when initially actuated, disengage a clutch in said drive line and, upon further actuation, apply a brake to said drive line. The actuating mechanism includes an actuator secured to a rotatable shaft, the actuator having an axially extending lug which is disposed between two arms. The arms are journalled about the shaft at one end and connected to an associated control cable at the other end. Each of the arms is normally biased against a stop by the associated control cable, each of which is spring biased away from the arm. Rotation of the actuator will cause the lug to contact one of the arms, forcing it away from the stop and in turn actuating its associated control cable.

3,679,016
VEHICLE PROVIDED WITH FOUR WHEEL DRIVE SYSTEM

Leo A. Bixby, Niles, Mich., assignor to North American Rockwell Corporation, Pittsburgh, Pa.

Division of Ser. No. 783,219, Dec. 12, 1968, Pat. No. 3,557,634. This application Sept. 9, 1970, Ser. No. 70,813
Int. Cl. B60k 17/34
U.S. Cl. 180—44 6 Claims

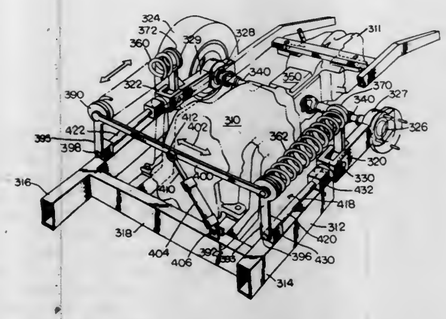


A short wheel base vehicle having a single power plant and forward and rearward drive axles incorporates a power dividing gear arrangement mounted on the rearward axle. The rearward axle housing has front and rear extensions mounting, a forward proportional differential gear set and a rearward drop gear set. The forward gear set comprises a planet carrier driven by the input shaft and mounting planet gears that are meshed with a sun gear drive connected to an output shaft for driving the forward axle. The planet gears are also meshed with a ring gear fixed on an output shaft that extends to the drop gear set which includes a pinion driving the rearward axle. The sun gear may be clutched directly to the input shaft for direct drive of both axles. The arrangement of the rearward axle housing with both front and rear extensions allows a relatively short wheelbase length for a vehicle of this type and provides for balance weight distribution with respect to the rearward axle.

3,679,017
SUSPENSION SYSTEM FOR VEHICLES

Leslie A. Roe, R.R. #5, Columbia City, Ind.

Filed Oct. 13, 1969, Ser. No. 865,610
Int. Cl. B60g 21/02
U.S. Cl. 180—73 TL 8 Claims

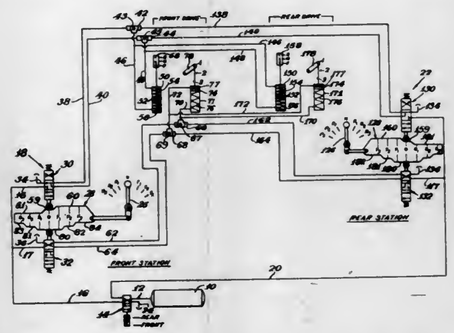


A linkage is pivotally connected to the frame of the vehicle and serves as a mounting for the vehicle wheel so that the vehicle wheel can pivot relatively to the frame in a vertical direction and the linkage is also journaled for movement on a horizontal axis causing pairs of interconnected wheels to be banked. Each wheel of the vehicle, whether power driven or steerable, can independently move vertically against a spring action for suspension of the vehicle and one or more pairs of such wheels are banked by turning movements on a respective horizontal axis. The banking of the wheel is in proportion to the steering of the vehicle. The front set or rear set, or both sets can be banked but in every event the pairs are banked in unison.

3,679,018
DUAL STATION TRANSMISSION CONTROL

Robert G. Luft, Wildwood, Ill., assignor to International Harvester Company, Chicago, Ill.

Filed July 7, 1970, Ser. No. 52,938
Int. Cl. B60k 19/02
U.S. Cl. 180—77 S 6 Claims

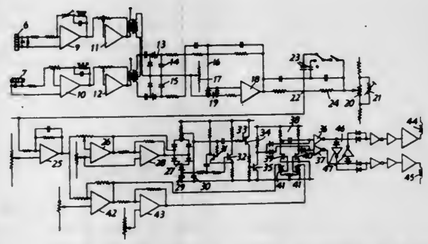


A means for controlling a pair of transmissions on a vehicle having dual power trains from either one of a pair of operator stations. A station selector valve directs air pressure to a selected valve means connected with slave cylinders for conditioning the power trains for direction of travel and speed range. The selected valve means is movable to properly direct the air pressure by a cam means selectively positionable by an operator.

3,679,019
VEHICLE GUIDANCE SYSTEMS

Stephen William Hobday, and David Stephen Hobday, both of 219 Sycamore Rd., Farnborough, England

Filed June 29, 1970, Ser. No. 50,398
Claims priority, application Great Britain, July 1, 1969, 33,286/69
Int. Cl. B62d 1/24
U.S. Cl. 180—98 5 Claims

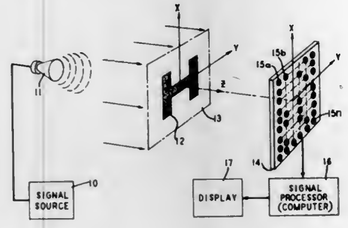


A vehicle guidance system in which a vehicle (e.g., a tractor) follows a conductor carrying a guidance signal. Steering control is effected in response to an error signal representative of divergence of the vehicle from the required track. A pulse generator gives a variable mark/space ratio output in accordance with the amplitude of the error signal and the pulse generator output is directed to operate a left- or right-hand on-off fluid valve in accordance with the sign of the error signal. The fluid valves are thus controlled by the variable mark/space signal to give proportional control although they are on-off valves.

3,679,020
RECONSTRUCTION OF OBJECT SHAPE FROM SOUND DIFFRACTION PATTERN

Man M. Sondhi, Berkeley Heights, N.J., assignor to Bell Telephone Laboratories Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed April 2, 1969, Ser. No. 812,638
Int. Cl. G01v 1/00
U.S. Cl. 181—0.5 R 4 Claims

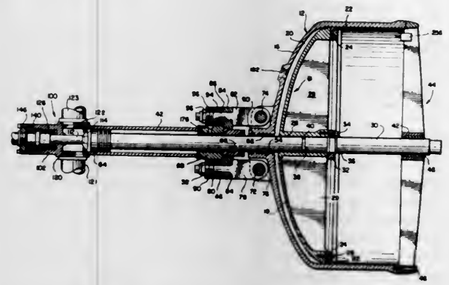


The shape of an object is reconstructed from measurements of the diffraction pattern observed in a monochromatic sound wave which irradiates the object. Both the amplitude and phase of sounds at a discrete set of points near the object (a rectangular lattice of suitable dimensions) are measured and used to evaluate the wavefront of the distorted sound wave. From these data, a visual display is constructed, e.g., on a facsimile receiver, cathode ray display, or the like.

3,679,021
ACOUSTIC PULSE GENERATING SYSTEM

Seymour Goldberg, Lexington, Mass., assignor to EG&G, Inc., Bedford, Mass.

Continuation-in-part of Ser. No. 813,625, April 4, 1969, Pat. No. 3,610,366. This application March 25, 1970, Ser. No. 22,425
Int. Cl. G01v 1/14
U.S. Cl. 181—.5 H 20 Claims

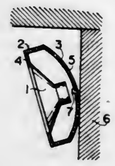


An acoustic pulse generator and a method of producing acoustic pulses in a fluid medium is provided. In a preferred embodiment of the invention, the acoustic pulse generator includes a piston slidably disposed within a cylindrical housing having one end open and one end closed to the fluid medium. When the generator is submerged, the piston is accelerated toward the closed end of the cylindrical housing by the ambient pressure of the fluid medium and rebounds from the closed end of the cylindrical housing to produce an acoustic pulse. Means are provided for capturing the piston after its rebound from the closed end of the cylindrical housing to prevent subsequent inward movement of the piston by the ambient pressure.

3,679,022
SPEAKER BOX

Yoshio Ohashi, Fukuroi, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu-shi, Shizuoka-ken, Japan

Filed June 29, 1970, Ser. No. 50,756
Claims priority, application Japan, July 4, 1969, 44/63575; July 4, 1969, 44/63576
Int. Cl. G10k 13/00; H04r 1/28
U.S. Cl. 181—31 B 4 Claims

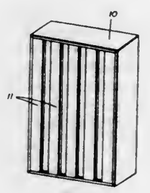


A speaker box structure comprising a casing having a front side facing the cone of a speaker contained in said casing and also having a substantially convexly curved outer surface of the rear panel joining said front side and further having a plurality of small perforations formed, in uniform scattered fashion, through said convexly curved rear panel for engagement with a hook provided on a generally substantially upright wall of a room. Thus, the position of the front side of the speaker box can be held at any desired parallel or vertically and/or laterally inclined angle relative to the wall surface by selecting the desired one perforation or two perforations for engagement with the hook.

3,679,023
LOUDSPEAKER ENCLOSURE

John C. Rankin, 908 S. Hobart Blvd., Los Angeles, Calif.

Filed Aug. 6, 1968, Ser. No. 750,615
Int. Cl. G10k 13/00; H04r 1/28
U.S. Cl. 181—31 A 1 Claim

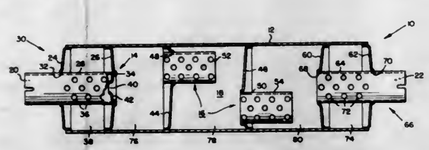


A closed back loudspeaker enclosure with the grille cloth replaced by wooden slats. The space between the slats is arranged to prevent air compression and allow free passage of sound from the loudspeaker. The loudspeaker is mounted on a front panel and both the loudspeaker and front panel are concealed by the slats.

3,679,024
MUFFLER

Kenneth C. Kirkland, Jr., and Raymon E. Hunt, both of Longview, Tex., assignors to Stemco Manufacturing Company, Inc., Longview, Tex.

Filed Sept. 11, 1970, Ser. No. 71,297
Int. Cl. F01n 1/08
U.S. Cl. 181—49 7 Claims

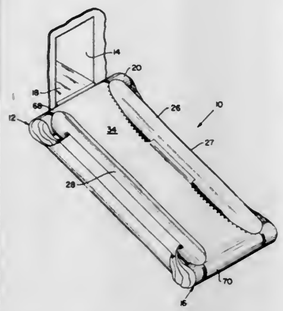


A muffler including a venturi inlet to degrade and dissipate the energy of the incoming gases and a plurality of transverse baffle plates having offset openings therethrough to cause a change in direction of the gas flow through the muffler to absorb gas flow energy with minimal increase in back pressure. Perforated tubes can be employed in the offset openings in the baffle plates.

3,679,025
INFLATABLE SLIDE AND RAFT APPARATUS

Samuel L. Rummel, East Brunswick, N.J., assignor to The Garrett Corporation, Los Angeles, Calif.

Continuation of Ser. No. 824,928, May 15, 1969. This application May 18, 1971, Ser. No. 144,646
Int. Cl. B65g 11/10; B63b 7/08; A62b 1/20
U.S. Cl. 182—20 12 Claims



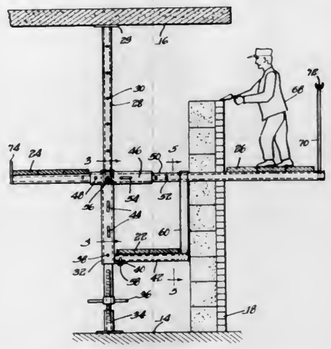
An inflatable escape slide apparatus has a somewhat stretchable slideway sheet extending from end-to-end of the slide frame. A relatively non-stretchable separator strip under the sheet also extends from slide end to slide end, permitting evacuees to slide in non-interfering side-by-side escape down the sheet. If evacuation occurs on water, separately inflatable wing-like frame members on either side of the slide frame are inflated to form a large raft.

3,679,026
INTERIOR SCAFFOLDING ARRANGEMENT

Robert N. Hansen, 616 Wilson Rd., Lombard, Ill.; George T. Hempel, P.O. Box 372, Lombard, Ill., and Raymond Noesges, 3521 Louis St., Franklin Park, Ill.

Filed July 13, 1970, Ser. No. 54,410
Int. Cl. E04g 3/02, 1/04
U.S. Cl. 182—132 4 Claims

A scaffold assembly for use in the erection of exterior building walls, said assembly being mounted interiorly of a building under construction, adjacent a proposed exterior wall. Said assembly includes a plurality of laterally spaced frame members, each of which includes a first support member which is secured to the interior of the building for bracing a pair of

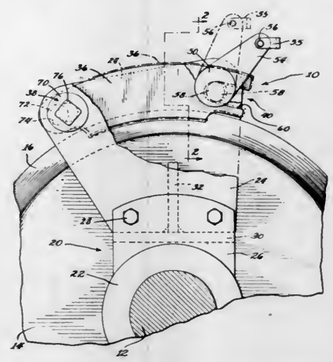


elongated planks and a second support member which is mounted to the first support member and which extends outward beyond the proposed wall for bracing an esterior elongated plank.

3,679,027
BRAKING METHOD AND APPARATUS

Birger F. Jansson, Racine, Wis., assignor to J. I. Case Company

Filed July 23, 1970, Ser. No. 57,585
Int. Cl. F16d 49/00
U.S. Cl. 188—74 9 Claims

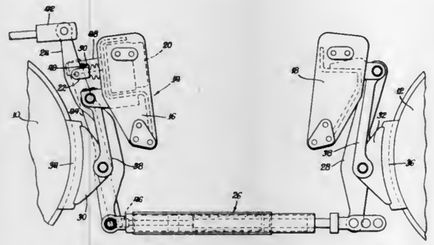


A method and apparatus for exerting a maximum braking force on a rotating member with a minimum amount of force being applied to the braking member. The apparatus includes a disc having opposed surfaces on the periphery thereof which define planes intersecting at an acute angle substantially less than 45°. A brake member is pivoted at one end on a support adjacent the disc and has a radius of curvature which is greater than the radius of the disc with actuating means cooperating with he opposite end of the elongated member to force cooperating surfaces on the member into engagement with the surfaces on the disc. During such movement, the elongated member is distorted to substantially the curvature of the periphery of the disc so that the member will return to its undistorted condition upon release of the actuating means and prevent interlocking of the member and the disc.

3,679,028
MULTIPLE UNIT BRAKE

Harry W. Mulcahy; Eldon W. Bushnell, both of Lansing, and John W. Kaim, Chicago, all of Ill., assignors to AMSTED Industries Incorporated, Chicago, Ill.

Filed Dec. 10, 1970, Ser. No. 96,778
Int. Cl. F16d 65/56
U.S. Cl. 188—202 4 Claims

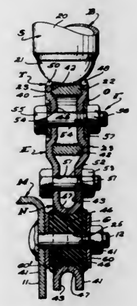


A live and dead lever are mounted on one side of a railway truck and pivotally connected at their lower ends to an automatic double-acting slack adjuster. The upper end of the dead lever is pivotally connected to the truck while the upper end of the live lever is pivotally connected to a piston engaged in a cylinder. A trigger lever is located proximate the live lever and pivotally connected at its lower end to a trigger of the slack adjuster. Two braking devices, each engageable with a wheel used to support the truck, are pivotally connected to the levers intermediate their ends. One device is connected to the dead lever and one device is connected to both the live lever and the trigger lever. Mounted proximate the upper end of the trigger lever is an abutment bracket which is used to retard movement of the end beyond a given point.

3,679,029
SHOCK ABSORBER EXTENSION

James H. Thomas, c/o Mr. Genuine Suspension, 866 W. 16th St., Newport Beach, Calif.

Filed April 21, 1971, Ser. No. 135,887
Int. Cl. F16f 9/54
U.S. Cl. 188—321 10 Claims

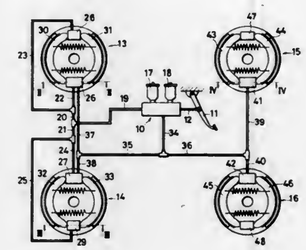


An extension to be engaged with one end of an elongate cylinder and piston type shock absorber to facilitate engaging said shock absorber with and between its normally related relatively shiftable structures upon increasing the normal spacing apart of said structures; said extension being such that it remains in axial alignment with the shock absorber, requires no modification of the shock absorber to effect its connection therewith and connects with standard shock absorber mounting means without alteration or modification thereof.

3,679,030
HYDRAULIC BRAKE SYSTEM

Tsuneo Kawabe, Hekikai-gun, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya City, Japan

Filed Nov. 17, 1970, Ser. No. 90,389
Claims priority, application Japan, Nov. 20, 1969, 44/93225
Int. Cl. B60t 11/20
U.S. Cl. 188—345 6 Claims

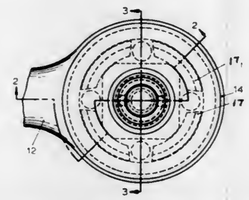


A hydraulic brake system of vehicles which comprises independent primary and secondary hydraulic circuits, two wheel cylinders attached onto each front wheel brake assembly, one of the wheel cylinders being provided with two independent hydraulic chambers therein connected with the primary and secondary fluid circuits respectively, said secondary fluid circuit being further connected with each rear wheel brake assembly, one of said hydraulic chambers which connects with the primary fluid circuit being connected with the other wheel cylinder, whereby when failure of either the primary or secondary fluid circuit occurs effective and sufficient brake force may be obtained.

3,679,031
REVERSIBLE ONE-WAY CLUTCH

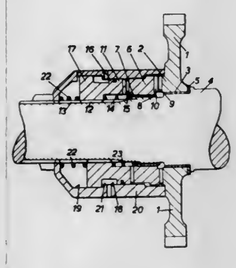
Leonard W. Stephens, Fairview, Pa., assignor to Palmer Filter Equipment Company, Fairview, Pa.

Filed Oct. 5, 1970, Ser. No. 78,114
Int. Cl. F16d 41/08
U.S. Cl. 192—44 5 Claims



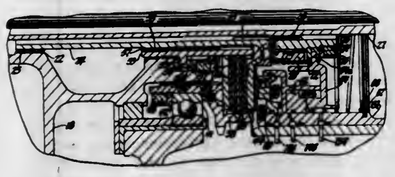
A reversible one-way clutch suitable to be used in combination with a drive and a driven member. The clutch is made up of a drum and a plurality of frictional shoes which connect the drive to the driven member. The shoes are actuated by cams. The cams move the shoes out into engagement with the drum connecting a driven member to the drive. A reversing mechanism is provided for holding the shoes away from the cam when a torsional force is exerted on the drive in a first direction relative to the driven member but allowing the shoes to move toward the cam and transmit force when a torsional force is exerted in an opposite direction between said drive and driven member. The reversing mechanism makes it possible to selectively drive the clutch either in a first direction or in a second direction.

3,679,032
LOCKABLE OVERRUN DEVICE
John S. Bennett, Cirencester, England, assignor to Massey-Ferguson Services N.V. and Abraham de Veerstrost, Curacao, Netherlands Antilles
Filed Nov. 19, 1970, Ser. No. 90,919
Claims priority, application Great Britain, Dec. 4, 1969, 59,204/69
Int. Cl. F16d 41/00, 11/00
U.S. Cl. 192—46 11 Claims



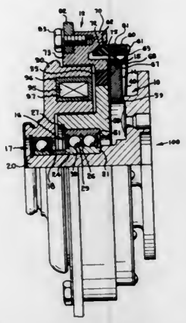
An overrun device comprises first and second drive members. The first drive member includes a plurality of ramped teeth engageable by similar teeth of a coupler mounted through helical splines to the second drive member. Engagement of these teeth in one direction causes a transmittal of the drive between the two members while driving in the opposite direction tends to separate the teeth because of the biasing effect of the helical splines. Another coupler is mounted on the second drive member for interlocking toothed engagement with the first coupler under the influence of a spring to disable the effect of the helical spline bias and retain engagement of the first set of teeth in either drive direction. Pressure fluid is utilized to disengage the second coupler and enable disengagement of the first set of teeth, effecting overrun.

3,679,033
PROPELLER COUPLING
Douglas A. Wagner, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.
Filed Nov. 30, 1970, Ser. No. 93,605
Int. Cl. F16d 23/04
U.S. Cl. 192—48.7 5 Claims



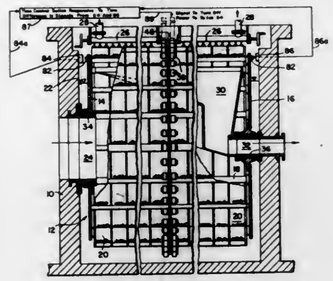
A hydraulic actuated propeller coupling for use in a helicopter type aircraft to selectively couple or uncouple a propeller to the output of a gas turbine engine normally used to drive a helicopter rotor.

3,679,034
SELF-ADJUSTING ELECTROMAGNETIC CLUTCH
Donald L. Miller, Horseheads, N.Y., assignor to The Bendix Corporation
Filed March 31, 1971, Ser. No. 129,742
Int. Cl. F16d 11/00
U.S. Cl. 192—111 A 5 Claims



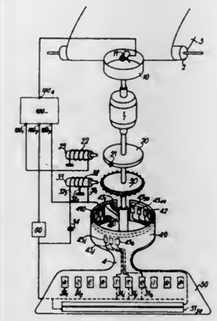
An electromagnetic clutch with wear compensating means having mating frustro-conical friction members for transmitting torque and a ferro-magnetic armature threaded to one of said friction members for clutch engagement. When the clutch is energized, the armature, which is not in the drive train, comes into contact with the pole faces of the electromagnet causing the freely mounted armature to decrease in rotational velocity. The driving friction member continues to rotate at input speed thereby advancing on its helical thread until engagement with the driven friction member. The driving friction member is driven through a flexible member which also serves as a return spring upon de-energization.

3,679,035
BEARING AND DRIVE MEANS FOR LARGE SIZE REVOLVING DRUMS
Walti Schmitt, Wiesbaden-Biebrich, Germany, assignor to Passavant-Werke, Michelbach, Hutte, Germany
Filed Sept. 2, 1970, Ser. No. 68,992
Claims priority, application Germany, March 19, 1970, P 20 13 230.3
Int. Cl. B01d 33/06; F16h 1/06; F16c 19/30
U.S. Cl. 192—129 A 18 Claims



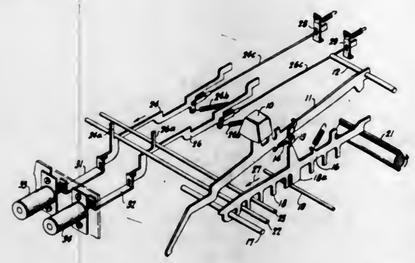
A large size drum, such as a screen drum for a screening machine or drum filter is driven by a means engaging the periphery of the drum in the same vertical plane in which the drum is supported. A plurality of rollers are mounted in a ring about the periphery of the drum and are free to run on one or more concave supporting surfaces located in position to support the drum. Drive means, such as a pinion, engage the rollers to rotate the drum.

3,679,036
KEY BOARD PRINTER
Paul F. Gloess, 114 Avenue Andre Morizot, Boulogne-Billancourt, France
Filed Aug. 13, 1970, Ser. No. 63,527
Claims priority, application France, Aug. 14, 1969, 6927998
Int. Cl. B41j 23/04
U.S. Cl. 197—18 3 Claims



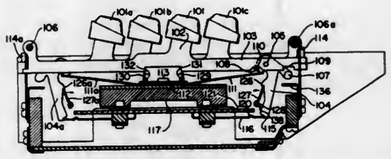
A keyboard printer for use as a peripheral element of a computer in which the codes of the characters are key pulses exhibiting with respect to a start pulse variable discrete phase-shifts. This printer comprises means for continuously rotating a first wheel with one magnetic tooth defining a start pulse in each rotating cycle, a second wheel with a plurality of magnetic teeth defining a plurality of character pulses in each rotating cycle and a rotative arm carrying a mobile electrode. A key pulse distributor comprises a common electrode and individual character electrodes. The keys are formed by two adjacent key electrodes which exhibit a small capacitance when not touched and a large capacitance when touched by the operator's finger tips. The key pulse distributor produces key pulses during several cycles since the time during which the operator's finger tip is on the key is longer than the rotation cycle duration of the printer. Means are provided for gating only one key pulse out of a series of identical key pulses.

3,679,037
CHARACTER SELECT INDICATOR FOR TYPEWRITER
William C. Bennett, Menlo Park, Calif., assignor to Novar Corporation, Mountain View, Calif.
Filed July 17, 1970, Ser. No. 55,856
Int. Cl. B41j 5/30, 23/02
U.S. Cl. 197—19 1 Claim



An electrical character select indicator for a typewriter where the latch interposers of a typical single printing head typewriter of the IBM Selectric type are each coupled to a differential transformer through a linkage which is coupled to the latch interposers, the differential transformer having a core which in its null position indicates the latch interposer is unactivated and when moved by the latch interposer means causes the differential transformer to provide an output voltage to indicate actuation of the latch interposer.

3,679,038
ELECTRICAL CIRCUIT FOR IMPACT CONTACT KEYBOARD
John M. Hunt, Hillsborough, Calif., and Hugh St. L. Dannatt, Rochester, N.Y., assignors to The Singer Company
Filed July 27, 1970, Ser. No. 58,441
Int. Cl. B41j 5/08
U.S. Cl. 197—98 5 Claims

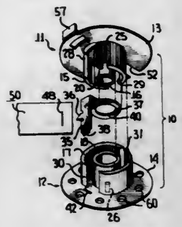


A keyboard is disclosed which produces a signal in response to the depression of a selected key lever. In response to the depression of the selected key lever, a resilient spring contact is deflected away from a relatively fixed contact and released. The resilience of the resilient spring contact causes said spring contact to return towards the relatively fixed contact and make a momentary closure therewith. In response to the momentary closure, an electrical signal is produced during the charge time of a capacitor in series with the closing contacts. The capacitor is so chosen that it will be substantially fully charged in response to the closure of the contacts and no additional signal will result in the event that there should be any contact bounce or multiple closures thereof. An actuating pawl for actuating the resilient contact spring is attached to the key lever and a single spring is used to bias the actuating pawl and the key lever to their at rest positions. A bail which may be selectively positioned in cooperative relationship with a projection on the actuating pawl may be used to lock the key levers against actuation. A frame member is employed to pivot the pawl near the end of the down stroke of the key lever and thereby release the resilient contact spring. The cited frame member, the pawl and the key lever coact to provide a down stop limit for the key lever. Alternate selective means may be provided for locking selected key levers against actuation. In the structure shown, selected key levers are pivoted from a forward position while other key levers are pivoted from a rearward position. The circuit of the cited capacitor is designed to assure discharge of the cited capacitor well within the cycle time of operation of a given key lever.

3,679,039
RIBBON SPOOL
Walter D. Landgraf, 9628 S. Kildare Ave., Oak Lawn, Ill.
Filed July 25, 1969, Ser. No. 844,993
Int. Cl. B41j 35/00
U.S. Cl. 197—175 7 Claims

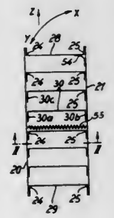
A ribbon spool for typewriter ribbon includes a pair of molded plastic spool components each having a circular flange from which a pair of spaced, cylindrical, coaxial internal and external telescoping hubs project. An axial hole in the smallest diameter hub is aligned with central holes in each of the flanges to permit the overall spool to accept the upstanding spindle of a business machine. A ribbon retaining element in the form of a sheet metal clip is adapted for insertion on the smallest diameter hub prior to joining of the two spool components. The clip is then held captive on the spool by the hub with which the smallest diameter hub mates and by a slot in

the flange of the other spool component which accepts a tab on the metal clip. A prong on the clip is adapted to engage the typewriter ribbon. As an alternative securing means, a pair of



aligned slots in the external mating hubs, accessible via a cutout in one of the flanges with the spool in the joined condition, accept and retain the end of a typewriter ribbon of the type having an edgewise-oriented bar clamped thereto.

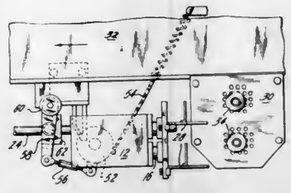
3,679,040
COLLAPSIBLE CONTAINER FOR USE IN CONVEYOR SYSTEMS
Heinz Kretzschmar; Rolf Chlebus, both of Wiesensteig, and Willi Ochsner, Nurtingen, all of Germany, assignors to Organisation Ralfs KG, Wiesensteig/Wuertt, Germany
Filed July 8, 1970, Ser. No. 53,251
Int. Cl. B65d 7/24; B65g
U.S. Cl. 198—1 **22 Claims**



A collapsible open-top container for use in conveyor systems wherein the containers travel in an upright channel and are entrained by one or more endless belts, chains or like conveyors travelling along the lower end of the channel. The container comprises two upright side walls connected to each other by transverse links which can form an apertured bottom and/or the front and rear end walls of the container. The side walls and the links together form a parallel motion whose components are pivotable with reference to each other about vertical axes so that one of the side walls is movable parallel to itself close to and away from the other side wall. The container is provided with one or more legs which engage the conveyor or conveyors, and with at least one bumper extending beyond the front and/or rear end wall to maintain the container at a desired minimum distance from adjacent containers.

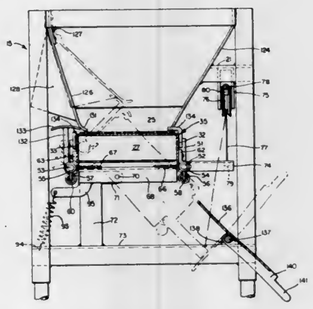
3,679,041
APPARATUS FOR THE TRANSFER OF ARTICLES
Edward F. Parkell, Horseheads, N.Y., assignor to Dart Industries, Inc., Los Angeles, Calif.
Filed Jan. 6, 1971, Ser. No. 104,357
Int. Cl. B65g 47/00
U.S. Cl. 198—24 **2 Claims**

An apparatus for moving glassware through substantially a 90° angle in transferring same from a stationary platform to a moving conveyor. Such apparatus includes an extensible and retractable means operable by a dual-mounted double-acting fluid motor arrangement that is automatically responsive to



the orientation of the apparatus, which orientation is controlled through a positive driving linkage with a glassware forming machine.

3,679,042
FEED DELIVERING APPARATUS
Benjamin K. Smoker, R. D. 3; Richard L. Weaver, R. D. 1, both of Myerstown, Pa., and Marlin P. Weaver, 525 E. Maple Ave., Annville, Pa.
Filed Feb. 16, 1970, Ser. No. 11,544
Int. Cl. B65g 47/18, 15/00; A01k 5/00
U.S. Cl. 198—57 **8 Claims**

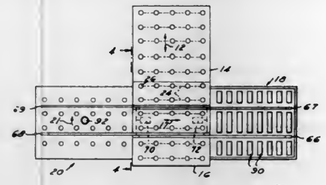


A delivering apparatus is provided, of the conveyor type, preferably adapted for delivering feed to animals, wherein feed is deposited onto a moving conveyor, preferably through a hopper, and travels along an upper surface of the conveyor for a predetermined distance, until a switch is actuated, which in turn, actuates a motor, which causes the conveyor to tilt, such that the feed is dumped therefrom by gravity drop, toward a deflector plate, to be deposited at one side or other of the conveyor. Particular novelty resides in the dumping of feed laterally of the conveyor.

3,679,043
ROLLER TRANSFER CONVEYOR
Raymond M. Becker, Oden, Mich., assignor to Jervis B. Webb Company
Filed April 13, 1971, Ser. No. 133,491
Int. Cl. B65g 37/00
U.S. Cl. 198—105 **14 Claims**

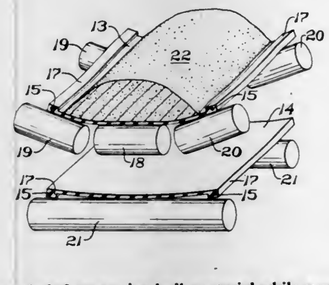
A conveyor for moving articles such as pallets in a main path and selectively in a transfer path at right angles to the main path. The article is supported by a plurality of generally spherical elements mounted at desired intervals along each of a plurality of parallel shafts. Each spherical element consists of a pair of spherical segments forming portions of a sphere centered on a shaft and rotatable therewith, the segments being independently rotatable on an axis normal to the shaft.

When the shafts are rotated by driving means, an article is moved by the elements in the main path. When the shafts are stopped with the axes of rotation of the spherical segments at



about 45° to the base plane of an article, it is movable in the transfer path with independent rotation of the spherical segments which the article engages.

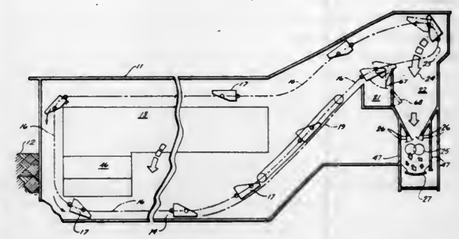
3,679,044
CONVEYOR BELT
Hebert E. McGinnis, Akron, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.
Filed Jan. 13, 1971, Ser. No. 106,158
Int. Cl. B65g 15/30, 15/40
U.S. Cl. 198—193 **9 Claims**



A conveyor belt for carrying bulk material while supported on troughing rolls has nearly inextensible longitudinal reinforcements in the edges only of the belt, above the margins of the transverse reinforcements. The belt is made of rubber or other elastomer of uniform thickness except at the edges which are substantially thickened on the top surface only, to contain the longitudinal reinforcements. The transverse reinforcements are preferably a spaced pair of fabrics, inextensible in the direction transverse of the belt but extensible longitudinally.

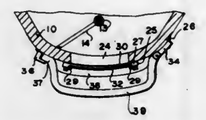
3,679,045
CONVEYOR SYSTEM
George W. Morgan, 1400 Douglass, Space 112, Anaheim, Calif., and Douglas S. Whitney, 2616 E. Norm Place, Anaheim, Calif.
Filed Sept. 14, 1970, Ser. No. 71,958
Int. Cl. B65g 23/00
U.S. Cl. 198—203 **16 Claims**

A conveyor system particularly useful for handling domestic waste or the like is described. The conveyor receives dumped waste, conveys it up an incline, and dumps it into a receiving silo from which it may be discharged as desired. A dumping station prior to the silo can be employed for selectively removing articles from the waste. The conveyor comprises a plurality of carts mounted between rails forming a continuous loop track. The carts are interconnected by cables to form a continuous conveyor with the carts intermittently spaced along the cables. In order to drive the conveyor, a reversible chain drive is employed with a pair of pawls on separate portions of the chain so that they move in opposite directions along the extent of the track. The pawls permit passage of the carts when the pawls are moving in the reverse direction and they engage the cart when moving in a forward direction for driving



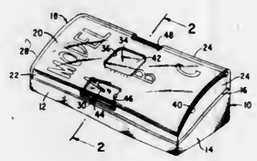
the conveyor in a hand-over-hand fashion. A pair of such sets of driving pawls are provided on the two sides of the conveyor respectively so as not to interfere with a selectively openable bottom on the carts.

3,679,046
GRAIN AUGER DEVICE
George N. Loch, Box 14, Glendon, Alberta, and Alphonse Loch, R.R. 2, Tofield, Alberta, both of Canada
Filed Dec. 29, 1970, Ser. No. 102,357
Int. Cl. B07b 1/06
U.S. Cl. 198—213 **1 Claim**



An elongated opening is formed through the casing of an auger on the underside and a screen is detachably secured over the opening to screen out small weed seeds and the like. This opening is blanked off when not in use and the degree of screening is governed by the volumetric intake of the auger which is adjustable.

3,679,047
STORAGE BOX WITH INTERCHANGEABLE GRAPHICS
Andrew G. Papirnyik, Cranford, N.J., assignor to The Singer Company, New York, N.Y.
Filed Nov. 25, 1970, Ser. No. 92,720
Int. Cl. A45c 11/18
U.S. Cl. 206—39 **2 Claims**



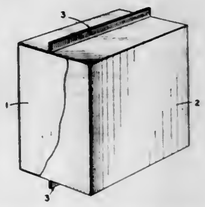
A box for storing attachments and an instruction booklet for a sewing machine or similar household appliance having a receptacle for storage of the attachments and a transparent plastic top cover for storing the instruction booklet with the graphics and indicia of the booklet positioned for display through the top. The top includes a convex surface and a ledge

or shelf juxtaposed slightly therebelow on opposite sides thereof. The booklet is positioned within the top with its sides supported on the shelves. The spacing between each shelf and the top surface, and the surface area of the top between the shelves, is such that the booklet conforms substantially to the shape of the convex top. A hole in the top allows removal of the booklet by manual application of a force against the visible surface of the booklet. Various model instruction booklets having model identifying graphics printed thereon may selectively be positioned within the box with the corresponding attachments to standardize and limit the number of different boxes manufactured and stored.

3,679,048
WRAPPER WITH TEAR TABS OF HEAT-SHRINKING SYNTHETIC RESIN FILM

Masaaki Fujio, 500 Central National Bank Building, Des Moines, Iowa

Filed April 1, 1970, Ser. No. 24,629
Int. Cl. B65d *85/00, 33/16*
U.S. Cl. 206—46 R **2 Claims**

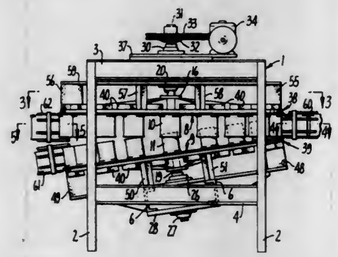


A product or article is enclosed in heat-shrinking synthetic resin film having opposite ends which are folded closed to provide tear tabs along the full width of the article. The article in the film is subjected to heat to shrink the film into contact with the article and the folded ends may be subjected to heat to seal them. The tear tabs may include three or more layers of material to give added strength.

3,679,049
ROTARY CAN SEPARATOR

George E. Kilner, Alameda, Calif., assignor to Fliper Corporation, San Ramon, Calif.

Filed May 21, 1971, Ser. No. 145,774
Int. Cl. B07c *5/36*
U.S. Cl. 209—71 **13 Claims**

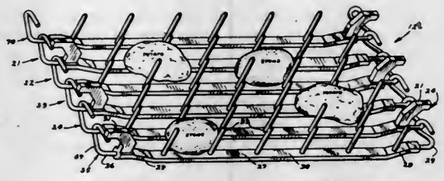


A rotary can separator for separating pairs of telescopically combined cans, each pair having a smaller can nested within a large can with the closed end of one extending across the open end of the other comprising a pair of rotatable, opposed, spaced, vertically diverging discs mounted on the same drive shaft, a motor for rotating the discs, a can feeding track which feeds the cans between the discs, a set of stationary magnets backing each disc of sufficient strength to attract and hold the closed ends of the cans against the respective discs and a pair of can withdrawing tracks which receive the separated cans and transport them from between the discs.

3,679,050
CONVEYOR STRUCTURE

William S. Anderson, Braham, Minn., and Foster L. Bucher, 222 N. Cypress Street, Cambridge, Minn.

Continuation of Ser. No. 1,384, Jan. 8, 1970, abandoned. This application June 25, 1971, Ser. No. 157,000
Int. Cl. B07b *13/04;* **B65g** *15/30*
U.S. Cl. 209—84 **5 Claims**



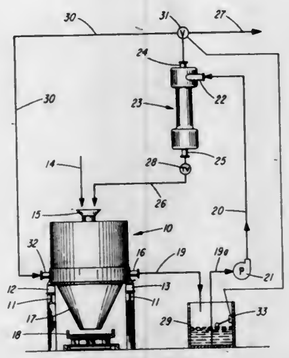
A cross-link conveyor as in connection with a potato harvester wherein each link thereof has upstanding resilient fingers spaced therealong and molded integral therewith, the fingers of successive of said links being in staggered relation with respect to one another and said fingers being spaced apart such that two or more adjacent of said fingers receive and retain therebetween potatoes as distributed onto said conveyor for travel by said conveyor

---

3,679,051
IMPROVED METAL AND PLASTIC CHIP WRINGING APPARATUS AND PROCESS

Charles R. Larson, Bellevue, and Robert H. Dudley, Portage, both of Mich., assignors to Prab Conveyors, Inc., Kalamazoo, Mich.

Filed Feb. 26, 1970, Ser. No. 14,313
Int. Cl. B01d *21/26*
U.S. Cl. 210—73 **6 Claims**

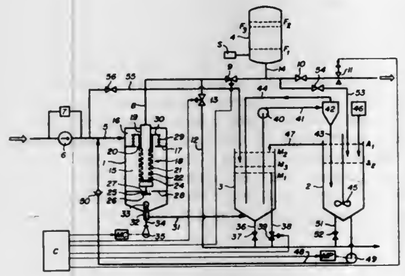


Cutting and cooling fluids used in machining metal and/or plastic parts are effectively removed from the resulting chips by a process comprising first separating in a centrifugal separator a liquid-slid admixture of the fluid and chips into a solids portion and a liquid portion containing entrained solid particles, thereafter introducing the liquid portion into a cyclone separator so as to concentrate the solid particles in a liquid bottoms portion, and reintroducing the solid particle-containing liquid bottoms portion into the centrifugal separator. The liquid takeoff portion from the cyclone separator is substantially free from solid particles and can be reused. The apparatus comprises a centrifugal separator and a cyclone separator suitably interconnected to effect the desired transfers of the fluids.

3,679,052
FILTRATION APPARATUS AND METHOD

Jean-Jacques Asper, Geneva, Switzerland, assignor to Brasco S.A., Geneva, Switzerland

Filed March 27, 1970, Ser. No. 25,169
Claims priority, application Switzerland, March 27, 1969, 4692/69
Int. Cl. B01d *33/36, 37/02*
U.S. Cl. 210—75 **21 Claims**



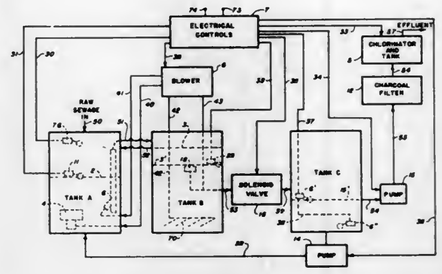
A pressure filter and a method of filtering of the type employing a particulate filter aid may be operated substantially continuously through an operating cycle composed of a cleaning stage of short duration, say on the order of 4 or 5 seconds, in which the filter aid layer and accumulated filter cake are purged from an open-work, supporting filter element, a coating stage in which a new layer of filter aid is formed on the filter element and involving a time of about 10 seconds, and a filtering stage. A rapid coating of the element with a layer of filter aid is facilitated by using a filter aid having a mean particle size approximately equal to the size of the openings in the support. The filter aid purged from the filter chamber during each cleaning cycle is recovered by conducting the mixture of filter aid, impurities, and raw liquid from the filter, upon cleaning, to a holding tank and then recycling, over a period of time or continuously, the mixture from the holding tank through a separator. The filter aid fraction is separated and conducted into a filter aid storage tank for use during the next cycle, make-up filter aid and filtrate being added to the filter aid storage tank as required. The level in the holding tank is reduced just before each cleaning to the extent required to provide a capacity sufficient to receive the mixture purged from the filter during cleaning. Continuous filtrate output may be achieved by accumulating filtrate in a storage reservoir during the filtering stage (for delivery) during the cleaning and filter aid coating stages.

3,679,053
BATCH SEWAGE TREATMENT SYSTEM

James Koulovatos, Brunswick, and Kenneth L. Thomas, Portland, both of Maine, assignors to Pollution Control Products, Inc., Portland, Maine

Filed July 27, 1970, Ser. No. 58,475
Int. Cl. B01d *21/24*
U.S. Cl. 210—86 **11 Claims**

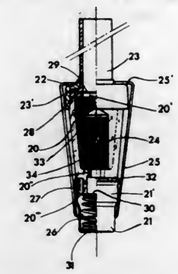
An aerobic batch sewage treatment system to receive raw sewage mixed with water and adapted to reduce the size of the sewage while simultaneously exposing it to oxygen to initiate aerobic activity. The system includes three tanks, an air lift pump within the first tank being adapted to transfer the sewage in the form of a slurry from the first tank to a second tank which serves as a settling tank, the level of sewage in the second tank being maintained between high and low limits. Ceramic diffusers are provided within the second tank below the low limit level of sewage therein to receive air from a blower to aerate the sewage. A third tank is connected to receive substantially pure liquid by gravity feed from the second tank and valve means is furnished within the second tank and connected to control flow of liquid between the second and third tanks; the active portions of the valve means which receive and control the liquid flow are located at all times below said low limit to prevent accumulation of oxidized sewage particles on said active portions and to keep such particles out of the connecting pipe between the tanks.



3,679,054
FILTERING AND AERATING JET BREAKER

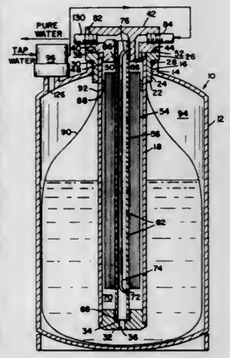
Jacques Muller, 123 Ave. du Genl. de Gaulle, La Garenne-Colombes, France

Filed May 21, 1970, Ser. No. 39,469
Claims priority, application France, May 30, 1969, 6917683
Int. Cl. C02c *1/14*
U.S. Cl. 210—95 **4 Claims**



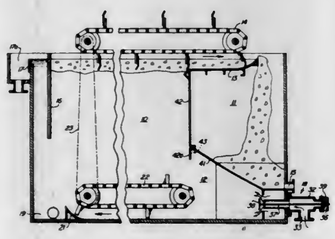
This invention relates to a filtering and aerating jet filter comprising a filter cartridge formed by a stack of grooved washers positioned in a chamber for flow of water under pressure through the stack of washers and out of the outlet of the device. The outlet has an associated port for entry of air into the filtered jet of water to aerate the latter. The chamber in which the stack is positioned is designed to contain a deodorizing substance to remove odors from the water and the device is designed so that it may readily be disassembled and also may be cleaned without disassembling by having a reverse flow of water therethrough.

3,679,055
REVERSE OSMOSIS WATER PURIFIER
Timothy M. Clark, San Carlos; Henry Shanfield, Santa Ana, and David L. Grunau, San Francisco, all of Calif., assignors to Polymetrics, Incorporated, San Carlos, Calif.
Filed July 15, 1970, Ser. No. 54,922
Int. Cl. B01d 31/00
U.S. Cl. 210—110 7 Claims



A water purifier for removing dissolved substances and solid impurities from water supplied at an elevated pressure to a reverse osmosis element located inside a pressurized storage tank. As purified water from the element is collected within the tank it further compresses air in the tank, which air is used to force the purified water from the tank when used. A valve connected in the conduit supplying water to the element is responsive to air pressure within the storage tank to cut off the water flow when the supply of purified water in the tank reaches a predetermined level.

3,679,056
FLOTATION APPARATUS
Ralph B. Haymore, Salt Lake City, Utah, assignor to Envirotech Corporation, Salt Lake City, Utah
Filed Aug. 13, 1970, Ser. No. 63,445
Int. Cl. B01d
U.S. Cl. 210—221 7 Claims



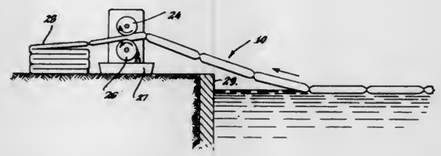
Flotation apparatus comprising an elongated tank having at one end both a submerged feed inlet and an upper froth overflow, a clarified effluent overflow at the opposite end, and a bottom outlet for removing settled solids. A mixing valve assembly is associated as a feed inlet for admixing an aeration stream with the primary feed as it enters the tank; and a trap is provided adjacent the feed inlet for removing relatively large air bubbles from the feed before it enters the main flotation zone.

3,679,057
SCREEN FILTER PACK AND METHOD FOR MAKING SAME
Damasco Rodolfo Adelto Perez, 17 E. San Marino Ave., Alhambra, Calif.
Filed Sept. 11, 1970, Ser. No. 71,300
Int. Cl. B01d 35/06
U.S. Cl. 210—223 7 Claims



The filter is constructed of superimposed corrugated screens, each of which has a plurality of flattened areas of a predetermined width at the level of the apexes of the corrugations and extending transversely to the latter. One screen may be superimposed on another screen with its flattened areas in registry with those of the other screen, but with the flattened area of both screens being disposed most remotely from each other, so that the two screens define a plurality of passages of said predetermined width extending between each pair of screens and through the corrugations. Into these passage bars may be inserted for support of the screens. Such bars may be of a magnetizable material and magnetized to attract metallic particles in the gas or fluid to be filtered through the screen. Additional pairs of screens may be stacked upon the first pair to make up a filter pack.

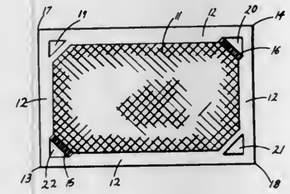
3,679,058
OIL COLLECTION BOOM
Millard F. Smith, P.O. Box 295, Saugatuck, Conn.
Continuation-in-part of Ser. No. 739,231, June 24, 1968, Pat. No. 3,539,013. This application Jan. 27, 1970, Ser. No. 6,117The portion of the term of this patent subsequent to Nov. 10, 1987, has been disclaimed.
Int. Cl. C02b 9/02
U.S. Cl. 210—242 6 Claims



An oil absorbing boom to be deployed across the effluent stream from a separator or settling basin on the downstream side of oil transfer operations at a seaport for the purposes of collecting and removing from the water thin films of oil such as those which sometimes escape from oil spill booms surrounding a tanker at a loading dock, and comprising an elongated flat tubular sleeve of polymer netting enclosing within itself a plurality of flat elongated slabs or bats of "picker-lap" fibrous polymer material such as blown polypropylene film arrayed end to end within the tubular sleeve and sufficiently spaced apart to permit accordion folding of the sleeve at fold lines between adjacent bats, with a tension-bearing rope or cable being positioned within the tubular sleeve alongside the successive plurality of absorbent bats to reinforce the structure for carrying its own weight or impact loads placing it in tension between its ends. Alternatively, a continuous, wide, flat sheet of extremely porous hydrophobic foam material such as fully reticulated polyurethane foam, suspended from overlying buoyant flotation material, is formed into a similar elongated boom deployed across a floating oil film or into a

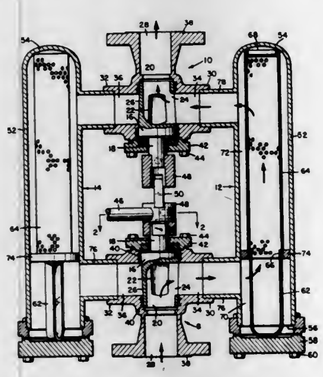
continuous endless belt repeatedly cycled through the floating oil. After trapping oil within the porosities or interstices of the boom or belt material, it is squeezed between pinch rolls to force out and recover the trapped oil, and the device is thus capable of successive repeated deployment cycles of oil recovery operation.

3,679,059
MEMBRANE PACKS
James Andrew Stewart Wyatt; Clifford Victor Gascoyne Chapman; George Stefan Solt, all of Rickmansworth, and Mullet, Sidney George, Chessington, all of England, assignors to William Boby & Company Limited, Rickmansworth, England
Filed July 28, 1969, Ser. No. 845,475
Int. Cl. B01d 31/00
U.S. Cl. 210—321 10 Claims



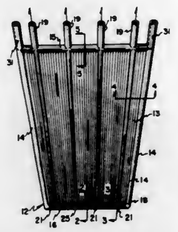
A gasket separator unit, for membrane packs, used in processes involving membrane packs used in osmosis, dialysis, and electrodialysis, comprises a mesh around the peripheral area of which is formed a layer of gasket-forming material, embedded in the mesh, which forms a continuous surface on either side of the mesh.

3,679,060
DUPLEX STRAINER CONSTRUCTION
Russell G. Smith, Cincinnati, Ohio, assignor to Xomox Corporation, Cincinnati, Ohio
Filed Sept. 8, 1970, Ser. No. 70,406
Int. Cl. B01d 35/12, 29/38
U.S. Cl. 210—333 15 Claims



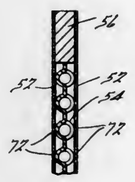
The duplex strainer structure comprises two parallel elongate strainer housings flanking rotatable valving means in a common plane, the valving means being operative to place in service alternatively either of the two fluid strainers while the other undergoes cleaning. The valving members, their operating stems, and the strainer axes are arranged in coplanar relationship, to provide a compact substantially flat assembly in which the strainer housings protectively flank the valving means.

3,679,061
MOLDED FILTER LEAF
Steven S. Davis, Bountiful, Utah, assignor to Envirotech Corporation, Salt Lake City, Utah
Filed June 15, 1970, Ser. No. 46,330
Int. Cl. B01d 33/22
U.S. Cl. 210—486 9 Claims



A double-faced filter leaf formed from two flat, molded sections joined back-to-back. Drainage channels are formed between parallel ribs molded on the front face of each section. A collecting channel transversely intersecting the drainage channels is also formed on the front face adjacent one edge of the leaf. Conduits for applying vacuum and removing filtrate are provided between the sections by opposed grooves formed on the back faces thereof. The conduits extend the full length of the leaf and are in communication with the drainage channels on the front face through one or more ports. Means are provided to hold a filter medium in place over the ribs.

3,679,062
FILTER LEAF AND METHOD OF MAKING THE SAME
Clark B. Burkhart, Livonia, Mich., assignor to AMBAC Industries, Incorporated, Garden City, N.Y.
Filed Dec. 17, 1969, Ser. No. 885,833
Int. Cl. B01d 39/12
U.S. Cl. 210—486 12 Claims

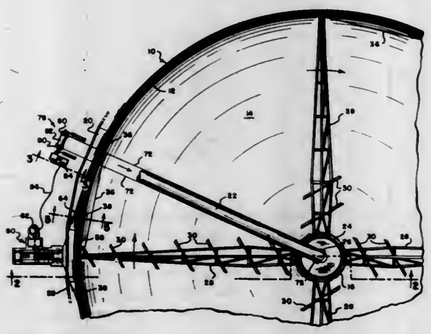


A filter leaf having a pair of spaced sheets disposed on opposite sides of a porous metallic spacer. At least one of such sheets consists of filter cloth through which a liquid flows to the spacer and thence to a peripheral or central outlet in the leaf. The spacer is desirably made from coarse woven wire cloth or expanded metal and is sprayed with a brazing material on one side thereof. The spacer and sheets are positioned together in a brazing furnace with a metallic sealing ring surrounding the spacer. Brazing material flows to the areas of contact between the sheets and the spacer, to establish a number of metallurgically bonded connections between the sheets and the areas of contact between the sheets and the spacer, to establish a number of metallurgically bonded connections between the sheets and the spacer and prevent movement of the sheets relative to the spacer.

3,679,063
MECHANISM FOR OPERATING THICKENER RAKE ARMS

Robert Lee Pate, Pittsburg, Kans., assignor to The McNally Pittsburg Manufacturing Corporation, Pittsburg, Kans.

Filed Aug. 20, 1970, Ser. No. 65,522
Int. Cl. B01d 12/00
U.S. Cl. 210—526 9 Claims

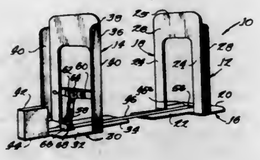


A thickener according to the invention is provided with a mechanism for operating the rake arms of the thickener without the use of central drive columns and central drive mechanism but comprising a traction means including a plurality of spaced cable carriers distributed and mounted for movement along the peripheral wall of the thickener tank, cable means respectively connecting the outer ends of the rake arms to one of the cable carriers, an endless cable drive means including a cable length extending around and engaging all of the cable carriers, means for continuously pulling with cable drive means and thereby advancing the cable carriers and the rake arms, and cable means for elevating the inner ends of the rake arms to avoid overloading in the case of an excessive amount of sediment in the thickener.

3,679,064
ARTICLE HOLDER

George E. Howkinson, 118 No. Peck Ave., La Grange, Ill.

Filed Oct. 20, 1970, Ser. No. 82,406
Int. Cl. A47b 65/00
U.S. Cl. 211—43 9 Claims

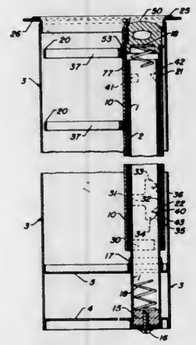


A pair of movable bookends are provided with an adjustable securing arrangement comprising a flexible tape having one end secured to one of the bookends and the opposite end portion wound on an automatic take-up reel device on the other of the bookends. An eccentric arm positively secures the tape on the second bookend to secure the two bookends at any desired spacing within the range allowed by the length of the tape.

3,679,065
UNIT FOR STORING AND SERVING ARTICLES SUCH AS CONDIMENTS

Nicholas A. Aurtemma, Miami, Fla., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Nov. 6, 1970, Ser. No. 87,392
Int. Cl. A47b 57/08
U.S. Cl. 312—312 6 Claims



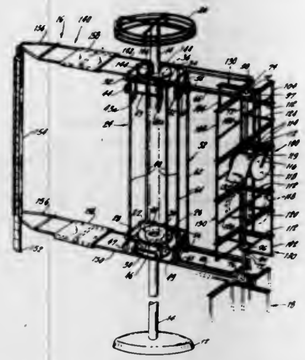
A unit for storing and serving articles, such as condiments, from containers, which is adaptable for countertop installation. The unit includes a containment section having an upper open end and having a first support post disposed therein. A movable second support post is telescopically connected to the first support post, and has an uppermost position wherein a portion extends above the open end of the containment sections and a lowermost position wherein substantially all of the second support post is within the containment section. Collar-like and bushing-like sections are connected to the posts to serve as means for maintaining the second support post in either the uppermost position or in the lowermost position thereof. Container holding means is connected to the second support post for holding containers in position. When the articles are to be stored, the second support post is lowered into its lowermost position which lowers the containers containing the articles within the containment section. When the articles are to be served, the second support post is telescoped to its uppermost position and latched in position. Thus, the containers are accessible to the server.

3,679,066
COMPACT ROTATABLE DISPLAY DEVICE

Nathan A. Leffield, 64 W. 23rd St., Livingston, N.J.

Continuation-in-part of Ser. No. 865,222, Sept. 10, 1969, which is a continuation-in-part of Ser. No. 712,534, March 12, 1968. This application July 23, 1970, Ser. No. 57,551
Int. Cl. A47f 5/02
U.S. Cl. 211—163 30 Claims

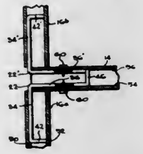
A display, comprising a central support post; at least one tier of an independently rotatable central frame rotatably carried on the post; each central frame carrying a plurality of merchandise display extension frames, access to which is obtained by rotating the central frame; each extension frame carrying a plurality of merchandise elements. In addition, there are separate brackets for mounting an extension frame on a support panel.



3,679,067
STORAGE RACK AND BRACKET THEREFOR

Anthony N. Konstant, Mount Prospect, Ill., assignor to Speedrack Inc., Skokie, Ill.

Filed Sept. 14, 1970, Ser. No. 71,841
Int. Cl. A47f 5/14
U.S. Cl. 211—182 9 Claims



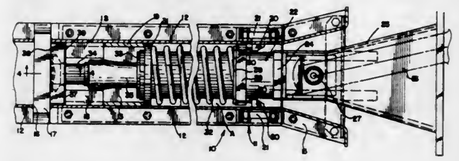
A cantilever storage rack including tubular cantilever arms extending outwardly from an upright primary support. Tubular stringers are supported at the end of the cantilever arms by integral brackets having first and second wings extending perpendicular to each other. The first wing is inserted into the hollow stringer and has a projection extending across the interior opening therewithin. The second wing is inserted into the tubular cantilever arm and a second projection extends across the interior opening within the arm. Another stringer can be supported extending from the other side of the cantilever arm using another such bracket.

3,679,068
CUSHIONING ARRANGEMENT FOR RAILWAY CAR

William H. Peterson, Homewood, Ill., assignor to Pullman Incorporated, Chicago, Ill.

Filed Aug. 17, 1970, Ser. No. 64,340
Int. Cl. B61g 9/12, 9/08
U.S. Cl. 213—8 10 Claims

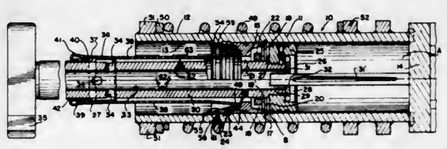
A railway car underframe is provided with a center sill having at opposite ends thereof cushion pockets each containing a hydraulic cushioning unit. The cushioning unit includes a cylinder which is connected to the coupler, the cushioning device being of the double-acting type functioning to cushion both draft and buff impacts. Stops are provided on the center sill permitting a limited amount of movement of the hydraulic cylinder in a forward direction during draft impacts and the cylinder includes a piston and piston rod arrangement, the end of which is anchored to a stop provided on the center sill at one end of the cushion pocket. A base plate is connected to the end of the piston rod and includes a concavity having an inner concave surface. The end of the piston rod has connected thereto a securing plate having a convex surface adapted to complement the concave inner surface within the concavity. The concavity has an open end facing the stop and a thrust plate which engages the stop is disposed within the concavity. The thrust plate includes a convex central surface which complements the concave surface provided in a block rigidly secured to the end of the piston rod. The face plate is held against substantial longitudinal movement relative to the center sill structure and during eccentrically applied loads, occasioned by either draft or buff impacts, the arrangement is such that limited movement in universal direction is achieved thereby accommodating the eccentric loads without damage to the center sill structure or to the arrangement. End-of-car cushioning units of the type utilized with the present invention are disclosed in assignee's U.S. Pat. No. 3,568,856 patented Mar. 9, 1971.



3,679,069
FLEXIBLE BOOT TYPE HYDRAULIC CUSHIONING UNIT WITH BOOT PROTECTOR

William R. Shaver, Munster, Ind., and Willis H. Knippel, Palos Park, Ill., assignors to Pullman Incorporated, Chicago, Ill.

Filed Feb. 17, 1971, Ser. No. 116,048
Int. Cl. B61g 9/12
U.S. Cl. 213—43 5 Claims

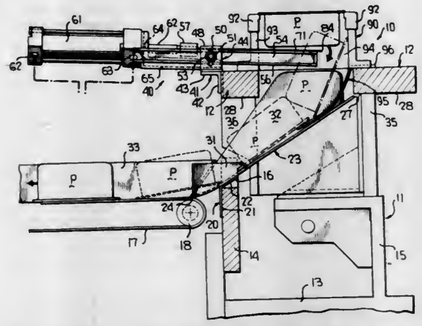


A railway car hydraulic cushioning unit includes a cylinder and piston assembly wherein a low pressure reservoir comprises a flexible boot which is constructed to eliminate sliding seals between the piston rod and an intermediate cylinder head. The boot is connected at one closed end to the piston rod and is connected at its other open end to an intermediate cylinder head. Adjacent the point of connection of the open end portion of the boot to the cylinder head a boot protector is provided which during reciprocation of the piston and piston rod assembly protects the flexible boot adjacent its point of connection against possible damage and rupture.

3,679,070
MACHINE FOR PACKAGE TURNOVER AND ORIENTATION

Alexander Skiba, Jr., Pearl River, N.Y., assignor to Royal Packaging Equipment, Inc., Maywood, N.J.

Filed July 13, 1970, Ser. No. 54,144
Int. Cl. B65g 7/00
U.S. Cl. 214—1 Q 30 Claims

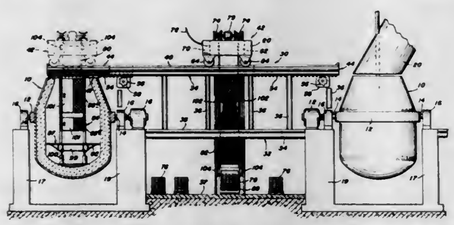


This disclosure relates to a machine for turning articles, packages or the like through approximately 180° to present the package in a desired position for subsequent processing. The machine preferably includes a plurality of pairs of chambers each of which receives a package formed from web material. Within each chamber is a platform which is progressively retracted after the packages have been severed from the web material whereupon the influence of gravity progressively tips each package during its discharge from its associated chamber. Cooperative movable and stationary guides assure the subsequent discharge of the packages to a take-away conveyor, while a vertical guide blade disposed generally in a plane between the packages maintains spacing therebetween during discharge and subsequent take-away. In addition to being tipped or turned over the packages are oriented to a desired position by providing the platforms with edges ranging from 0° to 60° relative to a plane normal to the direction of movement of the platforms.

3,679,071
APPARATUS FOR USE IN LINING VESSELS

George A. Smith, Beaver, Pa., assignor to Dravo Corporation, Pittsburgh, Pa.

Filed Feb. 9, 1971, Ser. No. 113,984
Int. Cl. B66c 19/00
U.S. Cl. 214—1 H 9 Claims

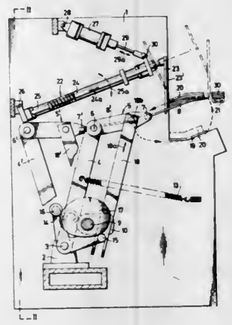


Apparatus for use in lining ground supported open-mouth metallurgical processing vessels arranged oppositely one another is disclosed. The apparatus includes an elongated support structure arranged between the vessels and upon which is disposed a transportation bed, such as parallel rails. The transportation bed includes selectively movable end sections arranged to be moved between a position outside of the vessels and a position over the mouth of each vessel. A self propelled vehicle having a compartment for storing refractory bricks is provided for travelling on the transportation bed between the vessels. Delivery means are provided in the form of an elevator cage and hoist for lowering refractory brick into a vessel where workers on a portable scaffold may receive the brick and place it in position to form the refractory wall of the vessel.

3,679,072
TRANSFER APPARATUS

Hans Mueller, Baerehubel, Switzerland, assignor to Grapha Maschinenfabrik Hans Mueller A.G., Zofingen, Switzerland

Filed March 31, 1971, Ser. No. 128,632
Claims priority, application Switzerland, March 31, 1970, 4711/70
Int. Cl. B65g 25/04, 57/30; B65h 33/00
U.S. Cl. 214—6 BA 13 Claims

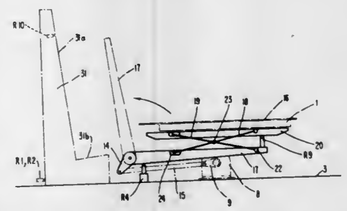


A pair of rakes, each provided with a plurality of tines projecting in a substantially horizontal direction. The rakes are mounted for movement in a substantially triangular path between an advanced position and a retracted position spaced from one another in the direction of elongation of the tines, and also between an upper and a lower level while they are in the advanced position. Movement of the rakes is controlled so as to assure that whenever one of the rakes is in the advanced position and at the upper level another rake will move to the advanced position and to the lower level before the first-mentioned rake moves away towards the retracted position.

3,679,073
APPARATUS FOR HANDLING FRAGILE SHEETS

Rene A. Malburet, Villeneuve-Saint-Georges, France, assignor to Compagnie de Saint-Gobain, Neuilly-sur-Seine, France

Filed Feb. 13, 1970, Ser. No. 11,096
Claims priority, application France, Feb. 13, 1969, 6903391
Int. Cl. B65g 57/28, 61/00
U.S. Cl. 214—1 Q 2 Claims

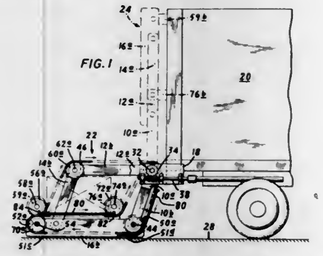


The handling of fragile sheet, e.g. glass sheet, because of its fragility, is extremely delicate and difficult. The machines for doing it have been complex and difficult to maintain in satisfactory working order. The present invention remedies these disadvantages in both loading and unloading glass sheet from a support by a machine which picks up the sheet from a horizontal conveyor, turns it to a more or less vertical position parallel to the front receiving face of the support, then moves it in a straight line parallel to the sole plate of the support, the starting position of the sheet being chosen in such a manner that its front edge runs along the said sole plate. If a sheet of glass has already been deposited it is not damaged by the edge of the sheet. In the same way, when this device is unloading, the sheet of glass resting on the support in a more or less vertical position carries out the reverse movement; its first motion is in a straight line, which is followed by a rotating movement onto a horizontal surface. This versatile machine can be economically operated and is manufactured at low cost.

3,679,074
TRANSPORT DEVICE

Guenther L. Kuehl, Peekskill, N.Y., assignor to Guenther Systems, Inc., Buchanan, N.Y.

Division of Ser. No. 798,366, Feb. 11, 1969, Pat. No. 3,578,145. This application April 22, 1970, Ser. No. 38,639
Int. Cl. B60p 1/38
U.S. Cl. 214—83.26 7 Claims

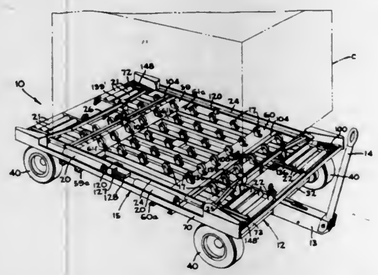


An adjustable transport device is provided which includes a multiple chain drive system for transporting unit loads of material between a number of vertically and laterally displaced locations. In one embodiment, the device is provided as a truck attachment, and is a second embodiment, the vertical lift is permanently installed in a truck dock.

3,679,075
TRAILER

James R. Guyaux, San Jose; Donald Le Duc, Sunnyvale, and Dean T. McDonald, San Jose, all of Calif., assignors to FMC Corporation, San Jose, Calif.

Filed Oct. 21, 1970, Ser. No. 82,670
Int. Cl. B60p 1/52
U.S. Cl. 214—84 6 Claims

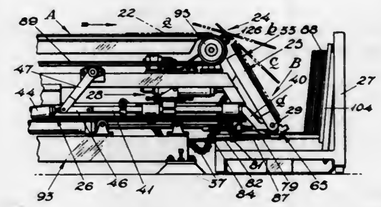


A cargo container trailer has a generally rectangular bed mounted for rotating through 360° and is provided with means for receiving or discharging cargo containers over either end or over either side edge.

3,679,076
METHOD AND APPARATUS FOR HANDLING SHEET MATERIAL

Alfred H. Miller, Toledo, Ohio, and George A. Dean, Kansas City, Mo., assignors to Libbey-Owens-Ford Company, Toledo, Ohio

Filed July 20, 1970, Ser. No. 56,529
Int. Cl. B65g 57/28
U.S. Cl. 214—152 8 Claims

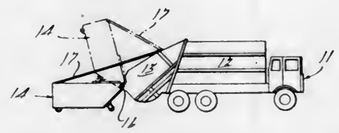


This application discloses transferring glass sheets from a horizontal conveyor to a vertical storage buck by permitting each sheet to ride over and drop off a driven roll at the discharge end of the conveyor and onto the angled face of a vacuum platen which receives, aligns and retains it. The sheet is then carried forward by the platen, swung from the receiving to a stacking angle and released, whereupon the conveyor and platen index themselves rearwardly and the platen returns to receiving position.

3,679,077
COUPLER BETWEEN A DUMPABLE CONTAINER AND A RECEIVING CONTAINER

William Gennick, Detroit, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Oct. 29, 1970, Ser. No. 85,019
Int. Cl. B65f 3/02
U.S. Cl. 214—302 3 Claims



A coupling means for pivotally attaching a dumpable container to a hopper. As the container pivots it engages a rotatable portion of the coupling means which moves with the container and locks the container to the hopper.

The coupling means comprises primarily a pair of slotted members, one of which is rotatable from an open position in which the slots are aligned to a closed, locked position.

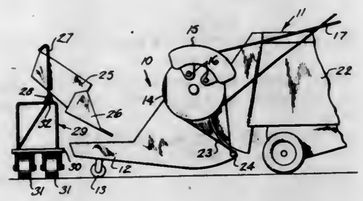
3,679,078
BASKET DEVICE FOR REFUSE TRUCKS

Walter Wetzel, 34825 Dryden Drive, Sterling Heights, Mich.

Filed Jan. 29, 1971, Ser. No. 110,864
Int. Cl. B65f 3/02
U.S. Cl. 214—302 4 Claims

An attachment for refuse trucks which will facilitate easy

handling of refuse that is being carted away. The device in-



cludes a motor operated basket which has counter-balances for the easy manipulation thereof.

3,679,079

APPARATUS FOR FEEDING CIGARETTE CONTAINERS TO THE HOPPER LOADING MECHANISM OF A CIGARETTE PACKAGING-CONDITIONING MACHINE

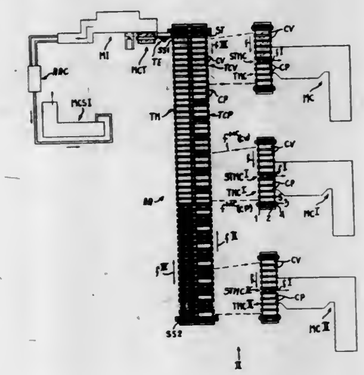
Ariosto Seragnoli, Bologna, Italy, assignor to G. D. Societa in Accomandita Semplice di Enzo Seragnoli e Ariosto Serganoli, Bologna, Italy

Filed Aug. 5, 1969, Ser. No. 847,690

Claims priority, application Italy, Aug. 6, 1968, 842214 A/68

Int. Cl. B65f 3/02

U.S. Cl. 214—302 **3 Claims**



Disclosed herein is an apparatus for supplying cigarette containers to the loading mechanisms for hoppers of cigarette packaging-conditioning machines. The apparatus supplies containers filled with cigarettes through a storage device so that the operating continuity of the cigarette packaging-conditioning machine is assured independently of the operating continuity for the cigarette manufacturing machine associated therewith. The storage device intervenes to ensure maximum operating efficiency for both the cigarette manufacturing machines and for the packaging-conditioning machine by storing the containers of cigarettes produced by the manufacturing machine when a failure occurs in the packaging machine; and, by supplying the stored containers to the packaging machine during proper operation of all of the apparatus and upon failure of the manufacturing machine.

3,679,080

PROCESS FOR LAUNCHING AND RECOVERY OF TOP-OF-VEHICLE TRANSPORTED WATERCRAFT

Robert Wendell Fulcher, 9202 Wofford Lane, Prince George's County, Md.

Filed July 17, 1970, Ser. No. 55,750

Int. Cl. B60r 9/00

U.S. Cl. 214—450 **1 Claim**



A launching and recovery process for top-of-vehicle transported watercraft in which the watercraft always remains correct side up and which is a true one man operation, even for heavier watercraft. The process is accomplished by means of a relatively short length primary dolly located under the watercraft (that is removed only when the watercraft is floated) and a removable transom dolly. Both dollies are used in conjunction with simple tracks and a single winch. The primary dolly provides a means for ground transport of the watercraft and a means for transporting the watercraft up and down a marine launching ramp. This transport can be either manual or aided by the winch previously mentioned.

3,679,081

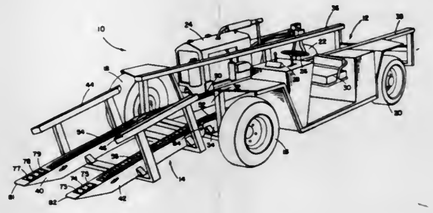
BIN CARRIER

Wilson B. Duncan, Jr., P.O. Box 846, Corning, Calif.

Filed July 30, 1970, Ser. No. 59,560

Int. Cl. B60p 1/36

U.S. Cl. 214—516 **1 Claim**



An automotive vehicle having a bin storing section for storing fruit bins along its length and at least one ramp, preferably on the leading end of the vehicle, including powered belt means on at least the ramp, and preferably on the storing section too, to engage fruit bins and to transport the bins up and down the ramp into and out of the bin storing section. The powered belts are preferably chain belts which are sprocket driven, and the belts on the ramp are preferably slightly offset from the belts on the storing section so that when a bin shifts from the ramp onto the storing section it promptly disengages the belts on the ramp, whereby the belts on the ramp and the belts on the storing section may be driven at different speeds.

Both the ramp and storing sections of the vehicle preferably have bottom and side rails to guide the bins.

In one embodiment, the vehicle has ramps at both ends thereof.

3,679,082

BULK TRANSPORTER

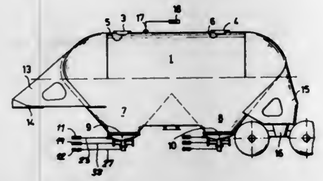
Fritz Gramlich, Mosbach/Baden, Germany, assignor to Ludwig Spitzer sen. KG, Mosbach/Baden, Germany

Filed June 8, 1970, Ser. No. 44,143

Claims priority, application Germany, Aug. 14, 1969, P 19 41 351.5

Int. Cl. B60p 1/42; B65p 1/60

U.S. Cl. 214—518 **10 Claims**



A bulk transporter comprises a pressure-retentive container adapted to be displaced along the ground and provided with a pair of downwardly converging discharge cones. Each cone in turn is provided with an internal arch-breaker and has a fluidized internal wall to prevent the bulk from becoming compacted. The arch-breaker element is rotated around the inside of the cone, adjacent the gas-fluidized wall. This element can be an auger which also serves to pull the bulk toward the outlet mouth of the cone whence it is pneumatically blown away through an unloading conduit.

3,679,083

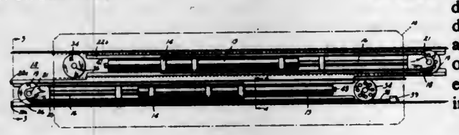
APPARATUS FOR TRANSFERRING A VEHICLE TO AND FROM AN ELEVATOR

Duane V. Sanders, Spokane, Wash., assignor to Systematic Multi-Level Parking Company, Seattle, Wash.

Continuation of Ser. No. 704,096, Feb. 8, 1968, abandoned. This application May 10, 1971, Ser. No. 143,686

Int. Cl. B66f 9/14; E04b 6/06

U.S. Cl. 214—730 **4 Claims**



This invention relates to a self-contained apparatus for extending an object from a central point in one of a plurality of directions and particularly to a new and improved automobile parking apparatus. The apparatus is mounted on an elevator and operates to direct a dolly having an automobile supported thereon into a stall on either side of the elevator. The apparatus includes fluid drive means coupled to the dolly through a unique pulley arrangement which multiplies the movement of the drive means to extend the dolly into a predetermined stall as desired.

3,679,084

CHILD-PROOF CONTAINER CLOSURE MEANS

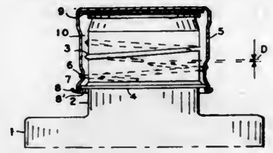
Theodore F. Aronson, 2108 Sunrise Key Blvd., Glen Cove, N.Y.

Filed Jan. 22, 1971, Ser. No. 108,868

Int. Cl. A61j 1/00

U.S. Cl. 215—9 **10 Claims**

A child-proof cap closure for containers. The container has a neck with a partial thread and a flange mounted below the thread. The cap has an annular recessed portion adapted to snap over the flange, and the cap has a partial thread adjacent the narrow portion. The positions of the said two partial threads are chosen so that the cap is snapped over the flange by turning the cap, and at the same time causes the threads to disengage. Therefore, the cap cannot be disconnected from the container by simple unscrewing motion, but only by unscrewing and pulling simultaneously to engage the partial threads.



3,679,085

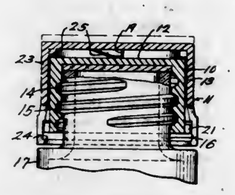
CHILD-PROOF CAP FOR MEDICINE BOTTLES

Peter P. Gach, Evansville, Ind., assignor to Sunbeam Plastics Corporation, Evansville, Ind.

Filed April 16, 1971, Ser. No. 134,702

Int. Cl. B65d 55/02

U.S. Cl. 215—9 **9 Claims**



A child-proof cap for medicine bottles or the like having an inner threaded closure member and an outer overcap or driver. The closure and driver have co-operating one-way driving means for screwing the closure onto the bottle which are engaged by pushing the driver down, and second co-operating driving means for unscrewing the closure which are engaged by pulling the driver upwardly and squeezing its walls inwardly.

3,679,086

LIQUID STORAGE TANK

Werner Grimm, Hasserodt, Ulrich, and Karl-Heinz Olschewski, Hamburg, both of Germany, assignors to Shell Oil Company, New York, N.Y.

Filed June 3, 1970, Ser. No. 43,071

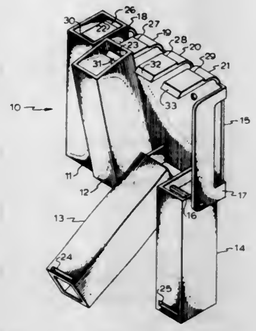
Int. Cl. B65d 7/22

U.S. Cl. 220—10 **10 Claims**



A liquid storage tank having inner and outer parallel spaced walls of substantially U-shaped vertical transverse cross-section, the outer wall being of metal and the inner wall being of a liquid resistant plastic material. The outer wall is closed at the top by a horizontal plate and the interior of the inner wall is in fluid communication with the space between the inner and outer wall. A drainage may be provided at the bottom of the outer wall for removing liquid from the inner wall.

3,679,087
CONTAINER APPARATUS
David L. Poll, 10201 Santa Paula N.E., Albuquerque, N. Mex.
Filed March 22, 1971, Ser. No. 126,460
Int. Cl. B65d 25/24
U.S. Cl. 220—18 13 Claims



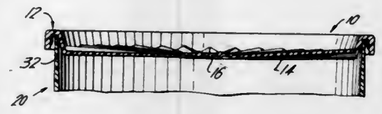
Container apparatus having a container pivotally mounted on a frame to be movable among covered, load, and unload positions. A cover is carried upon the frame, and is insertable into a slot on a wall of the container to cover it. A protrusion is formed on the top surface of the cover to constrain the container in the covered position, thereby allowing the container to be rotated away from the constrained cover position by downward pressure on the cover in the general direction of rotation of the container. The pivotal mount is disposed on the frame to cause the container to follow an arc upon rotation, in which the slot of the container engages the cover at a point away from the back mount to define the load position. Further rotation of the container from the covered and load positions disengages the cover from the slot to define an unload position.

3,679,088
PRESS TYPE CLOSURE
James B. Swett, Barrington, and Jack V. Croyle, Woonsocket, both of R.I., assignors to Dart Industries, Inc., Los Angeles, Calif.
Filed Feb. 3, 1970, Ser. No. 8,228
Int. Cl. B65d 41/00
U.S. Cl. 220—42 R 6 Claims



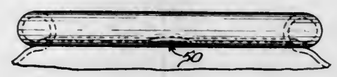
A closure suitable of insertion over the opening of a tubular or similarly constructed member and adapted to hermetically seal that opening. The closure construction includes a biased center main wall that particularly adapts it for placement upon the tubular member by a light application of finger pressure to the approximate center of the main wall. Also disclosed is the method of application of such a closure upon a tubular member, and a combined snap-on and locking feature for this closure.

3,679,089
PRESS TYPE CLOSURE
James B. Swett, Barrington, and Jack V. Croyle, Woonsocket, both of R.I., assignors to Dart Industries, Inc., Los Angeles, Calif.
Continuation-in-part of Ser. No. 8,228, Feb. 3, 1970. This application Aug. 27, 1970, Ser. No. 67,340
Int. Cl. B65d 39/00
U.S. Cl. 220—42 C 5 Claims



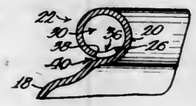
A closure suitable of insertion over the opening of a tubular or similarly constructed member and adapted to hermetically seal that opening. The closure construction includes a sloping, corrugated top wall dimensioned according to a plurality of design parameters such that particularly adapts it for placement upon the tubular member by the application of pressure to the approximate center of the top wall.

3,679,090
VENTED CURL FOR AEROSOL DOME
Stanley J. Miller, and James P. Davidson, both of Chicago, Ill., assignors to National Can Corporation, Chicago, Ill.
Filed April 9, 1970, Ser. No. 26,872
Int. Cl. B65d 7/42
U.S. Cl. 220—67 7 Claims



An aerosol dome having a lower end adapted to be attached to the upper end of a container and having an upper open end surrounded by an outwardly turned wall. The outwardly turned wall has a free edge and an adjacent end portion in overlapping relation with an adjacent outer surface of the aerosol dome to define a curl with an enclosed area having an internal radius. A major circumferential portion of the curl defined by the wall has a substantially constant or fixed internal radius which locates the free edge in contacting engagement with the outer surface of the dome and at least one selected circumferential portion of the curl has a radius at the free edge which is less than the fixed internal radius to space that portion of the free edge from the outer surface and provide a vent opening for the internal area of the curl.

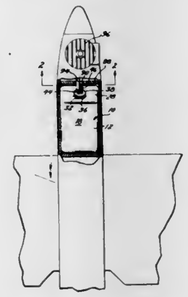
3,679,091
VENTED CURL FOR AEROSOL DOME
Robert F. Krupp, and Stanley J. Miller, both of Chicago, Ill., assignors to National Can Corporation, Chicago, Ill.
Filed April 9, 1970, Ser. No. 26,965
Int. Cl. B65d 7/42
U.S. Cl. 220—61 5 Claims



An aerosol dome having a lower end adapted to be attached to a container and an upper end having an opening sur-

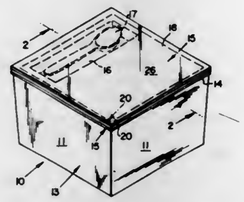
rounded by an outwardly turned wall. The outwardly turned wall has a free end portion in overlapping and contacting engagement with an outer surface of the dome to define an enclosed area of uniform cross-sectional configuration. The integral outwardly turned wall has openings defined therein with at least a portion of each of the openings being spaced from the free end portion and the adjacent outer surface of the dome to place the enclosed area in communication with the surrounding atmosphere. In one embodiment the opening is produced by forming a recess extending from the free edge through the free end portion with the base of the recess being spaced from the adjacent outer surface of the dome. In an alternative embodiment the opening is defined by an aperture extending through the wall at a point spaced from the free end.

3,679,092
FUEL TANK FOR USE IN MODEL AIRPLANES
Matthew A. Sullivan, Elkins Park, Pa., assignor to Sullivan Products, Inc., Willow Grove, Pa.
Filed Sept. 15, 1969, Ser. No. 857,869
Int. Cl. B65d 25/00
U.S. Cl. 220—85 R 6 Claims



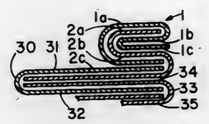
A fuel tank for use in model airplanes is disclosed, the fuel tank including an angled surface through which the fuel feed line and vent line pass to permit mounting of the fuel tank at the centerline position in "profile" fuselages, and between closely spaced or behind partly obstructed bulkheads in built-up fuselages.

3,679,093
COMBINATION FOOD CONTAINER AND IMPLEMENT FOR EXTRACTING THE CONTENTS
Henry M. Chang, Bronx, N.Y., assignor to First Dynamics, Inc., New York, N.Y.
Continuation-in-part of Ser. No. 15,413, March 2, 1970. This application Oct. 26, 1970, Ser. No. 83,941
Int. Cl. A47g 19/22
U.S. Cl. 220—90.2 13 Claims



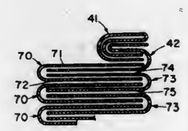
A food container has a two-layer cover, the lower layer of which is permanently adhered to the container body and has a depressed recess or trough therein housing an implement for extracting the contents. The upper layer of the cover is superimposed upon and releasably adhered to the lower layer. The lower layer has severance lines defining a severable tongue in which the recess lies. The upper layer which may or may not be transparent, seals the implement in its recess as well as the severance lines.

3,679,094
INTERFOLDED SHEET MATERIAL ASSEMBLY
Walter D. Nissen, Appleton, and Philip G. Hammond, Neenah, both of Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.
Filed June 1, 1970, Ser. No. 42,314
Int. Cl. A47k 10/20
U.S. Cl. 221—50 1 Claim



Interfolded webs such as those of tissue paper are provided in a stack. The upper two webs of the stack are so folded and interfolded as to provide four plies or folds of an upper web to the hand of a user to permit grasping of the full folded thickness for withdrawal. A method and apparatus to effect the particular folding of the upper starter web and next lower web of the stack are illustrated.

3,679,095
FOLDED SHEET MATERIAL AND METHOD AND APPARATUS THEREFOR
Walter D. Nissen, Appleton, and Philip G. Hammond, Neenah, both of Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.
Filed June 1, 1970, Ser. No. 42,348
Int. Cl. B65h 1/04
U.S. Cl. 221—50 3 Claims

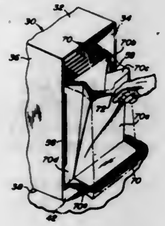


Tissue webs which may be of substantially indefinite length and suitable for cutting to a convenient size for packaging are folded and interfolded. The upper or starter web of the stack is folded in quarters and so arranged that this upper web is readily grasped by the fingers of a hand and easily removed from the stack. The next lower web being interfolded with the upper is partially withdrawn from the stack so that it is presented for easy removal also. Several apparatus arrangements and methods for effecting the folding are described.

3,679,096
BAG HOLDER AND OPENING APPARATUS
Malcolm E. Musser, P.O. Box 386, Jackson Center, Ohio
Filed April 22, 1970, Ser. No. 30,807
Int. Cl. B65h 1/08
U.S. Cl. 221—56 4 Claims

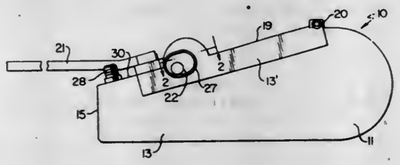
Structure for retaining and supporting a supply of bags, such as paper bags or the like. As each bag is manually removed

from the supply thereof, the bag is automatically opened by



the means which retains the bag.

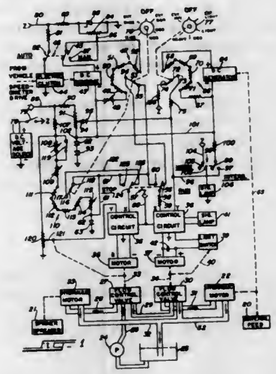
3,679,097
COILED SPRING SEPARATOR DEVICE AND METHOD
James C. Gunter, Greensburg, Pa., assignor to Robertshaw Controls Company, Richmond, Va.
Filed July 16, 1970, Ser. No. 55,414
Int. Cl. B65h *9/00*
U.S. Cl. 221—163 **20 Claims**



A housing having a chamber for receiving a supply of coiled springs with the housing having an exit means for the serial ejection of the springs. The housing has a separator means for receiving the springs in only a separated condition thereof from the chamber and delivering the same in a serial manner to the exit means. Means are provided for imposing an air flow into the chamber to cause the coiled springs to be subjected to a turbulent action in the chamber that separates the springs and causes an occasional spring to be delivered to the separator means of the housing.

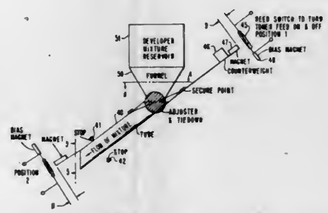
3,679,098
VEHICULAR MATERIAL SPREADER CONTROL APPARATUS
Paul C. Weiss, Evanston, Ill., assignor to Ambac Industries, Incorporated, Garden City, N.Y.
Filed April 21, 1969, Ser. No. 817,732
Int. Cl. A01c *19/20*
U.S. Cl. 222—23 **17 Claims**

The system for spreading the particulate material is interconnected with the dispensing system to automatically adjust the dispensing rate concomitantly with any adjustment in width of spread to maintain constant the spreading density. In one embodiment the speed control circuit for the spinner motor is interconnected with the speed regulating circuit for the dispenser motor. In another embodiment the feeding mechanism for dispensing and the spinner are driven by the same prime mover and the dispensing rate is further controlled by a speed regulated hopper gate. In a further embodiment the speed control circuit for the spinner motor is interconnected with a hopper gate while the feeding mechanism is independently controlled. Several forms of compensation are



provided for various non-linearities in the systems and for the various materials handled.

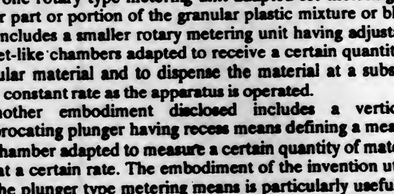
3,679,099
BALANCE TYPE TONER CONCENTRATION SENSING AND MONITORING SYSTEM
Michael K. Bullock; Myrl J. Miller, and William F. Voit, Jr., all of Lexington, Ky., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed July 28, 1970, Ser. No. 58,808
Int. Cl. B67d *5/08*
U.S. Cl. 222—55 **10 Claims**



A toner monitoring means including a sensor monitors the density of a mixture of toner and carrier in a developer means arranged for developing latent images in a xerographic process. The sensor in the monitoring means turns a toner feed mechanism on and off to maintain the toner concentration in the developer means at any selected density operating point.

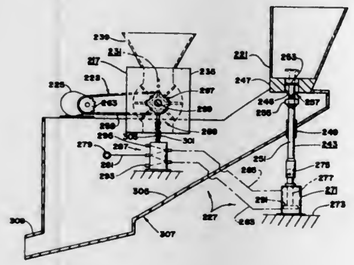
3,679,100
MOLDED PLASTIC GARMENT HANGER
Donald L. Brorson, Hinsdale, and Raymond A. Magnuson, Western Springs, both of Ill., assignors to Beatrice Food Co., Chicago, Ill.
Filed Sept. 4, 1969, Ser. No. 855,251
Int. Cl. A47j *51/098*
U.S. Cl. 223—88 **9 Claims**

A garment hanger formed of two complementary molded plastic shell sections forming a pair of hanger arms supported by a wire forming a T-type, ball-type, or conventional hook type hanger support. The hanger may be furnished with a horizontal rod below the arms and attached to the arms with wire hooks, which may also be formed so as to provide skirt hooks. The hanger may also be furnished with a centrally



located hook depending from the shell for the purpose of hanging umbrellas or other garment accessories.

3,679,101
APPARATUS FOR PROPORTIONING AND MIXING PARTICULATE MATERIALS
Gerald T. Aldridge, 4500 Dearing Rd, Memphis, Tenn.
Filed Sept. 5, 1968, Ser. No. 757,564
Int. Cl. B67d *5/48*
U.S. Cl. 222—136 **2 Claims**



Apparatus for proportioning and mixing particulate or granular material and particularly for handling plastic granular material constituting the various ingredients of a granular plastic mixture or blend of material adapted to be fed into plastic extruders, blow molding plastic forming machines, or the like.

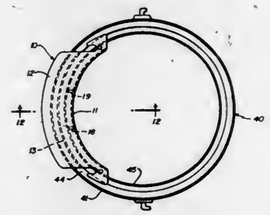
The apparatus of a basic embodiment disclosed includes at least one rotary type metering unit adapted for metering the major part or portion of the granular plastic mixture or blend and includes a smaller rotary metering unit having adjustable socket-like chambers adapted to receive a certain quantity of granular material and to dispense the material at a substantially constant rate as the apparatus is operated.

Another embodiment disclosed includes a vertically reciprocating plunger having recess means defining a measuring chamber adapted to measure a certain quantity of material and at a certain rate. The embodiment of the invention utilizing the plunger type metering means is particularly useful for metering color concentrate pellets or granules in the proportioning of the plastic granule mixture or blend. The plunger is adapted to be vertically reciprocated either by direct mechanical action utilizing a multi-lobe cam for direct vertical reciprocation of the plunger or may be pneumatically operated through a timed air valve synchronously connected with one of the large volume rotary metering means dispensing another ingredient of the plastic granule mixture.

3,679,102
AEROSOL COMPOSITION AND METHOD FOR PRODUCING SAME
Roger Charle, Soisy; Gregoire Kalopissis, Paris, and Charles Zviak, Franconville, all of France, assignors to L'Oreal, Paris, France
Filed Feb. 4, 1970, Ser. No. 8,726
Claims priority, application Luxembourg, Feb. 4, 1969, 57.891
Int. Cl. A61j *3/00*; A61k *7/12*
U.S. Cl. 222—192 **4 Claims**

A sprayable aerosol composition is prepared by encapsulating a material in a microcapsule and introducing into said microcapsule a fluid under a pressure essentially equal to the pressure in the aerosol container from which said composition is dispensed. Also provided is an aerosol dispenser containing under pressure said microcapsules dispersed in an aerosol propellant.

3,679,103
COMBINATION CARRYING HANDLE AND POUR SPOUT
John F. Chmela, 7256 W. Davis St., Morton Grove, Ill., and Seymour F. Fohrman, 1171 Longmeadow, Glencoe, Ill.
Filed March 6, 1970, Ser. No. 17,122
Int. Cl. B67d *5/06*
U.S. Cl. 222—192 **1 Claim**

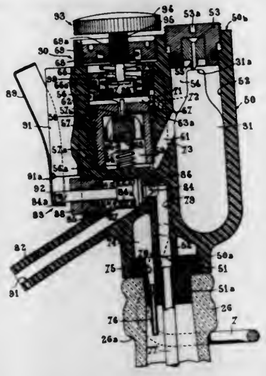


An inexpensive multi-purpose device which is adapted for use with cans such as paint cans and the like, as a pour spout, an easy grip handle for carrying one or two of such cans, as a wiping surface for removing, for example, excess paint from paint brushes, and as a carrying handle for packages.

3,679,104
SIPHON-VALVE STOPPER COMPRISING A BODY ENCLOSING CARBON DIOXIDE CAPSULE
Henri Philibert Giroud, Epinay-sur-Seine, France, assignor to Societe d'Exploitations et de Realisations Industrielles et Commerciales Serico, Epinay-sur-Seine, France
Filed June 18, 1970, Ser. No. 47,542
Int. Cl. B05b *7/32*
U.S. Cl. 222—396 **2 Claims**

A siphon-valve stopper adapted for use on containers formed with a neck and utilizing a small CO_2 cartridge of conventional type, said stopper being provided with a pressure reducing device and a gas stop valve, wherein said gas stop valve comprises a valve comprises a valve member and a valve seat incorporated in said pressure reducing device, with control members co-acting with an expansion piston so as to move said piston away from a rod rigid with said valve member when the control knob of the device is rotated in a given direction, whereby said valve member engages its seat, thus preventing the gas from said cartridge from flowing beyond the high-pres-

sure chamber of the pressure reducing device. The siphon-valve stopper may also be utilized without any risk with ordi-

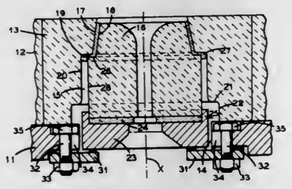


nary glass bottles containing indifferently a gaseous, or a non-carbonated liquid or beverage, for example beer.

3,679,105
NOZZLE ARRANGEMENT FOR MOLTEN METAL CONTAINER VESSEL

Temple W. Ratcliffe, Beaver, Pa., assignor to The Badcock & Wilcox Company, New York, N.Y.

Filed March 5, 1970, Ser. No. 16,839
Int. Cl. B22d 37/00
U.S. Cl. 222—567 **2 Claims**



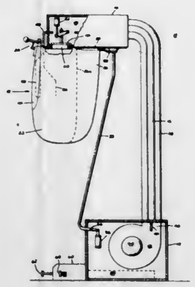
An improved nozzle arrangement for a molten metal container vessel in which the nozzle block passage and nozzle received therein have matching surfaces inclined with respect to the nozzle pouring axis, these matching surfaces being disposed to define a sealable joint between the nozzle and nozzle block and allow installation of the nozzle in the block by insertion into the passage from outside the vessel.

3,679,106
CONTROL SYSTEM FOR GARMENT FINISHING APPARATUS

William L. North, Morristown, and William J. Beckett, Talbott, both of Tenn., assignors to Forenta, Limited, Kincordine, Ontario, Canada

Filed March 16, 1971, Ser. No. 124,834
Int. Cl. D06c 15/00, 5/00; A41h 5/02; D06f 59/00, 71/00
U.S. Cl. 223—73 **20 Claims**

A control system for a steam-air garment finisher, such as a pants topper, having an inflatable bag for supporting the garment, a solenoid valve for injecting steam into the bag, and a blower for delivering a flow of air into the bag. The system includes first and second air reservoirs, first and second air bleeding orifices, first and second control valves normally coupling the reservoirs to a source of air under pressure, and a manually actuated control element for actuating the control valve respectively to couple the reservoirs to the bleeding orifices. A first pressure actuated switch is coupled to the first reservoir for actuating the steam valve to inject steam into the bag in response to air pressure in the first reservoir above a predetermined value, and a second pressure actuated switch is coupled to the second reservoir for actuating the blower to deliver an air flow into the bag in response to air pressure in



the second reservoir above a predetermined value. Actuation of the steam valve and air delivering means is inhibited when the reservoirs are coupled to the air source, and actuation of the blower is inhibited during actuation of the steam valve, the time of exhausting the second reservoir being substantially longer than the time of exhausting the first reservoir. The control element is actuated in response to termination of air delivery to actuate the control valve to recouple the reservoirs to the air source.

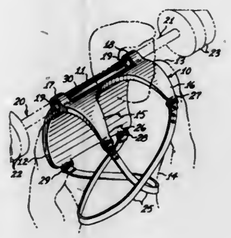
ERRATUM

For Class 223—88 see:
Patent No. 3,679,100

3,679,107
LIFTING YOKE

Walter E. Perrine, 7216 W. Pierson, Phoenix, Ariz.

Filed Dec. 28, 1970, Ser. No. 101,467
Int. Cl. A45f 5/00
U.S. Cl. 224—5 P **4 Claims**

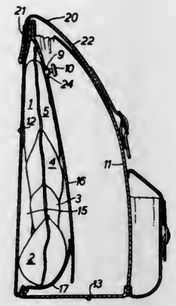


A weight lifting yoke for shoulder use wherein the weight is distributed over the shoulders of the wearer and off center of the end of the spinal column.

3,679,108
CARRIER DEVICES FOR SHOULDER-STRAP SUPPORT ON THE BACK

John Anthony Ingram, Ulverston, England, assignor to National Research Development Corporation, London, England

Filed July 17, 1970, Ser. No. 55,936
Claims priority, application Great Britain, July 17, 1969, 36,009/69; June 17, 1970, 29,473/70
Int. Cl. A45f 3/04
U.S. Cl. 224—8 R **15 Claims**

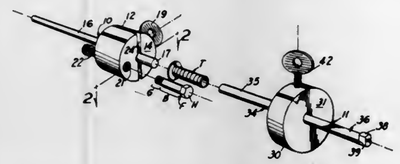


Load-carrying devices adapted to be supported on the back by means of shoulder straps are provided with a resilient or inflatable cushion to yield to the load on the back. The cushion is specially designed to provide the correct support of the load on the back, being formed with a bottom portion extending widthwise of the cushion to provide a main band of support around the small of the wearer's back and being narrower in width in an upper portion thereof to provide an upper zone of support which leaves the shoulder blades of the wearer substantially free. The cushion is preferably designed to form a pneumatic frame in place of the rigid frame used in framed-rucksacks, its shape being chosen according to whether the rucksack is of the truncated triangular form or of the rectangular form. A development of the invention is the application of the resilient or inflatable cushion to what may be basically termed a ruckbox, preferably comprising a box-like carrier attached to a shallow frame fitted with the resilient or inflatable cushion and carrying the shoulder straps.

3,679,109
METHOD AND APPARATUS FOR SEVERING TUBING

John O. King, Jr., 3990 N. Ivy Rd., Atlanta, Ga.
Continuation-in-part of Ser. No. 711,368, March 7, 1968, abandoned. This application Dec. 4, 1969, Ser. No. 882,126

Int. Cl. B26f 3/00
U.S. Cl. 225—2 **16 Claims**

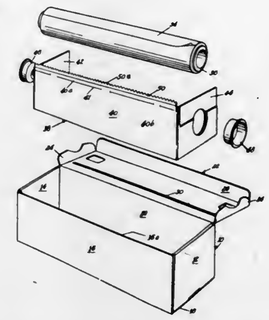


Method and apparatus for severing thin walled tubing into selected lengths wherein the method includes circumferentially scoring the outside of the tubing at a predetermined point to produce a narrow weakened portion therearound and subsequently supporting the tubing internally while applying separating forces to the inside of the tubing at the weakened portion to sever the tubing at the weakened portion. The apparatus includes means for selectively measuring the length of the tubing to be severed and means for supporting the tubing internally while applying separation forces to the inside thereof at a circumferentially extending weakened portion to cause the same to sever at the weakened portion. The apparatus also includes means for producing a circumferentially extending weakened portion in the tubing.

3,679,110
CUTTER-TYPE BOX FOR DISPENSING PACKAGING FILM WITH PROTECTIVE MOUNTING FOR THE CUTTER

Orrin Burr Stine, New York, N.Y., assignor to Borden Inc., New York, N.Y.

Filed June 25, 1970, Ser. No. 49,870
Int. Cl. B26f 3/02
U.S. Cl. 225—47 **6 Claims**

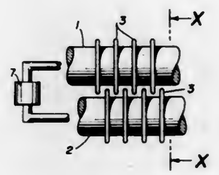


A cutter-type box for dispensing packaging film includes means such as a separate insert for rotatably supporting a roll of the film within an enclosure defined by a rectangular box container which has a closeable cover flap or panel. This film in the enclosure is fed outwardly through a transverse slit defined in the top cover for delivery over an edge at which a cutter is arranged. The cutter is supported on a panel or flap with a foldable portion permitting the cutter to be oriented either upright to project above the surface of the top cover when the cover is in a closed position or downwardly so as to be maintained within the enclosure and protected by the cover from damage during shipment.

3,679,111
APPARATUS FOR THE PRODUCTION OF FIBROUS MATERIALS

Peter Volans, Chepstow, England, assignor to Monsanto Chemicals Limited, London, England

Filed June 9, 1970, Ser. No. 44,831
Int. Cl. B26f 3/02
U.S. Cl. 225—97 **3 Claims**



Orientated and foamed thermoplastic material is fibrillated by passing the material through a nip comprised of a pair of

rotatable rolls each having a series of radially extending ribs with the ribs of one roll intermeshing with the ribs of another roll, the rolls being movable with respect to each other so that the degree of interpenetration of the ribs may be controlled.

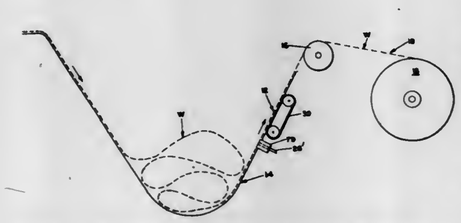
ERRATUM

For Class 356—114 see:
Patent No. 3,679,309

3,679,112
VACUUM BELT GUIDING MEANS

James A. Black, Kent City, and Harry Russell Farwell, Cedar Springs, both of Mich., assignors to James A. Black, Kent City, Mich.

Filed Feb. 26, 1971, Ser. No. 119,181
Int. Cl. B65h 25/06
U.S. Cl. 226—3 16 Claims

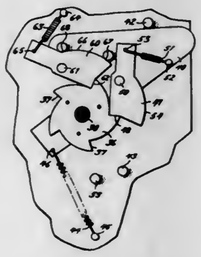


Herein is disclosed directional influencing apparatus for strip stock such as a traveling web or sheets, employing a traveling recirculatory vacuum belt controllably shifted to variable angular orientation.

3,679,113
TICKET DISPENSER

Paul E. Startzman, Bryn Mawr, Pa., assignor to Philadelphia Manufacturing Company, Inc., Philadelphia, Pa.

Filed April 23, 1971, Ser. No. 136,968
Int. Cl. B65h 17/22
U.S. Cl. 226—76 3 Claims

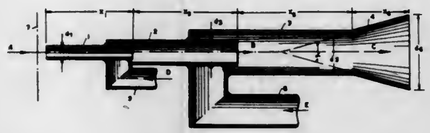


The present invention relates to a ticket dispenser in which a strip of tickets having recesses every ticket length between one ticket and another engages in projections on a ticket feeding wheel, which is advanced by a ratchet. The ratchet has both a fixed pawl and a moving pawl and both pawls are cam controlled so that the fixed pawl is free to advance when the moving pawl is restrained against advancing and the moving pawl is free to advance when the fixed pawl is restrained against advancing.

3,679,114
MULTI-STAGE INJECTOR FOR THREAD WITHDRAWAL

Karl Ostertag, Elsenfeld, and Heinrich Nilgens, Erlenbach/Main, both of Germany, assignors to Akzona Incorporated, Asheville, N.C.

Filed July 15, 1970, Ser. No. 55,104
Claims priority, application Germany, July 19, 1969, P 19 36 916.5
Int. Cl. B65h 17/32
U.S. Cl. 226—097 15 Claims

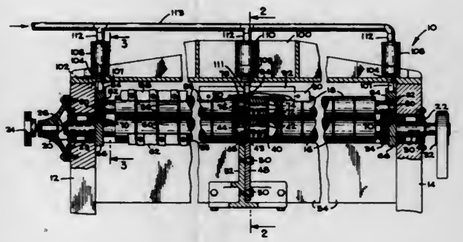


A multi-stage injector for the suction withdrawal of a rapidly moving thread or filament exhibiting at least two suction conduits or tubes, each having an annular air injector at their discharge ends leading into the next suction conduit or a final mixing conduit which is preferably provided with a diffusor conduit at its discharge end.

3,679,115
UNIFORM PRESSURE DRAW ROLLS

David K. Stock, Green Bay, Wis., assignor to FMC Corporation, San Jose, Calif.

Filed Dec. 4, 1970, Ser. No. 95,282
Int. Cl. B65h 17/20
U.S. Cl. 226—177 7 Claims



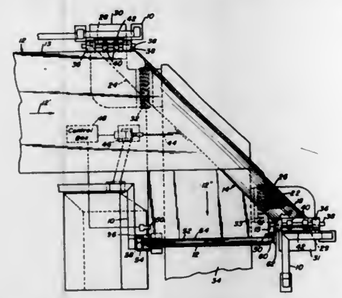
Uniform gripping pressure between two draw rolls for feeding a film web is achieved by providing three power cylinders along a movably mounted roll to press it into contact with the web and against a fixed opposed roller, and by providing a support yoke intermediate the ends of the opposed roller to counter the gripping force applied by the central power cylinder.

3,679,116
WEB TURNING AND GUIDING APPARATUS

David R. Hamlin, Rochester, and William A. Torpey, Scottsville, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 1, 1971, Ser. No. 111,216
Int. Cl. B65h 25/26
U.S. Cl. 226—197 11 Claims

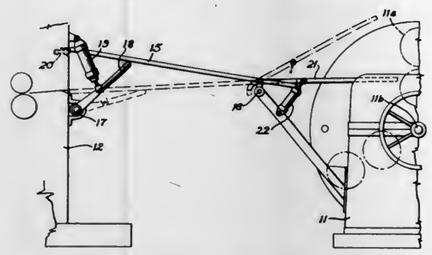
An air bar is provided in the path of web travel to change the direction of travel and the air bar position is automatically adjusted to compensate for minor lateral changes in the path of web travel. The web is laterally constrained a short distance downstream of the air bar and the constraining means is adapted to move simultaneously with the air bar in order that when the air turning bar moves to make a correction in web position, the web will move simultaneously by the same amount.



3,679,117
WEB FEEDING APPARATUS

John Arthur Moss, Stockport, England, assignor to Henry Simon Limited, Cheshire, England

Filed Jan. 22, 1971, Ser. No. 108,732
Claims priority, application Great Britain, Feb. 6, 1970, 5,759/70
Int. Cl. B65h 23/32
U.S. Cl. 226—199 18 Claims



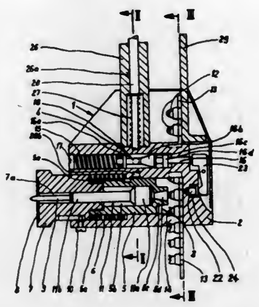
Web feeding apparatus for directing a plurality of webs arranged in side-by-side relationship and issuing from a slitting machine selectively to different levels of a rotary cutting machine comprising a feed table consisting of a plurality of spaced parallel fingers pivotted at one end, means adapted to be actuated to raise the free ends remote from the pivots, of all of said fingers to a maximum height, and means for locking selected ones of said fingers at the fully raised position whereby actuation of said raising means in the reverse direction serves to lower the remaining fingers to a lowered position.

3,679,118
POWDER CHARGE-OPERATED BOLT SETTER FOR SECURING EXOTHERMIC PLATES ON CHILL MOLDS

Elmar Maier, Feldkirch-tisis, and Herbert Rangger, Frastanz, both of Austria, assignors to Hilti Aktiengesellschaft, Schaan, Fuerstentum, Liechtenstein

Filed July 13, 1970, Ser. No. 54,365
Claims priority, application Germany, July 18, 1969, P 19 36 740.9
Int. Cl. B25c 1/14
U.S. Cl. 227—10 9 Claims

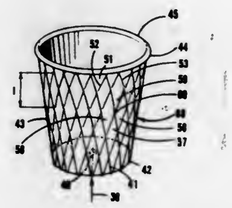
A powder charge-operated bolt setter is formed with a reduced axial length for effectively securing exothermic plates on chill molds. In the casing of the bolt setter a percussion pin and a barrel are arranged in spaced parallel relationship and a lever situated within the casing to be pivoted by the percussion pin against a firing pin aligned with the rear end of the barrel for exploding cartridges held in a magazine which is guided in a stepwise manner through the casing. A release bar extends perpendicularly from the casing and is arranged in operating relationship with the percussion pin so that the firing action can be initiated at a position remote from the casing.



3,679,119
INJECTION MOULDED PLASTIC CUP-LIKE ARTICLE

Keith Philip Copping, 24 Brian Cliff Drive, Don Mills, Ontario, Canada

Continuation-in-part of Ser. No. 759,845, Sept. 16, 1968, abandoned. This application June 1, 1970, Ser. No. 42,413
Int. Cl. B65d 3/06
U.S. Cl. 229—1.5 9 Claims



The disclosure sets forth an injection moulded cup-like plastic article characterized by point of injection and a moulding terminus and having as a major structural element thereof a wall embodying superposed ribs defining a cross-lattice network dividing the wall into segmental rectangular web portions entirely bounded by the ribs, the ribs being directed at an angle to a theoretical line of shortest distance between the injection point and the moulding terminus.

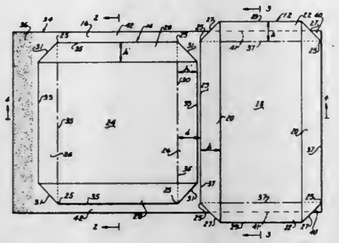
3,679,120
PRE-WRAPPED BOX

Marion Sturm Rubin, 69 W. 95th St., Brooklyn, N.Y.

Filed Nov. 26, 1969, Ser. No. 879,991
Int. Cl. B65d 65/12
U.S. Cl. 229—23 BT 4 Claims

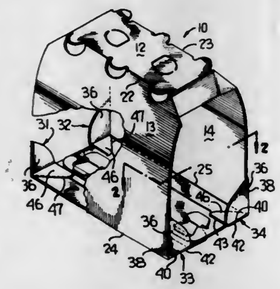
A pre-wrapped gift box comprises a decorative wrapping sheet and first and second box sections operatively attached to the wrapping sheet. The box sections are positioned on the sheet in registration with and adjacent each other and are spaced apart a distance which enables one box section to receive the other box section without buckling or otherwise

adversely affecting the smooth surface of the wrapping sheet upon the swinging of the sections toward each other. The box sections may be provided with diagonal fold lines so located as to enable each of the walls of the box sections to be folded



downwardly toward the wrapping sheet. With this structure the assembly is readily formed into a compact flattened package adapted for shipping and storage. Preferably the box sections are rectangular in shape and are composed of a stiff but collapsible material such as paperboard.

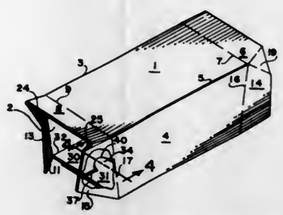
3,679,121
CARTON WITH GUSSETTED ENDS
Nicholas V. Morgese, Garnerville, N.Y., assignor to Continental Can Company, Inc., New York, N.Y.
Filed July 17, 1970, Ser. No. 55,642
Int. Cl. B65d 75/08
U.S. Cl. 229—40 **12 Claims**



This disclosure relates to a carton blank and a carton formed therefrom which includes top, side and bottom panels with the side panels each including an end panel joined thereto along a fold line whereupon being set up into a generally tubular configuration the end panels at least partially close axially opposite ends of the carton. The major feature of the invention is a locking panel associated with each bottom and end panel in the form of a pair of locking panel portions divided by a fold line which permits the locking panel to be folded or gussetted interiorly of the tubular body to maintain each end panel disposed generally 90° relative to its associated side panel.

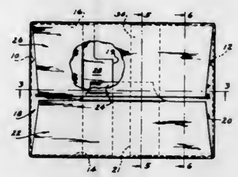
3,679,122
CARTON HAVING COMPOSITE BOTTOM
Robert G. Neff, Cincinnati, Ohio, assignor to The Mead Corporation
Filed Nov. 18, 1970, Ser. No. 90,568
Int. Cl. B65d 5/02
U.S. Cl. 229—40 **2 Claims**

A carton having top, bottom and side walls as well as end panels foldably joined to the end edges of the top wall is provided with a composite bottom panel including a pair of panels respectively adjoined foldably to the bottom edges of the side walls together with a plurality of projections extending from an edge of one of the bottom panels and arranged to be in-



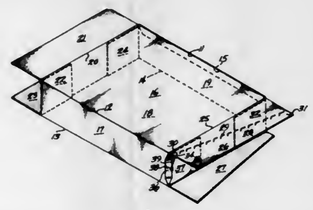
serted into corresponding openings formed in a retaining panel foldably joined to an edge of the other bottom panel and secured in flat face contacting relation with a surface of the one panel.

3,679,123
CARTON WITH COMPOSITE END WALL
Robert E. Wood, Ashland, Ohio, assignor to The A. L. Garber Company, Ashland, Ohio
Filed Feb. 2, 1971, Ser. No. 111,865
Int. Cl. B65d 5/64
U.S. Cl. 229—43 **1 Claim**



A means of forming or embossing the end-flaps of a fiberboard carton so that the mutually engaging surfaces of the several flaps are parallel to each other, and therefor define closely contacting surfaces when the carton is sealed. This relationship assures that the adhesive applied to the flaps will uniformly contact the surface of the opposed flap.

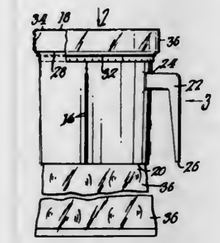
3,679,124
CONTAINER WITH OPENING FEATURE
Joseph F. Schillinger, Palos Hills, Ill., assignor to Weyerhaeuser Company, Tacoma, Wash.
Filed April 9, 1971, Ser. No. 132,850
Int. Cl. B65d 5/54
U.S. Cl. 229—51 TS **11 Claims**



A container with a diagonal tear-line extending across one panel, allowing the entire end to be opened for ease of access

to the contents. The opening panel may be formed of overlapping panels, and the upper panel may have a lift-tab to allow the overlapped panels to be opened more easily. The free edges of the upper and lower end closure panels may be cut diagonally to allow nesting of the blank on the web.

3,679,125
SANITARY BAG HOLDER
Ronald B. Forance, 7 Kathleen Rd., Hudson, Mass.; William F. Madden, 745 Pleasant St., Marlboro, Mass., and Clair H. Gaucher, 168 S. Central Ave., Ramsey, N.J.
Filed June 8, 1970, Ser. No. 44,376
Int. Cl. A47j 47/00; B65d 33/02
U.S. Cl. 229—55 **4 Claims**



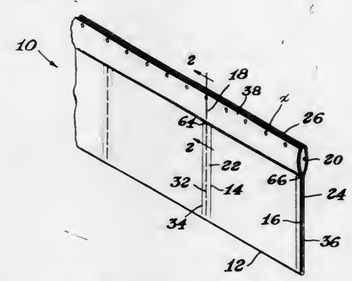
A one-piece molded plastic tubular member open at both ends in triangular section and having a substantial diameter compared to the length thereof, a handle integral therewith said handle being shorter than the length of the member and being attached at one end only thereof at an apex of the member, in combination with a disposable plastic or paper bag, with means holding the bag mouth thereof open at one open edge of the member, the bag depending down through the member and beyond the other open edge thereof.

3,679,126
BAG STRUCTURES WITH INTEGRAL CLOSURE ARRANGEMENT
Connie Lake, Pittsford, N.Y., assignor to Mobil Oil Corporation
Continuation-in-part of Ser. No. 884,534, Dec. 12, 1969. This application May 26, 1970, Ser. No. 40,649
Int. Cl. B65d 33/16
U.S. Cl. 229—62 **3 Claims**



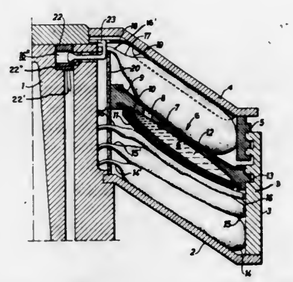
To provide a closure for bags of flexible material such as polyethylene, light fabric, or the like, a restricted opening is formed near the top of the bag, for example molding an opening into a wall of the bag, by a seam partitioning off a portion of the mouth of the bag, a pair of seams extending towards a side with the side being slit open between the seams, or a pair of seams between which a slit is cut; or a tear-off strip, or loop can be formed on the bag. The size of the opening is just large enough to enable a user to gather together the remainder of the mouth of the bag an push it through the opening, the released gathered material then flaring out by its own elasticity to provide a closure which will securely hold contents within the bag. If the bag is made of stressed material, such as streched polyethylene, applying heat in the range of the melting temperature to to bag causes localized melting; release of stress results in the formation of a hole having reinforced surroundings of re-melted, unstressed material.

3,679,127
BAG DISPENSING ARRANGEMENT
James M. Stefancin, Parma, Ohio, assignor to The Dow Chemical Company, Midland, Mich.
Continuation of Ser. No. 791,726, Jan. 16, 1969, abandoned. This application April 16, 1971, Ser. No. 134,860
Int. Cl. B65d 31/12, 31/14
U.S. Cl. 229—62.5 **3 Claims**



An improved packaging system of the type wherein a bag including a loop across its top end is mounted, for filling, in a fashion comparable to a curtain and rod arrangement, and thereafter the loop parted to form a fill opening. The loop is formed by a plurality of spaced attachments extending edgewise across the top end of the bag. A loop so constructed can be efficiently parted by a gentle pulling action.

3,679,128
CENTRIFUGE
Hans Peter Olof Unger, Stockholm; Johan E. H. Westberg, Lidingo; Gunnar Ingemar Berndtsson, Stockholm, and Stephen Lars Schwartz, Lidingo, all of Sweden, assignors to AGA Aktiebolag, Lidingo, Sweden
Filed Aug. 6, 1970, Ser. No. 61,583
Claims priority, application Sweden, Aug. 11, 1969, 11121/69
Int. Cl. B04b 11/00
U.S. Cl. 233—20 R **6 Claims**



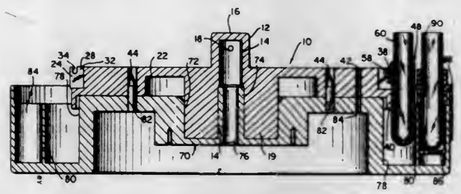
A centrifuge comprises a rotating chamber containing a compressible container for the liquid to be centrifuged. The centrifuge also includes means to compress the container to transfer liquid from the container during centrifugation. The compressing means is also capable of compressing one or more further compressible containers to transfer liquid

therefrom to the first-mentioned compressible container. The compressing means is preferably a diaphragm member which is urged by centrifugal force against a compressible container. In one application, the container is filled with blood to be centrifuged and, after the serum is separated, a valve is opened permitting the diaphragm to compress the container to transfer the serum to a further container. The valve is then closed and speed reduced until the diaphragm returns to its rest position causing compression of a still further container provided with wash water. A valve is then opened to permit transfer of some or all of the wash water into the first-mentioned container and the device may then be braked to cause the water to mix with the blood cells therein. The washed blood cells are then centrifuged and the water transferred to the water container or yet a still further container by the actuation of an appropriate valve similarly as in the case of transferring the serum. The washing operation is repeated if desired until all of the wash water has been utilized.

3,679,129
BLOOD SAMPLE TRAY APPARATUS

Stanley L. Livshitz, Bronx; Alvin Engelhardt, Nanuet, and Stanford L. Adler, Monsey, all of N.Y., assignors to Technicon Instruments Corporation, Tarrytown, N.Y.

Filed Sept. 8, 1970, Ser. No. 70,199
Int. Cl. B04b 9/12
U.S. Cl. 233—26 13 Claims



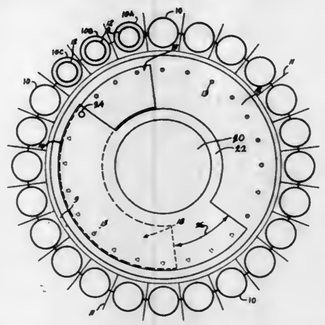
New and improved sample processing and supply apparatus are disclosed and comprise tray means from which are pivotally supported a plurality of partially filled sample container means. In use, said tray means are operatively connected to centrifuge drive means and rotated to centrifuge each of said samples and separate the same into sample constituent layers, whereupon said tray means are removed as a unit from said centrifuge drive means and operatively associated with automatic sample analysis means for indexing to supply a series of one of said sample constituents from said sample container means to said analysis means. Outer tray means comprising a plurality of outer sample container means are provided for use in conjunction with said tray means for the concomitant supply of, for example, a whole sample and a separated sample constituent to said sample analysis means. For such use, the tray means and outer tray means are combined in predetermined manner which insures ample container means and outer sample container means alignment, and the combined trays indexed as a unit.

3,679,130
CONTAINER HOLDING ROTATABLE BODY WITH ADJUSTABLE BALANCING FEATURE

Robert A. Mayo, Verona, N.J., and Philip Ohringer, Dix Hills, N.Y., assignors to Technicon Instruments Corporation, Tarrytown, N.Y.

Filed Oct. 30, 1970, Ser. No. 85,352
Int. Cl. B04b 9/12
U.S. Cl. 233—26 6 Claims

An imbalance of a centrifuge of the type used for a number of separate sample containers is compensated by means of two overlapping semi-circular sector balancing weights, which are

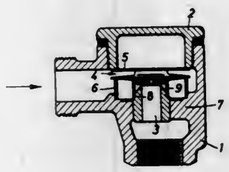


adjustable with respect to the axis of rotation of the centrifuge.

3,679,131
CONDENSATION DISCHARGER

Gerhard Hohn, Bremen; Josef Lingnau, Bremen-Borgfeld, and Wulf Rettemeier, Bremen, all of Germany, assignors to Gestra KSB Vertriebsgesellschaft mbH & Co., Bremen, Germany

Filed April 6, 1970, Ser. No. 25,724
Int. Cl. F16t 1/10
U.S. Cl. 236—59 3 Claims



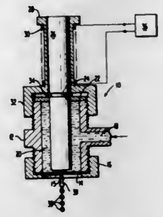
A device for discharging condensation has a flat thermic actuating member filled with evaporating liquid and having a diaphragm with a centrally located closing device co-operating with the corresponding valve seat. The invention is particularly characterized in that the diaphragm is held tightly between two rigid plate-like wall parts, whereby one of the wall parts along with the diaphragm forms the receiving space for the liquid, while the other wall part supported upon the valve seat sleeve serves as a holder for the actuating member.

3,679,132
JET STREAM VIBRATORY ATOMIZING DEVICE

Dennis A. Vehe, Mineral Wells, Tex.; Jay G. Porterfield, and Lawrence O. Roth, both of Stillwater, Okla., assignors to Cotton, Incorporated, New York, N.Y.

Filed Jan. 21, 1970, Ser. No. 4,595
Int. Cl. B05b 17/04
U.S. Cl. 239—4 4 Claims

In a jet stream vibratory atomizing device including a nozzle body and a nozzle head attached to the nozzle body, a selectively variable constant pressure source of fluid is connected into the nozzle body such that fluid may be force through an opening or openings fashioned in the nozzle head. A volumetric displacement member is positioned to contact the fluid within the nozzle body near the head. High rate cyclic disturbances are transmitted from the volumetric displacement member through the fluid downstream of the openings in the head to induce a uniform formation of droplets in the fluid



stream wherein the number of droplets formed corresponds to the rate of displacement of the volumetric displacement member.

3,679,133
APPARATUS FOR TRANSPIRING PERFUME

Masaaki Sekiguchi, Hiratsuka; Kaoru Yoshikawa, Fujisawa, and Akira Komatsu, Tokyo, all of Japan, assignors to Takasago Perfumery Co., Ltd., Tokyo, Japan

Filed Sept. 4, 1970, Ser. No. 69,783
Claims priority, application Japan, June 30, 1970, 45/65215
Int. Cl. A24f 25/00; A61l 9/04
U.S. Cl. 239—34 6 Claims

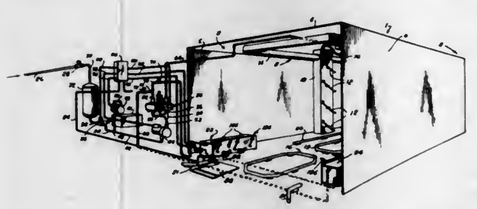


Apparatus for transpiring perfume includes a container having a pressurized liquid perfume therein, an adjustable valve which is sealed onto the container, a flexible pipe for passing the liquid perfume to the adjustable valve, and a porous member for transpiring the liquid perfume.

3,679,134
WHEEL WASHING DEVICE

Charles D. Nixon, 1411 Wysong Drive, McKinney, Tex.

Filed Nov. 9, 1970, Ser. No. 87,787
Int. Cl. B05b 15/06
U.S. Cl. 239—70 11 Claims

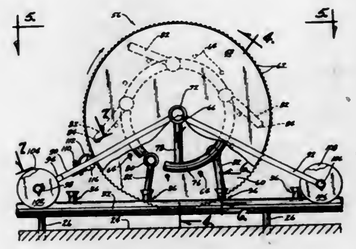


A vehicle washing device comprising wheel washing spray nozzles positioned at each side of the entrance of a wash bay in combination with a timer controlled valve adapted to divert all wash water from the vehicle washing apparatus to the wheel washing nozzles for a predetermined period of time and then back to the vehicle washing apparatus.

3,679,135
IRRIGATION APPARATUS

Gottlieb W. Groech, Silver Creek, Nebr.

Filed Jan. 25, 1971, Ser. No. 109,370
Int. Cl. B05b 3/00
U.S. Cl. 239—183 7 Claims



An irrigation apparatus comprising an elongated water supply pipe which extends along the length of the area to be irrigated and which is in communication with a source of water under pressure. The supply pipe has a plurality of spaced apart water discharge valves provided thereon along the length thereof which are normally closed but which are adapted to permit the flow of water from the supply pipe therethrough upon being opened. A water actuator means is movably mounted on the supply pipe along the length thereof and has means thereon to successively open and close the discharge valves along the supply pipe. The valve actuator means has at least one sprinkler pipe means extending therefrom which is transversely disposed with respect to the water supply pipe. The sprinkler pipe means has a plurality of sprinkler means along the length thereof which are in fluid communication with the water supply pipe when the actuator means successively opens the discharge valve. The apparatus includes power means for propelling the actuator means along the water supply pipe to successively actuate the water discharge valves so that the sprinkler pipe means will have a constant and continuous supply of water furnished thereto as the actuator means moves along the length of the water supply pipe. The sprinkler pipe means is preferably supported by a plurality of spaced apart self-propelled water towers which have the sprinkling means provided thereon.

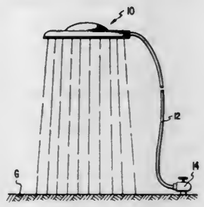
3,679,136
CONVERTIBLE WATER SPRINKLING DEVICE

Gary L. Snyder, Olde Forge East Bldg. 37 Apt 9-B, Morristown, N.J.

Filed Nov. 19, 1970, Ser. No. 90,913
Int. Cl. B05b 3/00
U.S. Cl. 239—188 4 Claims

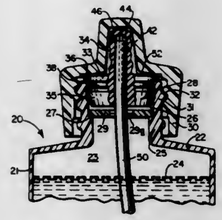
A water sprinkling device convertible from a ground supported upwardly sprinkling orientation to an airborne downwardly sprinkling orientation is designed to simulate the appearance of a flying saucer. The device includes a central chamber adapted to be connected with a source of water supply, such as a hose. A plurality of water distribution tubes extend radially outwardly from the central chamber, with each such tube having perforations formed therein. Removable legs can be inserted into openings spaced about the periphery of the device. When the legs are inserted into the device and the perforations are directed upwardly, the device will rest upon the ground and will act as a conventional lawn sprinkler, issuing an upwardly directed spray. However, when the legs are

removed from the device and the device is inverted so that the perforations are directed downwardly, the water issuing from



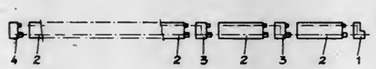
the perforations will provide a lift to the device so that the device will be airborne and the spray will be directed downwardly toward the ground.

3,679,137
SPRAY DISPENSING CONTAINER
Paul A. Marchant, Kansas City, Mo., assignor to Ethyl Development Corporation, Kansas City, Mo.
Filed Nov. 18, 1970, Ser. No. 90,753
Int. Cl. B65d *1/32*
U.S. Cl. 239—327 **5 Claims**



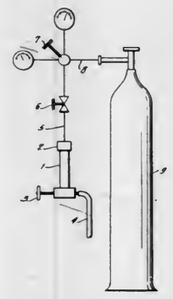
A spray-emitting squeeze bottle which includes a resilient, squeezable container having a hollow neck portion receiving a spray orifice plug and a check valve. A dip tube has its upper end received in an axial bore provided in the spray plug. Channels are provided in the inner wall defining the bore to supply air for the atomization of the bottle contents.

3,679,138
MULTI-PURPOSE WATERING EQUIPMENT
Eugene Bielle, 17 Route de Blanzet, 63 Cebazat Puy-de-Dome, France
Filed Dec. 23, 1970, Ser. No. 101,078
Claims priority, application France, Dec. 24, 1969, 6945031
Int. Cl. A01g *25/02*
U.S. Cl. 239—267 **8 Claims**



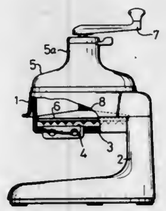
An assembly of elements constituting divisible and selective watering equipment which can be used along the edges of pathways, the assembly comprising a number of sectional elements of the same multi-bore cross-section assembled together, the number of elements being sufficient to give the required total length. By assembling the elements a continuous duct is formed right through the assembly, through which water is supplied, and in each section element is a branch duct equipped with sprinklers and discharge-regulating means to enable the water sprinkled from each sectional element to be regulated independently as a function of the requirements of the zone that it is watering.

3,679,139
PROCESS FOR THE DISRUPTING OF BIOLOGICAL MATERIAL
Amir Schneyour, 12 a Shalem St., Ramat-Gan, and Mordhay Avron, 9 Neve Weizmann, Rehovot, both of Israel
Filed May 15, 1970, Ser. No. 37,536
Claims priority, application Israel, May 21, 1969, 32,268
Int. Cl. B02c *19/12*
U.S. Cl. 241—2 **4 Claims**



The present invention relates to a process for the disruption of biological material and to a device for this process. The device according to the invention comprises in combination a pressure vessel provided with inlet and outlet means, pressure regulating means connecting the pressure vessel with a container of a compressed gaseous medium and means for determining the pressure established in the pressure vessel.

3,679,140
ICE SHAVER
Yoshiaki Kaishita, Nara, and Shigeo Sugimoto, Osaka, both of Japan, assignors to Tiger Vacuum Bottle Industrial Company, Limited, Osaka Prefecture, Japan
Filed July 9, 1970, Ser. No. 53,380
Claims priority, application Japan, July 10, 1969, 44/65613; July 21, 1969, 44/57856
Int. Cl. B02c *19/00*
U.S. Cl. 241—95 **5 Claims**



A device for making shavings of ice by rotating a chunk of ice on the bottom of a cylindrical container so as to shave the ice with a knife fixed to a holder at the bottom. The ice shaver has a rotary shaft provided with a screw-threaded portion and adapted to drive an ice pressing disk for rotating a chunk of ice in engagement therewith while pushing the disk downward, with a half nut being disposed in a rotary shaft supporting portion, and an operation lever for causing the half nut

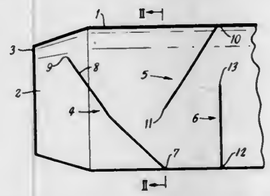
to engage with or disengage from the threaded portion of the rotary shaft.

3,679,141
GRINDING APPARATUS
Bertram W. Bristol, 71 Newman Ave., Verona, N.J.
Filed July 29, 1970, Ser. No. 59,115
Int. Cl. B02c *4/10, 15/08*
U.S. Cl. 241—106 **22 Claims**



A processing apparatus adapted to reduce the aggregate size of particles comprises a rotatable shaft concentrically mounted in a casing to form an annular channel in which the particles are received. A plurality of grinding rolls are disposed in said channel, at least one of said rolls being connected to the shaft for rotation therewith. Various sizes and arrangements of rolls are disclosed, all adapted to provide a shearing action on said particles upon rotation of said shaft relative to said casing.

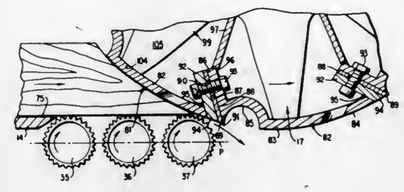
3,679,142
APPARATUS FOR TREATING REFUSE
Sydney Averill Gothard, Jersey, Guernsey (Channel Is.), assignor to Vickers Limited, London, England
Filed July 15, 1970, Ser. No. 55,051
Claims priority, application Great Britain, July 15, 1969, 35,670/69
Int. Cl. B02c *17/06*
U.S. Cl. 241—181 **7 Claims**



Apparatus for treating refuse comprising a drum rotatable about an axis that is horizontal or slightly inclined to the horizontal and having an inlet at one end and an outlet at the other end, and means within the drum for effecting a pulverizing action upon refuse fed into the drum; the curved wall of the drum being frusto-conical at the inlet end so as to taper inwardly in the direction towards the inlet from the outlet, and there being, within the inlet end portion of the drum, baffles rotatable with the drum for receiving refuse fed into the drum through the inlet and for feeding this refuse, during rotation of the drum, in the direction towards the outlet of the drum.

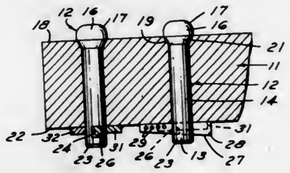
3,679,143
SHAVINGS MAKING MACHINES
William T. S. Montgomery, Jacksonville, Fla., assignor to Helene Irene Montgomery, Orlando, Fla.
Filed March 12, 1970, Ser. No. 18,828
Int. Cl. B02c *18/06*
U.S. Cl. 241—280 **6 Claims**

A shavings making machine comprises a rotating cutter drum having a plurality of longitudinally extending cutter blades on its periphery, and a moving feed bed for advancing pieces of wood to be converted into shavings under controlled



feed conditions into the path of said blades, the feed bed comprising a plurality of longitudinally serrated rotatable rollers.

3,679,144
ROTATABLE PLATE AND IMPACT MEANS FOR A SCRAP FRAGMENTIZING MACHINE
David M. Bogie, Grosse Pointe Farms, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed March 1, 1971, Ser. No. 120,023
Int. Cl. B02c *13/28*
U.S. Cl. 241—300 **4 Claims**

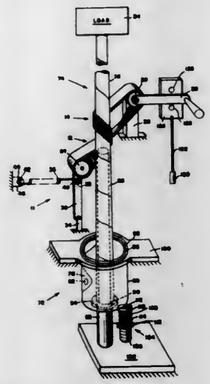


A rotatable plate and impact means for a scrap fragmentizing machine. The impact means comprises a stud including an enlarged head portion protruding from the scrap engaging surface of the plate and a shaft portion received within a bore formed in the plate. The head includes a portion countersunk into the surface of the plate to facilitate the transfer of impact forces from the head to the plate.

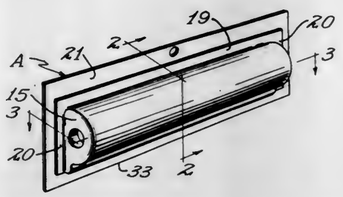
3,679,145
DEVICE FOR MOVING AN ELONGATED BODY IN THE DIRECTION OF ITS AXIS
Rene L. Guerster, Maple Glen, Pa., assignor to Ametek, Inc., New York, N.Y.
Filed June 3, 1970, Ser. No. 43,026
Int. Cl. B65h *75/00*
U.S. Cl. 242—54 R **3 Claims**

An endless belt is mounted on spaced drums with one reach of the belt being helically wrapped about an elongated body and with the other reach twisted through an angle of about 360°. Means are provided to rotate one of the drums. The device is shown cooperating with an elongated body in the form of a tapered rod and having takeup means to keep the belt taut. The device is also disclosed in cooperation with a screw operatively associated with a pair of nuts. Finally, the device is disclosed in cooperation with a tube comprising a helical axially extending ribbon of spring material which has

adjacent turns set to coil tightly in overlapping and telescoping engagement. In this embodiment the tube is mounted for storage in a rotatably mounted container, the movement of which is restricted by a damper.



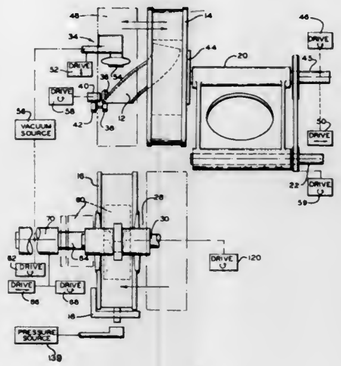
3,679,146
FILM DISPENSER
Loren J. Klitzke, Edina, Minn., assignor to Hoerner Waldorf Corporation, St. Paul, Minn.
Filed Feb. 17, 1971, Ser. No. 116,089
Int. Cl. B65h *19/00*
U.S. Cl. 242—55.53 **7 Claims**



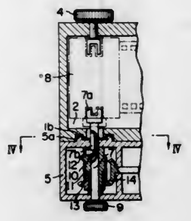
An elongated dispenser body is formed of sheet plastic. The body is of proper size to accommodate a roll of film. The body includes an open rear which is encircled on one longitudinal side and both ends by coplanar flanges. A fourth flange on the other longitudinal side is offset slightly from said coplanar flanges. The three coplanar flanges are secured in face contact with a backing sheet. A space is provided between the backing sheet and the fourth flange through which film may be drawn.

3,679,147
INHERENT REWOUND FILM TRANSPORT SYSTEM
Raymond Edson Kittredge, Binghamton, N.Y., assignor to The Singer Company, New York, N.Y.
Filed Sept. 18, 1970, Ser. No. 73,535
Int. Cl. B65h *17/48*
U.S. Cl. 242—55.18 **8 Claims**

A system for unwinding a motion picture film from a payoff or unwind cassette through a projector and winding the film on a takeup cassette in such a manner that the film is inherently rewound, whereby the takeup cassette may be immediately used as the payoff cassette. The film is unwound from the center toward the outside of the payoff cassette, and is wound on a collapsable, removable core within a cassette which includes means for firmly holding and centering the outside of a completely wound coil of film. Also disclosed are means for automatically handling the film reels or cassettes from storage to payoff to windup positions and to automatically handle the leading end of the film to begin both threading into the projector and windup on the callapsable core.

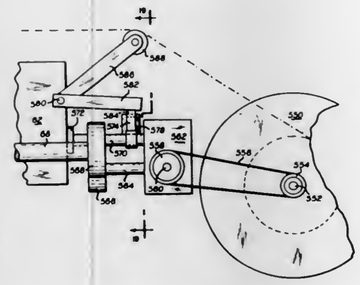


3,679,148
LIGHT-INTERCEPTING MEANS IN A CAMERA CAPABLE OF COMBINATION WITH POWER DRIVEN FILM REWINDING MEANS
Kouichi Daitoku, and Shuji Kimura, both of Tokyo, Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan
Filed Dec. 8, 1970, Ser. No. 96,028
Claims priority, application Japan, Dec. 12, 1969, 44/117538; Dec. 12, 1969, 44/117539
Int. Cl. G03b *1/04*
U.S. Cl. 242—71.6 **4 Claims**



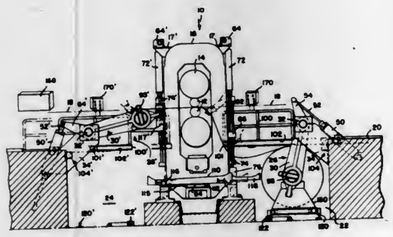
A camera has an aperture in a wall thereof opposite one end of a spool of a film magazine holding chamber, and a cover assembly in the aperture prevents light from entering the camera, the cover assembly being operable to open the aperture for reception of a detachable power-driven film rewinding assembly, the latter assembly also preventing entry of light into the camera when it is mounted on the camera, wherefor the camera can be used with or without the power-driven assembly and the film can be rewound by a manually operable rewind knob or automatically by the power-driven rewinding assembly.

3,679,149
TAKE-UP MECHANISM FOR PAPER STRIP
Gerald J. Ottavan, 585 Grand Ave., Ridgefield, N.J.
Division of Ser. No. 736,768, June 13, 1968, Pat. No. 3,567,148. This application June 15, 1970, Ser. No. 46,235
Int. Cl. B65h *23/20*
U.S. Cl. 242—75.5 **3 Claims**



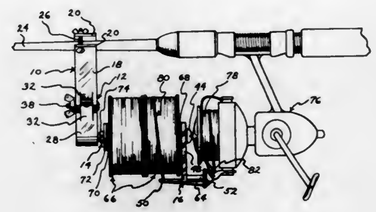
A printing press especially adapted for printing pressure sensitive adhesive-backed labels, comprising a novel paper feeding mechanism having means for maintaining constant tension including a self-adjusting brake and tension indicating means, a printing press head having two parallel ink feeds to permit the inking roller to move across the printing plate in either direction in order to ink the plate, a novel die stamp or die cut mechanism which assures a uniform application of cutting force over the entire peripheral edge of the label by virtue of a slightly resilient platen and a twin link arrangement for moving the movable die up and down, out of and into cutting relation with the label paper, a novel stripper having a slip clutch for driving a drum that pulls the unwanted material from the printed label at a substantially constant tension, a cutter of unique design not employing sheering for cutting the labels into longitudinal strips of a preselected integral number of labels and a take-up mechanism for rolling up the printed labels in lieu of cutting.

3,679,150
ROLLING MILL
Michael M. Feuer, and Richard G. Kotler, both of Allegheny City, Pa., assignors to Blaw-Knox Foundry & Mill Machinery, Inc., Pittsburgh, Pa.
Filed Dec. 4, 1970, Ser. No. 95,027
Int. Cl. B21c *47/02*
U.S. Cl. 242—78.1 **18 Claims**



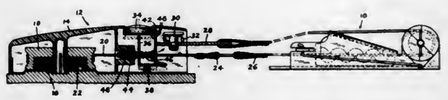
A coil rolling mill in which the supply coil and the finished coil are mounted on swing type reels which are moved to maintain the pass line, the spool for a used supply coil being transferred to the finished coil reel.

3,679,151
LINE TRANSFER APPARATUS
Harold D. Rice, 3404 W. 85th St., Leawood, Kans.
Filed June 1, 1970, Ser. No. 42,353
Int. Cl. A01k *89/00*
U.S. Cl. 242—85 **14 Claims**



A line transfer apparatus which includes a clamp mounting a shaft in substantial alignment with the axis of a spinning reel. The shaft carries a crank comprising a tube telescoped over the shaft and an arm extending radially therefrom. The arm has line guiding notches for lifting the line from a supply spool mounted on the tube as the arm, tube and supply reel are rotated as a unit on the shaft by the force exerted by the line on the arm during rotation of the reel line pick-up device. A friction brake yieldably resists relative rotation between the supply reel and the tube but permits such relative rotation responsive to tension in the line due to unequal diameters of the supply spool and stationary reel spool during the line winding operation.

3,679,152
CONTROLLED INERTIA SHOULDER STRAP RETRACTING DEVICE
Robert W. Stoffel, Ferndale, Mich., assignor to Allied Chemical Corporation, New York, N.Y.
Filed Oct. 8, 1970, Ser. No. 79,098
Int. Cl. A62b *35/00*
U.S. Cl. 242—107.4 **12 Claims**

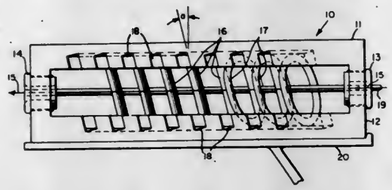


A motor vehicle shoulder strap retracting device for use with an inertia responsive belt element locking device. The retracting device relieves the vehicle occupant of the continuous retracting force heretofore applied by the shoulder strap to the occupant.

3,679,153
RING AND BAR TENSIONER
Ernest Lee Griggs, Jr., Chattanooga, and John David Porter, Hixson, both of Tenn., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed Dec. 17, 1969, Ser. No. 885,854
Int. Cl. B65h *59/34*
U.S. Cl. 242—153 **4 Claims**

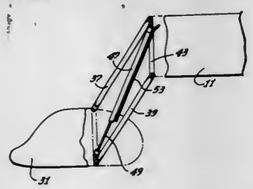
A tensioning apparatus that includes a housing through which a threadline passes in a straight path. The housing con-

tains a plurality of rings suspendable from the threadline and maintains these rings for free movement in a plane oriented at



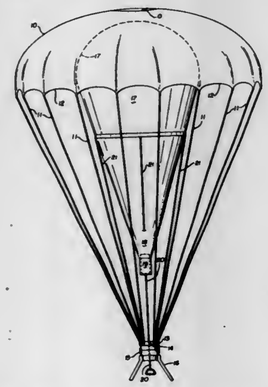
tilt and skew angles with respect to the threadline of from about 5° to about 45°.

3,679,154
HEAVY LIFT HELICOPTER WITH VERTICALLY ADJUSTABLE COCKPIT
John B. Nichols, and Roger L. Gamaunt, both of Manhattan Beach, Calif., assignors to Hughes Tool Co., Aircraft Division, Culver City, Calif.
Filed July 21, 1970, Ser. No. 56,932
Int. Cl. B64c *27/04*
U.S. Cl. 244—17.11 **8 Claims**



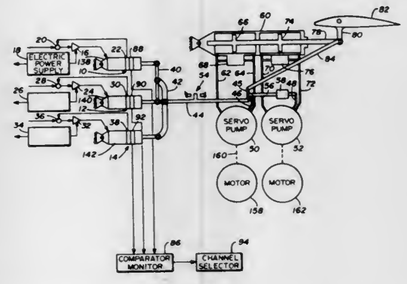
A helicopter for use in transporting large loads and having a cockpit movably connected to the main body fuselage by a parallelogram linkage which may be actuated by the pilot and/or load operator for increasing visibility when loading the helicopter and providing easy access to its interior.

3,679,155
BALLOON AND PARACHUTE COMBINATION
Armando P. Centofanti, 2812 Newbern Circle, Youngstown, Ohio
Filed Aug. 28, 1970, Ser. No. 67,834
Int. Cl. B64b *1/48*
U.S. Cl. 244—32 **5 Claims**



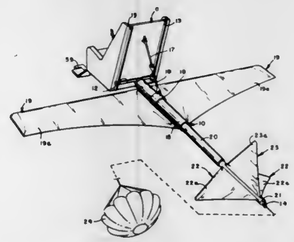
A balloon and parachute combination wherein the parachute is positioned over and around the balloon with the space therebetween being progressively smaller from the sides of the balloon and parachute to the top of the balloon and parachute.

3,679,156
FLY-BY-WIRE
William G. Redmond, Jr., Dallas, Tex., assignor to LTV Electrosystems, Inc., Greenville, Tex.
Filed July 20, 1970, Ser. No. 56,551
Int. Cl. B64c *13/50*
U.S. Cl. 244—77 R **5 Claims**



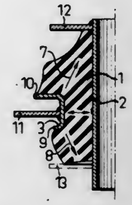
Three separately generated electrical control signals are applied to respective electromechanical transducers in a power actuator control system. Each electromechanical transducer generates a mechanical output motion related to the applied control signal and independent of the remaining transducers. A mechanical linkage arrangement coupled to the outputs of each of the three electromechanical transducers combines the motions into a single mechanical movement. This single mechanical movement positions the control element for a servo-pump supplying a power actuator.

3,679,157
AIRCREW RECOVERY SYSTEM
Richard A. Roberts, Corona, and John R. Jones, Palos Verdes Peninsula, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy
Filed Oct. 16, 1970, Ser. No. 81,353
Int. Cl. B64d *25/10*
U.S. Cl. 244—141 **16 Claims**



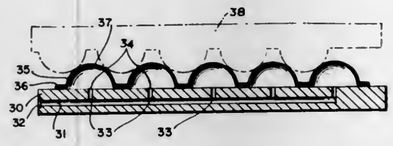
A deployable assembly, combined with an ejection seat, which when deployed by a drogue chute forms a lifting platform controllable by the crew member in the ejection seat. The assembly is deployed after parent aircraft abort from a collapsed configuration behind the seat and includes two wing lifting surfaces, a tail boom carrying a deployable empennage and a damper unit for selective conversion of the drogue chute drag into relative deployment sequence of the boom, empennage and the wings.

3,679,158
ELASTIC BEARING FOR MOTOR SUSPENSION OF MOTOR VEHICLES
Dietrich Pusch, Reese, Germany, assignor to Continental Gummi-Werke Aktiengesellschaft, Hannover, Germany
Continuation of Ser. No. 780,537, Dec. 2, 1968, abandoned.
This application Nov. 23, 1970, Ser. No. 92,253
Int. Cl. F16f *15/00*
U.S. Cl. 248—10 **2 Claims**



An elastic bearing for the motor suspension in motor vehicles having an inner sleeve and a radially spaced outer sleeve with a preloaded rubber body therebetween, in which said outer sleeve has a radially extending flange engaged by a first bead portion of said rubber body which first portion tapers away from said flange, said rubber body also having a second tapered portion adjacent said first tapered portion and tapering to a greater extent than said first tapered portion but tapering in the same direction as the latter.

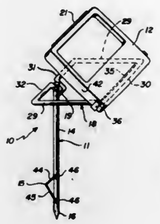
3,679,159
VIBRATION ISOLATION STRUCTURE
Bert Bach, 270 West End Avenue, New York, N.Y., and Eliot S. Gerber, 7 Frog Rock Road, Armonk, N.Y.
Filed Feb. 9, 1971, Ser. No. 114,009
Int. Cl. F16f *15/08*
U.S. Cl. 248—22 **5 Claims**



A structure to reduce vibration consists of a rigid bottom plate and a rigid top plate which may act as a vibration reducing platform. The plates are kept separated, in one embodiment, by a large number of fluid-filled separate containers having thin flexible walls. Preferably the containers are spheres held in a web and filled with air at above atmospheric pressure. In another embodiment the plates are separated by an elongated fluid-filled tube which forms a substantially closed curve in plan view.

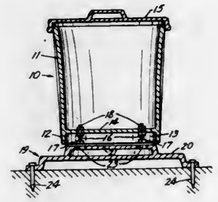
3,679,160
PORTABLE LITTER BAG HOLDER
William G. Ballenger, Highland Park, Ill., assignor to Central Specialties Co., Chicago, Ill.
Filed March 24, 1971, Ser. No. 127,729
Int. Cl. B65d *67/00*
U.S. Cl. 248—9 **10 Claims**

A portable litter bag holder is disclosed which is formed out of bent tubular material. The folding frame has a support stake with a right triangular foot piece secured thereto for pressing the same into the ground by standing on it. A rectangular bag frame is pivotally mounted to the support stake and a plastic bag of the typical 5 to 7 gallon plastic household variety has its upper edges folded around the bag frame, and is secured in place by a cover which is pivotally mounted to the bag frame



along the edge opposite to the pivotal mount of the support stake to the bag frame. Stops are provided on the cover as well as the bag frame to insure the proper relationship of the parts when in operation, and yet permit the unit to be folded into a flat configuration.

3,679,161
GARBAGE CONTAINER AND ANCHORING BASE
Liborius F. Husting, 109 E. Sixth St., Hastings, Minn.
Filed July 10, 1970, Ser. No. 53,930
Int. Cl. A47g *23/02*
U.S. Cl. 248—154 **4 Claims**

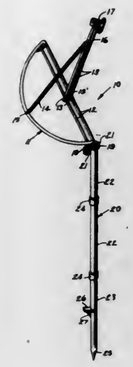


A stabilized garbage can is provided which is mounted to a base member by means of projecting headed studs that interlock with arcuate slot members. An adapter and anchoring base is also provided which permits the invention to be used with a previously owned garbage can.

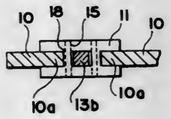
3,679,162
GARBAGE CAN LID HOLDING DEVICE
Maurice N. Burley, 1305 S. 5th St., Omaha, Nebr.
Filed Aug. 19, 1970, Ser. No. 65,142
Int. Cl. A45f *3/44*
U.S. Cl. 248—156 **2 Claims**

A holder for garbage can lids. This holder includes an arcuate shaped frame carrying parallel cross members to which are

secured a pair of arms which are held by a spring to the arcuate frame. The outer ends of the arm portions are secured to a spring clamp for holding the lid.



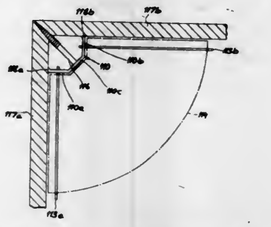
3,679,163
STEERING COLUMN MOUNTING BRACKET ASSEMBLY
George J. Smith, Alma, Mich., assignor to Lobdell-Emery Manufacturing Co.
Filed March 6, 1969, Ser. No. 804,820
Int. Cl. B62d 1/18
U.S. Cl. 248—223 **8 Claims**



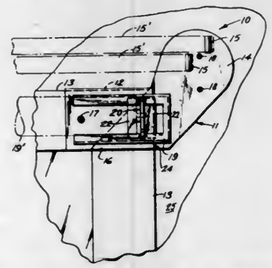
A break-away bracket assembly for releasably mounting an axially extending steering column to steering column support structure, and for other like purposes, wherein a first bracket part has an open ended aperture formed in one edge thereof. A second bracket part has an opening through which a securing member such as a bolt may extend and is mountable on the first bracket part. One of the bracket parts has an axially extending projection and the other bracket part has a socket receiving the projection which defines a retaining edge surface normally preventing separation of the projection from the socket but which may be stripped away under application of a predetermined axial separating force.

3,679,164
SHELF-SUPPORTING STANDARD
Martin Bard, 953 45th St., Brooklyn, N.Y.
Division of Ser. No. 649,627, June 28, 1967, Pat. No. 3,502,293. This application March 5, 1970, Ser. No. 26,452
Int. Cl. A47f 5/04, 5/10
U.S. Cl. 248—243 **3 Claims**

Standard comprising an upright tubular bar of polygonal cross-section having vertical slits in at least two nonadjoining faces to receive shelf-carrying brackets extending in different directions, a possibly unslitted intermediate face having holes to receive screws for fastening the bar to a supporting wall.

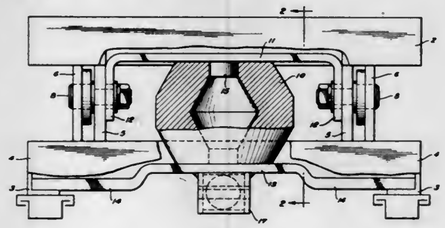


3,679,165
CURTAIN AND SHADE SUPPORT
Johnson L. Duncan, Route 1, Box 125-C, Helenwood, Tenn.
Filed June 19, 1970, Ser. No. 27,493
Int. Cl. A47h 1/12
U.S. Cl. 248—256 **5 Claims**



A decorative device for attachment to window molding. This device is for the purpose of supporting curtain rods, drapery rods and a window shade. The main body of the device includes a channel member which receives a removable shade bracket. A projection of the main body includes a pair of curtain rod hooks for supporting drapery and curtain rods.

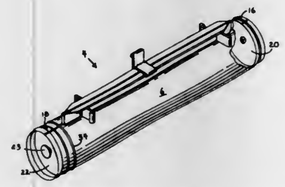
3,679,166
SEAT CONSTRUCTION
Klaus Sturhan, Lemgo/Lippe, Germany; assignor to Firm Gebr Isringhausen, Lemgo/Lippe, Germany
Filed Feb. 5, 1970, Ser. No. 8,765
Claims priority, application Germany, Feb. 13, 1969, G 69 05 646.8
Int. Cl. F16m 13/00
U.S. Cl. 248—399 **11 Claims**



An upper support is upwardly spaced above a lower support and connected with the latter so as to be moveable

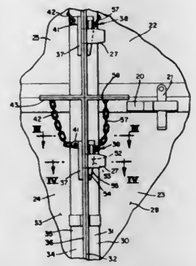
downwardly toward and away from the lower support. A hollow elongated elastomeric spring is arranged below and in engagement with the upper support, with its longitudinal axis in upward position so that the spring is elastically compressible in direction of its longitudinal axis when the upper support moves in direction towards the lower support.

3,679,167
DEVICE FOR FORMING HAMBURGER PATTIES
Bernard Jupiter, 184 Albermarle Ave., Levittown, N.Y., and Harry D. Kazakowitz, 18 Fortree Lane, East Meadow, N.Y.
Filed June 9, 1970, Ser. No. 44,763
Int. Cl. A22c 7/00; B29c 1/00
U.S. Cl. 249—173 **2 Claims**



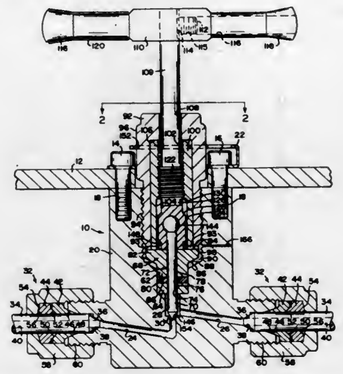
Device for forming hamburger patties, comprising an elongated container of resilient material. The container has a longitudin slit defined by a pair of flanges bent outwardly. Clamping means for locking the edge portions in intimate engagement are provided. A pair of removable closure disks for the ends of the container are received in outwardly extending shoulders formed at the ends of the container. One of the shoulders is of rectangular cross-section, to permit the axial displacement of one of the closure disks, when ground meat is frozen in the container. The frozen meat piece is removed from the container and is sliced transversely into hamburger patties of desired thickness.

3,679,168
CLAMPING DEVICE
Richard L. Weaver, Route 2, Myerstown, Pa., and Benjamin K. Smoker, Myerstown, Pa., assignors to said Weaver by said Smoker
Continuation-in-part of Ser. No. 720,687, April 11, 1968, Pat. No. 3,619,431. This application April 8, 1970, Ser. No. 26,490
Int. Cl. E04g 9/00
U.S. Cl. 249—196 **5 Claims**



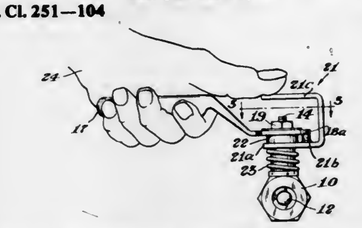
A clamping device is provided, that is specifically designed for clamping together plates or other members that have flanges connected thereto and bent out of the planes of the plates, with the clamping device having one member adapted to be inserted through holes of flanges, up close to the plates, and having another pin adapted to engage within the first member, up close to the plates that are being secured together.

3,679,169
HIGH PRESSURE VALVE AND METHOD
Alfred Bedo, Walton Hills, and Edward Beck, Cleveland Heights, both of Ohio, assignors to Sno-Trik Company, Solon, Ohio
Filed Oct. 1, 1969, Ser. No. 862,804
Int. Cl. F16k 25/00
U.S. Cl. 251—88 **7 Claims**



A high pressure valve employing a nonrotating needle. The valve actuating stem is threadedly received in a liner sleeve of the valve packing nut. The inner end of the actuating stem is bifurcated and includes a transverse cylindrical bore intersected by an axially directed slot somewhat smaller in breadth than the diameter of the bore and extending to the inner end of the stem. A valve needle including an enlarged spherical outer end is adapted to be received in the bore and slot. Essentially line contact is provided between the bearing surfaces of the valve needle and of the actuating stem. Sealing and support for the valve needle are provided by the combination of a seal washer, sealing member and alignment bushing disposed in a counterbore of the valve body.

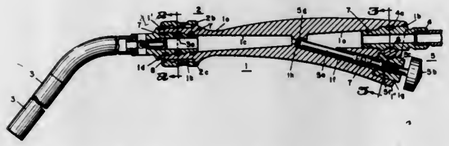
3,679,170
BALL VALVE WITH POSITIVE LOCKING MECHANISM
Richard J. Bernas, Midland, and Clarence J. Kaczynski, Auburn, both of Mich., assignors to The Dow Chemical Company, Midland, Mich.
Filed March 8, 1971, Ser. No. 121,756
Int. Cl. F16k 35/06
U.S. Cl. 251—104 **4 Claims**



The lock mechanism described herein is adapted for installation on a conventional ball valve. Basically, the mechanism comprises a U-shaped member, with the lower leg of the member having a hole therein and an upstanding stud positioned next to the hole. The lower leg of the U-member fits over the valve stem housing below the valve handle and is slidable up and down on the stem housing. In this position, both the upper and lower legs of the U-member are generally horizontal to the valve body, and the upper leg lies above the valve stem, which fits in the housing. A coil spring on the valve stem housing below the lower leg exerts a continuous upward

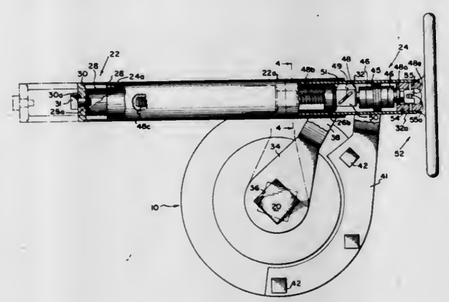
force against the lower leg. The lower leg is spaced a short distance below the handle by a washer positioned on the stem housing between the handle and the lower leg. When the valve is in a closed position, the upward force of the spring on the lower leg keeps the stud at a height such that it will engage an ear member on the handle and thus positively lock the valve in a closed position. The valve can be opened by pressing forward on the upper leg of the U-member, which disengages the stud from the lower leg and allows the handle to be rotated to open the valve.

3,679,171
TORCH HANDLE
Frank Baranowski, Jr., 7 Pine St., Lynnfield, Mass.
Filed Jan. 19, 1971, Ser. No. 107,780
Int. Cl. B05b *11/00*; F16k *51/00*; F23d *13/24*
U.S. Cl. 251—148 **15 Claims**



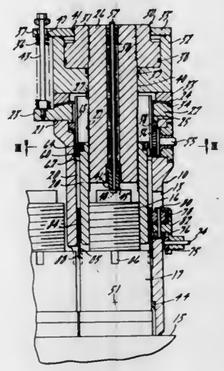
A torch handle shaped to best fit into a man's hand, and to be readily manipulated, is made-up of a handle body which receives three inserts, i.e., the torch, a fitting for connecting the handle body to a supply of gas under pressure, and a valve insert, the latter enclosing an acute angle with the inlet passageway and the outlet passageway defined by the handle body, and the cross-sectional area of the latter progressively increasing from its torch end to the end thereof opposite its torch end.

3,679,172
VALVE ACTUATOR ASSEMBLY
La Vern H. Kerkau, 387 River Rd., Lagoon Beach, Bay City, Mich.
Filed March 15, 1971, Ser. No. 124,021
Int. Cl. F16k *31/50*
U.S. Cl. 251—229 **10 Claims**



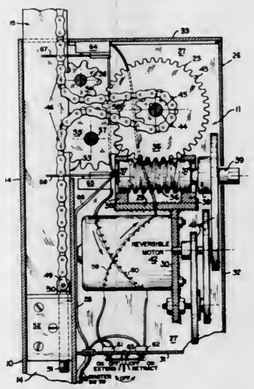
For use with a valve having a hollow valve housing supporting a rotatable valve stem, a valve actuator including telescoping tubular members respectively connected to the valve stem and the valve housing and providing a substantially dirt-free enclosure, and cooperating screw and nut members received within said enclosure and reactable between said tubular members to relatively move said tubular members and turn said valve stem relative to the housing to selectively prevent and permit the flow of fluid through the valve housing.

3,679,173
SELF-ALIGNING TENSIONER
Ronald E. Sherrick, and John C. Singleton, both of Lancaster, Ohio, assignors to Diamond Power Specialty Corporation, Lancaster, Ohio
Filed Aug. 6, 1970, Ser. No. 61,619
Int. Cl. B25b *21/00*
U.S. Cl. 254—29 A **12 Claims**



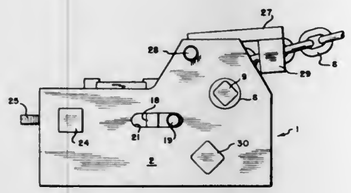
A hydraulic tensioner for preloading threaded studs or bolts has a cylinder and piston assembly at the top with a spherically concaved bottom surface overlying a matching spherically convex top surface of the supporting pedestal. Said assembly is held spaced above the pedestal by counterbalancing springs when the tensioner is unloaded but is pulled down to engage said surfaces when the tensioner is loaded. Said assembly and the drawbar, engagement nut and related components are angularly movable.

3,679,174
JACK OR LIFT MECHANISM AND DRIVE THEREFOR
Richard W. Boettcher, 18483 Ravenwood Drive, Saratoga, Calif.
Filed Feb. 10, 1971, Ser. No. 114,196
Int. Cl. B66f *7/26*
U.S. Cl. 254—45 **10 Claims**



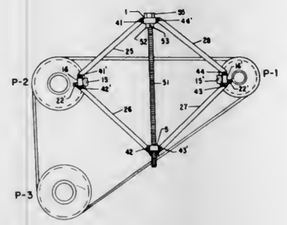
An extendable-retractable member telescopically guided for movement in a guide track having drive means affixed thereto and operatively associated with flexible linkage having its ends secured to the opposite ends of the member for extending and/or retracting the latter relative to the guide track.

3,679,175
ENERGY ABSORBING TIE-DOWN WINCH
Walker E. Drayton, York, Pa., assignor to American Chain & Cable Company, Inc., New York, N.Y.
Filed Nov. 24, 1969, Ser. No. 879,078
Int. Cl. B66f *1/00*; A63b *61/04*
U.S. Cl. 254—51 **10 Claims**



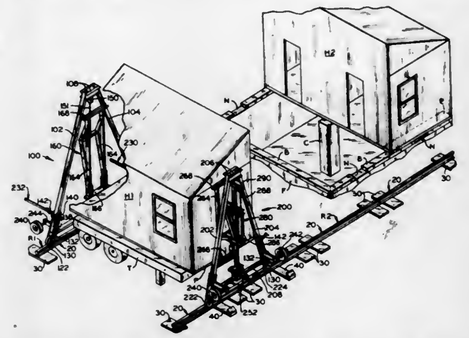
A tie-down winch for securing to the carrier deck of transporting vehicles loads which offer little frictional resistance to changes in the relative velocity between the load and vehicle. The winch is provided with an energy absorbing component which acts to compensate for any difference in velocity of the two objects in a manner eliminating shock loads. Changes in the energy of the system are transmitted to the energy absorber by linkage means.

3,679,176
BELT TIGHTENING TOOL
William W. Campbell, 271 Claywell Drive, San Antonio, Tex.
Filed Nov. 23, 1970, Ser. No. 91,771
Int. Cl. F16g *11/12*; B66f *3/36*
U.S. Cl. 254—54 **1 Claim**



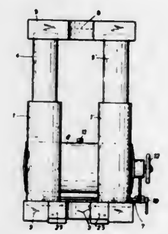
A belt tightening tool for adjusting the tension in the belt of a belt and pulley drive assembly having an adjustably mounted pulley consisting of a pair of pulley saddles for bearing against the grooves of opposite pulleys of the drive assembly. A screw bar adjusting assembly is operatively connected through pivotally connected connecting links to the pulley saddles for expanding and contracting the interval between the pulley saddles relative to each other along a common axis and for locking the pulley saddles in position relative to each other along the common axis.

3,679,177
METHOD AND APPARATUS FOR SETTING A PREFABRICATED BUILDING SECTION
Donald T. Scholz, Toledo, Ohio, assignor to Scholz Homes, Inc., Toledo, Ohio
Filed April 14, 1970, Ser. No. 28,415
Int. Cl. B66f *7/12*
U.S. Cl. 254—89 R **16 Claims**



A method and apparatus for erecting a home or building from prefabricated building sections wherein a prefabricated house or building section is transported on a carrier over a highway to a building site alongside a foundation, and removing the prefabricated building section from the transporting carrier and setting it onto the permanent foundation by means of a pair of substantially vertically positionable A-frame hoists rollable on parallel tracks made from portable interfitting sections which extend from along the ends of the carrier to along and closely adjacent the ends of the foundation. Each of these A-frame hoists have means for engaging opposite ends of the house or building section and lifting it from the carrier, moving it along the tracks to the foundation and setting it down thereon. The house section engaging means of one of the A-frames is freely suspended from the apex thereof by a hoist means, and the engaging means of the other A-frame is vertically movable along a vertical bar suspended from the apex of its A-frame, the lower end of which bar is guided, restricted, and transversely movable in its pendular movement relative to the A-frame.

3,679,178
APPARATUS FOR SETTING OF RODS FOR DEEP WELL INSTALLATIONS
Emil Lodynski, Modling, Austria, assignor to Firma Friedrich Leutert, Luneburg, Germany
Filed Feb. 18, 1970, Ser. No. 12,307
Claims priority, application Austria, Feb. 21, 1969, A 1750/69
Int. Cl. B66f *3/24*
U.S. Cl. 254—93 R **6 Claims**



An apparatus for setting the suspension means of deep well pump installations during operation, which comprises a pump-

ing rod. Two clamping means, including an upper clamping means and a lower clamping means, are operable on the polishing rod during the pumping operation. A suspension rail is operatively connected with the pumping rod, and a hydraulic cylinder with a piston reciprocates therein and is insertable between the upper clamping means and the suspension rail. A receiver container is adapted to feed a liquid medium under low pressure sufficient for lifting of the unloaded pistons and returns the liquid medium from the cylinder caused by the pressure originating from the suspension load by control with a throttle valve.

3,679,179

METHOD FOR REGULATING THE LIFTING OF AN ARM ARTICULATED ON A STRUCTURE AND LIFTING APPARATUS FOR CARRYING OUT THIS METHOD

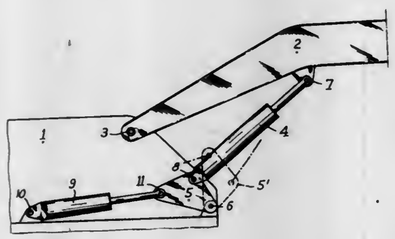
Pierre A. Praddaude, Crepy-en-Valois, France, assignor to Societe Anonyme Poclain, Le Plessis-Belleville, Oise, France

Filed June 16, 1970, Ser. No. 46,592

Claims priority, application France, June 18, 1969, 6920342

Int. Cl. B66f 3/26; B66c 23/54

U.S. Cl. 254—93 R **7 Claims**



This invention relates to a method of regulation for lifting, at the maximum possible speed, an arm articulated on a resistant structure, by means of a jack fed with pressurized fluid, without the power consumed exceeding a displayed value, wherein the position of at least one of the axes of articulation of the jack is servo-controlled to the value of the supply pressure of said jack. The invention also relates to lifting apparatus applying the above method, constituted by an arm articulated on a structure, by a jack coupled between the arm and an element whose position is adjustable with respect to the structure, and by a member for controlling the position of said element, wherein the control member is controlled by the feed pressure of the jack.

3,679,180

CABLE CONTROL SYSTEM

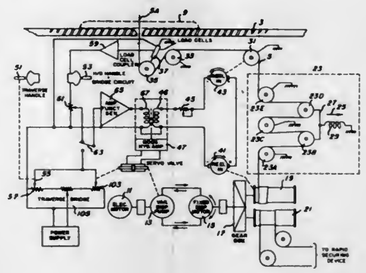
Joseph C. Callaghan, Dollard Des Ormeau, Quebec, Canada, assignor to Her Majesty the Queen in right of Canada as represented by the Minister of National Defence of Her Majesty's Canadian Government

Filed Oct. 17, 1969, Ser. No. 867,322

Int. Cl. B66d 1/48

U.S. Cl. 254—172 **7 Claims**

This application discloses means for maintaining a desired tension in a cable used to winch a helicopter down to the deck of a ship. In the system described, a cable accumulator is used interposed between the helicopter and a constant tension haul down winch. This cable accumulator stores a variable amount of cable to provide a snatch-absorbing facility. In a control system for the winch, the tension in the cable is sensed and utilized, but in addition two transducers measure the cable velocity respectively on opposite sides of the cable accumulator. The difference between the outputs of the two transducers provides an anticipatory control term.



3,679,181

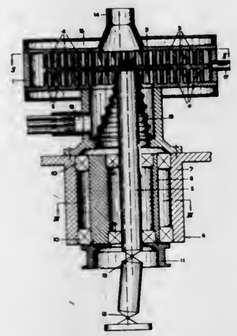
MIXING APPARATUS

Van Rij Coenraad, Sinaigvelderstraat 621, Weesp, Netherlands

Filed April 14, 1971, Ser. No. 133,837

Int. Cl. B01f 7/00

U.S. Cl. 259—5 **10 Claims**



Mixing apparatus for thoroughly mixing two or more ingredients irregardless of their respective densities. The apparatus includes first mixing means in the form of a housing having a plurality of mixing pins projecting from its inner surface and second mixing means in the form of a circular disk also having a plurality of mixing pins projecting from its respective surfaces. The disk is positioned within the housing and operatively aligned therein such that the respecting mixing pins projecting therefrom are intersticially disposed in a cooperating relationship with respect to the mixing pins projecting from the housing. The apparatus further includes an eccentric drive for moving at least one of the mixing means relative to the other mixing means such that the respective pins projecting from the moved mixing means orbit about the corresponding pins projecting from the stationary mixing means so as to define respective closed paths.

3,679,182

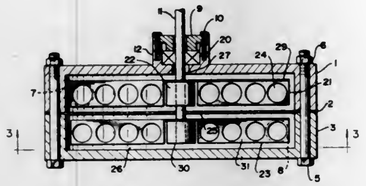
PROCESS SUITABLE FOR PREPARING HOMOGENEOUS EMULSIONS

Edwin T. Clocker, St. Paul, Minn., assignor to Ashland Oil, Inc., Houston, Tex.

Continuation-in-part of Ser. No. 798,393, Feb. 11, 1969, abandoned. This application June 5, 1970, Ser. No. 43,730

Int. Cl. B01f 7/04, 5/16

U.S. Cl. 259—9 **10 Claims**



Apparatus and process for preparing homogeneous emulsions incorporating the action of at least two centrifugal pumps with the driving force of two of the pumps tending to pull material in the opposite direction from the other.

3,679,183

MIXING APPARATUS

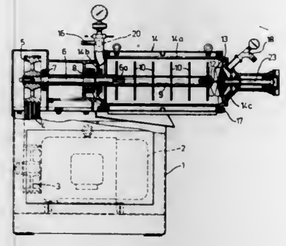
Willy A. Bachofen, Utengasse 15, Basel, Switzerland

Filed April 14, 1971, Ser. No. 133,974

Claims priority, application Switzerland, March 1, 1970, 2960/70

Int. Cl. B01f 7/04

U.S. Cl. 259—9 **12 Claims**



A mixing apparatus in which a suspension is to be subjected to a dispersing treatment with the help of a particulate dispersing aid. A housing has a chamber in which a rotatable shaft carrying one or more impellers is mounted to thereby agitate a mixture of a suspension with a particulate dispersing aid which has been admitted into the chamber. Outlet means for the treated suspension is provided and comprises an annular member having a center opening which communicates with the exterior of the chamber and a cooperating disc member which overlies the center opening and defines with the annular member an annular radial gap communicating with the center opening and so dimensioned that the treated suspension can pass therethrough but that the particulate dispersing aid is retained. The disc member is so mounted that it can turn or rotate with reference to the annular member but is completely independent of the rotatable shaft or any other drive means, that is it rotates freely.

3,679,184

MIXING DEVICES

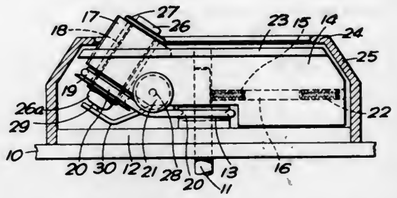
Cecil Halliday Woodham, deceased, late of Tuckaway, Warren Drive, Kingswood, Surrey, England, and Lloyds Bank Limited, executor and trustee of the estate

Filed Jan. 12, 1970, Ser. No. 2,169

Claims priority, application Great Britain, Jan. 14, 1969, 2,137/69; Feb. 17, 1969, 8,573/69; April 3, 1969, 17,724/69; Sept. 11, 1969, 44,896/69; Oct. 17, 1969, 51,216/69; Nov. 6, 1969, 54,515/69

Int. Cl. B01f 9/02

U.S. Cl. 259—72 **7 Claims**



A device for mixing dental cements comprises a structure mounted for rotation about a first axis, a motor for rotating the structure about that axis, a receptacle for the substance to be mixed mounted on the structure at a location spaced from the axis of rotation thereof and rotatable relative to the structure about a second axis inclined at an angle of less than 90° to the first axis, a transmission being provided to rotate the receptacle relative to the structure as the structure rotates. The receptacle receives a capsule comprising a main body having at least two compartments for the substances to be mixed, the compartments being separated by a dividing wall which is ruptured when required to permit the flow of a substance from one compartment to the other. Said one compartment also has an external rupturable wall so that the dividing wall may be ruptured by passing a piercing instrument first through the external wall and then through the dividing wall.

3,679,185

CARBURETOR SYSTEM HAVING A FLUIDIC PROPORTIONAL AMPLIFIER

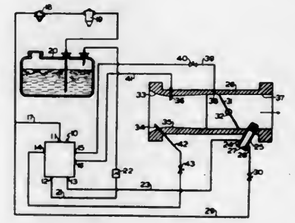
Giancarlo Nardi, Pisa, Italy, assignor to Compagnia Italiana Westinghouse Freni E Segnali, Torino, Italy

Filed Sept. 17, 1969, Ser. No. 858,652

Claims priority, application Italy, Oct. 18, 1968, 22441 A/68

Int. Cl. F02m 69/04

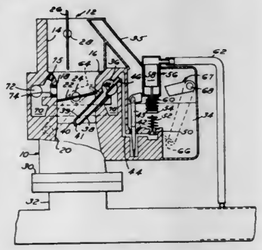
U.S. Cl. 261—36 A **3 Claims**



A carburetor having a fluidic proportioning device adapted to deliver fuel to an air-intake conduit in proportion to air pressure differential established across the control ports of the fluidic device by regions of different pressures established within the venturi shape of the air-intake conduit and the variable position of a throttle valve, the fluidic proportioning

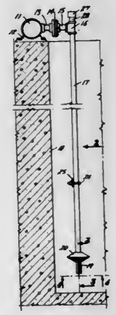
device including a first control port responsive to air pressure in an enlarged portion of the air-intake conduit, a second control port opposing the first control port and responsive to low air pressure in that portion of the air-intake conduit restricted by the throttle plate at low engine speeds and a third control port additively connected to the second control port and responsive to pressure within a narrow portion of the air-intake conduit.

3,679,186
SINGLE FUEL SYSTEM CARBURETOR HAVING IMPROVED METERING STABILITY
Laszlo Hideg, Dearborn Heights, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed Aug. 14, 1970, Ser. No. 63,843
Int. Cl. F02m 7/02
U.S. Cl. 261—50 R **12 Claims**



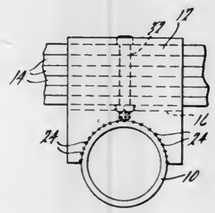
The nozzle supplying fuel to the metering chamber of a single fuel system carburetor has a guide member that extends toward the entrance to the fuel-air passage connecting the metering chamber with the carburetor induction passage downstream of the carburetor venturi. Both the nozzle and the guide member, which can be integral with the nozzle, preferably lie on the axis of the fuel-air passage. The intake manifold pressure signal and the pressure signal of the carburetor venturi are blended to establish a metering pressure in the metering chamber. The difference between that metering pressure and a reference pressure existing above the liquid fuel level in the float bowl serves as a metering signal for the liquid fuel.

3,679,187
AIR DIFFUSION APPARATUS FOR THE TREATMENT OF POLLUTED WATER
Mansel W. Smith, 1203 Dwyce Drive, Austin, Tex.
Filed June 3, 1970, Ser. No. 43,147
Int. Cl. B01f 3/04
U.S. Cl. 261—123 **3 Claims**



A plurality of substantially similar vertical air diffusion units suspended in spaced relation, and served by a common air supply manifold. Each unit embodying a vertical open-bottomed injection pipe extending downwardly and discharging into the tank liquor. The units being provided with individual orifice fittings which are preset so that the air discharging from all of the pipes will be distributed accordingly. The lower discharge extremities of the pipes, being vertically slotted, circumferentially distribute the discharging air and being provided with bubble deflectors above the slots to distribute and break up the coarse air bubbles arising from open slots. An elongated cleaning rod is provided for insertion down the injection pipes for the occasional removal of undesirable debris.

3,679,188
WELD-ON TYPE LEAF SPRING BRACKET ASSEMBLY AND METHOD
Terry LaVern Trindle, Edwardsburg, Mich., assignor to Kelsey-Hayes Company, Romulus, Mich.
Filed Dec. 7, 1970, Ser. No. 95,605
Int. Cl. F16f 1/28
U.S. Cl. 267—52 **14 Claims**



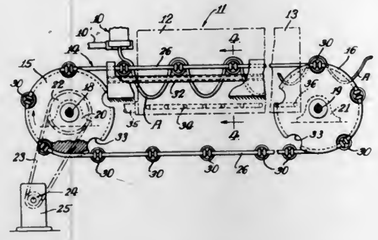
A weld-on leaf spring bracket assembly comprising a leaf spring, bracket means for holding the leaf spring, and an axle to which the bracket means is welded, with the leaf spring being compressively secured within the bracket means by suitable means such as welding or the like; and, the method technique of constructing the assembly.

3,679,189
PYROTECHNIC HEATING DEVICE
Robert S. Deal, Los Altos, and Joseph H. Evans, Palo Alto, both of Calif., assignors to Raychem Corporation, Menlo Park, Calif.
Division of Ser. No. 727,074, May 6, 1968, Pat. No. 3,551,223.
This application April 3, 1970, Ser. No. 25,558
Int. Cl. F27d 21/00; F23m 9/00
U.S. Cl. 263—50 **14 Claims**



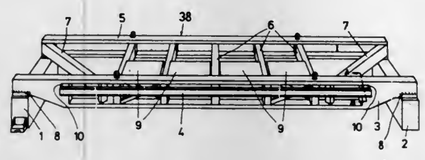
A device for heating a heat recoverable article to its heat recovery temperature comprising a shield, one surface of said shield being in contact with or near the surface of a heat recoverable article and the other surface of said shield being covered with a material capable of liberating a predetermined amount of heat energy for a predetermined amount of time substantially uniformly over the surface of the heat recoverable article.

3,679,190
APPARATUS FOR HANDLING SHRINKABLE MATERIAL
James M. Fenner, Niles, Mich., assignor to National-Standard Company, Niles, Mich.
Continuation-in-part of Ser. No. 807,391, March 14, 1969, abandoned. This application Jan. 15, 1971, Ser. No. 106,714
Int. Cl. C21d 9/56
U.S. Cl. 266—3 R **11 Claims**



Apparatus for conveying an elongated component, characterized by being shrinkable upon being heat treated, providing for the support and passage of the elongated component in a sinuous configuration to compensate for shrinkage upon heating, and for utilization of heating means of short length.

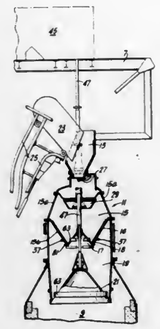
3,679,191
RUNNING CARRIAGE FOR A COORDINATE GAS CUTTING MACHINE
Erich Neander, Weiskirchen, Germany, assignor to Messer Griesheim GmbH, Frankfurt Main, Germany
Filed Aug. 28, 1970, Ser. No. 67,694
Claims priority, application Germany, Sept. 2, 1969, P 19 44 480.5
Int. Cl. B23k 5/22
U.S. Cl. 266—23 K **5 Claims**



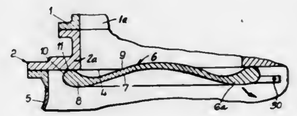
A longitudinally running carriage carries a transverse track for supporting and guiding a transverse drive carriage with torch supporting means. The transverse track is detachably fastened to the longitudinal running carriage and is adjustable in vertical and horizontal directions.

3,679,192
FURNACE TOP CHARGING DEVICES
Russell A. Powell, Pittsburgh, Pa., assignor to Koppers Company, Inc.
Filed March 18, 1970, Ser. No. 20,650
Int. Cl. F27b 1/20
U.S. Cl. 266—27 **9 Claims**

An improvement in a bell and bell hopper top charging device for use with a blast furnace comprises a retaining surface that projects upwardly from a frusto-conical surface of the bell to form a pocket between the frusto-conical surface and the retaining surface. This pocket is filled with raw materials. Upon lowering the bell from the bell hopper to discharge the raw materials from the bell hopper, the raw materials flow over the retained material in the pocket and out of contact with the sealing surface of the bell. The improvement further comprises a supplemental sealing means that is mounted to the bell hopper for engagement with the sealing surface of the bell for maintaining a gastight seal between the bell and the bell hopper. The improvement also comprises a bell and a hopper that are constructed of a plurality of severable sections including two top sections and a unitary bottom section for the initial installation and two bottom sections for replacement members.

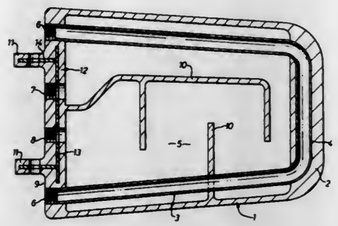


3,679,193
VALVE PACKING FOR METALLURGICAL SHAFT FURNACES
Pieter Hendrik Nieboer, Kapellen, Germany, assignor to Demag Aktiengesellschaft, Duisburg, Germany
Filed June 11, 1970, Ser. No. 45,371
Claims priority, application Germany, Oct. 1, 1969, P 19 49 471.4
Int. Cl. F27b 1/20
U.S. Cl. 266—27 **8 Claims**



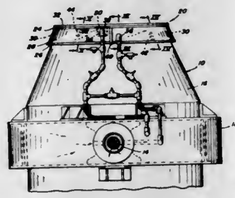
A valve construction particularly for closing the connection of a charging hopper to the furnace throat of a blast furnace comprises a valve seat for the hopper which is arranged in a recess portion or out of the stream of the material to be poured therefrom into the furnace. A valve closure member includes an inner portion having a cross section which makes it more flexible than an outer thicker portion. The outer sealing rim is formed in the thickened outer portion and it is rounded. The valve seat defined at the lower end of the charging hopper advantageously includes an annular groove which is connected to a source of gas under pressure and the groove is located over the rounded sealing rim of the valve member. Gas under pressure is directed to and through the groove and blows against the sealing rim of the valve member to provide the double function of preventing escape of gases from the furnace and cleaning the seat of the valve member for proper sealing purposes.

3,679,194
COOLERS
William Dyfrig Jones, Ty'R Bont, St. Mellons, Cardiff, Glamorgan, Wales, and Eric Peel, 5 Rockcliffe Terrace, Carlin How, Yorkshire, England
Filed Aug. 20, 1970, Ser. No. 65,427
Claims priority, application Great Britain, Aug. 20, 1969, 41,613/69
Int. Cl. C21b 7/10
U.S. Cl. 266—32 4 Claims



The invention provides a cooler for insertion in the lining of a furnace, for example for bosh or stack cooling in a blast furnace, and which mitigates against the effects of cooler failure by having nose and body portions with mutually isolated cooling water cavities, so that in the event of failure of the nose portion of the cooler, which is the portion most likely to fail in practice, the cooler can be kept in operation by the cooling water passing through the body portion alone. The nose portion cavity is fed with water through water passageways which extend through the body portion. Preferably the body portion cavity is provided with baffles which ensure that water passing therethrough travels into the vicinity of the nose portion.

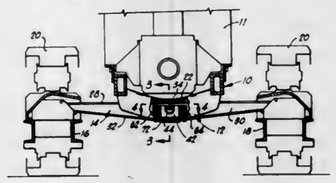
3,679,195
NOSE RING FOR METALLURGICAL PROCESSING VESSELS
Stanley M. Coulter, Wexford, and Ernst A. Mevissen, Robinson Township, Allegheny County, both of Pa., assignors to Dravo Corporation, Pittsburgh, Pa.
Filed Aug. 21, 1970, Ser. No. 65,934
Int. Cl. C21c 5/42
U.S. Cl. 266—35 7 Claims



A ring structure for cooling the nose or mouth portion of a metallurgical processing vessel, such as a basic oxygen furnace. The ring is formed of radially outwardly extending upper and lower plate members secured to the shell of the vessel at the mouth or nose portion thereof. An outer face plate is fixed at its axial ends to the upper and lower plates and is spaced from the vessel whereby a continuous coolant receiving cavity is defined. Coolant inlet and outlet openings communicating with the cavity are provided. Baffle plates are disposed throughout the coolant cavity for assuring turbulent flow of coolant through the ring to thereby improve heat transfer between the shell and the coolant. An outlet chamber is arranged in communication with the coolant outlet with a portion of the chamber being above the plane of the cavity for assuring complete filling of the cavity with coolant and thereby eliminating the possibility of formation of gas pockets in the ring.

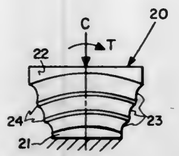
ERRATUM
For Class 267—52 see:
Patent No. 3,679,188

3,679,196
ELASTOMERIC SPRING BUMPER
Clady J. Royer, P.O. Box 75181, Oklahoma City, Okla.
Filed Dec. 15, 1969, Ser. No. 884,941
Int. Cl. B60k 7/00; F16f 3/10, 15/00
U.S. Cl. 267—140 8 Claims



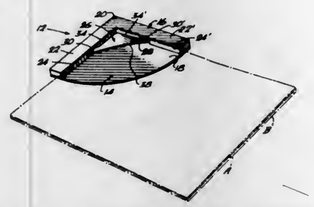
An equalizer bar support pad structure for use in conjunction with frame supporting equalizer bars of the type used on tracked vehicles. The equalizer bar support pad structure includes a pair of tubular members secured to the upper central portion of the equalizer bar and projecting horizontally from opposite sides of the bar into the space defined between the legs of a pair of U-shaped spring metal members disposed on opposite sides of the bar, and each forming a portion of a support pad secured to the main frame support saddle. The support saddle is an arcuate member having a top plate which bears against the upper flange of the equalizer bar, but is not attached thereto. Each of the support pads, in addition to the U-shaped spring steel member, includes a body of an elastomeric material, such as rubber, which has a plurality of spring steel reinforcing elements embedded therein, and which is bonded to one or more mounting plates used for mounting the support pad to mounting brackets formed on side plates of the main frame support saddle.

3,679,197
COMPRESSIVE LOAD CARRYING BEARINGS
Warren E. Schmidt, Erie, Pa., assignor to Lord Corporation, Erie, Pa.
Filed May 27, 1971, Ser. No. 147,488
Int. Cl. B60g 11/22
U.S. Cl. 267—152 2 Claims



A compressive load carrying laminated bearing comprising alternating bonded layers of a resilient material and a non-extensible material generally concentrically disposed about a common center with successive layers being disposed at successively increasing radii. The fatigue life thereof, when subjected to cylic rotational or torsional motion about the common center, is substantially enhanced by progressively increasing the thickness of the layers of resilient material with increasing radii while simultaneously progressively decreasing the modulus of elasticity of the layers of resilient material with increasing radii.

3,679,198
PHOTOGRAPH MOUNTING JIG
John Henry Weggeland, 401 E. Leland Heights Blvd., Lehigh Acres, Fla.
Filed Sept. 29, 1970, Ser. No. 76,481
Int. Cl. B25b 3/00, 1/24; B23q 3/18
U.S. Cl. 269—3 3 Claims



A small jig device for use in laminatingly mounting a photograph or the like and in squaring the photograph with a backing card as the card and photograph are contact-adhesive-bonded together. The jig device includes right angular abutment surfaces adapted for engaging corresponding corner edge portions of the photograph and card items, and includes thin separator means arranged between corresponding corner portions of the card and photograph for providing finger-grip means operative in the initial stage of the photograph mounting procedure.

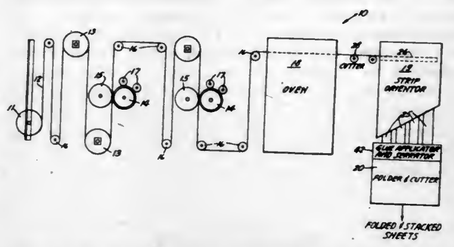
3,679,199
STRIP MATERIAL HOLDER
Ferdinand Christensen, 13207 Leumont Ave., Whittier, Calif.
Filed June 15, 1970, Ser. No. 46,396
Int. Cl. B65h 65/00, 75/28
U.S. Cl. 269—254 R 13 Claims



A material holder for engaging, holding and releasing strip materials is disclosed. The holder includes a housing having an elongated internal cavity and an aperture extending through one wall of the housing. A rotatable clamping member is positioned in the housing cavity. The clamping member is configured to allow the ready insertion or removal of strip material into or from the internal housing cavity in a first rotated position. In a second rotated position, the strip material is clamped to one edge of the housing aperture.

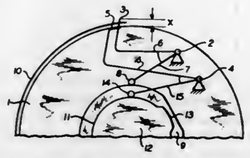
3,679,200
METHOD OF MAKING A MAGAZINE INSERT
Robert C. Bailey, Burnsville; Harry A. Estes, Edina; Glen S. James, Excelsior; James R. Klug, Minneapolis; Henry A. Montillon, St. Paul; Verne V. Myring, Minneapolis; Orville H. Robertson, West St. Paul; Blaine W. Sargeant, and Neal E. Sorensen, both of Minneapolis, all of Minn., assignors to Holden Industries, Inc., Minneapolis, Minn.
Filed Nov. 25, 1969, Ser. No. 879,850
Int. Cl. B41f 13/58
U.S. Cl. 270—4 7 Claims

A machine for making a magazine insert which includes the combination of a printing press and a modification of a web-press jaw folder by the addition of glue applying nozzles located at the input side of the folding apparatus to apply adhesive to a ribbon to be folded in a predetermined manner. In



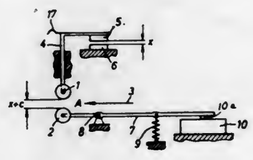
addition, the ribbon may be perforated with the application of adhesive on either side of the perforation lines to provide an insert which may be bound to a primary magazine and removed said bound portion therefrom.

3,679,201
COLLECTING DEVICE ESPECIALLY FOR TRANSVERSE FOLDERS FOR WEB-FED ROTARY PRINTING PRESSES
Klaus Hertrich, Gohrenz, and Reiner Peters, Leipzig, both of Germany, assignors to VEB Polygraph Leipzig Kombinat Fur Polygraphische Maschinen und Ausrustungen, Leipzig, Germany
Filed Feb. 2, 1971, Ser. No. 111,879
Int. Cl. B65h 5/06
U.S. Cl. 271—51 6 Claims



A collecting device, particular for cross folders of web-fed rotary printing presses in which the products are taken up by cam-controlled puncturing needles and are lifted off during the release from the collecting cylinder, and with each row of cam-controlled puncturing needles there is coordinated a counter-running cam-controlled row of strippers.

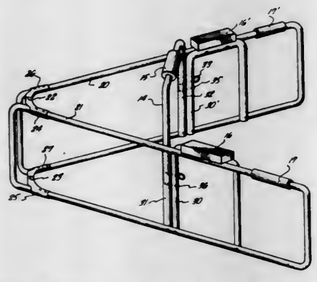
3,679,202
DOUBLE SHEET DETECTING AND LOCKING ARRANGEMENT
Walter Rauffer, Munich, Germany, assignor to AGFA-Gevaert A.G., Leverkusen, Germany
Filed Feb. 18, 1970, Ser. No. 12,304
Claims priority, application Germany, March 21, 1969, G 69 11 412
Int. Cl. B65h 7/06
U.S. Cl. 271—57 6 Claims



An arrangement in a microfilm flow type camera for detecting the presence of a double sheet and for automatically deac-

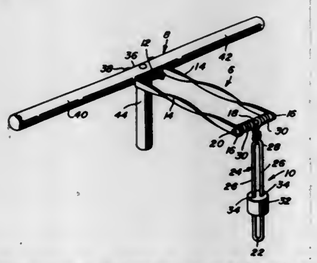
tivating the transport means for feeding sheets to be photographed on microfilm through the camera when a double sheet has been detected. The arrangement comprises a pair of oppositely arranged feelers between which a sample sheet can be inserted. One feeler of the pair of feelers is operatively connected to one roller of a pair of oppositely arranged rollers between which the sheets to be photographed on microfilm are being passed. One roller of the pair of rollers is operatively connected to a switch in the circuit of the transport mechanism for transporting sheets to be photographed through the camera. The distance between the pair of rollers is slightly larger than the distance between the pair of feelers so that when a double sheet passes between the pair of rollers the switch deactivates the transport mechanism of the camera.

3,679,203
EXERCISING STAND
Vito Grana, 15224 La Maida St., Sherman Oaks, Calif.
Filed Dec. 28, 1970, Ser. No. 101,496
Int. Cl. A63b *23/02*
U.S. Cl. 272—60 **11 Claims**



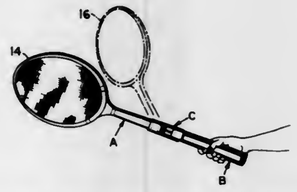
An exercising stand is disclosed herein having a pair of tubular side members pivotally joined together at one end so as to be pivoted between a first position for storage purposes and a second position for exercising purposes. Retainers are carried on the side members for slidably receiving an inverted U-shaped member constituting a back support extending between the side members when in their second position. Hand grips are carried on each of the side members adjacent the end opposite to the pivotally connected ends. A shoulder cushion is carried on each of the side members disposed between the back support and the hand grip.

3,679,204
WEIGHTED WHIRLING TYPE EXERCISING DEVICE
Samuel J. Busby, P.O. Box 74, Winlock, Wash.
Filed July 9, 1970, Ser. No. 53,456
Int. Cl. A63b *21/00, 21/20*
U.S. Cl. 272—81 **4 Claims**



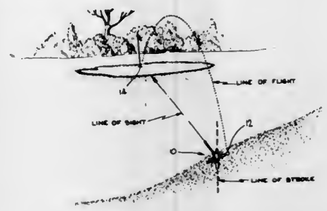
A handle-equipped U-bracket is positioned and braced against a selected body part (waist, knees, back, etc.). A uniquely weighted pendulous member is hinged on a terminally located shaft on an outer end of the U-bracket and is adapted to whirl through an orbital path after a suitable impetus is imparted and the desired momentum is achieved.

3,679,205
TENNIS RACKET FOR DEVELOPING TENNIS SWING
Eugene D. Finkle, 1100 Laurel, San Carlos, Calif., and James A. Patterson, 727 Viola Place, Los Altos, Calif.
Filed July 8, 1970, Ser. No. 53,152
Int. Cl. A63b *69/38*
U.S. Cl. 273—29 A **5 Claims**



A tennis racket is provided with a hinge intermediate the handle and racket head for providing hinged movement of the racket in the plane of the racket head. The hinge is preferably provided with a bias which tends to maintain the racket handle and head in a normal linear relation. When the racket is used to swing and hit the tennis ball so that the centrifugal momentum of the racket head propels the ball, the bias of the spring is not overcome and the racket handle and the head through the hinge are maintained in a normal linear relation. However, when the racket is used to push the tennis ball so that the racket head and handle is used as a lever to propel the ball, the bias of the spring is overcome and the racket handle and head fold at the hinge out of normal relation.

3,679,206
GOLFING AID
Howard G. Shambaugh, 830 Monroe St., River Forest, Ill.
Filed April 23, 1971, Ser. No. 136,717
Int. Cl. A63b *57/00, 69/36*
U.S. Cl. 273—32 R **5 Claims**



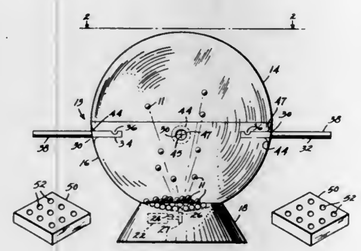
A device for aiding in the playing of the game of golf, particularly where playing on a sidehill such that the golf ball lies at a level above or below the golfer's feet. The device indicates the proper alignment of club and line of swing to compensate for the inclination of the sidehill. The device includes a base formed of pivotally connected members which define a first plane and a pointer element which extends upwardly from the base. When the pointer element is aligned along the line of sight from the ball to the point where the ball is to be hit, an indicator element positioned in the plane of the base lies parallel to the line of swing which will result in a line of flight of the ball along the above mentioned line of sight. The pointer element is adjustable to various marked positions which are functionally related to the lofts of the various club heads used in striking golf balls.

3,679,207
GOLF PUTTER CONSTRUCTION
Raymond J. Florian, 14440 Elwell, Belleville, Mich.
Continuation of Ser. No. 725,387, April 30, 1968. This application Aug. 3, 1970, Ser. No. 64,135
Int. Cl. A63b *53/00*
U.S. Cl. 273—80 A **12 Claims**



A golf putter for putting in a modified croquet style of putting comprising an elongated shaft having a substantially elongated grip portion at an upper end, and a putter head having a resilient striking face at a lower end. The putter head is of a predetermined weight which is counterbalanced by weighting means disposed in the upper end of the shaft to provide a weight balance point intermediate the ends of the shaft and proximate the lower extremity of the grip portion. The resilient striking face of the putter head may be formed by a slot located behind the face.

3,679,208
GAME APPARATUS FOR CATCHING RANDOMLY MOVING ARTICLES
Andrew J. Carrano, Jr., New Haven, Conn.; Stephen N. Cotsalas, Commack, and John E. Jacobson, Brooklyn, both of N.Y., assignors to Edu-Matic Designs, Ltd.
Filed July 20, 1970, Ser. No. 56,587
Int. Cl. A63b *71/04*
U.S. Cl. 273—95 R **7 Claims**



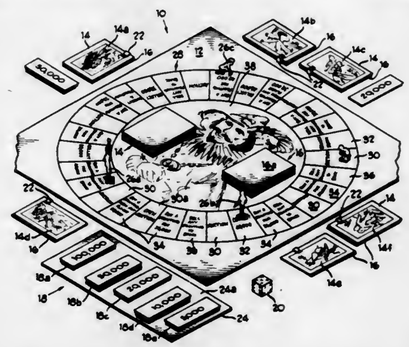
A game apparatus in which counter pieces are thrown violently upward in random directions from the bottom of an enclosure so as to bounce about inside the enclosure, and in which a catching device can be manipulated within the enclosure by a player to catch one or more counter pieces. The game may include a scoring board having individual places for counter pieces marked to match markings on certain counter pieces, so that a player attempts to catch pieces to place in a pattern on the board.

3,679,209
GAME CLUB
Charles W. Wexstaff, Ludington, Mich., assignor to Affiliated Hospital Products, Inc., St. Louis, Mo.
Filed Oct. 7, 1969, Ser. No. 864,455
Int. Cl. A63b *71/00*
U.S. Cl. 273—129 **4 Claims**



A game club for simulated golf type games, having two opposite heads on a common longitudinal medial shaft section, the two heads being crooked at substantially different acute angles relative to the longitudinal medial shaft section.

3,679,210
BOARD GAME APPARATUS
Jeffrey D. Breslow, Chicago, Ill., assignor to Marvin Glass & Associates
Filed Sept. 28, 1970, Ser. No. 75,953
Int. Cl. A63f *3/00*
U.S. Cl. 273—134 C **7 Claims**

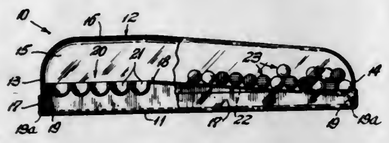


A game device of the type having a game board, playing pieces, and a chance device to determine the advance of the playing pieces, characterized by the provision of playing cards having simulated works of art thereon and other playing cards having value indicia thereon. The game board provides instructions for players as they advance therealong with respect to the purchase or sale of cards representing works of art. The value cards are selected at random and removably attached to the simulated works of art to establish a value therefor with the value of art cards remaining concealed until the termination of the game.

3,679,211
BALL AND SOCKET GAME DEVICE
Newell D. Hartley, 80 Collingsdale Drive, Milford, Conn.
Filed Dec. 29, 1970, Ser. No. 102,302
Int. Cl. A63f *7/04, 7/14*
U.S. Cl. 273—144 B **1 Claim**

There is disclosed an elongate box having a transparent top portion, and under the top portion a plate having a flat horizontal surface and a contiguous inclined flat surface, the

box containing a plurality of groups of colored balls resting on said plate, the balls of each group being of a color different from the balls of the other groups, the horizontal surface of the plate having five rows of hemispherical sockets to receive

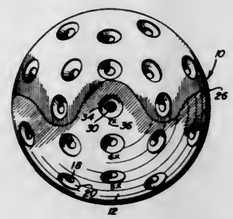


some of the balls when the box is tilted to cause the balls resting on said inclined surface to roll over the horizontal socket-containing surface and after the box is tilted back to cause the balls not retained in the sockets to roll onto the inclined surface, the scoring being based on the number of rows of sockets containing the same color balls.

3,679,212
CHANCE READOUT EDUCATIONAL BALL

James A. Smith, 520 Hilda St., Morgan City, La.

Filed May 28, 1971, Ser. No. 147,777
Int. Cl. A63b 39/00; A63f 5/04
U.S. Cl. 273—144 B 8 Claims



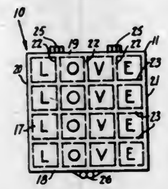
A hollow substantially spherical ball having a plurality of apertures therein and a plurality of movable members, generally in the form of pellets, having indicia thereon and shaped to fit partially into the apertures from the interior thereof but incapable of passing out through the apertures whereby the indicia may be observed externally of the ball. Magnetic means is associated with each aperture and associated with a metal ring on each pellet for retaining the pellets in the aperture during rolling movement of the ball so that each aperture of the ball will be provided with a pellet during rolling movement of the ball. The ball is provided with a weighted and flattened bottom surface so that it will come to rest in a predetermined position with indicia being provided on the external surface of the ball for association with the indicia revealed through the apertures for enabling various games to be played and enabling various educational processes to be practiced.

3,679,213
TRANSPARENT CONTAINER AND LETTERED CUBES PUZZLE

Vladimir Moss, 10463 Ambassador Drive, Rancho Cordova, Calif.

Filed Sept. 11, 1970, Ser. No. 71,606
Int. Cl. A63f 9/08
U.S. Cl. 273—156 1 Claim

A puzzle game which includes a square box formed of transparent material with a cover which can be easily opened for access to the interior of the box. The box is divided into sixteen cubical compartments with four compartments along each side of the box. A cube is provided for fitting into each of the cubical compartments so that all surfaces of the cube not adjacent to the surface of another cube are visible through the transparent box. Each cube is provided with various combinations of individual letters taken from the word "love" with a single letter being visible on each face of the cube. The basic

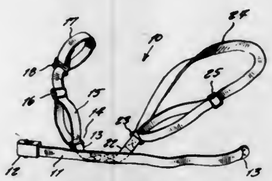


color of the cubes is the same however the letters are printed in different colors so that not only the proper spelling of the word is required but also the correct color for the letters of the word.

3,679,214
GOLF CLUB SWING TRAINING AID

Jack D. Boyte, 8837 Glenwood, Apt. #15, Overland Park, Kans.

Filed Jan. 12, 1971, Ser. No. 105,896
Int. Cl. A63b 69/36
U.S. Cl. 273—189 R 1 Claim

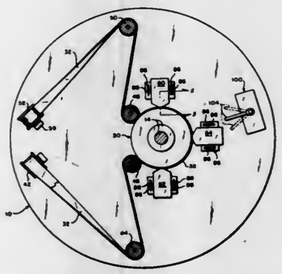


A training aid for a golf player and which is designed so to hold the right arm elbow of the student close to the body throughout the back swing, the device comprising a regulation canvas belt for being placed around the student's waist, a front cross belt section attached at one end to the regulation canvas belt, the other end of the front cross belt section having a loop that goes around the right arm of the player just above the elbow.

3,679,215
TAPE RECORDER

William E. Roberts, Palos Verdes Peninsula, Calif., and Gerald J. Barry, Fort Wayne, Ind., assignors to The United States of America as represented by the Secretary of the Navy

Filed Feb. 3, 1967, Ser. No. 617,004
Int. Cl. G11b 5/48, 5/78
U.S. Cl. 274—4 D 14 Claims



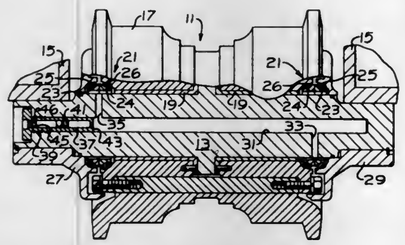
A tape recorder having a motor with a shaft, a pair of tape storage reels which are mounted rotatably on the shaft and are

mechanically interconnected by constant torque springs, a tape drive capstan fixed to the shaft for withdrawing magnetic tape from either of the tape storage reels, and magnetic recording heads positioned immediately adjacent the grooved periphery of the capstan for erasing, recording, and reading recorded information on a plurality of tracks carried by the magnetic tape. Circuitry is provided to cause the recorder to continuously record data without rewinding at a low speed, the oldest recorded data being continuously erased during the recording of new data; and remotely actuatable apparatus is provided to cause the recorder to play back and transmit the recorded data at high speed in reverse sequence.

3,679,216
PRESSURE-BALANCED TRACK ROLLER

Floyd S. Dadds, Peoria, and James E. Gee, Washington, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed April 17, 1970, Ser. No. 29,439
Int. Cl. F16j 15/40, 15/16
U.S. Cl. 277—3 1 Claim

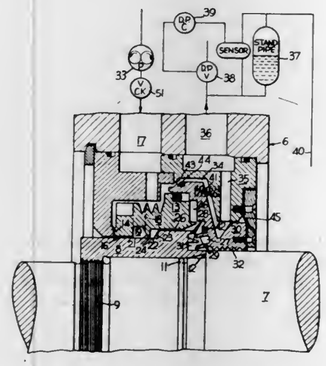


A pressure balanced track roller for underwater use includes a floating piston for transmitting ambient pressure to the lubricant chamber of a face seal to maintain adequate face loads on the seal rings when the track roller is operated at deep depths underwater.

3,679,217
AUTOMATIC SHUTDOWN SEAL

Gerald Lesiecki, Greendale, Wis., assignor to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.

Filed Oct. 27, 1970, Ser. No. 84,297
Int. Cl. F16j 15/40
U.S. Cl. 277—3 1 Claim



A rotary shaft seal is provided with a sealing fluid to seal a process fluid. A spring-biased mechanical shaft seal automatically closes and seals the process fluid from the atmosphere when the sealing fluid pressure is lost. During machine operation the pressure generated by the sealing fluid overcomes the force of the springs to open the mechanical seal.

3,679,218
UNITIZED VALVE PLATE, GASKETS AND THE LIKE

Robert G. Farnam, New Lisbon, Wis., assignor to F. D. Farnam Co.

Filed March 3, 1969, Ser. No. 803,535
Int. Cl. F16j 15/12
U.S. Cl. 277—233 6 Claims

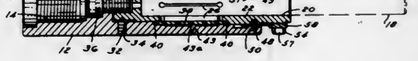


A unitized metal plate and gasket assembly in which a suitable gasket is firmly bonded to one or both sides of a metal plate with the unitized assembly having one or more die cut holes or apertures therethrough and with the unitized plate assembly being particularly suitable for use as a valve plate unit in automatic transmissions, but having other uses as well.

3,679,219
HYDRAULICALLY ACTUATED CHUCK

Gordon N. Cameron, 1322 Hampton Road, Grosse Pointe Woods, Mich.

Filed Feb. 20, 1970, Ser. No. 13,107
Int. Cl. B23b 31/30
U.S. Cl. 279—1 Q 8 Claims

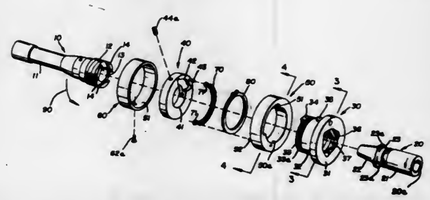


A sleeve actuated hydraulic chuck for accurately locating internal work pieces or tool elements for machining, grinding, gauging or other operations. The chuck is substantially symmetric for vibrationless operation at high speeds.

3,679,220
QUICK CHANGE TOOL HOLDER

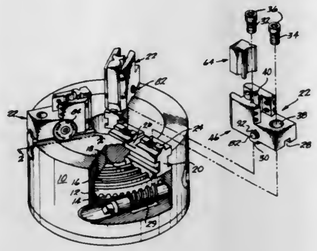
Harold C. Reeves, Akron, Ohio, assignor to Portage Machine Company, Akron, Ohio

Filed March 23, 1970, Ser. No. 21,834
Int. Cl. B23b 31/10
U.S. Cl. 279—1 B 5 Claims



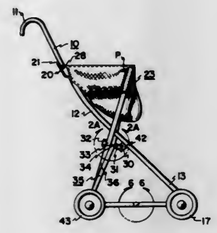
In a tool holder adapted to be mounted in a spindle for rotational purposes and to releasably hold a tool adaptor the provision of a spring loaded impact ring movable relatively of the holder and its locking nut, whereby, by grasping the impact ring, the adaptor can be removed without halting the spindle.

3,679,221
CHUCK JAW INSERT AND ASSEMBLY
Alvin J. Behrens, 25325 117 Place S.E., Kent, Wash.
Filed June 11, 1970, Ser. No. 45,499
Int. Cl. B23b 31/10
U.S. Cl. 279—1 SJ 6 Claims



A chuck for a turning machine or lathe, is disclosed having three jaws movable radially by a worm and scroll mechanism. The jaws illustrated are in the form of master and top jaws and an insert, formed of relatively soft material, is carried by each top jaw. Each insert is held in place by means disposed along its marginal edge portions. Wedge means are provided by an eccentrically mounted wheel so that a soft jaw insert is held without slack for machining of the surface to engage a work piece. Thus, the soft jaw insert surface is machined, while held in the same position it will be held during use, and prcision machining of soft jaw inserts may be obtained. Also, the use of inserts, selectively in more than one holder carried by a jaw, obtains by the mere cutting of the insert bar stock to desired lengths.

3,679,222
CHILD'S STROLLER
Alfonso Guillamon, 612 Columbus St., Salt Lake City, Utah
Filed Dec. 31, 1970, Ser. No. 103,053
Int. Cl. B62b 11/00
U.S. Cl. 280—36 R 5 Claims



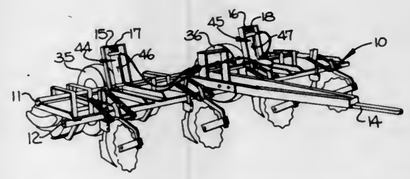
A stroller for small children having legs pivotally connectable to each other such that a collapsed, pole-like structure is obtained for storage when the stroller is not in use. Collapsible brace means are provided to secure the pivoted together legs in an extended position for use. One leg comprises a convenient handle member extending rearwardly of the carrier constructed to support the child.

3,679,223
PORTABLE BABY CARRIAGE
Koichi Sakai, 5457-1, Nishijimacho, Hamamatsu-shi, Japan
Filed Dec. 22, 1970, Ser. No. 100,707
Claims priority, application Japan, Dec. 24, 1969, 44/10335; Dec. 24, 1969, 44/121988; Dec. 24, 1969, 44/121989
Int. Cl. B62b 11/00
U.S. Cl. 280—37 1 Claim



A perambulator on wheels or baby carriage according to this invention in the form of a rectangular suitcase with a backrest and wheels which are retractable, thus making it easy to carry, the wheels extended or retracted being positively locked in a proper position.

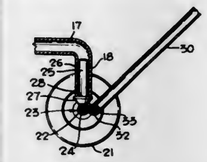
3,679,224
LIFTING ARRANGEMENT FOR AGRICULTURAL IMPLEMENT FRAME
John C. Hatcher, Charlotte, N.C., assignor to Cole Manufacturing Company, Charlotte, N.C.
Filed Feb. 16, 1971, Ser. No. 115,172
Int. Cl. B62d 21/18
U.S. Cl. 280—43.23 3 Claims



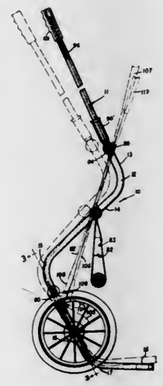
The frame of an agricultural implement is elevated relative to land traversed by the cooperation of first and second pressure fluid actuators having cylinders of common inside diameter, a pressure fluid circuit connecting the actuators in series, and a pair of lever members having ground engaging wheels mounted thereon. A differential in the stroke of the pressure fluid actuators resulting from the series connection thereof is compensated for by connection of respective actuators at different spaced locations along corresponding lever members.

3,679,225
HAND TRUCK
Merle B. McKinney, St. Louis, Mo., assignor to Pioneer Liquor Company, Inc., St. Louis, Mo.
Filed April 24, 1969, Ser. No. 819,014
Int. Cl. B62b 1/12
U.S. Cl. 280—47.18 3 Claims

This hand truck provides an adaptor carriage for converting a two-wheel hand truck of the type having a carrying frame supported by a pair of wheels at one end and including a pusher stem at the other end, into a four-wheel truck in one simple operation. The adaptor carriage includes an axle having a ground wheel at each end, an adaptor unit mounted on the axle and an elongate pulling handle. The adaptor unit includes a sleeve having a pin transversely mounted thereon and interfitting the pusher stem in pivotal relation. The elongate handle is pivotally mounted to the adaptor unit.

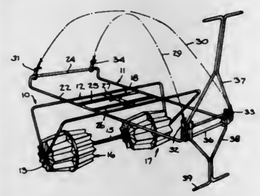


3,679,226
GOLF CLUB CARRIER OR CART
Thomas G. Bresser, 6216 Bona Vista Ave., Cincinnati, Ohio
Filed Oct. 14, 1969, Ser. No. 866,225
Int. Cl. B62b 1/14
U.S. Cl. 280—47.19 11 Claims



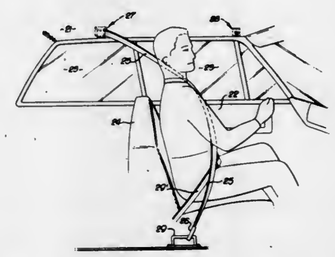
The golf cart comprises a central body member with wheels at opposite sides thereof and with the axles and other supports carried by the central body member securing the golf clubs, without benefit of a bag, in operative position for ready selective movement for the removal of the clubs from the supporting portion of the two wheel cart or carrier.

3,679,227
UTILITY CART
Thomas Rock, 39 Woodland Ave., East Orange, N.J.
Filed July 30, 1970, Ser. No. 59,591
Int. Cl. B26b 1/12
U.S. Cl. 280—47.24 6 Claims



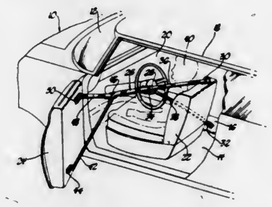
A utility cart of being hand-drawn over either soft or hard ground and of carrying loads of varying size and weight. The cart is composed of two distinct sections which may be dismantled when not in use to provide a more compact structure for storage or shipping purposes. The first or truck section is constituted by a frame having an axle carrying a pair of wheels, each wheel having a center tire which is flanked on either side by rollers having a paddle-wheel formation. The second section is constituted by a cradle which is supported on the truck frame, the cradle having both a handle and a rest pivoted on one end thereof.

3,679,228
RESTRAINT APPARATUS
Raymond J. Settimi, 23350 Los Encinos Way, Woodland Hills, Calif.
Division of Ser. No. 740,970, June 28, 1968, Pat. No. 3,550,875. This application Aug. 19, 1970, Ser. No. 64,993
Int. Cl. B60r 21/10
U.S. Cl. 280—150 SB 2 Claims



A vehicle occupant restraint apparatus including a shoulder strap having a connector on the free end thereof adapted to be engaged with a floor-mounted connector so as to be positioned diagonally across the upper torso of an occupant, and being secured within a spring biased retraction device supported by an outer wall of the vehicle and a stowing clip also supported on the vehicle outer wall so that the shoulder strap may be stowed in an out-of-the-way position when not in use. There is also disclosed a spring biased retraction device in which a strap is wound around a reel and is put in position for use by protraction of the strap to the desired length and then allowing slight rewind or retraction of the strap whereupon the reel will be locked against further protraction or retraction.

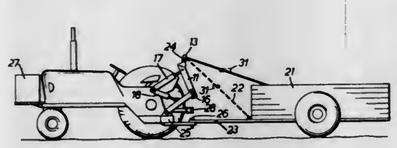
3,679,229
VEHICLE PASSIVE OCCUPANT RESTRAINING BELT ARRANGEMENT
Willem J. J. Weststrate, Washington, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Feb. 25, 1971, Ser. No. 118,604
Int. Cl. B60r 21/10
U.S. Cl. 280—150 SB 1 Claim



A vehicle passive occupant restraining belt arrangement includes a first belt whose one end is fixed to the upper inboard

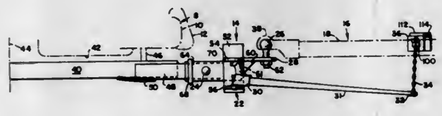
portion of a vehicle seat and whose other end is fixed adjacent the lower inboard portion of the seat, a first apertured member slidably receiving an intermediate portion of the first belt such that the first belt defines shoulder and lap belt portions, a second belt having one end fixed to the first apertured member and the other end received by a conventional inertia retractor mounted adjacent the lower rear portion of a vehicle body door, a second apertured member slidably receiving an intermediate portion of the second belt, and a control belt having one end attached to the second apertured member and the other end received by a control retractor also mounted on the vehicle door. When the door is in closed position, the inertia retractor retracts the second belt to maintain the first apertured member in a lower rearward position to position the shoulder and lap belt portions in occupant restraining positions. During movement of the door to open position, the control retractor retracts the control belt as the second apertured member slides along the second belt and moves the first apertured member from the lower rearward position to an upper forward position moving the shoulder and lap belt portions from the occupant restraining positions to easy-enter positions allowing convenient occupant access to the vehicle seat. During closing movement of the door, the control retractor protracts the control belt as the inertia retractor retracts the second belt moving the first apertured member from the upper forward position to the lower rearward position positioning the shoulder and lap belt portions in the occupant restraining positions.

3,679,230
SYSTEMS FOR DRAWING TRAILERS BEHIND TRACTORS
David J. Farrant, Weishes Farm, Clatworthy, Wivelscombe, Somerset, England
Filed Dec. 11, 1969, Ser. No. 884,386
Int. Cl. B62d *53/00*
U.S. Cl. 280—405 B **10 Claims**



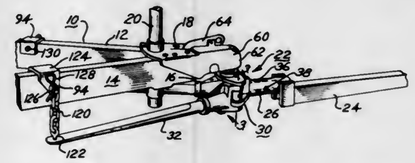
This invention is an attachment device enabling the rear wheels of a tractor to be loaded to increase the tractive effort by the tension in a chain connected between the trailer and a post on the attachment, a hydraulic actuator being arranged to move the attachment to tension the chain to supply the additional load to the rear wheels of the tractor.

3,679,231
TRAILER HITCH
Millard A. Derr, Jr., 17 Richard Court, Orinda, Calif.
Filed May 25, 1970, Ser. No. 40,068
Int. Cl. B60d *1/06*
U.S. Cl. 280—406 A **15 Claims**



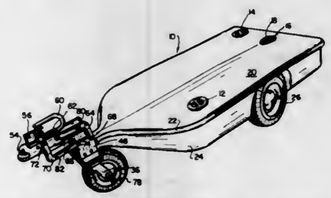
A trailer hitch which has a head demountably securable to a rearwardly extending mounting bar of the vehicle. The head permits substantial vertical adjustments before its installation to obtain standard spacings between it and the ground and includes laterally protruding flanges that mount identical load equalizing spring bar connectors. The connectors are retained to the flanges while they pivot about upright axes over a predetermined sector and can be removed from the head when they pivot through other sectors. The pivot axes are slightly inclined from the vertical. The spring bars are longitudinally tapered, retained in rearwardly directed openings in the connectors and include tensioning chains at their free aft ends secured to a retention member mounted to a forwardly extending trailer bar of the trailer. A chain engaging lever enables the simultaneous tensioning of the chain and its connection to or release from the chain retention member.

3,679,232
TRAILER HITCH
Charles A. Weber, Elkhart, Ind., assignor to Elkhart Welding & Boiler Works, Inc., Elkhart, Ind.
Filed Jan. 18, 1971, Ser. No. 107,349
Int. Cl. B62d *53/00*
U.S. Cl. 280—406 A **9 Claims**



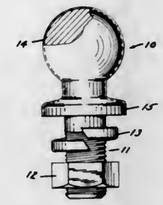
A load equalizing hitch for trailers and the like having a spring bar assembly in which the bar is adjustable angularly in a vertical direction with respect to the ball mount of the hitch, thereby permitting an adjustment of the spring bars relative to one another and to the head to compensate for wear of the hitch parts and fatigue of the spring bars. Each of the two spring bars is adjustable independently of the other and is pivotally connected to the fixture of the assembly. After an adjustment has been made, the spring bar is locked in its adjustable position with respect to the fixture, forming a rigid operative structure.

3,679,233
VERTICALLY ADJUSTABLE TRAILER HITCH
Calvin Lee Baker, 3242 Winton Road S., and Clarence H. Rogers, 3230 Winton Road S., both of Rochester, N.Y.
Filed March 10, 1971, Ser. No. 122,682
Int. Cl. B60d *1/00*; **B60p** *3/22*
U.S. Cl. 280—476 R **8 Claims**



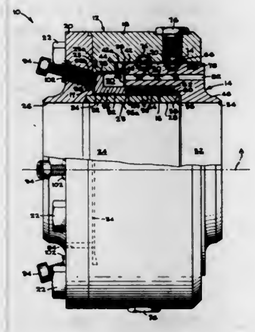
A vertically adjustable trailer hitch of the type mounted upon a trailer tongue and attachable to a towing vehicle, particularly including a ball socket arm and a parallelogram linkage interconnecting the ball socket arm and a pivotable front wheel. The parallelogram linkage enables a level ride of the trailer tongue upon the pivotable front wheel, regardless of the vertical position of the towing vehicle or hitch itself, also the hitch may be vertically extended for manual handling of the trailer apart from the towing vehicle.

3,679,234
REFLECTIVE PLASTIC COATED TRAILER HITCH BALL
Frank Collins, 7565 W. Huron River Drive, Dexter, Mich.
Filed Sept. 17, 1969, Ser. No. 858,648
Int. Cl. B60d *1/06*; **F16c** *1/06, 33/32*
U.S. Cl. 280—511 **3 Claims**



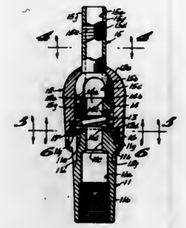
A trailer hitch ball encased in a molded reflective and friction reducing plastic covering to provide a quieter, longer wearing and more pleasing appearance.

3,679,235
PIPE SWIVEL JOINT FOR CORROSIVE FLUIDS
Armand L. Faccou, Santa Ana, Calif., assignor to FMC Corporation, San Jose, Calif.
Filed Aug. 24, 1970, Ser. No. 66,323
Int. Cl. F16l *55/00*
U.S. Cl. 285—14 **12 Claims**



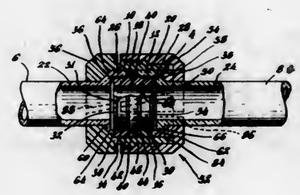
A pipe swivel joint designed especially for handling very corrosive fluids, with an annular externally-adjustable pressure plate that bears against the joint's packing, and a series of energizing screws to force the plate to compress the packing into a fluid-tight seal between the joint's outer and inner relatively rotatable elements. The screws extend through the radial wall of the joint's outer element rather than longitudinally through the inner element, thereby facilitating a reduction in the outside diameter of the inner element to provide a more compact joint of less overall radial dimension. The screws are threaded through corrosion-resistant sleeves so that they will not seize to the joint's outer element if corrosion should occur, and the sleeves are threaded into the outer element so that they can be easily replaced if necessary.

3,679,236
ALT AZIMUTH SWIVEL CONSTRUCTION
Jerome Warshawsky, 3285 Bertha Drive, Baldwin, N.Y.
Filed Oct. 16, 1970, Ser. No. 81,393
Int. Cl. F16l *27/00*
U.S. Cl. 285—39 **11 Claims**



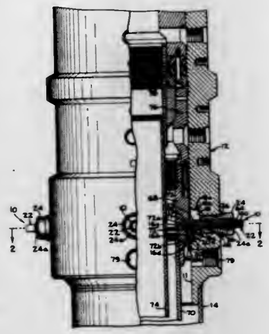
A swivel joint fitting for lighting fixtures comprises a tubular mounting base telescopingly connected by a swaged rotatable joint to a housing for relative axial rotation therewith through an arc short of 360° as the azimuthal swivel component. A ball, mounted in the housing and having a stem extending through a semicircular slot in a dome-shaped end of the housing, provides movement through an arc of 180° as the altitudinal swivel component, permitting a full right angular bend. A compression spring simultaneously provides frictional drag of predetermined force against the altitudinal and azimuthal movement.

3,679,237
COUPLING FOR JOINING GLASS PIPE SECTIONS AND THE LIKE
William M. De Angelis, Wilton, Conn., assignor to Technicon Instruments Corporation, Tarrytown, N.Y.
Filed June 23, 1970, Ser. No. 48,971
Int. Cl. F16l *17/06, 49/00*
U.S. Cl. 285—109 **4 Claims**



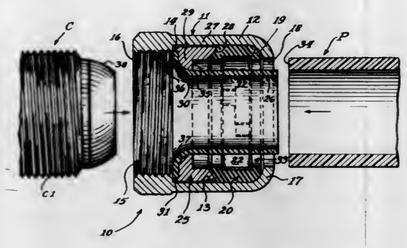
The juxtaposed ends of two glass pipe sections are joined by a coupling construction which comprises an inner coupling sleeve having its ends frictionally mounted in coupling chambers formed in cylindrical enlargements (end bells) provided at each of the juxtaposed ends to thereby effect radial fluid seals in the enlargements. An O-ring is disposed in an annular groove formed in the outer surface of the sleeve in the space between the juxtaposed ends to form fluid seals thereat. Threadedly telescoped external coupling rings are mounted over external portions of the enlargements to draw the latter toward each other to effect pressure between the enlargements and the O-ring to maintain the aforementioned fluid seals.

3,679,238
SEAT MECHANISM FOR THROUGH BORE WELL HEADS
Samuel W. Putch, Houston, Tex., assignor to FMC Corporation, San Jose, Calif.
Filed July 29, 1970, Ser. No. 59,170
Int. Cl. F16l 21/00
U.S. Cl. 285—144 **4 Claims**



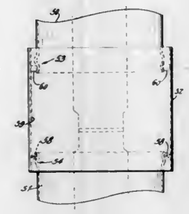
A retractable seat mechanism for a casing head comprising a plurality of arcuate segments and an actuating screw for each segment, wherein the screws are threaded inwardly to urge the segments from a retracted position until the segments drop into a pipe hanging position.

3,679,239
COMPRESSION COUPLING FOR PLASTIC PIPE
Joseph R. Schmitt, Dubuque, Iowa, assignor to A. Y. McDonald Mfg. Co.
Filed June 25, 1971, Ser. No. 156,734
Int. Cl. F16l 55/00
U.S. Cl. 285—176 **10 Claims**



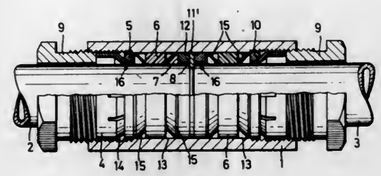
A compression coupling for connecting plastic pipe to an externally threaded hollow connector which has an end surface. Any pipe of a controlled outer diameter or made to standard outer dimensions can be used in the coupling. The coupling is a pre-assembled unit with a chamber in which slidable compressor means abuts the end surface of the connector as the coupling is screwed onto it, and the compressor means slides forwardly to compress a rubber compression ring between two wedging surfaces in the chamber and thereby squeeze the ring to clamp the end portion of a plastic pipe firmly onto a rigid sleeve which is part of the compressor means.

3,679,240
TUBULAR CIRCULAR GASKET TO SEAL AND REDUCE FORCE IN TRANSMISSION SYSTEM
Joseph A. Turgeon, Toronto, Ontario, Canada, assignor to I-T-E Circuit Breaker (Canada) Limited, Ontario, Canada
Filed April 14, 1970, Ser. No. 28,416
Int. Cl. F16l 21/06
U.S. Cl. 285—233 **3 Claims**



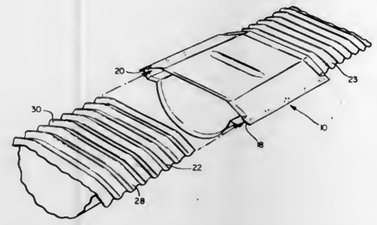
A tubular gasket is employed in a manner to maintain a water-tight joint between adjacent isolated phase bus housings and their associated clamp-on cover and, also, to reduce the magnitude of frictional forces produced during movement of one housing relative to the cover to a level sufficient to protect against buckling of the respective components.

3,679,241
COMPRESSION PIPE COUPLING
Ernst Hoffmann, Braunlage, Germany, assignor to Schmidt, Kranz & Co. GmbH, Zorge, Sudharz, Germany
Filed June 3, 1970, Ser. No. 43,099
Claims priority, application Germany, June 11, 1969, P 19 29 516.0; Feb. 4, 1970, P 20 04 921.2; March 26, 1970, P 20 14 622.9
Int. Cl. F16l 17/00
U.S. Cl. 285—340 **6 Claims**



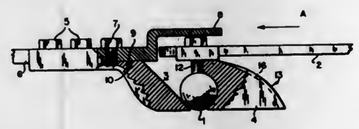
A compression type pipe coupling for connecting unthreaded pipes together or to a threaded pipe. A female threaded body has an annular collar upon which the end of the pipe rests, the pipe being held in place by an elastic plastic sealing ring, a frusto-conical washer and a male threaded sleeve which compresses the ring and washer.

3,679,242
DRAINAGE TUBE COUPLING
James R. Hess, Box 35, Bethel, Pa.
Filed April 14, 1970, Ser. No. 28,318
Int. Cl. F16l 21/00
U.S. Cl. 285—417 **12 Claims**



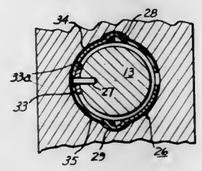
A coupling is provided, for slideably receiving ends of drainage tube therein, through its opposite open ends, and for frictionally retaining the same together.

3,679,243
COUPLING ASSEMBLY
Arthur John Hameri, 10125-103 Ave., Grande Prairie, Alberta, Canada
Filed March 24, 1969, Ser. No. 809,745
Claims priority, application Canada, April 9, 1968, 017,137
Int. Cl. F16c 11/06
U.S. Cl. 287—21 **3 Claims**



A ball and socket coupling for trailers and the like, the socket being upwardly and forwardly inclined in a body which has a forwardly convergent upwardly angled groove leading from the rear end of the body to the rear edge of the socket to guide the ball thereto, locking means being provided for locking the ball in the socket.

3,679,244
RELEASABLE SHAFT LOCK
Robert R. Reddy, 1195 Michillinda Blvd., Pasadena, Calif.
Filed Sept. 21, 1970, Ser. No. 73,865
Int. Cl. F16b 9/00
U.S. Cl. 287—20 R **6 Claims**



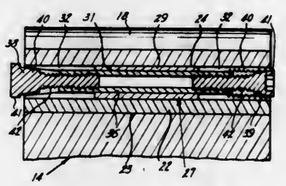
Releasable means for locking a shaft in an opening in a body, which opening is bounded by a peripheral, usually cylindrical, wall. A recess is formed in the wall and bounded at least in part by a circumferentially extending ramp-like bottom surface that extends for less than the full periphery of the wall, and a catch surface adjacent to the bottom surface. The catch surface extends radially. In the wall of the shaft there is provided a locking member which is resiliently biased to extend beyond its periphery and which can be retracted entirely within the periphery of the shaft. The lock member is restrained against rotation relative to the shaft so that when the shaft is pressed into the hole, the lock member can snap outwardly into the recess, thereby to lock the shaft in place, but the shaft can be released by twisting it so that the lock member is cammed inwardly to the diameter of the wall in which the recess is formed, and the shaft can thereafter be withdrawn.

3,679,245
ARTICLE OF MANUFACTURE
Hermann Ehrenberg, Michelstadt, Odw, Germany, assignor to Fouquet-Werk Frauz & Planck, Neckar, Germany
Continuation-in-part of Ser. No. 811,145, March 27, 1969, Pat. No. 3,578,364. This application April 27, 1971, Ser. No. 137,353
Claims priority, application Germany, Feb. 22, 1968, P 16 75 138.5; Dec. 30, 1968, P 18 17 398.3; April 27, 1970, P 20 20 469.7
Int. Cl. F16d 1/06
U.S. Cl. 287—52 **6 Claims**



A connecting element for connecting two coaxial elements which define with one another an annular clearance in which the connecting element is located in frictional engagement with both the coaxial elements. The connecting element is in form of an annular member of elastically yieldable material provided with a transverse annular portion with an outer and an inner annular flange portion projecting from the outer and inner margin thereof in one and the same axial direction. An axially projecting bead is provided on a side of the transverse annular portion which is opposite the flange portions and has a radial thickness corresponding substantially to three times the radial thickness of either one of the flange portions. Intermediate the flange portions at the axial side at which the latter are located, the transverse annular portion is provided with an annular groove whose steps corresponds at least approximately to the axial thickness of the annular transverse portion.

3,679,246
KEY LOCK ASSEMBLY FOR A PAIR OF RELATIVELY MOVABLE MEMBERS
Evert V. Bloomquist, and Gerald E. Bloomquist, both of P. O. Box 864, Wausau, Wis.
Filed April 29, 1970, Ser. No. 32,829
Int. Cl. F16d 1/06
U.S. Cl. 287—52.05 **1 Claim**



The key lock assembly has a hollow elongated locking bar with expandible end sections receivable within corresponding

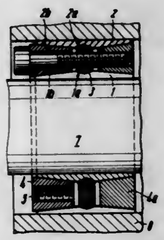
facing key ways formed in adjacent surfaces of a pair of relatively movable members which are to be locked together. Located within the locking bar is an elongated connector member having linearly adjustable end members which on linear adjustment toward each other coact with the locking bar to expand the end sections thereof into frictional locking engagement with adjacent surfaces of the key ways.

3,679,247

HUB-TO-SHAFT CLAMP CONNECTION ASSEMBLY

Oskar E. Peter, Schlosstrasse, 9/1, 7129 Brackenheim, and Lothar Peter, Wagnerstrasse 8, 7129 Gueglingen, both of Germany, assignors to said Oskar E. Peter, by said Lothar Peter

Filed Oct. 26, 1971, Ser. No. 191,994
Claims priority, application Germany, July 26, 1971, P 21 37 313.7
Int. Cl. F16d 1/06
U.S. Cl. 287—52.06 11 Claims



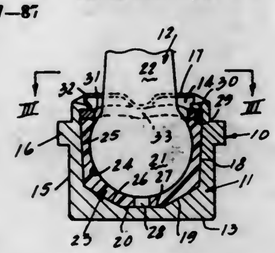
To connect a hub to a shaft, spaced inner and outer rings have conical surfaces formed thereon, the conical surfaces diverging towards the outer sides of the connection. A pair of intermediate clamp rings which have essentially matching (but possibly slightly smaller conical angles) conical surfaces are inserted between the inner and outer rings, one from each side. Screws pass through one of the clamp rings and bear against its outer face, and are threaded into the other clamp ring, to tighten the rings against each other, the inner and outer rings being formed with a central recess of dove-tailed cross-section, in which a ring-shaped metal disc is inserted having an outer surface substantially matching the dove-tailed conical surfaces of the inner and outer rings. The clamp ring against which the screw surfaces bear is additionally formed with threaded openings to permit screws to be threaded therein, to then bear against the metal ring when separation of the hub to shaft connection is desired.

3,679,248

BALL JOINT

Edward J. Herbenar, Detroit, Mich., assignor to TRW, Inc., Cleveland, Ohio

Filed Aug. 5, 1971, Ser. No. 169,425
Int. Cl. F16c 11/06
U.S. Cl. 287—87 7 Claims



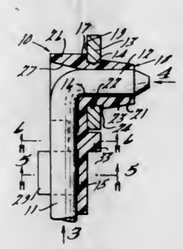
Preloaded ball and socket joints for automotive wheel suspensions and steering linkages of the type having the ball member enveloped by a plastic bearing compressed between the ball member and a housing to maintain a fixed tilting center for the ball in the housing while expanding to take up wear between the parts together with the added improvement of an initially locally deformed retainer spring regaining its undeformed condition as wear develops to increase the wear take-up capacity of the joint without increasing the turning torque or extruding the plastic bearing material.

3,679,249

ROD END CONNECTOR

Donald R. Hoffmann, Wayne, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed May 21, 1971, Ser. No. 145,680
Int. Cl. F16c 11/00
U.S. Cl. 287—93 2 Claims



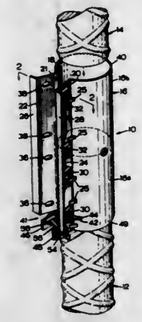
A connecting device for coupling an actuating rod to a lever member. The connecting device is an integrally molded plastic unit comprising a base member having a rod portion receiving aperture at one end; a retention means for holding the connecting means on the lever member, the retention means projecting from one side of the base member and having a bore axially aligned with the aperture; and a socket forming wall formed on the other side of the base member to receive an end of the actuating rod. A plurality of upstanding rod retention legs having overhanding lip portions receive the actuating rod as its right angled end is inserted through the bore of the retention means on the base member.

3,679,250

SPLICER FOR REINFORCING BARS

Ronald Eric Marsden, 53 Thorncliffe Park Drive Apt. 1211, Toronto 17, Ontario, Canada

Filed May 8, 1970, Ser. No. 35,871
Int. Cl. F16b 7/00
U.S. Cl. 287—110 2 Claims



A splicer for connecting compression loader reinforcing bars in end to end alignment. The splicer has a sleeve portion

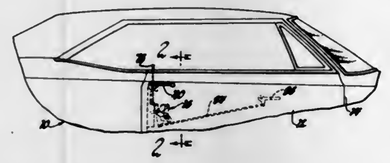
with longitudinal edges defining a gap and a pair of flanges extending radially one from each edge. A pair of projections also extend radially from the edges below the flanges and bolts pass through the flanges and projections. The projections can be drawn toward one another by tightening a bolt in the projections to draw a part of the sleeve portion tightly about an end portion of one of the bars. A second bar is then slipped into the sleeve portion and the bolts in the flanges tightened to draw the sleeve portion tightly about the second reinforcing bar. Inspection openings are provided in the sleeve portion to ensure proper abutment of the bar ends.

3,679,251

CLOSURE LATCH

Henry J. Brockman, Warren, and Bela Sandor, Detroit, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Oct. 19, 1970, Ser. No. 81,643
Int. Cl. E05c 3/26
U.S. Cl. 292—216 4 Claims



A vehicle body door lock includes a fork bolt mounted on the frame for movement between latched and unlatched positions, a detent mounted on the frame for movement between holding and released positions with respect to the bolt, and outside operating means which are selectively coupled and uncoupled with respect to the detent. An inside remote lever is swingably mounted on the frame and connected to the inside remote handle for movement in opposite directions upon corresponding movement of the remote handle. A detent release lever is coaxially mounted with the remote lever and has a foot overlying the detent. A connecting link is connected at one end to the release lever and the other end of the link mounts a pin slidable in a slot of a connecting lever coaxially mounted with the remote lever and release lever. The connecting lever is positionable in connected and disconnected positions and respectively located in each position by an overcenter coil torsion spring and the engagement of tabs of the lever with the detent and the frame. When the connecting lever is in connected position, the pin of the connecting link is engageable by a foot of the remote lever to move the release lever into engagement with the detent and release the detent upon movement of the remote lever in one direction by the remote handle. When the detent is moved by the bolt, the detent engages the positioning tab of the connecting lever to move the lever to disconnected position and move the pin of the connecting link out of the path of the remote lever foot. Movement of the remote lever by the remote handle in an opposite direction engages a foot of the remote lever with the positioning tab of the connecting lever to move the connecting lever to connected positions.

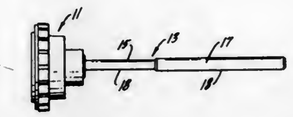
3,679,252

FRICTION FIT KNOB

Robert K. Howie, Jr., Decatur, Ill., assignor to The Grigoleit Company, Decatur, Ill.

Filed Dec. 7, 1970, Ser. No. 95,691
Int. Cl. E05b 3/00
U.S. Cl. 292—349 3 Claims

A molded knob of the type which fits over the end of a shaft and is held thereto by means of frictional engagement between the knob and the shaft. The knob has a hub with a shaft receiving socket formed therein. The socket is of irregular transverse cross-section and has a flat wall which engages a flat on the shaft. Fingers formed integrally with the hub extend into the socket. The fingers are located on the opposite side of the socket from the flat wall and are deflected in a direction away



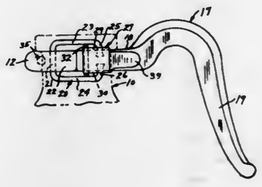
from the flat wall upon insertion of the shaft to frictionally secure the knob to the shaft. Stop means are formed in the socket to limit the depth of insertion of the shaft. The fingers extend into the socket beyond the stop means to provide flexibility throughout their contact with the shaft.

3,679,253

DETACHABLE BOTTLE HANDLE

James B. Simms, 8441 Birch Road, Taylor, Mich.

Filed Dec. 29, 1969, Ser. No. 888,229
Int. Cl. A47j 45/10
U.S. Cl. 294—31.2 2 Claims



A bottle handle for use on large milk bottles and the like, and which includes a circular housing comprising a semi-circular rear housing portion and a semi-circular front housing portion hingedly connected to said rear housing portion, whereby the circular housing may be opened for detachably mounting the handle on a bottle. A releasable locking means is provided for securing the semi-circular rear housing portion to the semi-circular front housing portion after these portions have been mounted on a bottle. A handle is attached to the semi-circular rear housing portion. One of the semi-circular housing portions is provided with a length of surgical rubber which extends inwardly into gripping engagement with a bottle when the bottle handle is mounted on a bottle around the open end thereof.

3,679,254

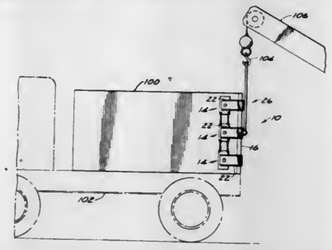
PANEL LIFT CLAMP ASSEMBLY

Robert B. Taylor, North Canton, Ohio, assignor to Metropolitan Industries, Inc., Canton, Ohio

Filed Feb. 12, 1971, Ser. No. 114,762
Int. Cl. B66c 1/10
U.S. Cl. 294—81 R 13 Claims

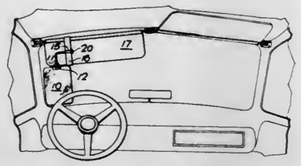
The specification and drawings disclose a clamp assembly particularly suited for handling large construction panels, prefabricated wall sections, and the like. The structure comprises an elongated frame having a pivoted lift member connected generally at the center of one side. Extending from the opposite side of the frame are a plurality of opposed pairs of clamp plates. The clamp plates in each pair are arranged for adjusting movement toward and away from one another. Ad-

ditionally, biasing means are provided to permit each plate to tilt to compensate for irregularities in a panel being clamped



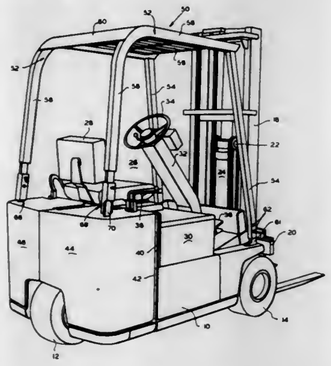
and lifted. Also, the biasing means function to return the clamp plates to their original position after they are disengaged from the panel.

3,679,255
MOUNTING MEANS FOR WINDSHIELD LIGHT FILTER
Ralph A. Nacarato, 528 Murray Hill Drive, Youngstown, Ohio
Filed Oct. 15, 1970, Ser. No. 80,923
Int. Cl. B60j *3/02*
U.S. Cl. 296—97 C **3 Claims**



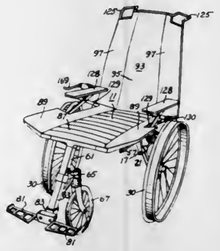
A mounting for a windshield light filter having a transparent tinted filter member attachable to a sun visor in an automobile whereby the filter member may be positioned between the driver of the automobile and a selected portion of the windshield thereof or alternately moved to a position where it is horizontally disposed beneath the top of the automobile.

3,679,256
OVERHEAD GUARD FOR LIFT TRUCK
James L. Orns, Battle Creek, Mich., assignor to Clark Equipment Company
Filed May 10, 1971, Ser. No. 141,889
Int. Cl. B62d *25/06*
U.S. Cl. 296—102 **7 Claims**



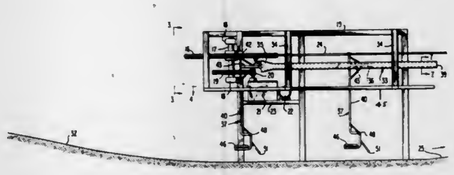
An overhead guard for the protection of operators of lift trucks of a type in which the rear truck portion is housed in hinged and transversely swingable doors or body housing portions to permit ready access to the rearwardly located truck operating components. The rear support legs of the overhead guard may be quickly connected to and detached from the swingable doors by an adjustable sleeve and short support legs which are secured to the doors.

3,679,257
FOLDABLE WHEEL CHAIR
Roy A. Jacuzzi, Orinda, and Kenneth A. Jacuzzi, Lafayette, both of Calif., assignors to Jacuzzi Research, Inc., Berkeley, Calif.
Filed May 15, 1970, Ser. No. 37,713
Int. Cl. A47c *4/20*
U.S. Cl. 297—42 **3 Claims**



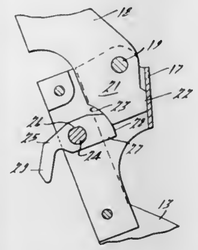
A favorable three wheeled wheelchair with solid seat and back, the back being hinged for folding down upon the seat, while the side wheel and front wheel assemblies are hingedly secured for folding in under the seat, the entire wheel chair in its folded condition being of light weight and capable of storage in the trunk of a car.

3,679,258
SEAT UNIT FOR SKI LIFT APPARATUS
David R. Pender, 1018 Marion St., Columbia, S.C.
Division of Ser. No. 769,559, Oct. 22, 1968, Pat. No. 3,621,789. This application April 22, 1970, Ser. No. 38,633
Int. Cl. B61d *33/00*
U.S. Cl. 297—195 **4 Claims**



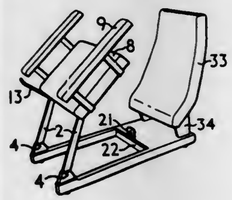
An apparatus for conveying skiers safely to the top of a ski slope characterized by saddle-type seats which are mounted and de-mounted by skiers from the rear while the seats are moving at a relatively fast rate in comparison to conventional equipment, thereby greatly increasing the overall speed and capacity of the lift without decreasing safety. Existing conventional equipment is readily convertible.

3,679,259
SEAT BACK LATCH
Chris P. Simonelli, Birmingham, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed Nov. 25, 1970, Ser. No. 92,740
Int. Cl. B60n *1/06*
U.S. Cl. 297—379 **2 Claims**



A seat assembly comprising a seat and a seat back pivotally supported thereon and having a latch mechanism for locking the seat back in upstanding position relative to the seat. The latch mechanism includes a portion of a seat back support arm having a cam surface engageable by a complementary cam surface on a cam lock member. The cam lock member, when its cam surface is in abutting relationship to the support arm cam surface, becomes a compression member effective to resist any force tending to tilt the seat back forwardly over the seat.

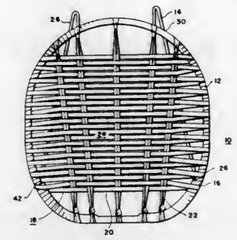
3,679,260
INVALID CHAIRS
Austin G. Morse-Brown, Wolverhampton, England, assignor to The Bath Institute of Medical Engineering, Bath, England
Filed May 21, 1970, Ser. No. 39,366
Int. Cl. A47c *15/00*
U.S. Cl. 297—338 **5 Claims**



An invalid chair to facilitate entry and exit from the chair by an invalid comprises a chair base, a seat portion, guide means connecting said seat portion to said chair base, said guide means guiding said seat portion from a lowered position to a raised position with a combined upward, forward and forwardly tilting movement, and resilient means adapted to urge the seat portion towards said raised positions and a latch mechanism to enable the seat portion to be held in the lowered position.

3,679,261
AUTOMOBILE SEAT BACK
Christo G. Slabakov, 5803 Doral Apts., Bldg. #58, Cornwells Heights, Pa.
Filed April 3, 1970, Ser. No. 25,311
Int. Cl. A47c *7/02*
U.S. Cl. 297—231 **1 Claim**

A device is disclosed for fitting over the back of an automobile seat. The device when used provides increased lateral stability to the driver or passenger of an automobile and in addition supports the person against the webbing, away from the fabric of the seat itself, thereby providing a certain cooling effect. The device includes an elliptical frame having a hanger



member attached to the rear thereof for hooking over the back of a seat. Resilient strips connected to either side and the top and bottom of the elliptical frame are woven together to form a webbing against which a users back rests.

3,679,262
LEG REST FOR VEHICLE DRIVER'S SEAT
Eugene Slavitt, 11987 Audubon Ave., Philadelphia, Pa.
Filed Nov. 19, 1970, Ser. No. 91,059
Int. Cl. A47c *7/50*
U.S. Cl. 297—427 **2 Claims**

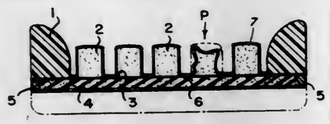


An auxiliary leg rest attachable to the seat of a vehicle next to the right leg of the driver to support the leg and prevent fatigue and muscle strain. The rest is made of formed plastic with a base seatable on the vehicle seat and having a downturned front which anchors the base against rearward shift by abutting the nose of the vehicle seat and a side wall extending angularly upward from the base and against which the thigh of the driver rests. A resilient cushion is secured to the underside of the base and frictionally engages the vehicle seat to prevent side shifting of the leg rest due to thigh pressure. An adjustable anchoring strap secures the leg rest to the seat in desired position by means of hooks which anchor the opposite ends of the strap to the vehicle seat frame.

3,679,263
SEAT COMPRISING INDEPENDENTLY MOUNTED BLOCKS OF DEFORMABLE ELASTIC PADDING
Jean Georges Cadiou, St. Cloud, France, assignor to Societe Anonyme Automobiles Citroen, Paris, France
Filed June 29, 1970, Ser. No. 50,717
Claims priority, application France, June 27, 1969, 6921734
Int. Cl. A47c *7/02*
U.S. Cl. 297—456 **2 Claims**

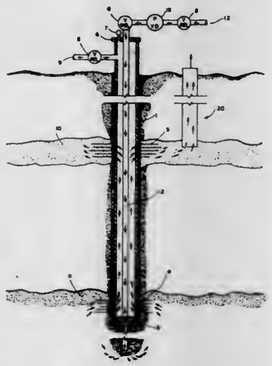
Seat comprising deformable elastic padding which consists

of blocks of elastic material which are juxtaposed to each other but are connected to each other only to the extent that



their bases are connected to a common flexible mounting sheet.

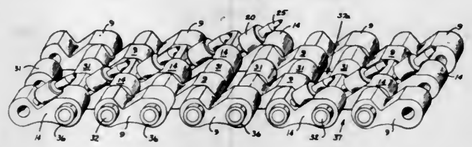
3,679,264
GEOTHERMAL IN SITU MINING AND RETORTING SYSTEM
Allen T. Van Huisen, 1516 Granvia Altamira, Palos Verdes Estates, Calif.
Filed Oct. 22, 1969, Ser. No. 868,395
Int. Cl. E21b *43/24, 43/28*
U.S. Cl. 299—4 **5 Claims**



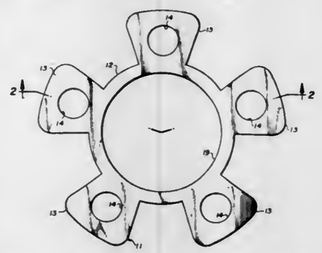
The following disclosure relates to a system for the recovery of minerals, metals, and chemicals in situ by the utilization of geothermal heat energy which is transferred from one stratum or zone within the interior depths of the earth into another stratum or zone in the earth's interior, which contains minerals, oil, metals, or chemicals whose recovery is enhanced by coming in contact with the invading heat energy, and is accomplished by a closed system which permits the escape of high pressure geothermally heated gas or fluid from the one subsurface zone within the earth into the other subsurface zone within the earth. Alternatively a fluid may be injected into the geothermal zone, heated therein, transferred into the other zone, and the fluidized body of material from the other zone recovered through a second well.

3,679,265
CHAIN FOR MINING MACHINES AND THE LIKE
Claude B. Krekeler, Cincinnati, Ohio, assignor to The Cincinnati Mine Machinery Company, Cincinnati, Ohio
Filed Oct. 30, 1970, Ser. No. 85,601
Int. Cl. E21c *25/34*
U.S. Cl. 299—84 **19 Claims**

An endless chain for a mining machine or the like which can be made up to any desired length and width. In one embodiment, the chain can be made to carry cutting tools in any suitable pattern or arrangement and will comprise a plurality of standard link elements and a plurality of standard chain block elements. In another embodiment, the chain can serve as an endless tread for a self-propelled mining machine, in which instance it may be comprised of a plurality of identical, standardized link elements or it may be comprised of a plurality of standard link elements and a plurality of one or more types of modified link elements. In both embodiments, the link elements, or the link and chain block elements, will be joined together by connecting pins of appropriate lengths.

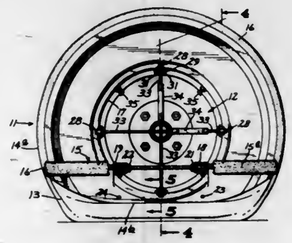


3,679,266
LUG TEMPLATE
Robert C. Jenkins, 133 Antonia Drive, Jackson, N.J.
Substitute for Ser. No. 725,697, May 1, 1968. This application Dec. 17, 1970, Ser. No. 99,222
Int. Cl. B60b *3/16*
U.S. Cl. 301—9 DN **5 Claims**



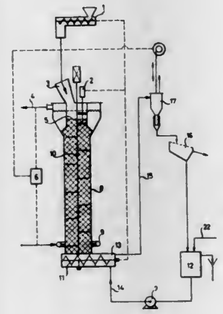
A lug template in which a plurality of lugs are rotatably mounted to a flexible template wherein each lug may be individually and substantially deflected out of the normal plane of the template without substantially deflecting the remaining lugs and further in which the template may be limitedly deformed in its normal plane to slightly increase the effective distance between given lugs.

3,679,267
SPARE WHEEL FOR AUTOMOBILE
Octave B. Zachmann, 7531 Angeline Drive, New Hope, Minn.
Filed Aug. 14, 1970, Ser. No. 63,771
Int. Cl. B60b *11/00*
U.S. Cl. 301—38 R **9 Claims**



A spare wheel for automobiles which removably attaches to the wheel of a flat tire and permits movement of the vehicle without fixing or removing the tire. The spare wheel comprises a pair of rigid wheel segments of unequal size which are pivotally connected and together form a wheel having a diameter at least as great as the tire. The smaller segment pivots outwardly to permit attachment of the unit to the wheel of the flat tire, after which the vehicle is advanced until the segments can be returned to the wheel forming position. The edge of the first segment which is common with the second segment is arcuately shaped to permit it to roll in either direction notwithstanding composition of the road surface.

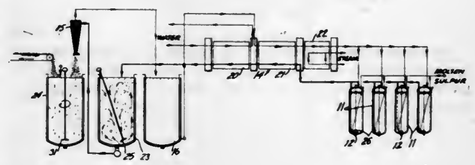
3,679,268
PROCESS FOR DISCHARGING SOLIDS TREATED WITH LIQUIDS FROM VERTICAL COLUMNS
Ludwig Jurgen-Lohmann, Frankfurt am Main, and Rolf Holtermann, Augsburg, both of Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt/Main, Germany
Filed Feb. 3, 1970, Ser. No. 8,179
Claims priority, application Germany, Feb. 8, 1969, P 19 06 400.7
Int. Cl. B65g *53/04*
U.S. Cl. 302—14 **7 Claims**



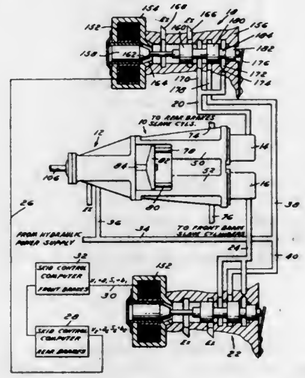
In the process for discharging solids treated with liquids from vertical columns, the treated solids are transported by means of a conveyor to a circulating auxiliary liquid with variable hydrostatic pressure and from there to the subsequent stage of treatment. By varying the hydrostatic pressure of the cycle of auxiliary liquid, the pressure conditions in the system can be adjusted in a manner to permit discharging from the column pure solid or solid with a defined amount of adhering liquid, or introducing defined amounts of liquid from the auxiliary cycle into the column in countercurrent flow with respect to the direction of flow of the solid.

3,679,269
TRANSPORT OF SULPHUR
Herbert James Elliott, Bradford-on-Avon, England, assignor to Elliott Associated Developments Limited, London, England
Division of Ser. No. 659,386, Aug. 9, 1967, Pat. No. 3,476,441. This application March 21, 1969, Ser. No. 832,519The portion of the term of this patent subsequent to Nov. 4, 1986, has been disclaimed.
Int. Cl. B65g *53/30*
U.S. Cl. 302—14 **5 Claims**

This invention relates to the preparation of sulphur for transport through a pipeline in a carrier liquid in which molten sulphur is introduced into a light oil fraction. There are means for cooling the sulphur-loaded oil and precipitating the sulphur from the oil. A blending vessel is provided which mixes the precipitated sulphur with the carrier liquid and the sulphur-loaded oil from the mixing vessel is passed to a countercurrent heat exchange with the separated oil returning to the vessel.



3,679,270
SKID CONTROL APPARATUS FOR VEHICLE BRAKE SYSTEM
Zbigniew J. Jania, Northville, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed June 15, 1970, Ser. No. 46,076
Int. Cl. B60t *8/02*
U.S. Cl. 303—21 F **8 Claims**



A brake system having a master cylinder and a slave cylinder connected to the master cylinder for actuating a wheel braking device is equipped with skid control apparatus. Means are provided for applying a first axial force to one side of the piston in the master cylinder. A skid control actuating means is connected to the master cylinder to provide a second axial force to the piston in opposition to the first axial force. The second axial force exerted by the skid control actuator means on the master cylinder piston is dependent upon the fluid output pressure from a skid control valve means, the output from the skid control valve means being the input to the skid control actuator means. The pressure level of the output from the skid control valve means is dependent upon the magnitude of an input signal supplied to the valve means. Power assist means are described which reduce the effort required to be expended by the vehicle operator to actuate the braking system.

3,679,271
SUPPORT FOR A FLUIDIZED BED

Raymond C. Clark, and Donn G. Ziebell, both of Orange, Conn., assignors to Brunswick Corporation, Chicago, Ill.

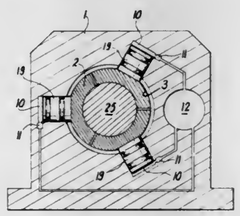
Filed Nov. 19, 1969, Ser. No. 878,103
Int. Cl. B65g 53/34
U.S. Cl. 302—45 1 Claim

This invention relates to a support for a fluidized bed. The support consists of a perforated metal base, a wire screen adjacent the base and a mat of bonded metal fiber adjacent the screen.

3,679,272
AUTOMATIC ALIGNMENT BEARINGS FOR GUIDING IN TRANSLATIONAL OR ROTATIONAL MOTION

Charles Costa, Gradignan; Andre Loupere, Arcachon; Philippe Monsel, Pessac, and Bertrand Schmitt, Bordeaux, all of France, assignors to Commissariat a L'Energie Atomique, Paris, France

Filed Feb. 2, 1971, Ser. No. 111,872
Claims priority, application France, Feb. 2, 1970, 7003473
Int. Cl. F16c 17/16
U.S. Cl. 308—9 5 Claims

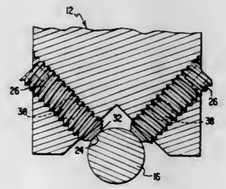


A bearing which ensures automatic alignment of a part to be guided and comprises a stationary supporting frame, a core which is placed within the frame and provided with elements for securing the part, pistons fitted within cylinders which are formed in the frame and each open on the core. Each piston is applied against an oil chamber of small width by means of the piston face which is remote from the core. Each chamber is connected through a high pressure drop inlet to a reservoir which contains oil under pressure and is fitted with a compensation system for maintaining the pressure at a practically constant value.

3,679,273
ADJUSTABLE VEE BEARING

John A. Cupler, II, 10 Cupler Drive-LaNale, Cumberland, Md.

Filed May 5, 1970, Ser. No. 34,787
Int. Cl. F16c 23/02, 29/10
U.S. Cl. 308—36 10 Claims

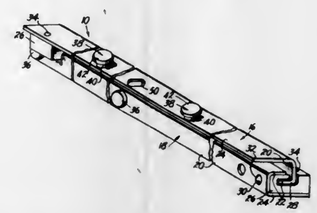


An adjustable Vee bearing wherein a bearing defined axis may be adjusted within the bearing itself.

3,679,274
BROILER DRAWER AND SLIDE

Joseph W. Nance, Cleveland, Tenn., assignor to Magic Chef, Inc., Cleveland, Tenn.

Filed Sept. 25, 1970, Ser. No. 75,581
Int. Cl. F16c 21/00
U.S. Cl. 308—3.6 5 Claims

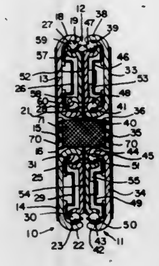


A broiler drawer for a cooking range is carried by drawer guides each of which is made of a pair of similar metal channels each having a nylon guide block embracing and slidably guiding portions of the other and preventing metal-to-metal contact between the channels. The broiler drawer is releasably mounted on the movable channel by keyhole slots in its bottom wall engaging headed projections on the movable channel, and selectively releasable means within the broiler drawer normally hold the drawer against release from its guides.

3,679,275
BALL BEARING SLIDE WITH SYNCHRONIZING MECHANISM

Herbert S. Fall, 6248 E. Iona Road, Indianapolis, Ind.; William D. York, 50 West Edwards Ave., Indianapolis, Ind., and Larry D. Huff, 1130 North Chester Ave., Indianapolis, Ind., assignors to said Fall, by said York and said Huff

Filed June 11, 1971, Ser. No. 152,258
Int. Cl. F16c 29/00
U.S. Cl. 308—3.8 13 Claims

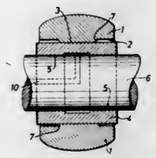


A drawer slide structure in which two mating slide rails oppositely enclose an intermediate member which carries a roller peripherally extending into longitudinal runways formed in the rails, the runway floors presenting surfaces of one material for pressure engagement by the peripheral surface of another material presented by the roller, the two materials being of such character as to establish a driving connection inhibiting slippage therebetween. In the optimum form, the two materials are of the type known as "VELCRO" brand hook and loop tape, and preferably the hook type tape is on the roller while the loop type tape is on the runway floors, though that relationship may be reversed. Alternatively, one of the materials may be relatively soft and elastically deformable by the other material which is relatively hard and crenelated or otherwise roughened.

3,679,276
SELF-ALIGNING MOUNTING DEVICE, PARTICULARLY FOR HYDRAULIC OR PNEUMATIC CYLINDERS

Stig Gote Stenlund, Boras, Sweden, assignor to Monsun-Tison AB, Boras, Sweden

Filed March 4, 1971, Ser. No. 120,840
Claims priority, application Sweden, March 5, 1970, 2968/70
Int. Cl. F16c 27/00
U.S. Cl. 308—26 3 Claims

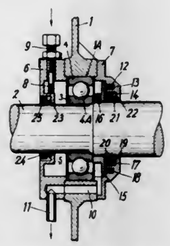


A self-aligning mounting device, particularly for the attachment of hydraulic or pneumatic cylinders or piston rods, comprising a mounting lug, a bushing fitted in the lug and a shaft journalled in said bushing. The circumference of at least a central portion of the bushing consists of a material having a high surface hardness and is bearing under a certain play against a surrounding ring-shaped rib consisting of non-elastic material and projecting from the inner surface of the mounting lug, the edges of said rib being deformable by plastic deformation under the influence of a load acting upon the mounting device when mounted with the shaft in a tilted position.

3,679,277
SEALED BEARINGS LUBRICATED BY A LUBRICATING MEDIUM

Heinz Dohmen, Dominikus-Vraetz-Str. 23, 4070 Rheydt, Germany

Filed Jan. 20, 1971, Ser. No. 107,946
Claims priority, application Germany, Jan. 30, 1970, P 20 04 167.2
Int. Cl. F16c 1/24
U.S. Cl. 308—187.1 5 Claims

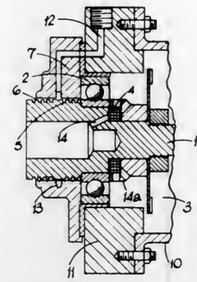


A dynamoelectric machine, such as a motor, has its rotor shaft journaled in antifriction bearings which are seated in an opening of the machine housing and are sealed from the interior and exterior of the machine by elastically deformable glide-ring structures, the bearing space communicating with the outside through lubricant injection and drainage duct means. A cover is rigidly mounted on the machine housing on the inner side thereof and coaxially surrounds the shaft. The cover and the shaft form together an annular air gap labyrinth having fixed parts mounted on the cover and rotatable parts fastened to the rotor shaft, the respective parts of the labyrinth seal straddling each other so that the effective length of the air gap is correspondingly extended. A glide-ring seal coaxially surrounds the shaft and is seated on the shaft to seal the extended air gap.

3,679,278
OIL SEAL ARRANGEMENTS FOR ROTARY SHAFTS

Sydney Lucas, deceased, late of 287 Preston Road, Harrow, Middlesex, England (by Hilde Katie Lucas, administratrix)

Filed Sept. 2, 1970, Ser. No. 68,946
Claims priority, application Great Britain, Sept. 2, 1969, 43,383/69
Int. Cl. F16c 33/76
U.S. Cl. 308—187.1 6 Claims

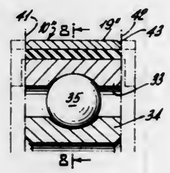


An oil seal arrangement for a rotary shaft which is supported by a bearing within an end closure of a casing, the casing having a shroud which extends around an extended portion of the shaft, and there is provided a passage in the shroud and through which air can be forced through the bearing into the casing and the shaft is provided with a passage through which air can escape from the casing. In order to prevent escape of oil from the casing a baffle is provided and through which the air leaving the casing passes, the baffle acting to coalesce any oil entrained with the air. The baffle is subjected to centrifugal force so that the coalesced oil will be returned to the interior of the casing.

3,679,279
SELF-LOCKING RING CONSTRUCTION

Horace B. Van Dorn, Kinsington, and Ralph S. Howe, Jr., New Britain, both of Conn., assignors to Textron, Inc., Providence, R.I.

Division of Ser. No. 741,456, July 1, 1968, Pat. No. 3,521,342.
This application March 26, 1970, Ser. No. 30,611
Int. Cl. F16c 35/06
U.S. Cl. 308—236 6 Claims



This invention contemplates a resilient self-locking structure involving the use of a plurality of resiliently loaded clamp feet angularly distributed in concentric relationship with respect to a ring member, such as the inner or outer race ring of an antifriction bearing. The clamp feet are embedded in an elastomeric material, isolated from one another, and capable of providing biting contact either upon a shaft or within a bore to which the structure is mounted.

The method of this invention includes forming a cylindrical annular structure with a plurality of angularly distributed axially extending slots. This slotted structure is held in radially spaced relation with the ring to be mounted, while elastomeric

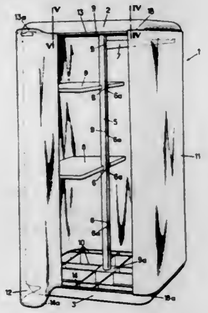
material is caused to fill the slots and the annular space between the ring and the cylinder, being cured to bonded relation with the rigid parts. The interconnected segments are separated from one another by removal of material from an axial end of the cylinder. The final external or internal clamping diameter is thus essentially determined by the cylinder diameter.

3,679,280

CLOSET FOR STORAGE OF CLOTHING AND THE LIKE

Claude Friederich, and Etienne Cramazou, both of Mulhouse, France, assignors to Societe anonyme Dite: Plastra, Strasbourg-Neudorf, France

Filed June 26, 1970, Ser. No. 50,033
Claims priority, application France, June 26, 1969, 6921571; Feb. 26, 1970, 7007004
Int. Cl. E04h *1/12*
U.S. Cl. 312—6 **24 Claims**



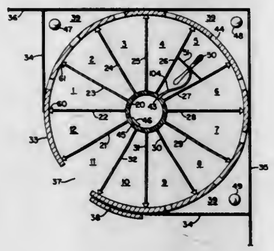
A collapsible closet comprises a bottom element and a top element, both rigid and similar in shape and size and joined together by a central post and by a flexible peripheral wall stretched over a major portion of the periphery of the closet between grip devices on the top and bottom elements. The peripheral wall has a flexible unconnected free end able to close a front opening of the closet or be fastened to the top and bottom elements at the edge of the opening so as to preserve the same.

3,679,281

VENTED CLOTHES CABINET

Kurt Lehovec, 11 Woodlawn Drive, Williamstown, Mass.

Filed Jan. 27, 1969, Ser. No. 794,111
Int. Cl. A44f *25/00*
U.S. Cl. 312—31 **5 Claims**



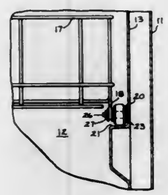
A cabinet for garments providing provisions for venting of the garments by air ducts guiding the ventilation to a position within a garment. A rigid support for a garment with a suction duct extending to a position within the garment.

3,679,282

METHOD AND STRUCTURE FOR CUSHIONING THE OPERATION OF A MOVABLE RACK IN A DISHWASHER

Melvin R. Kauffman, Louisville, Ky., assignor to General Electric Company

Filed Sept. 3, 1970, Ser. No. 69,274
Int. Cl. A47b *88/14*
U.S. Cl. 312—311 **9 Claims**



A slidable dish-supporting rack in a front-opening dishwashing machine wash chamber is provided with a unique wheel structure including a resilient tire on oppositely mounted rack wheels whereby wear on the track surface beneath the wheels is reduced and quieter, smoother movement of the rack is achieved.

ERRATUM

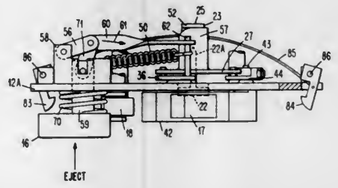
For Class 312—312 see:
Patent No. 3,679,065

3,679,283

CARTRIDGE LOCK ACTUATOR

Donovan M. Janssen, and Clarence G. Meyer, both of Boulder, Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed March 10, 1971, Ser. No. 122,868
Int. Cl. A47b *88/00, 95/00*; G11b *3/00*
U.S. Cl. 312—319 **4 Claims**



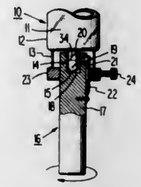
In a tape cassette or cartridge player, cassette locking is activated by cassette insertion. Unlocking is activated by a release button. The cassette is held in a cassette receiving well by two pivoted holddowns on opposite ends of the well. Clamping force is provided by placing a moment about the pivot point of the two holddowns. This moment is created by typing the two holddowns together with a flexible media and placing the media in tension. A spring-urged pivoted link supplies the tension and cooperates with cassette insertion and ejection mechanism for respectively pivoting the holddowns into cassette retention and release positions.

3,679,284

METHOD FOR FILLING AN EVACUATED ELECTRON TUBE WITH GAS TO ATMOSPHERIC PRESSURE

Earle Solomon Thall, Waverly, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Aug. 21, 1970, Ser. No. 65,787
Int. Cl. H01j *9/50*
U.S. Cl. 316—2 **3 Claims**



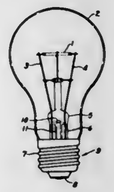
Method includes scribing a circumferential cut on the glass exhaust tubulation of an electron tube, positioning the tubulation inside a close-fitting, closed chamber, cracking the tubulation on the cut, and slowly filling the chamber and tube with gas at a low rate of inflow to atmospheric pressure. Apparatus includes a close-fitting, closed chamber having a flexible portion that seals over the tubulation, a solid portion that closely fits over the tubulation, and a means to fill the tube and chamber with gas at a low rate of inflow to atmospheric pressure.

3,679,285

GETTERING PROCESSES FOR ELECTRIC LAMPS AND SIMILAR DEVICES

Edward G. Zubler, Chagrin Falls, Ohio, assignor to General Electric Company

Division of Ser. No. 826,888, May 22, 1969, Pat. No. 3,580,856. This application Dec. 28, 1970, Ser. No. 101,589
Int. Cl. H01j *7/18, 17/26*
U.S. Cl. 316—25 **6 Claims**



In the process of gettering, the rate and extent (to about 100 percent) of thermal decomposition of P_3N_5 getter are increased by providing a catalyzer metal in contact with the solid P_3N_5 or its primary gaseous decomposition products.

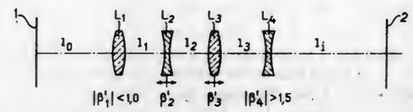
3,679,286

ZOOM LENS OBJECTIVE FOR STEREOSCOPIC VISION MICROSCOPES

Walter Klein, Auf Hohl 36, 6301 Wissmar, Germany

Continuation-in-part of Ser. Nos. 377,913, June 25, 1964, abandoned, and Ser. No. 769,442, Oct. 21, 1968, abandoned. This application Jan. 19, 1970, Ser. No. 3,849
Claims priority, application Germany, July 6, 1963, L 45 284
Int. Cl. G02b *15/16, 21/22*
U.S. Cl. 350—184 **3 Claims**

The invention is a low-power zoom lens system for a stereoscopic vision microscope characterized by an objective having four lens members, the first and the fourth lens members being fixedly mounted, and the second and third lens members being mounted between the first and fourth lens members for movement relative to each other. The pupil is positioned within the objective. The absolute magnifying power of the first lens



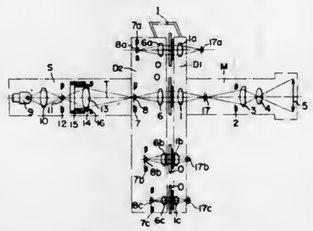
member is less than 1.0 and that of the fourth lens member is greater than 1.5. Preferably, the ratio of the absolute focal length of the third to the second lens member is greater than 1.3.

3,679,287

ILLUMINATION SYSTEM FOR LIGHT MICROSCOPES

Kinji Takahashi, and Megumu Shio, both of Yokohama, Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Filed Dec. 4, 1970, Ser. No. 95,069
Claims priority, application Japan, Dec. 16, 1969, 44/118912
Int. Cl. G02b *21/08*
U.S. Cl. 350—87 **3 Claims**



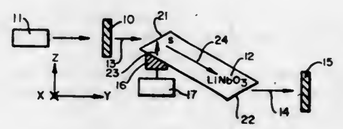
In a microscope utilizing Kohler's illumination method, each ratio of a focal length of an objective to that of a paired condenser lens of a plurality of such objective-and-condenser-lens pairs is made constant regardless of the magnifying powers of these pairs. Uniformly illuminated field of view is always obtained without adjusting the field stop and aperture stop even when the objective is changed.

3,679,288

TUNABLE ACOUSTO-OPTIC METHOD AND APPARATUS

Stephen E. Harris, Palo Alto, Calif., assignor to Chromatix, Inc.

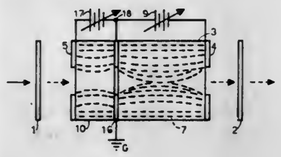
Continuation of Ser. No. 820,873, May 1, 1969, abandoned. This application Nov. 13, 1970, Ser. No. 89,379
Int. Cl. G02f *1/24*
U.S. Cl. 350—149 **54 Claims**



Polarized light waves propagate collinearly with acoustical waves in an optically anisotropic media. For nearly matched momentum vectors of the ordinary optical wave, extraordinary optical wave, and acoustic wave, diffraction of light into the orthogonal polarization occurs in a bandwidth determined by

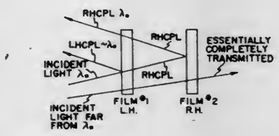
the birefringence and length of the media. The diffracted light may be selected by an output analyzer to form a band-pass filter. The operating point of the filter is varied by varying the frequency of the applied acoustical waves. A theory of operation is set forth together with example embodiments.

3,679,289
CRYSTAL LIGHT MODULATOR PROVIDING BOTH APERTURE AND INTENSITY CONTROL
Robert L. Goldstein, 7 Reading Terrace, Fair Lawn, N.J.
Filed Aug. 24, 1970, Ser. No. 66,527
Int. Cl. G02f *1/26, 1/28*; F02f *1/36*
U.S. Cl. 350—150 **5 Claims**



A Pockels Cell provided with annular electrodes provides intensity control of a light beam or an aperture control depending on the geometry. Two cells may be combined to provide control of both beam size and intensity.

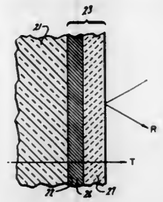
3,679,290
LIQUID CRYSTAL OPTICAL FILTER SYSTEM
James E. Adams, Ontario; Lewis B. Leder, Rochester, and Werner E. L. Haas, Webster, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.
Filed Jan. 6, 1971, Ser. No. 104,369
Int. Cl. G02f *1/16*
U.S. Cl. 350—157 **20 Claims**



An optical filter system capable of transmitting light at substantially all wavelengths of incident radiation while simultaneously reflecting radiation at a single wavelength band or plurality of wavelength bands within the incident radiation is described. The system employs liquid crystal films having optically negative properties but which are opposite in intrinsic screw sense.

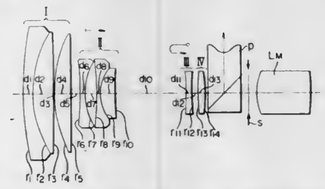
3,679,291
FILTER WITH NEUTRAL TRANSMITTING MULTILAYER COATING HAVING ASYMMETRIC REFLECTANCE
Joseph H. Apfel, Santa Rosa, and Robert M. Gelber, Rohnert Park, both of Calif., assignors to Optical Coating Laboratory, Inc., Santa Rosa, Calif.
Filed April 21, 1970, Ser. No. 30,495
Int. Cl. G02b *1/10*
U.S. Cl. 350—164 **18 Claims**

Filter with neutral transmitting multilayer coating having asymmetric reflectance with strong color on one side. Certain embodiments have low reflectance on the other side over a broad spectral region which covers at least a visible portion of the electromagnetic spectrum. Certain of the filters have a single metal layer with at least one dielectric layer, whereas



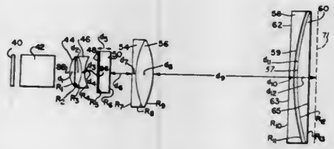
others of the filters have a pair of metal or absorbing layers, each of which is paired with one or more dielectric layers.

3,679,292
CONTINUOUSLY-VARIABLE-MAGNIFICATION AFOCAL LENS SYSTEM
Kawazu Motoaki, Kawasaki, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan
Filed May 17, 1971, Ser. No. 144,158
Claims priority, application Japan, May 21, 1970, 45/42839
Int. Cl. G02b *15/16*
U.S. Cl. 350—184 **2 Claims**



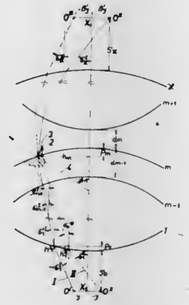
A zoom lens for cameras is provided which comprises four groups. The third group consists of a biconcave lens both surfaces of which have the same radius of curvature, and the fourth group consists of a biconvex lens both surfaces of which have the same radius of curvature. In combination of these third and fourth groups with the first and second groups, the spherical aberration as well as astigmatism of the lens system may be limited within a very small range and a flat image is obtained.

3,679,293
SCHMIDT OPTICAL SYSTEM SUITABLE FOR A PANORAMIC SCANNING CAMERA INCLUDING MEANS TO COMPENSATE FOR VARIATIONS IN OFF-AXIS MAGNIFICATION
James G. Baker, Winchester, Mass., assignor to Polaroid Corporation, Cambridge, Mass.
Division of Ser. No. 680,621, Nov. 6, 1967, Pat. No. 3,548,729.
This application Dec. 15, 1969, Ser. No. 889,787
Int. Cl. G02b *15/00, 3/04, 17/00*
U.S. Cl. 350—184 **10 Claims**



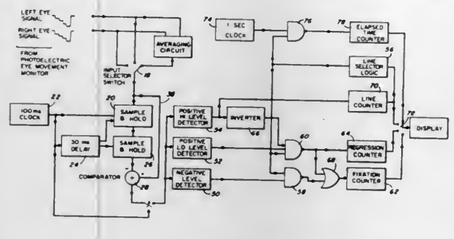
The subject invention provides an optical system that is particularly well suited for use in a panoramic scanning camera. It has a primary image-forming system followed by a Schmidt system having positive and negative components. A pair of correcting prisms can be placed between the primary and Schmidt systems. An aspheric surface on one of the prisms is imaged by refraction into the vicinity of the Schmidt components. Components to correct variations in off-axis magnification are also included.

3,679,294
FRESNEL OPTICAL SYSTEMS HAVING ECHELONS ON AT LEAST ONE OF ITS FACES
Christian Hofmann, Jena, and Jorg Neumann, Hermsdorf, both of Germany, assignors to Jenoptik Jena G.m.b.H., Jena, Germany
Filed Nov. 18, 1970, Ser. No. 32,494
Int. Cl. G02b *3/08*
U.S. Cl. 350—211 **9 Claims**



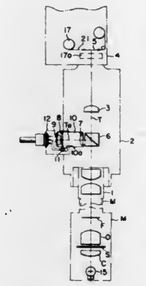
An optical system comprising at least one optically active face has Fresnel echelons on one of these optically active faces. The echelons and the face carrying them are corrected in such a manner as to produce an aberrationless image of a circle substantially concentric with the optical axis of the system. The state of correction of the system is mathematically defined. The system may consist of one or a plurality of lenses or it may be a reflector.

3,679,295
AUTOMATIC ELECTRONIC READING PATTERN ANALYZER
Joel S. Newman, Framingham, and Marvin E. Jernigan, Boston, both of Mass., assignors to Biometrics, Inc., Cambridge, Mass.
Filed April 29, 1971, Ser. No. 138,595
Int. Cl. A61b *3/10*
U.S. Cl. 351—6 **13 Claims**



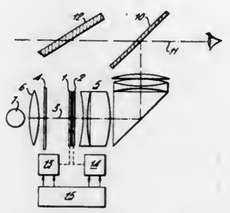
A subject's eye movement, while reading, is monitored by a photoelectric sensing device. The input from the photoelectric sensor comprises a signal, the amplitude of which is a direct function of the position of the subject's eye. The differences in successively sampled signals are compared to provide an indication of the character of each eye movement, such as normal advancements, fixations, regressions and return sweeps, which are the primary characteristic eye motions during reading. The invention employs means for analyzing automatically and electronically, the outputs from the photosensors and means for directly and immediately presenting the analyzed data in readable alpha-numeric form.

3,679,296
AUTOMATIC EXPOSURE DEVICE FOR MICROSCOPIC MOTION PICTURE PHOTOGRAPHY
Hiroshi Tanaka, and Toshiyuki Arai, both of Yokohama, Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan
Filed Feb. 22, 1971, Ser. No. 117,438
Claims priority, application Japan, Feb. 25, 1970, 45/17888
Int. Cl. G03b *41/00*
U.S. Cl. 352—84 **1 Claim**



An automatic exposure device for taking microscopic motion pictures in which preliminary light of a suitable intensity is thrown upon a photoconductive element and during photographing operation such preliminary illumination is eliminated while the photoconductive element is illuminated solely by light to be measured, whereby the photo-response speed of the photoconductive element may be increased to ensure more accurate exposure measurement to be effected.

3,679,297
DISPLAY SYSTEMS
Simon M. St. L. Searle, Cranham, and Christopher H. C. Walker, Isle of Wight, both of England, assignors to Smiths Industries Limited, London, England
Filed Feb. 26, 1970, Ser. No. 14,439
Claims priority, application Great Britain, Feb. 28, 1969, 10,815/69
Int. Cl. G03b *21/00*; G09f *9/00*; G02b *5/22*
U.S. Cl. 353—14 **10 Claims**



An aircraft head-up display is projected from symbol-markings borne by two complementary color filters superim-

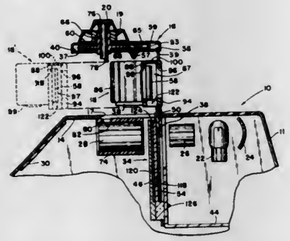
posed in the light-path from an electric lamp. An horizon-line marking of the first filter has the color of the second filter bearing a flight-vector marking, and vice versa, but either marking may be transparent. The filters are separately driven to follow aircraft movements with the symbol-images simulating the true horizon and flight-vector. A third filter with glide-slope marking may be carried adjustably with the first filter to allow modification of indicated glide-slope below the horizon.

3,679,298

CASSETTE-TYPE MICROFILM READER

Frederick G. Knowles, and Clarence R. Taylor, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 3, 1970, Ser. No. 8,266
Int. Cl. G03b *23/12, 1/48*
U.S. Cl. 353—26 **13 Claims**



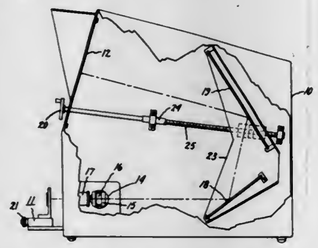
Apparatus for projecting images from an information bearing medium such as filmstrip extending between supply and takeup members in a cassette. The apparatus includes a carriage assembly for receiving the cassette in a first position and for moving the cassette to a second position in which the filmstrip is aligned for projection and in which a two-way drive mechanism is engaged to the cassette supply and take-up members. Also, during movement to the second position, a focusing control mounted on the carriage assembly is coupled with a projection lens focusing device in the reader projection system. The projection apparatus further includes a relatively stationary film gate for supporting the filmstrip in a predetermined projection plane, and the cassette containing the filmstrip is adapted to envelop the film gate as the cassette is inserted into the projection apparatus by the carriage assembly.

3,679,299

METHOD AND APPARATUS FOR OPTICAL PROJECTION OF DEFORMATION IMAGES

James F. Burgess; Robert F. Kopczewski, and John M. Holeman, all of Schenectady, N.Y., assignors to General Electric Company

Filed Dec. 20, 1968, Ser. No. 785,582
Int. Cl. G03b *21/06*
U.S. Cl. 353—67 **5 Claims**



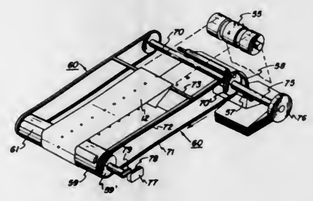
The optical projection of information stored in a relief image such as a pattern of surface deformation of a light reflecting medium is accomplished by a projector which images on a screen the foci of either of the two sets of mirrors produced by the curved surfaces of the deformations. The hollows or concave mirrors provided by the bottoms of the deformations have their foci in front of the recording and when imaged on a screen by the projection optics provide a bright line image on a light background. The convex mirrors at the edges of the deformations have their foci (virtual) located to the rear of the recording and when imaged on the screen by the projection optics provide a dark outline of the deformations on a light background. In the embodiment illustrated, the projector is a reader and is provided with a back projection screen at the same end of the reader as the recording to be projected and the projection path includes suitable mirrors for reversing the direction of the projected light.

3,679,300

LABEL PRINTING APPARATUS

Herbert C. Artelt, Jr., Wildwood, Ill., assignor to Xerox Corporation, Stamford, Conn.

Filed June 22, 1970, Ser. No. 49,209
Int. Cl. G03g *15/00*; G03b *1/56*
U.S. Cl. 355—3 **9 Claims**



Apparatus for electrostatically printing label information from cards on a web material. The apparatus includes card feeding means, means for electrostatically printing images from the cards on the web material, means to advance the web material in timed relation with the card feeding and the printing means; and means to thereafter fix the images. To enable the web material to be threaded into the apparatus from without, a web threading mechanism designed to follow the path followed by the web material to the image producing means and from there through the fixing means is provided, the threading means including a part to which the leading section of the web material may be attached. A remote operator for the threading means together with signaling means to indicate proper positioning of the web guide member following threading is included.

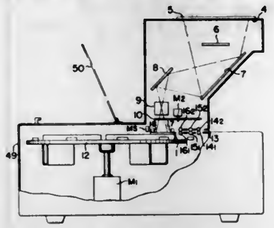
3,679,301

MULTICOLOR ELECTROPHOTOGRAPHIC DEVICE

Shozo Inoue, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 28, 1970, Ser. No. 41,365
Claims priority, application Japan, May 31, 1969, 44/51117
Int. Cl. G03g *15/00*
U.S. Cl. 355—4 **5 Claims**

An electrophotographic multicolor image reproducing device comprises a rotating type color separation means having a plural number of color separation filter, a means projecting a light image to the color separation filter, a means for fixing a photosensitive member to which a separated color image from the color separation filter is projected, a rotary disc having a plural set of a charging means and a developing means, and a means for synchronizing the change of the color separation filter with the change of the set on the rotary disc and rotating discontinuously the rotary disc and the rotating type color separation means.

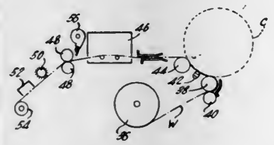


3,679,302

METHOD AND MEANS FOR REPRODUCING PRINTED MATERIAL

Frederic G. Ludwig, Woodbridge, Conn., assignor to Albert C. Nolte, Jr. and Gavin Gale Borden, New York, N.Y., a part interest to each

Filed Feb. 26, 1970, Ser. No. 14,473
Int. Cl. G03g *13/00*
U.S. Cl. 355—17 **7 Claims**



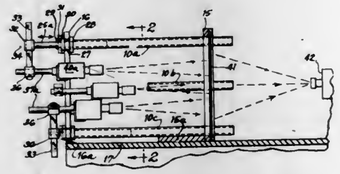
A method of reproducing printed material such as old and rare books, manuscripts and the like whereby a considerable savings in cost over known reprint methods is achieved. The reprints are of outstanding quality and are produced at a significantly higher rate than known methods. The process involves the use of an electrostatic copying machine utilizing roll paper, the copying machine having two fusing steps and a brushing step. The latter results in the virtual elimination of the random toner particles on the paper after the first fusing step has been achieved. Thus, a high contrast reproduction print is the result of the present process.

3,679,303

MULTI-PROJECTOR IMAGE COMPOSING HEAD

Laurence L. La Vant, 1144 Oak Ridge Drive, Glencoe, Ill.

Filed Feb. 16, 1971, Ser. No. 115,452
Int. Cl. G03b *21/26*
U.S. Cl. 355—40 **1 Claim**



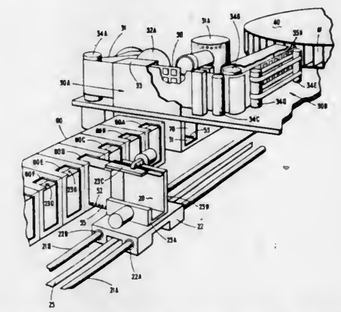
The invention discloses a structure wherein a plurality of projectors are provided to project on a common focal plane images arranged in desired relative size and position to provide a composite image on a focal plane. From the composite image photographic plates may be derived. The various projectors are mounted to permit independent operation of the various projectors along parallel laterally offset lines and makes possible arrangements of separate material for use in preparing a composite picture in desired form.

3,679,304

MICROFICHE REPRODUCTION SYSTEM

Albert Eng, Chestnut Hill, Mass., assignor to Foto-Mem, Inc., Natick, Mass.

Filed April 15, 1970, Ser. No. 28,751
Int. Cl. G03b *27/62, 27/70*
U.S. Cl. 355—41 **9 Claims**



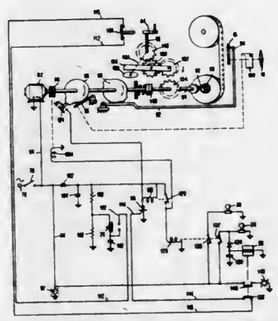
An automatic reproduction system which includes a cartridge storage bank for holding cartridges containing microfiche film cards. The cards are notch-coded to facilitate selection of particular cards. A command module controls the selection of a particular cartridge and further controls a cartridge retrieval and refile mechanism which transports the selected cartridge to a microfiche selector. A particular microfiche card is selected and transported to a reproduction station where a duplicate is made. After reproduction, the particular card returns to the cartridge and the cartridge retrieval and refile mechanism transports the cartridge to its position in the cartridge storage bank. The duplicate card is placed in rotary collator for further use. The individual microfiche selection is by forced air so as to protect the film surfaces of the cards within the cartridge from rubbing or scratching against one another.

3,679,305

MICROFILM RECORDING SYSTEM

John R. Hereford, Florissant, Mo., assignor to U.S. Dynamics Inc., Elmsford, N.Y.

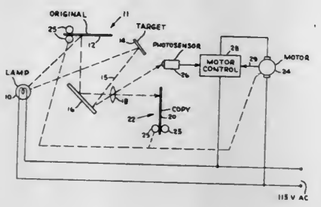
Filed Aug. 15, 1969, Ser. No. 850,606
Int. Cl. G03b *27/32*
U.S. Cl. 355—65 **12 Claims**



The system uses a film cartridge containing film having positioning perforations, and it is operable in each exposure cycle

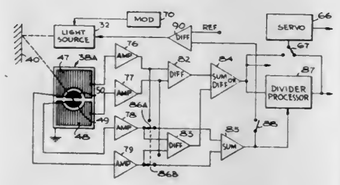
to advance the film before opening the shutter. An interlock is provided to prevent ambient light damage to film records at the cartridge exposure window.

3,679,306
FEEDBACK SYSTEM FOR CONTROLLING IMAGE LIGHT ENERGY IN ELECTROSTATIC PHOTOCOPIERS
Robert Clark Du Bois, Fairfield, and Wayne H. Miller, Stamford, both of Conn., assignors to Pitney-Bowes, Inc., Stamford, Conn.
Filed Jan. 21, 1971, Ser. No. 108,504
Int. Cl. G03b *27/78*
U.S. Cl. 355—68 **2 Claims**



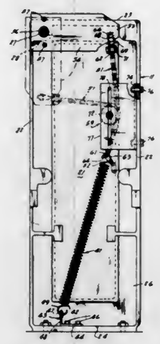
A control system for electrostatic photocopiers monitors the light level of a reference beam. The beam is projected at the imaging station from the projection lamp by way of the illuminating station and the image projection optics to derive a feedback signal for regulating either the copy sheet feed rate through the imaging station or the lamp current to compensate for lamp voltage variations, lamp aging, dirty projection optics, etc.

3,679,307
NON-CONTACTING OPTICAL PROBE
Robert Martin Zoot, Los Angeles, and James Leo Scieszinski, Canoga Park, both of Calif., assignors to ATI, Inc.
Filed Feb. 19, 1970, Ser. No. 12,575
Int. Cl. G01c *3/08*
U.S. Cl. 356—4 **42 Claims**



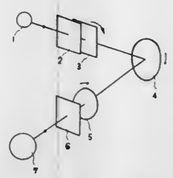
A distance measuring device for deriving contour information without contacting the surface being measured and without the use of internal moving parts. The device utilizes an optical system and geometric triangulation techniques to develop electrical output signals which may be used to drive readout displays and numerically controlled machine tools or the like. One embodiment of the device includes a specially configured photo detector which compensates for certain ranging errors encountered in previously known devices. Data processing electronics are provided for a variety of operations and applications. A particular feedback light control system is employed to compensate for variations in reflected light levels.

3,679,308
EQUILIBRATED COPYBOARD
Gerhard A. Nothmann, Wilmette, Ill., assignor to Robertson Photo-Mechanix, Inc., Des Plaines, Ill.
Filed Aug. 31, 1970, Ser. No. 68,118
Int. Cl. G03b *27/62*
U.S. Cl. 355—75 **4 Claims**



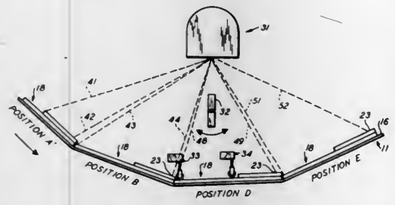
A pivoted holder for flat material such as a copyboard or similar device for use in a light exposure system is mounted on a support for tiltable movement selectively between an expose or process position and a loading position and includes elastic means interconnecting the copyboard and the support in a manner to urge the holder toward an equilibrium position approximately mid-way between the two extreme positions, thereby implementing actuation of the copyboard by an operator between selected positions.

3,679,309
INSTRUMENTS FOR MEASURING MOLECULAR ORIENTATIONS WITH THE AID OF FLUORESCENCE
Hideho Hiragaki, and Yoshihiro Mochida, both of Tokyo, Japan, assignors to Japan Spectroscopic Co., Ltd., Tokyo, Japan
Filed May 4, 1970, Ser. No. 34,106
Claims priority, application Japan, May 6, 1969, 44/34027; May 6, 1969, 44/34028; May 6, 1969, 44/34029; May 12, 1969, 44/35793; Oct. 30, 1969, 44/86453; Nov. 29, 1969, 44/95371; Dec. 1, 1969, 44/95739
Int. Cl. G01n *21/40*; G01j *39/18*
U.S. Cl. 356—114 **13 Claims**



This invention relates to instruments for measuring molecular orientations with the aid of fluorescence, or more particularly to instruments for measuring molecular orientations that can measure the types of orientations of the macromolecular system of the samples through the measurement of the angular distribution of the intensity of the polarized components in the fluorescence emanated by the samples, by making use of the dual anisotropy exhibited when the light is absorbed and the fluorescence emitted, particularly with an eye to the anisotropy of fluorescent molecules dispersed among macromolecules.

3,679,310
METHOD OF PARTIAL SHUTTERING FOR EVEN EXPOSURE OF PHOTOSENSITIVE MATERIAL
Douglas Earl Campbell, and Richard Allen Harris, both of Greensboro, N.C., assignors to Western Electric Company Incorporated, New York, N.Y.
Filed Dec. 30, 1970, Ser. No. 102,739
Int. Cl. G03b *27/02*
U.S. Cl. 355—132 **10 Claims**

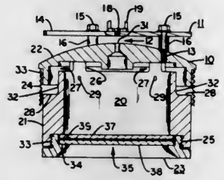


A method of uniformly polymerizing a circuit pattern on a strip of photosensitive material by displacing the strip relative to a radiant energy source while successively engaging each of a series of masks. Each mask is supported by one of a series of carriages mounted for movement about the radiant energy source. The leading end of each mask and underlying strip is shadowed by the frame of the supporting carriage as the strip is displaced towards the radiant energy and the opposite end of the mask and underlying strip are shadowed by the frame of the following carriage as the strip is displaced away from the radiant energy source. To compensate for the uneven exposure resulting from the shadowing, the radiant energy is blocked by a shutter from the center portion of each mask that is never shadowed during the movement of the strip through the radiant energy. The radiant energy is blocked for a period of time sufficient to uniformly polymerize the circuit pattern on the strip of photosensitive material.

ERRATUM

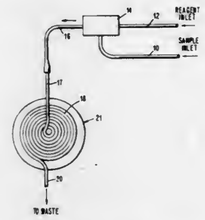
For Class 356—4 see:
Patent No. 3,679,307

3,679,311
AMBIENT CONTAMINANT COLLECTING DEVICE
Harold A. Van Dusen, Jr., South Milwaukee, Wis., assignor to McGraw-Edison Company, Milwaukee, Wis.
Filed Feb. 11, 1971, Ser. No. 114,542
Int. Cl. G01n *1/18*
U.S. Cl. 356—36 **13 Claims**



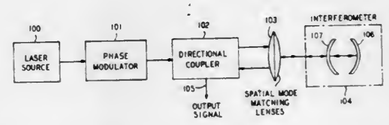
An ambient particulate density measuring device has a chamber for collecting solid particle contaminants precipitated from an air flow pumped by an omnidirectional venturi located at the top of the chamber. The venturi is formed between a cover plate positioned above a curved external top of the chamber having a hole at its center that extends into the chamber. The chamber has a wind and rain shielded air inlet and has a glass bottom of two sections with an internal section exposed to the contaminants precipitated within the chamber and an external section exposed to contaminants outside the chamber. The bottom is removable so that transmission of light through the two pieces may be measured to give a determination of both particulate density within the chamber and ambient contaminant effects on the external section.

3,679,312
METHOD AND APPARATUS FOR MEASURING BIOLUMINESCENCE OR CHEMILUMINESCENCE FOR QUANTITATIVE ANALYSIS OF SAMPLES
Hyman P. Mansberg, Pound Ridge, N.Y., assignor to Technicon Instruments Corporation, Tarrytown, N.Y.
Filed June 16, 1971, Ser. No. 153,536
Int. Cl. G01n *1/00, 21/38, 1/10*
U.S. Cl. 356—36 **12 Claims**



Method and apparatus for the quantitative determination of an ingredient of a fluid sample by the degree of luminescence created when the sample is reacted with another substance. The apparatus includes a photometer having a planar light-receiving window and a conduit providing a sinuous passageway portion formed in a body having its axis lying in a plane parallel to the photometer window and in proximity thereto and constructed of a transparent material. The sinuous passageway portion effectively obscures the window and is of substantially the same overall area. This conduit has an outlet portion at one end of the sinuous passageway portion and has an inlet close to or in the other end of the sinuous passageway portion. A sample and a reagent flow together and are intermixed in close proximity to the sinuous passageway portion, and are fed into the aforementioned inlet for flow into and through the aforementioned sinuous passageway portion for a luminescent reaction therein. A device is provided for receiving a signal from the photometer and for recording the results of the analysis.

3,679,313
DISPERSIVE ELEMENT FOR OPTICAL PULSE COMPRESSION
Robert Rosenberg, Fair Haven, N.J., assignor to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.
Filed Oct. 23, 1970, Ser. No. 83,414
Int. Cl. G01b *9/02*; H01s *3/00*
U.S. Cl. 356—112 **10 Claims**



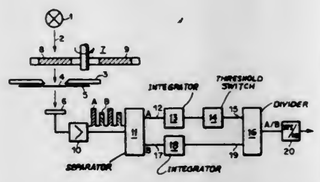
An interferometer cavity defined by two mirrors of different reflectance is advantageously adjusted to achieve superior

compression of optical pulse signals. In particular, a mirror of predetermined partial reflectance is juxtaposed with a mirror of substantially total reflectance, the separation distance being detuned by a calculated amount from a condition of resonance with the optical pulse input. The detuning distance is calculated in terms of the physical characteristics of the cavity and certain delimiting characteristics of the optical pulse signals.

3,679,314
APPARATUS FOR OPTICALLY TESTING THE GENUINENESS OF BANK NOTES AND OTHER TOKENS OF VALUE

Rudolf Mustert, Oberwil/Zug, Switzerland, assignor to Landis & Gyr, Zug, Switzerland

Filed June 1, 1970, Ser. No. 41,837
Claims priority, application Switzerland, June 12, 1969, 9030/69
Int. Cl. G06k 9/08; G01j 3/50
U.S. Cl. 356—71 **3 Claims**

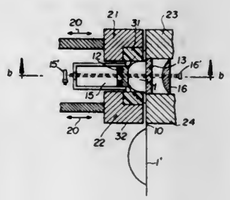


Apparatus for optically testing the genuineness of bank notes and the like by successively illuminating a selected portion of a note with light beams having different spectral distributions and then detecting the light transmitted through or reflected by the illuminated portion with a light sensitive device such as a photo cell. The output of the photocell is separated into two signals corresponding to the different spectral distributions and the ratio of the two signals is formed. An evaluating circuit is used to decide whether the ratio falls within predetermined limits and, if so, the note is treated as genuine.

3,679,315
APPARATUS FOR MEASURING THE LIGHT PASSING THROUGH A LIQUID SAMPLE IN A CLOSED FLEXIBLE WALLED CHAMBER

Robert Laucournet, L'Hay-Les-Roses, and Pierre Turpin, Bars S/Yvette, both of France, assignors to Hoffman-La Roche Inc., Nutley, N.J.

Filed Aug. 25, 1970, Ser. No. 66,747
Claims priority, application France, Sept. 9, 1969, 6930619
Int. Cl. G01n 21/24
U.S. Cl. 356—180 **7 Claims**

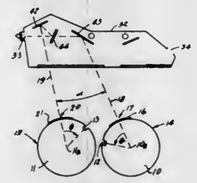


A device for measuring a concentration of a liquid sample in a flexible chamber for containing the sample where a portion of the chamber is defined by a measuring zone including, an operating station having a photometer where pressurizing force means are applied to the chamber to alter the chamber configuration forcing the liquid sample into the chamber area at the measuring zone causing intimate contact with a pair of spaced fixed plates of the photometer to provide for a predetermined sample thickness for measurement purposes.

3,679,316
METHOD AND APPARATUS FOR OPTICALLY POSITIONING PRINTING PLATES

Gerard Boujon, Pully, near Lausanne, Switzerland, assignor to J. Bobst & Fils, S.A., Prilly, Switzerland

Filed Nov. 5, 1970, Ser. No. 87,209
Claims priority, application Switzerland, Dec. 16, 1969, 18663/69
Int. Cl. G01b 11/24
U.S. Cl. 356—168 **11 Claims**



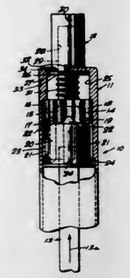
The positioning of printing plates on a support means for synchronized color printing wherein successive impressions of various colors or images are to be superimposed is accomplished by the method according to the invention wherein a model having a positive image of the matter to be printed is placed in position on a first support means, a first color printing plate having a reversed image of the matter to be printed is placed on a second support means, the model and the first printing plate are viewed through an optical device situated in predetermined relation to the first and second support means so that with adjustment of the first printing plate the model and the first printing plate will appear in superimposed relation to each other. The model is then removed from the first support means and a second printing plate having a reversed image is mounted on the first support means and again adjusted in position so that when viewed through an optical device the images on the first and second printing plates will appear in superimposed relation to each other. Subsequent printing plates may be aligned in a manner similar to that set forth for the second printing plate. The apparatus for carrying out this method includes a pair of cylinder means mounted on a frame means in predetermined relation to each other and connectable to each other by a coupling means to rotate together in the same or opposite directions. An optical viewing means fixed in predetermined relation to the axis of the cylinder means employs suitable mirrors to allow superimposition between the positive image of the model and the negative images of the first and second printing plates.

3,679,317
BALL-POINT PEN SAFETY LOCK

Ivar G. Larson, 7620 S.W. 58th Ave., South Miami, Fla.

Filed Sept. 14, 1970, Ser. No. 71,725
Int. Cl. B43k 5/16
U.S. Cl. 401—109 **7 Claims**

Mechanism for locking an ordinary retractable writing element ball-point pen to prevent inadvertent or accidental depression of the actuating plunger is described. The locking mechanism comprises an elongated abutment member extending longitudinally of the outside of the pen actuating plunger and normally overlying, at its lower end, a solid wall portion at the upper end of the pen housing, resilient means normally rotatively constraining the plunger so that the abutment members is in such overlying position, and a recess in the upper end of the pen casing, rotatively removed from the solid wall portion at the upper end of the pen, permitting manual depression of the actuating plunger only after the plunger is first turned from its normal or locking position to a position whereat the abutment member can pass through the recess.



3,679,318
PROPEL AND REPEL BALL POINT PEN MECHANISM

Thomas A. Liguori, Pelham Manor, N.Y., assignor to Modern Mold & Tool Corp., Bronx, N.Y.

Filed Jan. 18, 1971, Ser. No. 106,996
Int. Cl. B43k 24/06
U.S. Cl. 401—110 **7 Claims**

A retractable pen includes a barrel with relatively rotatable upper and lower sections. An axially movable plunger is located in the upper and lower sections and is provided with a top cam section having a top face with a peripheral helical cam surface terminating in an upper horizontal dwell section. The cam surface extends for less than 360° and terminates in stop shoulders at both ends. A vertical protruding rib is formed on the plunger and slideably engages a vertical slot in the barrel lower section while a projection on the upper section of the barrel engages the cam surface. A writing cartridge has its upper end engaging a well in the plunger and is upwardly spring urged.

3,679,319
CLEANING ATTACHMENT FOR ELEVATED SPRAY DEVICE

Eugene A. Munchel, and Henry M. Thornton, both of York, Pa., assignors to Ashcombe Products Company, Dover, Pa.

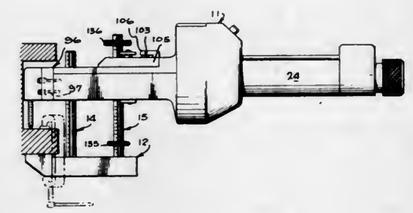
Filed Jan. 13, 1971, Ser. No. 106,049
Int. Cl. A47l 1/08
U.S. Cl. 401—138 **9 Claims**

A cleaning attachment for an elevated spray device in which a U-shaped bail supports an aerosol spray container in position to be discharged at elevated locations such as in the eaves of buildings, high windows, and the like. The attachment comprises a U-shaped member having legs adapted to be connected to the legs of the U-shaped bail by readily connectible means, and a cleaning device is connected to the bight portion of the U-shaped member, the cleaning means comprising selectively either a scraping blade, squeegee blade, brush of suitable type, or a mop.

3,679,320
PORTABLE RIGHT ANGLE DRILL

Luis Bohorquez, Inglewood, and Pierre G. Vindez, Redondo Beach, both of Calif., assignors to Zephyr Manufacturing Co., Inc. - Manufacturing Division, Los Angeles, Calif.

Filed Oct. 28, 1970, Ser. No. 84,731
Int. Cl. B23b 47/18
U.S. Cl. 408—99 **14 Claims**



A portable drill with two gear trains driven by a single motor wherein one gear train rotatably drives a drill spindle and a pair of feed spindles through a connection that permits axial movement of the spindles, and the other gear train drives the pair of feed spindles through threaded connections therewith. The feed spindles carry a footplate adapted to be clamped to the work. Means is provided for changing the gear ratios of one gear train and other means provided for selectively stopping either gear train in order to advance and retract the feed spindles at different speeds.

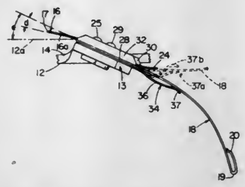
3,679,321
PRESTRESSED FLEXIBLE BLADED FAN

Karl H. Strick, Chatham, Ontario, Canada, assignor to Fran Corporation, E. Providence, R.I.

Filed April 26, 1971, Ser. No. 137,123
Int. Cl. F04d 29/38
U.S. Cl. 416—132 **8 Claims**

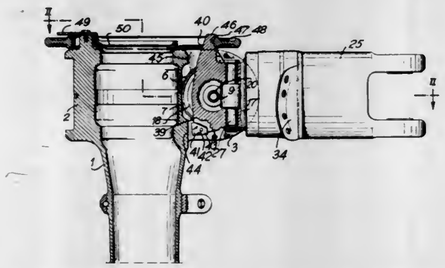
A fan having a hub, a plurality of arms extending radially outwardly of the hub, blades, one secured to each arm, which

decamber as rotational speed increases, and biasing members, one connected to each arm contacting the associated blade



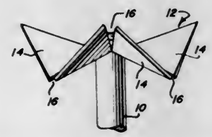
and urging such blade member toward its decambered position and thereby prestressing said blade member.

3,679,322
ROTOR HUBS ON ROTARY WING AIRCRAFT
Rene Louis Mouille, Bouches-Du-Rhone, France, assignor to Societe Nationale Industrielle Aerospatiale, Paris, France
Filed May 27, 1970, Ser. No. 40,823
Claims priority, application France, May 28, 1969, 6917323
Int. Cl. B64c 27/40
U.S. Cl. 416—141 **4 Claims**



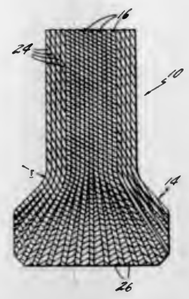
The invention relates to a rotor hub for rotary-wing aircraft, in which a hollow one-piece rotor hub-mast is provided at its upper end with lobes lying in planes parallel to the rotation axis of the rotor hub-mast, pairs of such lobes forming yokes for respectively receiving a flapping hinge-pin for the associated blade.

3,679,323
MIXING AND DISPERSING DEVICE
Barry L. Buck, 414 N. Lawndale, Chicago, Ill.
Filed Feb. 25, 1971, Ser. No. 118,742
Int. Cl. B01f 7/24
U.S. Cl. 416—183 **4 Claims**



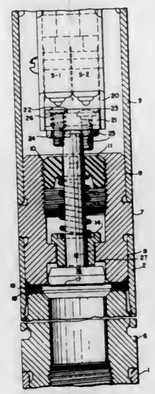
A mixing and dispersing device in which an elongated shaft has connected thereto a rigid blade which undulates about a plane that is perpendicular to the shaft, to form a plurality of sub-blades a number of which are at a positive angle of attack and an equal number of which are at a negative angle of attack.

3,679,324
FILAMENT REINFORCED GAS TURBINE BLADE
Hans Stargardter, Bloomfield, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.
Filed Dec. 4, 1970, Ser. No. 95,232
Int. Cl. F01d 5/14
U.S. Cl. 416—229 **6 Claims**



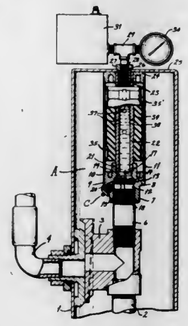
A filament reinforced gas turbine engine blade having a divergent root defined by a particular splay radius comprising oriented high modulus, high strength nonductile first reinforcing filaments embedded in a matrix and forming a radius of curvature greater than the splay radius and no smaller that its working radius, and oriented high strength ductile second reinforcing filaments embedded in a matrix and forming a radius of curvature which is equal to or less than the splay radius with no loss of strength therein.

3,679,325
AUTOMATIC PUMP CONTROL
Clyde E. Yost, 700 S. Villa Drive, Evansville, Ind.
Filed Sept. 16, 1970, Ser. No. 72,568
Int. Cl. F04b 49/00
U.S. Cl. 417—17 **1 Claim**



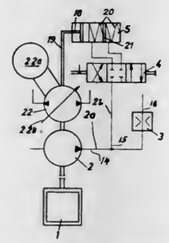
An automatic pump control for oil wells and the like is provided with a pair of pressure sensitive electrical switches which are activated by pressure of fluid within the well. One of the switches is closed at a relatively low pressure and the other switch is closed at a relatively high pressure and these switches are incorporated in a circuit which actuates a pump when the fluid within the well reaches a predetermined high level and deactivates the pump when the fluid within the well reaches a predetermined low level.

3,679,326
PUMP CONTROL
Anthony V. Weber, St. Louis County, Mo., assignor to Weber Industries, Inc., St. Louis, Mo.
Continuation-in-part of Ser. No. 862,711, Oct. 1, 1969, Pat. No. 3,563,671. This application Oct. 19, 1970, Ser. No. 81,802
Int. Cl. F04b 49/02, 49/06, 49/08
U.S. Cl. 417—38 **3 Claims**



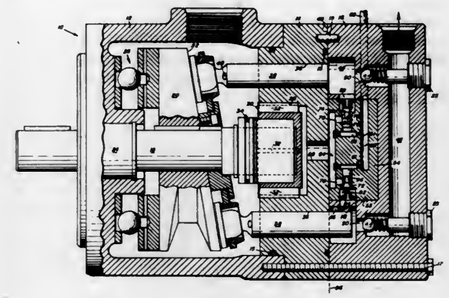
A pump control for use within a pump system and being connected to the discharge pipe therefor; there being a check valve between the pump control and the outlet pipe. Said control comprises a pipe having a plurality of openings which pipe connects said valve and a pressure switch in circuit controlling relationship with respect to the pump with a pressure accumulator disposed about said pipe and constituting a resilient sleeve having a thickness of about one-half inch and a durometer hardness within the range of 55 to 70.

3,679,327
HYDRAULICALLY REGULATED DRIVE
Josepf Riedhammer, Horb am Neckar, and Fritz-Jorg Glaser, Muehlen am Neckar, both of Germany, assignors to Bruninghaus Hydraulik GmbH, Horb (Neckar), Germany
Filed March 3, 1970, Ser. No. 15,987
Claims priority, application Germany, March 4, 1969, P 19 10 915.015
Int. Cl. F04b 1/26
U.S. Cl. 417—222 **10 Claims**



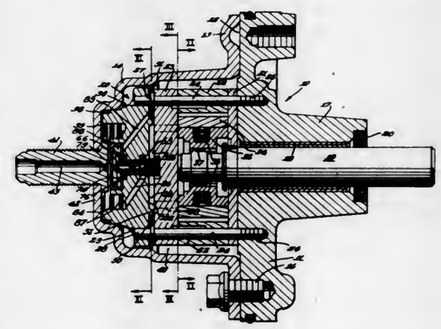
A hydraulic transmission drive comprising a combustion engine, a main pump, and a hydraulic motor, is regulated by adjusting the output of the main pump by regulating means including a hydraulic motor and a regulating pump driven by the combustion engine and driving the regulating motor. An adjustable throttle means is connected with the outlet conduit of the regulating pump and influences the operation of the regulating motor so that when the main pump has an overload, its speed is reduced together with the speed of the combustion engine until the torque of the combustion engine is sufficient.

3,679,328
VARIABLE PRESSURE SENSITIVE PUMP
Hamish A. G. Cattanach, Teddington, England, assignor to Applied Power Industries, Inc., Milwaukee, Wis.
Continuation of Ser. No. 738,050, June 18, 1968, abandoned. This application March 27, 1970, Ser. No. 20,875
Int. Cl. F04b 49/00
U.S. Cl. 417—270 **5 Claims**



An axial pump having the capability of providing a plurality of independently adjustable fluid flows wherein there is an orifice network for returning adjustable amounts of pumped fluid from each piston to the inlet chamber depending on detected control pressures. A series of poppets are spring biased across orifices and the poppets adjust the open orifice period depending on the detected control pressures. The pump uses segmented bearings for its cam plate in combination with the aforesaid variable flow capacity. The pump further includes the use of a divided barrel wherein one portion houses reciprocating pistons and the other portion consists of a replaceable end-plate having passageways and valving means therein for determining the number of outputs and which of these outputs will be variable or fixed flow.

3,679,329
FLAT SIDE VALVE FOR A PUMP
Gilbert H. Drutchas, Birmingham; George A. Berman, Detroit, and Phillip B. Spencer, Royal Oak, all of Mich., assignors to TRW Inc., Cleveland, Ohio
Filed June 8, 1970, Ser. No. 44,268
Int. Cl. F04b 49/00
U.S. Cl. 417—300 **6 Claims**



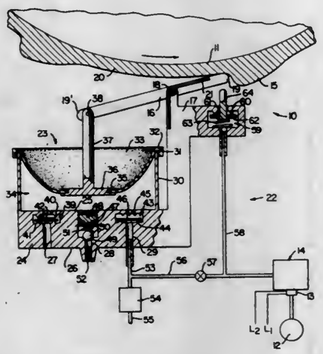
Two confronting relatively movable radial surfaces formed by a stationary pressure part and a movable valve part respectively, have an axially projecting circumferentially continuous

shoulder formed on one of the parts and disposed between the surfaces to partition the space between the two parts into an inlet zone and an outlet zone. The valve part is moved axially as a function of fluid flow to by-pass fluid directly across the shoulder into the inlet zone from the outlet zone.

3,679,330
PNEUMATIC CONTROL SYSTEM AND PARTS THEREFOR OR THE LIKE

Douglas R. Scott, Elkhart, Ind., assignor to Robertshaw Controls Company, Richmond, Va.

Division of Ser. No. 776,224, Nov. 15, 1968, Pat. No. 3,550,404. This application Aug. 26, 1970, Ser. No. 67,208
Int. Cl. F04b 49/00
U.S. Cl. 417—306 **5 Claims**

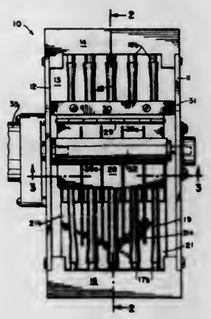


This disclosure relates to a laundry machine wherein the rotating laundry confining drum or tub is operatively interconnected to a vacuum pump to cause continuous operation of the vacuum pump during the entire movement of the confining means so as to provide a source of vacuum for controlling vacuum operated actuators of the apparatus. In addition, a pneumatically operated timer controlling the "on-off" operation of the laundry machine is repetitively actuated and deactuated by the movement of the laundry confining means.

3,679,331
METERING PUMP AND VALVE

Jack Kushner, Lindenhurst, N.Y., assignor to Delta Scientific Corporation, Lindenhurst, N.Y.

Filed April 24, 1970, Ser. No. 31,686
Int. Cl. F04b 43/08
U.S. Cl. 417—477 **2 Claims**

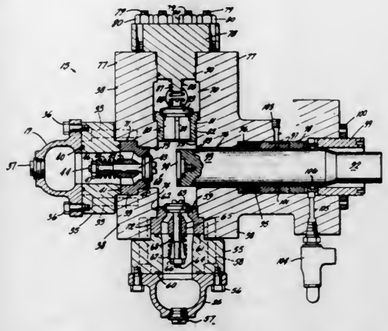


A metering pump and valve combination is disclosed wherein means are provided for pumping discrete quantities of fluid such as might be used as samples for analysis. The pump includes a resilient tube which is flexed in a traverse direction in a manner which precludes exceeding the elastic limit of the tube.

3,679,332
RECIPROCATING PISTON PUMP

Reinhard A. Yohpe, Battle Creek, Mich., assignor to Union Pump Company, Battle Creek, Mich.

Filed April 10, 1970, Ser. No. 27,330
Int. Cl. F04b 21/00
U.S. Cl. 417—503 **9 Claims**

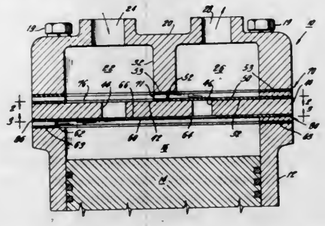


A reciprocating high-pressure pump assembly is provided, having a housing, a piston reciprocably mounted in a cylindrical chamber of the housing, and an outlet port and valve assembly mounted at the upper part of the housing. A pair of inlet port and valve assemblies are additionally mounted in the housing, one substantially coaxially with the piston, and the other substantially coaxially with the outlet valve, and in a lower portion of the housing. This structure, because it utilizes two inlet valve assemblies, permits inlet valves and housings to be utilized of considerably reduced dimensions, thereby greatly increasing the trouble-free operating time of the pump without reducing pumping capacity, and additionally permitting a plurality of pump assemblies to be mounted side by side in closer relationship than is possible with prior art pumps.

3,679,333
PACKING FOR AIR COMPRESSOR VALVE

Bruno Zoppi, Milano, Italy, assignor to Fabbrica Italiana Magneti Marelli S.p.A., Milan, Italy

Continuation-in-part of Ser. No. 105,263, Jan. 12, 1971, abandoned. This application March 16, 1971, Ser. No. 124,886
Claims priority, application Italy, Jan. 12, 1970, 19251
Int. Cl. G05d 16/06
U.S. Cl. 417—571 **7 Claims**

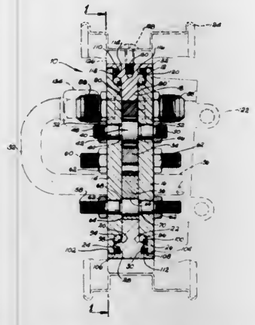


In an air compressor, including flapper type blade valves over the inlet and outlet bores of the compressor, the invention is an improved packing for mounting the captured end of each blade valve. Each packing is comprised of a wide, rigid, metal sheet and two thin layers of yieldable material on opposite surfaces of the sheet. The blade is in a recess of and has the same thickness as one of the thin layers.

3,679,334
FLUID POWER UNIT

Walter Keldrauk, 21500 Lassen St. 0149, Chatsworth, Calif.

Filed Aug. 21, 1970, Ser. No. 65,836
Int. Cl. F03c 3/00; B60k 3/00
U.S. Cl. 418—142 **11 Claims**

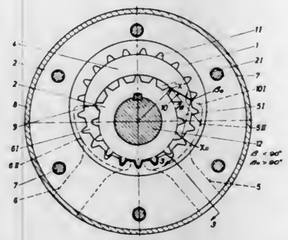


A rotary, fixed displacement fluid motor or pump. In a particular embodiment, an axially short, compact fluid power unit is provided utilizing roller bearings integrally disposed in angular contact between the annular bearing surfaces of a central rotor and axially juxtaposed side plates. The rotating rim of the central rotor is exposed and designed to accept a tire tim on its periphery and to replace and fit within the space used by the conventional wheel hub and brake assembly of a vehicle. Alternatively, a pulley rim can be superannularly disposed on the central rotor rim. In another embodiment, the power unit components are encased in a housing and power is transmitted via a rotating shaft journaled in extensions through the housing.

3,679,335
GEAR PUMP

Christof Zippel, Buchschachweg, and Manfred Ill, Markdorf, both of Germany, assignors to Zahnradfabrik Friedrichshafen Aktiengesellschaft, Friedrichshafen, Germany

Filed March 23, 1970, Ser. No. 21,931
Claims priority, application Germany, March 21, 1969, P 19 14 444.6
Int. Cl. F01c 1/10; F03c 3/00; F04c 1/06
U.S. Cl. 418—170 **4 Claims**

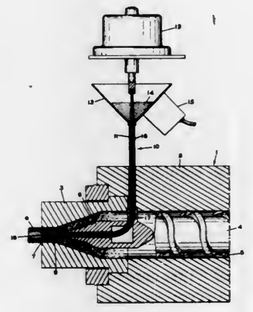


A gear pump having a power rotated pinion and an internal gear effecting positive displacement is provided including a filler or diverter element intermediate the toothed pumping elements for the purpose of directing flow into the recesses between the teeth of the rotative pinion from the suction side of the pump. Such diverter component insures filling of the recesses and avoids turbulence and cavitation thereby substantially decreasing pump noise, particularly at high speeds.

3,679,336
DRY LUBRICANT COATING OF EXTRUDED TUBING

Donald H. Bagley, East Freetown, and Richard L. Erickson, Braintree, both of Mass., assignors to Armstrong Cork Company, Lancaster, Pa.

Filed June 18, 1970, Ser. No. 47,360
Int. Cl. B29d 23/04
U.S. Cl. 425—95 **1 Claim**

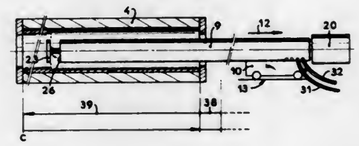


A dry lubricant is applied to the interior surface of an extruded tubing to assist in the placement of the tubing on piping. As the tubing is emerging from the extruder, mica powder is sprayed on the inside of the tubing. The mica powder is placed on the inside of the tubing by a rotating feed structure which forces the powder into the interior of the tube. A vibrating hopper is used to hold the mica powder in a nonpacked state. The apparatus is particularly useful with an in-line extruding head.

3,679,337
MANUFACTURE OF PLASTIC ARTICLES

Claude Fuseller, St. Jean de Moirans 38, France

Filed April 16, 1970, Ser. No. 29,194
Claims priority, application France, April 18, 1969, 6911370; Dec. 5, 1969, 6942262
Int. Cl. B29c 5/00
U.S. Cl. 425—130 **11 Claims**



Apparatus for manufacturing hollow plastics articles using a centrifugal mould. A polymerizable mixture of accelerated

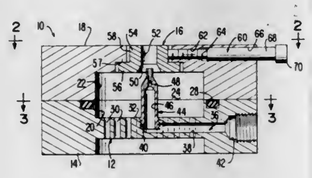
and catalysed resins is introduced into the mould through two or more nozzels, the component resins of the mixture being fed through separate nozzels. The jets of resin issued from the nozzels are directed to a rotary disc mounted at the forward end of a reciprocating arm bearing the nozzels. The arm is movable into and out of the mould by means of a carriage. Various internal mould configurations may be provided for the production of articles of different section.

3,679,338

APPARATUS FOR FORMING FILLED FOOD PRODUCTS

Roger J. Lutz, Fremont, Mich., assignor to Gerber Products Company, Fremont, Mich.

Filed June 11, 1970, Ser. No. 45,451
Int. Cl. A21c 11/16
U.S. Cl. 425—131 **2 Claims**



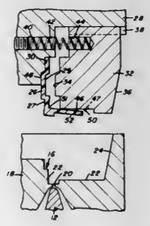
Apparatus for handling two different materials forming a filled food product, such as ready-to-eat product having an outer tubular layer of a first cereal material which encloses a core of a second non-cereal material for use as a filler for the tubular layer. A first die directs the first material into a confining chamber and a second material into the region within the first material. A second die provides for extrusion of the first material with the second material therewithin. Means is provided to adjustably mount the second die so that dies of different configurations and sizes can be used.

3,679,339

MOLD HAVING A SLIDE PLATE FOR FORMING ARTICLES HAVING A PROJECTION OR RECESS

Archie J. Tucker, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 27, 1970, Ser. No. 93,210
Int. Cl. B29f 1/14
U.S. Cl. 425—242 **5 Claims**



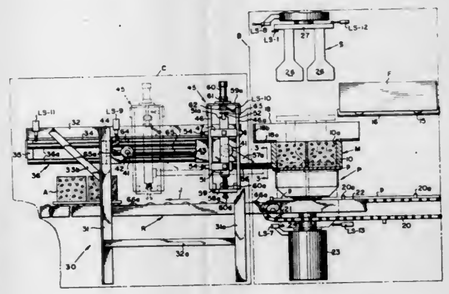
Apparatus for molding plastic articles. The apparatus includes a cavity piece, a force piece, and a slide plate which cooperate to define a molding cavity of the shape of the article to be molded. The slide plate is provided with a cavity to form a projection on the article and a camming surface which forms a recess in the molded article adjacent the projection. The slide plate during stripping of the article from the mold moves in a direction normal to the direction of the projection whereby the camming surface cams the article away from the slide plate to strip the projection from the cavity.

3,679,340

APPARATUS FOR FORMING BUILDING BLOCKS

Thomas W. Springs, Alpena, Mich., assignor to Besser Company, Alpena, Mich.

Filed Sept. 15, 1969, Ser. No. 858,032
Int. Cl. B28b 1/08, 7/18
U.S. Cl. 425—163 **17 Claims**



An apparatus for forming a building block, having conventional vertically extending, upwardly opening block cavities with a longitudinally extending channel in its lower surface. The block is made in a vibrated mold box assembly open at its upper and lower ends and a pallet is movable into position to form a removable mold cavity closing bottom wall for the assembly. A longitudinally removable core, which is resiliently mounted on a core adapter so that it can vibrate with the mold box assembly, is moved from a removed position to a position beneath the mold cavity and the pallet is then moved vertically to sandwich the core between the mold and pallet. After cementitious material is introduced into the mold cavity to form the block and the assembly is vibrated, the core is removed, and the block and pallet are then vertically stripped from the mold assembly and moved away for further processing.

3,679,341

APPARATUS FOR IMPACT INJECTION MOLDING OF PLASTIC ARTICLES

Harold W. Graybill, Lambertville, Mich.; James E. Helder, and Harold P. Sponseller, both of Toledo, Ohio, assignors to Owens-Illinois, Inc.

Filed Sept. 25, 1970, Ser. No. 75,599
Int. Cl. B29f 1/03
U.S. Cl. 425—244 **6 Claims**

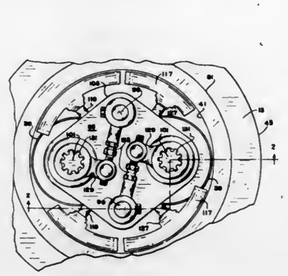
An apparatus and method for injection molding or impact molding from a source of plasticized material at a pressure independent of the source pressure. The apparatus includes a piston freely floating in an accumulation chamber to which material is supplied at source pressure, as by an extruder, and a valving nozzle through which the piston expresses material at a different pressure. The actuating force is generated by relative source-mold closing movement and is transmitted by the mold-contacting nozzle to the piston to sequentially establish mold-accumulator chamber communication, isolate the accumulation chamber from the material source, and inject material from the accumulation chamber through the nozzle into the mold at the independent pressure. Upon relative source-mold opening movement, the mold-accumulator chamber communication is interrupted and the accumulation chamber is replenished with material from the source at the source pressure.

3,679,343

EXTRUSION MILL WITH ROLLER ADJUSTMENT MEANS

Robert W. Gilman, San Francisco, Calif., assignor to California Pellet Mill Company, San Francisco, Calif.

Division of Ser. No. 652,539, July 11, 1967, Pat. No. 3,559,238. This application May 4, 1970, Ser. No. 46,577
Int. Cl. B29f 3/012
U.S. Cl. 425—331 **4 Claims**



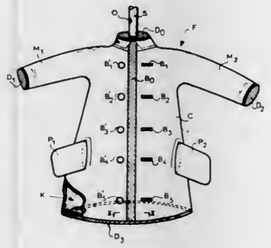
An apparatus for adjusting rollers of an extrusion mill comprising an adjustable link extending between a drive post in the roller assembly and a radial extension arm secured to the roller journal shaft which has a journal center eccentric of its roll center.

3,679,342

DIPPING FORM FOR MAKING SKIN-TYPE ARTICLES FROM PLASTIC MATERIAL

Jean Henri Roger Fougeray, 11 rue Charles Floquet, Rueil-Malmaison, and Louis Henri Jules Giffard, 33 rue de la Mission Marchand, 92 Courbevoie, both of France

Filed June 8, 1970, Ser. No. 44,497
Claims priority, application France, June 6, 1969, 6918731
Int. Cl. B28b 21/46
U.S. Cl. 425—275 **1 Claim**



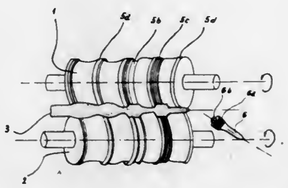
In the manufacture of skin-type articles by dipping a hot former into a fluidized bath of powdered thermoplastic material, adhesion of said material on said former is locally prevented for providing neat edges, holes and other discontinuities in the article and thus facilitating the stripping of the former and avoiding any need of manual intervention for finishing the article.

3,679,344

APPARATUS FOR PRODUCING MOLDED BODIES OF ROTATION BY ROLLING

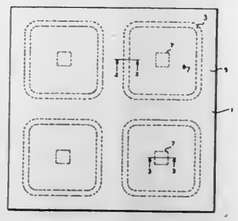
Lajos Balint, Feldkirch/Vorarlberg, Austria, assignor to Hilti Aktiengesellschaft, Schaan Furstentum, Liechtenstein

Division of Ser. No. 690,212, Dec. 13, 1967, Pat. No. 3,494,990. This application Aug. 5, 1969, Ser. No. 862,121
Claims priority, application Austria, Dec. 16, 1966, 7 A 11630/66
Int. Cl. B29d 7/10
U.S. Cl. 425—366 **6 Claims**



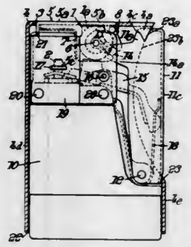
In an apparatus for producing molded bodies of rotation by rolling from blanks, the blanks are conducted longitudinally through the gap between two rolls having helical molding profiles extending in the same direction and approaching steadily the desired end profile of the molded body of rotation. At least one of the two rolls has imparted thereto a vibratory motion perpendicular to the roll axis and relative to the other roll, and this vibratory movement has a frequency of more than 50 cps, with the frequency being dependent on how great a reduction of the cross section is necessary. The amplitude of the vibratory movement is preferably up to about 2 mm.

3,679,345
FLASHLESS COMPRESSION MOLD
William J. Malutich, Edinboro, Pa., assignor to Continental Rubber Works, Erie, Pa.
Filed Aug. 20, 1970, Ser. No. 65,466
Int. Cl. B29c *1/14, 3/00*
U.S. Cl. 425—406 5 Claims



A metal mold for making flash free parts of elastomer. The mold has the parting line of the mold cavity formed by a narrow land of width such that the compression stress on the land does not exceed the elastic limit of the metal and all flash is squeezed outside the land so that the land always closes in metal-to-metal contact. Supplemental projections in the plane of the land may be provided to carry some of the load so that the pressure on the land does not exceed the elastic limit of the metal.

3,679,346
LIGHTERS, ESPECIALLY GAS LIGHTERS
Jacques Lambert, Paris, France, assignor to Societe Flaminaire
Marcel Quercia, Paris, France
Filed Sept. 10, 1970, Ser. No. 71,181
Claims priority, application France, Sept. 22, 1969, 6932213
Int. Cl. F23q *2/00*
U.S. Cl. 431—130 10 Claims



The lighter comprises a burner, an ignition device and a push member which acts on the ignition device and on the burner fuel supply. The case of the lighter includes a port provided with a pivoting cover and actuated by the push member. In its resting position the push member reestablishes the parallelepipedic shape of the lighter.

CHEMICAL

3,679,347
DYEING HUMAN HAIR WITH A PEROXY COMPOUND AND A REACTIVE DYESTUFF
Frederick G. Brown, Cottingham, England, assignor to Lever Brothers Company, New York, N.Y.
No Drawing. Continuation-in-part of application Ser. No. 521,797, Jan. 20, 1966. This application Jan. 26, 1970, Ser. No. 8,010
Claims priority, application Great Britain, Jan. 25, 1965, 3,222/65
Int. Cl. A61k *7/12*
U.S. Cl. 8—10.1 4 Claims

A process for dyeing human hair including the steps of (a) oxidising the hair with a peroxy acid or a salt thereof, such as the potassium triple salt of Caro's acid, and (b) subsequently reacting the oxidised hair with one or more reactive dyes, for example a dye containing a vinyl sulphone precursor, or a mono- or di-chlorotriazine group.

3,679,348
COMBINED PROCESS FOR DYEING AND FINISHING FABRICS COMPOSED OF CELLULOSIC FIBERS
Matahiko Asahi, Tokyo, Hisamichi Murakami and Yukio Hasegawa, Yokohama, Hideo Matsui, Kawasaki, and Eifu Takayanagi, Yokohama, Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan
No Drawing. Filed Oct. 13, 1970, Ser. No. 80,466
Claims priority, application Japan, Oct. 14, 1969, 44/81,529
Int. Cl. D06p *5/00;* D06m *9/00*
U.S. Cl. 8—18 2 Claims

A process for effecting the dyeing and finishing of fabrics of cellulosic fibers simultaneously, which comprises applying a liquor containing at least one finishing agent selected from the group consisting of tetraoxane and pentoxane, an acid catalyst, and at least one dyestuff to a fabric of cellulosic fibers, and heat-treating the fabric.

3,679,349
REMOVAL OF POLYESTER OLIGOMERS WITH CHLOROFLUOROALKANES AND METHYLENE CHLORIDE TREATMENT OF POLYESTER FIBERS
Hans-Ulrich von der Eltz and Walter Birke, Frankfurt am Main, Wolfgang Kunze, Hofheim, Taunus, and Franz Schou, Frankfurt am Main, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany
No Drawing. Filed Jan. 18, 1971, Ser. No. 107,571
Claims priority, application Germany, Jan. 20, 1970, P 20 02 285.9
Int. Cl. D06p *5/00*
U.S. Cl. 8—17 7 Claims

Process for the improvement of the processing and dyeing properties of textile materials consisting of or containing high molecular polyesters by treating these materials with a solvent mixture of halogenated methane or ethane derivatives of the general formula

R—F

in which R represents a radical of the formula

$FCl_2C—CFCl—$

or $Cl_3C—$, and methylene chloride, containing both the components in a weight ratio of from 30:70 to 70:30, preferably of from 45:55 to 55:45.

3,679,350
PROCESS FOR THE DYEING OF TEXTILE MATERIALS MADE FROM MIXTURES OF POLYESTER AND CELLULOSIC FIBRES
Rudolf Lowenfeld, Buchschlag, and Hans Kaiser, Offenbach am Main, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany
No Drawing. Filed May 6, 1970, Ser. No. 35,301
Claims priority, application Germany, May 14, 1969, P 19 24 803.4
Int. Cl. D06p *3/82*
U.S. Cl. 8—21 C 6 Claims

Process for the semi-continuous or continuous dyeing of textile material made from mixtures of polyester and cellulosic fibres, the polyester fibre portion of which having been predyed with disperse dyestuffs, by impregnating said textile material with an alkaline solution containing a coupling component and a diazoamino or tetrazoamino compound or an anti-diazotate, as well as wetting and dispersing agents, and subsequently treating the textile material, without intermediate drying, with an acidic solution at temperatures of from 50° to 80° C. to achieve development of the dyestuff on the fibre.

3,679,351
ATTENUATION OF THERMAL RADIATION WITH PHOTOTROPIC DYES
Leonard Weissbein, Bridgewater Township, Somerset County, and Samuel James O'Brien, Dunellen, N.J., assignors to American Cyanamid Company, New York, N.Y.
No Drawing. Filed Dec. 7, 1961, Ser. No. 157,837
Int. Cl. D06p *1/18, 3/28, 3/44*
U.S. Cl. 8—50 3 Claims

Objects, particularly cyanoethylated cellulose, cellulose acetate or nylon textile materials, are protected from the effects of incident, high intensity flash radiation by coloring them with certain phototropic azo dyes which upon exposure to said radiation exhibit a substantially instantaneous change to a white or colorless condition and which upon ceasation of exposure to said radiation revert rapidly to their original color.

3,679,352
METHOD OF PRINTING TEXTILES USING A PRINTING PASTE CONTAINING β-1,4 GLUCAN
Noriaki Mizuma, Tokyo, and Yuzo Yokota, Oi-machi, Iruma-gun, Japan, assignors to FMC Corporation, Philadelphia, Pa.
No Drawing. Filed Apr. 13, 1970, Ser. No. 28,066
Int. Cl. C09b
U.S. Cl. 8—62 6 Claims

A process of printing with a colored paste comprising finely-divided β-1,4 glucan particles, a water-soluble binder and a coloring agent wherein the paste is applied to a textile in the form of a pattern and the textile is subjected to steam, washed and dried.

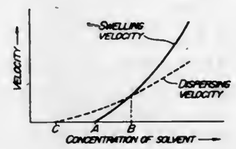
3,679,353
DIRECT DYE, ALKANOLAMINE OR MORPHOLINE, AND NEUTRAL SALT CONCENTRATE AND MILLING PREPARATION THEREOF
Clemens Streck, Loudonville, N.Y., assignor to GAF Corporation, New York, N.Y.
No Drawing. Filed Oct. 30, 1969, Ser. No. 872,723
Int. Cl. C09b *67/00*
U.S. Cl. 8—79 8 Claims

A method of preparing liquid dispersions of direct dyes. The method includes the steps of mixing a direct dye and a neutral salt with water and milling the resulting mixture to produce a pourable viscous liquid or paste.

3,679,354
PROCESS FOR THE MANUFACTURE OF HIGH BULK TEXTILE MATERIALS FROM POLYACRYLONITRILE
Dietrich Hildebrand, Odenthal, and Karl Neufang, Cologne, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany
No Drawing. Filed Aug. 10, 1970, Ser. No. 62,654
Claims priority, application Germany, Aug. 16, 1969, P 19 41 706.2
Int. Cl. D06m *3/16*
U.S. Cl. 8—130.1 5 Claims

Process for the manufacture of high bulk textile materials of polyacrylonitrile by heat treatment of textile materials consisting of polyacrylonitrile fibre materials of different thermal shrinkability, characterised in that the heat treatment is carried out in chlorinated hydrocarbons which optionally contain small amounts of water and small amounts of emulsifiers.

3,679,355
METHOD FOR IMPROVING POLYACRYLONITRILE FIBER BY PEELING OFF THE FIBER SURFACE WITH SOLVENTS
Hiroyuki Yamaguchi, Kyoto, Katsuyoshi Tuji, Osaka, Kenji Maki, Kyoto, and Isoo Shimonishi, Sakai-shi, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan
Filed Oct. 10, 1968, Ser. No. 766,550
Claims priority, application Japan, Oct. 16, 1967, 42/66,079
Int. Cl. D06m *3/00;* D06p *1/68, 3/70*
U.S. Cl. 8—130.1 10 Claims

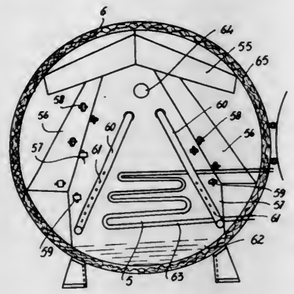


An acrylic fiber article is improved by treating it with a solution of a solvent having a concentration higher than that at which the solution begins to dissolve the fiber and lower than that at which the swelling velocity of the solution on the fiber surface is equal to the dispersing velocity of the surface of the swelled layer to peel the fiber. Examples of such solvent are dimethylformamide, dimethylacetamide, dimethylsulfoxide, sodium thiocyanate, zinc chloride, sulfuric acid, nitric acid, etc.

3,679,356
PROCEDURE FOR THE DYEING OF TEXTILE RIBBONS
Francisco Vancells Calvet, Tarrasa, Spain, assignor to Hilados y Tintes Soler, S.A., Barcelona, Spain
Filed May 1, 1969, Ser. No. 820,883
Claims priority, application Spain, Aug. 2, 1968, 356,806
Int. Cl. D06p *7/00*
U.S. Cl. 8—149.1 5 Claims

A process for the dyeing of textile ribbons wherein the air is swept out of the ribbons and expelled prior to the dye fixing process. The moistened dyed ribbons are delivered to a tub which is positionable within a dye fixing chamber, the tub being heated by a heat source disposed below the tub. A dry vapor is supplied to the interior of the fixing chamber. The vapors within the fixing chamber are drawn downwardly into the tub and through the

ribbons contained therein, which vapors are drawn through the bottom of the tub and discharged to a location externally of the fixing chamber. The air contained



with the ribbons is also drawn downwardly and discharged externally of the dye fixing chamber. The dye fixing chamber is then heated to a predetermined temperature and maintained at this temperature for a predetermined time for fixing of the dye within the textile ribbons.

3,679,357

METHOD FOR WET TREATMENT OF ELONGATED TEXTILE MATERIAL

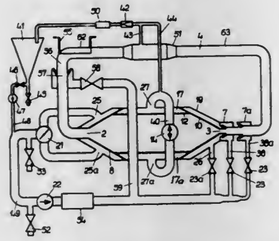
Wilhelm Christ and Peter Weissbach, Schwabisch Hall, Germany, assignors to Firma Rudolf Then, Farberimaschinenfabrik Gesellschaft mit beschrankter Haftung, Schwabisch Hall-Hessental, Germany

Filed June 4, 1969, Ser. No. 830,318

Claims priority, application Germany, June 6, 1968, P 17 60 576.4

Int. Cl. D06c *29/00*; B05c *3/04*

U.S. Cl. 8—152 **9 Claims**



A method of treating elongated textile material in a treatment vessel which has double walls, the inner wall being perforated; the treatment vessel having conical (or pyramidal) inlet and outlet sides, textile material being introduced at the inlet and removed, by suction, at the outlet side; the inner walls of the vessel are perforated, and treatment liquid introduced therein is removed alternately from one opposite lateral side, or the other, to set up cross currents of flow and bunch textile material, totally immersed in treatment liquid in the vessel; the removed liquid is re-introduced adjacent a portion of the outlet side by an injector nozzle, to additionally create a flow of liquid through a transport system which may be open, or closed.

3,679,358

PROCESS FOR THE DYEING OR PRINTING OF TEXTILE MATERIALS MADE FROM POLYMERS OR COPOLYMERS OF ACRYLONITRILE

Konrad Lohe and Reinhard Mohr, Offenbach, Main, and Eberhard Mundlos and Hermann Freb, Heusenstamm, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

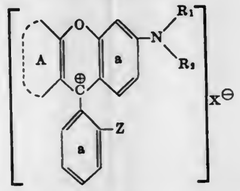
No Drawing. Filed July 27, 1970, Ser. No. 64,870

Claims priority, application Germany, Aug. 21, 1969, P 19 42 508.2

Int. Cl. D06p *3/70*

U.S. Cl. 8—177 AB **6 Claims**

Process for the dyeing or printing of textile materials made from polymers or copolymers of acrylonitrile, by using dyestuffs of the general formula



wherein R_1 and R_2 each stands for a hydrogen atom or optionally substituted lower alkyl group, Z represents a carboxylic acid ester group, A represents a phenylene radical which may contain non-ionic substituents optionally connected with one another to form a ring, but is free from amino groups, and $X^{\ominus}$ represents an anion and wherein the benzene nuclei *a* may contain further non-ionic substituents.

3,679,359

CONTINUOUS MANUFACTURE OF CUPROUS CHLORIDE

Erich Haberland and Werner Perkow, Hamburg, Germany, assignors to Norddeutsche Affinerie, Hamburg, Germany

No Drawing. Filed Mar. 2, 1970, Ser. No. 15,907

Int. Cl. C01g *3/04*

U.S. Cl. 23—97 **3 Claims**

Continuous production of cuprous chloride by reacting metallic, preheated copper with chlorine gas in a melt of cuprous chloride and/or cupric chloride at a temperature between 500 and 700° C. and passing the hot cuprous chloride product through a permeable layer of metallic copper.

3,679,360

PROCESS FOR THE PREPARATION OF BRUSHITE CRYSTALS

Bernard Rubin, Belmont, and James D. Childress, Arlington, Mass., assignors to the United States of America as represented by the Administrator of the National Aeronautics and Space Administration

No Drawing. Filed June 26, 1970, Ser. No. 50,339

Int. Cl. C01b *25/32*; A61k *5/02*

U.S. Cl. 23—109 **3 Claims**

A process for the preparation of calcium phosphate salts wherein a calcium phosphate salt is deposited from a gel medium onto the surface of a tooth. The use of the gel diffusion process to deposit the constituents of tooth enamel onto the surface of a weak or damaged tooth and thereby effect repair of the tooth is disclosed.

3,679,361

PROCESS FOR ALUM CRACKING AND THE SO OBTAINED PRODUCTS

Giovanni Bonelli, Via Marchiondi 7, Milan, Italy

No Drawing. Filed Jan. 21, 1970, Ser. No. 4,765

Int. Cl. C01d *5/00*; C01b *17/50*; C01f *7/30*

U.S. Cl. 23—121 **18 Claims**

A molten alum, is subjected to dehydration at a temperature of 95–300° C.—which can possibly be graduated in different percentages—and calcination, either in the same apparatus or in two different apparatuses, that is in a dehydrating and calcinating apparatus respectively; carrying out the operations preferably in a fluidized bed furnace and at a calcination temperature in a range of 575° C.–1200° C. Sulphur dioxide—from which sulphuric acid is successively prepared—alumina and alkali sulphates are obtained through the alum cracking thus effected.

3,679,362

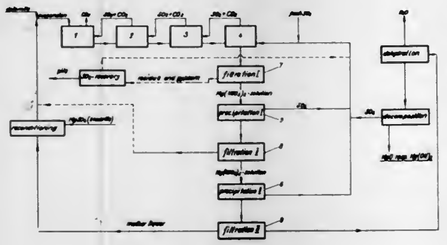
PROCESS FOR MAKING MAGNESIUM OXIDE OR HYDROXIDE FROM MAGNESIUM CONTAINING RAW MATERIALS

Hellmut Hartmann, Braunschweig, and Gerhard Budan, Wathlingen, Celle, Germany; said Budan assignor to Hellmut Hartmann, Braunschweig, and Wintershall Aktiengesellschaft, Kassel, Germany

Filed Feb. 19, 1969, Ser. No. 800,592

Int. Cl. C01f *5/14, 5/16*; C01b *17/48*

U.S. Cl. 23—201 **28 Claims**



A substantially pure magnesia or magnesium hydroxide is obtained by proceeding in succession as follows:

(a) treating a magnesium sulfate suspension of a magnesium containing raw material with sulfur dioxide to form a solution of magnesium bisulfite upon release of CO_2;
(b) separating the formed gypsum and insoluble residue from the said solution;
(c) converting the dissolved magnesium bisulfite to an insoluble neutral hydrate of magnesium sulfite that is substantially free of calcium;
(d) separating the hydrate from the mother liquor;
(e) dehydrating the said magnesium sulfite hydrate; and
(f) decomposing the sulfite to magnesium oxide or magnesium hydroxide while drawing off the sulfur dioxide.

3,679,363

PRODUCTION OF PHOSPHORUS

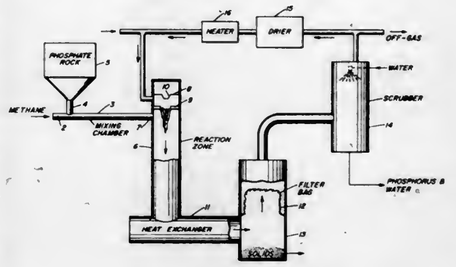
Joseph Francis Skrivan, Stamford, Conn., assignor to American Cyanamid Company, Stamford, Conn.

Filed Dec. 15, 1970, Ser. No. 98,363

Int. Cl. C01b *25/02*

U.S. Cl. 23—223 **4 Claims**

In a continuous process of making phosphorus by reduction of fine particulate phosphate rock while suspended as dilute solid phase in a gas stream which comprises hydrocarbon gas reducing agent, and wherein the phosphate rock and hydrocarbon reactants are heated together in said stream to reaction temperature in a reaction zone by hot plasma gas heated in a plasma generator, the invention provides the improvement wherein said plasma gas consists essentially of hydrogen and



carbon monoxide recycled from the reactor product stream after removal of phosphorus and solids from said product stream. Preferred reaction temperatures are about 1600–3400° F. The preferred hydrocarbon is methane. The recycle gas can be preheated prior to final heating in the plasma generator.

3,679,364

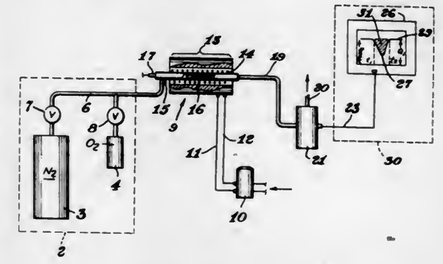
DETERMINING THE LOW LEVEL OXYGEN DEMAND OF COMBUSTIBLE MATERIALS IN AQUEOUS DISPERSIONS

James L. Teal and Charles Eugene Hamilton, Midland, Mich., and Dennis A. Clifford, Bethel Park, Pa., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of application Ser. No. 452,809, May 3, 1965. This application Oct. 30, 1970, Ser. No. 85,516

Int. Cl. G01n *31/12, 33/18*

U.S. Cl. 23—230 PC **5 Claims**



A method for measuring oxygen demands of aqueous dispersions containing combustible material in the parts per billion range. The method broadly comprises the steps of flowing a feed gas stream composed of an inert gas containing a small amount of oxygen into a confined, heated combustion zone, at a constant rate. The feed gas stream is passed through a combustion supporting, porous catalyst bed contained within the combustion zone, which is heated to a combustion supporting temperature. The gas stream is then fed into a detector for measuring small amounts of free oxygen. A small aliquot of the aqueous dispersion to be analyzed is injected into the feed gas stream within the combustion zone upstream from the catalyst bed. The resulting gaseous products are swept along in the gas

stream from the combustion zone into an oxygen detector. The oxygen depletion in the gas stream is calibrated to yield a measurement of the oxygen demand of the aqueous dispersion.

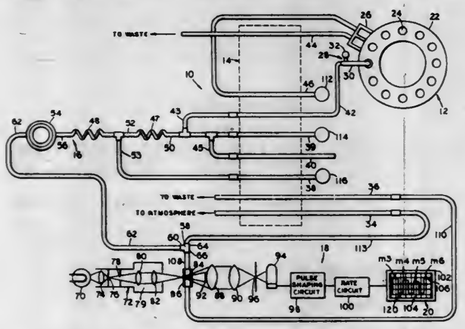
To achieve accurate measurements at low levels of oxygen demand, the method is operated with the feed gas stream containing oxygen within the range from about 0.5 up to about 10 parts per million by volume. A catalyst bed at least 8 centimeters long assures complete and reproducible combustion. It is also essential that the aqueous sample to be analyzed be substantially free of dissolved oxygen upon injection into the combustion zone.

3,679,365

METHOD FOR THE AUTOMATIC COUNTING OF THE SOMATIC CELLS IN MILK, AND NOVEL REACTION REAGENT FOR USE THEREWITH

Karl B. Wrightman, New City, and Hans Zehnder, Pound Ridge, N.Y., assignors to Technicon Instruments Corporation, Tarrytown, N.Y.

Filed Jan. 29, 1970, Ser. No. 12,515
Int. Cl. G01n *33/04*
U.S. Cl. 23—231 **20 Claims**



New and improved, automatic method and apparatus for the clarification of milk attendant the counting of the somatic cells therein by cell counter means, and a novel reaction reagent for use therewith, are provided and comprise means to supply a stream of a series of different milk samples and continuous streams of a reaction reagent and fixative for milk sample-reaction reagent mixture, and means to treat the mixture to effect the clarification reaction and clarify the milk whereupon the latter may be supplied to automatic cell counter means for somatic cell counting and provision of a permanent cell count record.

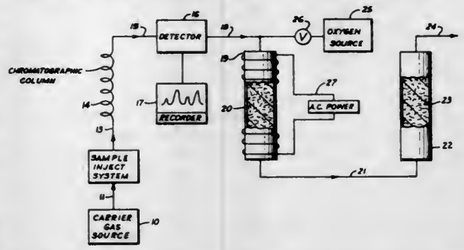
3,679,366

SAFETY DEVICE FOR REMOVING TRITIUM GAS FROM A GAS STREAM

Royal H. Benson, Texas City, and Robert J. Bodre, La Marque, Tex., assignors to Monsanto Company, St. Louis, Mo.

Filed Jan. 9, 1970, Ser. No. 1,630
Int. Cl. B01d *53/00, 59/28*
U.S. Cl. 23—254 R **23 Claims**

Safety device for removing tritium gas from flowing fluid streams comprised of a means to convert the tritium in the stream to a labile-tritium-containing compound and a trapping means connected to the conversion means such that the fluid stream upon exiting from the conversion means flows through the trapping means, the trapping means comprising a means to prevent the escape of the labile-tritium-containing compound to atmosphere. In a specific embodiment, the invention is a safety device for use in combination with gas chromatographic detectors of the electron capture type which employ a tritiated material as a source of beta radiation wherein the converter means is connected to the outlet of the detector and the trapping means, which in the preferred embodiment takes



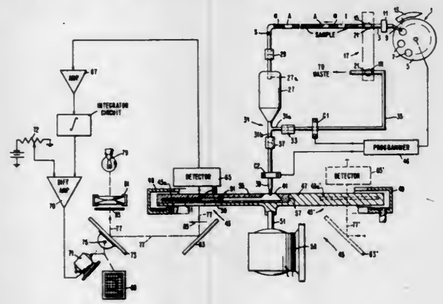
the form of a tritium-exchange means, is connected to the outlet of the converter means such that the tritium in the labile-tritium-containing compound is exchanged with labile hydrogen in the tritium-exchange means.

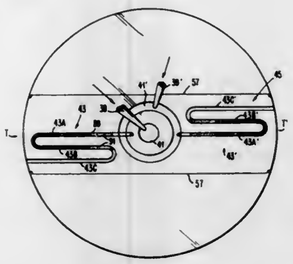
3,679,367

APPARATUS FOR DETERMINING THE PACK VOLUME OF PARTICULATES IN LIQUID MIXTURES

Kent M. Negersmith, Mahopac, and William J. Calogero, Hopewell Junction, N.Y., assignors to Technicon Instruments Corporation, Tarrytown, N.Y.

Filed Sept. 14, 1970, Ser. No. 71,700
Int. Cl. G01n *1/10, 21/00, 33/16*; B04b *5/12*
U.S. Cl. 23—259 **56 Claims**





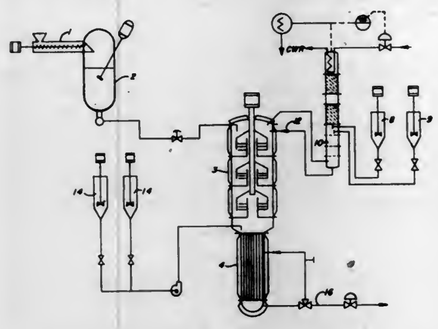
Blood samples are successively and centrifugally loaded into a same capillary chamber defined in a continuously rotating centrifuge head to measure the respective packed cell volumes. The capillary chamber is open-ended and has a serpentine configuration, i.e., it reverses upon itself, to trap and retain a fixed volume of each successive blood sample for centrifuging. The capillary chamber is purged of a packed blood sample by the introduction of a next successive blood sample.

3,679,368

CONTINUOUS POLYESTER POLYMERIZATION APPARATUS

Laszlo J. Balint and David W. H. Roth, Jr., Chester, and Orvill E. Snider, Petersburg, Va., assignors to Allied Chemical Corporation, New York, N.Y.

Filed Oct. 20, 1969, Ser. No. 867,726
Int. Cl. B01d *1/22*; C08f *1/98*
U.S. Cl. 23—263 **2 Claims**



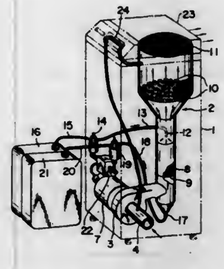
Apparatus for continuous esterification and polycondensation comprising a rectification unit having a feed outlet therefrom to a multiple zone, substantial vertical esterification means containing agitators and weirs (wherein said agitators are conical in shape) and interpositioned with respect to said weirs, and devolatilization means located between said multiple zone esterification means and a plug flow means.

3,679,369

DEODORIZATION DEVICE

Hideo Hashimoto, 17–22, Gamou 3-chome, Koshigaya-shi, Japan; Nobuo Kasahara, 2–7, Omori Nishi 1-chome, Ota-ku, Tokyo, Japan; and Toshio Yoshino, C10–6 Korigaoka 5-chome, Hirakata-shi, Osaka, Japan

Filed May 11, 1970, Ser. No. 36,262
Claims priority, application Japan, May 13, 1969, 44/36,175
Int. Cl. C01c *1/12*; B01d *53/34*
U.S. Cl. 23—284 **3 Claims**



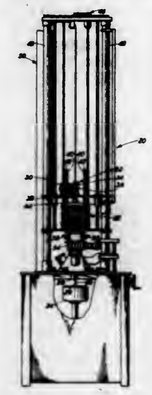
A deodorization device particularly adapted for use with ammonia process diazo copying machines includes an odor removing conduit having two odor removing sections, through which ammonia containing exhausts are caused to flow. A filler is provided in the first odor removing section, a deodorizing chemical being applied to the filler, while an ammonia adsorbent is provided in the second odor removing section, the ammonia containing exhausts flowing first through the first section and then through the second section.

3,679,370

CRYSTAL GROWER WITH EXPANDABLE CHAMBER

Joseph J. Czeck, Glen Lyon, and Raymond E. Reusser, Bethlehem, Pa., assignors to Western Electric Company, Incorporated, New York, N.Y.

Filed July 31, 1970, Ser. No. 60,052
Int. Cl. B01j *17/18*
U.S. Cl. 23—273 SP **6 Claims**



A crystal grower has an expandable chamber formed of alternate bellows and flanges, which surround a portion of a rotatable seed shaft. As a crystal is drawn out of a melt at the end of the seed shaft, the bellows extend to expand the chamber at the same rate the shaft is moved. As a result, an increased length of crystal is achieved for a particular length of seed shaft. A shorter seed shaft results in a more compact grower which ultimately results in fewer crystal defects because of a decrease in probability of shaft run-out or wobble.

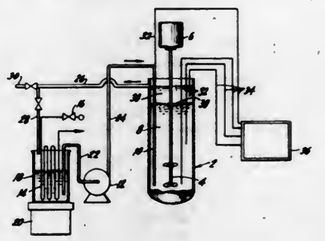
The chamber has externally mounted alignment members to withstand adverse environmental conditions which might otherwise cause distortion of the chamber.

3,679,371

CRYSTALLIZATION AND RECOVERY OF ELEMENTAL SULFUR FROM SOLVENTS

Lawrence C. Tisdel and Harry B. Scott, Golden, Colo., assignors to Brameda Resources Limited, Vancouver, British Columbia, Canada

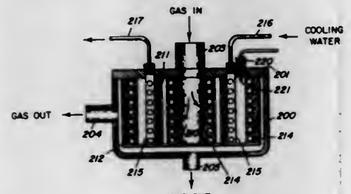
Filed June 27, 1969, Ser. No. 837,113
Int. Cl. B01d *9/02*; C01b *17/08*
U.S. Cl. 23—295 **7 Claims**



The process for the recovery of sulfur of controlled crystalline size from a solvent containing sulfur dissolved therein by a direct heat exchange relationship with a liquid, which is immiscible with said solvent. An immiscible liquid at a temperature different from that of the sulfur laden solvent is admixed directly therewith, mixed

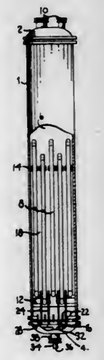
to insure adequate heat exchange contact, allowed to layer and drawn off for recycle. A slurry of crystalline sulfur in the phase in which it is contained, is withdrawn, separated and recovered.

3,679,372
OFF-GAS BURNER SYSTEM
William A. Hartman, Jr., and Manny Siegler, San Jose, Calif., assignors to General Electric Company
Original application Apr. 9, 1969, Ser. No. 814,769, now Patent No. 3,598,699, dated Aug. 10, 1971. Divided and this application Mar. 6, 1970, Ser. No. 24,953
Int. Cl. F23d *13/16*; F23g *7/06*
U.S. Cl. 23—277 C **4 Claims**



A system for burning flammable gas including three porous plugs in series in the off-gas line. The first plug serves as an upstream flame arrestor in case of burner failure. The second porous plug serves as a burner with a flame ignition means adjacent the downstream face of the plug. The third porous plug serves as a downstream flame arrestor and condenser for the water vapor formed in the flame reaction. Each of the porous plugs includes internal cooling means to remove heat. Appropriate temperature sensing means and control means are provided to insure safe, reliable operation.

3,679,373
REACTOR FOR USE WITH FLUIDIZED BEDS
Raymond M. Vancamp, Pittsburgh, Pa., Paul S. Minor, New Martinsville, W. Va., and Albert P. Muren, Jr., Corpus Christi, Tex., assignors to PPG Industries, Inc., Pittsburgh, Pa.
Filed Dec. 16, 1968, Ser. No. 783,788
Int. Cl. C07c *17/00*; B01j *9/20*
U.S. Cl. 23—288 L **19 Claims**

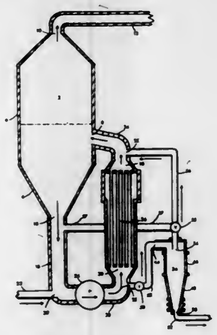


Apparatus suitable for containing fluidized bed reactions is described. The apparatus includes a reaction chamber and points for the admission of reactants to the reaction chamber located in at least two levels. Conduit ordinarily used for transferring heat from the reaction chamber is located in close proximity to the higher level. Preferably, most of the surface of the conduit is substantially vertical.

3,679,374
SEPARATION OF PHOSPHORUS ACID FROM MIXTURES OF PHOSPHORUS ACID AND PHOSPHORIC ACID BY CRYSTALLIZATION
William L. Kovacs, Springfield Township, Hamilton County, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio
No Drawing. Filed Mar. 31, 1970, Ser. No. 24,400
Int. Cl. C01b *25/00, 25/12*
U.S. Cl. 23—297 **9 Claims**

A method of isolating phosphorous acid from a mixture of phosphorous and phosphoric acid comprising the formation of a solution of said acid mixture in an alkyl phosphate or phosphite solvent at a temperature above about 70° F., cooling the acid/solvent solution to a temperature below about 70° F. and recovering the resultant phosphorous acid crystals by conventional means.

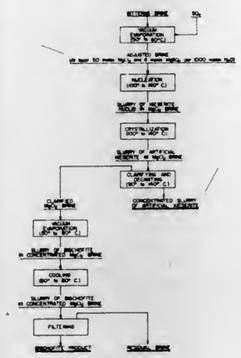
3,679,375
SALT PRODUCTION PROCESS
Horace W. Diamond, Flossmoor, Ill., assignor to Morton-Norwick Products, Inc., Chicago, Ill.
Filed Sept. 4, 1970, Ser. No. 69,868
Int. Cl. C01d *1/30*
U.S. Cl. 23—303 **2 Claims**



A process and apparatus for crystallizing and separating crystalline salt from brine involving in sequence heating said brine in a heater, conducting the resulting heated brine to an evaporating chamber, evaporating off water thereby causing nucleation and crystallization of salt in said brine to form a slurry, removing said slurry from said chamber to said heater for recirculation, bleeding a portion of said slurry into a centrifuging zone, centrifugally separating therein crystalline salt from said slurry, conducting the resultant supernatant brine to the evaporating chamber for recirculation, and discharging said crystalline salt from said centrifuging zone for collection.

3,679,376
PROCESS FOR REMOVING SULFATE FROM MAGNESIUM CHLORIDE BRINES CONTAMINATED THEREWITH
Hans Gerhard Flint and Ulrich E. G. Neitzel, Ogden, Utah, assignors to Great Salt Lake Minerals and Chemicals Corporation, Ogden, Utah
Filed Oct. 17, 1969, Ser. No. 867,336
Int. Cl. B01d *9/02*; C01f *5/30, 5/40*
U.S. Cl. 23—304 **9 Claims**

Magnesium chloride brines containing at least about 50 moles $MgCl_2$ and at least about 6 moles $MgSO_4$ per 1000 moles H_2O are heated rapidly to temperatures above about 100° C. to cause the formation of a substantial quantity of artificial kieserite nuclei. The resulting slurry is held at high temperature (about 130° C.) until substantially all of the metastable sulfate in solution has crystallized therefrom.

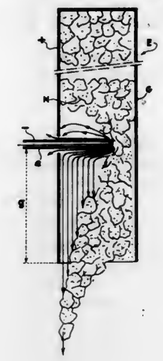


3,679,377
IRON COMPLEXES CONTAINING AQUO, SULFATE AND HYDROXYL LIGANDS
Donald C. Young, Fullerton, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.
No Drawing. Filed Feb. 17, 1970, Ser. No. 12,129
Int. Cl. C01g *49/00*
U.S. Cl. 23—315 **8 Claims**

An agronomically effective source of iron is provided in a plant nutrient solution as a soluble ferric sulfatohydroxyl complex anion. The solution is effective for foliar application to plants and is compatible with plant nutrients commonly used for fertilization such as ammonium nitrate and ammonium phosphate. Solutions containing the iron complexes have been observed to exhibit a greater agronomical effect on plants than exhibited by use of aqueous solutions of water soluble iron salts or chelates of iron using conventional chelating agents. In a specific embodiment, a solution is provided which is effective for the foliar fertilization of pineapple and which contains a soluble ferric sulfatohydroxyl complex dissolved in ammonium nitrate.

3,679,378
PROCESS FOR SEPARATING THE CORE OF A TUBULAR NUCLEAR FUEL ELEMENT
Jean Van Impe, St. Genese, Belgium, Pierre E. Chaussonnet, Sceaux, France, and Jean-Pierre M. Rombaux, Grimbergen, Belgium, assignors to ENI-L'Electro-Navale & Industrielle, Anvers, Belgium, and S.E.P.I., Saint-Denis, France
Filed July 9, 1969, Ser. No. 840,318
Claims priority, application Belgium, July 10, 1968, 158.676
Int. Cl. C22b *61/04*
U.S. Cl. 23—324 **10 Claims**

The electrically conductive outer cladding of a tubular element is separated from the inner core of the element by cutting the cladding electrochemically using an electrolyte and simultaneously leaching the core material out of the cladding by means of the electrolyte. The electrode used to effect the electrochemical cutting may be hollow and the electrolyte passed through it under pressure. The electrolyte may be of a nature which dissolves the core material. A screen beneath the tubular element catches empty cut sections of the element but allows the electrolyte and the core material to pass through for collection.



3,679,379
MAGNETIC COMPOSITIONS
Fumio Okamoto and Yasuo Wada, Tokyo, and Kazuo Miyatani, Kanagawa, Japan, assignors to RCA Corporation, New York, N.Y.
No Drawing. Filed May 19, 1967, Ser. No. 639,647
Int. Cl. C01b *19/00*; H01f *1/00*; H01b *1/06*
U.S. Cl. 23—367 **4 Claims**

A new magnetic semiconductor material comprises the molar formula $CuCr_2Z_3Br$ where Z is sulfur or tellurium. The material is in the spinel crystal class and is useful in magnetic and semiconductor devices. A method of preparing the material comprises first mixing the starting materials, copper bromide, chromium and sulphur or tellurium in the molar ratios of 1:2:3. Then pressed pellets of the mixture are formed and placed in an evacuated quartz tube. The pellets are then fired for about 50 hours at about 800° C.

ERRATUM

For Class 29—199 see:
Patent No. 3,679,381

3,679,380
POUR IMPROVERS FOR FUEL OILS
Charles B. Biswell, Woodstown, N.J., and Thomas F. Johnston, Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.
No Drawing. Continuation-in-part of application Ser. No. 785,376, Dec. 19, 1968. This application Mar. 1, 1971, Ser. No. 119,841
Int. Cl. C10l *1/16*
U.S. Cl. 44—62 **8 Claims**

Middle distillate fuel oil compositions containing an effective amount of a pour improver consisting of a soluble, substantially linear, ethylene copolymer consisting of, on a weight basis, 58 to 68% polymerized ethylene units, 32 to 42% polymerized propylene units, and up to 10% polymerized 1,4-hexadiene units, said copolymer having an inherent viscosity in tetrachloroethylene at 30° C. of about 0.1 to 0.45, a number average molecular weight of about 1,000 to 10,000 and a molecular weight distrbution of less than about 8.

3,679,381
NOVEL COMPOSITE

Hyman Chessin, Birmingham, Mich., assignor to M & T Chemicals Inc., New York, N.Y.

No Drawing. Filed Aug. 21, 1970, Ser. No. 66,146
Int. Cl. C23b 5/02, 5/06, 5/08, 5/18
U.S. Cl. 29—199 12 Claims

This invention relates to new processes and to a novel corrosion resistant bright decorative chromium composite metal coated article comprising:

(1) a first layer of copper;
(2) a second thin layer of bright cobalt thereon;
(3) a third thin layer containing nickel having a thickness of 2–12 microns; and
(4) a fourth layer of bright decorative chromium on said third nickel-containing layer

to form an article bearing a corrosion resistant bright decorative chromium surface.

3,679,382
THICKENED FUEL COMPOSITIONS AND METHOD AND MATERIAL FOR THICKENING SAME

William E. Cohrs, Midland, and Edward Stroiwas, Merrill, Mich., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Continuation-in-part of application Ser. No. 792,848, Jan. 21, 1969. This application Nov. 24, 1969, Ser. No. 879,552
Int. Cl. C10l 7/02
U.S. Cl. 44—7 D 17 Claims

Aliphatic fuel compositions such as gasoline, jet (turbine) fuel, diesel fuel and the like are thickened to decrease flammability hazards employing soluble polymers containing minor amounts of polar materials such as acrylic acid. Such fuel does not induce sulfidation on combustion.

3,679,383
PROCESS FOR THE MANUFACTURE OF SHAPED ARTICLES OF ZIRCONIUM CORUNDUM

Peter Hack, Ranzel, Troisdorf, Karl Haas, Niederkassel, and Georg Schinke, Ranzel, Troisdorf, Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Germany

No Drawing. Continuation-in-part of application Ser. No. 757,452, Sept. 4, 1968. This application Feb. 17, 1970, Ser. No. 14,811
Claims priority, application Germany, Sept. 5, 1967, D 54,018
Int. Cl. C09c 1/68
U.S. Cl. 51—309 7 Claims

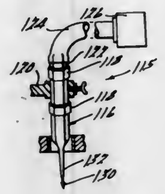
Process for manufacturing shaped articles of zirconium corundum which comprises shaping a fine grained eutectic mixture of low-silica bauxite and zirconium oxide, possibly in admixture with an organic binding agent and heating the shaped bodies in a reducing atmosphere at a temperature of 1250–1500° C. or in an oxidizing atmosphere at a temperature of 1400–1600° C.

3,679,384
METHOD FOR FORMING A HONEYCOMB STRUCTURE

William B. Colson, Royal Oak, Herbert C. Niedermiller, Warren, and Bagdasar Deradoorian, Detroit, Mich., assignors to The Bendix Corporation, Southfield, Mich.

Filed May 7, 1970, Ser. No. 35,379
Int. Cl. C03c 25/02
U.S. Cl. 65—4 10 Claims

A method for forming a honeycomb structure from glass tubes and the resulting article including arranging the tubes in a stack, heating the stack, and maintaining the interstitial spaces of the stack at a predetermined gas pressure no greater than that of the remainder of the stack, in order to radially expand the individual tubes of the stack and reduce the cross sectional size of interstitial spaces between tubes a predetermined amount. The

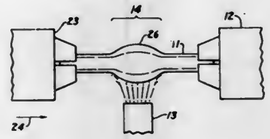


method can be used to change the cross sectional shape of a round tube of the stack to other shapes such as hexagonal or square.

3,679,385
MANUFACTURE OF INTERIOR COATED BULBS FOR HIGH TEMPERATURE GLASS LAMPS

Stephen P. Senft, Cleveland Heights, Ohio, assignor to General Electric Company

Filed Sept. 18, 1970, Ser. No. 73,500
Int. Cl. C03b 23/14; C03c 17/02
U.S. Cl. 65—60 6 Claims



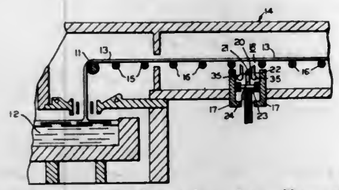
An interior coated lamp envelope having a thick-walled bulbous portion is manufactured by first coating an interior region of a length of quartz tubing with a layer of boric oxide. This may be done by bubbling nitrogen gas through liquid trimethyl borate and feeding the resultant vapors, along with air, through the quartz tubing while rotating in a glass lathe and heating the region thereof which is to be formed into a thick-walled bulbous portion. While continuing the heating, the ends of the tubing are forced toward each other thereby forming a thick-walled bulbous portion and at the same time baking the deposited coating of boric oxide.

3,679,386
PROCESS AND APPARATUS FOR FORMING A METAL OXIDE COATING ON FLAT GLASS

Akira Kushihashi, Nishinomiya-shi, and Koji Ikeda, Tsushi, Japan, assignors to Nippon Sheet Glass Co., Ltd., Osaka, Japan

Filed June 22, 1970, Ser. No. 48,334
Claims priority, application Japan, June 30, 1969, 44/52,058
Int. Cl. C03c 17/20
U.S. Cl. 65—60 8 Claims

Process and apparatus for forming a metal oxide coating on the surface of flat glass wherein a solution of a metal compound convertible to its oxide upon pyrolysis is sprayed from a nozzle uniformly on the surface of flat glass maintained at a temperature of 400° to 750° C. during its transfer towards a lehr, the spraying being performed within a spray chamber including the nozzle therein and defined by partition walls in order not to have the spray scattered in the direction of transfer of the flat glass.

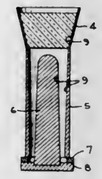


The process ensures the formation of a uniform and compact coating.

3,679,387
METHOD AND APPARATUS FOR MANUFACTURING TUBULAR OPTICAL GLASS

Tetsuo Kudo and Kozo Nakatani, Itami, and Kiyoyasu Koda, Nishinomiya, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Continuation-in-part of application Ser. No. 830,623, June 5, 1969. This application Dec. 1, 1971, Ser. No. 203,789
Claims priority, application Japan, June 17, 1968, 43/41,338
Int. Cl. C03b 9/04
U.S. Cl. 65—105 5 Claims



An upstanding mold is divided into inner and outer sections which rest on a base including a ring member so as to form a reservoir at the bottom of the mold. The inner and outer molds have inclining surfaces so that the annular space between the molds increases from the base support to the top of the mold. A glass preform rests on top of the mold and is heated to cause the glass to melt and flow into the annular recess. The molten glass at the bottom of the mold collects in the reservoir thereby enabling the glass to flow freely down between the mold sections, thereby preventing bubbles and stria from forming. After the glass has cooled, the bottom is removed from the mold and the inner and outer molds withdrawn downwardly so as to free the glass cylinder.

3,679,388
TOUGHENING OF GLASS

David George Giddings, Stourbridge, and David Duncan Murphy, Leamington Spa, England, assignors to Pilkington Brothers Limited, Liverpool, England

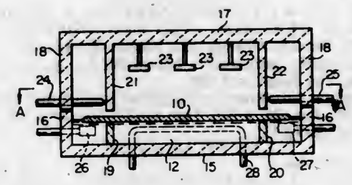
No Drawing. Filed Dec. 30, 1969, Ser. No. 889,340
Claims priority, application Great Britain, Jan. 8, 1969, 1,262/69; June 24, 1969, 31,952/69
Int. Cl. C03b 27/00
U.S. Cl. 65—116 12 Claims

Glass heated to a temperature near its softening point is toughened by heat exchange with an oil held at a temperature below the flash point of the oil, there being maintained in the oil a proportion from 0.01% to 0.07% by weight of a liquid having a boiling point lower than the flash point of the oil.

3,679,389
METHOD AND APPARATUS FOR THE MANUFACTURE OF FLAT GLASS

Eizo Kanai, Yokohama, Japan, assignor to Asahi Glass Co., Ltd., Tokyo, Japan

Filed July 8, 1970, Ser. No. 53,072
Claims priority, application Japan, July 15, 1969, 44/55,429
Int. Cl. C03b 18/00
U.S. Cl. 65—99 A 9 Claims



An improved float process for the manufacture of flat glass in which a glass ribbon formed in a forehearth is fed onto a molten metal bath and both edges of the ribbon are maintained at temperatures lower than that of a central portion of the ribbon, whereby the glass ribbon advances without a substantial change in thickness and is smoothed in the course of the advance.

3,679,390
SUSPENSION FERTILIZERS

Donald C. Young, Fullerton, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

No Drawing. Filed Nov. 21, 1969, Ser. No. 878,955
Int. Cl. C05b 15/00
U.S. Cl. 71—29 8 Claims

An aqueous, suspension fertilizer is described which contains up to about 75 weight percent insoluble solids that are present in the aqueous suspension at concentrations greater than their solubilities and are maintained in suspension by the presence of a calcium orthophophate gel. The compositions are prepared by admixing ammonium phosphate, the desired nutrient such as a potassium salt, urea source, ammonium salt, phosphate rock, acidulated phosphate rock, elemental phosphorus or sulfur, or a minor nutrient such as a salt of any of the trace metals, and then adding a soluble calcium salt to gel the mixture. The compositions are preferably prepared under highly turbulent conditions to insure intimate dispersion of the calcium salt gelling agent throughout the liquid before precipitation occurs. It has been found that the compositions prepared in this manner are highly thixotropic and resist settling under static or dynamic conditions. The compositions are prepared at a pH value from about 6.5 to about 7.4 where the maximum thixotropicity of the calcium orthophosphate precipitate can be achieved. In this fashion, maximum gelation is effected with the minimum quantity of the calcium salt.

3,679,391
FERTILIZER COMPOSITIONS

James Jack, Troon, and John Drake, Ardrossan, Scotland, David Crompton Thompson, Norton-on-Tees, England, and Frederick John Harris, Edinburgh, Scotland, assignors to Imperial Chemical Industries Limited, London, England, and Scottish Agricultural Industries Limited, Edinburgh, Scotland

Filed Apr. 18, 1968, Ser. No. 722,498
Claims priority, application Great Britain, Apr. 24, 1967, 18,781/67; June 7, 1967, 26,317/67
Int. Cl. C09k 3/00
U.S. Cl. 71—64 E 9 Claims

Fertilizer compositions, for example granular fertilizers containing ammonium nitrate or urea, having improved

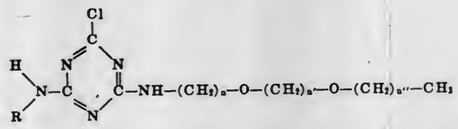
free-flowing properties, resistance to caking and drillability, are provided with a coating comprising a silicon compound selected from silanes (exemplified by alkyltrialkoxy silanes) and organopolysiloxanes (exemplified by cyclic and linear alkyl hydrogen siloxanes) which are efficacious even when applied at room temperature.

3,679,392
PLANT GROWTH STIMULATED BY A COMBINATION OF GLYCOLIC ACID AND GIBBERELLIN
Robert E. Strauss, Orange, and Saburo Hashimoto, Yorba Linda, Calif., assignors to Union Oil Company of California, Los Angeles, Calif.
No Drawing. Continuation-in-part of application Ser. No. 700,370, Jan. 25, 1968. This application June 18, 1969, Ser. No. 834,515
Int. Cl. A01n 9/28
U.S. Cl. 71—89 3 Claims

Glycolic acid applied to foliage will open stomata pores and cause the plant to become desiccated. The glycolic acid also may be combined with known desiccants. In lower concentrations, the glycolic acid may be employed with systemics such as herbicides and gibberellic acid to aid their absorption and translocation by the plant.

3,679,393
ALKOXY-ALKYLAMINO-s-TRIAZINE HERBICIDES
Daniel Bertin, Montrouge, and Jacques Perronnet, Paris, France, assignors to Roussel-UCLAF, Paris, France
No Drawing. Original application Nov. 13, 1968, Ser. No. 775,545, now Patent No. 3,551,421, dated Dec. 29, 1970. Divided and this application Aug. 20, 1970, Ser. No. 65,660
Int. Cl. A01n 9/22
U.S. Cl. 71—93 8 Claims

Novel herbicidal compositions containing as the active ingredient at least one triazine of the formula



wherein R is lower alkyl of 1 to 7 carbon atoms and n and n' are 1 or 2 and and n'' is 0, 1 or 2 and novel methods of killing weeds.

3,679,394
METHOD FOR CASTING HIGH Ti CONTENT ALLOYS
William J. Buehler, Bethesda, Md., assignor to the United States of America as represented by the Secretary of the Navy
No Drawing. Continuation-in-part of application Ser. No. 493,940, Oct. 7, 1965, now Patent No. 3,508,914, dated Apr. 28, 1970. This application Nov. 24, 1969, Ser. No. 879,622
Int. Cl. C22b 53/00; C22d 7/06
U.S. Cl. 75—10 8 Claims

Methods for forming and treating alloys containing (a) Ti and Ni, (b) Ti, Ni and Co, (c) Ti and Co, (d) Ti, Co and Fe, and (e) Ti and Fe which include preparing the alloys by induction melting techniques and purifying the alloys by contacting the molten alloy with carbon. The alloys are further cast in suitable graphite molds with the solidification process proceeding from the bottom toward the top of the mold.

3,679,395
PROCESS FOR RECOVERING LEAD, LEAD ALLOYS, AND LEAD COMPOSITIONS FROM BATTERIES
Frank C. Smyers, Munster, and John H. Garrison, Griffith, Ind., assignors to United States Smelting, Refining & Mining Company, New York, N.Y.
Filed July 27, 1970, Ser. No. 58,474
Int. Cl. C22b 13/00
U.S. Cl. 75—77 14 Claims

The improved process for recovering lead and other metallic components from whole storage batteries and/or battery scrap generally involves the preparation of a unique feedstock which is useful as a charge for a blast furnace or other reducing apparatus. This unique feedstock is prepared, for example, by treating batteries or battery scrap to form a comminuted mass of battery particles, preparing a porous, pelletized bed of battery particles, and sintering the pelletized bed of battery particles for a time and under conditions sufficient to form an agglomerated sinter cake and to reduce or eliminate the sulfur content of the pelletized bed. The sinter cake is used alone or in combination with various other materials as a blast furnace charge.

3,679,396
MERCURY RECOVERY FROM SEDIMENT
Vernon A. Stenger, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.
No Drawing. Filed Jan. 14, 1971, Ser. No. 106,559
Int. Cl. C22b 7/00, 43/00; E02d 29/00
U.S. Cl. 75—81 6 Claims

A method is provided for recovering mercury from sediment at the bottom of a body of water by overlaying the sediment with a layer of metal containing at least one of aluminum, magnesium and zinc. Preferably, the metal is in sheet form for more efficient interception of mercury vapor rising from the sediment. After removal of the metal from the water body, the mercury, which forms an amalgam on the surface of the metal, may be recovered by distillation from the metal surface.

3,679,397
BACTERIAL LEACHING PROCESS
Lawrence T. O'Connor, Tucson, Ariz., and James A. Brierley and Roshan B. Bhappu, Socorro, N. Mex., assignors to The Regents, New Mexico Institute of Mining and Technology, Socorro, N. Mex.
No Drawing. Filed Dec. 29, 1969, Ser. No. 888,815
Int. Cl. B22b 3/00
U.S. Cl. 75—101 12 Claims

A process for leaching metallic constituents from metallurgical materials and lixiviant composition therefor wherein the lixiviant solution contains ferrous sulfate, bacteria and carbamide phosphoric acid (urea phosphoric acid).

3,679,398
PROCESS FOR THE PREPARATION OF ACICULAR, SUBMICROSCOPIC, PERMANENTLY MAGNETIZABLE METAL PARTICLES
John W. Geus, Geleen, Netherlands, assignor to Stamicarbon N.V., Heerlen, Netherlands
Filed Mar. 20, 1970, Ser. No. 21,466
Claims priority, application Netherlands, Mar. 22, 1969, 6904453
Int. Cl. C22b 5/00, 23/00
U.S. Cl. 75—108 6 Claims

The preparation of acicular cobalt-containing permanently magnetizable material is described wherein the pH value of a solution containing a cobalt salt and a ferrous salt, or a cobalt salt and a nickel salt or a combination of said three salts, is homogeneously increased at a con-

trolled temperature and with agitation, following which the resulting precipitate is then subjected to a reductive treatment in a separate liquid phase.

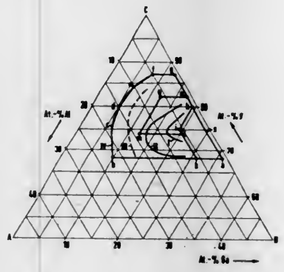
3,679,399
CONTINUOUS PROCESS TO PRECIPITATE HIGH PURITY COPPER POWDER FROM ACID LEACHING LIQUORS CONTAINING COPPER IN SOLUTION
Denton C. Linton, Salt Lake City, Utah, Andrew Zinkl, Prescott, Ariz., and Jack Ballam, Moab, Utah, assignors to Micro Copper Corporation
Continuation-in-part of abandoned application Ser. No. 841,477, July 14, 1969. This application Nov. 10, 1970, Ser. No. 88,465
Int. Cl. C22b 15/12
U.S. Cl. 75—109 6 Claims

A method of precipitating copper powder continuously from an acid leaching liquor is disclosed comprising steps of adding aluminum powder to a copper pregnant liquor solution together with sodium chloride as a catalyst, the aluminum powder displacing and causing precipitation of most but not all the copper from the solution, the remaining copper being subsequently precipitated by interaction with aluminum ingots.

3,679,400
HOT DUCTILITY OF STEELS CONTAINING TELLURIUM
Elliot Simon Nachtman, Evanston, Ill., assignor to La Salle Steel Company, Hammond, Ind.
No Drawing. Filed Oct. 19, 1970, Ser. No. 82,090
Int. Cl. C22c 39/54
U.S. Cl. 75—123 AA 15 Claims

Minimizing the loss in ductility at elevated temperature resulting from the additions of tellurium to steels by providing the steels with rare earth metals in predetermined amounts with the tellurium.

3,679,401
SUPERCONDUCTIVE ALLOY AND PRODUCTION THEREOF
Alfred Müller and Arno Fink, Erlangen, Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany
Filed Nov. 26, 1969, Ser. No. 880,076
Claims priority, application Germany, Nov. 30, 1968, P 18 11 926.1
Int. Cl. C22c 27/00
U.S. Cl. 75—134 V 5 Claims



Intermetallic superconductor with composition

$V_xGa_yAl_z$

where $x+y+z=100$ and $68\leq x\leq 87$; $5\leq y\leq 31$ and $1\leq z\leq 22$. Compositions can be formed in A2 lattice, machined to desired form and converted to A15 lattice.

3,679,402
PORCELAIN BONDING DENTAL GOLD ALLOY
Leo Hirschhorn, 4 Hartley Road, Great Neck, N.Y. 11023
No Drawing. Filed Jan. 4, 1971, Ser. No. 103,866
Int. Cl. C22c 5/00
U.S. Cl. 75—165 1 Claim

A dental gold alloy used for bonding to dental porcelains for capping teeth and similar purposes consisting essentially of approximately by weight of 67.7% gold, 11.6% platinum, 16.7% palladium, 1.3% ruthenium, 2% silver, .6% tin and .1% copper. The alloy is characterized in having a melting point of approximately 2400 degrees F. and having a coefficient of expansion closely approximating most commercially available dental porcelains, which may be adjusted for perfect compatibility. In addition, the alloy is relatively free of any tendency to gas, oxidize or discolor during baking, and is capable of greater elongation than prior art alloys.

3,679,403
METHOD OF IMPROVING MACROSTRUCTURE OF TITANIUM-BASE ALLOY PRODUCTS
Howard B. Bomberger, Jr., Canfield, and Stanley R. Seagle, Warren, Ohio, assignors to RMI Company, Niles, Ohio
Continuation-in-part of application Ser. No. 749,269, Aug. 1, 1968. This application May 5, 1970, Ser. No. 34,674
Int. Cl. C22c 15/00
U.S. Cl. 75—175.5 9 Claims

A method of improving the macrostructure of titanium-base alloy products by adding to the alloy about 0.03 to 0.40 percent yttrium, which may be either the metal itself or a compound thereof. Addition of yttrium achieves a fine grain structure and avoids spangled surfaces on macroetched sections of the product, but usually lowers both the yield strength and ultimate tensile strength of the product. Invention compensates for this latter effect by adjusting the content of strengthening agents, preferably oxygen or nitrogen.

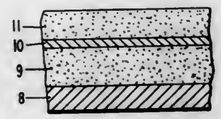
3,679,404
ZINC BASE CASTING ALLOY
Leslie J. Larrieu, San Marino, Calif., assignor to Morris P. Kirk & Son, Inc., Los Angeles, Calif.
No Drawing. Filed Feb. 8, 1971, Ser. No. 113,728
Int. Cl. C22c 17/00
U.S. Cl. 75—178 AM 8 Claims

Improved zinc base die casting alloys conforming to A.S.T.M. B86–64 AG40A with lowered magnesium contents that impart improved fluidity properties enabling lowered temperature die casting use and retaining dimensional stability and permanence of properties after aging.

3,679,405
ELECTROPHOTOGRAPHIC ELEMENT HAVING A SERIES OF ALTERNATE PHOTOCONDUCTIVE AND INSULATING LAYERS
Katsuo Makino and Iwao Sawato, Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Aug. 26, 1968, Ser. No. 755,166
Claims priority, application Japan, Aug. 26, 1967, 42/54,679
Int. Cl. G03g 5/00, 7/00
U.S. Cl. 96—1.5 14 Claims

An electrophotographic element is made having n photoconductive insulating layers and $n-1$ insulating

layers respectively interposed between said n photoconductive insulating layers, where $n=2, 3 \ldots i-1, i, \ldots N$. The photoelectric current generated in the



ith photoconductive layer is greater than that generated in the $(i-1)$th photoconductive layer, the $(i-1)$th layer being on the exposed side of the element.

3,679,406

HETEROGENEOUS PHOTOCONDUCTOR COMPOSITION FORMED BY LOW-TEMPERATURE CONDITIONING

Frederick J. Kryman, Batavia, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Nov. 13, 1970, Ser. No. 89,446
Int. Cl. G03g 5/00; H01l 13/00
U.S. Cl. 96—1.6 10 Claims

Heterogeneous photoconductive compositions are formed by first dissolving a dye in a solvent. After substantial dissolution of the dye, polymer and photoconductor are added to the dye solution to form a coating dope. The resultant dope is subjected to low-temperature conditioning by cooling to a reduced temperature and holding at that temperature for a period of time. The conditioned dope is then warmed to coating temperature, coated as a thin film and allowed to dry to form a heterogeneous composition containing submicron sized particles of a co-crystalline complex. Electrophotographic elements are formed by coating this dope on a support.

3,679,407

METHOD OF FORMING HETEROGENEOUS PHOTOCONDUCTIVE COMPOSITIONS AND ELEMENTS

Curtis L. Stephens, Brockport, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Nov. 13, 1970, Ser. No. 89,447
Int. Cl. G03g 5/00
U.S. Cl. 96—1.6 10 Claims

A method of forming heterogeneous photoconductive compositions comprises the steps of forming a first solution of a carbonate polymer and a pyrylium dye, subjecting the solution to shearing action, preparing a second solution of pyrylium dye alone and combining the first and second solutions with an organic photoconductor and a polymeric binder different from the carbonate polymer, coating the resultant combination and drying.

3,679,408

HETEROGENEOUS PHOTOCONDUCTOR COMPOSITION FORMED BY TWO-STAGE DILUTION TECHNIQUE

Frederick J. Kryman, Hornell, and William J. Staudenmayer, Pittsford, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Nov. 13, 1970, Ser. No. 89,448
Int. Cl. G03g 5/00; H01l 13/00
U.S. Cl. 96—1.6 10 Claims

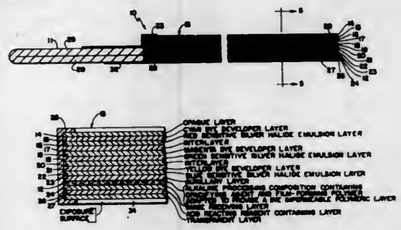
Heterogeneous photoconductive compositions containing dye and polymer are prepared by a two-stage dilution technique. The dye used is dissolved in a solvent at a dye/solvent ratio substantially equal to the solubility limit of the dye. Polymeric binder and photoconductor are added and the additional solvent is added to substantially reduce the dye/solvent ratio well below the solubility limit. Upon coating the resultant formulation, a high-speed heterogeneous composition results.

3,679,409

COLOR DIFFUSION TRANSFER PROCESSES AND ELEMENTS FOR USE THEREON WITH INCORPORATED IMAGE-FORMING MATERIAL IMPERMEABLE LAYER

Sheldon A. Buckler, Lincoln, Terry W. Milligan, Belmont, and Howard G. Rogers, Weston, Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Continuation-in-part of application Ser. No. 867,583, Oct. 20, 1969. This application June 1, 1971, Ser. No. 148,349
Int. Cl. G03c 5/54, 1/48, 1/32
U.S. Cl. 96—3 52 Claims



Diffusion of undesirable image-forming materials to the image-receiving element of a multicolor diffusion transfer photographic product is inhibited by incorporating in such product an image-forming material impermeable layer between the image-receiving element and the next adjacent silver halide emulsion layer subsequent to substantial image formation.

3,679,410

HEAT-SENSITIVE RECORDING MATERIAL

Marcel Nicolas Vrancken, Hove, and Daniel Alois Claeys, Mortsel, Belgium, assignors to Agfa-Gevaert, Mortsel, Belgium

Continuation-in-part of application Ser. No. 608,571, Jan. 11, 1967. This application Nov. 23, 1970, Ser. No. 91,864
Claims priority, application Great Britain, Jan. 11, 1966, 1,350/66
Int. Cl. G03c 5/04
U.S. Cl. 96—27 48 Claims



A heat-sensitive recording material containing a thermosensitive recording layer comprising hydrophobic thermoplastic particles dispersed in a hydrophilic binder and in underlying contacting relation to said recording layer an underlayer having a hydrophility and removability with water less than that of said recording layer and which contains at least one thermoplastic substance having a hydrophobic character and a melting or softening point such that said substance remains adherent after heating to the heat coalesced hydrophobic thermoplastic particles contained in the hydrophilic binder of the recording layer.

According to a preferred embodiment the interlayer has been prepared from a latex containing polymer particles which coalesce on drying the coated layer at room temperature. The interlayer may contain hydrophilic pigments such as colloidal silica and a hydrophilic binder that is preferably less soluble in water than the hydrophilic binder of the recording layer and the weight ratio of polymer particles relative to the hydrophilic binder is preferably at least 1:1.

3,679,411

NOVEL FRICTIONAL RESISTANCE MOTION PICTURE FILM

Robert K. Stephens, Burlington, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

No Drawing. Filed July 13, 1970, Ser. No. 54,613
Int. Cl. G03c 5/54
U.S. Cl. 96—29 16 Claims

Exposed motion picture film is processed with a developing composition containing a friction reducing agent to impart slip properties to the film thereby minimizing frictional resistance as the film contacts various mechanisms involved in transporting, storing and projecting film strips, thus minimizing a lack of uniformity in film transport rates and obviating damage to the film as a result of frictional resistance.

3,679,412

LITHOGRAPHIC PRINTING PLATES AND METHODS FOR PREPARATION THEREOF

William E. Guthrie and Anthony J. Parrinello, both of 1669 Lake Ave., Rochester, N.Y. 14650

No Drawing. Continuation-in-part of application Ser. No. 769,430, Oct. 21, 1968. This application May 4, 1970, Ser. No. 34,541
Int. Cl. G03c 7/02
U.S. Cl. 96—33 15 Claims

Lithographic plates are prepared by (a) providing metallic support with gelatinous image; (b) treating the gelatinous image with an aqueous solution comprising dichromate, halide, and acetic acid; and (c) subjecting the treated image to heat.

3,679,413

PHOTOGRAPHIC PROCESS WHICH PRODUCES NEUTRAL DYE IMAGE IN DIAZOTYPE MATERIAL

William C. Gray, Jr., Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 657,077, July 31, 1967, now Patent No. 3,573,051, dated Mar. 30, 1971. This application Sept. 21, 1970, Ser. No. 74,230
Int. Cl. G03c 1/54, 1/58, 5/18
U.S. Cl. 96—49 6 Claims

A two-component diazotype composition which provides, upon exposure and development, a neutral image with low contrast is obtained by employing as the light-sensitive layer a polymeric matrix such as cellulose acetate having dispersed therein a light-sensitive diazotype composition comprising (1) as the diazo component, a 2,5-dialkoxy-4 - morpholinobenzene diazonium salt, and optionally a 4-(dialkylamino)benzene diazonium salt; (2) as a blue coupler, at least one of a 2-hydroxy-N-(2-alkyl phenyl)-3-naphthamide, and a 2-hydroxy-N-(2,4-dialkoxy-5-halophenyl)-3-naphthamide; and (3) as a yellow coupler, an N-substituted or N,N-di-substituted 1-hydroxy-2-naphthamide or a 2-acylamido-5-alkylphenol. The diazotype composition is preferably stabilized against premature coupling by the presence of acid stabilizers such as 5-sulfosalicyclic acid. These compositions are conveniently processed by contact with an alkaline medium, such as one containing ammonia. Additionally, formulations containing the phenol coupler are advantageously processed by contact with high pressure anhydrous ammonia.

3,679,414

LITHOGRAPHIC PLATE AND METHOD

Joan M. W. Mukherjee, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

No Drawing. Filed Aug. 4, 1969, Ser. No. 847,393
Int. Cl. G03c 1/76, 3/00
U.S. Cl. 96—67 8 Claims

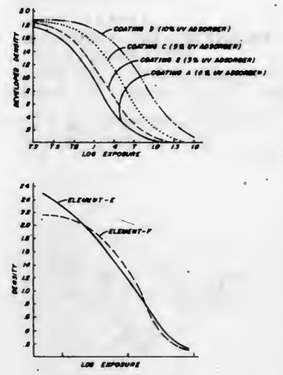
A lithographic plate comprises a hydrophilic backing having an oleophilic solvent-removable coating which becomes solvent-resistant when heated in reactive association with an oxidizing agent. The coating comprises a polyphenolic reducing agent together with a lesser amount of chemically inert film-forming binder.

3,679,415

DIAZOTYPE PHOTOGRAPHIC ELEMENTS HAVING EXTENDED EXPOSURE LATITUDE WITH SPECIFIC U-V ABSORBER

James G. McNally, Jr., Pittsford, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed July 18, 1969, Ser. No. 842,906
Int. Cl. G03c 1/60, 1/52, 1/58
U.S. Cl. 96—68 4 Claims



Diazotype photographic elements having stratified light-sensitive layers including a diazonium salt and a coupler compound which can react with the diazonium salt to produce an azo dye are able to reproduce highlight and shadow details of continuous tone images under widely varying exposure conditions and without background stain by the inclusion therein of an alkaline-bleachable ultraviolet absorber layer which is positioned such that it intercepts activating exposing radiation not later than its passage through the terminally irradiated light-sensitive layer. Advantageous ultraviolet absorber materials include substituted pyrylium salts and substituted thiapyrylium salts such as 2,4,6-triphenylthiapyrylium fluoroborate. Additionally, duplicating characteristics including the print speed and image quality of subsequent generation copies are improved.

3,679,416

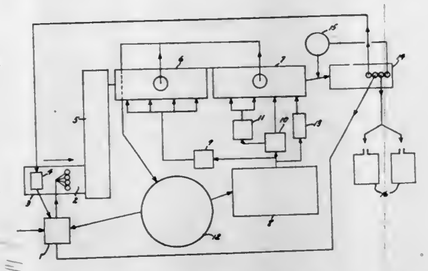
AGGLOMERATION OF POWDERED COFFEE

Izmar M. Reich, Merrick, N.Y., assignor to Chock Full O'Nuts Corporation, New York, N.Y.

Filed Dec. 2, 1970, Ser. No. 94,462
Int. Cl. A23f 1/04
U.S. Cl. 99—71 6 Claims

A means and method for modifying instant coffee by agglomeration to form particles of controlled increased size, darkened appearance, and controlled bulk density. A falling stream of instant coffee is sprayed with an aqueous fluid and is allowed to drop onto a moving layer

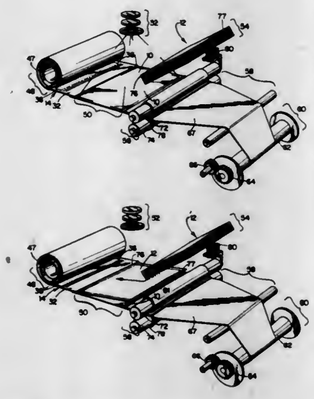
of dry instant coffee. The combined moistened and dry coffee is dried at low temperature. Agglomerated particles are removed by screening and the undersize particles are recycled. Regulation of the moving layer velocity controls agglomerate particle size. Adjustment of other parameters controls bulk density.



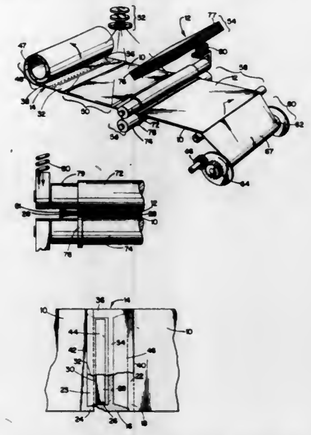
3,679,417
SIMPLIFIED DIFFUSION-TRANSFER FILM PRODUCTS

Frank W. Knight, Salem, N.H., and David Van Allen, Malden, Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed June 30, 1970, Ser. No. 51,250
Int. Cl. G03c 1/48, 3/00
U.S. Cl. 96—78 **19 Claims**



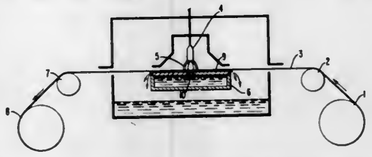
A plurality of sheets connected together by pod assemblies to form a flexible elongated strip of materials and a plurality of individual second sheets of photographic material each of which is adapted to overlie one of the aforementioned sheets to facilitate the production of a photographic print. Each pod assembly includes a carrier sheet connecting adjacent first mentioned sheets and which has a rupturable container of processing fluid extending thereacross in spaced apart relationship to each such adjacent first-mentioned sheet. Further, each such pod assembly includes a bib extending over the adjacent edge of one of the first-mentioned sheets connected thereto and a trapping sheet extending over the adjacent edge of the other first-mentioned sheet connected thereto. When positioned over a first-mentioned sheet each second photographic sheet has one of its edges disposed over the bib of one pod assembly while the opposite edge thereof is disposed under the trapping sheet of the next pod assembly. Typically, each first-mentioned sheet may include an image-recording component and each second sheet may comprise an image-receiving component.



3,679,418
PROCESS FOR TREATING A METAL SURFACE AND REPROGRAPHIC MATERIAL COMPRISING A SURFACE SO TREATED

Joachim Stroszynski, Wiesbaden, Germany, assignor to Kalle Aktiengesellschaft, Wiesbaden-Biebrich, Germany

Filed Sept. 25, 1968, Ser. No. 762,558
Claims priority, application Germany, Sept. 28, 1967, P 16 71 508.5
Int. Cl. G03c 1/76, 1/94
U.S. Cl. 96—86 **5 Claims**



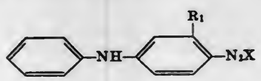
This invention relates to a process for treating a metal surface, wherein a surface of a metal foil is subjected to a uniform treatment with a plasma arc jet, and also to a reprographic material which comprises a metal surface which has been treated according to the process.

3,679,419
LIGHT-SENSITIVE DIAZO CONDENSATE CONTAINING REPRODUCTION MATERIAL

Thomas N. Gillich, Berkeley Heights, N.J., assignor to Azoplate Corporation, Murray Hill, N.J.

No Drawing. Filed May 20, 1969, Ser. No. 826,289
Int. Cl. G07c 113/04; G03c 1/54; G03f 7/08
U.S. Cl. 96—91 R **4 Claims**

This invention relates to novel light-sensitive reproduction material, a process for the preparation of novel light-sensitive condensation products, and to said condensation products as compounds, the compounds being condensation products of at least one diazonium salt of the general formula



wherein

R_1 is selected from the group consisting of H, an alkoxy group having from 1 to 4 carbon atoms, and a 2-hydroxy-ethoxy group, and

X is the anion of the diazonium salt,

and at least one compound of the general formula

$$R(—CH_2—OR_2)_n$$

wherein

n is an integer from 1 to 4,

R is a residue produced by the splitting off of *n* hydrogen atoms from a diphenyl ether, and

R_2 is selected from the group consisting of H, an alkyl group with 1 to 4 carbon atoms, and an acyl group with 1 to 4 carbon atoms,

said condensation product containing, on the average, 0.25 to 0.75 unit derived from $R(—CH_2—OR_2)_n$ per diazo group.

3,679,420
TWO COMPONENT DIAZOTYPE WITH AZO COUPLER

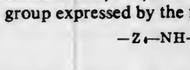
Taizo Yokoyama, Asahi-ku, Osaka, Japan, assignor to Mita Industrial Company Limited, Osaka, Japan

No Drawing. Filed Aug. 5, 1969, Ser. No. 847,702
Claims priority, application Japan, Aug. 7, 1968, 43/55,677
Int. Cl. G03c 1/58
U.S. Cl. 96—91 R **9 Claims**

A copying material comprising as an azo coupling component a compound of the general formula



wherein X is =O, =S, or =N—Z_3; Z_2 is an oxyaryl group or a group expressed by the formula

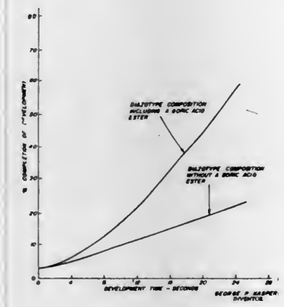


wherein Z_4 is an arylene group, each of Z_1 and Z_5 is an oxyaryl group; Z_3 is hydrogen, an alkyl group, an oxyalkyl group or an oxyaryl group; the oxyaryl or arylene groups optionally having a further substituent.

3,679,421
AZO DYE-FORMING SYSTEM INCLUDING A BORIC ACID ESTER

George P. Kasper, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 26, 1969, Ser. No. 853,028
Int. Cl. G03c 1/60, 1/52, 1/58
U.S. Cl. 96—91 R **7 Claims**



The resistance to premature coupling and the development rate of two-component diazotype compositions (i.e., at least one diazonium salt and at least one coupler compound) are advantageously increased by the inclusion therein of a boric acid ester.

3,679,422
PHOTOTHERMIC COMPOSITION CONTAINING ONIUM HALIDE SENSITIZER AND THE USE THEREOF

Richard A. de Mauriac, Rochester, and Gary Lynn Hiller, Hilton, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed June 3, 1970, Ser. No. 43,172
Int. Cl. G03c 1/28, 1/72
U.S. Cl. 96—107 **21 Claims**

An onium halide compound, such as 1-phenethyl-2-picolinium bromide or trimethylphenylammonium bromide, with an image-forming combination containing a heavy metal salt oxidizing agent, such as silver behenate, and a reducing agent, such as a bis-naphthol reducing agent, in a photosensitive and thermosensitive element suitable for dry processing with heat, provides increased photosensitivity and in some cases reduced background densities. A combination of a bis-β-naphthol reducing agent and a colorless, speed-increasing, onium halide compound in conjunction with a stable source of silver for physical development is useful in photosensitive elements for dry processing. The element can contain a sensitizing dye and an activator-toning agent. A stable, developed image can be provided by heating the element after exposure. The photosensitive component can be photographic silver halide or other suitable photosensitive metal salts.

3,679,423
SILVER HALIDE EMULSION CONTAINING ACETYLENE DICARBOXYLIC ACID ANIONS ANTIFOGGANT

Robert Joseph Pollet, Vremde, and Antoon Leon Vandenberghe, Hove, Belgium, assignors to Gevaert-Agfa N.V., Mortsel, Belgium

No Drawing. Filed June 22, 1970, Ser. No. 48,541
Claims priority, application Great Britain, July 8, 1969, 34,432/69
Int. Cl. G03c 5/30
U.S. Cl. 96—109 **8 Claims**

Photographic materials comprising a light-sensitive silver halide emulsion layer having in the emulsion layer or in an adjacent water-permeable layer a compound providing acetylene dicarboxylic acid anions are described. These photographic materials have decreased fogging tendency, even under conditions of high temperature and humidity, and their sensitivity is practically not lowered by the presence of this compound.

3,679,424
FOGGED, DIRECT-POSITIVE SILVER HALIDE EMULSION CONTAINING NITRON

Jean-France Leon Paul Barbier and Guy Renard, Vincennes, France, assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Nov. 5, 1969, Ser. No. 874,393
Int. Cl. G03c 1/34
U.S. Cl. 96—109 **7 Claims**

This invention relates to direct-positive, silver halide, photographic elements. In one aspect, at least one layer of said element contains nitron. In another aspect, an over-layer containing light-insensitive silver chloride is used to provide more uniform photographic characteristics in used developers. In still another aspect, improved direct-positive silver halide grains are prepared by reducing a portion of the water-soluble silver salt before admixture with the water-soluble halide to precipitate the silver halide grains.

3,679,425
COAGULATION OF AQUEOUS POLYMERIC DISPERSIONS OF SILVER HALIDE

Kenneth Robert Hollister, Pittsford, and Ernest John Perry, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Aug. 3, 1970, Ser. No. 60,701
Int. Cl. G03c 1/04
U.S. Cl. 96—114 17 Claims

Processes are disclosed for coagulating and redispersing aqueous dispersions of polymeric compounds which contain anionic sulfoxy groups thereon. Generally, the polymeric dispersion is coagulated by adding a polymeric compound containing primary amine groups thereon and providing a dilution ratio of at least 100 grams of liquid per gram of polymer comprising anionic sulfoxy groups. The coagulated material can then be decanted and easily redispersed with low volumes of liquid.

3,679,426
PHOTOSENSITIVE AND THERMOSENSITIVE ELEMENTS, COMPOSITIONS AND PROCESSES

Mary J. Youngquist, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Apr. 9, 1970, Ser. No. 27,150
Int. Cl. G03c 1/02
U.S. Cl. 96—114.1 17 Claims

A reductone reducing agent, such as an amino hexose reductone or an anhydro dihydro amino hexose reductone, and an activate toning agent in a photosensitive and thermosensitive element suitable for so-called dry processing with heat provide improved black tone, increased maximum density and reduced background print-out. Such an element which contains an oxidation-reduction image forming combination in which a reductone is employed as a reducing agent is especially suitable. This can be an image reproduction sheet in which a radiation sensitive heavy metal salt can be reduced to free metal and form the image components in an oxidation-reduction reaction combination by producing a visible color change with an organic silver salt.

3,679,427
RIGIDIZED CARBOCYANINE DYES AND PHOTOGRAPHIC EMULSIONS

Lewis L. Lincoln and Donald W. Heseltine, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Oct. 30, 1970, Ser. No. 85,708
Int. Cl. G03c 1/08
U.S. Cl. 96—120 15 Claims

Rigidized carbocyanine dyes including at least two nitrogen-containing heterocyclic nuclei with a nitrogen atom of each nucleus joined by a 5 carbon polyene chain, each heterocyclic nucleus also having the non-metallic atoms to complete, in combination with the two nitrogen atoms and the carbon atoms of the intervening polyene chain, a nucleus which is either 3,4,5a,6,7,8-hexahydro-4aH - pyrano[3,2-c; 5,6-c']dipyridine or an analog wherein the member in the 5-position is alternatively one such as a sulfur atom, a nitrogen atom, a selenium atom, etc., are useful as spectral sensitizing dyes for silver halide. Since they are structurally rigidized, their absorption envelope is more selective, and they exhibit high stability in solution and an increased fluorescence efficiency when compared to similar, but non-rigidized dyes. The high degree of fluorescence makes these compounds advantageous also as textile dyes, plastics dyes and colorant dyes for related situations including cosmetics, e.g., nail polish, facial coloring compositions, lipsticks or the like. Additionally, these rigidized carbocyanine dyes are desirable as colorants for coatings like paints, lacquers and the like when dispersed or dissolved therein.

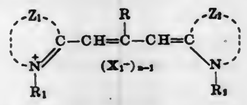
3,679,428
SPECTRALLY SENSITIZED PHOTOGRAPHIC EMULSIONS

Keisuke Shiba, Motohiko Tsubota, Akira Sato, Tadashi Ikeda, and Akira Ogawa, Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed July 23, 1970, Ser. No. 57,607
Claims priority, application Japan, July 23, 1969, 44/58,180
Int. Cl. G03c 1/08
U.S. Cl. 96—124 6 Claims

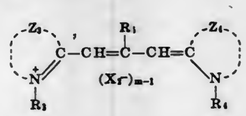
A silver halide light-sensitive photographic emulsion containing at least one sensitizing dye represented by the following Formula I:

(Formula I)



in which R is a hydrogen atom or an alkyl group having from 1 to 4 carbon atoms; R_1 and R_2, which may be the same or different, each represents an alkyl group, an allyl group and an alkyl group substituted by hydroxy, carboxy, sulfo or mixtures thereof, at least one of R_1 and R_2 being a substituted alkyl group; Z_1 is a non-metallic atomic group necessary to complete a heterocyclic nucleus of the naphthothiazole, naphthoselenazole or naphthoxazole series; Z_2 is a non-metallic group necessary to complete a nucleus of the naphthoselenazole, naphthoxazole, naphthoimidazole or benzimidazole series; X_1^- is an acid anion and n is 1 or 2, and at least one sensitizing dye represented by the following Formula II:

(Formula II)



in which R_5 is an alkyl group having from 1 to 4 carbon atoms; R_3 and R_4, which may be the same or different, each represents an alkyl group, an allyl group and an alkyl group substituted by hydroxy, alkoxy, carboxy, sulfo or mixtures thereof; Z_3 and Z_4, which may be the same or different, each represents a non-metallic atomic group necessary to complete a benzothiazole or a benzoselenazole nucleus, which may be substituted by halogen, phenyl, alkoxyphenyl, hydroxyphenyl, carboxyphenyl, an alkyl having from 1 to 4 carbon atoms, hydroxyl, alkoxy, carboxyl, carboxylic acid ester, carbamoyl or alkyl carbamoyl groups; X_2 is an acid anion and m is 1 or 2.

3,679,429
CAT FOOD WITH HEXAMIC ACID FLAVORANT

Robert K. Mohrman, Belleville, Ill., and Paul E. Kifer, Webster Groves, and Edward V. Oborsh, Ballwin, Mo., assignors to Ralston Purina Company, St. Louis, Mo.

No Drawing. Continuation-in-part of application Ser. No. 763,924, Sept. 30, 1968. This application May 14, 1969, Ser. No. 824,708
Int. Cl. A23k 1/00
U.S. Cl. 99—2 6 Claims

This application discloses a method of enhancing the flavor of an animal feed composition by adding a flavor improving acid to the feed composition. The acid may be applied directly to the food particle, applied over a fat coating, or incorporated in a fat coating. The flavoring acid may be added in the amount of 0.05 to 5% by weight of the feed.

3,679,430
CONDITIONER FOR BAKED GOODS

Hermann Birnbaum, Pittsburgh, Pa., assignor to Caravan Products Co., Inc., Totowa, N.J.

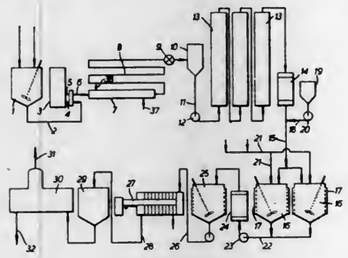
No Drawing. Filed Oct. 30, 1969, Ser. No. 872,756
Int. Cl. A21d 2/16
U.S. Cl. 99—90 CB 12 Claims

A conditioner that can be added to the fermentation broth in a continuous baking process without causing serious foaming, the conditioner comprising 50–80% of surface active agents selected from polyoxyethylene sorbitan esters of fatty acids having 16–18 carbon atoms or ethoxylated monoglycerides, and a hard monoglyceride, and 50–20% of fatty materials comprising a combination of a saturated fatty material such as hydrogenated lard and an unsaturated fatty material such as lard. The preferred form of the conditioner is that of a thick aqueous emulsion containing 40–50% water. While eliminating foaming in the fermentation broth, the conditioner also provides excellent properties in the baked goods such as anti-staling, increased loaf volume, and prolonged compressibility. Whereas foaming is no problem in the conventional batch process, be it the straight dough method or the sponge-dough method, the conditioner provides the same quality improvement in the baked goods produced by the conventional process such as reducing firming, increased specific volume and prolonged shelf life as observed in baked goods produced by the continuous process.

3,679,431
WORT PRODUCTION

David Henry Clayton, 161 Manthorpe Road, Grantham, England, and John Karkalas, Wilhelm Becksvej 93, 8000 Aarhus C, Denmark

Filed May 13, 1969, Ser. No. 824,048
Claims priority, application Great Britain, May 15, 1968, 23,028/68; Apr. 22, 1969, 20,409/69
Int. Cl. C12c 7/00
U.S. Cl. 99—52 14 Claims



A method of producing wort by the action on a mash of starch liquefying enzymes, saccharifying enzymes and proteolytic enzymes includes subjection of the mash to hydrodynamic conditions such that a thixotropic reduction of viscosity is obtained to facilitate the action of the starch liquefying enzymes.

3,679,432
METHOD OF PRODUCING COOKED PRODUCTS

Robert F. Schiffmann, Brooklyn, Howard Roth, Bronx, David H. Lipka, Roslyn, and Abraham H. Goodman, Great Neck, N.Y., assignors to DCA Food Industries Inc., New York, N.Y.

Continuation-in-part of application Ser. No. 519,255, Jan. 7, 1966. This application Aug. 17, 1970, Ser. No. 64,218
Int. Cl. A21d 13/0, 13/08
U.S. Cl. 99—86 15 Claims

A fried bakery product, such as a chemically leavened and extruded doughnut, is produced by first totally immersing a piece of dough for the fried product in an edible frying medium at a frying temperature wherein the edible frying medium is liquid and for a time sufficient to assure proper shaping of the dough piece. Thereafter, the dough piece, while partially immersed in the frying medium, is subjected to microwave energy concurrent with frying of the underside thereof. The fried product is completed by inverting the same in the frying medium.

3,679,433
PROTEIN-ENRICHED BAKED PRODUCTS AND METHOD OF MAKING SAME

Yeshajahu Pomeranz, Madison, Wis., and Karl F. Finney, Manhattan, Kans., assignors to the United States of America as represented by the Secretary of Agriculture

No Drawing. Filed Sept. 8, 1970, Ser. No. 70,490
Int. Cl. A21d 13/06, 2/26, 2/16
U.S. Cl. 99—90 HP 5 Claims

Nutritionally improved baked products of consumer acceptance quality are produced by adding small amounts of naturally occurring or synthetic glycolipids to dough formulations containing added protein concentrates from plant or animal sources.

3,679,434
METHOD OF PREPARING FRESH UNCURED MEAT PRODUCTS

John C. Bard, Monona, and Floyd C. Olson, Madison, Wis., assignors to Oscar Mayer & Co., Inc., Madison, Wis.

No Drawing. Filed July 13, 1970, Ser. No. 54,566
Int. Cl. A22c 18/00
U.S. Cl. 99—107 6 Claims

Bodies of cooked fresh meat of predetermined uniform size, shape and weight suitable for slicing are made from lean primal cuts or lean chunks of whole (unground) uncooked, fresh (uncured) meat with at least a substanial portion of the chunks weighing at least about one-half pound a piece and at least in places having a minimum thickness of about one inch. Such primal cuts or chunks are injected with a solution of edible polyphosphate salt prior to being mechanically worked until a tacky exudate develops on the meat surfaces. The mechanically worked primal cuts or chunks are pressed together to form consolidated meat bodies of predetermined uniform size, shape and weight suitable for cooking. Injection of the salt furnishing the polyphosphate ions, as distinguished from surface treatment therewith, prevents, or at least substantially reduces and retards, the rancidity which otherwise would quickly develop in the cooked fresh meat bodies on cooling.

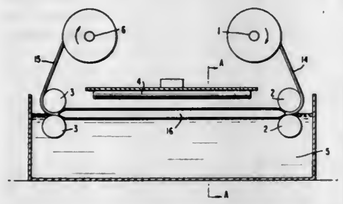
3,679,435
SAUSAGE CASINGS OF SYNTHETIC HIGH-POLYMER THERMOPLASTIC MATERIAL

Ludwig Klenk, Hallgarten, Rheingau, Hans Strutzel, Wiesbaden-Dotzheim, and Richard Sobottka, Wiesbaden-Biebrich, Germany, assignors to Kalle Aktiengesellschaft, Wiesbaden-Biebrich, Germany

Filed Sept. 25, 1968, Ser. No. 762,597
Claims priority, application Germany, Sept. 27, 1967, K 63,470
Int. Cl. A22c 13/00; B29c 13/00
U.S. Cl. 99—176 1 Claim

A plastic sausage casing material which is convertible into an annular casing and to a process for the manufacture of such a casing in which process a tube of synthetic high-polymer thermoplastic material, which has been longitudinally stretched and thus is shrinkable in its longitudinal direction by heating, is filled with a gas and

the gas-filled tube is heated on one longitudinal side only, while preventing longitudinal shrinkage, to a temperature



at which the tube loses its shrinkability while maintaining conditions preventing shrinkage.

3,679,436

PREPARATION OF FIBROUS REINFORCED SAUSAGE-TYPE CASINGS FROM ORGANIC SOLVENT SOLUBLE POLYVINYL ALCOHOL RESINS

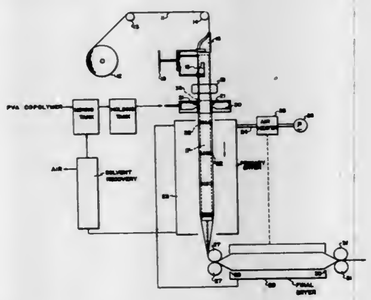
Seymour Oppenheimer, Chicago, and Albin F. Turbak, Danville, Ill., assignors to Tee-Pak, Inc., Chicago, Ill.

Filed May 26, 1969, Ser. No. 827,594

The portion of the term of the patent subsequent to Feb. 8, 1989, has been disclaimed

Int. Cl. A22c *13/00*

U.S. Cl. 99—176 **12 Claims**



A novel fibrous casing for packaging sausages and similar products comprises a saturating tissue impregnated with a continuous film of an insolubilized, film-forming polyvinyl alcohol resin. The casing is preferably prepared by impregnating a suitable saturating tissue with an organic solvent solution of a polyvinyl alcohol resin and then insolubilizing the resin as a film on the tissue, e.g., by contact with a coagulation (acid, salt, or non-solvent liquid) bath, by evaporation of the solvent, etc. Further insolubilization of the resin film may be effected by reacting the resin with a suitable cross-linking agent, viz formaldehyde. Resin impregnated-saturating tissue may be formed directly into a tubular casing or initially may be produced as a sheet which is slit to appropriate width and then formed into a tubular casing in a separate seaming operation. Casings are preferably formed using long fiber hemp papers as the saturating tissues and using organic solvent soluble, film-forming polyvinyl alcohol resins having a hydroxyl group D.S. of at least 20%, e.g., in the range of from about 25% to about 99.99%.

3,679,437

PREPARATION OF FIBROUS REINFORCED SAUSAGE-TYPE CASINGS FROM MELT-EXTRUDED POLYVINYL ALCOHOL RESINS

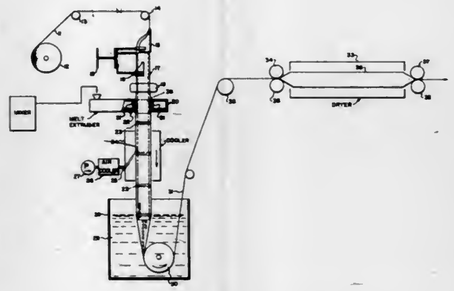
Seymour Oppenheimer, Chicago, and Albin F. Turbak, Danville, Ill., assignors to Tee-Pak, Inc., Chicago, Ill.

Filed May 26, 1969, Ser. No. 827,643

The portion of the term of the patent subsequent to Feb. 8, 1989, has been disclaimed

Int. Cl. A22c *13/00*; C08f *3/34*

U.S. Cl. 99—176 **10 Claims**



A novel fibrous casing for packaging sausages and similar products comprises a saturating tissue impregnated with a melt-extruded film of a polyvinyl alcohol resin. The casing is preferably prepared by melt extruding a plasticized, film-forming polyvinyl alcohol resin to form a film and, simultaneous with or subsequent to the extrusion step, impregnating and coating a saturating tissue with the extruded film. The resin film then may be, and preferably is, reacted with a suitable cross-linking agent, viz formaldehyde, to render it less sensitive to water and other solvents. Resin impregnated saturating tissue may be formed directly into a tubular casing or initially may be produced as a sheet which is slit to appropriate width and then formed into a tubular casing in a separate seaming operation. Casings are preferably formed using long fiber hemp papers as the saturating tissues and using film-forming polyvinyl alcohol resins having a hydroxyl group D.S. of at least about 60%, and more preferably in the range of from about 95% to about 99.99%.

3,679,438

METHOD FOR MATURING WHEAT FLOUR

Fujihiko Yokoyama, Tokyo, Tohru Yoneyama, Saitama-ken, and Shigehiko Sato, Higashiyodogawa-ku, Osaka, Japan; said Yokoyama and said Yoneyama assignors to Nisshin Flour Milling, Ltd., Tokyo, and said Sato assignor to Takeda Chemical Industries, Ltd., Osaka, Japan

No Drawing. Filed May 14, 1969, Ser. No. 824,663

Int. Cl. A21d *2/04, 2/20*

U.S. Cl. 99—232 **10 Claims**

Freshly milled wheat flour can be matured in a remarkably shortened period of time without fear of overmaturing by incorporating thereinto at least one of hydrogen peroxide adducts of alkali metal phosphates and alkali metal carbonates in a concentration of from about 10 to about 500 parts per million parts by weight of the flour, the alkali metal being sodium or potassium.

3,679,439

LEAD-CONTAINING METALLIZATIONS

Alvin A. Milgram, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Continuation-in-part of abandoned application Ser. No. 829,141, May 29, 1969. This application Mar. 23, 1971, Ser. No. 127,342

Int. Cl. C09d *5/24*

U.S. Cl. 106—1 **11 Claims**

Metallizing compositions, for producing fired-on coatings which have good electrical properties, comprising noble metals, an inorganic binder and 1–25% by weight of lead. The metallic lead is added to the metallizing composition to provide a fired metallization that has solder wetability and increased solder leach resistance. The metallizing composition are used to form electrodes, microcircuitry and other related articles in the electronic industry.

3,679,440

HIGH K DIELECTRIC MATERIALS

Daniel W. Mason, West Peabody, Mass., assignor to Owens-Illinois, Inc.

No Drawing. Continuation-in-part of application Ser. No. 54,591, July 13, 1970. This application Jan. 18, 1971, Ser. No. 107,566

Int. Cl. C04b *35/00*; C03c *3/10*; H01b *3/02*

U.S. Cl. 106—39 R **5 Claims**

Unique dielectric compositions may be used to formulate thick film pastes for printing microelectronic capacitors. The resulting dielectrics exhibit dielectric constants greater than about 500 and capacitances greater than about 80,000 picofarads per square inch at a thickness of at least about 1.0 mil. The unique dielectric compositions comprise about 55–76 percent by weight of a ferroelectric material and 45–24 percent of a glass binder. The glass binder employed comprises a lead barium borosilicate glass and a ferroelectric material previously dissolved therein. The composition is formulated into a printing paste by first dissolving 20–30 percent by weight ferroelectric into 70–80 percent by weight lead barium borosilicate glass binder, cooling the newly formed glass to a solid state comminuting the glass to a particle size of less than about 1 micron and thereafter admixing the comminuted glass with the same particulate ferroelectric in an amount as indicated. This admixture is then added to a liquid organic carrier vehicle to formulate the printing paste. The printing paste is then printed into a chosen design and fired at a temperature of approximately 1,000–1,050° C. to produce a highly dense, uniform, and substantially crack-free dielectric material.

3,679,441

CERAMIC PRODUCT FROM FLY ASH AND METHOD OF MAKING SAME

Kelsey I. Harvey, 1098 5th St., Beaver, Pa. 15009

No Drawing. Continuation-in-part of application Ser. No. 640,519, May 23, 1967. This application Oct. 1, 1970, Ser. No. 77,322

Int. Cl. C04b *33/00*

U.S. Cl. 106—41 **3 Claims**

The invention relates to a ceramic product comprising the waste ash material obtained from coal-burning industrial power and other plants, and to the method of producing the same. Essentially, the invention is a process for producing a substitute for conventional clay or shale ceramic products with properties at least equivalent to those products by the use of very near to 100% of the waste ash material normally called fly ash, bottom ash, clinker, etc.

3,679,442

HOT-PRESSED TITANIUM NITRIDE-TITANIUM CARBIDE COMPOSITIONS

Horacio E. Bergna, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Nov. 21, 1969, Ser. No. 878,891

Int. Cl. C04b *35/52*

U.S. Cl. 106—43 **4 Claims**

Solid solutions of from 10 to 90 volume percent titanium nitride and 90 to 10 volume percent titanium carbide having an average grain size of less than 2 microns and a density of at least 99 percent of theoretical are prepared by hot-pressing an intimate mixture of fine powdered titanium nitride and titanium carbide at a temperature between 1750° and 1900° C. and a pressure between 3000 and 6000 pounds per square inch. The dense compositions are very strong and hard and possess a very desirable combination of oxidation resistance, wear-resistance, scratch-resistance and corrosion resistance.

3,679,443

MINERAL WOOL MADE FROM SILICATE GLASS COMPRISING IRON OXIDES

Fridolin Mechel, Ludwigshafen-Edigheim, and Hans Kummermehr, Ludwigshafen (Rhine), Germany, assignors to Grunzweig & Hartmann Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Filed Dec. 17, 1969, Ser. No. 885,983

Claims priority, application Germany, Dec. 18, 1968, P 18 15 244.8

Int. Cl. C03c *13/00*

U.S. Cl. 106—50 **4 Claims**

Temperature and acid resistant mineral wool, fibers, filaments and the like comprising the glass forming oxides SiO_2 and Al_2O_3, meltable iron oxides in an amount of at least 18 wt. percent and from 0 to 5 wt. percent of alkali metal and/or alkaline earth metal oxides.

3,679,444

CONTROL OF SHRINKAGE AND GROWTH OF SILICON OXYNITRIDE BODIES

Malcolm E. Washburn, Princeton, Mass., assignor to Norton Company, Worcester, Mass.

No Drawing. Filed June 29, 1970, Ser. No. 50,940

Int. Cl. C04b *35/58*

U.S. Cl. 106—55 **3 Claims**

Control of the physical dimensions of silicon oxynitride articles, during firing of the shaped reaction mix, is achieved by inclusion of colloidal silica, such as fume silica, in the reaction mix, preferably in the amount of 5% by weight of the mix, exclusive of temporary binders. Use of fused silica, instead of flint, also helps control dimensional changes. Amounts of from 2% to 40% of colloidal silica are useful in control of shape or properties of fired product.

3,679,445

LOW DENSITY CONCRETES AND THEIR MANUFACTURE

Alan Colin Scott Howe, Hemel Hempstead, England, assignor to John Laing and Son Limited, London, England

No Drawing. Filed Aug. 25, 1969, Ser. No. 852,920

Claims priority, application Great Britain, Aug. 23, 1969, 40,418/68

Int. Cl. C04b *31/02*

U.S. Cl. 106—88 **26 Claims**

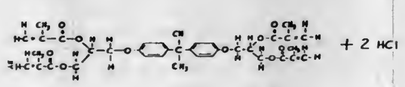
A plastic concrete or mortar mix including an incorporated gas such as entrained air, and from one to ten

grams of short fibres per pound of cement uniformly distributed throughout the mix.

3,679,446
MOLDING MATERIALS OF CALCIUM SILICATE HYDRATE AND SHAPED PRODUCTS THEREOF
Kazuhiko Kubo, Motosu-gun, Gifu-ken, Japan, assignor to Kabushiki Kaisha Osaka Packing Seizosho, Osaka-shi, Japan
Filed June 2, 1969, Ser. No. 829,181
Claims priority, application Japan, June 4, 1968, 43/38,421; June 8, 1968, 43/39,531; Nov. 1, 1968, 43/80,135; Nov. 4, 1968, 43/80,820
Int. Cl. C04b *15/06*
U.S. Cl. 106—120 10 Claims

A molding material of crystallized calcium silicate hydrate which comprises water and calcium silicate crystals dispersed in the water in the weight ratio of solid to water of between 1:10 and 1:25; at least 40 weight percent of said calcium silicate crystals having formed numerous small agglomerates of a diameter of 10 to 150 microns by being three-dimensionally interlocked with one another; and agglomerates being dispersed in the water in substantially globular form; a shaped product of crystallized calcium silicate hydrate which comprises agglomerates of calcium silicate crystals being compressed to at least one direction and interlocked with one another and voids interspersed therebetween, said agglomerates having had a diameter of 10 to 150μ.

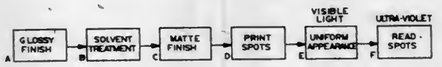
3,679,447
TETRAVINYL-VINYL MONOMER PAINT COMPOSITION AND PAINTING PROCESS
Elihu Aronoff, Framingham, Mass., and Santokh S. Labana, Dearborn Heights, Mich., assignors to Ford Motor Company, Dearborn, Mich.
Filed Aug. 4, 1969, Ser. No. 847,046
Int. Cl. C09k *1/02*
U.S. Cl. 106—287 16 Claims



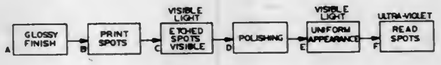
A substrate is coated with a film-forming composition consisting essentially of vinyl monomers and a unique tetravinyl compound and the coating is converted to a tenaciously adhering, solvent-resistant, wear and weather-resistant coating by exposing the coated substrate to ionizing radiation, preferably in the form of an electron beam. This tetravinyl compound is formed by first reacting a diepoxide with acrylic acid and/or methacrylic acid and subsequently reacting the resultant ester condensation product with a vinyl unsaturated acyl halide.

3,679,448
CREDIT CARD AND METHOD OF LUMINESCENT PRINTING
Herbert Trumpoosh, Riverside, Conn., assignor to Pitney-Bowes, Inc., Stamford, Conn.
Filed July 27, 1970, Ser. No. 58,486
Int. Cl. B41m *3/14*; B44d *1/44*
U.S. Cl. 117—1 1 Claim

A plastic credit card is to be imprinted with a luminescent spot code readable under ultra-violet radiation for use in verification of the subscriber's account. The luminescent marker material employed for this purpose is borne in a solvent which attacks the material of the credit card, producing a surface etching effect which is visible under ordinary light. To avoid betraying the existence and locations of the luminescent spots in this manner, the card is treated, prior to luminescent printing, with a solvent material to produce a similar etching effect over an entire background area. The locations where printing subsequently takes place are then indistinguishable from the background under visible light.



3,679,449
CREDIT CARD AND METHOD OF POLISHING
Marc N. Nagot, Springdale, and Frederic E. Zucker, Stamford, Conn., assignors to Pitney-Bowes, Inc., Stamford, Conn.
Filed July 27, 1970, Ser. No. 58,493
Int. Cl. B41m *3/14*; B44d *1/44*
U.S. Cl. 117—1 1 Claim



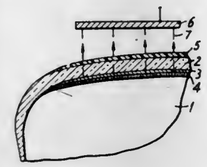
A glossy plastic credit card is to be imprinted with a luminescent spot code readable under ultra-violet radiation for use in verification of the subscriber's account. The luminescent market material employed for this purpose is borne in a solvent which attacks the material of the credit card, producing a surface etching effect which is visible under ordinary light. To avoid betraying the existence and location of the luminescent spots in this manner, the card is treated, after luminescent printing, by a heat process to repolish the locations where printing took place, making them indistinguishable from the background under visible light.

3,679,450
BIOPSY METHOD
Leroy Earl Beightol, Los Angeles, Calif., assignor to Roy Nutt
No Drawing. Filed Mar. 16, 1970, Ser. No. 20,114
Int. Cl. A01n *1/00*
U.S. Cl. 117—3 13 Claims

This patent describes a novel method of rapidly preparing tissue for biopsic examinations which provides for the rapid preparation of thinner tissue sections, said method comprising infiltrating a fixed and dehydrated tissue sample with a liquid ultraviolet light-curable thermosetting resin system having a curing threshold in the presence of ultraviolet light on the order of one minute or less, preferably comprising a polyester containing carbon-to-carbon unsaturation, an ethylenically unsaturated monomer polymerizable therewith, and an activator, and curing

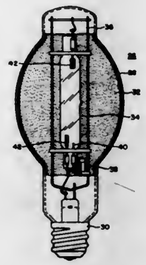
said sample in the presence of ultraviolet light for several minutes to form a rigid block adapted to yield ultrathin sections. The method of this invention is preferably concerned with the use of a thermosetting resin system which gives a clear or optically transparent polymer within the rigid block, can be sliced into sections having a thickness of as little as 0.2 micron in small sections and a corresponding improvement in larger sections.

3,679,451
NONGLARE COATING FOR SURFACES OF TV TUBES AND THE LIKE AND SUCH COATED SURFACES
Alvin M. Marks, Whitestone, Mortimer M. Marks, Beechhurst, and Arthur P. Kent, Kew Gardens, N.Y., assignors to Marks Polarized Corporation, Whitestone, N.Y.
Filed Feb. 13, 1970, Ser. No. 11,261
Int. Cl. B44d *5/06*
U.S. Cl. 117—33.3 72 Claims



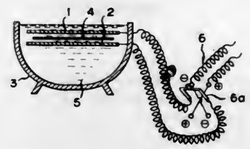
Coatings for decreasing reflected images from the surface of a transparent sheet used for displays of television, radar scopes, rear projection screens, picture glass and the like are disclosed. These coatings, which are comprised of at least two intermixed incompatible discrete polymeric bodies, enhance image contrast by decreasing the reflections of external objects and ambient light from the face of the display by absorption and scattering while transmitting light images with good resolution.

3,679,452
PROCESS FOR COATING LEHRING-SENSITIVE PHOSPHOR ONTO LAMP ENVELOPE
Richard C. Ropp, North Caldwell, N.J., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Continuation of abandoned application Ser. No. 620,074, Apr. 2, 1967. This application Jan. 28, 1971, Ser. No. 110,744
Int. Cl. B44d *1/02*; H01j *61/35*
U.S. Cl. 117—33.5 3 Claims



For coating lamp envelopes with phosphor which normally is sensitive to lehring, a small amount of room-temperature-stable, metal-free, ammonia-radical-containing compound which will decompose on heating to release ammonia gas is included in the phosphor paint. The paint also includes a small amount of organic binder material. When the coating paint is lehred after application to decompose the organic binder, the ammonia compound also decomposes to release ammonia gas which preserves the desired valence state of the activator in the phosphor. The finished discharge lamp has improved performance.

3,679,453
DEVELOPING METHOD AND DEVICE THEREFOR FOR USE IN WET TYPE ELECTRONIC OR ELECTROSTATIC PHOTOGRAPHY
Nobuyuki Katagiri and Hideaki Akiyama, Tokyo, Japan, assignors to Kabushiki Kaisha Ricoh, Tokyo, Japan
Filed Mar. 21, 1969, Ser. No. 809,243
Claims priority, application Japan, Mar. 25, 1968, 43/19,335
Int. Cl. G03g *13/10*, *15/10*
U.S. Cl. 117—37 LE 8 Claims



A developing method and device therefor for use in wet type electrostatic photography wherein the polarities of DC voltage applied to a pair of bias electrodes are reversed. Accumulation of developing toner to the electrodes can be prevented.

3,679,454
EDGE-INKING OF SHOE SOLES AND COLORING OF UPPERS
John G. Penniman, Jr., 200 Tompkins Ave., Pleasantville, N.Y. 10570
No Drawing. Filed Nov. 25, 1969, Ser. No. 879,946
Int. Cl. B44d *1/16*, *1/10*
U.S. Cl. 117—44 8 Claims

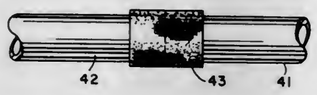
Black edge ink dye or other high strength or jetness dye is applied to the edge of shoe soles and top-lift of heels in such a manner that the edge-sole and top-lift do not have to be masked when the shoe upper attached thereto is colored by brushing or spraying, by the use of a water-insoluble black dye in the edge ink which is soluble in the resin used in the color coat and/or in a lacquer solvent used as a topcoat over the previously colored shoe upper. When a lacquer is applied to the upper portion of the shoe, it is also applied to the edge-sole and top-lift portions of the shoe, the resin in the color coat and/or the solvent in the lacquer topcoat, causing the dye coated thereon or impregnated therein to bleed or leach through the color applied to the upper, which incidentally also colored the edge-sole and top-lift to its original color, advantageously black.

3,679,455
PROCESS FOR THE PRODUCTION OF A SUPPORT FOR A PHOTOGRAPHIC SENSITIVE MATERIAL
Tsuneo Kasugai and Nobuhiko Minagawa, Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
No Drawing. Filed Nov. 24, 1970, Ser. No. 92,529
Claims priority, application Japan, Nov. 27, 1969, 44/95,224
Int. Cl. G03c *1/78*
U.S. Cl. 117—47 6 Claims

A process for the production of a support for a photographic sensitive material comprising applying a subcoat

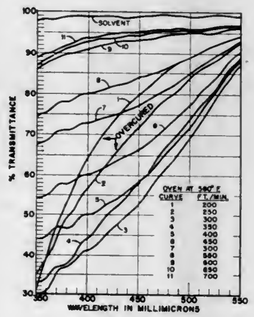
comprising a hydrophilic resin to the surface of a polyolefin coated paper, said resin having a higher relative dielectric constant and a dielectric power factor than those of the polyelefin and good adhesion with a photographic emulsion, and treating the support with microwaves under the conditions that discharging does not occur to adhere the subcoat firmly to the polyolefin support is disclosed.

3,679,456
METHOD OF MAKING SEALING TAPES
Chester C. Young, Dallas, Tex., assignor to Hardcast, Inc., Louisville, Ky.
Filed Apr. 1, 1970, Ser. No. 24,569
Int. Cl. B44d *1/44*
U.S. Cl. 117—63 **7 Claims**



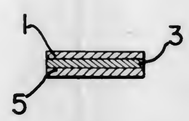
Disclosed is a sealing tape comprising a fabric medium impregnated with a plaster and adhesive slurry which is activated upon immersion in an adhesive-containing solution. The activated tape is used to join and seal joints of conduit and to encase insulated conduit. Methods and apparatus for making the tape are also disclosed.

3,679,457
METHOD FOR DETERMINING RELATIVE DEGREE OF CURE OF IMPREGNATED TIRE CORD
Jeanne E. Gordon, Granville, Ohio, assignor to Owens-Corning Fiberglas Corporation
Filed July 30, 1970, Ser. No. 59,502
Int. Cl. C03c *25/02*; G01n *21/24*
U.S. Cl. 117—66 **2 Claims**



A method for determining and controlling the degree of cure of a heat-curable composition. A heat-curable synthetic resinous composition comprising a vinyl chloride or a vinylidene chloride polymer is cured under a plurality of conditions differing in severity and the physical properties of each cured sample are determined. Each cured sample is extracted with an organic solvent, and the percent transmittance of the extract is spectrophotometrically determined in the visible region between 340–550 millimicrons. Cure of the same heat-curable composition is then controlled by monitoring the percent transmittance of extracts in the same solvent, measured by the same procedure, and increasing or decreasing the severity of the curing conditions as required to maintain the monitored transmittance at a desired level corresponding with desired physical properties. The present transmittance of the extract varies inversely as the degree of cure of the polymeric component. The method of this invention is particularly useful for controlling the cure of a resinous composition comprising a vinyl chloride or a vinylidene chloride polymer applied as a coating on glass filaments.

3,679,458
PRESSURE SENSITIVE ADHESIVE TAPE
Henry P. Sorell, Arlington Heights, Eugene Pomazak, Lindenhurst, and Sven Rygg, Glenview, Ill., assignors to Borden Inc., New York, N.Y.
Filed June 23, 1970, Ser. No. 49,046
Int. Cl. C09j *7/04*
U.S. Cl. 117—68.5 **2 Claims**



A release coating for pressure sensitive adhesive tape prepared by admixing an organic titanate with a polysiloxane having hydroxyl groups to form a reaction product of said siloxane and titanate in an aromatic solvent and further admixing with said reaction product in aromatic organic solvent solution a (higher) alkyl compound having an active hydrogen atom or a polymer having active hydrogen atoms containing a major proportion of such alkyl compound polymerized therein. The solvent is evaporated to leave the release coat of this invention which is used on pressure sensitive tapes.

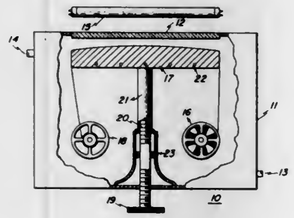
3,679,459
BEARING MEMBER FOR HIGH TEMPERATURE APPLICATIONS
Vemulapalli D. Rao, Woodhaven, Yeshwant P. Telang, Grosse Ile, and Jerry E. White, Dearborn Heights, Mich., assignors to Ford Motor Company, Dearborn, Mich.
No Drawing. Filed Apr. 7, 1971, Ser. No. 132,231
Int. Cl. B44d *1/16*
U.S. Cl. 117—69 **7 Claims**

A seal member for rubbing against a rotating ceramic regenerator has a surface layer consisting essentially of calcium fluoride, zinc oxide and stannic oxide. The surface layer is supported on a metal substrate and a bonding layer of nickel aluminide can be applied between the substrate and the surface layer. The surface layer has surprisingly low friction and wear and excellent resistance to salt attack when operating at temperatures of about 900–1600° F.

3,679,460
COMPOSITE WEAR RESISTANT MATERIAL AND METHOD OF MAKING SAME
Edwin Durham Reid, Charlotte, N.C., assignor to Union Carbide Corporation, New York, N.Y.
Continuation-in-part of application Ser. No. 20,582, Mar. 18, 1970. This application Oct. 8, 1970, Ser. No. 79,090
Int. Cl. C23d *5/10*
U.S. Cl. 117—93.1 PF **7 Claims**

A method of forming a metal oxide coating upon a workpiece, which coating may have a closely controlled surface roughness over a wide range of coating thicknesses. The method consists of applying a metal oxide base coating by an arc torch deposition process and thereafter applying a top surface coating of metal oxide with a detonation gun deposition process. A wear-resistant composite coating having an arc torch-applied base portion with a roughness of 100 A.A. to 150 A.A. combined with a detonation gun-applied top surface coating having surface roughness of 150 A.A. to 450 A.A. is also disclosed as a preferred textile surface.

3,679,461
METHOD FOR MAKING PHOTOPOLYMERIZED TETRAFLUOROETHYLENE FILMS
Donald H. Maylotte, Schenectady, N.Y., assignor to General Electric Company
Filed June 30, 1970, Ser. No. 51,277
Int. Cl. B44d *1/50*
U.S. Cl. 117—93.31 **6 Claims**



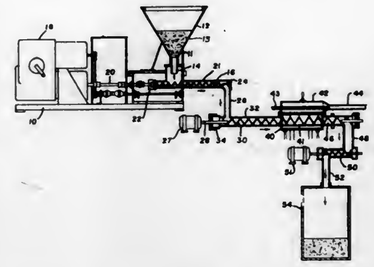
A method is provided for improving the rate of surface photopolymerization of tetrafluoroethylene to make continuous imperforate films and substrate-film composites. Surface photopolymerization of tetrafluoroethylene is achieved at pressures above 25 torr by positioning the substrate at a distance from the ultraviolet light source within the tetrafluoroethylene photopolymerization zone sufficient to provide for the production of continuous film. Composites made by the subject method can be utilized to make capacitors, cryogenic devices, etc.

3,679,462
METHOD FOR PERFECTING AIRCRAFT EMERGENCY LANDING
Donald J. Pistilli, Morristown, and Edward R. Degginger, Convent Station, N.J., assignors to Allied Chemical Corporation, New York, N.Y.
No Drawing. Filed Oct. 16, 1970, Ser. No. 81,621
Int. Cl. B44d *1/08, 1/12*
U.S. Cl. 117—105.5 **6 Claims**

Aqueous dilatant solutions containing 0.5 to 6.0 weight percent alkali metal borate and 0.5 to 6.0 weight percent water-soluble polyvinyl alcohol can be rapidly applied to the surface of aircraft runways to provide a spark and fire-retardant cushion for emergency aircraft landings. This dilatant solution is preferably formed by mixing two aqueous systems, one containing borate and the other PVA. The mixing is preferably effected by spraying converging streams of the two solutions.

3,679,463
APPARATUS AND METHOD FOR CONTINUOUSLY DEPOSITING BERYLLIA THROUGH VAPORIZATION OF A BASIC FORMATE
Peter L. Fleischner, New York, N.Y., assignor to National Beryllia Corporation, Haskell, N.J.
Filed June 8, 1970, Ser. No. 44,344
Int. Cl. C23c *11/00*
U.S. Cl. 117—107.2 R **7 Claims**

An apparatus and method for vaporizing a basic formate of beryllium by continuous means in which the beryllium basic formate is mixed with a granular inert carrier material such as sand and as an aggregate is fed from a storage hopper through a closed screw conveyor system through a heating zone whereat the basic formate of beryllium is vaporized and in a vaporized condition



is delivered to a chamber in which the beryllium basic formate is thermally decomposed into beryllia and is deposited on a substrate. The granular inert material and unvaporized basic formate is discharged to a closed receiving hopper for reprocessing and the like.

3,679,464
COMPOSITION AND PROCESS FOR GLAZING CERAMIC WARE
Richard Andrew Eppler, Timonium, Md., assignor to SCM Corporation, Cleveland, Ohio
No Drawing. Application May 27, 1969, Ser. No. 828,345, now Patent No. 3,561,984, dated Feb. 9, 1971, which is a continuation-in-part of application Ser. No. 625,000, Mar. 22, 1967. Divided and this application Oct. 21, 1970, Ser. No. 82,803
Int. Cl. C03c *25/00*
U.S. Cl. 117—175 **6 Claims**

This patent application describes a composition for glazing ceramic ware, preparations useful for making same, process for glazing bodies and substrates with same, and resulting coated ceramic bodies. The composition for glazing is characterized by containing a particulate vitrifiable material, at least a substantial fraction of which is in the particulate vitreous state, said vitrifiable material, after melting into a fluent vitreous state, being self-nucleating or autocrystallizable or crystallizable into a substantially dimensionally stable continuous vitreous film in which are dispersed crystals of low thermal expansion. The glazing composition is particularly suited for glazing low expansion ceramic whiteware. Set forth as useful preparations are special particulate lithia-alumina-silica and alkaline earth-alumina-silica systems modified with flux in proportion controlled to restrict the development of a primary low thermal expansion crystalline phase, some of said preparations being modified with zirconia. The glazing process comprises partially coating a ceramic body with the composition for glazing, firing the coated body at a temperature sufficiently high and for a time sufficiently long for converting the composition into a fluent continuous vitreous surface coating, then adjusting the temperature to a value at which crystal growth in the surface coating occurs at a measurable rate, and finally cooling the resultant glazed ware at a rate consistent with keeping the ware integral. The invention shows particular advantage for making glazes of adjustable and low thermal expansion for thermal shock and mechanical shock resistant ceramic whiteware, for example, dinnerware, cookware, ceramic tile, acoustical tiles of the mineral type, sanitary ware, artware and electrical and technical porcelain. The invention is specially adaptable to conventional "two fire" glazing practice.

3,679,465
PROCESS FOR PRODUCING HARDENABLE EPOXY RESIN COMPOSITIONS
Robert Flynn, Toms River, N.J., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.
No Drawing. Continuation-in-part of abandoned application Ser. No. 877,477, Nov. 17, 1969. This application Nov. 23, 1970, Ser. No. 83,626
Int. Cl. C03c *25/02*
U.S. Cl. 117—126 GE 9 Claims

A process for producing epoxide compositions useful in a variety of applications especially in compression molding is disclosed. A low-boiling single or formulated solvent is used to dissolve the appropriate resin and a curing agent therefor and said solution used to coat or impregnate a suitable reinforcement material, preferably a continuous roving type. The solvent is then driven off under conditions which by virtue of the nature of the solvent permit solvent evaporation without a substantial precuring of epoxy resin.

3,679,466
REPELLING OF MARINE ANIMAL PESTS
Mark M. Bowman, Jr., Bartlesville, Okla., assignor to Phillips Petroleum Company
No Drawing. Filed Mar. 6, 1970, Ser. No. 17,305
Int. Cl. A01n *9/12*; B44d *1/26, 1/34*
U.S. Cl. 117—127 10 Claims

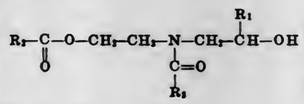
Methods of repelling marine animal pests from structures comprising wood and/or metal using an N,N-dimethylsulfenyl dithiocarbamate.

3,679,467
BURNER GRATE
Cloyd L. Betzer, Kankakee, Ill., assignor to Roper Corporation, Kankakee, Ill.
Filed Sept. 4, 1970, Ser. No. 69,673
Int. Cl. B32b *15/04*; F24c *15/10*
U.S. Cl. 117—129 3 Claims

A burner grate for gas burning ranges is disclosed. The intense heat areas of the grate comprise a steel substrate inhibited with respect to carbon migration coated with a semi-crystallized ceramic. Useful ceramic coatings have a remelt temperature in excess of about 1600° F. and include, in addition to SiO_2, oxides which function to promote crystallization, dissolve metal scale, control thermal expansion, and increase coating adhesion.

3,679,468
PROCESS FOR THE ANTISTATIC TREATMENT OF LINEAR CRYSTALLIZABLE POLYESTERS AND PRODUCTS THUS TREATED
Roland Feinauer, Werner Thier, and Wolfgang Schneider, Marl, Germany, assignors to Chemische Werke Huls, A.G., Marl, Germany
No Drawing. Filed Apr. 21, 1970, Ser. No. 30,606
Claims priority, application Germany, Apr. 26, 1969, P 19 21 527.1
Int. Cl. D06m *15/00*; B44d *1/22*
U.S. Cl. 117—138.8 F 15 Claims

Shaped antistatic polyester articles of manufacture are produced by applying to the surface thereof a compound having the formula:



wherein R_1 is hydrogen or methyl and R_2 and R_3 each is an aliphatic group containing 1 to 17 carbon atoms, inclusive, at least one of which contains 11 to 17 carbon atoms, inclusive, and thereafter, to render the antistatic treatment permanent, heat setting at, e.g., 120–140° C.

3,679,469
CARPET BACKSIZING WITH LATEXES OF ACIDIC OLEFIN COPOLYMERS
Carl Moore, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.
No Drawing. Filed Feb. 24, 1970, Ser. No. 13,833
Int. Cl. B32b *27/06*
U.S. Cl. 117—161 UZ 10 Claims

Carpets and other fibrous textile products are backsized with latexes of acidic copolymers of olefins such as ethylene and acidic comonomers such as acrylic acid by applying the latex, drying and fusing the copolymer in place.

3,679,470
METHOD FOR PRODUCING HIGH PURITY MONOCRYSTALLINE SILICON
Leo C. Rogers and Roger G. Nilkirk, Phoenix, and Alfred J. Heitz, Mesa, Ariz., assignors to Motorola, Inc., Franklin Park, Ill.
Filed Mar. 13, 1970, Ser. No. 19,269
Int. Cl. C23c *11/08*; H01l *7/50*
U.S. Cl. 117—200 3 Claims

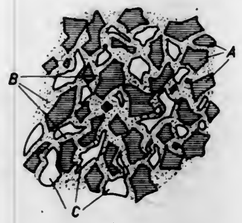


A method of producing high purity monocrystalline silicon. A silicon rod is heated in a reducing atmosphere and an etchant passed thereover. After the etchant has etched the surface of the silicon rod, a gaseous mixture of a silicon halogenide and a reducing agent is passed over the silicon rod while the flow of the etchant is continued. The flow of the etchant may continue during the growth of the monocrystalline silicon rod or it may be discontinued a short time after the silicon halogenide gaseous mixture has been introduced.

3,679,471
METHOD FOR THE PRODUCTION OF ELECTRICAL RESISTOR BODIES, AND ELECTRICAL RESISTOR BODIES PRODUCED IN ACCORDANCE WITH SAID METHOD
Hugo Wyss, Rue des Cedres 7, Neuchatel, Switzerland
Filed Dec. 8, 1969, Ser. No. 882,874
Claims priority, application Switzerland, Dec. 10, 1968, 18,426/68
Int. Cl. H01c *7/00*
U.S. Cl. 117—201 5 Claims

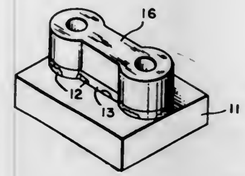
A novel method for the production of electrical resistor bodies is disclosed, as are novel electrical resistor bodies produced by said method. The method and process of the instant invention contemplates the steps of embedding a poly-crystalline porous mixture of grains in a coherent matrix deposited in the pores of the mixture by a chemical reaction of vapors at high temperature, the source of such vapors being disposed outside the reaction zone and at a lower temperature than that in the reaction zone. The

matrix is deposited throughout the entire mixture and, during deposition, is doped if desired in a controlled manner through the addition of known doping agents and amounts thereof to the reacting vapors. While matrix is deposited throughout the entire mixture, it does not fill up the entire pore volume.



In the preferred inventive embodiment, the electrical resistor bodies so produced are heated in an inert atmosphere and at a higher temperature than that prevalent during the vapor deposition of the matrix such that the dopants are allowed to diffuse to certain known depths.

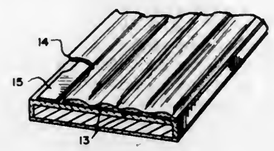
3,679,472
METHOD FOR BONDING A METAL PATTERN TO A SUBSTRATE
Gerald E. Crosby, Levittown, Pa., and Daniel J. Shanefield, Princeton, N.J., assignors to Western Electric Company, Incorporated, New York, N.Y.
Continuation-in-part of application Ser. No. 884,046, Dec. 15, 1969. This application July 16, 1970, Ser. No. 55,516
Int. Cl. B44d *1/18*
U.S. Cl. 17—212 27 Claims



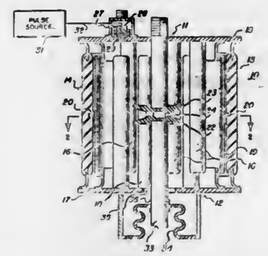
The bond between a metal film and a substrate is increased by employing an intermediate layer which effects a tenacious bond to the substrate. The propensity of such an intermediate layer to be extremely difficult, if not impossible, to etch without deleteriously damaging the film is eliminated by using a discontinuous intermediate layer. Electroplating of the metal film is facilitated by depositing a continuous conductive coating which can be etched without deleterious damage to the metal film onto the discontinuous intermediate layer.

3,679,473
METHOD OF MAKING A HEATING ELEMENT
John K. Blatchford, St. Joseph, Edward C. Peterson, Benton Harbor, and Jan C. Burda, Eau Claire, Mich., assignors to Whirlpool Corporation
Filed Dec. 23, 1970, Ser. No. 100,875
Int. Cl. B44d *1/18*
U.S. Cl. 117—212 12 Claims

A method of making a heating element such as a heated panel for a cooking oven comprising applying to a heat resistant base such as a metal panel a fired vitreous ceramic first coating, then applying over this first coating a fired vitreous ceramic second coating containing dispersed metal particles in electrical conducting contact with each other formed in said second coating by chemical reduction of a metal compound therein, and then, preferably, applying over this second coating a fired vitreous ceramic protective coating with the result that the second coating comprises an electrical conducting resistant heating layer that is protected by the ceramic protective coating.



3,679,474
PERIODIC ELECTRODE STRUCTURE FOR VACUUM GAP DEVICES
Joseph A. Rich, Schenectady, N.Y., assignor to General Electric Company
Continuation-in-part of abandoned application Ser. No. 875,919, Nov. 12, 1969. This application Jan. 18, 1971, Ser. No. 107,511
Int. Cl. H01j *17/04*
U.S. Cl. 313—217 10 Claims

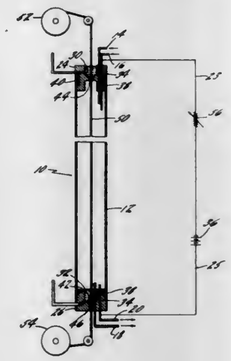


Discloses vacuum gap devices including triggerable gap and switch devices in which a pair of electrode assemblies, each having a plurality of electrode elements which are parallel and/or normal to the same plane are assembled with opposed electrode members interleaved to form a periodic ring shaped structure. A current interrupting arc is initiated by a pair of butt-type arc-electrodes located centrally of the rod array.

3,679,475
METHOD FOR PRODUCING BORON-CARBON FIBERS
Malcolm Basche, West Hartford, Conn., Roy Fanti, Springfield, Mass., and Francis S. Galasso, Manchester, Urban E. Kuntz, East Hartford, and Richard D. Schile, Wethersfield, Conn., assignors to United Aircraft Corporation, East Hartford, Conn.
Filed Mar. 27, 1969, Ser. No. 811,072
Int. Cl. H01b *1/00*; B44d *1/14, 1/18*
U.S. Cl. 117—216 3 Claims

A chemical deposition process for producing continuous node-free filaments of boron over carbon by reduc-

ing a boron-containing gas, such as boron trichloride, on a resistively heated carbon substrate, the carbon substrate



being pretreated with graphite to prevent the formation of hot spots during deposition.

3,679,476

METHOD OF COATING SYNTHETIC RESIN BASE

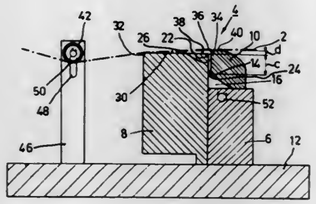
Gerard Willem van Oosterhout, Hendrikus Johannes Lemmen, and Cornelis Johannes Klomp, Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 1, 1970, Ser. No. 24,674

Claims priority, application Netherlands, June 13, 1969, 6909118

Int. Cl. H01f *10/00*

U.S. Cl. 117—236 **5 Claims**



A method of coating a support base of a synthetic material, with a layer of lacquer for particular application in manufacturing magnetic tape. The lacquer is forced through a pouring slit into a pressure chamber where it is temporarily stored in contact with the support base. The support is guided along the stored lacquer under a tensile stress and the support with the adhering layer of lacquer is then guided along a smoothing side in such manner that the parts of the support in front of and behind the smoothing side form an angle so that the layer is equalized. The pressure in the pressure chamber can be controlled by controlling the angle, the tensile stress and the quantity of lacquer supplied per unit of time so that the thickness of the layer is also controlled.

3,679,477

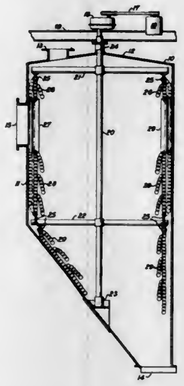
CHAMBER CLEANING DEVICE AND METHOD

Austin A. Zimmer, Elkridge, Md., assignor to W. R. Grace & Co.

Filed Aug. 20, 1970, Ser. No. 65,405

Int. Cl. B08b *9/00*

U.S. Cl. 134—8 **19 Claims**



A chamber cleaning device and method wherein the device has a rotatable member within the chamber, and pendent from the rotatable member one or more flexible chain members which are caused to contact the internal surfaces of the chamber on a rotation of the rotatable member. The contacting of the flexible chain member with the internal surfaces of the chamber effectively removes adhering substances from these surfaces by both a rapping and friction scraping of the internal chamber surfaces.

3,679,478

PROCESS FOR REMOVING CREPIDULA FROM OYSTER SHELLS

James Edward Mulhall, Southold, N.Y., assignor to Long Island Oyster Farms, Inc., New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 77,326, Oct. 1, 1970. This application Apr. 26, 1971, Ser. No. 137,616

Int. Cl. A01k *61/00*; **B08b** *3/08*

U.S. Cl. 134—25 R **7 Claims**

The process for removing Crepidula from the shells of live oysters which preferably comprises immersing the oysters in a solution of from about 2% to about 11% of ammonium chloride in sea water (on a weight/volume basis) for a period between about 10 minutes and 8 hours.

3,679,479

WASHOUT-PRESERVATIVE FOR LITHOGRAPHIC PRINTING PLATES

Donald A. Ray and Richard E. Arnold, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Jan. 7, 1970, Ser. No. 1,285

Int. Cl. B08b *3/08*; **C23g** *5/02*

U.S. Cl. 134—40 **8 Claims**

A washout-preservative for removing a full charge of ink from a lithographic printing plate and conditioning and protecting the printing plate during holdover between press runs of from several hours to several weeks comprises a hydrophilic colloid desensitizer, an ink solvent, and an image conditioner. The compositions can contain surfactants and other addenda.

ERRATUM

For Class 136—46 see:
Patent No. 3,679,483

3,679,480

ELECTRICAL CELL ASSEMBLY

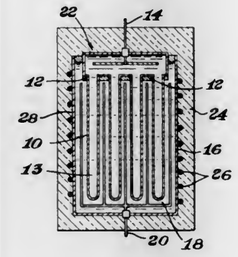
William E. Brown, Walnut Creek, and Robert G. Heitz and Charles A. Levine, Concord, Calif., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of application Ser. No. 567,587, July 25, 1966. This application May 8, 1969, Ser. No. 823,000

The portion of the term of the patent subsequent to Nov. 4, 1986, has been disclaimed

Int. Cl. H01m *35/00*

U.S. Cl. 136—6 **8 Claims**



A cell for generating electrical energy is provided comprising a sealed container partitioned into anode and cathode chambers, said partition comprising an electrolyte-separator. The latter is in the form of a bundle of hollow, fine glass or ceramic fibers sealed within a common header. The fibers are sealed at the end which penetrates the cathode chamber and are in open communication with the anode chamber. Preferred anode and cathode materials comprise an alkali metal such as sodium or potassium and sulfur respectively. The cell is useful as either a primary or secondary battery. By providing for the introduction of alkali metal and the withdrawal of catholyte during operation, it can be readily modified to provide a fuel cell.

3,679,481

PROCESS OF MANUFACTURING SINTERED CARRIER TYPE NEGATIVE ELECTRODES FOR ALKALINE STORAGE CELLS

Emile Jean Lucien Pinard, Bordeaux, France, assignor to Societe des Accumulateurs Fixes et de Traction (Societe Anonyme), Romainville, France

No Drawing. Filed Mar. 1, 1971, Ser. No. 119,867

Claims priority, application France, Mar. 26, 1970, 10,933

Int. Cl. H01m *35/18*

U.S. Cl. 136—24 **15 Claims**

A method of preparing negative electrodes for alkaline storage cells by incorporating active electrode material into porous metal carriers, for example, of sintered nickel by impregnating the carrier with an acidified cadmium salt solution, then precipitating cadmium hydroxide and incidentally nickel hydroxide in its pores by immersion in an alkali metal solution, then washing and drying the precipitate bearing carrier, thereafter heating such carrier at temperatures ranging from 200 to 500° C. in air or inert atmosphere for a selected period of time to convert the nickel and cadmium hydroxides into respective oxides, thereafter rehydrating the heated oxide bearing carrier by immersion in an aqueous liquid such as water or an aqueous solution of a nickel salt or an alkali metal hydroxide maintained at a temperature of approximately 80° C. for approximately 1 to 2 hours. This converts the cadmium oxide to cadmium hydroxide without substantially affecting the nickel oxide. Subsequently washing the so-treated carrier bearing cadmium hydroxide and such nickel oxide and finally washing and finally drying the electrode preferably in carbonated air. The resultant negative electrode has a materially reduced amount of deleterious or parasitic positive active material and increased porosity and flexibility as compared with like negative electrodes produced by conventional carrier impregnating and precipating procedure. Negative electordes resulting from the process of this invention and alkaline storage cells with such negative electrodes are also disclosed.

3,679,482

IRON ELECTRODE

Carl C. Hardman, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Feb. 5, 1971, Ser. No. 112,974

Int. Cl. H01m *43/04*

U.S. Cl. 136—25 **4 Claims**

A negative electrode plate, for a battery containing at least one positive and one negative electrode plate, with electrolyte contacting the plates, is made by depositing a soluble cobalt salt in a sulfur activated iron negative electrode plate and reacting the deposit with alkali hydroxide.

3,679,483

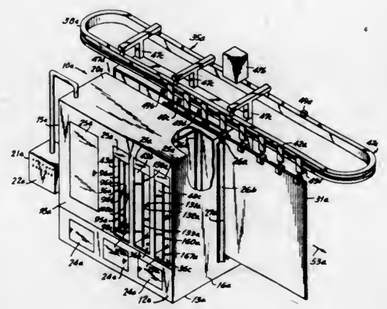
APPARATUS FOR CLEANING MEMBERS WITH FLUIDS

Leon A. Zweig, Chicago, Ill., assignor to Bell Tech Systems, Inc., Chicago, Ill.

Original application May 2, 1968, Ser. No. 726,081, now Patent No. 3,542,592, dated Nov. 24, 1970. Divided and this application Mar. 31, 1970, Ser. No. 24,201

Int. Cl. B08b *3/02*

U.S. Cl. 134—46 **9 Claims**



The present invention discloses apparatus for cleaning a variety of objects, such as printing plates or dies, having thereon foreign deposits, with a cleaning fluid. The equipment includes a chamber within which the member to be cleaned is supported and sequentially sprayed with cleaning fluid under controlled pressure and any remaining foreign deposits removed by a rinsing

fluid. The fluids are supplied by nozzles either mounted in fixed spaced relation to the supported member or manually controlled by a spray gun for directing the fluid. Apparatus for continually supplying the cleaning and rinsing fluids through the nozzle of the spray gun or fixed mounted nozzles is provided with a complete system which automatically controls the relationship of the temperature, pressure, supply, recirculating and other automatically inter-related operations of the system. The cleaning fluid may also be energized with sonic energy waves to further enhance its cleaning effectiveness.

3,679,484

LITHIUM-THALLIUM (ic) OXIDE ORGANIC ELECTROLYTE CELL

Arabinda N. Dey, Needham, and Robert W. Holmes, Boston, Mass., assignors to P. R. Mallory & Co., Inc., Indianapolis, Ind.

Filed July 15, 1970, Ser. No. 55,169
Int. Cl. H01m 23/02
U.S. Cl. 136—83 R 6 Claims

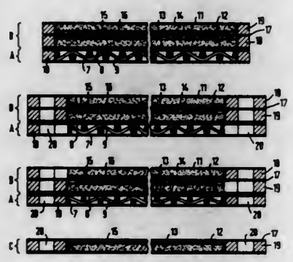
This invention relates to a novel high energy density primary battery comprising at least one positive plate composed of a mixture of thallium (ic) oxide (Tl_2O_3) and a conductive diluent, and at least one negative plate having a metal selected from the group of light metals, said plates being disposed in an electrolyte comprising an organic solvent selected from the group consisting of tetrahydrofuran, N-nitrosodimethylamine, dimethyl sulfite, propylene carbonate, gamma-butyrolactone, dimethyl carbonate, dimethoxy ethane, acetonitrile, dimethyl sulfoxide, dimethyl formamide and the mixtures thereof, and having dissolved therein soluble salts of the light metals, for example, the perchlorates, hexafluorophosphates, tetrafluoroborates, tetrachloroaluminates, hexafluoarsenates of lithium.

3,679,485

FUEL CELL BATTERY FOR REACTING GASEOUS REACTANTS IN FUEL CELLS OPERATED WITH LIQUID ELECTROLYTE

Hans Kohlmuller, Erlangen, and Dieter Kuhl, Bubenreuth, Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Sept. 9, 1970, Ser. No. 70,766
Claims priority, application Germany, Sept. 11, 1969, P 19 45 946.2
Int. Cl. H01m 27/00
U.S. Cl. 136—86 R 7 Claims



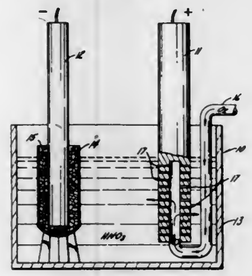
Fuel cell battery for reacting gaseous reactants in fuel cells operated with liquid electrolyte includes a stack of alternatingly superimposed components A and B with a component C at the respective ends of said stack, the stack being embedded in a casing of molding resin, the component A comprising a pair of diaphragms with a support frame and sealing frame sandwiched therebetween, the component B comprising a pair of diaphragms with bipolar electrodes and sealing frames sandwiched therebetween, and the component C comprising a diaphragm and a contact plate with an electrode, a spacer grid and a sealing frame sandwiched therebetween, the sealing frames, diaphragms and contact plates being provided with fins and formed with bores for supplying the reactants to and discharging the same from the battery, and the sealing frames being firmly bonded to the diaphragms and contact plates of the respective components; and method of producing the fuel cell battery.

3,679,486

FUEL CELL AND METHOD OF OPERATING SAID CELL

Wayne A. Proell, Seymour, Ind., assignor to American Hydrocarbon Company, Salt Lake City, Utah

Filed Aug. 13, 1969, Ser. No. 849,655
Int. Cl. H01m 27/00
U.S. Cl. 136—86 E 13 Claims



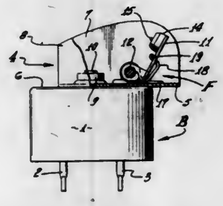
A fuel cell with its anode comprising a carbon electrode and fossil fuel, its cathode a porous carbon electrode through which molecular oxygen is introduced into the fuel cell, and employing nitric acid as an electrolyte for the simultaneous production of electricity and humates. There is also disclosed an electrochemical process for the conversion of the chemical energy into electrical energy while simultaneously preparing a soil enriching agent from a fossil fuel.

3,679,487

THERMAL BATTERY WITH PERCUSSION CAP

Jan R. Coyle, 514 E. Ghent, San Dimas, Calif. 91773

Filed Feb. 19, 1969, Ser. No. 800,555
Int. Cl. H01m 17/06
U.S. Cl. 136—90 1 Claim



A thermal battery and activator in which a percussion cap is affixed to the thermal battery, and a striker is held initially in an inoperative position by a removable pin, the striker being forced toward the percussion cap by a spring when the pin is removed.

3,679,488

SILVER OXIDE-MAGNESIUM CELL OR ELECTROCHEMICAL GENERATOR

Francis Jean Dalard and Jan Witold Augustinsky, Grenoble, and Jean-Claude Sohm, Meylan, France, assignors to Société des Accumulateurs Fixes et de Traction (Société Anonyme), Romainville, France

Filed Oct. 18, 1970, Ser. No. 79,058
Claims priority, application France, Oct. 15, 1969, 6935369
Int. Cl. H01m 11/00
U.S. Cl. 136—100 M 25 Claims

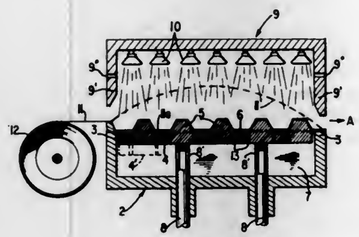
The invention relates to an electrolyte for a cell having electrodes based respectively upon magnesium and preferably silver oxide. Other electrodes in lieu of silver oxide are also disclosed as useful, e.g. silver chloride, copper chloride or oxygen or air electrodes. In accordance with the invention, the electrolyte comprises an aqueous solution of sodium or lithium metaborate and sodium or lithium perchlorate and has a pH in the neighborhood of 11. In certain conditions, additives to the electrolyte solution, e.g. sodium tartrate improve operation of the cell in rapid discharge. The invention is applicable notably to rapidly discharging electrochemical generators.

3,679,489

PROCESS FOR MASS PRODUCTION OF BATTERIES OF ELECTROCHEMICAL GENERATORS OF STACKED FLAT CONSTITUENTS

Jean Firmin Jammet, Poitiers, France, assignor to Societe des Accumulateurs Fixes et de Traction (Societe Anonyme), Romainville, France

Continuation of abandoned application Ser. No. 786,990, Dec. 26, 1968. This application Aug. 5, 1971, Ser. No. 169,472
Int. Cl. H01m 31/00
U.S. Cl. 136—175 12 Claims



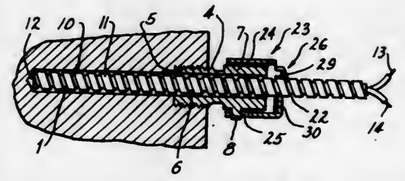
Batteries are mass produced by initial formation from plastic material of trays of substantially inverted truncated pyramidic form. These formed trays are perforated at their bottoms and have adhesive applied around the openings on internal bottom faces of the trays. Then, the perforated trays have mounted therein successively a negative duplex electrode, for example, of zinc whose lower face is covered with a conductive coating, the superposed separator impregnated with electrolyte lying over the upper face of the electrode and a depolarizer positive active material is superposed over each separator. The filled trays are severed and nested successively. Then, respective positive and negative contact terminals are applied at the opposite ends of the battery assembly. Thereafter, the so-formed battery assembly is mounted in stretched outer sheath of extensible plastic material.

3,679,490

ADJUSTABLE DEPTH IMMERSION TEMPERATURE SENSING DEVICE

Roy R. Finkbiner, Indianapolis, Ind., assignor to Barber-Colman Company, Rockford, Ill.

Filed July 10, 1970, Ser. No. 53,853
Int. Cl. H01v 1/02
U.S. Cl. 136—221 12 Claims



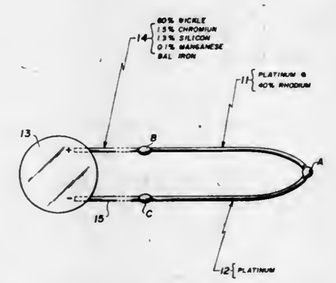
A thermocouple enclosed in a protective flexible spiral overlap cable is adjustable as to depth of immersion in a well by means of a bayonet cap threaded on the cable and engageable with a coupling pin in fixed relation to the well to releasably retain the thermocouple pressed against the closed end of the well.

3,679,491

PLATINUM-RHODIUM VS. PLATINUM THERMOCOUPLE HAVING BASE METAL COMPENSATING LEADS

Edward D. Zysk, Livingston, and Eugene E. Ozovitz, Englishtown, N.J., assignors to Engelhard Minerals & Chemicals Corporation

Filed Feb. 18, 1971, Ser. No. 116,437
Int. Cl. H01v 1/02
U.S. Cl. 136—236 5 Claims



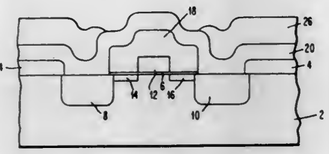
A thermocouple comprising platinum-40% rhodium vs. platinum as thermocouple legs, with each leg having connected thereto a base metal compensating lead closely approximating the E.M.F. output of its respective thermocouple leg, measured against a common standard thermocouple element, over the range of 100° C. to 1000° C. One of the leads being composed of 60% Ni, 15% Cr, 1.3% Si, 0.1% Mn and the balance Fe. The other lead being composed of 95.31% Ni, 4.49% W and 0.2% of at least one of Mn and Si.

3,679,492

PROCESS FOR MAKING MOSFET'S

Frank F. Fang and Alan B. Fowler, Yorktown Heights, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 23, 1970, Ser. No. 21,562
Int. Cl. H01l 7/54
U.S. Cl. 148—1.5 3 Claims



A process for preparing metal-oxide semiconductor devices (MOSFET's) using ion implantation is described wherein aluminum source and drain contacts are added after ion implantation through a highly refractory metal gate so that very high temperature annealing can be used. If the aluminum contacts are put down before the high temperature annealing, not only does a reaction between the aluminum and thin oxide channel region of the MOSFET occur, but ohmic contacts at the source and drain deteriorate, resulting in defective devices.

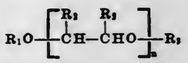
3,679,493

GLYCOL ETHER-CHROMIUM CORROSION RESISTANT COATINGS FOR METALLIC SURFACES

John Paul Gerhardt Beiswanger, Easton, and Assadullah Nasary, Bethlehem, Pa., assignors to GAF Corporation, New York, N.Y.

No Drawing. Filed Mar. 11, 1970, Ser. No. 18,762
Int. Cl. C23f 7/26, 11/16
U.S. Cl. 148—6.16 21 Claims

A process and composition for increasing the resistance to corrosion of a metallic surface, which process comprises contacting said metallic surface with a composition obtained by mixing in the presence of water a water soluble chromium compound such as chromium trioxide, ammonium chromate, chromium chromate, and the like, and an oxygenated organic compound having the following formula:



(I)

wherein R_1 is an alkyl group having from 1 to 6 carbon atoms, R_2 is hydrogen or an alkyl group having from 1 to 6 carbon atoms, and R_3 is hydrogen or an alkyl group having from 1 to 6 carbon atoms, n is an integer of from 1 to 4.

3,679,494

NITRIDED HAFNIUM-TANTALUM ALLOYS AND METHOD OF MAKING THE SAME

Vernon L. Hill, Niles and Harry R. Nichols, Chicago, Ill., and Alan L. Hess, Worcester, Mass., assignors to IIT Research Institute, Chicago, Ill.

No Drawing. Filed Apr. 30, 1969, Ser. No. 820,648
Int. Cl. C22c 27/00; C23c 11/14
U.S. Cl. 148—20.3 11 Claims

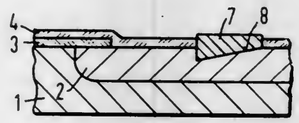
Improved alloys of hafnium-tantalum suitable for use as a cutting tool and the method of making the same. The alloys include a nitrided case layer formed by nitriding at temperatures between 2500° F. and 4000° F. until the nitrided layer is at least 2 mils thick.

3,679,495

METHOD OF PRODUCING ELECTRONIC PLANAR-TYPE DEVICES APPLICABLE FOR HIGH FREQUENCY GERMANIUM PLANAR TRANSISTORS

Wolfgang Schembs, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed May 7, 1969, Ser. No. 824,026
Claims priority, application Germany, May 7, 1968, P 17 64 269.2
Int. Cl. H01l 7/46
U.S. Cl. 148—179 12 Claims



Described is a method of producing a plurality of microsemiconductor components according to the planar method, more particularly, high frequency germanium planar transistors or integrated circuits, containing germanium planar transistors. The conventional method steps are employed up to the production of the emitter region. The process is characterized in that the emitter region is produced in the semiconductor body in a manner whereby a window, corresponding to the area of the emitter region, is etched into the masking layer which is produced on the semiconductor crystal surface after the base diffusion. The emitter material is subsequently applied over the entire area, in form of a metal layer, upon the crystal surface, freed from the masking layer, and on the adjacent masking layer, covered by the photo varnish layer. The photo varnish layer and thus the metal layer located thereon are removed by a suitable solvent. Finally, the emitter material located directly on the crystal surface is alloyed into the semiconductor body.

3,679,496

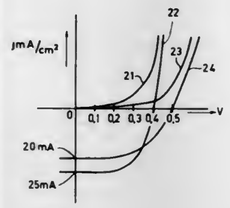
SEMICONDUCTOR DEVICES COMPRISING A HETEROJUNCTION

Ties Siebolt Te Velde and Sybrandus van Heusden, Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 27, 1970, Ser. No. 6,066
Claims priority, application Netherlands, Feb. 1, 1969, 6901662
Int. Cl. H01l 7/44
U.S. Cl. 148—188 11 Claims

A method of forming a heterojunction in a semiconductor device wherein a substrate of a polycrystalline layer of a II–VI material coated with a thin layer of a halide of copper, silver and/or gold is heated to effect a solid-state reaction wherein a halide layer of the II–VI material is formed in the thin layer and at least one of the metals copper, silver, and gold penetrates into the

substrate to form a compound with the VI material which provides a heterojunction with the substrate. The thin



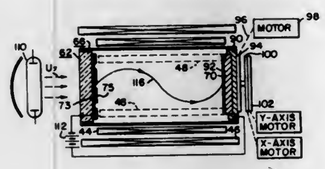
layer of the halide of the II material is subsequently removed with a solvent thereof.

3,679,497

ELECTRON BEAM FABRICATION SYSTEM AND PROCESS FOR USE THEREOF

Robert M. Handy, Export and Stephen J. Angello, Paul R. Malmberg, and Terence W. O'Keeffe, Pittsburgh, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Oct. 24, 1969, Ser. No. 869,229
Int. Cl. B44c 1/22; H01j 37/26; B23p 1/00
U.S. Cl. 156—2 15 Claims



A system for fabrication of patterns in substrates such as integrated circuits on silicon wafers, employs a scanning electron microscope to produce a photocathode having the desired surface pattern therein and the photocathode is then employed to produce replicate patterns on a plurality of substrates. The photocathode produces a patterned electron beam which impinges on an electron resist on a substrate to provide for differential solubility between the electron beam treated and untreated resist areas. Removing the more soluble portion of the electron resist after treatment by the photocathode, exposes the substrate surface which is then altered either physically or chemically. One or more highly precise patterns both in their location and configuration, may be produced on the surface of a substrate by applying a series of successive electron resists to the substrate and using a plurality of photocathodes.

3,679,498

METHOD FOR MOLDING FORMS ON VARIOUS SUBSTRATES

Anton M. Andersen, 1 Highland Ave., Demarest, N.J. 07627

Filed May 14, 1970, Ser. No. 37,197
Int. Cl. B32b 31/14
U.S. Cl. 156—3 16 Claims

A method for molding forms on substrates so that the forms and substrates are a homogeneous unit and where-

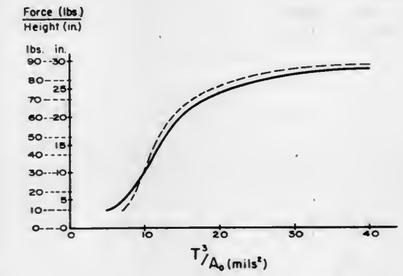
3,679,499

PROCESS OF BACK ETCHING A PERFORATED METAL MASK FOR COLOR TV TUBES

Thomas C. Minzenberger, Oak Lawn, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.

Filed Jan. 30, 1970, Ser. No. 7,281
Int. Cl. C23f 1/02, 17/00
U.S. Cl. 156—7 2 Claims

A 23-inch rectangular shadow mask color tube is screened, using the apertures of the mask in determining



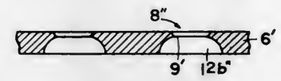
the position and dimensions of the phosphor dots, and then the mask is re-etched to enlarge the diameter of its apertures, relative to the phosphor dots, to a value A_0. The thickness T of the mask and the parameters of the re-etch are determined so that the quantity T^2/A_0 has a value of approximately 13 or greater.

3,679,500

METHOD FOR FORMING PERFORATIONS IN METAL SHEETS BY ETCHING

Nobuzo Kubo and Takeshi Ito, Hikone, Japan, assignors to Dainippon Screen Manufacturing Company, Limited, Kyoto, Japan

Filed Aug. 7, 1970, Ser. No. 62,009
Int. Cl. H01l 7/50
U.S. Cl. 156—11 2 Claims



A method and apparatus for perforating thin sheet or web material as in the manufacture of various thin metal screen products. The method of the invention generally comprises the following steps: Providing on opposite side surfaces of a metal sheet or web a coating of etch-resistant pattern film material having apertures of desired configuration; effecting a first slight etching from one side or both sides of the sheet or web stock; forming slight depressions in the web surfaces in the areas uncovered by the apertures of the etch-resistant coatings; providing a second etch-resistant coating over the entire face of one of the slightly etched faces of the web material; effecting a second etching action on that side of the web opposite

from the second coating, such as to form the perforations, and then removing the etch-resistant coatings and pattern film material from the perforated web or sheet material.

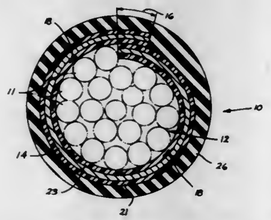
3,679,501
METHOD OF POLISHING GALLIUM PHOSPHIDE
Richard J. Chicotka, Mahopac, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
No Drawing. Filed Apr. 13, 1970, Ser. No. 28,059
Int. Cl. C09g 1/00; H01l 7/00
U.S. Cl. 156—17 10 Claims

A method of polishing gallium phosphide used in the manufacture of semiconductive devices. A gallium phosphide wafer is immersed in a solution consisting of from about 15 to 20 parts by volume of concentrated hydrofluoric acid and from about 3 to about 0.5 parts of concentrated nitric acid. Treatment by the $HF\text{-}HNO_3$ solution of this invention leaves the wafer substantially pit free with a mirror-like surface.

3,679,502
GASEOUS NONPREFERENTIAL ETCHING OF SILICON
Robert G. Hays, Scottsdale, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.
No Drawing. Filed Sept. 29, 1969, Ser. No. 862,039
Int. Cl. H01l 7/00
U.S. Cl. 156—17 5 Claims

A silicon surface is etched or polished with a gaseous mixture comprising sulfur hexafluoride, SF_6, of high purity and a carrier gas such as hydrogen at temperatures between 950° C. and 1250° C. The sulfur hexafluoride should have a low nitrogen concentration with a preferred nitrogen concentration being less than 200 parts per million by weight.

3,679,503
METHODS OF MAKING SHIELDED ELECTRICAL CABLE
Matthew Raymond Dembiak, Clifton, N.J., and George H. Webster, Timonium, Md.; said Webster assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J., said Dembiak assignor to Western Electric Company, Incorporated, New York, N.Y.
Original application Mar. 24, 1969, Ser. No. 809,547, now Patent No. 3,551,586, dated Dec. 29, 1970. Divided and this application June 11, 1970, Ser. No. 45,343
Int. Cl. H01b 13/10
U.S. Cl. 156—54 6 Claims

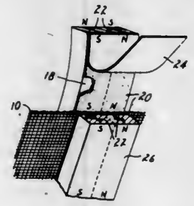


A metallic tape, having a release agent material applied selectively in at least one longitudinal strip on one major surface thereof, has a coating of adhesive over the strip and both major surfaces. The tape is wrapped longitudinally about a cable core, with the one major surface facing the core, to form an overlapped seam which is then heated to bond the adhesive on the one major surface to the adhesive on the other major surface. The strip of release agent material may be easily removed together with the overlying adhesive to bare the metal to facilitate grounding at a splice location.

3,679,504
METHOD OF FORMING COLOR EFFECTS IN HYDROGEL CONTACT LENSES AND OPHTHALMIC PROSTHESES
Otto Wichterle, Prague, Czechoslovakia, assignor to Ceskoslovenska akademie ved, Prague, Czechoslovakia
No Drawing. Filed Mar. 26, 1969, Ser. No. 810,843
Claims priority, application Czechoslovakia, Apr. 5, 1968, 2,571
Int. Cl. B32b 31/00
U.S. Cl. 156—62 11 Claims

Object of the invention is a method of forming color effects in hydrogel contact lenses and ophthalmic prostheses, wherein the colored pattern is formed between at least two transparent hydrogel layers, bound together by polymerizing between them a monomer mixture forming the same or similar hydrogel. A homogeneous transparent thin covering layer of hydrogel is first formed on a regular surface of a smooth pad. The desired colored pattern is then formed between it and the concave surface of a lens or that of an ophthalmic prosthesis, being either laid between them as a thin foil or created on either the said concave surface or said covering layer, the last mentioned embodiment being preferred. The bond between the lens or prosthesis and the covering layer is realized by putting a drop of initiated monomer mixture between them and pressing them slightly together so that the excess of the monomer mixture is expressed. The colored pattern is preferably formed using colors, dyestuffs or pigments which are insoluble in water and in monomer mixture. The finished lens or prosthesis is then removed from the pad by swelling the whole in a swelling liquid such as water or alcohol and kept in sterile physiologic solution.

3,679,505
MAGNETIC INSECT SCREEN
Philip D. Hinderaker and Karl E. Nelson, St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Feb. 9, 1971, Ser. No. 113,951
Int. Cl. E04b 2/00; A47b 23/00
U.S. Cl. 156—71 6 Claims



A method for removably mounting an insect screen over a vehicle window opening with a pair of flexible magnetic strips which are self-aligning and between which the edges of the insect screen are sandwiched around the vehicle window opening.

3,679,506
TRANSFER COATING PROCESS
Anthony Joseph Burgess, Alan Charles Eagles, and Margaret Lillian Steel, Runcorn, England, assignors to Imperial Chemical Industries Limited, London, England
No Drawing. Filed May 26, 1969, Ser. No. 827,967
Claims priority, application Great Britain, June 11, 1968, 27,779/68; Aug. 16, 1968, 39,267/68
Int. Cl. B31f 00/00; B32b 31/00; B44c 00/00
U.S. Cl. 156—209 15 Claims

A process for the production of a painted planar polymeric article which comprises pressing an advancing band of thermoplastic polymeric material the surface of which

is in heat softened form against a paint releasing substrate moving in the same direction and at the same speed as said band and to which has been applied a fluid paint coating and substantially dried, maintaining contact between the advancing band and the moving painted substrate for sufficient distance to effect transfer of the paint coating from the substrate to the band and thereafter parting the band from the substrate, and causing or allowing the surface of the thermoplastic polymeric material to cool below the softening point of the thermoplastic polymeric material during or after its contact with the painted substrate.

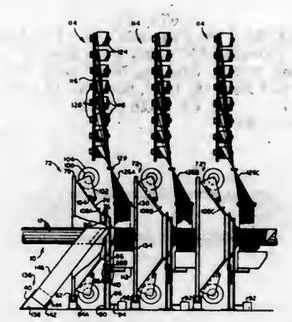
3,679,507
METHOD OF PRODUCING A COATED GLASS FIBER STRAND
Alfred Marzocchi, Cumberland, R.I., assignor to Owens-Corning Fiberglas Corporation
Continuation of application Ser. No. 4,160, Jan. 9, 1970, which is a continuation of application Ser. No. 563,010, June 20, 1966, which in turn is a continuation-in-part of application Ser. No. 234,639, Nov. 1, 1962. This application Dec. 24, 1970, Ser. No. 101,397
Int. Cl. D06a 11/00
U.S. Cl. 156—148 8 Claims



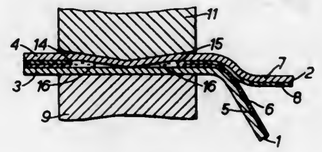
A method of coating glass fibers which consists of applying a primary size consisting essentially of water and a wetting agent to the individual fibers, forming the fibers into a strand, drying the strand, and applying a different, but compatible second coating to the strand, whereby the second coating penetrates interstices between the fibers adjacent to the surface only of the strand. This leaves a highly mobile core. The method makes possible the constant utilization of forming equipment, which is stabilized for greater efficiency of operation and perfection of product.

3,679,508
METHOD AND APPARATUS FOR MAKING PLASTIC TUBING
Joseph C. Weidel, Bonita, Calif., assignor to Rohr Corporation, Chula Vista, Calif.
Continuation-in-part of application Ser. No. 499,572, Oct. 21, 1965. This application Apr. 10, 1969, Ser. No. 814,905
Int. Cl. B65h 81/00
U.S. Cl. 156—173 11 Claims

Peripheral segments of a cylindrical mandrel are reciprocally and successively moved in an axial direction on the mandrel as the latter is rotated. A tape is wrapped around the peripheral segments as the mandrel is rotated, and the reciprocal movement of said segments causes this tape to advance toward one end of the mandrel. As the tape advances it is alternately wound with filaments which are coated with resin and filaments which are uncoated. The tape and filament windings thereon are advanced by the reciprocal movement of the peripheral mandrel segments to a heater which surrounds the mandrel, where the resin on the coated filaments is cured to thereby form a rigid plastic tube which continuously moves off the mandrel.



3,679,509
PROCESS FOR SEALING LAMINATED MATERIALS
Josef Frans Fielibert, Zevenaar, Netherlands, assignor to Lever Brothers Company, New York, N.Y.
Filed Dec. 23, 1969, Ser. No. 887,660
Claims priority, application Great Britain, Dec. 24, 1968, 61,348/68
Int. Cl. B32b 31/20
U.S. Cl. 156—182 5 Claims



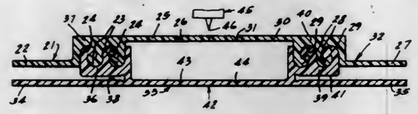
A method of sealing laminated materials, particularly as used in food containers, in which a jaw shape is used which causes the contacting sealable layers to rupture along a parting line and then form heat seals on each side of the parting line, so giving a double seal of improved reliability.

3,679,510
WEATHER RESISTANT MOLDABLE LAMINATE
Kenneth E. Conley, Matthews, and Thomas M. Ellison, Charlotte, N.C., assignors to Riegel Paper Corporation, New York, N.Y.
No Drawing. Filed Aug. 6, 1970, Ser. No. 61,827
Int. Cl. B29f 5/00; B29g 5/00; B32b 27/00
U.S. Cl. 156—245 6 Claims

A low cost composite material having properties of high strength, easy moldability and excellent outdoor weathering characteristics, as well as a smooth and decorative outer surface is disclosed. The new composite material includes an outer layer of clear, reverse printed polyvinyl fluoride film adhesively bonded to a thermoplastic layer, which in turn is joined to a reinforced polyester base stratum. The exposed thermoplastic surface of

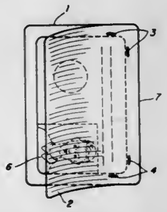
the polyvinyl fluoride-thermoplastic laminate is joined to the reinforced polyester base stratum during curing and molding of the polyester material without the use of a laminating adhesive.

3,679,511
FLEXIBLE PILFER PROOF CLOSURE CONSTRUCTION FOR BAGS
Steven Ausnit, 124 E. 61st St., New York, N.Y. 10021
Filed Feb. 18, 1970, Ser. No. 12,185
Int. Cl. B32b *31/26*
U.S. Cl. 156—251 **8 Claims**



Closure device for bags, pouches, and other articles, consisting of two outer and one inner interengaging webs of resilient, flexible material, said webs having ribs and grooves therein shaped complementarily to interlock with each other, the two outer webs having end portions which are brought together and merged with the inner web into a heat sealed bead, with each web having lines of weakness formed therein in close proximity to the bead whereby said web can be torn open to provide access to its interlocking elements and said bead can also be readily severed to form separate closure tubes.

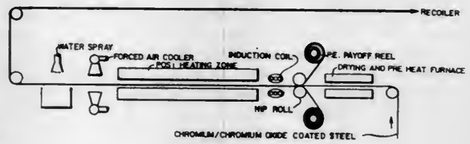
3,679,512
LAMINATED CARD ENVELOPE
Frederick W. Macone, Carlisle, Mass., assignor to Avant Corporation, Lincoln, Mass.
Original application Apr. 19, 1967, Ser. No. 632,072, now Patent No. 3,526,567. Divided and this application May 20, 1970, Ser. No. 39,035
Int. Cl. B32b *31/20*; **G09f** *3/02*
U.S. Cl. 156—272 **2 Claims**



This disclosure illustrates a novel envelope for receiving and properly orienting a data card positioned within the envelope which is thereafter subjected to heat and pressure to produce a composite, multilayered laminated card.

3,679,513
PROCESS FOR APPLYING A POLYMERIC FILM TO A STEEL SUBSTRATE
Ramon L. Addinall, Stoney Creek, Ontario, William T. Lewis, Burlington, Ontario, and Otokar Mudroch, Hamilton, Ontario, Canada, assignors to The Steel Company of Canada Limited, Hamilton, Ontario, Canada
Filed May 6, 1970 Ser. No. 35,102
Int. Cl. C09j *5/06*
U.S. Cl. 156—309 **9 Claims**

A method of applying a film of lower polyolefin or film of a copolymer of a major amount of a lower olefin with a minor amount of a copolymerizable monomer having polar functional groups to a steel substrate which involves generation of an intermediate layer of chromium/chromium oxide on the substrate and then application of the



polyolefin film during a pre-determined heating cycle is described. The method permits high line speeds in a continuous process. The product exhibits excellent resistance to corrosion and delamination.

3,679,514
PROCESS FOR IMPROVING THE PRODUCTION OF A LAMINATED PLASTIC ID CARD
Roger J. Kuhns, Lincoln, Mass., assignor to Avant Incorporated, Lincoln, Mass.
No Drawing. Filed Aug. 27, 1969, Ser. No. 853,515
Int. Cl. C09j *5/06*
U.S. Cl. 156—309 **2 Claims**

A process for eliminating die cutting of finished laminated plastic ID cards by providing top and bottom protective sheets having the exact dimensions of the finally produced card and utilizing sparse amounts of adhesive for laminating a data card between the protective top and bottom sheets.

3,679,515
SELF-BONDED TISSUE-FIBER LAMINATE PROCESS
A. Earl Capell, Hendersonville, N.C., and Leroy E. Wilson, Appleton, Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.
No Drawing. Filed Sept. 3, 1969, Ser. No. 855,017
Int. Cl. C09j *5/06*
U.S. Cl. 156—309 **5 Claims**

A process for joining independent fabric structures comprised of a web of light weight creped cellulose wadding, a layer of oriented fibers, and an intermediate layer of substantially cured, thermoplastic adhesive. The process comprises (1) preparing a laminate consisting essentially of at least two fabric structures positioned such that a portion of the cellulose webs of each of the structures are in overlapping contact, (2) while, maintaining the laminate at a temperature of at least 300° F., applying pressure to the laminate to cause a portion of the intermediate layer of substantially cured, thermoplastic adhesive in each of said structures to flow through its own cellulose web and into and through the cellulose web of the structure in contact therewith, and (3) cooling the laminate.

3,679,516
PROCESS FOR PRODUCING AN AIR-IMPERVIOUS TIRE FABRIC
James Newton McGee, Pleasant Garden, and Thomas Franklin Griffin, Kernersville, N.C., assignors to Burlington Industries, Inc., Greensboro, N.C.
Filed Apr. 3, 1969, Ser. No. 813,184
Int. Cl. C09j *5/04*
U.S. Cl. 156—315 **6 Claims**

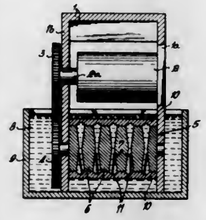
A process for preparing an air-impervious tire fabric which comprises padding the fabric at pressures of from 1 to 20 p.s.i.g. with an aqueous resorcinol-formaldehyde/latex composition, where solids content is in the range of 32–43% by weight, partially drying at a temperature of

from 125 to 175° F. the thus padded fabric in the relaxed state to a moisture content of 5–15%, then further padding the partially dried fabric with aqueous resorcinol-



formaldehyde/latex composition having a solids content in the range of 20–43% by weight and drying and curing the thus treated fabric at a temperature of from 200 to 450° F.

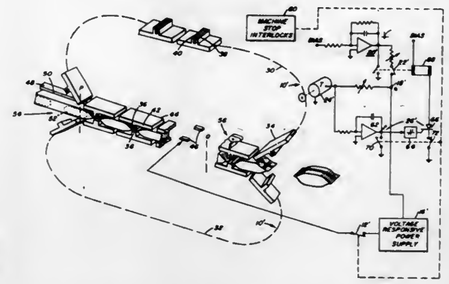
3,679,517
APPARATUS FOR ETCHING SEMICONDUCTOR BODIES
Reinhard Schulten, Weissach, and Hartmut Michel, Vaihingen, Enz., Germany, assignors to Robert Bosch, G.m.b.H., Stuttgart, Germany
Filed Mar. 25, 1970, Ser. No. 22,627
Claims priority, application Germany, Mar. 27, 1969, P 19 15 714.3
(Filed under Rule 47(b) and 35 U.S.C. 118)
Int. Cl. C23f *1/02*
U.S. Cl. 156—345 **11 Claims**



An apparatus for etching semiconductor bodies comprises a receptacle which accommodates a bath of etching fluid. A drum is mounted for rotation in the etching fluid about an at least substantially horizontal axis and is driven by drive means. Partitions separate the interior of the drum into a plurality of axially arrayed cells each of which extends transversely of the axis and has a cross-sectional area divergent from the region of the axis in radially outward direction, defining with the inner periphery of the drum a concavely curved guide path which annularly surrounds the axis and along which the semiconductor bodies to be etched travel in an orbit about the axis.

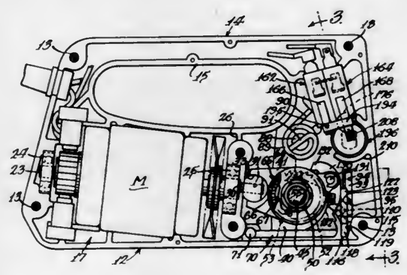
3,679,518
HEATER CONTROL APPARATUS FOR PACKAGING MACHINERY
Richard C. Andler, Rochester, N.Y., and Harley B. Keck, Greeley, Colo., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Feb. 1, 1971, Ser. No. 111,510
Int. Cl. G05d *23/19*; **H05b** *1/02*
U.S. Cl. 156—351 **8 Claims**

A heater control circuit for use in packaging thermoplastically wrapped articles is disclosed. The circuit computes the time that electrical power is removed from a packaging machine heater; and when power is re-applied to such heater, the power level is set in accordance with such computed time, thereby to compensate for the cool-



down of the heater. In a preferred form of the invention, the computing is by means of an exponential clock that has a time constant similar to the cool-down time constant of the heater.

3,679,519
CONTROL SYSTEM FOR APPARATUS FOR FRICTION-FUSING OVERLAPPING PORTIONS OF A THERMOPLASTIC STRAPPING LIGATURE
Robert J. Frey, Mount Prospect, Ill., assignor to Signode Corporation
Filed June 16, 1970, Ser. No. 46,591
Int. Cl. B32b *31/20*
U.S. Cl. 156—359 **12 Claims**



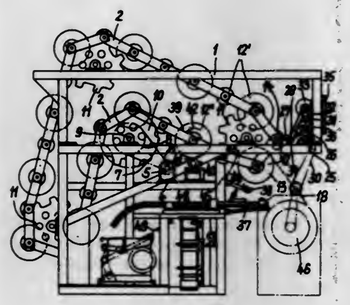
The system disclosed herein is adapted to control the overall duration of the operating cycle of a tool for friction-fusing overlapping portions of a thermoplastic strapping ligature. The operating cycle that is controlled includes the withdrawing of the supply end of the strapping material to tension a loop about a package and the oscillation of a strap gripping member to produce the frictional heat for interface melting and subsequent joinder. The control system includes first and second switches connected in a series circuit with an electric motor, with a first switch being normally closed and a second switch being normally open. A single operating means in a form of a manually engageable push button simultaneously actuates the first and second switches, with the first switch immediately returning to the closed position when the push button is released, and with the second switch having a timer connected thereto so that it returns to the first or open position only after a fixed time interval has elapsed during which the motor is energized.

3,679,520

APPARATUS FOR FEEDING FABRIC AND RUBBER INSERTS TO A TIRE BUILDING DRUM

Manfred Aust and Gerhard Sasada, Hamburg, Germany, assignors to Fried. Krupp Gesellschaft mit beschrankter Haftung, Essen, Germany

Filed Nov. 12, 1969, Ser. No. 875,798
Claims priority, application Germany, Nov. 15, 1968, P 18 09 137.7
Int. Cl. B29h *17/20*
U.S. Cl. 156—406 6 Claims



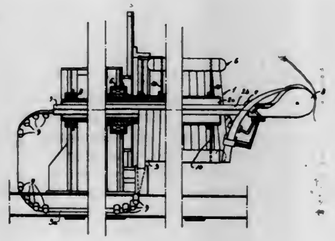
An apparatus for feeding fabric and rubber layers for a tire to a tire building drum of a tire building machine with a plurality of groups of rolls advanced toward the tire building drum by two substantially parallel link chains each of which comprises bearing means into which the said groups of rolls are easily exchangeably inserted, each of said groups including a layer roll and a roll for winding up the intermediate web which prior to the winding off of a layer section from said layer roll separates successive windings of said layer roll from each other.

3,679,521

DRIVEN MANDREL ROTATABLE ABOUT ITS LONGITUDINAL AXIS

Peder Ulrik Poulsen, Graested, Denmark
(Lonholt Ladegaard, 3480 Fredensborg, Denmark)

Filed Feb. 27, 1970, Ser. No. 15,097
Claims priority, application Denmark, Feb. 28, 1969, 1,133/69
The portion of the term of the patent subsequent to Sept. 2, 1986, has been disclaimed
Int. Cl. B65h *81/08*
U.S. Cl. 156—429 4 Claims



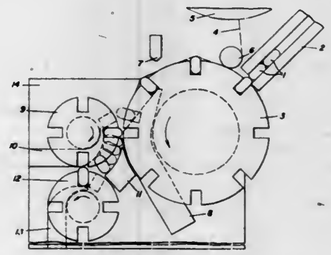
A driven mandrel for production of tubing in continuous lengths comprises a tubular core section extending beyond bearing supports for the care section and on which is mounted a mandrel wall on the outer surface of which the tubing is formed. The outer wall is constituted by an endless strip wound continuously and helically towards the free end of the core section with adjacent convolutions in edge to edge relationship. The strip is supported on rows of rolls rotatably supported and secured against longitudinal movement in radial frames extending from the core section.

3,679,522

WRAPPING MACHINE

Paul Anderegg, Horgen, and Rolf G. Granger, Oberrieden, Switzerland, assignors to International Standard Electric Corporation, New York, N.Y.

Filed June 22, 1970, Ser. No. 48,352
Claims priority, application Switzerland, June 25, 1969, 9,711/69
Int. Cl. B32b *1/08*
U.S. Cl. 156—477 6 Claims



A machine for wrapping flat-oval bodies with an adhesive tape. The bodies to be wrapped are supplied to a first slotted wheel and adhesive tape is brought into contact with said body and said first wheel, said tape being subsequently cut into strips of desired length by a heated wire. The body is then transferred, by means of a lifting segment, to a second slotted wheel, this operation covering three sides of said bodies with adhesive tape. A second lifting mechanism coupled to said second wheel transfers said body to a third slotted wheel, this latter transfer completing the wrapping of said body. A third lifting segment attached to said third wheel subsequently removes the body from its slot on said third wheel.

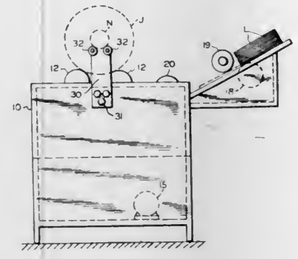
3,679,523

NECK SUPPORTING BRACKET FOR JUG LABELING MACHINE

Donald V. Knight, Thomasville, Ala., assignor to Ciba-Geigy Corporation, Greensburgh, N.Y.

Filed Dec. 4, 1970, Ser. No. 95,118
Int. Cl. B65c *3/12*
U.S. Cl. 156—447 2 Claims

A neck supporting bracket for a machine for applying a label to a jug having a neck with a handle thereon while the jug is rotated while on its side around a horizontal axis. The machine has a pair of parallel horizontal rollers, driving means coupled to the rollers for driving the rollers, label feed means for feeding labels one at a time to the space between the rollers, and glue applying means between the label feed means and the rollers for intermittently applying glue to labels fed thereby. A starting switch is provided adjacent the rollers having an actuating arm which is engaged and actuated when a jug is placed on its side on the rollers. The starting switch is connected to the driving means for starting the driving means when the starting switch actuating arm is engaged. A label feed switch is provided which has an actuating arm extending upwardly to a position in the path of the jug handle as the jug is rotated. A label position timer is connected between the label feed switch and the label feed means for controlling the feed of labels when the label feed switch is actuated, and a glue timer is connected between the label feed switch and the glue applying means for controlling the application of glue to the fed labels. The neck supporting bracket is vertically mounted on the machine adjacent the position of the neck of the jug when the jug is in position on the rollers, and has bearing means on the upper end lying along the periphery of the neck of the jug when the jug is in position on the rollers.

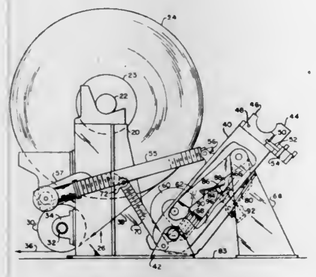


3,679,524

SPLICING WEBS

Kirk W. Bassett, Paxton, Mass., and Frank P. Ford, Liverpool, N.Y., assignors to Rice Barton Corporation, Worcester, Mass.

Filed July 18, 1969, Ser. No. 842,894
Int. Cl. B65h *19/18, 69/06*
U.S. Cl. 156—502 9 Claims



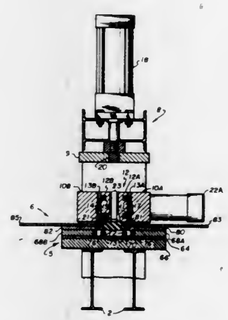
Splicer for large rolls of sheet material providing generally horizontal sheet run, with stationary primary stands, secondary arms pivoted upstream of the primary stands for movement of the secondary roll axis through an arc above the secondary arm pivots, and a splicing member mounted between the primary and secondary roll axes, so that the sheet run just upstream of the lead-out roll is more nearly horizontal after transfer than before.

3,679,525

APPARATUS FOR MOLDING FORMS ON VARIOUS SUBSTRATES

Anton M. Andersen, 1 Highland Ave., Demarest, N.J. 07627

Filed Feb. 3, 1970, Ser. No. 8,263
Int. Cl. B32b *31/04, 31/20*
U.S. Cl. 156—515 6 Claims



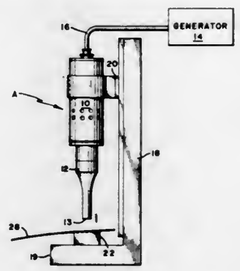
Apparatus for molding forms on substrates so that the forms and substrates are a homogeneous unit and whereby the forms originate as shaped parts in the raw, semicured or fully cured state or as loads of form material in the raw state.

3,679,526

SONIC OR ULTRASONIC CUTTING APPARATUS

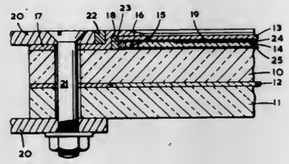
Robert C. Horton, Rochester, N.Y., assignor to Branson Instruments, Incorporated, Stamford, Conn.

Filed Apr. 8, 1970, Ser. No. 26,489
Int. Cl. B29c *27/08*; B32b *31/20*
U.S. Cl. 156—580 11 Claims



A cutting apparatus operating in the sonic or ultrasonic frequency range comprises an oscillating tool impacting on an anvil in order to cut or slit sheet material interposed. A portion of a movable strip interposed in the gap between the tool and anvil acts as a knife edge, the strip being advanced to provide a new cutting edge.

3,679,527
LAMINATED STRUCTURES
Roger Dudley Salway Crick, Luton, England, assignor to The English Electric Company Limited, London, England
Filed Aug. 21, 1969, Ser. No. 851,928
Claims priority, application Great Britain, Aug. 23, 1968, 40,354/68
Int. Cl. B32b *1/04*; B44f *1/00*
U.S. Cl. 161—5 **7 Claims**



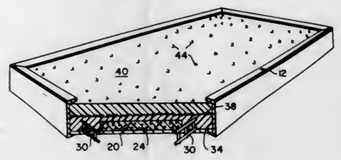
A laminated structure, for example an aircraft window, includes two rigid layers separated by a layer of a liquid or near-liquid (jelly-like) material. Since a liquid or jelly-like interlayer cannot transmit shear loads between the rigid layers, the use of such an interlayer material eliminates delamination of the structure. A barrier layer may be provided between the rigid layers and the interlayer to prevent chemical interaction between the layers which could inhibit any necessary curing of the interlayer material.

3,679,528
INDOOR-OUTDOOR ARTIFICIAL CHRISTMAS TREE
Si Spiegel, Briarcliff Manor, N.Y., assignor to American Technical Industries, Inc., Mount Vernon, N.Y.
Filed Oct. 30, 1970, Ser. No. 85,672
Int. Cl. A47g *33/06, 33/12*
U.S. Cl. 161—24 **2 Claims**



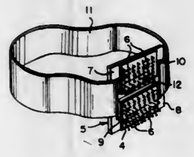
An artificial tree such as an artificial Christmas tree which can be mounted indoors during the holiday season and thereafter removed and mounted in an outdoor setting. For indoor mounting the wire trunk of the tree is fitted into an apertured block which is in turn inserted into an indoor stand. For outdoor mounting, the tree is removed from the block and fitted into the open end of a stake which is pointed at its other end for insertion into the ground.

3,679,529
PANEL CONSTRUCTION
Richard C. Prusinski, Dearborn, and Marcello Fermani, Attilio Torcolacci, and Luigi Fermani, Detroit, Mich., assignors to Architectural Research Corporation, Detroit, Mich.
Original application Jan. 24, 1966, Ser. No. 522,527. Divided and this application Aug. 12, 1969, Ser. No. 871,209
Int. Cl. B24d *3/02*; B32b *1/04*
U.S. Cl. 161—44 **4 Claims**



A massive ornamental panel made up of a frame, rigid foamed material, a filled resinous material and a foraminous sheet.

3,679,530
ATTACHMENT DEVICE FOR HOOK AND LOOP FASTENERS
Joseph Perina, Huntington, N.Y., assignor to American Velcro, Inc., Manchester, N.H.
Filed June 8, 1970, Ser. No. 44,531
Int. Cl. B32f *7/08*; A44f *21/00*
U.S. Cl. 161—48 **2 Claims**

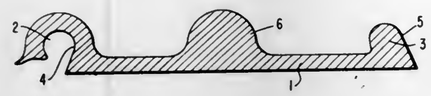


An attachment device is disclosed for removably attaching hooking elements of a separable fastener member to an object, said device comprising generally a support member from which the hooking elements project and a strap directed through selectively positioned spaced slots in the support member. The strap is adapted to be secured about said object to thereby hold the support member and associated hooking elements in place thereon.

3,679,531
SHAPED SECTION OF A THERMOPLASTIC SYNTHETIC MATERIAL
Michael Wienand, Siegburg, Klaus Jensen, Buisdorf, Franz Primessing, Mondorf, and Franz-Werner Alfter, Oberlar, Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Germany
Filed Apr. 7, 1969, Ser. No. 813,834
Claims priority, application Germany, Apr. 5, 1968, P 17 78 201.3; Aug. 5, 1968, P 17 75 379.6
Int. Cl. A44b *21/00*
U.S. Cl. 161—48 **16 Claims**

The present disclosure is directed to a shaped section of a thermoplastic synthetic material containing at least one

tongue portion and at least one groove portion for mutual joining or for further joining said section with similarly shaped sections containing identical tongue and groove portions wherein the cross-sectional configurations of

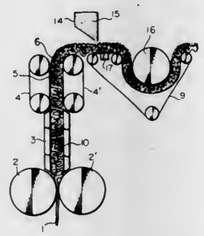


said tongue and groove portions are adapted to each other such that upon interlocking with each other, they are deformed and pressed together in a flush union along their entire surface.

3,679,532
FLEXIBLE INSULATING SHEET CONTAINING BORON NITRIDE FIBERS AND METHOD FOR FORMING THE SAME
William S. Neff, Lima, Ohio, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
No Drawing. Filed Dec. 8, 1969, Ser. No. 883,280
Int. Cl. B32b *5/12*
U.S. Cl. 161—59 **12 Claims**

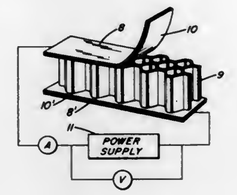
A strong, flexible sheet insulation is prepared by firing boron nitride fibers combined with submicroscopic fibrous crystals of boehmite alumina. Boron nitride fibers, having a diameter from about 10 to 30 microns and a length of about 1 to 4 inches, are laid out in layers and the boehmite alumina is distributed throughout the layers. The combination is fired in air at a temperature in the range of about 750 to 1000° F.

3,679,533
LOOP PILE FABRIC AND METHODS FOR MANUFACTURING SAME
Masao Fukuda, Hachiro Goto, Susumu Norota, and Yukimasa Fujisawa, Ibaraki, Japan, assignors to Teijin Limited, Kita-ku, Osaka, Japan
Filed Oct. 13, 1970, Ser. No. 80,314
Claims priority, application Japan, Oct. 13, 1969, 44/81,714
Int. Cl. D04h *11/00*
U.S. Cl. 161—66 **11 Claims**



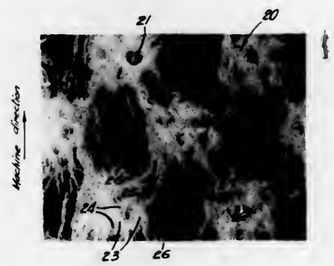
A loop pile fabric produced without the use of looms or tufting machines, the fabric being composed of thermoplastic synthetic fibers and prepared by melting and cutting a sheeting having repeated foldings into two separate zones; the backing layer and the face covering layer and fusing them again to manufacture loop pile fabric having an appealing appearance and good hand.

3,679,534
ELECTROCHEMICAL FORMATION OF BONDED STRUCTURES
Norman Louis Weinberg, Williamsville, N.Y., assignor to American Cyanamid Company, Stamford, Conn.
Filed Feb. 9, 1971, Ser. No. 113,923
Int. Cl. B32b *3/12, 15/04, 31/04*
U.S. Cl. 161—68 **10 Claims**



Compositions and methods for the generation of bonded structures through the electrochemical conversion of a precursor to a curing agent within an adhesive composition are disclosed.

3,679,535
NONWOVEN FABRIC COMPRISING DISCONTINUOUS GROUPS OF SMALL HOLES CONNECTED BY RIBBONS DEFINING LARGE HOLES
Frank Kalwaites, Somerville, N.J., assignor to Johnson & Johnson
Filed Mar. 24, 1970, Ser. No. 22,290
Int. Cl. D04h *1/46, 1/70*
U.S. Cl. 161—109 **7 Claims**

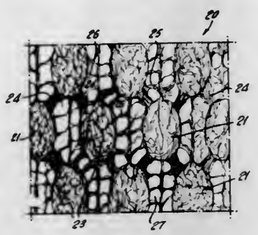


A nonwoven fabric having a plurality of patterns of groups of fiber segments that alternate and extend throughout the fabric. The first pattern is of yarn-like bundles of fiber segments which define holes or apertures or other areas of low fiber density located in first discontinuous portions of the fabric. These discontinuous portions of the fabric are interconnected by ribbon-like groups of aligned fiber segments that form a second pattern in second discontinuous portions of the fabric.

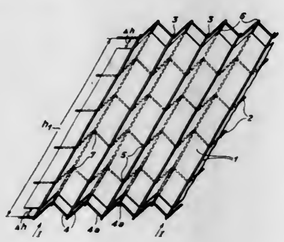
3,679,536
NONWOVEN FABRIC COMPRISING BUDS PLUS BUNDLES CONNECTED BY ALIGNED FIBERS INCLUDING BUNDLES
Frank Kalwaltes, Somerville, N.J., assignor to Johnson & Johnson
Filed Mar. 24, 1970, Ser. No. 22,291
Int. Cl. D04h *1/46, 1/70*
U.S. Cl. 161—109 **14 Claims**

A nonwoven fabric having a plurality of patterns of groups of fiber segments that alternate and extend throughout the fabric. One of the patterns is disposed in first discontinuous portions of the fabric each of which portions

comprises at least one yarn-like bundle of fiber segments and a mat of interentangled helter-skelter fiber segments. These first discontinuous portions of the fabric are interconnected by groups of substantially aligned fiber segments lying in second portions of the fabric which form a second pattern. The groups of substantially aligned fiber segments in this second pattern may be flat, ribbon-like groups or yarn-like bundles of fiber segments.



3,679,537
PACKING ELEMENTS FOR MATERIALS-INTERCHANGE COLUMN
Max Huber and Werner Meier, Winterthur, Switzerland, assignors to Sulzer Brothers, Ltd., Winterthur, Switzerland
Filed Aug. 7, 1968, Ser. No. 750,938
Claims priority, application Switzerland, Aug. 16, 1967, 11,527/67; June 24, 1968, 9,362/68
Int. Cl. B01d *25/04, 35/00, 39/08*; B32b *3/28*
U.S. Cl. 161—135 **7 Claims**



The packing elements are formed of lamella or strips which are constructed of reinforced non-self-supporting woven structure. The reinforcement is provided by wires which are disposed on opposite sides of the woven structure and spot welded together. Where the woven structure is corrugated, the transverse wires are disposed in the troughs of the corrugations. Intermediate layers of flat woven structure can be used between corrugated layers in forming the packing elements.

3,679,538
NOVEL OPEN-CELLED MICROPOROUS FILM
Melvin L. Druin, West Orange, John T. Loft, Springfield, and Steven G. Plovan, Livingston, N.J., assignors to Celanese Corporation, New York, N.Y.
Continuation-in-part of abandoned application Ser. No. 876,511, Nov. 13, 1969. This application Oct. 28, 1970, Ser. No. 84,712
Int. Cl. B32b *3/00*; B29c *17/02*
U.S. Cl. 161—159 **17 Claims**

Open-celled microporous polymer films characterized by having a reduced bulk density as compared to the bulk density of the corresponding polymer films having no open-celled structure, a crystallinity of above about 30 percent, a pore size of less than 5000 angstroms and a nitrogen flux of greater than 35.4, are prepared by the consecutive steps of cold stretching, hot stretching and heat setting a non-porous, crystalline, elastic film.

3,679,539
LIGHTWEIGHT BUILDING UNITS
Hubert Gossens, Moers, Jürgen Kammermeier, Krefeld-Uerdingen, and Werner Klöker, Krefeld-Bockum, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany
No Drawing. Filed Nov. 25, 1970, Ser. No. 92,865
Claims priority, application Germany, Dec. 13, 1969, P 19 62 603.0
Int. Cl. B32b *5/14, 5/20*; B29d *27/00*
U.S. Cl. 161—159 **6 Claims**

Lightweight building units, especially lightweight slabs of synthetic resin rigid foam having a granular surface with exposed aggregates which is synthetic resin-bonded and resembles washed concrete.

The lightweight building units may be optionally fibre-reinforced and/or contain lightweight fillers.

3,679,540
REINFORCED MICROPOROUS FILM
Daniel Zimmerman, Brunswick, and Stanley Wolfowitz, Union, N.J., assignors to Celanese Corporation, New York, N.Y.
No Drawing. Filed Nov. 27, 1970, Ser. No. 93,514
Int. Cl. B32b *7/00*
U.S. Cl. 161—159 **6 Claims**

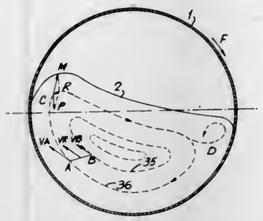
Microporous films exhibit many properties which are beneficial in specialized end uses, however, because of the microporous characteristics, the film inherently suffers from poor strength. By reinforcing the microporous films with a macroporous substrate the strength problems have been overcome while maintaining the desirable permeability and accordingly, the reinforced films may now be used in sterile packaging and as hospital bed sheets, pillow liners and the like.

3,679,541
SHEATH/CORE BICOMPONENT FILAMENTS AND PROCESS OF PREPARING SAME
Anthony Charles Davis, Pontypool, and Ian Stuart Fisher, Harrogate, England, assignors to Imperial Chemical Industries Limited, London, England
No Drawing. Filed July 20, 1970, Ser. No. 56,667
Claims priority, application Great Britain, July 28, 1969, 37,789/69
Int. Cl. D01d *5/28*
U.S. Cl. 161—175 **8 Claims**

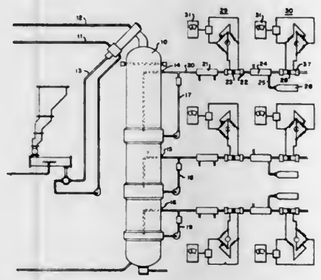
Sheath/core bicomponent filaments having a core derived from a fibre-forming linear polyamide or copolyamide and a sheath derived from a copolyester or copolyamide containing poly (alkylene oxide) radicals.

3,679,542
METHOD OF TREATING SUSPENSION OF FIBERS TO FORM FIBROUS AGGREGATES
Guy Jacquelin, Grenoble, France, assignor to Société d'Exploitation des Brevets Granofibre (Sebreg), Paris, France
Continuation-in-part of application Ser. No. 557,036, June 13, 1966, which is a continuation-in-part of application Ser. No. 427,040, Jan. 21, 1965. This application Apr. 1, 1970, Ser. No. 24,764
The portion of the term of the patent subsequent to Apr. 14, 1987, has been disclaimed
Int. Cl. D21d *5/28*
U.S. Cl. 162—1 **1 Claim**

A suspension of fibers is treated to form aggregates by subjecting a suspension of the fibers in a liquid to rotational agitation to establish a speed gradient between points in the suspension causing the formation of eddys, which result in the fibers moving together into groups. The grouped fibers cling to one another to form aggregates, the concentration by weight of the fibers in the suspension at the beginning of the treatment being relatively low.



3,679,543
CONTROLLING THE COOKING PROCESS IN PULP DIGESTION BY DIFFERENTIAL CONDUCTIVITY MEASUREMENTS
Hubert M. Rivers, Upper St. Clair Township, Allegheny County, Pa., assignor to Calgon Corporation
Continuation-in-part of application Ser. No. 717,564, Apr. 1, 1968. This application Aug. 18, 1970, Ser. No. 64,676
The portion of the term of the patent subsequent to Jan. 5, 1988, has been disclaimed
Int. Cl. D21c *7/12*
U.S. Cl. 162—49 **8 Claims**

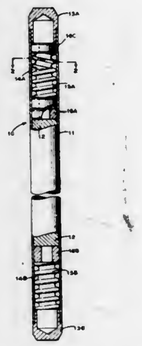


A method is provided for automatically controlling the cooking process in a pulp digester by determining the differential conductivity of the liquor in said digester at spaced stages in the cooking process and adjusting one of the control variables temperature, time of processing and liquor strength including the hydroxide concentration in the bath from a curve of conductivity differences versus concentration previously prepared.

3,679,544
PROCESS FOR THE PRODUCTION OF WATER-RESISTANT PAPER OR NONWOVENS CONTAINING WATER SOLUBLE POLYVINYL ALCOHOL
Tadao Ashikaga and Shosuke Higashimori, Kurashiki, Japan, assignors to Kurashiki Rayon Co., Ltd., Sakazu, Kurashiki, Okayama Prefecture, Japan
Filed Aug. 11, 1969, Ser. No. 848,862
Claims priority, application Japan, Aug. 13, 1968, 43/57,547; Sept. 10, 1968, 43/65,095
Int. Cl. D21h *3/44, 5/12*
U.S. Cl. 162—157 R **7 Claims**

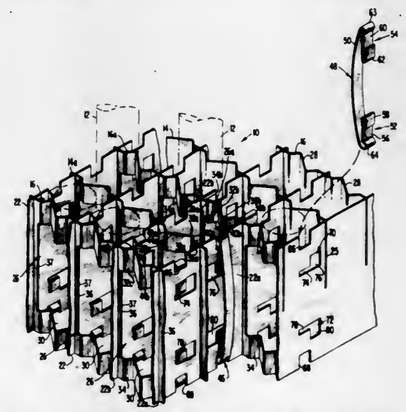
A process for the production of paper or nonwovens comprising impregnating at 40° C. or below paper or nonwovens containing a water-soluble polyvinyl alcohol which dissolves in water at 95° C. or below with an aqueous mineral acid solution of α-titanic acid which has a titanium concentration of at least 0.2% by weight and which is prepared at 40° C. or below, then rinsing and drying.

3,679,545
NUCLEAR FUEL ROD
Raymond M. Leirvik, Lynchburg, Va., assignor to The Babcock & Wilcox Company, New York, N.Y.
Filed June 2, 1969, Ser. No. 829,629
Int. Cl. G21c *3/18*
U.S. Cl. 176—68 **7 Claims**



A nuclear reactor core element utilizing one or more corrugated tubular spacer members that resiliently support and locate within a sealed cladding tube either a body of nuclear fuel material or a body of neutron absorber material. Each corrugated spacer member is located in a plenum zone wthin the cladding tube and radially reinforces the tube wall section around such plenum zone against collapse by external fluid pressure.

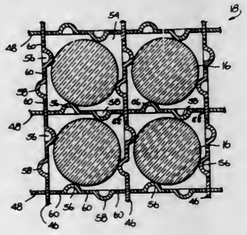
3,679,546
NUCLEAR REACTOR FUEL ROD SUPPORT GRID
Frank E. Muellner, Potomac, and Lewis P. Sarkozi, Adamstown, Md., assignors to NUS Corporation, Washington, D.C.
Filed Oct. 22, 1968, Ser. No. 769,587
Int. Cl. G21c *3/34*
U.S. Cl. 176—78 **5 Claims**



A generally rectangular support grid of the egg-crate type for laterally supporting intermediate their ends the

fuel rods in a nuclear reactor fuel assembly. Substantially perpendicular wall members form a plurality of openings through which nuclear reactor fuel rods are adapted to extend when mounted in a nuclear reactor fuel assembly. Two opposite walls of each opening have inwardly projecting portions which form substantially rigid support surfaces for a rod. A removable spring is mounted on a third wall of each opening for providing a resilient support surface for the rod. Therefore, three surfaces support the rod against lateral movement while providing for axial movement thereof, and the rod is supported at only three areas around any given peripheral section of the rod. The spring is shaped to cooperate with slots mounted in the third wall so that the spring may be easily installed and removed after the wall members have been permanently assembled to form the grid. Therefore, springs made of different material from that of the grid members may be used. In addition, different size springs may be mounted on the third wall of an opening to accommodate warping of the support grid and variations in the diameters of the rods. The third wall also contains means for reliably locking the spring in place during reactor operation.

3,679,547
ELASTIC SUPPORT GRID FOR NUCLEAR FUEL ELEMENTS
Henrik S. Warberg, Dearborn, Mich., assignor to Atomic Power Development Associates, Inc., Detroit, Mich.
Continuation-in-part of application Ser. No. 728,951, May 14, 1968. This application Dec. 16, 1968, Ser. No. 871,462
Int. Cl. G21c *3/34*
U.S. Cl. 176—78 **8 Claims**

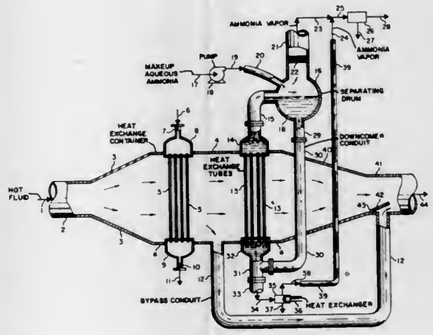


A nuclear reactor fuel element assembly which includes a plurality of elongated fuel members contained in a wrapper tube and supported by a plurality of spaced support grids. Each of the support grids includes grid straps which interconnect to form a grid cell for each fuel member, and each cell has one resilient point of support on each of its four walls for supporting its respective fuel member, the points of support of one grid cell being offset with respect to the points of support of the adjacent grid cell.

3,679,548
PROCESS FOR THE ENZYMIC UNHAIRING OF HIDES
Ross Grant Donovan, Etobicoke, Ontario, and Stewart Franklin Wolf, Acton, Ontario, Canada, assignors to Canada Packers Limited, Toronto, York, Ontario, Canada
No Drawing. Continuation-in-part of application Ser. No. 666,958, Sept. 11, 1967. This application Oct. 19, 1970, Ser. No. 82,154
Int. Cl. C12b *1/00*
U.S. Cl. 195—6 **8 Claims**

A process for the unhairing of hides comprising a pretreatment by soaking the hides in a solution of alkali metal hydroxide followed by the application of a proteolytic enzyme material containing chymotryptic activity, as determined by assay on acetyl tyrosine ethyl ester, in an amount sufficient to provide from about 0.0005% to 0.05% chymotryptic activity based on the weight of the hides.

3,679,549
SEPARATION OF AMMONIA IN A THERMOSYPHON EVAPORATOR
Daniel J. Newman, Jackson Heights, and Louis A. Klein, Flushing, N.Y., assignors to Chemical Construction Corporation, New York, N.Y.
Filed Dec. 15, 1969, Ser. No. 885,145
Int. Cl. B01d *3/04*
U.S. Cl. 203—12 **9 Claims**

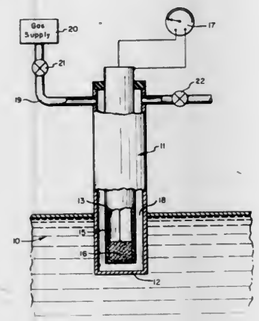


The ammonia content of an aqueous liquid ammonia stream is selectively vaporized as a concentrated vapor in a thermosyphon type of vaporizer by indirect heat exchange with a hot fluid, and a side stream of the circulating aqueous ammonia is drawn off and separately heated to a higher temperature for recovery of additional ammonia vapor.

3,679,550
PROCESS FOR PURIFYING TRIARYL PHOSPHATES BY REDUCED PRESSURE DISTILLATION AND PHENOL INJECTION
Edward F. Orwoll, Baltimore, Md., assignor to FMC Corporation, New York, N.Y.
No Drawing. Filed Sept. 10, 1970, Ser. No. 71,267
Int. Cl. B01d *3/34*
U.S. Cl. 203—38 **4 Claims**

Reaction mixtures, resulting from the phosphorylation of a mixture containing phenol; ortho-, meta- and para-alkylphenol; 2,6-, 2,4-, 2,5- and 3,5-dialkylphenols, 2,4,6- and 2,3,5-trialkylphenols with phosphorus oxychloride, containing tris (alkylphenyl) phosphate esters, unreacted alkylphenols and generally a catalyst residue are purified to remove the unreacted alkylphenols by (1) distilling the reaction mixture at an elevated temperature and reduced pressure to remove most of the unreacted alkylated phenols (generally hindered alkylated phenols), (2) sparging phenol into the remaining reaction mixture for one-half to several hours at elevated temperatures and reduced pressure to remove remaining hindered phenols not only by a simple entraining mechanism but also, apparently, by transalkylation and transesterification reactions, leaving essentially only unhindered phenols in the product phosphate ester, (3) distilling the sparged reaction mixture to separate the phosphate ester and unhindered phenols from the reaction residue which also generally contains a catalyst residue, and (4) further purifying the product by conventional means such as caustic washing and/or activated carbon treatment to reduce the color of the tris(alkylphenyl) phosphate esters.

3,679,551
METHOD AND APPARATUS FOR DETERMINING THE CARBON ACTIVITY OF FLUIDS
Morris Kolodney, River Edge, N.J., assignor to the United States of America as represented by the United States Atomic Energy Commission
Filed Oct. 30, 1968, Ser. No. 771,953
Int. Cl. G01n *27/46*
U.S. Cl. 204—1 T **17 Claims**



The carbon activity of a fluid of unknown carbon content is determined by measuring the E.M.F. of a dependent electrochemical relationship. The carbon-containing fluid is brought into contact with a tubular probe made of a fluid-impervious material (e.g., Fe or Ni) in which carbon from the fluid dissolves and diffuses. A ceramic tube is disposed within and is spaced slightly away from the outer tubular probe. The annular space between the outer tubular probe and the ceramic tube is filled with a gaseous medium containing CO_2, CO and a small amount of O_2, the relative proportions of these gases present in the gaseous medium being determined by well known, reversible chemical reactions. The ceramic tube is made of a metallic oxide material (e.g., ZrO_2+CaO) that conducts electricity by the transfer of oxygen ions through the material. A thin porous layer of an inert metal (e.g., Pt) is disposed on the outer surface of the ceramic tube in contact with the gaseous medium, and a reference electrode of known oxygen activity (e.g., Cu+Cu_2O) is disposed on the inside of the tube in contact with the inner surface thereof. A potentiometer in electrical contact with the layer of inert metal and with the reference electrode measures the potential difference (E.M.F.) between the gaseous medium and the reference electrode, and this E.M.F. provides a direct measure of the carbon activity of the carbon-containing fluid.

3,679,552
CELLULAR STRUCTURES
Roy Jervis, Sutton Coldfield, England, assignor to Dunlop Holdings Limited, London, England
Continuation-in part of application Ser. No. 847,428, Aug. 4, 1969. This application June 29, 1970, Ser. No. 50,383
Claims priority, application Great Britain, June 21, 1969, 31,473/69
Int. Cl. C23b *5/50, 5/52*
U.S. Cl. 204—37 R **17 Claims**

A method of producing a cellular structure which comprises electroplating a metal on a conductive porous substrate to produce a layer of metal on said substrate and subsequently alloying the metal by contacting it with at least one alloying component or a precursor thereof at an elevated temperature in order to introduce said alloying component and thus produce a porous alloy structure. The product alloy structures are useful in applications where metal cellular structures are required to have particular properties, for example high physical strength or good heat resistance.

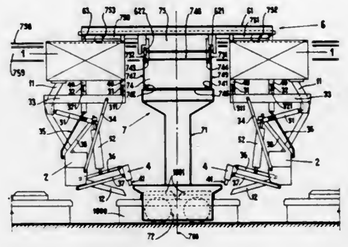
3,679,553
MIRROR BRIGHT SILVER PLATING
Lawrence Greenspan, New York, N.Y., assignor to Engelhard Minerals & Chemicals Corporation
No Drawing. Filed Nov. 16, 1970, Ser. No. 90,118
Int. Cl. C23b *5/44, 5/46*
U.S. Cl. 204—43 **5 Claims**

A silver cyanide plating bath for electroplating a mirror bright silver deposit is improved by the addition of highly sulfated castor oil containing at least about 10% combined SO_3.

3,679,554
METHOD FOR ELECTROLYTIC TREATMENT OF STEEL SURFACE IN A CHROMATE SOLUTION
Hidehisa Yamagishi, Yokohama-shi, Hiroshi Takano, Tokyo, and Masao Takeuchi, Zushi-shi, Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan
Filed Jan. 2, 1970, Ser. No. 99
Claims priority, application Japan, Jan. 13, 1969, 44/2,066
Int. Cl. C23b *11/00*
U.S. Cl. 204—56 **3 Claims**

With respect to the prior art method which comprises immersing a steel plate as a cathode in an electrolyte in which there are dissolved a main agent of chromic acid or chromates and a promotive agent of inorganic sulfur compounds, and subjecting the surface of said article to electrolytic treatment so as to improve the paint adhesion and corrosion resistance of said surface, it has been found that addition of fluorine compounds to said electrolyte as a second promoter will elevate the paint adhesion to the treated surface.

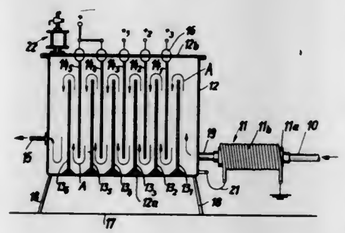
3,679,555
PROCESS AND APPARATUS FOR SUPPLYING ALUMINA
Daniel Duclaux, Lille, Jean-Pierre Givry, Ville-d'Avray, and Jacky Pointud, Marseille, France, assignors to Compagnie Pechiney et Electrification and Charpente, Levage, fractional part interest to each
Filed Apr. 16, 1970, Ser. No. 29,034
Claims priority, application France, Apr. 16, 1969, 6911759
Int. Cl. C22d *3/02, 3/12*
U.S. Cl. 204—67 **14 Claims**



Process and apparatus for supplying alumina to an igneous electrolysis tank containing molten material and having a crust on the surface thereon wherein the crust is pierced along at least one series of points along one axis of the tank, a source of alumina is moved continuously along the pierced zone while feeding alumina to the openings formed in the crust, piercing the crust along at least

one series along another axis of the tank and continuously moving a source of alumina along the second pierced zone while continuously feeding alumina to the openings formed in the crust.

3,679,556
DEVICE FOR TREATING DISPERSE SYSTEMS
Heinz Doevenspeck, Minden, Germany, assignor to Dr. Richard Elfer Wirtschaftsprufungsgesellschaft und Steuerberatungsgesellschaft mit beschrankter Haftung, Dortmund, Germany
Original application Sept. 25, 1968, Ser. No. 762,492, now Patent No. 3,625,843. Divided and this application Jan. 6, 1971, Ser. No. 104,261
Claims priority, application Germany, Sept. 26, 1967, P 16 67 029.4
Int. Cl. B01k *3/00*
U.S. Cl. 204—269 **8 Claims**



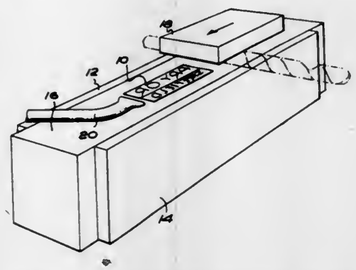
The invention provides a method of and a device for treating disperse systems, preferably liquids, particularly beer, which device comprises at least one cascade container having an inlet and an outlet for the systems to be treated, a plurality of cascade barriers in the form of positive and negative carbon electrodes, and an induction coil connected to said cascade container on the upstream side of said inlet, said induction coil and said negative carbon electrodes being grounded in series.

3,679,557
HEXAVALENT CHROMIUM REDUCTION
Patricia G. Gilby, Wilmington, Del., and William R. Heineman, Euclid, Ohio, assignors to Hercules Incorporated, Wilmington, Del.
No Drawing. Filed July 20, 1970, Ser. No. 56,649
Int. Cl. B01k *3/08;* **C01g** *37/00;* **C02b** *1/82*
U.S. Cl. 204—97 **6 Claims**

Disclosed is an electrochemical process of reducing Cr(VI) to Cr(III) in aqueous solution. The pH of the solution is adjusted to about 1.5–3 and subjected to the action of an electrolytic cell by passing the solution through the cell and hence the cathode thereof. The cathode of the cell is made of an electrolytically conductive material, for instance carbon, having a high surface area per unit volume.

3,679,558
ELECTROLYTIC MARKING OF METAL OBJECTS
Albert Edward Godbehere, Sheffield, England, assignor to Edward Pryor Developments Limited
Filed Aug. 6, 1970, Ser. No. 61,640
Int. Cl. B23p *1/00*
U.S. Cl. 204—143 R **14 Claims**

A method of and apparatus for electrolytically marking metal objects of circular shape by flooding the surface to be marked with a deluge of electrolyte and bringing an electrode member into close proximity with said surface, the electrode member bearing in relief the markings with which it is required to mark said surface, the electrode and the object to be marked being connected into an electric circuit suitable to cause an electrolytic action to



occur between the two and the electrode member being brought into close proximity with the surface of the object to be marked with a rolling action.

3,679,559
METHOD OF ELECTROPOLISHING MOLYBDENUM
George R. Blair, Culver City, and Sherman R. Keller, Valinda, Calif., assignors to Hughes Aircraft Company, Culver City, Calif.
No Drawing. Continuation-in-part of application Ser. No. 721,153, Apr. 15, 1968. This application June 22, 1970, Ser. No. 48,551
Int. Cl. C23b *1/04, 3/06*
U.S. Cl. 204—140.5 **4 Claims**

A method of electropolishing work pieces as molybdenum electrodes and grids and removal of oxidation on stainless steel, with a current density on the order of 0.9 to 5 amperes per sq. inch in a voltage range in the order of 15 to 90 volts, using an anhydrous acetic acid based bath containing about 10 percent sulfuric acid. The process is relatively free of various hazards common to the electropolishing of metals, e.g. high cell voltage, excessive metal loss and dangerous electrolyte compositions.

3,679,560
PROCESS FOR THE PREPARATION OF AN ANHYDRIDE OR TRIVALENT PHOSPHORUS USING EXCITED HELIUM
Eugene J. Mezey, Upper Arlington, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio
No Drawing. Filed Sept. 25, 1969, Ser. No. 861,145
Int. Cl. C01b *25/12*
U.S. Cl. 204—157.1 S **15 Claims**

A process for preparing an anhydride of trivalent phosphorus from an anhydride of pentavalent phosphorus using electronically-excited helium is disclosed. The anhydride of trivalent phosphorus is useful as an intermediate in the preparation of detergency builders for use in detergent compositions.

3,679,561
TREATMENT OF ETHYLENE UNSATURATED ACID ESTER COPOLYMER WITH ALKALINE MEDIUM
Francis R. Galiano and Wayne E. Smith, Overland Park, Kans., assignors to Gulf Research & Development Company, Pittsburgh, Pa.
No Drawing. Filed June 22, 1970, Ser. No. 48,511
Int. Cl. C08f *27/00*
U.S. Cl. 204—159.15 **15 Claims**

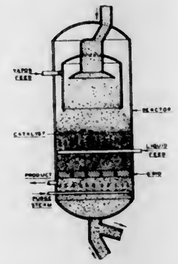
Without changing the physical form of the ethylene copolymer, the pendant ester groups of an ethylene copolymer are converted to the salt form by introducing an article of manufacture having a surface comprising a crosslinked ethylene polymer containing pendant ester

groups into an aqueous medium maintained at an elevated temperature, said aqueous medium containing an inorganic alkali or alkaline earth metal salt.

3,679,562
LOWER TEMPERATURE SOLID PHASE POLYMERIZATION OF ACRYLONITRILE IN THE PRESENCE OF AN ORGANIC CARBONYL COMPOUND
Yoneho Tabata, Chiba-ken, and Chihiro Oizumi, Tokyo, Japan, assignors to Japan Atomic Energy Research Institute, Tokyo, Japan
No Drawing. Filed Dec. 15, 1969, Ser. No. 885,284
Claims priority, application Japan, Dec. 23, 1968, 43/93,741
Int. Cl. B01j *1/00;* **C08d** *1/00;* **C08f** *1/16*
U.S. Cl. 204—159.23 **6 Claims**

The present disclosure relates to a process of solid phase polymerization of acrylonitrile by means of an ionizing radiation below the melting point of an acrylonitrile, characterized in that an organic carbonyl compound or compounds are added to acrylonitrile before the polymerization thereof. The carbonyl compound added to the polymerization system serves to control the molecular weight of polyacrylonitrile and improve other physical properties of the polymer.

3,679,563
HOUDRIFLOW CRACKING PROCESS
André W. Pollock, West Chester, Pa., assignor to Sun Oil Company, Philadelphia, Pa.
Filed Aug. 7, 1970, Ser. No. 61,987
Int. Cl. C10g *11/14*
U.S. Cl. 208—166 **3 Claims**

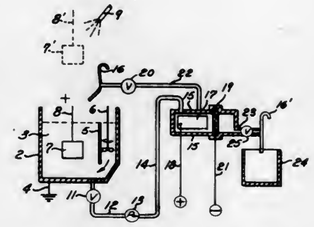


In an airlift catalytic cracking system using a highly active zeolite catalyst where the hydrocarbon is contacted by falling catalyst which forms a bed on a supporting grid, the improvement of feeding hydrocarbon vapors to the cracking zone and feeding a liquid portion of the hydrocarbon to a lower portion of said catalyst bed whereby coking on the catalyst in the cracking zone is reduced, and deactivation of the catalyst in the cracking zone is ameliorated and conversion and yields of gasoline are increased.

3,679,564
PROCESS FOR ELECTRODEPOSITING ACRYLIC COMPOSITIONS
Rostyslaw Dowbenko and Wen-Hsuan Chang, Gibsonia, Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.
No Drawing. Filed June 19, 1970, Ser. No. 47,860
Int. Cl. B01k *5/02;* **C23b** *13/00*
U.S. Cl. 204—181 **6 Claims**

It has been found that aqueous coating compositions comprising acid-solubilized, imine-modified, carboxylic acid group-containing acrylic resins can be electrodeposited. These compositions deposit on the cathode to provide coatings having excellent properties.

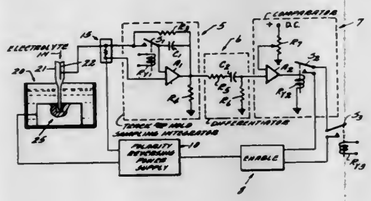
3,679,565
PROCESS FOR ELECTROLYTIC TREATMENT OF LIQUORS USING PRESSURE CELL WITH POROUS ELECTRODE MEANS
Allan E. Gilchrist, Westlake, Ohio, assignor to SCM Corporation, Cleveland, Ohio
Continuation-in-part of applications Ser. No. 76,311, Sept. 28, 1970, Ser. No. 91,905, Nov. 23, 1970, and Ser. No. 94,267, Dec. 2, 1970. This application July 27, 1971, Ser. No. 166,436
Int. Cl. B01k *5/00, 5/02;* **C23b** *13/00*
U.S. Cl. 204—180 R **15 Claims**



Shown is an improved pressure cell process and apparatus for treating feed liquor bearing dissolved electrolyte and providing, from a bath thereof with a pair of D.C. electrodes immersed therein at a minimum deposition voltage V_1 across said electrodes, a fluent electrodeposit on one of said electrodes, which electrodeposit has electrical conductivity lower than that of the bath, e.g., resin, oil, slime, or gel. The apparatus is for sustained operation at a voltage above V_1, and it comprises opposed electrodes disposed apart in a casing for forming an electrical cell zone therebetween, at least one of such electrodes being a deposition electrode for attraction of said fluent electrodeposit, at least one of such electrodes being a relatively grossly microporous product discharge electrode that forms a boundary area for said zone, the thickness of such product discharge electrode providing substantial electrical field constriction of its passageways to substances of like charge, an inlet to said zone for continuous supply of feed liquor thereto, an outlet from said zone for continuous withdrawal of treated feed liquor therefrom, a permeate collection chamber for each such support discharge electrode, each such chamber being equipped with adjustable throttling outlet means for controlling back pressure therein, and means for continuously removing resulting fluent electrodeposit from collection on the deposition electrode at a rate effective for maintaining substantially unattenuated electric current flow between said electrodes at an operating voltage above V_1, said means for removing comprising a deposition electrode adapted for through-the-pore flushing away of or surface flushing away of said fluent electrodeposit. Feed liquor is passed into the cell zone; operating voltage across the opposed electrodes is maintained above V_1; fluent electrodeposit tending to collect at the deposition electrode is removed therefrom at a rate effective for maintaining substantially unattenuated electric current flow between opposed electrodes at the elevated voltage by: (a) flushing it away from the deposition electrode surface into the cell zone while liquid enriched in dissolved electrolyte is forced out of the cell zone through a product discharge electrode; (b) flushing it through a product discharge electrode as a cell liquor-bearing permeate; or (c) flushing it through a product discharge electrode as in (b) while liquid enriched in dissolved electrolyte is forced out as in (a); and permeate that flows through the microporous product discharge electrode or electrodes is collected, the differential pressure across such product discharge electrode or electrodes being regulated for obtaining permeate enriched

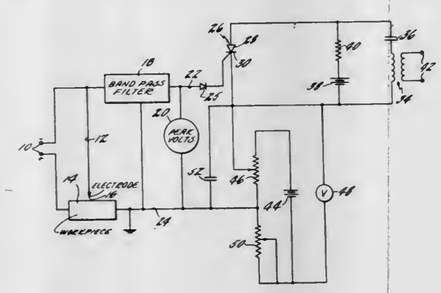
in the liquor components attracted to a particular product discharge electrode. Suitable feed liquors include aqueous electrocoating paints and waste waters therefrom, pigmented dispersions, and generally aqueous streams and wastes containing fats, oils, sliming and gel-forming materials, e.g., sewage, food processing, paper making, industrial plant, petroleum refinery, and mine wastes.

3,679,566
APPARATUS WITH STEM OVERCURRENT PROTECTION
Emmet Mitchell Fulkerson, Cincinnati, Ohio, assignor to General Electric Company
Original application June 6, 1968, Ser. No. 734,971, now Patent No. 3,619,640, dated Nov. 9, 1971. Divided and this application July 6, 1970, Ser. No. 60,995
Int. Cl. B01k *3/00;* **B23p** *1/04*
U.S. Cl. 204—228 **2 Claims**



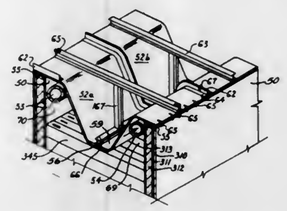
A sensing circuit for use in an electrochemical machining apparatus for prevention of damage to said apparatus caused by a short circuit during the machining process wherein said sensing circuit includes a tracking and a comparison circuit.

3,679,567
ELECTROCHEMICAL SPARK DETECTION SYSTEM
Norman D. Ballard, East Hartford, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.
Filed Mar. 19, 1971, Ser. No. 125,968
Int. Cl. B01k *3/00;* **B23p** *1/02*
U.S. Cl. 204—228 **3 Claims**



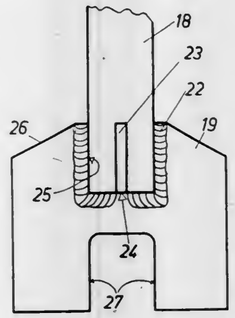
A spark detection system for an electrochemical machining apparatus has an adjustable threshold for electrical disturbances typically caused by sparking in the gap between the electrode and the workpiece. The threshold level is directly readable in volts.

3,679,568
CELL CONSTRUCTION
Gothe O. Westerlund, Vancouver, British Columbia, Canada, assignor to Chemech Engineering Ltd., Vancouver, British Columbia, Canada
Filed Sept. 17, 1968, Ser. No. 760,209
Claims priority, application Canada, Oct. 13, 1967, 002,445
Int. Cl. B01k *3/00;* **E01c** *2/04*
U.S. Cl. 204—242 **84 Claims**



An improved electrolytic cell of enhanced durability and ease of construction is provided which includes a novel cover member, with or without novel cell wall structure and/or novel internal structure of the electrolytic cell tank. The cover is characterized by three members which sealingly engage with the upper surface of the electrolytic cell tank to provide an inlet manifold and a separate and distinct outlet manifold, with the inner exposed surfaces of the cover being resistant to the chemicals within the electrolytic cell tank. The cell wall construction is characterized by a "sandwich" of an outer shell, an inner lining, formed of a single appropriately sized lining sheet or an array of lining sheets separated by, but joined by means of specified sealing members, and a mortar bonded to the shell and anchored to the lining.

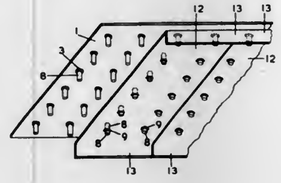
3,679,569
WELDED JOINT
Kurt Springer, Rheinfelden, Germany, assignor to Swiss Aluminum Ltd., Chippis, Switzerland
Filed Oct. 15, 1970, Ser. No. 81,056
Claims priority, application Switzerland, Oct. 24, 1969, 15,879/69
Int. Cl. B01k *3/04;* **C22d** *3/12*
U.S. Cl. 204—286 **2 Claims**



Disclosed is a support or suspension for an anode in an aluminum electrolytic cell, including a steel mounting plate and a contact rod of aluminum or copper welded at

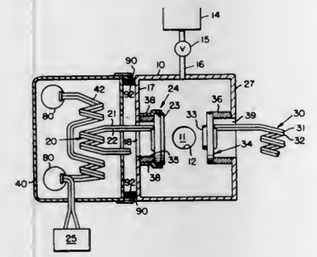
one end portion thereof to an end portion of the plate so that the axis of the rod is in the plane of the plate. The end portion of the rod is provided with a diametral slot directed transversely to the plane of the plate and the weld is interrupted by the slot.

3,679,570
BASEPLATE ASSEMBLY FOR MERCURY-CATHODE CELL
John Howliston King and Frank Smith, Runcorn, England, assignors to Imperial Chemical Industries Limited, London, England
Filed July 7, 1970, Ser. No. 52,859
Claims priority, application Great Britain, July 22, 1969, 36,832/69
Int. Cl. B01k *3/04;* **C22d** *1/04;* **C23b** *5/70*
U.S. Cl. 204—297 R **6 Claims**



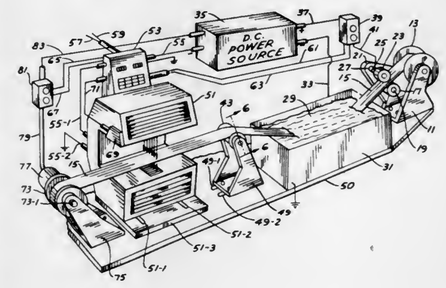
A baseplate assembly for an electrolytic cell having a flowing mercury cathode comprising a steel plate the upper surface of which in operation is wetted by and carries the flowing mercury cathode and a current extractor plate and made of a metal of higher electrical conductivity than steel, said plates being substantially parallel to each other and spaced apart by a plurality of aluminum studs distributed in a substantially uniform pattern over the common area of the two plates, one end of each stud being friction-welded to the steel plate and each stud being electrically-connected in rigid manner at or near its other end to the current extractor plate.

3,679,571
R-F SPUTTERING APPARATUS
Frieder H. Ensslin, Rochester, N.Y., assignor to The Bendix Corporation, Rochester, N.Y.
Filed Oct. 12, 1970, Ser. No. 80,068
Int. Cl. C23c *15/00*
U.S. Cl. 204—298 **23 Claims**



The radio frequency generator of a sputtering system is inductively coupled to a sputter target to achieve radio frequency power transfer and impedance matching between generator and target. The radio frequency generator assembly containing the primary winding of a radio frequency coupling transformer is adjustably positioned over the secondary winding of this transformer, which is disposed in juxtaposition to the vacuum enclosure and to the sputter target contained therein, to achieve sputtering. The inductive coupling allows impedance matching through varied degrees of coupling between the primary and the secondary coils, thus eliminating need for a radio frequency transmission line and associated impedance matching devices between frequency generator and the sputter target. This reduces the total volume required for the radio frequency components; it simplifies the operation; and eliminates the danger of radio frequency radiating from a mismatched cable connection.

3,679,572
ELECTROCOATING APPARATUS WITH IONIZING RADIATION MEANS
Arthur G. Smith, Livonia, and Allen H. Turner, Ann Arbor, Mich., assignors to Ford Motor Company, Dearborn, Mich.
Application Sept. 7, 1967, Ser. No. 666,338, now Patent No. 3,501,391, dated Mar. 17, 1970, which is a continuation-in-part of application Ser. No. 583,885, Oct. 3, 1966. Divided and this application Dec. 1, 1969, Ser. No. 881,020
Int. Cl. B01k *5/02;* **C23b** *13/00*
U.S. Cl. 204—300 **4 Claims**

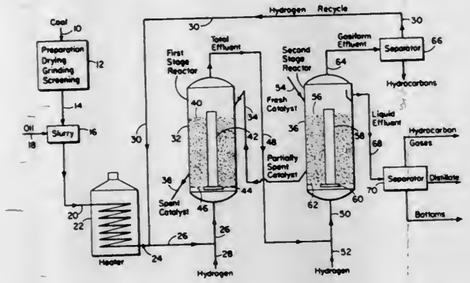


A coating bath comprising paint binder resin is dispersed as anionic electrolyte in aqueous medium and characterized by being anodically depositable therefrom as a paint film that is crosslinkable by ionizing radiation having average energy in the range of 100,000 to 450,000 electron volts. In one embodiment, the major fraction of the paint binder resin is a homopolymerizable, alpha-beta olefinically unsaturated resin having per molecule at least one carboxyl group ionizable in the aqueous medium of the bath. In another embodiment, the major fraction of the paint binder is an alpha-beta olefinically unsaturated resin having per molecule at least one carboxyl group ionizable in the aqueous medium of the bath and a crosslinkable amount of vinyl monomers. Apparatus for use in electrodepositing and curing this coating material is also disclosed.

3,679,573
TWO STAGE COUNTER-CURRENT HYDROGENATION OF COAL
Clarence A. Johnson, Princeton, N.J., assignor to Hydrocarbon Research, Inc., New York, N.Y.
Filed Mar. 8, 1971, Ser. No. 121,815
Int. Cl. C10g *1/08*
U.S. Cl. 208—10 **5 Claims**

In the ebullated bed catalytic hydrogenation of coal into hydrocarbonaceous products either greater coal throughput per pound of catalyst can be achieved or,

alternatively, less catalyst per ton of coal can be employed by conducting the hydrogenation of the coal

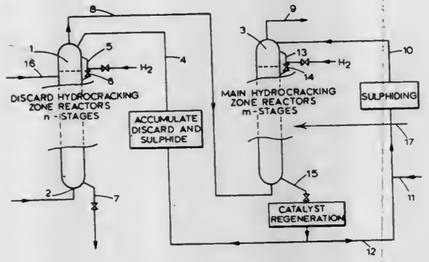


in first and second stage ebullated bed reaction zones and by using the partially spent catalyst from the second stage as the catalyst in the first stage.

3,679,574
HYDROGENATION PROCESS

Robert L. Irvine, Rob Nes, Pyle Hill, Woking, Surrey, England

Filed Feb. 25, 1971, Ser. No. 118,699
Claims priority, application Great Britain, Mar. 5, 1970, 10,587/70
Int. Cl. C10g *23/00, 37/00, 37/10*
U.S. Cl. 208—57 **9 Claims**



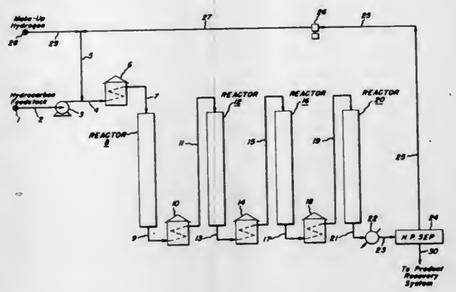
The invention relates to the preparation of lube oil and wax from low vanadium content crude or residua feed. The feed is first treated in a catalyst discard zone hydrocracker using catalyst provided by regeneration of low activity catalyst from a subsequent main hydrocracking zone. The discard hydrocracker comprising a plurality of beds containing fluidised catalyst descending in countercurrent to ascending feed and hydrogen. Catalyst transfer between beds is external of the reactor.

3,679,575
REFORMING WITH A PLATINUM MORDENITE-ALUMINA CATALYST

Ralph J. Bertolacini, Chesterton, Ind., assignor to Standard Oil Company, Chicago, Ill.

Filed Nov. 3, 1969, Ser. No. 873,305
Int. Cl. C10g *35/08*
U.S. Cl. 208—65 **20 Claims**

The catalyst comprises a Group VIII noble metal, mordenite having a silica-to-alumina ratio of at least 19:1, and an adsorbent refractory inorganic oxide. The preferred Group VIII noble metal is platinum; the preferred refractory inorganic oxide is a catalytically active alumina. The mordenite has a silica-to-alumina ratio of less than 45:1.

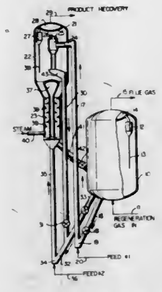


The processes in which the catalyst is employed are processes for the reforming of petroleum hydrocarbon feedstocks.

3,679,576
FLUIDIZED CATALYTIC CRACKING APPARATUS AND PROCESS

Gerald W. G. McDonald, Summit, N.J., assignor to Commonwealth Oil Refining Company, Inc., New York, N.Y.

Filed Jan. 6, 1970, Ser. No. 964
Int. Cl. B01j *9/20;* **C10g** *11/18, 37/02*
U.S. Cl. 208—74 **11 Claims**



A process and apparatus for the catalytic cracking of hydrocarbons under fluid catalytic cracking conditions wherein the maximum efficiency is obtained from a catalyst by serially contacting various hydrocarbon feeds with a catalyst in an apparatus providing a plurality of riser reactors connected in series. With the use of this apparatus and process, the maximum use is made of the catalyst before regeneration of the catalyst is necessary.

3,679,577
MOLTEN SALT HYDROFINING PROCESS

Charles F. Wantland, Pasadena, Tex., Frank E. Juge, Jr., Maitland, Fla., and William H. Hinds, Houston, Tex., assignors to Shell Oil Company, New York, N.Y.

No Drawing. Filed Nov. 29, 1968, Ser. No. 780,256
Int. Cl. C10g *13/08, 23/02, 29/12*
U.S. Cl. 208—108 **5 Claims**

A process for conversion of heavy hydrocarbon fractions containing hetero-atom impurities comprising contacting the fractions in the presence of hydrogen, at elevated temperature and pressure with a molten salt comprising cadmium halides, an alkali metal halide and optionally one or more additional salts as diluents or co-catalysts.

3,679,578
REFORMING A PARAFFINIC FRACTION WITH A PLATINUM-RHENIUM CATALYST

Milton H. Dalson, 1 Ogden Road, Mendham, N.J. 07945; James P. Gallagher, 325 Indiana, Park Forest, Ill. 60466; Carl D. Keith, 100 Crest Drive Countryside, Summit, N.J. 07901; and William C. Pfefferle, 51 Woodland Drive, Middletown, N.J. 07748

No Drawing. Filed June 12, 1970, Ser. No. 45,895
Int. Cl. C10g *35/08*
U.S. Cl. 208—138 **2 Claims**

Paraffinic fractions of 6 to 8 carbon atoms made from naphtha reformate are reformed in contact with a catalyst containing platinum and rhenium supported on a porous, solid base, for instance, alumina.

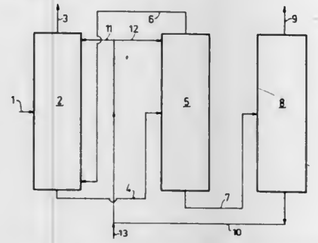
ERRATUM

For Class 208—166 see:
Patent No. 3,679,563

3,679,579
PROCESS FOR RECOVERING HIGHLY PURE AROMATIC SUBSTANCES FROM HYDROCARBON MIXTURES CONTAINING BOTH AROMATIC AND NON-AROMATIC SUBSTANCES

Gerhard Preusser, Essen, Martin Schulze, Neviges, and Klaus Richter, Essen, Germany, assignors to Heinrich Koppers Gesellschaft mit beschrankter Haftung, Essen, Germany

Filed Mar. 22, 1971, Ser. No. 126,650
Claims priority, application Germany, Mar. 20, 1970, P 20 13 298.3
Int. Cl. C10g *21/20*
U.S. Cl. 208--323 **12 Claims**



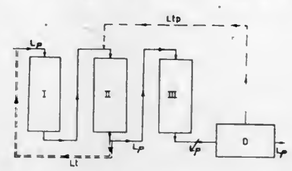
Process for recovering highly pure aromatic substances from hydrocarbon mixtures which contain in addition to the aromatic substances varying amounts of non-aromatic substances by liquid-liquid extraction advantageously in combination with an after arranged extractive distillation characterized in that there is used as selective solvent a mixture of N-substituted morpholine and N-substituted succinimide in a mixing range of between 90 wt.-percent N-substituted morpholine and 10 wt.-percent N-substituted succinimide and 30 wt.-percent N-substituted morpholine and 70 wt.-percent N-substituted succinimide.

3,679,580
PROCESS FOR THE DE-IONIZATION OF AQUEOUS SALINE SOLUTIONS

Gianfranco Boari, Lorenzo Liberti, Carlo Merli, and Roberto Passino, Rome, Italy, assignors to Consiglio Nazionale Delle Ricarche, Rome, Italy

Filed July 13, 1970, Ser. No. 54,256
Claims priority, application Italy, July 12, 1969, 38,643/69
Int. Cl. B01d *15/04*
U.S. Cl. 210—26 **3 Claims**

A process for the de-ionization of aqueous saline solutions by means of ion exchange treatment is disclosed, the process being characterized by the fact that the process is carried out by using a cation exchanger, an anion exchanger and a cation exchanger arranged in series, and wherein the first cation exchanger is constituted of essentially weak cation exchange resins and the anion exchanger is constituted of weak anion exchange resins, the process comprising the steps of: passing the aqueous solution to be de-ionized through the first cation exchanger, then through the anion exchanger and at last

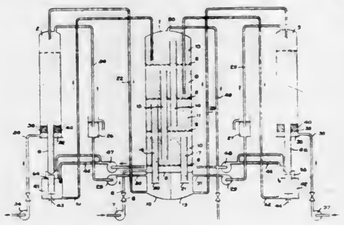


through the second cation exchanger; recycling a part of the solution effluent from the anion exchanger upstream of the first cation exchanger and controlling the recycle in order to obtain a methyl orange alkalinity in the solution feeding the first cation exchanger, and if necessary, decarbonating the solution effluent from the last cation exchanger and recycling the recovered CO_2 upstream of the anion exchanger.

3,679,581
METHOD AND APPARATUS FOR SOFTENING OR DESALTING WATER BY ION EXCHANGE

Gerhard K. Kunz, Guystavsburg, Germany, assignor to GHH-M.A.N. Technik Gesellschaft für Anlagenbau m.b.H., Essen (Ruhr), Germany

Filed Apr. 15, 1970, Ser. No. 28,672
Int. Cl. B01d *15/06;* **B01j** *1/06*
U.S. Cl. 210—33 **8 Claims**



In an ion exchange apparatus and method for the softening and/or desalting of water by countercurrent flow, an ion exchange column, containing alternately cation exchange material and anion exchange material, is provided with a pair of regenerating columns being connected to said exchange column, with one receiving spent cation material and the other spent anion material, and a washing column connected to each regeneration column and to the exchange column so that upon the regeneration and washing of the cation and anion exchange materials, each will be passed to their respective zone.

3,679,582
FLOW IMPROVEMENT OF WAXY HYDROCARBON WITH THE AID OF POLYSACCHARIDE DERIVATIVES

Adriaan H. Wagenaar and Pieter H. van der Meij, Amsterdam, Netherlands, assignors to Shell Oil Company, New York, N.Y.

No Drawing. Filed Oct. 8, 1969, Ser. No. 864,900
Int. Cl. C09k *3/00*
U.S. Cl. 252—8.3 **12 Claims**

A method of transporting waxy liquid hydrocarbons through conduits without causing waxy deposition or

plugging of the conduits and improving the flow characteristics of the hydrocarbon by addition to said hydrocarbons a small amount of a polysaccharide derivative having saturated aliphatic hydrocarbon chains of at least 15 carbon atoms in the molecule.

3,679,583
METHOD OF STRETCHING LEATHER SHOES
Elias W. Packman, Philadelphia, Pa., assignor to Arcadia Products Corporation, Hollywood, Fla.
No Drawing. Continuation of abandoned application Ser. No. 725,217, Apr. 29, 1968. This application Dec. 2, 1970, Ser. No. 94,545
Int. Cl. C14c *9/90*
U.S. Cl. 252—8.57 **1 Claim**

A method of stretching leather shoes comprising the steps of applying a composition comprising isopropyl alcohol, octylphenoxy polyethylene oxide and hexachlorophene to the shoe and walking with the shoe on the foot in order to stretch the leather. The hexachlorophene is an anti-bacterial agent, and its function is to kill odor-producing bacteria in shoes.

3,679,584
OVERBASED ALKALINE EARTH METAL SULFONATE LUBE OIL COMPOSITION MANUFACTURE
Walter W. Hellmuth, Beacon, N.Y., assignor to Texaco Inc., New York, N.Y.
No Drawing. Filed June 1, 1970, Ser. No. 42,514
Int. Cl. C10m *1/54, 1/10*
U.S. Cl. 252—33.4 **3 Claims**

A process for increasing the alkaline earth metal ratio of an alkaline earth metal carbonate overbased alkaline earth metal sulfonate lubricating oil composition comprising introducing into a lubricating oil medium containing a colloidal-like dispersion of an alkaline earth metal carbonate overbased alkaline earth metal sulfonate, an alkaline earth metal hydroxide and boric acid and subsequently contacting the resultant mixture with carbon dioxide.

3,679,585
LUBRICANT COMPOSITIONS
James H. T. Brook, Wirral, England, and Joyce Williams, Mold, Wales, assignors to Shell Oil Company, New York, N.Y.
No Drawing. Filed Nov. 6, 1969, Ser. No. 874,370
Claims priority, application Great Britain, Nov. 13, 1968, 53,870/68
Int. Cl. C10m *1/20, 1/22, 1/32*
U.S. Cl. 252—51.5 A **9 Claims**

A lubricant comprising (1) a lubricating oil (2) an oil soluble succinimide dispersant and (3) an oil soluble alcohol or ester has increased dispersancy properties.

3,679,586
LIQUID ELECTROPHOTOGRAPHIC DEVELOPERS CONTAINING A DYE MODIFIED POLYPEPTIDE
Satoru Honio and Yasuo Tamai, Asaka-shi, Japan, assignors to Fuji Photo Film Co., Ltd., Ashigara-Kami-gun, Kanagawa, Japan
No Drawing. Filed Aug. 18, 1970, Ser. No. 64,826
Claims priority, application Japan, Aug. 18, 1969, 44/64,732
Int. Cl. G03g *9/04*
U.S. Cl. 252—62.1 **6 Claims**

An electrophotographic liquid developer comprising a highly insulating non-polar carrier liquid and a toner dispersed therein, characterized by that said toner comprises a polypeptide compound which is chemically united with a reactive dye containing both of an electron affinitive functional group capable of reacting with NH_2, or OH group in a hydrophilic polypeptide compound and of a chromogenic group exhibiting an optical absorption in the visible region of the spectrum and the method for making the developer.

3,679,587
FUNCTIONAL FLUID COMPOSITIONS CONTAINING PERFLUORO SURFACTANTS
Terrill D. Smith, Edmond, Okla., assignor to Monsanto Company, St. Louis, Mo.
No Drawing. Filed Mar. 10, 1970, Ser. No. 18,291
Int. Cl. C09k *3/00*
U.S. Cl. 252—75 **20 Claims**

Phosphate ester based functional fluid compositions containing small amounts of perfluorinated anionic surfactants are novel compositions of matter which when employed as hydraulic fluids in hydraulic systems show increased ability to inhibit erosion of material and damage to members in such hydraulic systems.

3,679,588
HYDRAULIC FLUIDS
Luke A. Schaap, South Holland, and Marvin J. Den Herder, Olympia Fields, Ill., assignors to Standard Oil Company, Chicago, Ill.
No Drawing. Continuation of application Ser. No. 682,651, Nov. 13, 1967. This application Oct. 29, 1970, Ser. No. 85,263
Int. Cl. C09k *3/00*
U.S. Cl. 252—75 **4 Claims**

Petroleum based hydraulic fluids, when contaminated with sea water form tight sea water-in-oil emulsions and protect hydraulic systems, consist of petroleum lubricating oil having a viscosity of about 60–920 SSU at 100° F. and contain in combination (a) about 4–8 volume percent of a mineral oil solution of about 35–45 weight percent of the condensation product of (i) 1 mole of a monoalkylphenol wherein the alkyl group has about 90–120 carbon atoms, (ii) 1 mole of tetraethylenepentaamine, and (iii) 2 moles of formaldehyde, said solution containing about 1.0–1.5 percent nitrogen; (b) zero to about 0.5 volume percent of polyoxyethylene lauryl alcohol having about four oxyethylene groups; (c) about 1.5–1.7 volume percent of a mineral oil solution of about 40–45 weight percent calcium sulfonate, said solution having a total base number of about 15–30; (d) about 0.25–0.35 volume percent of 2,6-di-(t-butyl)-paracresol; (e) about 0.035–0.045 volume percent of bis-(octyldithio)-thiadiazole; (f) zero to about 0.7 volume percent of paraffin wax-naphthalene condensation product; (g) about 0.1–0.4 volume percent of a methylnaphthalene solution of about 4.8 weight percent of N,N'-dimethyldithiooxamide; and (h) about 3–5 parts per million of silicone oil foam depressant having a viscosity of about 1000 cs. at 25° C., such fluids have a viscosity of about 12–220 cs. at 100° F.

3,679,589
LOW-FOAMING RINSING, WASHING AND CLEANING COMPOSITIONS
Harald Schnegelberger, Hilden, Rhineland, and Theodor Altenschöpfer, Dusseldorf-Wersten, Germany, assignors to Henkel & Cie GmbH, Dusseldorf, Germany
No Drawing. Filed June 27, 1969, Ser. No. 837,369
Claims priority, application Germany, Aug. 17, 1968, P 17 92 308.9
Int. Cl. B01d *19/04;* **C11d** *3/28, 7/32*
U.S. Cl. 252—102 **8 Claims**

Low-foaming rinsing, washing and cleaning compositions comprising (a) a content of at least one compound having a cleaning action selected from the group consisting of (1) anionic surface-active compounds, amphoteric surface-active compounds, non-ionic surface-active compounds and mixtures thereof, (2) organic builder salts and inorganic builder salts, and (3) mixtures of (1) and (2), and (b) a content of at least one alkoxylated melamine having a molecular weight of from 700 to 20,000 selected from the group consisting of propoxylated melamines, butoxylated melamines and propoxylated-butoxylated melamines, where the weight ratio of components (a) to components (b) is from 999:1 to 3:1.

3,679,590
SOLVENT BLEACHING
Charles L. Cormany, Wadsworth, and John A. Spotts, Jr., Akron, Ohio, assignors to PPG Industries, Inc., Pittsburgh, Pa.
No Drawing. Filed Sept. 11, 1969, Ser. No. 857,214
Int. Cl. C11d *7/54*
U.S. Cl. 252—104 **11 Claims**

Fabrics with both oleophilic and hydrophilic characteristics are cleansed with compositions of organic cleansing solvent throughout which an aqueous bleaching phase is dispersed. Bleaching agent remaining in the fabric is removed by a rinse solution containing the combination of an alcohol or like water soluble component and the cleansing solvent.

3,679,591
METHOD AND COMPOSITION FOR STRIPPING STRUCTURAL ADHESIVES AND THE LIKE
Gilberto Carrillo, Riverside, Calif., assignor to Rohr Corporation, Chula Vista, Calif.
No Drawing. Filed Dec. 1, 1969, Ser. No. 881,328
Int. Cl. C11d *7/08*
U.S. Cl. 252—142 **9 Claims**

A mixture is composed of concentrated nitric acid and a strong oxidizing agent, with an optimum mixture formulation of 86 percent HNO_3 (42° Bé.) and 7 percent each of H_2O and CrO_3. The mixture can be used as a bath for items contaminated with cured structural adhesives, primers and paints, and the like, or have added thereto a filler to provide a paint-like mixture selectively applied to the items with a brush. In the case of the optimum mixture, the contaminants are stripped from the items in from about one-quarter to about one-half hour, with no adverse effect on the surfaces of the items. The items are then thoroughly rinsed with water or other solvent.

3,679,592
CLEANSING AND SOIL PREVENTIVE COMPOSITION
Noel L. Schomburg, Florissant, Mo., assignor to Monsanto Company, St. Louis, Mo.
No Drawing. Filed Aug. 17, 1970, Ser. No. 64,635
Int. Cl. C11d *3/065, 3/30, 3/44*
U.S. Cl. 252—153 **4 Claims**

Compositions comprising a film forming component, a surfactant, a scale inhibitor, an organic solvent, and water are effective for cleansing hard surfaces and inhibiting deposition of soils or stains thereon.

3,679,593
STRIPPING OF CONDENSATION POLYMERS WITH AN ALKOXIDE
Charles N. Hansen, Salt Lake City, Morris D. Young, Ephraim, and James E. Granger, Provo, Utah, assignors to Wasatch Chemical Company, Salt Lake City, Utah
No Drawing. Filed Jan. 24, 1969, Ser. No. 793,874
Int. Cl. C09d *9/00*
U.S. Cl. 252—170 **6 Claims**

Methods and compositions for stripping or removing condensation polymers from a substrate, whereby the amide or ester linkages of said polymer are cleaved by a transesterification reaction using an alcoholic solution of an alkali metal catalyst.

3,679,594
CHEMILUMINESCENT SMOKES
Urho A. Lehikoinen, Detroit, Mich., assignor to Ethyl Corporation, New York, N.Y.
No Drawing. Continuation-in-part of applications Ser. No. 561,337, June 29, 1966, now Patent No. 3,496,111, Ser. No. 649,820, now Patent No. 3,576,752, Ser. No. 649,821, now Patent No. 3,551,341, Ser. No. 649,835, now Patent No. 3,551,342, Ser. No. 649,836, now Patent No. 3,576,753, Ser. No. 649,838, now Patent No. 3,576,754, and Ser. No. 649,850, all June 29, 1967, and application Ser. No. 778,316, Nov. 22, 1968, now Patent No. 3,551,343, which is a continuation-in-part of application Ser. No. 561,418, June 29, 1966. This application Dec. 18, 1969, Ser. No. 886,349
The portion of the term of the patent subsequent to Feb. 17, 1987, has been disclaimed
Int. Cl. C06d *1/10;* **C09k** *3/00*
U.S. Cl. 252—188.3 **25 Claims**

A method of illuminating an area using a chemiluminescent smoke composition containing an aluminum alkyl complexed with an amine or an ether and then mixed with a chemiluminescent agent. For example, triethylaluminum complexed with a hexamethylene tetramine or diethylether and mixed with a chemiluminescent agent, such as tetrakis dimethylamino ethylene, when contacted with water produces a chemiluminescent smoke of sufficent intensity to light an area.

3,679,595
METHOD OF CONCENTRATING RADIOACTIVE WASTE
Walter Döllgast, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany
No Drawing. Filed June 19, 1969, Ser. No. 834,866
Claims priority, application Germany, June 29, 1968, P 17 64 586.2
Int. Cl. C09k *3/00, 3/22*
U.S. Cl. 252—301.1 W **3 Claims**

A method of concentrating aqueous solutions and suspensions of radioactive waste by thickening and drying processes. The method is characterized in that the concentrate is dried on heated rollers, whereby a polyelectrolyte is added, in a known manner, for the purpose of adjusting an appropriate viscosity. Bone glue is added, in order to prevent formation of dust and as an embedding mass. The rolled product is subsequently compressed into solid bodies.

3,679,596
NUCLEAR REACTOR FUEL COMPOSITION
Howard W. Hill, Fremont, Alexis I. Kaznoff, Castro Valley, and Mickey O. Marlowe, Livermore, Calif., assignors to General Electric Company
No Drawing. Filed Aug. 30, 1968, Ser. No. 756,383
Int. Cl. C09k *3/00*
U.S. Cl. 252—301.1 R **6 Claims**

The viscosity or creep resistance of oxide-type reactor fuels may be minimized by the addition of low viscosity materials which segregate to the fuel grain boundaries during reactor heat-up and operation. This minimizes the stress applied to the cladding due to mechanical interaction of the fuel and the clad during the reactor operation. Suitable materials include glass formers which may form glasses with the nuclear fuel material. The low viscosity material segregates to the fuel material grain boundaries resulting in a marked increase in the creep rate resulting from less restrained grain boundary sliding.

3,679,597
CALCIUM CONTAINING SILICATE OXYAPATITE LASER MATERIALS

Richard H. Hopkins and George W. Roland, Monroeville, Kenneth B. Steinbruegge, Murrysville, and William D. Partlow, Blackridge, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Sept. 22, 1969, Ser. No. 859,673
Int. Cl. C09k *1/54*
U.S. Cl. 252—301.4 F **10 Claims**

A composition of matter which can be used as a laser crystal and which can be doped with sensitizer ions has the empirical chemical formula $CaM_{4-x}(SiO_4)_3O:A_x$ where A represents a lasing ion selected from Nd, Er, and Ho, x has a value from .001 to 1 and M represents an ion selected from La, Gd and mixtures thereof.

3,679,598
INSPECTION PENETRANT PROCESS AND COMPOSITIONS EMPLOYING MIXTURES OF FLUORESCENT INDICATOR DYE AND NON-FLUORESCENT ULTRAVIOLET ABSORBER DYE

James R. Alburger, 7356 Santa Monica Blvd., La Canada, Calif. 90046

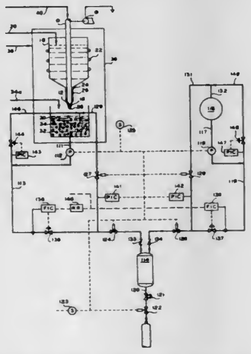
No Drawing. Continuation-in-part of application Ser. No. 731,225, May 22, 1968. This application Sept. 14, 1970, Ser. No. 72,138
Int. Cl. G01n *21/16*; **G09k** *1/02*
U.S. Cl. 252—301.2 R **2 Claims**

An inspection penetrant process and inspection penetrant compositions which utilize mixtures of fluorescent indicator dyes and ultraviolet absorber dyes dissolved in liquid penetrant carrier materials. The penetrant composition disclosed may be used in the detection of surface defects in test objects in the presence of a background of shallow porosity indications. The novel combination of an ultraviolet absorber dye with a fluorescent indicator dye provides a relatively sharp transition of fluorescence response, with the result that the brightness response of porosity indications is selectively diminished without any substantial loss in the brightness of underlying crack indications, whereby the seeability contrast and detectability of actual crack indications is substantially improved.

3,679,599
PRESSURIZED CHAMBER CONTAINING SELF-CURING INGREDIENTS

Clifton R. Goldsmith, Borger, Tex., assignor to Phillips Petroleum Company

Filed Aug. 3, 1970, Ser. No. 60,533
Int. Cl. C09k *3/30*
U.S. Cl. 252—305 **6 Claims**

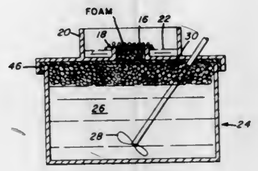


A valved chamber is provided which contains therein, along with a propellant, at least two reactive ingredients, one being held in capsules out of reactive contact with the other; said capsules bursting substantially immediately upon release of the ingredients from the chamber to thus establish reactive contact of the reactive ingredients.

3,679,600
CONTAINER WITH MEANS FOR DEFOAMING FOAMING LIQUIDS

Paul Timothy Hahm, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 23, 1970, Ser. No. 92,040
Int. Cl. B01d *19/00*; **C12b** *1/00, 1/18*
U.S. Cl. 252—361 **4 Claims**



An improved container for liquids which, upon mixing, agitation, aeration etc., tend to foam and means for adding an antifoaming agent to such a liquid in a controlled fashion are disclosed. The improved container comprises a vessel having a liquid level, means above said liquid level communicating the interior of said vessel to at least one horizontally disposed orifice opening to a recessed antifoaming agent reservoir. A novel antifoaming agent supply lid embodying the foregoing structure is also described.

3,679,601
DEHYDROGENATION CATALYSTS

George J. Nolan and Vernon C. F. Holm, Bartlesville, Okla., assignors to Phillips Petroleum Company

No Drawing. Original application Jan. 8, 1968, Ser. No. 696,146, now Patent No. 3,580,969. Divided and this application Dec. 4, 1970, Ser. No. 95,321
Int. Cl. B01j *11/82*
U.S. Cl. 252—437 **6 Claims**

Improvements in hydrocarbon dehydrogenation are realized by the use of a catalyst comprising tin and/or a tin compound supported on an aluminum phosphate.

3,679,602
HYDROCARBON ISOMERIZATION PROCESS

Ernest L. Pollitzer, Skokie, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Continuation-in-part of application Ser. No. 723,886, Apr. 24, 1968. This application Feb. 25, 1969, Ser. No. 802,207
Int. Cl. B01j *11/78*
U.S. Cl. 252—442 **6 Claims**

Isomerizable hydrocarbons including paraffins, cycloparaffins, olefins and alkylaromatics are isomerized by contacting the hydrocarbon at isomerization conditions with a catalytic composite of alumina having combined therewith a platinum group metallic component, a halogen component and a rhenium component.

3,679,603
CATALYST FOR OXIDATION OF OLEFINS

Artur Maximovich Garnish, ulitsa Chernyshevskogo, 25-a, kv. 4, and Lev Moiseevich Shafransky, ulitsa Ostrovskogo, 11, kv. 2, both of Novokuibyshevsk, Kuibyshevskoi oblasti, U.S.S.R., and Galina Antonova Ischerikova, ulitsa Iskra, 1a, kv. 63, Gorky, U.S.S.R.

No Drawing. Filed Jan. 15, 1970, Ser. No. 3,198
Int. Cl. B01j *11/82*
U.S. Cl. 252—432 **2 Claims**

A catalyst for oxidation of olefins, based on bismuth, molybdenum and oxygen, as well as silicon, or silicon and an alkali metal, or silicon and boron, or silicon, an alkali metal and boron, the empirical formula of the catalyst being

$$Bi_aSi_bMo_cM_dB_eO_f$$

where

M is an alkali metal;
a=5–20
b=0.02–1
c=12
d=0–2.3
e=0–0.1
f=43–72

The catalyst may also comprise a carrier with the specific surface of 0.3–3 m.²/g. in an amount of 20–90% of the total weight of the catalyst.

3,679,604
ULTRA-STABLE 3-ANGSTROM MOLECULAR SIEVE

Hanju Lee and Dongsuk Chi, Columbia, Md., assignors to W. R. Grace & Co., New York, N.Y.

No Drawing. Filed Sept. 21, 1970, Ser. No. 74,217
Int. Cl. B01j *11/40*; **C01b** *33/28*
U.S. Cl. 252—455 Z **16 Claims**

Ultra-stable 3 A. zeolite A molecular sieves can be produced from 4 A. zeolite A molecular sieves by the concurrent or sequential exchange of the 4 A. zeolite using potassium and rare earth ions. The resulting 3 A. zeolite A has a high steam and thermal stability, is very useful as an adsorbent, and can be reactivated using extreme environments for a subsequent reuse.

3,679,605
EXTRUDED ALUMINA CATALYST SUPPORT AND THE PREPARATION THEREOF

Robert A. Sanford, Prospect, Ky., and John Mool, Homewood, and Edward S. Rogers, Hinsdale, Ill., assignors to Sinclair Research, Inc., New York, N.Y.

No Drawing. Continuation of application Ser. No. 725,218, Apr. 29, 1968. This application July 17, 1970, Ser. No. 56,000
Int. Cl. B01j *11/06*
U.S. Cl. 252—463 **16 Claims**

A method of preparing extruded, gel-type alumina catalyst supports is disclosed. The method involves mixing crystalline alumina hydrate and about 2 to about 25 parts by weight of finely divided, low density polyethylene per 100 parts of alumina and an extrudable amount of water, extruding the mixture and calcining the mixture in a molecular oxygen-containing gas to substantially burn away the polyethylene and form a support. Additionally about 0.5 to 3 weight percent of starch and/or methyl cellulose may be included in the mixture prior to extrusion and calcination. These latter materials are also burned out of the support during the calcination.

3,679,606
THERMISTOR COMPOSITIONS AND THERMISTORS MADE THEREFROM

Oliver Alton Short, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Continuation-in-part of application Ser. No. 583,925, Oct. 3, 1966. This application Sept. 8, 1970, Ser. No. 70,571
Int. Cl. H01b *1/02*
U.S. Cl. 252—514 **12 Claims**

The invention relates to thermistor compositions which, upon being fired onto a ceramic substrate, yield glaze thermistors having resistance values of from about 500 to about 5,000 ohms/square and temperature coefficient of resistance values of from about −5,000 to −700 p.p.m./° C., consisting essentially of:

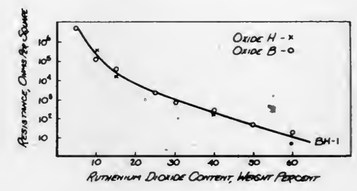
(I) 20 to 50% of a finely divided noble metal powder, and
(II) 50 to 80% of a finely divided inorganic binder powder.

The noble metal powder consists essentially of (a) 15 to 85% of a finely divided palladium or ruthenium powder or a mixture thereof, (b) 15 to 85% of a finely divided rhodium powder and (c) 0 to 12% of a finely divided silver or gold powder or a mixture thereof. The choice of metals, proportions thereof and proportions of inorganic binder are selected to provide thermistor compositions which then printed and fired will produce glaze thermistors possessing the desired resistances and temperature coefficients of resistance. Additionally, an inert vehicle may also be included to disperse the powders.

3,679,607
OXIDE RESISTOR MATERIALS

Hamish Carmichael Angus, High Wycombe, and Peter Edward Gainsbury, Ruislip, England, assignors to The International Nickel Company, Inc., New York, N.Y.

Filed Oct. 19, 1967, Ser. No. 676,515
Claims priority, application Great Britain, Oct. 24, 1966, 47,690/66
Int. Cl. H01b *1/02*
U.S. Cl. 252—518 **15 Claims**



Resistors made from compositions comprising ruthenium and/or iridium dioxides with fine crystallite size are characterized by low noise levels and low values of temperature coefficient of resistivity.

3,679,608
LOW FOAMING HARD SURFACE CLEANERS

Harry Julius Aubert, Center Township, Dearborn County, Ind., and Edward Carroll Gemperle, Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

No Drawing. Filed Aug. 2, 1968, Ser. No. 749,597
Int. Cl. C11d *3/075*
U.S. Cl. 252—526 **5 Claims**

Low foaming hard surface cleaner composition comprising a foaming surfactant, a sequestrant builder and,

as a suds suppressor, the condensation product of a straight-chain random secondary alcohol with from 0 to about 3 moles of ethylene oxide.

3,679,609
CLEANING AND CONDITIONING CONCENTRATE COMPOSITIONS

Charles S. Castner, Reading, Pa., assignor to Schuyler Development Corporation

No Drawing. Filed July 28, 1969, Ser. No. 845,536

Int. Cl. C11d *3/066, 3/07*

U.S. Cl. 252—527 **7 Claims**

A concentrate composition made up of lower alcohols 30–40 parts, a selected glycol 14–18 parts, methyl Cellosolve 7–11 parts, ammonia 3–6 parts, higher alcohols and ethers 2–4 parts, detergents 1.5 to 2.5 parts, a member from the group alkaline earth borates, pyro phosphates, ortho phosphates and ortho silicates 0.5 to 1.5 parts, ethylene diamine tetracetate 0.25 to 0.75 part, a member from the group sodium and potassium hydroxide 0.1 to 0.5 part and water 20 to 30 parts, and which by the serial addition of water and active agents, can be predictably altered to produce a variety of different compositions, all of which have exceptional ranges of water extendability with slight diminution of surfactant conditioning efficiency; and, therefore, serve as highly effective cleansers and conditioners for a variety of hard surface finished, soft goods, fibre and fabric materials.

3,679,610
TINTED GRANULES

Robert H. Sams, Aldan, Robert W. Linton, Springfield, and Noboru R. Horikawa, Swarthmore, Pa., assignors to Philadelphia Quartz Company, Philadelphia, Pa.

No Drawing. Continuation-in-part of application Ser. No. 748,644, July 30, 1968. This application Oct. 9, 1968, Ser. No. 766,281

Int. Cl. C11d *3/066*

U.S. Cl. 252—529 **8 Claims**

Water soluble granules of alkali metal bases and salts capable of forming 1% aqueous solutions with a pH greater than 11 are colored by mixing with a coloring agent and a relatively small amount of a water soluble, volatile, polar hydrogen bonding compound, such as an alcohol, and allowing the compound to evaporate. In some cases with hydrated granules of alkali it is preferable to include a non-volatile hydrogen bondable organic compound such as a non-ionic surfactant.

3,679,611
COMPOSITIONS WITH HYDROXYALKYL PIPERIDINE OR PYRROLIDINE OXIDES

John Fred Gerecht, Somerville, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

No Drawing. Original application Nov. 13, 1967, Ser. No. 682,597, now Patent No. 3,547,932. Divided and this application Aug. 3, 1970, Ser. No. 60,754

Int. Cl. C11d *3/28, 1/22, 1/86*

U.S. Cl. 252—542 **10 Claims**

Compositions with hydroxy higher alkyl piperidine or pyrrolidine oxides particularly with a surface active agent have many beneficial effects in the detergent cosmetic fields.

3,679,612
DECORATIVE COMPOSITION AND PROCESS FOR PREPARING SAME

Witold Titow, Chessington, Surrey, England, assignor to Molins Limited, London, England

No Drawing. Continuation of application Ser. No. 598,953, Dec. 5, 1966. This application Sept. 23, 1970, Ser. No. 74,922

Claims priority, application Great Britain, Dec. 13, 1965, 52,818/65

Int. Cl. G03g *9/02;* **C08f** *47/20*

U.S. Cl. 260—2 **26 Claims**

This specification describes novel, dry particulate inks of substantially spherical shape which are composed of a polymeric binder, a colorant and a filler which is present to give the inks improved transfer characteristics when used in electrostatic printing. The inks may be produced by dispersing a solution of the ink composition (binder, colorant, filler plus any other additives) in another liquid and then evaporating off the binder solvent to form a suspension of the ink particles in the liquid. A melt of the ink composition may be used instead of a solution.

3,679,613
PROCESS FOR THE PRODUCTION OF POLYAMIDE FOAMS

Heinrich Gilch, Bonn-Ippendorf, and Hermann Schnell, Krefeld-Uerdingen, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Continuation-in-part of application Ser. No. 611,803, Jan. 26, 1967. This application Mar. 17, 1970, Ser. No. 20,400

Claims priority, application Germany, Feb. 4, 1966, F 48,347; July 22, 1966, F 49,764

The portion of the term of the patent subsequent to May 7, 1985, has been disclaimed

Int. Cl. C08j *1/22*

U.S. Cl. 260—2.5 N **9 Claims**

A process of preparing polyamide foams by heating a lactam or a mixture of lactams having at least 7 ring members with at least one mole percent of an organic isocyanate or masked isocyanate at a temperature above 130° C. in the presence of an alkali metal or alkaline earth metal compound wherein the mole ratio of isocyanate to metal compound is greater than 5:1.

3,679,614
METHOD FOR MAKING POROUS FIBROUS SHEETS CONTAINING POLYTETRAFLUOROETHYLENE

Girish Chandulal Shah and Mahesh Shantilal Shroff, Stamford, Conn., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed Nov. 24, 1969, Ser. No. 879,538

Int. Cl. B29d *27/00;* **C08f** *3/24*

U.S. Cl. 260—2.5 M **4 Claims**

In the manufacture of polytetrafluoroethylene fiber sheets an intermediate sheet was rigid until a continuous phase of polymethylmethacrylate (PMMA) has been extracted with solvents. The invention employs high concentration of plasticizer (e.g. terephthalate diesters) in the PMMA phase to render the intermediate sheet nonrigid hence easier to handle. Also plasticizer reduces working temperature for making the intermediate sheet, enabling incorporation of heat-sensitive fillers e.g. heat sensitive catalyst or low-melting polypyropylene incorporated fibers.

3,679,615
MULTI-COMPONENT ELECTROCOATING COMPOSITIONS

Allan E. Gilchrist, Westlake, Ohio, assignor to Ford Motor Company, Dearborn, Mich.

Division of application Ser. No. 518,620, Jan. 4, 1966, now Patent No. 3,532,613, which is a continuation-in-part of application Ser. No. 375,633, June 16, 1964, which is a continuation-in-part of applications Ser. No. 304,297, Aug. 14, 1963, now Patent No. 3,230,162, and Ser. No. 273,270, Apr. 16, 1963. Said application Ser. No. 304,297, being a continuation-in-part of application Ser. No. 249,812, Jan. 7, 1963, which is a continuation-in-part of applications Ser. No. 186,320, Apr. 10, 1962, now Patent No. 3,351,575, Ser. No. 132,303, Aug. 18, 1961, Ser. No. 183,024, Mar. 28, 1962, Ser. No. 186,496, Apr. 10, 1962, Ser. No. 202,691, June 15, 1962, and Ser. No. 218,575, Aug. 22, 1962. Said application Ser. No. 273,270, being a continuation-in-part of applications Ser. No. 249,812 and Ser. No. 258,913, Feb. 15, 1963, which is a continuation-in-part of applications Ser. Nos. 249,812, 186,320, 132,303, 183,024, 186,496, 202,691, and 218,575. This application June 25, 1970, Ser. No. 49,892

The portion of the term of the patent subsequent to May 7, 1986, has been disclaimed

Int. Cl. C09d *3/66, 5/02, 5/24*

U.S. Cl. 260—3.3 **16 Claims**

An aqueous dispersion of paint for use in the coating bath of an electrodeposition cell wherein the major fraction of the paint binder resin is a synthetic polycarboxylic acid resin and there is intimately dispersed therewith a minor fraction of discrete solid particles of an essentially non-ionizable adjunct resin that is fusible with the polycarboxylic acid resin at paint-baking temperature.

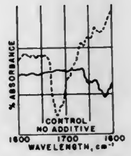
3,679,616
METHOD OF MAKING ETHYLENE SULFIDE POLYMERS BY ADDITION OF STABILIZERS TO REACTION MIXTURE PRIOR TO POLYMERIZATION

Jose L. Villa, Heightstown, N.J., assignor to Thiokol Chemical Corporation, Bristol, Pa.

Filed July 30, 1970, Ser. No. 59,525

Int. Cl. C08g *23/00*

U.S. Cl. 260—18 R **14 Claims**



Ethylene sulfide polymers are stabilized against oxidative degradation by incorporating therein a small amount of finely divided copper or a copper salt essentially insoluble in and inert toward ethylene sulfide monomer. Representative copper salts are cuprous potassium cyanide, cupric hydroxide, cuprous cyanide, cupric carbonate, cupric sulfate and copper stearate. The stabilizing agent is incorporated in the polymerization mixture prior to polymerization. Known thermal stabilizing agents may be added to the polymer to improve its overall stability.

3,679,617
FLEXIBILIZED PHENOL-FORMALDEHYDE RESINS

Jack B. Boylan and Robert J. Sturwold, Cincinnati, Ohio, assignors to Emery Industries, Inc., Cincinnati, Ohio

No Drawing. Filed Sept. 22, 1969, Ser. No. 860,079

Int. Cl. C08g *5/20*

U.S. Cl. 260—19 R **8 Claims**

Internally flexibilized phenol-formaldehyde resins are prepared from formaldehyde, phenol and a phenolated oil obtained by reacting an excess of a phenolic compound with a non-conjugated, unsaturated oil in the presence of an active clay catalyst, the catalyst optionally containing a minor amount of a mineral acid.

3,679,618
ELECTRODEPOSITION OF FLUOROCARBON POLYMERS

James E. Lohr, Drexel Hill, Pa., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Oct. 7, 1969, Ser. No. 864,552

Int. Cl. C09d *3/52, 3/56;* **C23b** *13/00*

U.S. Cl. 260—21 **6 Claims**

The application of fluorocarbon polymer coatings on metal articles by electrodeposition is the subject of this invention; aqueous dispersions containing carboxylic acid polymer having an acid number of about 6–25 neutralized with a water soluble basic compound, such as ammonia, an amine, metal hydroxide, contain uniformly dispersed fluorocarbon polymer particles which can be electrodeposited on metal articles. Electrodeposition of fluorocarbon polymers is particularly useful in coating irregular shaped objects, such as screws, nuts and bolts, and is also useful in coating objects, such as cookware, tools and the like.

3,679,619
RIGID HALOGEN-CONTAINING RESIN COMPOSITIONS

Christian H. Stapfer, Newtown, Pa., and William B. Racz, Highland Park, N.J., assignors to Cincinnati Milacron Chemicals, Inc., Reading, Ohio

No Drawing. Filed Dec. 11, 1970, Ser. No. 97,309

Int. Cl. C08f *45/04*

U.S. Cl. 260—23 XA **11 Claims**

Halogen-containing resin compositions containing an admixture of a lubricant and a synthetic silicate powder exhibit improved lubricity, stability and higher deflection temperatures.

3,679,620
UNIFORM ETHYLENE/VINYL ACETATE/N-METHYLOL ACRYLAMIDE TERPOLYMER DISPERSIONS

Aleksander Beresniewicz, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed May 1, 1970, Ser. No. 33,876

Int. Cl. C08f *15/40*

U.S. Cl. 260—29.6 TA **5 Claims**

A uniform ethylene/vinyl acetate/N-methylol acrylamide terpolymer is provided. A latex coating composition comprising an aqueous medium having the terpolymer colloidally suspended therein is provided. A coated textile fabric having a coating comprising the terpolymer is provided. And an improvement in the process for preparing an ethylene/vinyl acetate/N-methylol acrylamide terpolymer wherein the monomers are copolymerized in an aqueous dispersion system under ethylene pressure is provided. The improvement comprises maintaining the level of unreacted vinyl acetate monomer in the aqueous dispersion system at about 5–25 weight percent based on the total weight of the system at a given time during a substantial portion of the polymerization, continuously adding N-methylol acrylamide and vinyl acetate to the aqueous dispersion system in a substantially constant ratio and at a rate substantially the same as the rate of polymerization and continuously adding N-methylol acrylamide after completion of vinyl acetate addition in order to form a terpolymer having a uniform distribution of the N-methylol acrylamide. The terpolymer formed by the process of this invention has improved curability over prior art ethylene/vinyl acetate/N-methylol acrylamide terpolymers and, accordingly, provides superior coatings for textiles such as woven fabrics.

3,679,621

REACTION PRODUCTS OF CARBOXYLIC ACID POLYMERS, ALKYLENIMINES AND ALKYLENE OXIDES

Max Morf, Toms River, Markus Wenger, Beachwood, and Jutta Feisst, Toms River, N.J., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 771,356, Oct. 28, 1969. This application Jan. 28, 1970, Ser. No. 6,643

Int. Cl. C08f *45/24*

U.S. Cl. 260—29.6 H 30 Claims

New water-soluble to water-dispersible reaction products are provided which are obtained by condensing a carboxylic acid polymer with an alkylenimine and an alkylene oxide. A typical product of the present invention is obtained by condensing a polyacrylic acid with ethylenimine and propylene oxide. The novel condensation products of the present invention have a plurality of utilities. The condensation products of this invention exhibit properties which make them especially useful in paper-making applications as drainage aids, flotation aids, flocculating aids, retention aids, and as wet strength resins.

3,679,622

NITROALKYL PIPERAZINES AS ANTIBACTERIAL AGENTS IN AQUEOUS PAINT SOLUTIONS

Nathaniel Grier, Englewood, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

No Drawing. Application June 21, 1968, Ser. No. 738,843, which is a division of application Ser. No. 457,802, May 21, 1965, now Patent No. 3,399,199, dated Aug. 27, 1968. Divided and this application Apr. 23, 1971, Ser. No. 137,048

Int. Cl. C08d *7/12*

U.S. Cl. 260—29.7 N 2 Claims

Antimicrobial compositions containing piperazine nitroalkanes useful as soil sterilants and algicides, etc., for agricultural and industrial application.

3,679,623

COMPOSITIONS OF POLY (ALKYL VINYL ETHER/MALEIC ANHYDRIDE) WITH PHOSPHATE ESTER SURFACTANT

Thomas S. Mestetsky and Edwin M. Smolin, Easton, Pa., assignors to GAF Corporation, New York, N.Y.

No Drawing. Filed June 12, 1970, Ser. No. 45,893

Int. Cl. C08f *29/12*

U.S. Cl. 260—31.2 R 6 Claims

Film forming compositions, which give hard glossy, water-dispersible films and which are particularly useful for coating or saturating fibrous sheet material such as paper and woven and non-woven textiles, are prepared by compounding (intimately mixing), in solution, 1 to 5 parts by weight of a water-soluble phosphate ester surfactant with 1 part by weight of an alkyl vinyl ether polymer selected from the group consisting of homopolymers of alkyl vinyl ethers in which the alkyl groups have from 1 to 18 alkyl carbon atoms and copolymers of such alkyl vinyl ethers with each other or with maleic anhydride. Such compositions when applied to paper and similar sheet material as a coating can serve both as a remoistenable adhesive and a heat sealable adhesive. They can also be applied to paper etc. either as a coating or saturant to decrease the porosity of the sheet, increase its stiffness or tensile strength. The water sensitivity of the films produced by such compositions may be modified by incorporating a wood rosin ester (which may be either hydrogenated or unhydrogenated) or a hydrocarbon resin in the composition. Various other additives, such as pigments to increase the opacity of the resulting films, may also be incorporated in the compositions.

3,679,624

POLYAMIDES

Owen Burchell Edgar, Manchester, William Hughes, Norton, Derek Robert Lawrance, Abergavenny, Gerald Lederer, Stockton-on-Tees, and Colin Foster Ritchie, Manchester, England, assignors to Imperial Chemical Industries Limited, London, and British Titan Products Company Limited, Billingham, England

No Drawing. Continuation of application Ser. No. 684,542, Nov. 20, 1967. This application Sept. 25, 1970, Ser. No. 75,778

Claims priority, application Great Britain, Nov. 25, 1966, 52,828/66

Int. Cl. C08g *45/56, 51/04*

U.S. Cl. 260—37 N 9 Claims

Polyamide compositions comprising a synthetic linear fibre-forming polyamide, a delustering agent (especially titanium dioxide), a manganese compound and an antimony compound, and optionally a copper compound and a halide, or a phenol and hypophosphorous acid or a salt thereof; processes for their manufacture; and titanium dioxide pigments suitable for use in their manufacture containing chemically combined antimony and having a coating containing chemically combined manganese.

3,679,625

POLYSILOXANES IN ADMIXTURE WITH HYDRATES OR CARBONATES USEFUL FOR REMOVING HYDROCARBONS FROM TOBACCO SMOKE

Edward W. Merrill, Cambridge, Mass., assignor to Hans H. Estin, Leonard W. Cronkhite, Jr., and William W. Wolbach, Trustees of the Charles River Foundation

Filed Dec. 29, 1969, Ser. No. 888,505

Int. Cl. C08g *51/04*

U.S. Cl. 260—37 SB 6 Claims

Polynuclear aromatic hydrocarbons (PAH) can be absorbed and thereby removed from tobacco gas-smoke by polysiloxane compositions. The polysiloxane may be present in the tobacco to absorb the PAH at or near the combustion zone, or placed in a "filter" section downstream from the combustion zone. Endothermic fillers in the polysiloxane and high polysiloxane to tobacco ratios are effective to reduce the combustion temperature and minimize desorption of previously absorbed PAH.

3,679,626

THERMOPLASTIC TRAFFIC PAINTS AND PROCESS FOR THE MANUFACTURE THEREOF

Toshimi Tanekusa, Fujisawa-shi, Hideaki Takasawa, Yokohama, and Achihiko Yamahata, Tokyo, Japan, assignors to Nippon Paint Co., Ltd., Osaka, Japan

No Drawing. Filed June 23, 1967, Ser. No. 648,210

Claims priority, application Japan, July 21, 1966, 41/47,356

Int. Cl. C08f *45/04;* E01c *23/16*

U.S. Cl. 260—41 A 1 Claim

A process for manufacturing a thermoplastic traffic marking paint including the steps of mixing at room temperature a liquid plasticizer and a nucleus component to coat the nucleus with the plasticizer, and thereafter adding to said mixture a thermoplastic resin, a pigment and additive ingredients selected from an aggregate of silica sand, glass spheres, a lubricant, an antioxidant, an antiblocking agent and mixtures thereof, to form a uniform powdered mixture which is easily melted on heating to form a fast drying marking material which is easily applied to a road surface and has good shock resistance, adherence, cold resistance and abrasion resistance characteristics.

3,679,627

HYDROXYLATED ALPHA-OLEFIN/NON-CONJUGATED DIENE POLYMER

Jerald R. Harrell, Anestis L. Logothetis, and John J. Verbanc, Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Continuation-in-part of application Ser. No. 764,328, Oct. 1, 1968. This application July 9, 1969, Ser. No. 840,511

Int. Cl. C08d *11/00*

U.S. Cl. 260—41.5 6 Claims

An hydroxylated alpha-olefin/non-conjugated diene polymer having hydroxylated side chains in admixture with clay, ZnO, $ZnBr_2$, a phenol-formaldehyde resin or polyisocyanate. An hydroxylated alpha-olefin/non-conjugated diene polymer having hydroxyl substituted side chains containing one hydroxyl group each and other side chains containing ethylenic unsaturation and a process for making.

3,679,628

THERMOPLASTIC POLYESTER MOULDING COMPOSITIONS CONTAINING BORON NITRIDE

Ludwig Brinkmann and Walter Herwig, Frankfurt am Main, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed July 22, 1970, Ser. No. 57,312

Claims priority, application Germany, July 29, 1969, P 19 38 436.2

Int. Cl. C08g *39/10, 51/10*

U.S. Cl. 260—45.7 PS 13 Claims

Polyester compositions suitable for injection moulding are provided which do not exhibit discoloration or discolor to a minor extent only during manufacturing and processing. The compositions consist of linear saturated polyesters, boron nitride and compounds containing S—O—Na or P—O—Na groups in their chemical structure.

3,679,629

METHOD FOR STABILIZING POLYCARBONATES AND COMPOSITIONS MADE THEREBY

Alan J. Chalk and Arnold Factor, Scotia, N.Y., assignors to General Electric Company

No Drawing. Filed Apr. 1, 1971, Ser. No. 130,492

Int. Cl. C08g *51/04, 51/58*

U.S. Cl. 260—37 PC 4 Claims

A method is provided for improving the resistance of polycarbonate resins to yellowing, resulting from molding the resin at temperatures between 500° F.–700° F. There is utilized an effective amount of an organosilicon hydride such as trihexylsilane. There also is provided polycarbonate compositions made by such method exhibiting stability toward color change during molding and subsequent fabrication.

3,679,630

CURABLE COMPOSITIONS COMPRISING A POLYEPOXIDE, A POLYISOCYANATO SILANE AND A CATALYST THEREFOR

Frederick P. Corson, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Dec. 11, 1970, Ser. No. 97,326

Int. Cl. C08g *30/14*

U.S. Cl. 260—47 EN 9 Claims

Curable epoxide compositions comprise (a) a polyepoxide such as the diglycidyl ether of bisphenol A, (b) a polyisocyanatosilane such as diisocyanatodiphenylsilane and (c) a curing catalyst therefor such as a phosphonium compound, a quaternary ammonium halide, an alkali metal halide or cyanate, an aliphatic tertiary amine, or a tertiary phosphine.

3,679,631

HIGHER HEAT SET SPANDEX PREPARED FROM A MIXTURE OF A POLYETHER OR POLYESTER PREPOLYMER AND A DIHYDRIC PHENOL AND METHOD OF PREPARATION

Nathan Mayes, Barrington, R.I., assignor to Globe Manufacturing Company, Fall River, Mass.

No Drawing. Filed Feb. 8, 1971, Ser. No. 113,609

Int. Cl. C08g *22/10, 22/14*

U.S. Cl. 260—47 CB 16 Claims

The heat setting of cross-linked spandex can be increased by adding a dihydric phenol, preferably bisphenol A, to the preformed polyester or polyether prior to reaction with the organic polyisocyanate and subsequently curing, e.g., with a polyamine. The use of the dihydric phenol also permits faster curing of the spandex at lower temperature.

3,679,632

POLYAMIDE ACID COMPOSITION AND METHOD OF PREPARATION

Ralph G. Flowers, Pittsfield, and Thomas L. Sherer, Richmond, Mass., assignors to General Electric Company

No Drawing. Continuation-in-part of application Ser. No. 641,131, May 25, 1967. This application Dec. 29, 1969, Ser. No. 888,852

Int. Cl. C08g *20/32*

U.S. Cl. 260—47 CP 4 Claims

A polyamide-acid is prepared by reacting a dianhydride with a diamine formed from the reaction of a diepoxide compound and a diamine. The resultant polyamide-acid is then converted to a polyimide by heating. The polyimide compound is useful for electrical insulating purposes, especially in the form of coatings on electrical conductors.

3,679,633

ELONGATION-SET POLYURETHANE ELASTOMERIC FIBERS AND PROCESS OF PREPARATION

Kanji Matsubayashi and Hiroyuki Segawa, Kurashiki, Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

Continuation of application Ser. No. 498,470, Oct. 20, 1965. This application Jan. 6, 1970, Ser. No. 924

Claims priority, application Japan, Dec. 19, 1964, 39/71,840

Int. Cl. C08g *22/08, 53/20;* C01f *7/06*

U.S. Cl. 260—75 NE 4 Claims

Elongation-set polyurethane elastomeric fibers are prepared by drawing the fiber formed from a reaction product of a polymeric diol having a molecular weight between 200 and 8,000, an organic diisocyanate and a glycol and heat treating the drawn fiber to reduce the elongation to a value not exceeding 150%.

3,679,634

POLYMERS OF FLUORINATED ETHYLENE IMINES AND THEIR USE FOR TEXTILE FINISH

Erich Schulerer and Werner Renz, Burghausen, and Hans Sommer, Hofheim, Taunus, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed July 27, 1970, Ser. No. 58,648

Claims priority, application Germany, Aug. 8, 1969, P 19 40 351.1

Int. Cl. C08g *22/02*

U.S. Cl. 260—77.5 B 4 Claims

Fluorinated polymers and copolymers are obtained by reacting toluene diisocyanate with fluorinated alkanols, optionally in admixture with fluorine-free alkanols, and ethylene imine and polymerizing the so-obtained ethylene

imine ureas in the presence of boron trifluoride. The polymers and copolymers are water- and oil-repellent agents for fibrous materials, especially textiles.

3,679,635
OPERATION OF POLYAMIDE CONTINUOUS POLYMERIZATION SYSTEM
Bruce W. Portus, Greenville, S.C., assignor to Fiber Industries, Inc.
No Drawing. Filed July 8, 1970, Ser. No. 53,270
Int. Cl. C08g *20/20*
U.S. Cl. 260—78 R **7 Claims**

Polyamide continuous polymerization system is operated by maintaining inert, substantially oxygen-free blankets through the system during start-up and shutdown periods.

3,679,636
FORMATION OF AROMATIC POLYAMIDES IN GAMMABUTYROLACTONE AS MUTUAL SOLVENT FOR AROMATIC DIAMINES, AND 2,6-LUTIDINE
Elliot A. Vogelfanger, Edison, N.J., assignor to Celanese Corporation, New York, N.Y.
No Drawing. Filed Sept. 26, 1969, Ser. No. 861,491
Int. Cl. C08g *20/20*
U.S. Cl. 260—78 R **7 Claims**

Aromatic diamines and aromatic diacid halides are reacted to form high-molecular weight polyamides in a mutual solvent system comprising anhydrous gammabutyrolactone and at least one amine acid acceptor, e.g., 2,6-lutidine.

3,679,637
CATIONIC PRECIPITATION POLYMERIZATION OF VINYL CARBAZOLE
Eugene V. Hort, Piscataway, N.J., assignor to GAF Corporation, New York, N.Y.
No Drawing. Filed Mar. 12, 1970, Ser. No. 19,092
Int. Cl. C08f *7/16*
U.S. Cl. 260—88.3 **10 Claims**

A process is provided for obtaining particulate low molecular weight poly(vinyl carbazole) comprising charging (1) monomeric vinyl carbazole, (2) an inert, organic solvent for said vinyl carbazole, said solvent being a nonsolvent for the resulting polymer and (3) a catalytically effective amount of a cationic polymerization catalyst to a polymerization zone; maintaining the resulting mixture in said zone at a temperature ranging from about −50° C. to about +100° C. for a period of time sufficient to cause polymerization of said monomer and substantially simultaneous precipitation of discrete particles of poly(vinyl carbazole) forming a polymer slurry, and thereafter recovering said polymer from said slurry.

3,679,638
PREPARING FINELY DIVIDED COPOLYAMIDES BY PRECIPITATION FROM ALCOHOL-WATER SOLUTION
Hans Helmuth Korsgen, Praroman-Le Mouret, and Wolfgang Weller, Bulle, Switzerland, assignors to Coathylene S.A., Fribourg, Switzerland
No Drawing. Filed Apr. 8, 1970, Ser. No. 26,801
Claims priority, application Austria, Apr. 14, 1969, A 3,591/69
Int. Cl. C08g *20/38*
U.S. Cl. 260—78 S **16 Claims**

Very finely divided powdered copolyamides, particularly ternary copolyamides melting between 100°–200° C., are prepared by first dissolving the copolyamide in a mixture of C_1–C_5 alcohol and water containing a dissolved ionizable salt as a precipitation aid, and thereafter removing the solvent as by evaporation.

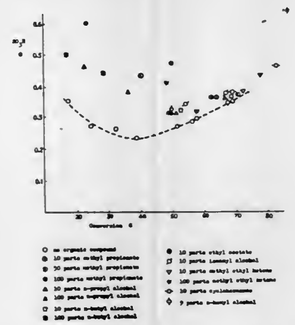
3,679,639
CURABLE COMPOSITIONS OF AN UNSATURATED BIS-AMIDE, A DIAMINE, AND A MULTICYCLIC AROMATIC COMPOUND
Michel Bargain, Lyon, Max Gruffaz, Le Mulatiere, Serge Laurent, Bron, and Maurice Mallet, Lyon, France, assignors to Rhone-Poulenc S.A., Paris, France
No Drawing. Filed Apr. 16, 1970, Ser. No. 29,286
Claims priority, application France, Apr. 18, 1969, 6912222
Int. Cl. C08g *20/00*
U.S. Cl. 260—78 U **8 Claims**

Compositions curable by heating to give resins of good heat resistance comprise (a) a prepolymer of an N,N′-bis-imide of an unsaturated dicarboxylic acid and a diamine and (b) an aromatic compound of 2 to 3 benzene rings.

3,679,640
METHOD FOR MAKING HYDRAZINE DERIVATIVES OF COPOLYMERS OF VINYL AROMATIC COMPOUNDS AND α,β-UNSATURATED DICARBOXYLIC ACIDS OR ANHYDRIDES
Eugene R. Moore and William R. R. Park, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.
No Drawing. Continuation-in-part of application Ser. No. 583,435, Sept. 30, 1966. This application Sept. 25, 1969, Ser. No. 861,167
Int. Cl. C08f *27/08*
U.S. Cl. 260—78.5 T **4 Claims**

The invention concerns a method for making hydrazine derivatives of resinous copolymers of monovinyl aromatic compounds and α,β-monoethylenically unsaturated dicarboxylic acids or their anhydrides.

3,679,641
PRODUCTION OF ACRYLONITRILE UNSATURATED SULFONIC ACID COPOLYMERS
Kenji Takeya, Saidaiji, Japan, assignor to Japan Exlan Company Limited, Osaka, Japan
Continuation-in-part of application Ser. No. 672,892, Oct. 4, 1967. This application May 27, 1970, Ser. No. 40,930
Claims priority, application Japan, Oct. 18, 1966, 41/68,756
Int. Cl. C08f *15/02, 15/40*
U.S. Cl. 260—79.3 MU **1 Claim**

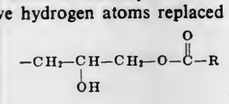


Copolymers of at least 80% of acrylonitrile, about 0.1 to 5% of an ethylenically unsaturated organic sulfonic acid or a salt thereof and up to 19.9% of at least one ethylenically unsaturated monomer which is copolymerizable with acrylonitrile and the aforesaid sulfonic acid or its salt, are prepared in aqueous polymerization medium in the presence of an organic compound which is a non-solvent for the copolymer but is a solvent for the monomer(s) other than the sulfonic acid or its salt.

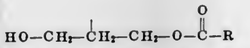
3,679,642
HYDROXYL CONTAINING COPOLYMERS
Joseph A. Vasta, Woodbury, N.J., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
No Drawing. Filed Oct. 8, 1970, Ser. No. 79,348
Int. Cl. C08f *15/00, 15/40*
U.S. Cl. 260—80.72 **8 Claims**

Polymers of ethylenically unsaturated monomers, containing

(A) at least 5% by weight of the total polymer of ethylenically unsaturated carboxylic acid monomer units having active hydrogen atoms replaced with



and/or



radicals, wherein R is a tertiary aliphatic hydrocarbon radical having the structure

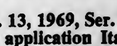


where R_1 is $—CH_3$ and R_2 and R_3 are alkyl groups of 1–12 carbon atoms; and

(B) up through 10% by weight of the total polymer of vinyl pyrrolidone units, and coating compositions containing such polymers.

3,679,643
COPOLYMERS OF ACRYLONITRILE WITH NITROGENOUS MONOMERS AND PROCESS FOR THEIR PREPARATION
Giulio Natta, Ferdinando Danusso, and Paolo Ferruti, Milan, Italy, assignors to Montecatini Edison S.p.A., Milan, Italy
Filed Feb. 13, 1969, Ser. No. 798,949
Claims priority, application Italy, Feb. 16, 1968, 12,832/68
Int. Cl. C08f *15/22*
U.S. Cl. 260—85.5 R **5 Claims**

A new composition of matter comprising a copolymer of acrylonitrile and an enamine having the general formula:



wherein R is an aliphatic, cycloaliphatic or aromatic hydrocarbon residue, R′ and R″ may be the same or different, and are aliphatic, cycloaliphatic or aromatic hydrocarbon residues or hydrogen and X is a radical derived from a secondary amine by removal of the hydrogen atom bound to the nitrogen are disclosed. Copolymer is prepared by reacting acrylonitrile and the enamine in the presence of a free radical initiator.

3,679,644
POLYALKYLMETHACRYLATES AS POUR POINT DEPRESSANTS FOR LUBRICATING OILS
Pieter H. van der Meij and Arnold A. Buitelaar, Amsterdam, Netherlands, assignors to Shell Oil Company, New York, N.Y.
No Drawing. Original application Aug. 19, 1968, Ser. No. 753,777, now Patent No. 3,598,736, dated Aug. 10, 1971. Divided and this application July 15, 1970, Ser. No. 56,231
Claims priority, application Great Britain, Aug. 30, 1967, 39,700/67
Int. Cl. C08f *3/64, 3/66, 15/18*
U.S. Cl. 260—86.1 E **4 Claims**

Pour points of lubricating oils with widely varying viscosities are depressed by adding thereto small amounts of novel oil soluble polyalkylmethacrylates.

3,679,645
FREE RADICAL PRECIPITATION POLYMERIZATION OF VINYL CARBAZOLE
Eugene V. Hort, Piscataway, N.J., assignor to GAF Corporation, New York, N.Y.
No Drawing. Filed Mar. 12, 1970, Ser. No. 19,073
Int. Cl. C08f *7/16*
U.S. Cl. 260—88.3 **11 Claims**

A process is provided for obtaining particulate high molecular weight poly(vinyl carbazole) comprising charging (1) monomeric vinyl carbazole, (2) an inert organic solvent for said vinyl carbazole, said solvent being a nonsolvent for the resulting polymer, and (3) a catalytically effective amount of a free radical polymerization catalyst to a polymerization zone; heating the resulting mixture in said zone at a temperature ranging from about 45° C. to about 150° C. for a period of time sufficient to cause polymerization of said monomer and substantially simultaneous precipitation of discrete particles of poly(vinyl carbazole) forming a polymer slurry, and thereafter, recovering said polymer from said slurry.

3,679,646
PREPARATION OF POLYVINYL ALCOHOL HAVING IMPROVED COLOR PROPERTIES BY TREATING THE POLYVINYL ESTER WITH AN ALKALI METAL BOROHYDRIDE
John E. Bristol, Niagara Falls, N.Y., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
No Drawing. Filed Aug. 5, 1970, Ser. No. 61,464
Int. Cl. C08f *27/16*
U.S. Cl. 260—91.3 PV **5 Claims**

Polyvinyl alcohol having improved color properties is prepared in a process in which an alcoholic solution of the polyvinyl ester utilized to prepare the polyvinyl alcohol is treated with an alkali metal borohydride prior to the alcoholysis of the polyvinyl ester to the corresponding polyvinyl alcohol.

3,679,647
PREPARATION OF POLYVINYL ALCOHOL HAVING IMPROVED COLOR PROPERTIES BY TREATING THE POLYVINYL ESTER WITH MAGNESIUM METAL
John E. Bristol, Niagara Falls, N.Y., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
No Drawing. Filed Aug. 5, 1970, Ser. No. 61,483
Int. Cl. C08f *27/16*
U.S. Cl. 260—91.3 PV **10 Claims**

Polyvinyl alcohol having improved color properties is prepared in a process in which an alcoholic solution of the polyvinyl ester utilized to prepare the polyvinyl alcohol is treated with magnesium metal, in the presence of an acid such as acetic acid or sulfuric acid, prior to the alcoholysis of the polyvinyl ester to the corresponding polyvinyl alcohol.

3,679,648
PREPARATION OF POLYVINYL ALCOHOL HAVING IMPROVED COLOR PROPERTIES BY TREATING THE POLYVINYL ESTER WITH AN ALKALINE EARTH METAL HYDRIDE
John E. Bristol, Niagara Falls, N.Y., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
No Drawing. Filed Aug. 5, 1970, Ser. No. 61,466
Int. Cl. C08f *27/16*
U.S. Cl. 260—91.3 PV **6 Claims**

Polyvinyl alcohol having improved color characteristics is prepared in a process in which an alcoholic solution of the polyvinyl ester utilized to prepare the polyvinyl alcohol is treated with an alkaline earth metal hydride prior to the alcoholysis of the polyvinyl ester to the corresponding polyvinyl alcohol.

3,679,649
POLYVINYL ALCOHOL ESTERIFICATION IN N-METHYL-2-PYRROLIDONE

Harlan B. Freyermuth, Easton, and Nathan D. Field, Allentown, Pa., assignors to GAF Corporation, New York, N.Y.

No Drawing. Filed Dec. 29, 1969, Ser. No. 888,816

Int. Cl. C08f *27/12*

U.S. Cl. 260—91.3 VA **5 Claims**

A process of esterifying polyvinyl alcohol using N-methyl-2-pyrrolidone as a solvent is disclosed.

3,679,650
PROCESS FOR THE PRECIPITATION POLYMERIZATION OF α-METHYLSTYRENES WHICH MAY BE SUBSTITUTED

Herbert Schott, Hofheim, Taunus, and Walter Herwig, Frankfurt am Main, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed Aug. 13, 1970, Ser. No. 63,616

Claims priority, application Germany, Aug. 19, 1969, P 19 42 017.8

Int. Cl. C08f *7/04, 1/08*

U.S. Cl. 260—93.5 S **8 Claims**

A process is disclosed for the precipitation polymerization of α-methylstyrene, which may be substituted, in the presence of a hydrocarbon inert to alkali metals, at least one finely divided alkali metal, a phosphoric acid amide as accelerator and a co-accelerator, at temperatures within the range of from —20° C. to +40° C. The polymers thus are obtained in a grainy, filterable form.

3,679,651
METHOD OF POLYMERIZING STYRENE

Toshimichi Kii, Tokyo, and Motoshi Suka, Yokohama, Japan, assignors to Mitsui Toatsu Chemicals Incorporated, Tokyo, Japan

Filed Aug. 29, 1968, Ser. No. 756,270

Int. Cl. C08f *1/04, 1/06, 7/04*

U.S. Cl. 260—93.5 S **3 Claims**

Process for treating viscous fluids, such as are obtained during the polymerization of monomers, e.g., styrene, comprising, continuously feeding the fluid to and agitating the fluid in a mixing and reaction zone wherein it is caused to flow in reverse directions at high flow rates and into contact with heat exchange surfaces whereby the polymerizing mixture is simultaneously and perfectly mixed while a large amount of sensible heat is absorbed, subjecting the fluid to one or more stages wherein it is continuously moved through a tubular heat exchange zone, then through an annular heat exchange zone containing, in addition, heat exchange tubes, accompanied by recirculating at high flow rates of the fluid from one zone to the other while contacting it with heat exchange surfaces and while maintaining as small a temperature differential between the heat exchange surfaces and the fluid as provides the desired heat exchange.

3,679,652
OLEFIN POLYMERIZATION CATALYST AND PROCESS

Arthur William Anderson, Windsor Hills, Wilmington, and William Lawrence Truett, Mayfield, Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed May 15, 1956, Ser. No. 584,887

Int. Cl. C08f *1/38, 3/06*

U.S. Cl. 260—94.9 B **3 Claims**

Alpha-olefins are polymerized with a catalyst prepared by reacting a metal above hydrogen in the electromotive series with a transition metal halide. The character of the polymer and the yield are dependent upon the fineness of the metal component, which should be below 10 microns.

3,679,653
HORMONALLY-ACTIVE REACTION PRODUCT OF A POLYMER WITH A HORMONE

James M. Schuck, Chesterfield, and Bernard S. Wildi, Kirkwood, Mo., assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Sept. 27, 1968, Ser. No. 763,364

Int. Cl. A61k *17/00;* **C07c** *103/52;* **C08f** *27/08*

U.S. Cl. 260—112.5 **9 Claims**

A hormonally-active reaction product of a peptidic hormone such as bovine growth hormone, insulin, vasopressin, adrenocorticotropic hormone, and the like, with a copolymer of an olefinically unsaturated polycarboxylic acid and an olefin. The hormone is covalently bound to the polymer through an amino, hydroxyl, or sulfhydryl group of the hormone which is not essential for hormonal activity. These products have improved stability, are substantially odorless and colorless, and have prolonged activity when contrasted with the native hormone.

3,679,654
INTERFERON OR VIRAL INHIBITOR PROTEIN INDUCTION

Roland Maes, Rio de Janeiro, Brazil (94 Boudgenotenlaan, 3000 Leuven, Belgium)

Filed Aug. 11, 1969, Ser. No. 848,959

Claims priority, application Brazil, Aug. 20, 1968, 201,650

Int. Cl. C07c *103/52*

U.S. Cl. 260—112.5 **10 Claims**

Complex substances capable of provoking the release or formation of interferon or viral inhibitory proteins when introduced into a host are produced by reacting single-stranded or multi-stranded nucleic acid polymers with cationically charged polymers having a molecular weight between about 10^3 and 10^8 in specified proportions, e.g. 10 parts of nucleic acid polymer to 1 part to 100 parts cationic polymer by weight.

3,679,655
N,N-DISUBSTITUTED AMINOETHYLCARBAMYL PROTECTING GROUPS FOR CYSTEINE

Georg Jager, Raunheim (Main), and Rolf Geiger, Frankfurt am Main, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed June 20, 1969, Ser. No. 835,259

Claims priority, application Germany, June 28, 1968, P 17 68 777.3; July 31, 1968, P 17 93 089.1; June 14, 1969, P 19 30 330.1

Int. Cl. C07c *101/00, 103/52, 155/08*

U.S. Cl. 260—112.5 **2 Claims**

A method of protecting the sulfur atom of cysteine in peptide synthesis by reaction with β-[N,N-disubstituted]-aminoethyl isocyanate in which one substituent is methyl or ethyl and the other is benzyloxycarbonyl, t-butyloxycarbonyl, or adamantyloxycarbonyl. For removal of the protective group, the peptide is treated with a strong acid to form the acid salt of the corresponding monosubstituted N-ethyl or N-methyl amino compound and then made alkaline to liberate the amine. The protective group cleaves intramolecularly with formation of a methyl or ethyl-substituted imidazolone and the peptide in which the cysteine sulfur atom is present as sulfhydryl.

3,679,656
QUATERNIZED 1,2,4-TRIAZOLIUM-3-AZO DYESTUFFS

Masao Iizuka, Norio Igari, and Shigeo Maeda, Tokyo, Japan, assignors to Hodogaya Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

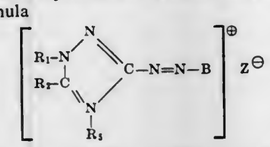
Filed May 15, 1969, Ser. No. 824,774

Claims priority, application Japan, May 20, 1968, 43/33,539

Int. Cl. C09b *29/00, 29/34, 43/00*

U.S. Cl. 260—157 **11 Claims**

Water-soluble quaternized cationic monoazo dyestuffs of the formula



wherein B is a residue of a coupling component and R_1, R_2, R_5 and $Z^{\ominus}$ are the radicals individually defined in the specification and claims. The cationic monoazo dyestuffs are suitable for the dyeing of various materials such as paper, mordant-treated cellulose fibers, acetate fibers, silk, leather, polyester fibers and the like and especially for the dyeing of fibrous materials made of polyacrylonitrile or copolymers thereof. The dyeings in orange to reddish violet shades obtained with the new dyestuff possess an excellent fastness to light, washing and the like. The dyestuff is further characterized by the fact that the resulting dyeing can be more completely discharged by treatment with stannous chloride than the dyeings obtained by analogous dyestuffs hitherto known.

3,679,657
MONOAZO DYESTUFFS

Nalin Binduprasad Desai and Ponnusami Jayaraman, Goregaon-Bombay, India, Visvanathan Ramanathan, Basel, and Klaus Artz, Muttenz, Switzerland, Navnitrai Nagarji Naik, Goregaon-Bombay, India, and Walter Jenny, Basel, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

No Drawing. Filed Mar. 11, 1969, Ser. No. 806,291

Claims priority, application Switzerland, Mar. 18, 1968, 3,958/68

Int. Cl. C09b *29/08*

U.S. Cl. 260—205 **4 Claims**

Dyestuffs containing at least one group of formula —X—CO—NR—SO_2, wherein R is a hydrogen atom or an optionally substituted alkyl, cycloalkyl, aryl, or heterocyclic group, and X is an oxygen or sulphur atom or a group of formula —NR_1—, where R_1 is a hydrogen atom or an optionally substituted alkyl, cycloalkyl, aryl or heterocyclic group.

3,679,658
CALCIUM CARBOXYLALKYL ETHERS OF GALACTOMANNAN GUMS

Mao Hsun Yueh and Eugene D. Schilling, Minneapolis, Minn., assignors to General Mills, Inc.

No Drawing. Continuation-in-part of application Ser. No. 680,016, Nov. 2, 1967. This application Feb. 3, 1970, Ser. No. 8,440

Int. Cl. C07c *47/18*

U.S. Cl. 260—209 R **7 Claims**

A thickening and fiber forming composition comprised of a carboxymethyl galactomannan in which at least part of the carboxymethyl group is present as the calcium salt and the degree of substitution is 0.6–2.0 and a process for the making of the salt which comprises mixing of the carboxymethyl galactomannan or a soluble salt thereof with a compound containing calcium in an aqueous medium.

3,679,659
PROCESS FOR THE PREPARATION OF SODIUM GLUCOHEPTONATE

Henry C. Zak, Great Notch, N.J., assignor to Belzak Corporation, Clifton, N.J.

No Drawing. Filed Dec. 18, 1969, Ser. No. 886,398

Int. Cl. C07c *47/18*

U.S. Cl. 260—209 R **12 Claims**

A soluble cyanide is reacted with dextrose hydrate or anhydrous dextrose, for example, in an aqueous solution having a total solids content of 50–65% by weight at 0°–40° C. while removing ammonia produced in the reaction by sparging or vacuum over a period of 4–12 hours, whereby a pure light colored alpha glucoheptonate salt crystallizes directly from solution in high yield. A second crop of crystalline alpha glucoheptonate salt is obtained by concentrating the mother liquor; the remaining mother liquor being a desirably light colored solution in the beta isomer. Glucoheptonic acid and its lactone are obtained from the salts. The process is also operable with other 6-carbon atom aldo- and keto-sugars; e.g. with invert sugar to produce alpha and beta glucoheptonate and alpha and beta fructoheptonate. The process provides solutions of glucoheptonates capable of being spray dried according to conventional techniques to provide dry, crystalline glucoheptonates.

3,679,660
GLUCOSAMINE-ALKYLSULFONATE AND PROCESS

Agatha C. Magnus, 430 LaLoma Road, Pasadena, Calif. 91105

No Drawing. Filed June 9, 1969, Ser. No. 831,734

Int. Cl. C07c *95/04*

U.S. Cl. 260—211 R **2 Claims**

The disclosure relates to a series of food and pharmaceutical additives comprising molecules which, when in aqueous solution, form an ion with a terminal hydrophilic group and a terminal hydrophobic group. Particularly useful compounds include amine salts joined to the hydrophobic group, alkane sulfonic acids joined to the hydrophobic group and cholesterics. A new chemical, glucosamine-n-alkylsulfonate is also disclosed.

3,679,661
PREPARATION OF WATER-SOLUBLE, DYED SUBSTRATES FOR AMYLASE ASSAY

Arthur L. Babson, Morristown, N.J., assignor to Warner-Lambert Company, Morris Plaines, N.J.

No Drawing. Continuation-in-part of application Ser. No. 771,354, Oct. 28, 1968, now Patent No. 3,597,322, dated Aug. 3, 1971, which is a continuation-in-part of abandoned application Ser. No. 521,814, Jan. 20, 1966. This application Dec. 21, 1970, Ser. No. 100,373

Int. Cl. C08b *19/00, 19/12*

U.S. Cl. 260—233.3 R **14 Claims**

Water-soluble, dyed substrates for use in assaying amylase activity in such media as body fluids, plant extracts, and the like, are prepared by coupling, in an aqueous alkaline solution, a reactive dye with a starch or

starch fraction, such as amylose or amylopectin and removing all unreacted dye from the water-soluble substrate obtained. Gel filtration or dialysis can be used as the purification process, provided the process is monitored to detect the presence of free dye in the purified solution of dyed substrate. To monitor the purification procedure, an alcoholic tannic acid precipitating agent is used to precipitate the dyed substrate from a sample of the solution being purified and the supernatant fluid is observed for the presence of color; color in the supernatant fluid indicates that some free dye remains, and that the dyed substrate solution requires further purification. The preferred precipitating agent contains a 0.5% to 2% tannic acid in 50% alcohol, buffered to a pH of 5.0 to 5.5 and brought to a temperature of from about 20° C. to about 30° C.

3,679,662

TETRAHYDROCYCLOPROPADIBENZAZEPINE DERIVATIVES

Katsura Morita and Kenya Kawashima, Osaka, Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

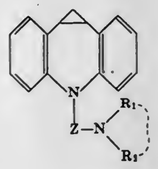
No Drawing. Filed June 9, 1970, Ser. No. 44,895

Claims priority, application Japan, June 20, 1969, 44/48,750, 44/48,751; Mar. 3, 1970, 45/18,103; Apr. 27, 1970, 45/36,176

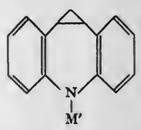
Int. Cl. C07d *41/08, 57/00, 99/04*

U.S. Cl. 260—239 D **8 Claims**

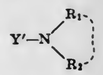
Novel compounds of the general formula



(wherein Z stands for a lower alkylene or a carbonyl group, each R_1 and R_2 stands for hydrogen atom, an alkyl group, or an aryl group, and R_1 and R_2 may form with the adjacent nitrogen atom a heterocyclic group) or its pharmaceutically acceptable salts, are prepared by reacting



with a compound of the general formula



[wherein R_1 and R_2 have the same meaning as above, and one of M′ and Y′ is hydrogen atom and the other is a radical of Y—Z (wherein Y stands for a halogen atom and Z has the same meaning as above)], and if desired, converting the resultant to pharmaceutically acceptable salts. The novel compounds are useful as psychotropic drugs such as antidepressants, major tranquilizers, anti-Parkinson agents, antihistaminic agents, anticonvulsants and antiepileptics.

3,679,663

PIVALOYLOXYMETHYL HETACILLIN

John Michael Essery, Fayetteville, N.Y., assignor to Bristol-Myers Company, New York, N.Y.

Filed Oct. 28, 1970, Ser. No. 84,743

Int. Cl. C07d *99/16*

U.S. Cl. 260—239.1 **1 Claim**

The specification discloses the compound pivaloyloxymethyl hetacillinate and a method for the preparation thereof. This compound is useful in the treatment of infectious diseases in mammals.

3,679,664

3-AZA-A-HOMO-STEROIDS

Arvin Pranlal Shroff, Somerville, N.J., assignor to Ortho Pharmaceutical Corporation

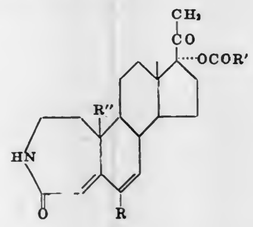
No Drawing. Original application June 18, 1965, Ser. No. 465,175. Divided and this application Jan. 14, 1970, Ser. No. 7,326

The portion of the term of the patent subsequent to July 15, 1986, has been disclaimed

Int. Cl. C07c *169/36;* **C07d** *101/00*

U.S. Cl. 260—239.3 P **4 Claims**

Compounds of the formula:



wherein R is hydrogen, methyl, ethyl, chlorine, bromine or fluorine, R′ is hydrogen or alkyl from 1 to 11 carbon atoms and R″ is hydrogen or methyl, are potent progestational agents and possess anti-ovulatory activity.

3,679,665

LACTAM-N-CARBOXYLIC ACID CHLORIDES AND THEIR PRODUCTION

Hans Kiefer, Wachenheim, Germany, assignor to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Filed Sept. 22, 1969, Ser. No. 860,025

Int. Cl. C07d *41/06*

U.S. Cl. 260—239.3 R **6 Claims**

The production of lactam-N-carboxylic acid chlorides having 5 to 13 ring members by reacting with a hydrogen halide a 1-aza-2-hydroxycycloalkene-(2)-carboxylic acid chloride-(1) which is etherified in the 2-position. Lactam-N-carboxylic acid chlorides are suitable for the production of N-substituted lactams from which the correspondingly substituted polyamides may be produced.

3,679,666

4-[4-HYDROXYPIPERIDINO]-4′-FLUOROBUTYROPHENONES

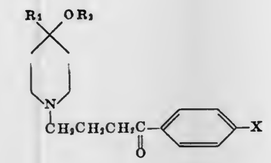
Nicholas Malatestinic, Staten Island, N.Y., and Albert Ziering, Nutley, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Original application July 1, 1966, Ser. No. 563,962. Divided and this application Apr. 3, 1969, Ser. No. 813,317

Int. Cl. C07d *29/20*

U.S. Cl. 260—293.8 **2 Claims**

Compounds of the formula



I

are described. These compounds are useful as analgesics, anti-pyretic and anti-inflammatory agents.

3,679,667

ESTERS OF 3-(2,2-TETRAMETHYLENE ETHENYL)-2,2 - DIMETHYLCYCLOPROPANECARBOXYLIC ACID

Wayne I. Fanta, Colerain Township, Hamilton County, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

No Drawing. Filed Mar. 27, 1970, Ser. No. 23,513

Int. Cl. C07d *5/34*

U.S. Cl. 260—240 R **10 Claims**

Described are esters of certain carbocyclic alcohols with 3-(2,2-tetramethylene ethenyl) - 2,2 - dimethylcyclopropanecarboxylic acid and a method for preparing same in the transisomeric form. These esters possess unique insecticidal properties and are useful as such in home, garden and agricultural applications.

3,679,668

1,2,4-TRIAZOLYL-(1)-DERIVATIVES OF THE STILBENE AND BIS-STYRYLBENZENE SERIES, PROCESS FOR THEIR MANUFACTURE AND THEIR USE AS OPTICAL BRIGHTENERS

Anton Horn, Kelkheim, Taunus, Erich Schinzel, Hofheim, Taunus, and Gunter Rosch, Altenhain, Taunus, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed Apr. 13, 1970, Ser. No. 28,105

Claims priority, application Germany, Apr. 16, 1969, P 19 19 209.7; Mar. 13, 1970, P 20 11 916.8

Int. Cl. C07d *99/02*

U.S. Cl. 260—240 CA **11 Claims**

1,2,4-triazolyl-(1)-derivatives of the stilbene and bis-styrylbenzene series are obtained by condensation of the corresponding phenylhydrazines with formamide. The products are useful as optical brighteners for various substrates.

3,679,669

PHENYL-1,3,4-OXDIAZOLE COMPOUNDS

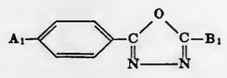
Erwin Maeder, Aesch, Basel-Land, and Adolf Emil Siegrist, Basel, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

No Drawing. Continuation of application Ser. No. 658,331, Aug. 4, 1967. This application Sept. 23, 1970, Ser. No. 74,873

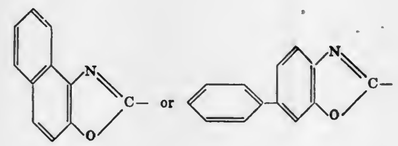
Int. Cl. C07d *85/52*

U.S. Cl. 260—240 D **11 Claims**

This invention relates to new phenyl-1,3,4-oxdiazole compounds of the formula



in which A_1 is the residue



and B_1 represents a member selected from the group consisting of a phenyl, diphenylyl, naphthyl, styryl and p-phenylstyryl residue, and these residues A_1 and B_1, preferably in the terminal phenyl residues, may also contain further non-chromophoric substituents. Such compounds are valuable optical brightening agents for organic materials.

3,679,670

ARSENIC CONTAINING BISAZIDE COMPOUNDS

Nicholas J. Clecak, San Jose, and Robert J. Cox, Los Gatos, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

No Drawing. Filed Nov. 26, 1971, Ser. No. 202,574

Int. Cl. C07c *117/00*

U.S. Cl. 260—240 G **3 Claims**

The novel compounds bis-(p-azidophenyl) arsenic acid and p-arseno (p-azidobenzylidene) aniline have been prepared and found useful as negative photoresists which leave metallic arsenic deposited on the substrate after development.

3,679,671

OXIDATION OF PHENYLACETONITRILE DERIVATIVES EMPLOYING A COPPER (II)-AMINE CATALYST SYSTEM

Laurence I. Peterson, Framingham, Mass., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Jan. 6, 1969, Ser. No. 789,378

Int. Cl. C07d *29/32*

U.S. Cl. 260—240 D **13 Claims**

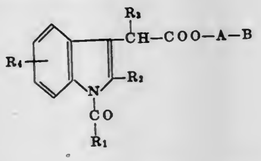
A new method of oxidizing various phenylacetonitrile derivatives employing a copper (II)-amine catalyst system; and the new 3-(amine substituted)-2-phenylacrylonitriles and 5-substituted derivatives of 3,5-diphenyl-3-pyrrolin-2-one prepared by this new method.

3,679,672
NOVEL ESTER OF 3-INDOLYLALIPHATIC ACID DERIVATIVE

Hisao Yamamoto, Nishinoye; Tadashi Okamoto, Ashiya-shi, and Tsuyoshi Kobayashi, Minoo-shi, all of Japan, assignors to Sumitomo Chemical Company, Ltd., Higashi-ku, Osaka, Japan

Filed Sept. 9, 1969, Ser. No. 856,484
Claims priority, application Japan, Sept. 10, 1968, 43/65456; Sept. 10, 1968, 43/65459; Nov. 14, 1968, 43/83367; Nov. 14, 1968, 43/83368; Feb. 10, 1969, 44/9857
Int. Cl. C07d 27/56
U.S. Cl. 260—240 J 3 Claims

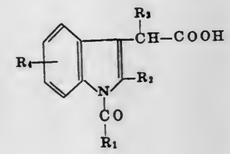
Novel 3-indolylacetate derivatives and salts thereof useful for anti-inflammatory agents which have the formula,



wherein R_1 is styryl, phenyl, halogenophenyl or methylenedioxyphenyl; R_2 and R_3 are independently hydrogen, methyl or ethyl; R_4 is hydrogen, halogen, C_1–C_4 alkyl or C_1–C_4 alkoxy; A is a group of the formula,

$$-CH_2-CH_2-O-CH_2-CH_2- \text{ or } -C_nH_{2n}-$$

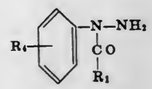
wherein n is an integer of 1–6; and B is amino, C_1–C_4 alkylamino, di C_1–C_4 alkylamino, morpholino, benzylpiperazino, piperazino, etc. The 3-indolylacetate derivatives are produced by reacting a 3-indolylacetic acid derivative of the formula,



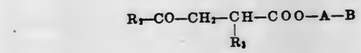
or a reactive derivative thereof with an alcohol derivative of the formula,

$$HO-A-B$$

or its reactive ester derivative, or reacting an N^1-acyl phenylhydrazine derivative of the formula,



or its salt or its hydrazone derivative with a keto ester derivative of the formula,



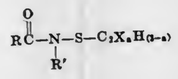
or its salt, in which formulas, R_1, R_2, R_3, R_4, A and B have the same meanings as defined above.

3,679,673
N-POLYHALOVINYLTHIOCARBOXAMIDES

Melancthon S. Brown, Berkeley, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. Nos. 810,368, March 25, 1969, abandoned, and Ser. No. 748,642, June 30, 1968, abandoned, Ser. No. 810,368, , which is a continuation-in-part of Ser. No. 748,642, , and Ser. No. 704,555, Feb. 12, 1968, abandoned, Ser. No. 748,642, , which is a continuation-in-part of Ser. No. 704,555,. This application April 30, 1970, Ser. No. 33,879
Int. Cl. C02d 41/06
U.S. Cl. 260—239.3 R 9 Claims

N-polyhalovinylthiocarboxamides of the formula:



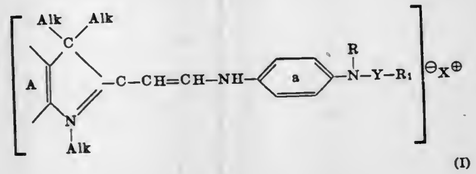
where R is an aliphatic hydrocarbon radical of one to 10 carbon atoms which has zero to about three halogen substituents of atomic number 17 to 35, R′ is hydrogen or alkyl of one to four carbon atoms with the proviso that R and R′ may be joined to form a linear alkylene radical of three to five carbon atoms which is bound to the carbonyl and nitrogen to form a ring, X is halogen of atomic number 17 to 35 and a is two or three. These carboxamides are fungicidal, algicidal and nematocidal.

3,679,674
BASIC HEMICYANINE DYESTUFFS

Herbert Friedrich, Offenbach/Main, and Gunther Trapp, Frankfurt/Main, both of Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt/Main, Germany

Filed June 13, 1969, Ser. No. 833,198
Claims priority, application Germany, June 20, 1968, P 17 69 631.0
Int. Cl. C07d 27/30
U.S. Cl. 260—240.8 6 Claims

Water-soluble basic dyestuffs of the formula



(I)

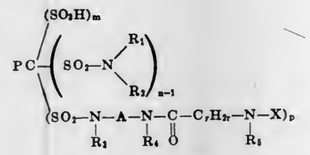
in which A stands for a benzene or naphthalene radical that may be substituted, ALK represents each a lower alkyl group preferably of one to four carbon atoms, R represents hydrogen or a lower alkyl radical preferably of one to four carbon atoms that may be substituted, Y represents a —CO— or —SO_2— group, R_1 is an aliphatic, araliphatic, aromatic or heterocyclic radical and X^- represents an anion, and wherein the benzene nucleus a may further contain non-ionic substituents, which are suitable for the dyeing or printing of textile fibrous materials consisting of native or regenerative cellulose, silk, acetate rayon, acid-modified polyamides or polyesters, polyacrylonitrile or polyvinylidene cyanide or leather.

3,679,675
PHTHALOCYANINES

Hans von Tobel, Riehen/BS, Switzerland, assignor to Sandoz Ltd., Basle, Switzerland

Filed March 30, 1970, Ser. No. 23,997
Claims priority, application Switzerland, April 3, 1969, 5157/69; April 25, 1969, 6314/69
Int. Cl. C07d 27/74
U.S. Cl. 260—242 11 Claims

Dyes of the formula



wherein
PC is the radical of a phthalocyanine,
R_1 and R_2 are each H or a hydrocarbon radical or, together with N, a hetero ring,
R_3 and R_4 are each H or (substituted) alkyl or, together with A and both N atoms, a hetero ring,
R_5 is H or (substituted) alkyl,
X is a fiber-reactive radical
m is 1 to 3,
n is 1 to 3,
p is 1 or 2,
r is 1 to 5,
the sum $m+n+p$ is 4 or 5,
are especially good for printing cellulosic and polyamide fibers.

3,679,676
THIADIAZABICYCLOALKANE COMPOUND

Karl Heusler, Basel, and Bruno Fechtig, Reinach-Basel-land, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Nov. 23, 1970, Ser. No. 92,231
Claims priority, application Switzerland, Nov. 27, 1969, 17673/69; June 5, 1970, 8473/70
Int. Cl. C07d 93/12
U.S. Cl. 260—243 R 1 Claim

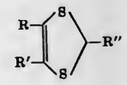
The 4,4-dimethyl-5-thia-2,7-diazabicyclo[4.2.0]oct-2-en-8-one, which is obtained by splitting the esterified carboxyl group in a 6-amino-3-etherified hydroxycarbonylamino-2,2-dimethyl-penam compound, is useful as intermediate of compounds of the 7-amino-cephalosporanic acid type.

3,679,677
1,3-DITHIOL COMPOUNDS

Akira Takamizawa, Ibaraki, and Kentaro Hirai, Kyoto, both of Japan, assignors to Shionogi & Co., Ltd., Higashi-ku, Osaka, Japan

Filed Feb. 11, 1970, Ser. No. 10,620
Claims priority, application Japan, Feb. 14, 1969, 44/11165
Int. Cl. A61k 27/00; C07d 87/46, 71/00
U.S. Cl. 260—247.1 21 Claims

A 1,3-dithiol compound represented by the formula:



wherein R and R′ represent each hydrogen, lower alkyl, aryl or ar(lower)alkyl and R″ represents hydroxy, lower alkoxy, (lower)alkylthio, aryloxy, arylthio, ar(lower)alkoxy, ar(lower)alkylthio or (mono- or di-substituted)aminothiocarbonylthio, being useful as antibacterial, antifungal, anti-inflammatory, insecticidal, miticidal agents or their intermediates, is prepared from a 1,3-di-thiol-2-yliden-ammonium salt in 3 steps.

3,679,678
DIAMINO-S-TRIAZINES

Karl-Heinz Koenig; Artur Maschke, both of Ludwigshafen, and Adolf Fischer, Mutterstadt, all of Germany, assignors to Badische Anilin-& Soda-Fabrik Aktiengesellschaft, Ludwighsafen/Rhein, Germany

Filed Nov. 21, 1968, Ser. No. 777,873
Int. Cl. C07d 55/20
U.S. Cl. 260—249.8 3 Claims

Valuable new triazine derivatives having good herbicidal properties, especially for controlling unwanted plants without damaging crop plants.

3,679,679
PREPARATION OF QUINOXALINE-DI-N-OXIDES FROM O-QUINONEDIOXIME AND BUTENE-1,4-DIONES

Beryl William Dominy, Groton, Conn., assignor to Pfizer Inc., New York, N.Y.

Filed April 3, 1970, Ser. No. 25,544
Int. Cl. C07d 51/78
U.S. Cl. 260—250 R 8 Claims

Preparation of quinoxaline-di-N-oxides through a condensation of o-quinonedioxime and a butene-1,4-dione in a reaction-inert solvent at 20°–150° C.

3,679,680
PROCESS FOR PREPARING DISUBSTITUTED PYRAZINES

Malvin J. Michelson, Poughkeepsie, and William P. Doyle, Lagrangeville, both of N.Y., assignors to Texaco Inc., New York, N.Y.

Filed Sept. 3, 1969, Ser. No. 855,038
Int. Cl. C07d 51/76
U.S. Cl. 260—250 R 4 Claims

This invention concerns a one step process for preparing alkylated pyrazines comprising contacting aliphatic nitroketones under mild reducing conditions of temperature and pressure with a reducing catalyst such as Raney nickel.

3,679,681
DIGLYCIDYL ETHERS

Juergen Habermeier, Allschwil; Hans Batzer, Ariesheim, and Daniel Porret, Binningen, all of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

Filed Jan. 7, 1970, Ser. No. 1,289
Claims priority, application Switzerland, Jan. 24, 1969, 1104/69
Int. Cl. C07d 49/32, 51/42
U.S. Cl. 260—256.4 C 9 Claims

New diglycidyl ethers of binuclear, five-membered or six-membered, unsubstituted or substituted, oxyalkylated N-

hetero-cyclic compounds, which contain two NH groups in the molecule, by reaction of binuclear, five-membered or six-membered, unsubstituted or substituted, N-heterocyclic compounds, such as bis-(hydantoin) or bis-(dihydrouracil) compounds, for example 1,1'-methylene-bis-(5,5-dimethylhydantoin), bis-(5,5-dimethylhydantoinyl-3)-methane or 1,1'-methylene-bis-(5,6-dihydrouracil) with ethylene oxide, for example ethylene oxide or propylene oxide, to give the corresponding monohydroxy or dihydroxy compounds, and subsequent glycidylation of the OH groups or of the OH group and the NH group to give the corresponding glycidyl ethers. The new diglycidyl ethers can be crosslinked by means the usual curing agents for epoxides to form insoluble and infusible products with good mechanical properties.

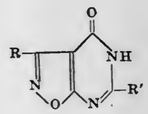
3,679,682

CERTAIN 5H-ISOXAZOLO[5,4-D]PYRIMIDIN-4-ONES

Loren K. Gibbons, Medina, N.Y., assignor to FMC Corporation, New York, N.Y.

Filed April 23, 1970, Ser. No. 31,414
Int. Cl. C07d *99/04*
U.S. Cl. 260—256.4 F **13 Claims**

Outstanding herbicidal activity is exhibited by the respective members of the group of new isoxazolopyrimidines that are included within the general formula:



wherein R and R', which may be the same or different, are each members of the group consisting of lower (one to four carbon atoms)—aliphatic, lower (three to six carbon atoms)—cycloaliphatic and trifluoromethyl radicals;
and the metallic and amine salts thereof.

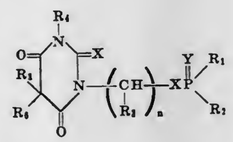
3,679,683

BARBITURATE 3-N-METHYLENE PHOSPHATES

Martin L. Gerbaty, Elizabeth, N.J., assignor to Esso Research and Engineering Company

Filed May 11, 1970, Ser. No. 36,430
Int. Cl. C07d *51/20, 51/24*
U.S. Cl. 260—257 **16 Claims**

Barbiturate phosphates characterized by the following structural formula:



wherein R_1 and R_2 are each selected from the group consisting of C_1–C_6 alkoxy, C_1–C_6 thioalkyl, C_1–C_6 alkyl, C_3–C_6 alkoxyalkyl, phenyl, phenoxy, thiophenyl, wherein said groups can be optionally substituted with chlorine, bromine, nitrile or nitro; R_4 and R_5 may or may not be the same; R_3 is one selected from the group consisting of hydrogen, C_1–C_6 alkyl, optionally substituted with chlorine or bromine; R_4 is one selected from the group consisting of hydrogen, C_1–C_6 alkyl, optionally substituted with chlorine or bromine, phenyl, bromo or chloro-substituted phenyl, C_1–C_4 alkylamino, C_2–C_4 dialkylamino, C_2–C_4 acyl, C_1–C_4 thioalkyl, C_1–C_4 alkylsulfoxide, C_1–C_4 alkylsulfone, C_2–C_4 alkoxyalkyl, C_2–C_6 alkenyl, C_3–C_6 alkynyl; R_5 and R_6 are each selected from the group consisting of C_1–C_6 alkyl, phenyl, C_1–C_6 chloro or bromo-substituted alkyl, C_1–C_4 alkylthio, thiophenyl optionally substituted by chlorine, bromine, C_1–C_4 alkyl or nitro, C_1–C_4 alkylsulfoxide, C_1–C_4 alkylsulfonyl, C_1–C_4 alkoxy, C_2–C_8 alkoxyalkyl, C_1–C_6 monoalkylamino and C_2–C_6 dialkyl amino, cyano, thiocyano, C_2–C_6 alkenyl, C_3–C_6 alkynyl, nitro, C_3–C_6 cycloalkyl and C_3–C_6 cycloalkenyl wherein R_5 and R_6 may or may not be the same; X and Y can be 0 or S; and n is an integer ranging from 1 to 3. Such compounds have been found to possess highly active contact and systemic insecticidal and miticidal activity.

3,679,684

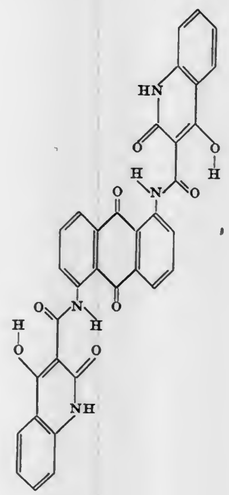
YELLOW PIGMENTS

Pritam Singh Dhaliwal, Belleville, and Edward E. Jaffe, Union, both of N.J., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

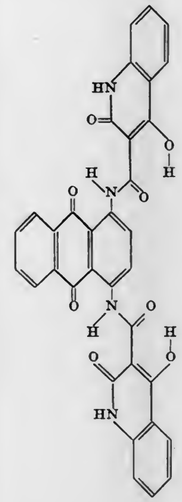
Filed April 17, 1969, Ser. No. 817,187
Int. Cl. C07d *33/56*
U.S. Cl. 260—272 **7 Claims**

Yellow pigments are produced by reacting a 3-alkoxy-carbonyl-2,4-dihydroxyquinoline, such as 3-ethoxycarbonyl-2,4-dihydroxyquinoline, and a diaminoanthraquinone, such as 1,5-diaminoanthraquinone, 1,4-diaminoanthraquinone, or 1,1-diamino-4,4'-dianthraquinonyl. Typical compounds of this invention are:

1,5-Bis(2,4-dihydroxyquinoline-3-carboxamido)anthraquinone which may be represented by the following structural formula

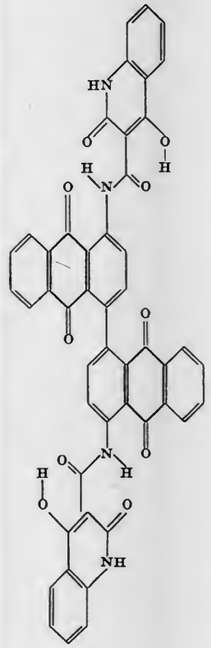


1,4-bis(2,4-dihydroxyquinoline-3-carboxamido)anthraquinone which may be represented by the following structural formula



and

1,1'-bis(2,4-dihydroxyquinoline-3-carboxamide)4,4'-dianthraquinonyl which may be represented by the following structural formula



3,679,685

ESTERS OF 2-(β-CARBOXYETHYL)AMINO-3,4-PHTHALOYLHENZACRIDONE

Paul Buecheler, Reinach/Basel-Land, and Fred Mueller, Muchenstein/Basel-Land, both of Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

Continuation-in-part of Ser. No. 578,121, Sept. 9, 1966, abandoned. This application Feb. 12, 1970, Ser. No. 10,992
Claims priority, application Switzerland, Sept. 15, 1965, 12819/65
Int. Cl. C07d *39/00*
U.S. Cl. 260—276 **12 Claims**

Phthaloylbenzacridone disperse dyes, having an alkoxycarbonyl-alkylamino-substituent in an ortho-position, are suitable for dyeing, padding and printing fiber or filaments of hydrophobic, synthetic or semi-synthetic, high molecular organic substances.

3,679,686

N-(BICYCLOAMINO-ALKANOYL)-ANILINES

Hubert Karel Frans Hermans, Beerse; Alfonsus Gillielmus Knaeps, Herentals, and Joannes Josephus Maria Willems, Turnhout, all of Belgium, assignors to Janssen Pharmaceutica N.V.

Filed Sept. 9, 1970, Ser. No. 70,878
Int. Cl. C07d *33/06, 39/00*
U.S. Cl. 260—287 R **15 Claims**

Compounds of the class of N-(bicycloamino-alkanoyl)-anilines useful as local anesthetic and anti-arrhythmic agents.

3,679,687

DERIVATIVES OF 4-[2-(CARBOCYCLOALKOXYMETHYL) PHENYLIMINO]-1,4-DIHYDROQUINOLINES

Jan W. F. Wasley, Ossining, and Norbert Gruenfeld, Bronx, both of N.Y., assignors to Ciba-Geigy Corporation, Greenburgh, N.Y.

Continuation-in-part of Ser. No. 827,998, May 26, 1969, abandoned, which is a continuation-in-part of Ser. No. 694,411, Dec. 29, 1967, abandoned. This application Sept. 11, 1970, Ser. No. 72,875
Int. Cl. C07d *33/12*
U.S. Cl. 260—287 R **13 Claims**

4-[2-(Carbocycloalkoxymethyl)phenylimino]-1,4-dihydroquinolines bearing a chloro or trifluoromethyl group in the 7-position of the quinoline nucleus are anti-inflammatory and anti-malarial agents and can be prepared through treatment of a cycloalkyl 2-aminophenylacetate with the appropriate 4-chloroquinoline. A typical embodiment is 7-chloro-4-[2-(carbocyclohexyloxymethyl)phenylimino]-1,4-dihydroquinoline.

3,679,688

PREPARATION OF SUBSTITUTED PYRIDINES

Donald M. Fenton, Anaheim, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Continuation-in-part of Ser. No. 637,891, May 12, 1967, abandoned. This application April 23, 1970, Ser. No. 31,371
Int. Cl. C07d *31/06*
U.S. Cl. 260—290 P **13 Claims**

Substituted pyridines are prepared by reacting an ethylenically unsaturated hydrocarbon, carbon monoxide, hydrogen and ammonia in a liquid medium containing a Group VIII noble metal catalyst in complex association with a biphyllic ligand at a temperature of 50° to 400° C. and a pressure of 5 to 300 atmospheres. A typical process comprises contacting ethylene, carbon monoxide and hydrogen with a liquid reaction medium containing ammonium hydroxide, rhodium trichloride and triphenylphosphine to produce 3,5-dimethyl, 2-ethyl pyridine.

3,679,689
PREPARATION OF SUBSTITUTED PYRIDINES

Donald M. Fenton, Anaheim, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Continuation-in-part of Ser. No. 655,750, July 25, 1967, abandoned. This application July 6, 1970, Ser. No. 52,702
Int. Cl. C07d 29/40
U.S. Cl. 260—290 H 18 Claims

Substituted pyridines are prepared by reacting an ethylenically unsaturated hydrocarbon, carbon monoxide, water and ammonia in a liquid medium containing a Group VIII noble metal catalyst in complex association with a biphyllic ligand or an aromatic heterocyclic amine at a temperature of 50° to 400° C and a pressure of 5 to 300 atmospheres. A typical process comprises contacting ethylene, carbon monoxide and water with a liquid reaction medium containing rhodium trichloride and triphenylphosphine to produce dihydrodimethylethylpyridine.

3,679,690
CERTAIN N-(PYRIDYL) PROPIONANILIDES

Philip M. Carabateas, Schodack, N.Y., assignor to Sterling Drug Inc., New York, N.Y.

Division of Ser. No. 758,924, Sept. 9, 1968, Pat. No. 3,658,675. This application March 18, 1971, Ser. No. 125,879
Int. Cl. C07d 31/44
U.S. Cl. 260—295 AM 4 Claims

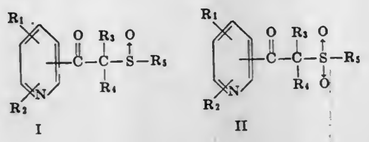
An N-[1-Z-4(or 3)-piperidyl]acylanilide, having antidiarrheal utility, is prepared by reacting an N-[4(or 3)-piperidyl]acylanilide with a Z-halide or by reacting a 4(or 3)-(Q-anilino)-1-Z-piperidine with an acyl halide or anhydride, where Z is lower-alkyl, 3-cyano-3,3-diphenylpropyl or 2-cyanoethyl, acyl is propionyl, lactyl, dichloroacetyl or carbethoxy, and Q is hydrogen or (halo)$_n$ where halo is fluoro or chloro and n is 1 or 2. Also included are corresponding N-[4(or 3)-pyridyl]-, N-(3-quinuclidinyl)-, and N-(8-Z-3-nortropanyl)-acylanilides.

3,679,691
PYRIDYL β-KETOSULFOXIDES AND SULFONES

Glenn C. Morrison, Dover, and John Shavel, Jr., Mendham, both of N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

Continuation-in-part of Ser. No. 773,941, Nov. 6, 1968, abandoned. This application May 21, 1970, Ser. No. 39,557
Int. Cl. C07d 31/50
U.S. Cl. 260—294.8 F 21 Claims

The present invention relates to pyridyl β-ketosulfoxides and sulfones. These compounds may be represented by the following structural formulas:



I

II

wherein R_1 and R_2 may be hydrogen, lower alkyl, cycloalkyl, lower alkenyl, aryl, substituted aryl, aralkyl, substituted aralkyl, heterocyclic, substituted heterocyclic, acyl, halogen, lower alkoxy, nitro, mercapto, lower alkylthio, hydroxy, amino, lower alkylamino, dilower alkylamino and the like. R_3 and R_4 may be hydrogen, lower alkyl or aryl. R_5 may be alkyl of up to 12 carbon atoms, aryl, substituted aryl, heterocyclic or substituted heterocyclic. They are prepared by reacting an ester of the pyridine carboxylic acid with dimethylsulfoxide or dimethylsulfone in the presence of a strong base. These compounds are useful as immunosuppressive agents.

3,679,692
IMINOMETHYLINDOLINES

Yao Hua Wu, and Walter G. Lobeck, both of Evansville, Ind., assignors to Mead Johnson & Company, Evansville, Ind.

Filed Oct. 1, 1969, Ser. No. 862,915
Int. Cl. C07d 31/42
U.S. Cl. 260—296 B 12 Claims

This invention relates to a series of 1-iminomethylindolines which are analeptic agents capable of counteracting central nervous system depressant effects of pentobarbital and chloral hydrate. They also exhibit analgesic effects. This invention also relates to a process for the preparation of 1-iminomethylindolines which comprises reaction of an indoline with carboxamides selected from the group consisting of amides, lactams, symmetrical or unsymmetrical ureas and hydrazides. Typical examples of 1-iminomethylindoline derivatives are 5-acetyl-1-[2-(1-pyrrolinyl)]indoline and 1-[2-(5,5-dimethyl-1-pyrrolinyl)]indoline.

3,679,693
N-PYRIDYLALKYL-β-ALKOXY-β-TRIFLUOROMETHYL-PHENALKYLAMINES

Stephen T. Ross, and Charles L. Zirkle, both of Berwyn, Pa., assignors to Smith Kline & French Laboratories, Philadelphia, Pa.

Filed Sept. 15, 1970, Ser. No. 72,536
Int. Cl. C07d 31/42
U.S. Cl. 260—296 AE 8 Claims

N-Pyridylalkyl-β-alkoxy-β-trifluoromethylphenalkylamines having anorectic activity are prepared by the condensation of an Nepyridylalkylamine with a β-alkoxytrifluoromethylphenalkyl halide.

3,679,694
L-AND DL-2-GUANIDINO-1,3-THIAZOLINE CARBOXYLIC ACID-4 AND METHOD OF MAKING SAME

Paul Rambacher, 82 Rosenheim, Steffinerstrasse 4, and Siegfried Make, 8201 Kirchdorf am Inn, both of Germany

Filed June 10, 1969, Ser. No. 832,003
Claims priority, application Germany, July 30, 1968, P 17 95 021.9
Int. Cl. C07d 91/24
U.S. Cl. 260—299 4 Claims

The application discloses L- and DL-2-guanidino-1,3-thiazoline carboxylic acid-4 and its tautomere, L- and DL-2-guanidino-1,3-thiazolidine carboxylic acid-4, as well as their basic copper salts, and a method of making these novel and useful compositions by reacting cysteine hydrochloride and dicyandiamide. In addition, advantageous uses of these compositions are disclosed, notably, for instance, as precipitating agents for inorganic or organic acids, and as means for separating the optical antipodes of the racemates of optically active acids.

3,679,695
CERTAIN THIAZOLYLHALOALKAVESULFORANILIDES

George G. I. Moore, Birchwood, and John F. Gerster, Woodbury, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Dec. 14, 1970, Ser. No. 98,010
Int. Cl. C07d 91/00
U.S. Cl. 260—302 S 18 Claims

Thiazole derivatives in which a thiazole ring is linked by carbonyl, sulfonyl, sulfinyl, oxygen and sulfur to a phenyl ring which is substituted by a haloalkylsulfonamido group in which the sulfonamido nitrogen atom is optionally substituted. These compounds are active anti-inflammatory agents.

3,679,696
METHOD OF PREPARING D1 6-PHENYL-2,3,5,6-TETRAHYDROIMIDAZO [2,1-B]-THIAZOLE HYDROCHLORIDE

Milon Walker Bullock, Hopewell, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 669,704, Sept. 22, 1967, abandoned, which is a division of Ser. No. 493,231, Oct. 5, 1965, abandoned. This application July 22, 1969, Ser. No. 843,847
Int. Cl. C07d 99/10
U.S. Cl. 260—306.7 4 Claims

A method of preparing 6-phenyl-2,3,5,6-tetrahydroimidazo[2,1-b]thiazole hydrochloride by reacting styrene oxide with ethyleneimine in a polar solvent to produce α-phenyl-1-aziridineethanol, treating this reaction product with thiocyanic acid and hydrochloric acid to obtain 2-imino-α-phenyl-3-thiazolidineethanol hydrochloride and reacting the 2-imino-α-phenyl-3-thiazolidineethanol hydrochloride with thionyl chloride to obtain d1 3-(β-chlorophenethyl)-2-iminothiazolidine hydrochloride, treating this compound with aqueous alkali to obtain d1 3-(β-chlorophenethyl)-2-iminothiazolidine free base, and isomerizing the latter compound in the absence of alkali to obtain d1 6-phenyl-2,3,5,6-tetrahydroimidazo [2,1-b]thiazole hydrochloride. The product is useful as an anthelmintic.

3,679,697
1-(β-HALOPHENETHYL)IMIDAZOLES

Eunice M. Kreider, Chicago, and Robert C. Twelt, Wilmette, both of Ill., assignors to G. D. Searle & Co., Chicago, Ill.

Filed Oct. 8, 1970, Ser. No. 79,259
Int. Cl. C07d 49/36
U.S. Cl. 260—309 11 Claims

Preparation of the captioned compounds — for example, 1-(β-chloro-4-nitrophenethyl)imidazole oxalate — and their valuable biological properties — including antiulcerogenic, antibacterial, antiprotozoal, antifungal, antialgal, and antigerminant activities — are disclosed.

3,679,698
2-NITROIMIDAZOLES

Alden Gamaliel Beaman, North Caldwell, N.J.; Robert Duschinsky, Pully-Lausanne, Switzerland, and William Paul Tautz, New York, N.Y., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Continuation-in-part of Ser. No. 543,066, April 18, 1966, Pat. No. 3,505,349, which is a continuation-in-part of Ser. No. 447,103, April 9, 1965, abandoned. This application Sept. 12, 1969, Ser. No. 857,556
Int. Cl. C07d 49/36
U.S. Cl. 260—309 16 Claims

2-Nitroimidazoles substituted in the 1-position with an alkanoic acid, alkanoic acid ester or an N-substituted alkanoic acid amide which are useful as germicides, antiprotozoal agents and as agents for treatment of pathogenic yeast infections.

3,679,699
CIS-2-ACETYL-1-METHYL-1,2,3,3A,4,9B-HEXAHYDRO [1]BENZOPYRANO [4,3-C]PYRAZOLE

Wolfgang Oppolzer, Richen, Switzerland, assignor to Sandoz Ltd. (a.k.a. Sandoz AG), Basel, Switzerland

Filed Dec. 11, 1969, Ser. No. 884,313
Claims priority, application Switzerland, May 22, 1968, 7659/68; Dec. 12, 1968, 18517/68; March 25, 1969, 4471/69
Int. Cl. C07d 49/18
U.S. Cl. 260—310 D 1 Claim

The invention concerns a process for the production of an anellated or bridged N'-monosubstituted N-acyl pyrazolidine, characterized in that an olefinic aldehyde component comprising an olefinic aldehyde, or one of its reactive functional derivatives having its olefinic C/C double bond separated from the aldehyde by three to five atoms, of which one or two members may be contained in the same ring, and a hydrazine component comprising an N'-monosubstituted N-acl hydrazine, are reacted together with the removal of water.

The invention furthermore extends to various compounds which may be produced by the process. The invention allows for production of a large class of novel pharmacologically active compounds.

3,679,700
PREPARATION OF N-VINYL CARBAZOLE

Stanley Robert Sandler, Springfield, Pa., assignor to Borden Inc., New York, N.Y.

Filed May 13, 1970, Ser. No. 37,063
Int. Cl. C07d 27/68
U.S. Cl. 260—315 12 Claims

A method for preparing an intermediate hydrolyzable to N-vinyl carbazole comprises passing acetylene into a substantially anhydrous liquid mixture of an alkali-metal carbazole in an inert reaction medium selected from the group consisting of N-methyl-2-pyrrolidone, N,N-dimethylacetamide and dimethyl sulfoxide, said mixture containing at least 10 percent by weight of said metal carbazole. The new method is operable at atmospheric pressure, thus avoiding the hazards entailed in high-pressure acetylene systems.

3,679,701
7-BENZOYL INDOLINES

Jackson B. Hester, Jr., 6126 Devon, Portage, Mich.

Division of Ser. No. 873,718, Nov. 3, 1969, Pat. No. 3,579,503. This application Dec. 4, 1970, Ser. No. 95,338
Int. Cl. C07d 27/38
U.S. Cl. 260—326.11 12 Claims

1,2-Dihydro-7-phenylpyrrolo[3,2,1-jk][1,4]benzodiazepin-4(5H)-ones; 6,7-dihydro-7-phenylpyrrolo[3,2,1-jk][1,4]benzodiazepin-4(5H)-ones; 7-phenylpyrrolo[3,2,1-jk][1,4]benzodiazepin-4(5H)-ones; 1,2-dihydro-6-phenylpyrrolo[1,2,3-ef][1,5]benzodiazepin-4(5H)-ones; 1,2-dihydro-4-phenylpyrrolo[1,2,3-ef][1,5]-benzodiazepin-6(7H)-ones and 1,2,4,5-tetrahydro-4-phenylpyrrolo-[1,2,3-ef][1,5]benzodiazepin-6(7H)-ones, processes for preparing the same and novel intermediates prepared by said processes. The novel compounds of this invention exhibit tranquilizing and anticonvulsant activity in animals.

3,679,702
1-[2-AMINO-A-(3-INDOLYL PHENETHYL]-2-PYRROLIDINONE

Yao Hua Wu, and Richard P. Ryan, Jr., both of Evansville, Ind., assignors to Mead Johnson & Company, Evansville, Ind.

Filed March 12, 1971, Ser. No. 123,852
Int. Cl. C07d 27/56
U.S. Cl. 260—326.14 R 3 Claims

1-[2-Amino-α-(3-indolyl)phenethyl]-2-pyrrolidinone is a new synthetic compound having pharmacological value as a diuretic agent and as a chemical intermediate in the preparation of other diuretics and azo dyestuffs. This substance is prepared by basic hydrolysis of 2,3,5,6-tetrahydro-5-(indol-3-yl)-1H-pyrrolo[2,1-b][1,3]benzodiazepine.

3,679,703
SAND CORE AND MOLD COMPOSITIONS CONTAINING GLYCERINE AND AN AMMONIUM SALT

James A. Conrady, Amherst, and John S. Fitzpatrick, Lorain, both of Ohio, assignors to The B. F. Goodrich Company, New York, N.Y.

Filed Oct. 16, 1970, Ser. No. 81,562
Int. Cl. C08f 45/28, 45/56, 45/58
U.S. Cl. 260—334 R 7 Claims

Dielectric baked sand cores and molds containing amine salts of copolymers of acrylonitrile and acrylic acid have improved resistance to humidity when these compositions also contain small amounts of an ammonium salt and glycerine.

3,679,704
PREPARATION OF DIBENZODIOXINS

George R. Lester, Park Ridge, and John F. Brennan, Des Plaines, both of Ill., assignors to Universal Oil Products Company, Des Plaines, Del.

Filed Aug. 7, 1969, Ser. No. 848,359
Int. Cl. C07d 15/20
U.S. Cl. 260—340.3 10 Claims

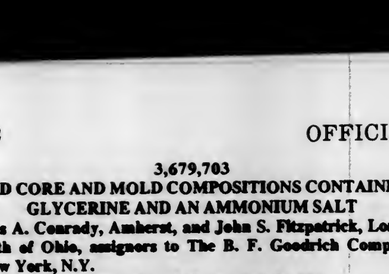
Dibenzodioxins are prepared by reacting phenol with a palladium halide in the presence of a catalyst comprising a copper halide, said reaction being effected in a sodium acetate-acetic acid medium at refluxing conditions.

3,679,705
PROCESS FOR MAKING PROSTAGLANDINS AND COMPOUNDS RELATED TO PROSTAGLANDINS

John C. Babcock, and Philip F. Beal, III, both of Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 517,442, Dec. 29, 1965, Pat. No. 3,505,386. This application April 6, 1970, Ser. No. 31,066
Int. Cl. C07d 15/00
U.S. Cl. 260—340.7 10 Claims

The preparation of compounds of the following formulas is disclosed:



In these formulas, R is alkyl, W is hydrogen, alkyl, haloalkyl, phenyl, or phenyl substituted with halo, nitro, or carbomethoxy, X is hydrogen or methyl, Y′ is hydrogen or carboxyacyl, Z is hydrogen or alkyl, and *n* is zero, one, or two. These compounds are used as intermediates to make prostaglandins of the dihydro-$PGF_{1\alpha}$-type.

3,679,706
POLYMERIZATION INHIBITORS FOR ε-CAPROLACTONES

Hubert H. Thigpen, and Charles C. Hobbs, both of c/o Celanese Corporation, Corpus Christi, Tex.

Filed April 6, 1970, Ser. No. 26,049
Int. Cl. C07d 9/00
U.S. Cl. 260—343 8 Claims

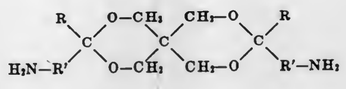
Disclosed herein is a process for inhibiting the production of polymeric ε-caprolactones in the oxidation of cyclohexanones to produce monomeric ε-caprolactones. The cyclohexanones are reacted with a suitable oxidizing agent such as peracetic acid in the presence of certain polymerization inhibitors such as isocyanates.

3,679,707
CURING AGENT FOR EPOXY RESINS

Ippei Yoshimura, Tokyo; Norihiko Fukue; Hiroshi Sakamoto, both of Kawasaki-shi; Hisashi Murofushi, Tokyo; Takami Hiyama, and Takao Matsunaga, both of Yokohama-shi, all of Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Continuation-in-part of Ser. No. 560,067, June 24, 1966, abandoned. This application Nov. 26, 1969, Ser. No. 880,356
Claims priority, application Japan, June 26, 1965, 40/38175; Feb. 9, 1966, 41/7496
Int. Cl. C07d 15/04
U.S. Cl. 260—340.7 2 Claims

Epoxides and acrylonitrile react with spiroacetal diamines of the formula



to form a viscous liquid which is a good hardener for epoxy resin intermediates, in the formula R being hydrogen, methyl, or ethyl, and R′ being alkyl having one to six carbon atoms. Epoxy resins cured by means of the hardener are flexible, colorless and transparent.

3,679,708
PEROXIDES BEARING GAMMA-LACTONE RING AND METHOD OF MAKING THE SAME

Yun Ger Chang, Austin, Tex., assignor to Reichhold Chemicals, Inc., White Plains

Filed March 9, 1971, Ser. No. 122,549
Int. Cl. C07d 5/06
U.S. Cl. 260—343.6 6 Claims

New peroxides containing the gamma-lactone ring are prepared by reacting alpha-acetyl-gamma-butyrolactone or alpha-acetyl-alpha-methyl-gamma-butyrolactone with a monofunctional hydroperoxide in the presence of an acidic catalyst at a temperature ranging from about −10° C. to about 100° C. with a preferred temperature of from about 10° C. to about 30° C. The mole ratio of the reactants may vary from about 1:2 to about 1:4 and the preferred mole ratio may range from about 1:2.0 to about 1:2.2. Peroxides of this invention are highly efficient polymerization initiators and crosslinking agents.

3,679,709
PREPARATION OF OCTAFLUOROTETRAHYDROFURAN

Hughie R. Frick, and Richard W. Anderson, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed July 6, 1970, Ser. No. 52,757
Int. Cl. C07d 5/04
U.S. Cl. 346.1 R 6 Claims

Disclosed is a process for the preparation of octafluorotetrahydrofuran. The process involves reacting perfluoroglutaryl fluoride with fluorine in the presence of KF, CsF, AgF or RbF as catalyst. The reaction is carried out at a temperature within the range of from about −196° to 25° C.

3,679,710
METHOD OF ISOMERIZING 4-CYCLO-HEXENE-1,2-DICARBOXYLIC ACID ANHYDRIDES

Wolfgang C. Forster, Middletown, N.Y., assignor to Reichhold Chemicals, Inc., White Plains, N.Y.

Filed May 18, 1970, Ser. No. 38,480
Int. Cl. C07c 61/24
U.S. Cl. 260—346.3 2 Claims

A method for preparing liquid mixtures of isomers of both the cis and trans forms of 4-cyclohexene-1,2-dicarboxylic anhydride and its nuclear alkyl derivatives and resulting product. These liquid mixtures are prepared by isomerizing the anhydride with a catalyst consisting of boric acid and oxalic acid, at temperatures between about 65° C. and about 185° C. This procedure permits the use of mild reaction conditions and yields a product having improved color, less by-products and low viscosity as compared to products prepared by heretofore known methods.

3,679,711
METHOD OF PREPARING (CIS-1,2-EPOXYPROPYL)PHOSPHONIC ACID ESTERS

Raymond A. Firestone, Fanwood, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Jan. 27, 1969, Ser. No. 794,385
Int. Cl. C07f 9/40
U.S. Cl. 260—348 R 3 Claims

A method for the preparation of (cis-1,2-epoxypropyl)-phosphonic acid and its salts and ester derivatives which comprises treating a propionaldehyde substituted in the 2-position by a leaving group with: (1) an alkali metal dihydrocarbylphosphite, (2) a trihydrocarbylphosphite or (3) a di-alkali metal phosphite. Suitable leaving groups include halogen, alkarylsufonyloxy, alkanesulfonyloxy or a sulfonium, sulfoxonium, ammonium or phosphonium cation. The (cis-1,2-epoxypropyl)phosphonic acid product thus obtained and its salts are antibiotics which have utility as antibacterials in inhibiting the growth of gram-negative and gram-positive pathogenic bacteria.

3,679,712
METHOD FOR THE PREPARATION OF (CIS-1,2-EPOXYPROPYL)PHOSPHONIC ACID DERIVATIVES

Raymond A. Firestone, Fanwood, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Jan. 29, 1969, Ser. No. 795,041
Int. Cl. C07f 9/38, 9/40, 9/44
U.S. Cl. 260—348 R 5 Claims

A method for the preparation of (±) and (−) (cis-1,2-epoxypropyl)phosphonic acid and its salt, amide and ester derivatives via the reaction of a 2-oxy substituted n-propylphosphonate or diamide analog with a reagent capable of effecting ring closure. The (±) and (−) (cis-1,2-epoxypropyl)phosphonic acid product thus obtained and its salts are antimicrobial agents which are useful in inhibiting the growth of gram-positive and gram-negative pathogenic bacteria.

3,679,713
RECOVERY AND PURIFICATION OF BASIC TRIARYLMETHANE DYES

Martin Louis Feldman, East Brunswick, and John Edson Gordon, Martinsville, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Filed Jan. 20, 1970, Ser. No. 4,413
Int. Cl. C09b 11/14
U.S. Cl. 260—388 9 Claims

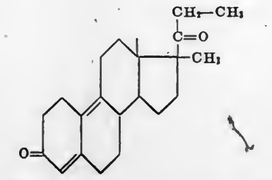
Basic triarylmethane dyes such as Malachite Green (C.I.42,000), Crystal Violet (C.I. 42,555) and Victoria Blue B (C.I. 44,045) are obtained in a purified or more concentrated condition from aqueous dispersions thereof by reacting the salt form of the dye with an inorganic base in the presence of a nonpolar solvent, thereby extracting the dye base into the solvent as it is formed, followed by separating the dye base solution from the aqueous phase and acidifying it to form the triarylmethane dye.

3,679,714
17α,21-DIMETHYL-19-NOR-$\Delta^{4,9}$-PREGNADIENE-3,20-DIONE AND PROCESS THEREFOR

Julien Warnant, Neuilly Sur-Seine, and Andre Farcilli, Rosny-Sous-Bois, both of France, assignors to Uclaf Roussel, Paris, France

Filed Feb. 3, 1971, Ser. No. 112,387
Claims priority, application France, Feb. 20, 1970, 7006179
Int. Cl. C07c 169/34
U.S. Cl. 260—397.3 2 Claims

17α,21-dimethyl-19-nor-$\Delta^{4,9}$-pregnadiene-3,20-dione of the formula



I

having antigonado-hypophsial, progestomimetic and progestative activity and its preparation.

3,679,715
PROCESS FOR THE SELECTIVE REDUCTION OF 6-METHYLENE-3-KETO-Δ^4-STEROIDS

John M. Beaton; Verlan H. Van Rheenen, both of Portage, and Jekishan R. Parikh, Kalamazoo, all of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Filed Oct. 16, 1970, Ser. No. 81,544
Int. Cl. C07c 169/36
U.S. Cl. 260—397.1 14 Claims

A novel process for the selective reduction of 6-methylene-3-keto-Δ^4-steroids with a palladium catalyst to obtain the corresponding 6-methyl-3-keto-Δ^5-steroid which is isomerized in the presence of an acid or a base to obtain the desired 6α-methyl-3-keto-Δ^4-steroid.

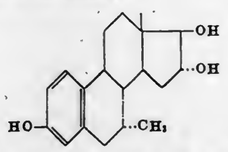
An important characteristic of many pharmacologically active steroids is the presence of a methyl substituent at the 6α-position. The process of this invention provides a useful method for obtaining these novel compounds.

3,679,716
3, 16α, 17α-TRIHYDROXY-$\Delta^{1,3,5(10)}$ OESTRATRIENE

Georg Anner, and Jaroslav Kalvoda, both of Basel, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Feb. 11, 1970, Ser. No. 10,647
Claims priority, application Switzerland, Feb. 27, 1969, 2963/69
Int. Cl. C07c 169/08
U.S. Cl. 260—397.5 1 Claim

The compound of the formula



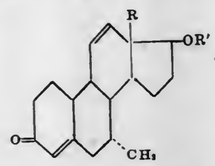
Use: Oestrogenic agent for inhibiting the gonadotropic function and ovulation.

3,679,717
STEROID COMPOUNDS AND PROCESS
Glen E. Arth, Cranford, and Gary H. Rasmusson, Watchung, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.
Filed Feb. 13, 1970, Ser. No. 11,332
Int. Cl. C07c 169/32
U.S. Cl. 260—397.45 5 Claims

The invention disclosed herein relates to 3,11β-dihydroxy-9α-fluoro-16α-methyl-17α-acyloxy-pregn-4-en-20-one, and to 3-ester and 3-ether derivatives thereof; more particularly it relates to certain preferred embodiments, namely to the specific compounds 3-methoxy (or acetoxy)-9α-fluoro-11β-hydroxy-16α-methyl-17α-acetoxy-pregn-4-en-20-one. These compounds are prepared by reacting the corresponding 3-ketone with an alkali metal borohydride thereby forming the corresponding 3-hydroxy derivative, and reacting the latter with an appropriate etherifying or acylating agent. These 3-esters and 3-ethers of 3,11β-dihydroxy-9α-fluoro-16α-methyl-17α-acyloxy-pregn-4-en-20-one possess progestational activity and are valuable as estrus regulating agents.

3,679,718
NOVEL 7α-METHYL-Δ4,11-GONADIENES
Robert Bucourt; Lucien Nedelec, both of Clichy-sous-Bois, and Jean-Claude Gasc, Bondy, all of France, assignors to Roussel Uclaf, Paris, France
Filed July 27, 1970, Ser. No. 58,730
Claims priority, application France, July 28, 1969, 6925701
Int. Cl. C07c 169/22
U.S. Cl. 260—397.45 4 Claims

Novel 7α-methyl-Δ4, 11-gonadiene of the formula



I

wherein R is alkyl of one to four carbon atoms and R′ is selected from the group consisting of hydrogen, acyl of an organic carboxylic acid of one to 18 carbon atoms and an organic ether radical which have anabolic and androgenic activities and their preparation.

3,679,719
NON-YELLOWING SOFTENING AGENT FOR COTTON AND RAYON TEXTILES
James Marvin Brown, Charlotte, N.C., assignor to American Cyanamid Company, Stamford, Conn.
Continuation-in-part of Ser. No. 576,849, Sept. 2, 1966, abandoned. This application March 12, 1970, Ser. No. 19,066
Int. Cl. C07c 143/90; C11d 1/28
U.S. Cl. 260—400 3 Claims

Process for producing a novel composition of the class normally employed as softening agents for cotton and rayon textiles during hot finishing treatments, and storage of the composition. More particularly, the invention relates to the alkali metal salts of sulfonated bisfumarates of the mixed glycerides of unsaturated fatty acids, having at least 15 percent by weight of polyunsaturated fatty acids therein.

3,679,720
ACYL FLUORIDES
John B. Siddall, Palo Alto, Calif., assignor to Zoecon Corporation, Palo Alto, Calif.
Continuation-in-part of Ser. No. 854,778, Sept. 2, 1969, Pat. No. 3,649,590. This application Feb. 26, 1970, Ser. No. 14,660
Int. Cl. C11c 3/00
U.S. Cl. 260—408 20 Claims

Novel quaternary alkylated acyl fluorides prepared from acyl chloride or bromide by reaction with anhydrous fluoride useful as insect control agents.

3,679,721
TITANIUM COMPOUNDS
David Whiteley Brook, Teesside, and Raymond Ward, Coxhoe, both of England, assignors to British Titan Products Company Limited, Durham, England
Filed March 9, 1970, Ser. No. 17,939
Claims priority, application Great Britain, March 18, 1969, 14,048/69
Int. Cl. C07f 7/28
U.S. Cl. 260—429.5 6 Claims

A titanium chelate which is the reaction product of either ethylene glycol, propylene glycol or diethylene glycol or of mixtures thereof with monoethanolamine and a titanium orthoester. The chelate is of use in producing stable suspensions of titanium dioxide in water.

3,679,722
METAL-COBALT CARBONYL COMPLEXES
James H. Tsai, Sarnia, Ontario, and Glenn H. Anderson, Corunna, Ontario, both of Canada, assignors to The Dow Chemical Company, Midland, Mich.
Filed June 22, 1970, Ser. No. 48,486
Int. Cl. C07f 7/22
U.S. Cl. 260—429.7 8 Claims

Complexes of metal-cobalt carbonyl moiety represented by the empirical formula, $X_{y-x}(A)_xM[Co(CO)_4]_n$, wherein, for example, X is bromine, A is tetrahydrofuran, M is tin, y is 4, z is an average number of 0.5 to 1, and n is 2 are provided by reacting lower metal halide such as tin dibromide with octacarbonyldicobalt in the presence of tetrahydrofuran. The complexes are useful catalysts in the polymerization of olefins such as norbornadiene.

3,679,723
CONDENSATION PRODUCTS OF ALUMINUM HYDROXIDE AND AN ALUMINUM ALCOHOLATE
Hideo Tomomatsu, Austin, Tex., assignor to Jefferson Chemical Company, Inc., Houston, Tex.
Division of Ser. No. 821,944, May 5, 1969, Pat. No. 3,542,750. This application Dec. 22, 1969, Ser. No. 889,862
Int. Cl. C07f 5/06
U.S. Cl. 260—448 AD 5 Claims

The condensation products of aluminum hydroxide and an aluminum alcoholate are catalysts for the polymerization of cyclic alkylene oxides. These condensation products are useful alone or in combination with an organometallic compound as a catalyst for the high molecular weight polymerization of cyclic alkylene oxides. High molecular weight polymerized cyclic alkylene oxides are useful as thickeners, water friction reducers, adhesives, cosmetics, and elastomers.

3,679,724
DIALKALI SALTS OF ORTHOSILICIC ACID DIESTERS AND THEIR PREPARATION
Erich Termin, Laufenburg; Walter Rogler, Bonn; Wilhelm Joch, Niederkassel, and Rudiger Hoalgschmid-Groscich, Ranzel, all of Germany, assignors to Dynamit Nobel AG, Froisdorf, Germany
Filed Oct. 27, 1970, Ser. No. 84,461
Claims priority, application Germany, Oct. 31, 1969, P 19 54 830.2; Sept. 30, 1970, P 20 48 018.6
Int. Cl. C07f 7/04
U.S. Cl. 260—448.8 5 Claims

Dialkali salts of orthosilicic acid diesters, e.g. disodium orthosilicic acid dimethyl ester, are obtained by reaction of an alkali hydroxide with an orthosilicic acid tetraester. The dialkali salts of orthosilicic acid diesters are useful products for surface treatment of glass plates or glass fibers by tackling or etching.

3,679,725
COMPOUND [(β-HYDROXYPHENETHYL)AMINO] ETHYL THIOCYANATE AND ACID ADDITION SALTS THEREOF
Milon Walker Bullock, Hopewell, N.J., assignor to American Cyanamid Company, Stamford, Conn.
Continuation-in-part of Ser. No. 669,715, Sept. 22, 1967, abandoned, which is a division of Ser. No. 493,231, Oct. 5, 1965, abandoned. This application June 11, 1970, Ser. No. 45,571
Int. Cl. C07c 161/02
U.S. Cl. 260—454 6 Claims

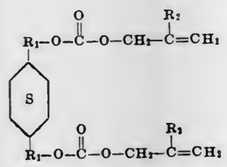
A method of preparing 2-[(β-hydroxyphenethyl)amino]ethyl thiocyanate by contacting α-phenyl-1-aziridineethanol with thiocyanic acid and products resulting, are described. The products of the process are useful as intermediates in preparing 2,3,5,6-tetrahydroimidazo[2,1-b]thiazoles useful as anthelmintics.

3,679,726
SUBSTITUTED BENZYL-THIOLCARBAMIC ACID ESTERS
Akio Kudamatsu; Masao Miyamoto, and Nobuo Fukazawa, all of Tokyo, Japan, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany
Filed Nov. 10, 1969, Ser. No. 875,487
Claims priority, application Japan, Nov. 13, 1968, 43/82510
Int. Cl. C07c 155/02
U.S. Cl. 260—455 A 1 Claim

Substituted benzyl-thiolcarbamic acid esters, i.e. S-[(optionally mono and di chloro, bromo, nitro, alkyl and alkoxy substituted)-α-methyl-benzyl]-[N-alkyl and N,N-dialkyl]-thiolcarbamic acid esters and S-[(optionally mono and di chloro, bromo, nitro, alkyl and alkoxy substituted)-α-methyl-benzyl]-[pyrrolidino and piperidino]-carbothiolic acid esters, which possess herbicidal properties and which may be produced by conventional methods.

3,679,727
ALLYL CARBONATE AND SUBSTITUTED ALLYL CARBONATE ESTERS OF 1,4-DIALKYLOL CYCLOHEXANE, AND POLYMERS THEREOF
David A. Berry, Columbus, and Gilbert M. Gynn, Hilliard, both of Ohio, assignors to Dart Industries Inc., Los Angeles, Calif.
Filed July 22, 1969, Ser. No. 843,831
Int. Cl. C07c 69/00; C08f 3/52, 37/16
U.S. Cl. 260—463 2 Claims

Disubstituted cyclohexane compositions designated as either bis(2-alkylallylcarbonyldioxy) 1,4-dialkylene cyclohexane or bis(2-arylallylcarbonyldioxy) 1,4-dialkylene cyclohexane represented by the formula:



wherein R_1 is a lower alkyl and R_2 is hydrogen or an alkyl, aryl, aralkyl or alkaryl hydrocarbon radical, are useful in the production of polymers and copolymers. Compositions containing these polymers and copolymers when combined with the proper filler have outstanding stain resistance as well as excellent impact resistance and other strength properties when compared with prior art compositions recognized as outstanding for use in dinnerware.

3,679,728
PROCESS FOR PREPARING METHYLENEBISIMINODIACETONITRILE
Charles R. Morgan, Laurel, Md., and David A. Daniels, Kendall Park, N.J., assignors to W. R. Grace & Co., New York, N.Y.
Filed Aug. 13, 1968, Ser. No. 752,186
Int. Cl. C07c 121/42
U.S. Cl. 260—465.5 11 Claims

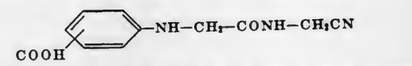
This invention is directed to a process for preparing methylenebisiminodiacetonitrile comprising reacting, in an aqueous system having a pH of about 0.9–3.9, ammonia, from an ammonia source selected from the group consisting of hexamethylenetetramine and ammonia sulfate (the hexamethylenetetramine also being a formaldehyde source), formaldehyde, and HCN to form methylenebisiminodiacetonitrile; separating, drying, and recovering the methylenebisiminodiacetonitrile, all as recited hereinafter.

3,679,729
CONTINUOUS PROCESS FOR PREPARING METHYLENEBISIMINODIACETONITRILE
David A. Daniels, Kendall Park, N.J., assignor to W. R. Grace & Co., New York, N.Y.
Filed Aug. 13, 1968, Ser. No. 752,375
Int. Cl. C07c 121/42
U.S. Cl. 260—465.5 14 Claims

This invention is directed to a fully continuous process for preparing methylenebisiminodiacetonitrile comprising continuously reacting an aqueous acidic reaction mixture consisting essentially of an ammonia source selected from the group consisting of hexamethylenetetramine and ammonium sulfate, formaldehyde, and HCN to form methylenebisiminodiacetonitrile; continuously separating, continuously drying, and continuously recovering the methylenebisiminodiacetonitrile, all as recited hereinafter.

3,679,730
AMINOACETONITRILE DERIVATIVES
Tsutomu Irikura; Keigo Nishino; Seigo Suzue, all of Tokyo; Keiichi Ushiyama, Saitama-ken; Hirotaka Shinoda, Kawaguchi-shi, and Yoshinori Hasegawa, Tokyo, all of Japan, assignors to Kyorin Seiyaku Kabushiki Kaisha, Tokyo, Japan
Division of Ser. No. 558,281, June 17, 1966, Pat. No. 3,462,533. This application April 21, 1969, Ser. No. 832,532
Claims priority, application Japan, June 18, 1965, 40/36289
Int. Cl. C07c 121/52
U.S. Cl. 260—465 D 4 Claims

Compounds of the formula



protect the liver against the action of carbon tetrachloride with-out exhibiting any side effects.

3,679,731
ACRYLOXY ESTERS OF ANHYDRIDES
Gordon M. Parker, Harwick; Marco Wismer, Gibsonia, and Ernest A. Hahn, Pittsburgh, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.
Filed July 9, 1969, Ser. No. 840,524
Int. Cl. C07c 69/76
U.S. Cl. 260—475 P 9 Claims

This invention relates to acryloxy(or methacryloxy)alkyl(or alkyloxyalkyl) acryloxy(or methacryloxy)hydroxyalkyl organic polycarboxylic esters prepared by reacting an organic acid anhydride selected from the group consisting of trimellitic anhydride and pyromellitic anhydride with a hydroxyalkyl acrylate or methacrylate and then reacting this half-ester with

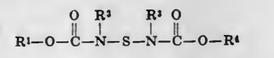
a glycidyl acrylate or methacrylate. These compounds are useful in coating compositions and particularly coating compositions curable by radiation.

3,679,732
PROCESS FOR OBTAINING 3-TRANS-DIMETHYLAMINO-4-PHENYL-4-TRANS-CARBETHOXY-Δ -CYCLOHEXENE
Robert M. Novack, Mendham, N.J., assignor to Warner-Lambert Company, Morris Plains, N.J.
Filed April 17, 1969, Ser. No. 817,176
Int. Cl. C07c *101/14*
U.S. Cl. 260—471 A 20 Claims

The separation of 3-trans-dimethylamino-4-phenyl-4-trans-carbethoxy-Δ^1-cyclohexene from a mixture comprising 3-trans-dimethylamino-4-phenyl-4-trans-carbethoxy-Δ^1-cyclohexene and 3-cis-dimethylamino-4-phenyl-4-cis-carbethoxy-Δ^1-cyclohexene and the partial isomerization of 3-cis-dimethylamino-4-phenyl-4-cis-carbethoxy-Δ^1-cyclohexene into the trans- isomer is described. In the separation procedure, the mixture containing 3-cis-dimethylamino-4-phenyl-4-cis-carbethoxy-Δ^1-cyclohexene and 3-trans-dimethylamino-4-phenyl-4-trans-carbethoxy-Δ^1-cyclohexene is mixed, in a suitable organic solvent, with oxalic acid or fumaric acid at a temperature up to reflux temperature until the reactants become dissolved in the solvent. When a solution is obtained, it is cooled to a temperature below about 10° C. to facilitate the precipitation of the oxalic acid or fumaric acid salt of 3-trans-dimethylamino-4-phenyl-4-trans-carbethoxy-Δ^1-cyclohexene. Partial isomerization of 3-cis-dimethylamino-4-phenyl-4-cis-carbethoxy-Δ^1-cyclohexene involves the step of heating the cis- isomer with an organic acid, or with an anhydride of an organic acid, at a temperature within the range of from about 60° C. to about 130° C. for a period of time sufficient to produce a mixture of the cis- and trans-isomers.

3,679,733
N-SUBSTITUTED ARYLCARBAMOYL SULFIDES
Melancthon Starr Brown, deceased, late of Berkley, Calif. (by Gustave K. Kohn, administrator), assignor to Chevron Research Company, San Francisco, Calif.
Filed Nov. 9, 1970, Ser. No. 88,105
Int. Cl. C07c *125/06*
U.S. Cl. 260—479 C 7 Claims

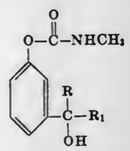
Compound of the formula



wherein R^1 and R^4 are individually aryl of six to 14 carbon atoms optionally substituted with alkyl groups, halogen atoms, nitro groups, alkoxy groups, alkylthio groups or dialkylamino groups; R^2 and R^3 are individually hydrogen or alkyl of one to four carbon atoms. The compounds are insecticides.

3,679,734
M-α-HYDROXYALIPHATICHYDROCARBYLPHENYL N-METHYL CARBAMATES
Gustave K. Kohn, Berkeley, Calif., assignor to Chevron Research Company, San Francisco, Calif.
Filed March 24, 1971, Ser. No. 127,778
Int. Cl. C07c *125/06*
U.S. Cl. 260—479 C 4 Claims

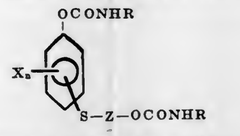
m-α-hydroxyaliphatichydrocarbylphenyl N-methyl carbamates of the formula



wherein R is methyl or ethyl and R_1 is ethyl, propyl, vinyl or allyl find use as insecticides.

3,679,735
CARBAMIC ACID ESTERS
Walter Reifschneider, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.
Filed Oct. 15, 1970, Ser. No. 81,145
Int. Cl. C07c *125/06*
U.S. Cl. 260—479 C 9 Claims

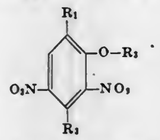
Carbamic acid esters corresponding to the formula



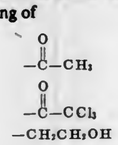
wherein X represents loweralkyl of one to four carbon atoms, loweralkoxy of one to four carbon atoms, chloro, fluoro or bromo; *n* represents an integer of from 0 to 4; Z represents an alkylene radical of one to four carbon atoms and R represents loweralkyl of one to four carbon atoms, loweralkenyl of two to four carbon atoms or phenyl are prepared. These compounds are useful as pesticides.

3,679,736
DINITROPHENYLCARBAMATES
Ivan C. Popoff, Ambler, Pa., and Kenneth I. H. Williams, Sterling Junction, Mass., assignors to Pennwalt Corporation, Philadelphia, Pa.
Filed June 2, 1967, Ser. No. 643,054
Int. Cl. C07c *125/06*
U.S. Cl. 260—479 C 3 Claims

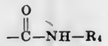
Formulations containing compounds of the structure



where R_1 is butyl, R_2 is H or lower alkyl, and R_3 is selected from the group consisting of



and



where R_4 is lower alkyl, and halogenated phenyl, and the use of these formulations as plant desiccants.

3,679,737
PRODUCTION OF ESTERS OF OMEGA-HYDROXYALKANESULFONIC ACIDS WITH ALKENOIC ACIDS
Heinz Pohlemann, Limburgerhof, and Rolf Wurmb, Heidelberg, both of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rhine, Germany
Filed Nov. 25, 1969, Ser. No. 879,936
Claims priority, application Germany, Dec. 7, 1968, P 18 13 364.7
Int. Cl. C07c *69/54, 69/60*
U.S. Cl. 260—486 R 8 Claims

Production of ω-hydroxyalkanesulfonic/alkenoic acid esters by reaction of alkali metal or alkaline earth metal salts of alkenoic acids with sultones in the presence of alcohols at a temperature below 45° C. The products are starting materials for the production of fibers, detergents, wetting agents, dispersing agents, ion exchangers and plastics.

3,679,738
ALKALI METAL SALTS OF POLYACETYLENIC POLYOIC ACIDS
George E. Cremeans, Groveport, Ohio, assignor to The Battelle Development Corporation, Columbus, Ohio
Continuation-in-part of Ser. No. 555,229, June 6, 1966, Pat. No. 3,501,297. This application March 16, 1970, Ser. No. 20,051
Int. Cl. C07c *57/24, 69/52*
U.S. Cl. 260—485 R 5 Claims

Radiant-energy photosensitive crystalline alkali metal salts of polyacetylenicpolyoic acids and the partial lower alkyl esters of the acids, which acids contain a minimum of two acetylenic linkages as a conjugated system; and a preparing of a clear and transparent body containing polyvinyl alcohol fixedly positioning dispersed radiant-energy photosensitive crystalline alkali metal salts.

3,679,739
PRODUCTION OF ESTERS OF ACETIC ACID
Gerhard Schulz, and Guenther Matthias, both of Ludwigshafen, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rhein, Germany
Filed June 13, 1969, Ser. No. 833,178
Claims priority, application Germany, June 21, 1968, P 17 68 708.0
Int. Cl. C07c *67/00, 69/14*
U.S. Cl. 260—488 F 10 Claims

Production of esters of acetic acid by reaction of ketenes with alcohols in the presence of metal sulfides. The products are valuable intermediates, for example for adhesives and photographic film, and some of them are important solvents, for example for surface coatings.

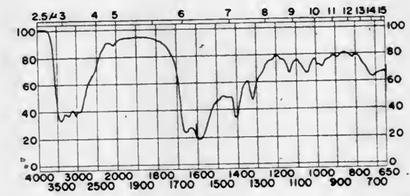
3,679,740
PREPARATION OF AROMATIC ACIDS
Stephen N. Massie, Palatine, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.
Filed Dec. 17, 1969, Ser. No. 886,038
Int. Cl. C07c *63/02*
U.S. Cl. 260—524 R 9 Claims

Aromatic acids such as benzoic acid are prepared by treating an alkylaromatic compound such as toluene with an oxygen-containing gas in the presence of a metal-containing compound at an elevated temperature in the range of from about 150° to about 250° C. The yields of the desired acids are improved by effecting the process in the presence of a compound containing nitrogen in the form of ammonia, amines, or compounds which will generate ammonia or amines under the reaction conditions.

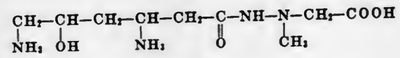
3,679,741
PURIFYING AND MILLING TEREPHTHALIC ACID
George T. Burress, Beaumont, and James L. Willis, Jr., Beaumart Gardens, both of Tex., assignors to Mobil Oil Corporation
Filed July 23, 1970, Ser. No. 57,779
Int. Cl. C07c *51/42*
U.S. Cl. 260—525 9 Claims

Impure terephthalic acid contaminated with intermediate products of the oxidation of p-xylene is processed into a state suitable for easy direct esterification with glycol by a combination of contact of the crude acid at 600°–750°F. in the vapor state with a Group VIII metal catalyst (e.g., Pt or Pd on carbon) and condensation of the purified acid from the treated vapor together with subsequent disintegration of the resulting predominantly rough aggregate particles of condensate by a high intensity wet or dry milling without metal-to-metal contact (e.g., high impact milling) to produce mainly discrete smooth particles of high purity and excellent dry flow and glycol slurrying characteristics; optionally, the condensed aggregate particles may also be leached in a solvent (e.g., water) at elevated temperatures and recrystallized prior to milling to further enhance both handling properties and purity.

3,679,742
NEGAMYCIN
Hamao Umezawa, Tokyo; Shinichi Kondo, Yokohama; Kenji Takeuchi Maeda, Tomio, and Masa Hamada, Tokyo, all of Japan, assignors to Zaidan Hojin Biseibutsu Kagaku Kai, Tokyo, Japan
Filed April 28, 1970, Ser. No. 32,641
Claims priority, application Japan, May 8, 1969, 44/34827; Oct. 22, 1969, 44/83843
Int. Cl. C07c *101/34*
U.S. Cl. 260—534 M 1 Claim

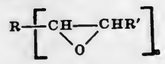


Process for the production of an antibiotic substance called negamycin which comprises cultivating a strain of Streptomyces purpeofuscus A.T.C.C. 21470 in an aqueous carbohydrate solution containing a nitrogenous nutrient under aerobic conditions until substantial antibacterial activity is imparted to said solution and then recovering said negamycin from said solution and negamycin which is effective for inhibiting Pseudomonas, Salmonella, Shigella, Klebsiella, E.coli, Staphylococci and which has the following structure:



3,679,743
CHLORO-OXYCARBONYL ISOCYANATES
Hermann Hagemann, Cologne, Flittard, Germany, assignor to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany
Filed June 16, 1970, Ser. No. 46,822
Claims priority, application Germany, June 20, 1969, P 19 31 283.5
Int. Cl. C07c *119/04*
U.S. Cl. 260—545 R 4 Claims

Organic isocyanates are prepared by reacting substantially equimolar quantities of N-chlorocarbonyl isocyanate and an epoxide compound having the formula



wherein

R is hydrogen or a substituted or unsubstituted, saturated or unsaturated organic radical selected from the group consisting of C_1 to C_{12} alkyl, aralkyl, aryl, alkylene, aralkylene or arylene;

R′ is hydrogen or a substituted or unsubstituted, saturated or unsaturated organic radical selected from the group consisting of C_1 to C_{12} alkyl, aralkyl or aryl; and *n* is 1 or 2.

at a temperature of from about −50° to about 200° C.

3,679,744
THIODIALKANOAMIDOPHENOL ANTIOXIDANTS

Martin Knell, Ossining, and Martin Dexter, Briarcliff Manor, both of N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed March 25, 1969, Ser. No. 810,352
Int. Cl. C07c *103/38*
U.S. Cl. 260—559 T 4 Claims

Novel thiodialkanoamidophenol compounds are provided by a procedure involving the reaction of an alkylaminophenol and a thiodialkanoyl chloride. The thiodialkanoamidophenol products are useful as stabilizers of organic materials which are subject to oxidative deterioration.

3,679,745
HYDRATION OF ACRYLONITRILE

Erwin Frederick Schoenbrunn, Ridgefield, Conn., assignor to American Cyanamid Company, Stamford, Conn.

Filed April 22, 1970, Ser. No. 31,012
Int. Cl. C07c *103/08*
U.S. Cl. 260—561 N 4 Claims

Acrylamide is produced by hydration of nitriles with water in presence of cuprous dihydrogen phosphate catalyst. The catalyst is preferably generated in situ by reaction of cuprous oxide with phosphoric acid.

3,679,746
ISOMER ENRICHMENT OF BICYCLOHEXYL-4,4'-DIAMINE

Loren D. Brake, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 27, 1969, Ser. No. 869,502
Int. Cl. C07c *87/40*
U.S. Cl. 260—563 R 24 Claims

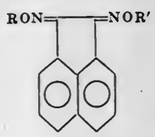
A mixture of the stereoisomers of bicyclohexyl-4,4'-diamine not at equilibrium is converted to a mixture of stereoisomers approaching the equilibrium ratio by heating the mixture of stereoisomers to a temperature of from 150° to 300° C. in the presence of hydrogen at a pressure of from 50 to 5,500 pounds per square inch gage and a total pressure of from 500 to 15,000 pounds per square inch gage, in the presence of from 0 to 200 percent by weight of added ammonia and from 0.001 to 10 percent by weight, calculated as metallic ruthenium, of a ruthenium catalyst supported on an inert carrier, both percentages being based on the weight of a starting material, said catalyst being alkali moderated with from 0.05 to 15 percent of a basic alkali metal compound calculated as the alkali metal. Either essentially pure trans,trans-bicyclohexyl-4,4'-diamine or an enriched mixture of cis,trans- and cis,cis-bicyclohexyl-4,4'-diamine can be recovered.

3,679,747
ACENAPHTHENE DERIVATIVES

Seymour D. Levine, North Brunswick, N.J., assignor to E. R. Squibb & Sons, Inc., New York, N.Y.

Filed Dec. 23, 1969, Ser. No. 887,735
Int. Cl. C07c *131/00*
U.S. Cl. 260—566 AE 4 Claims

Acenaphthene derivatives are provided having the general structure:



wherein R and R' are alkyl having from one to about three carbon atoms. These compounds possess anti-inflammatory activity.

3,679,748
2-AMINOMETHYL-1,3-BUTADIENE MONOMERS

Giffin D. Jones; Gerald R. Geyer, both of Midland, Mich., and Melvin J. Hatch, Socorro, N. Mex., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 798,512, Oct. 23, 1968, Pat. No. 3,544,532, which is a division of Ser. No. 381,546, July 9, 1964, abandoned. This application Sept. 3, 1970, Ser. No. 69,442
Int. Cl. C07c *87/24*
U.S. Cl. 260—583 H 5 Claims

New cationic 2-aminomethyl-1,3-butadiene monomers of Formula I:



(I)

are prepared by reacting 2-halomethyl-1,3-butadiene with ammonia or an organic amine NH_2R (II). These aminomethyl monomers can be polymerized to form cationic polymers and copolymers. They are particularly suitable for modifying styrene-maleic anhydride copolymers to form vinyl resins with increased toughness desirable for coatings, adhesives, laminates, foams, potting resins, and fiber-reinforced panels.

3,679,749
PERHYDRO 1,4,9,9-TETRAMETHYL-4,7-METHANDAZULENONES

James D. Grossman, Old Bridge; Braja D. Mookherjee, Matawan; Robert De Simone, Madison Township, Middlesex County, and Erast T. Theimer, Rumson, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Filed June 10, 1968, Ser. No. 735,544
Int. Cl. C07c *49/27*
U.S. Cl. 260—586 R 4 Claims

Novel perhydro 1,4,9,9-tetramethyl-4,7-methano-azulenones useful as olfactory agents; perfume compositions containing such azulenones; and methods for preparing such azulenones and such compositions.

3,679,750
HEXAHYDRO-1,4,9,9-TETRAMETHYL-4,7-METHANO-AZULENONES

Braja D. Mookherjee, Matawan, N.J., assignor to International Flavors & Fragrances Inc., New York, N.Y.

Filed June 10, 1968, Ser. No. 735,545
Int. Cl. C07c *49/54*
U.S. Cl. 260—586 A 3 Claims

Novel hexahydro-1,4,9,9-tetramethyl-4,7-methanoazulenones useful as olfactory agents; perfume compositions containing such azulenones; and methods for preparing such azulenones and such compositions.

3,679,751
BORIC ACID RECOVERY

Richard L. Golden, Oradell, N.J., and Gerald Mazzella, Brooklyn, N.Y., assignors to Halcon International, Inc.

Division of Ser. No. 429,165, Jan. 29, 1965, Pat. No. 3,423,471. This application July 25, 1968, Ser. No. 747,474
Int. Cl. C07c *45/02*
U.S. Cl. 260—586 B 4 Claims

This invention relates to an improved process for the recovery of boron compounds used to form borate esters in hydrocarbon oxidation processes, which comprises removing dissolved and entrained organic material from the aqueous phase of the hydrocarbon oxidation process by extraction with a hydrocarbon or alcohol solvent.

3,679,752
2-CYCLOHEXYLACYLCYCLO-ALKANONES

Sydney Archer, Bethlehem, and Roman R. Lorenz, East Greenbush, both of N.Y., assignors to Sterling Drug Inc., New York, N.Y.

Continuation-in-part of Ser. No. 589,201, Oct. 25, 1966, Pat. No. 3,523,959. This application Oct. 13, 1969, Ser. No. 866,007
Int. Cl. C07c *49/43*
U.S. Cl. 260—586 R 2 Claims

2-Cyclohexylacetylcyclohexanone, 2-cyclohexylacetylcyclopentanone, and 2-(3-cyclohexylpropanoyl)cyclopentanone are prepared by heating in an acidic aqueous medium 2-cyclohexylacetyl-1-BN-cyclohexene, 2-cyclohexylacetyl-1-BN-cyclopentene and 2-(3-cyclohexylpropanoyl)-1-BN-cyclopentene, respectively, where BN is morpholino, piperidino, pyrrolidino or di-(lower-alkyl)amino. These compounds are intermediates for the preparation of 2-hydroxy-3-(8-cyclohexyloctyl)-1,4-naphthoquinone and 2-hydroxy-3-(7-cyclohexylheptyl)-1,4-naphthoquinone, which are potent antimalarial agents.

3,679,753
PREPARATION OF DIHYDROCATECHOL FROM CYCLOHEXANONE

Nicholas P. Greco, Pittsburgh, Pa., assignor to Koppers Company, Inc.

Filed Feb. 11, 1969, Ser. No. 798,467
Int. Cl. C07c *45/00*
U.S. Cl. 260—586 B 8 Claims

Dihydrocatechol is prepared from cyclohexanone by oxidation in the presence of aqueous selenium dioxide at a temperature of 15°-25°C. The red selenium produced by the reduction of a selenium dioxide is converted to an easily separable form of black selenium powder by removing excess water from the mixture, adding black selenium to the product mixture and heating. The black selenium is easily separated by filtration and the dihydrocatechol recovered from this product mixture.

3,679,754
δ-IONONE DERIVATIVES AND PROCESS THEREFOR

John J. Beereboom, Old Lyme, Conn., assignor to Pfizer Inc., New York, N.Y.

Filed Jan. 23, 1968, Ser. No. 699,803
Int. Cl. C07c *49/48*
U.S. Cl. 260—587 6 Claims

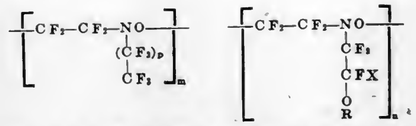
The conversion of α and β-ionone, and mixtures thereof, to various alkyl-substituted δ-ionone derivatives is accomplished in high yield by the use of a base-catalyzed alkylation reaction step. The resulting isoalkyl-δ-ionones are useful as perfume and flavor odorants, with isoethyl-δ-ionone resembling α-irone.

3,679,755
NITROSO ETHER POLYMERS

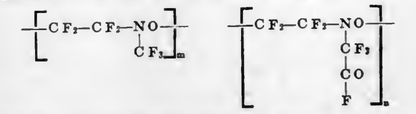
Nathan Mayes, Barrington, R.I., and Robert A. Falk, Rockaway, N.J., assignors to Thiokol Chemical Corporation, Bristol, Pa.

Filed Nov. 29, 1968, Ser. No. 780,297
Int. Cl. C07c *43/00*
U.S. Cl. 260—615 BF 5 Claims

Nitroso polymers are provided which are produced by reacting certain nitroso ether monomers. These polymers in turn yield novel polymers by converting, partially or substantially fully, pendant groups in the obtained polymer. The precursor polymers as well as the converted polymers are highly oxidation resistant. Elastomers can be produced directly from the precursor as well as the desired polymer. Liquid as well as solid polymers are provided. These polymers are represented by the following general formulas



wherein R is lower alkyl; p is 0 to 4; X is halogen; wherein the ratio of m:n is 1:1 to 50:1 and



The liquid polymers are appropriately chain-terminated with a chain terminator such as chlorine.

3,679,756
PROCESS FOR PREPARING β-SANTALOL FROM 3-METHYLNORCAMPHOR

Herbert C. Kretschmar, Greenhills, and William F. Erman, Springfield Township, Hamilton County, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed May 21, 1969, Ser. No. 826,684
Int. Cl. C07c *35/28*
U.S. Cl. 260—631.5 5 Claims

A process for preparing β-santalol, useful in perfume compositions, from 3-methylnorcamphor comprising the steps of

1. alkylating 3-methylnorcamphor with β-bromopropionaldehyde ethylene glycol acetal;
2. reacting the reaction product of Step (1) with a methylmetallic compound, such as methyllithium, followed by acid hydrolysis;
3. reacting the reaction product of Step (2) with (carbethoxyethylidene)triphenylphosphorane;
4. dehydrating the reaction product of Step (3) with a dehydrating agent, such as thionyl chloride; and
5. reducing the reaction product of Step (4) with a reducing agent, such as lithium aluminum hydride, to obtain β-santalol,

and novel compounds produced therein are disclosed.

3,679,757
PREPARATION OF PERFLUOROALKYL IODIDES

Barry Tittle, Runcorn, England, assignor to Imperial Chemical Industries Limited, London, England

Continuation-in-part of Ser. No. 813,737, April 4, 1969, abandoned. This application Nov. 24, 1969, Ser. No. 879,624
Claims priority, application Great Britain, April 24, 1968, 19,426/68
Int. Cl. C08f *3/32*; C07c *19/08*
U.S. Cl. 260—653.1 T 4 Claims

Perfluoroalkyl iodides $C_2F_5(C_2F_4)_nI$, where n is zero or an integer equal at least to one, are made by heating perhaloalkyl arsines with iodine or with iodine and tetrafluoroethylene at temperatures from 40° – 280° C and pressures from atmospheric up to about 30 atmospheres. The preferred reaction is that between monofluorobis (pentafluoroethyl)arsine, iodine and tetrafluoroethylene at 50° – 280° C and under pressures from 5 to 30 atmospheres.

3,679,758
DIHALOGENATION OF BRANCHED ALKANES

Abraham Schneider, Overbrook Hills, Pa., assignor to Sun Oil Company, Philadelphia, Pa.

Continuation-in-part of Ser. No. 702,789, Feb. 5, 1968, Pat. No. 3,485,880. This application Dec. 9, 1969, Ser. No. 883,580
Int. Cl. C07c *17/10*
U.S. Cl. 260—659 R 23 Claims

Singly and doubly branched alkanes of the C_7–C_{30} range having a chain of at least 6 carbon atoms and 1-2 alkyl sub-

stituents of 1-3 carbon atoms each are dichlorinated or dibrominated by reacting the same under homogeneous conditions and at −30° C. to 20° C. with a C_4–C_8 tertiary alkyl chloride or bromide, using as catalyst dissolved $AlCl_3$ or $AlBr_3$, and then recovering a dichloro or dibromo alkane product. The products have utility as intermediates for preparing difunctional derivatives, e.g. diacids, dialcohols or diamides, which are useful as monomers in polymer manufacture.

3,679,759

PREPARATION OF PRIMARY ALKYL HALIDES

Louis Schmerling, Riverside, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Aug. 28, 1968, Ser. No. 755,790
Int. Cl. C07c *17/08*
U.S. Cl. 260—663 **9 Claims**

Primary alkyl halides are prepared by reacting a 1-alkene with an aqueous hydrohalic acid at an elevated temperature above about 200° C. to prepare alkyl halides in which the halogen substituent is in a primary position.

3,679,760

PREPARATION OF DIARYLALKANES

Louis Schmerling, Riverside, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Feb. 22, 1971, Ser. No. 117,741
Int. Cl. C07c *15/12*, *15/14*
U.S. Cl. 260—668 C **10 Claims**

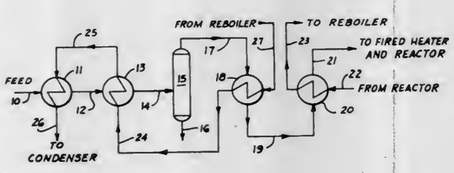
Diarylalkanes are prepared by reacting an α-haloalkyl-aromatic compound with an aromatic compound in the presence of certain catalysts comprising copper halides at elevated temperatures to prepare the desired products. The reaction is exemplified by reacting benzyl chloride with benzene to form diphenylmethane.

3,679,761

PROCESS FOR THE VAPORIZATION OF ALKYL AROMATIC LIQUID FEEDS WITH REMOVAL OF HIGH BOILERS

Claude W. Smalling, Jr., 101 Larkspur, Alvin, Tex.

Filed May 15, 1970, Ser. No. 37,792
Int. Cl. C07c *3/58*
U.S. Cl. 260—672 NC **7 Claims**



An improved process for the vaporization of liquid hydrocarbon feeds wherein high boiling components present in the liquid feed are removed from the feed prior to subsequent processing comprising heating the liquid feed to a temperature at, but just below, its dew point, introducing the thus heated feed into a separation zone where any high boiling liquid components are removed and removing a substantially dry gaseous feed from the separation zone. The process minimizes fouling in heat exchangers and other indirect heating systems caused by coking of entrained high boiling liquids in the vaporized feed.

3,679,762

SELECTIVE HYDROGENATION OF ACETYLENES

Richard W. La Hue, and Nolan A. Smith, both of Louisville, Ky., assignors to Catalysts and Chemicals Inc., Louisville, Ky.

Filed June 8, 1970, Ser. No. 44,567
Int. Cl. C07c *5/08*
U.S. Cl. 260—677 H **6 Claims**

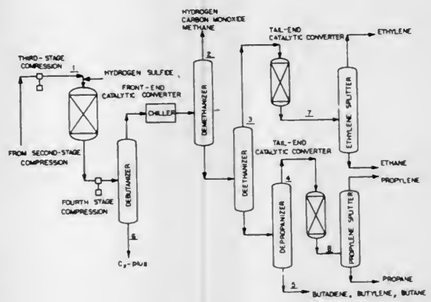
In view of the exothermic nature of acetylene hydrogenation reactions it is necessary to effect the hydrogenation of process gas streams containing larger quantities of acetylenes under other than usually practiced conditions. Under such circumstances isothermal operation has become the process of choice. Whereas a multiplicity of palladium catalysts have found their place in adiabatic operation, very few of these perform satisfactorily in isothermal reactors. We have found a palladium catalyst which outperforms these known catalysts.

3,679,763

PURIFICATION OF PROCESS GAS STREAMS BY HYDROGENATION

Jimmy Y. Livingston, Louisville, Ky., assignor to Catalysts and Chemicals Inc., Louisville, Ky.

Filed July 28, 1970, Ser. No. 58,887
Int. Cl. C07c *5/02*
U.S. Cl. 260—677 H **5 Claims**



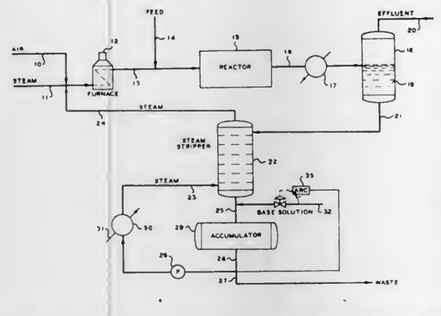
Process gases, for example, those gases derived from the pyrolysis or cracking of butane, kerosene, naphtha, refinery gases and other mineral oil and gas oil fractions, are excellent sources of olefins for the plastics industry. The acetylenes must of course be removed from these process gases before they are usable as raw materials for plastics. Hydrogenation is the process of choice, and a selective catalyst must be used so that acetylenes will be hydrogenated to the exclusion of the olefin. Partially sulfided catalysts afford a high degree of selectivity in hydrogenating acetylenes to the exclusion of olefins, but there is no selectivity between acetylenes and dienes, dienes being desired products. Accordingly the C_4 stream is generally removed prior to the selective hydrogenation reaction. Butylene, butadiene, propylene, and ethylene are removed herein from a process gas stream also containing acetylene and methylacetylene and propadiene by hydrogenating the acetylenes with minimal hydrogenation of butylene, butadiene, propylene, and ethylene. The process gas stream is passed through a bed of a catalyst so that the acetylenes are incompletely hydrogenated, the butadiene thus remaining unsaturated. Subsequently the gas stream is separated into C_2, C_3, and C_4 fractions, and then the C_2, C_3, and C_4 fractions are conducted to separate hydrogenation zones.

3,679,764

PURIFICATION OF OXIDATIVE DEHYDROGENATION PROCESS EFFLUENTS

Robert A. Hinton, Lawrence, Kans., and John E. Cottle, Bartlesville, Okla., assignors to Phillips Petroleum Company

Filed June 4, 1969, Ser. No. 830,398
Int. Cl. B01d *3/38*; C07c *7/00*, *11/22*
U.S. Cl. 260—680 E **10 Claims**



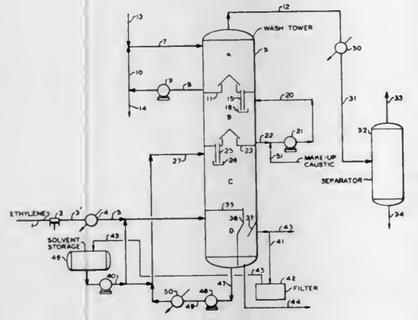
Water containing oxygenated hydrocarbons resulting from hydrocarbon oxidative dehydrogenation processes is rendered substantially non-toxic by stripping with steam to remove the oxygenated hydrocarbons including carbonyls and returning to the oxidative dehydrogenation process to suppress the formation of additional oxygenated hydrocarbons and the conversion of a portion of the steam stripped water to steam for use as stripping medium. The steam stripped water phase can be neutralized with a base prior to reboiling and converted to steam for use as the stripping medium.

3,679,765

REMOVAL OF POLYMER FROM CRACKED GAS CAUSTIC WASHES OR CAUSTIC SOLUTIONS

William L. Houston, Jr., and William C. Clark, both of Sweeny, Tex., assignors to Phillips Petroleum Company

Filed Oct. 29, 1969, Ser. No. 872,309
Int. Cl. C07c *3/00*
U.S. Cl. 260—683 R **5 Claims**



A cracked hydrocarbon gas, e.g., an effluent resulting from the pyrolytic conversion of a feed consisting essentially of ethane to form ethylene, is treated conventionally to produce a stream containing essentially ethylene which is treated with an alkali wash. The used alkali containing solid and other polymer formed therein and polymer-forming constituents is periodically or continuously treated by contacting the same with a solvent, e.g., an aromatic, to remove said polymers and polymer forming constituents. The used solvent is treated by contact with an adsorbent, e.g., activated charcoal or carbon or functional equivalent, to remove from the solvent polymer and polymer-forming constituents, rendering the solvent suitable for reuse and avoiding ultimate plugging of pumps, pipes, heat exchangers and other equipment. Polymers removed from the alkali wash can be liquid but usually are substantially solid and are at least to a real extent insoluble in the alkali wash. Polymer-forming constituents usually will not be entirely dissolved in the alkali wash. By use of the adsorbent to remove polymer-formers, and polymers, the formation of polymers in the alkali wash is considerably reduced if not completely avoided.

The treatment of the alkali wash and the solvent considerably reduces the growth of polymer initially, the treatment of solvent with the charcoal considerably reducing the tendency of polymer-forming constituents to form polymer by simply removing the polymer-forming constituents.

3,679,766

CRYSTALLIZATION OF 2,6-DIPHENYLPHENOL

Donald L. Kippax, West Stockbridge, and Kevin E. Murphy, Pittsfield, both of Mass., assignors to General Electric Company

Filed Dec. 22, 1966, Ser. No. 603,976
Int. Cl. C07c *37/22*
U.S. Cl. 260—620 **4 Claims**

A process for the separation of high purity 2,6-diphenylphenol from a mixture of 2,6-disubstituted phenols by fractional crystallization. The process is characterized by at least one crystallization stage from a solvent system comprising a mixture of an aliphatic solvent and an aromatic solvent. By the process of the invention, 2,6-diphenylphenol having a purity of at least 99.8% can be separated from a mixture of phenols using only two crystallization stages.

3,679,767

PROCESS FOR PREPARING HALOGENATED AND MIXED HALOGENATED DERIVATIVES OF METHANE BY THE CHLOROFLUORINATION OF METHANE

Martino Vecchio, Milan; Italo Cammarata, Bollate, and Vittorio Fattore, Milan, all of Italy, assignors to Montecatini Edison S.p.A., Milan, Italy

Continuation-in-part of Ser. No. 608,705, Jan. 11, 1967, abandoned, which is a continuation-in-part of Ser. No. 458,413, May 24, 1965, abandoned. This application Aug. 8, 1968, Ser. No. 751,056
Claims priority, application Italy, May 29, 1964, 11912 A/64
Int. Cl. C07c *17/10*
U.S. Cl. 260—653.8 **2 Claims**

Process for preparing chlorofluoromethanes by reaction of methane, chlorine and a recycle mixture of halogenated hydrocarbons, containing prevailingly carbon tetrachloride, with mineral calcium fluoride in a fluid bed at a temperature of from 450° to 600°C and for a contact time of from 0.5 to 120 seconds.

3,679,768

HYDRODEALKYLATION PROCESS WITH CATALYST OF GROUP VIB METALS PROMOTED BY TIN OXIDE OR LEAD OXIDE

Ronald A. Kmecak; Stephen M. Kovach, both of Ashland, and Ralph E. Patrick, Flatwoods, all of Ky., assignors to Ashland Oil, Inc., Houston, Tex.

Filed Oct. 22, 1968, Ser. No. 769,733
Int. Cl. C07c *3/58*; B01j *11/06*
U.S. Cl. 260—672 R **9 Claims**

A process for the hydrodealkylation of alkyl-substituted aromatic hydrocarbons, including contacting the alkyl-substituted aromatic hydrocarbons with a catalyst comprising a

metal of Group VIB of the Periodic System, such as chromium, molybdenum and tungsten, in an amount from about 5 to 15 percent by weight based on the finished catalyst and a promoter comprising a metal of Group IVA of the Periodic System, such as tin and lead, in an amount between about 1 to 15 percent by weight of the final catalyst, both deposited on an inert oxide support, such as gamma aluminas, silica-alumina, magnesia-alumina, etc., at a temperature of about 1,050° to 1,200° F, a pressure of about 100 to 1,000 psig., a liquid hourly space velocity of about 0.1 to 5 and a hydrogen-to-hydrocarbon mole ratio between about 3 and 15 to 1. A second promoting agent selected from the Group consisting of alkali metals, alkaline earth metals, and rare earth metals, such as potassium, rubidium, cesium, calcium, strontium, barium, cerium, thorium, etc., may also be deposited on the carrier.

3,679,769

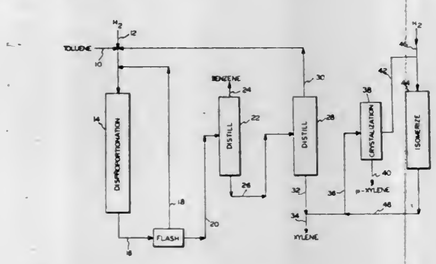
ALKYL TRANSFER OF ALKYL AROMATICS WITH GROUP VIII METALS ON ZEOLITES

Ronald A. Kmecak, and Stephen M. Kovach, both of Ashland, Ky., assignors to Ashland Oil, Inc., Houston, Tex.

Filed Dec. 19, 1968, Ser. No. 785,251

Int. Cl. C07c 3/62, 11/04; C10g 23/02, 31/14

U.S. Cl. 260—672 T **8 Claims**



A process for the alkyl transfer of alkyl aromatics including contacting an alkyl aromatic feed material, such as toluene, with a catalyst comprising a precious metal of Group VIII, such as platinum, palladium, rhodium, ruthenium, etc., deposited on a zeolite base at a temperature of about 700° to 1,100° F, a pressure of about 0 to 2,000 psig, and a liquid hourly space velocity of about 0.1 to 10, and in the presence of hydrogen introduced at a rate of about 1 to 10 moles hydrogen per mole of hydrocarbon feed. Promoters selected from Group I, Group II, Group IV, and the Rare Earth metals of the Periodic System may be added to the catalyst. Deactivated catalyst may be periodically rejuvenated by discontinuing the introduction of aromatic feed material and purging with hydrogen and the catalyst can be reactivated by calcination in air. Where toluene is the feed, the alkyl transfer product may be distilled to separate benzene, toluene and xylenes, the toluene may be recycled to the alkyl transfer step, the xylenes may be crystallized to separate para-xylene from the remaining xylenes, the mother liquor from the crystallization step may thereafter be isomerized to readjust the para-xylene content and the product of the isomerization may be recycled to the crystallization zone.

3,679,770

PROCESS FOR REMOVAL OF CATALYST COMPLEX

Charles F. Nicolet, Naperville, Ill., assignor to Standard Oil Company, Chicago, Ill.

Filed Aug. 10, 1970, Ser. No. 62,707

Int. Cl. C07c 7/10

U.S. Cl. 260—674 A **18 Claims**

Friedel-Crafts catalyst complexes are converted into fast-settling agglomerates having easily permeable filter cakes by treatment with mixtures comprising ammonia and water.

3,679,771

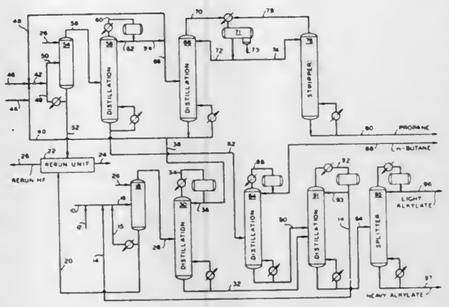
CONVERSION OF HYDROCARBONS

Thomas Hutson, Jr., and Cecil O. Carter, both of Bartlesville, Okla., assignors to Phillips Petroleum Company

Filed May 12, 1970, Ser. No. 36,528

Int. Cl. C07c 3/54, 3/62, 9/16

U.S. Cl. 260—676 R **15 Claims**



Isoparaffins are converted in a reaction zone to other hydrocarbons including isoparaffins containing fewer carbon atoms per molecule and isoparaffins containing more carbon atoms per molecule by contacting an isoparaffin feedstock with hydrofluoric acid in the presence of an amount of an olefin which is sufficient to increase the conversion of said feedstock. In a combination process said isoparaffin product containing fewer carbon atoms per molecule than the isoparaffin feedstock is passed to an alkylation zone as a portion of one of the reactants thereto. Isoparaffin product containing the same number of carbon atoms as said first-mentioned isoparaffin feedstock, and which are produced in said alkylation zone, are passed to the first-mentioned reaction zone as a portion of the feedstock thereto. Isoparaffin product containing more carbon atoms per molecule are blended with at least a portion of the hydrocarbon product produced in the alkylation zone.

3,679,772

CHEMICAL PROCESS

Jin S. Yoo, South Holland, Ill., assignor to Atlantic Richfield Company, New York, N.Y.

Filed Aug. 4, 1969, Ser. No. 847,447

Int. Cl. C07c 3/10, 11/12

U.S. Cl. 260—680 B **21 Claims**

Reaction of a mono-olefin and a conjugated olefin in contact with a catalyst comprising a complex of nickel, a Group V-A electron donor ligand and a non-protonic Lewis acid and reducing agent on a solid, acidic silica-based support. Illustrative is the preparation of 1,4-dienes from the reaction of 1,3-butadiene and ethylene in contact with nickel acetylacetonate, triphenylphosphine, and ethylaluminum-sesquichloride supported on silica-alumina pellets.

3,679,773

DEHYDROGENATION-TYPE REACTIONS WITH GROUP VIII CATALYSTS

Stephen M. Kovach, and Ronald A. Kmecak, both of Ashland, Ky., assignors to Ashland Oil, Inc., Houston, Tex.

Filed Oct. 22, 1968, Ser. No. 769,751

Int. Cl. C07c 5/18, 11/04

U.S. Cl. 260—683.3 **10 Claims**

A process for the dehydrocyclization of paraffinic hydrocarbons or the dehydrogenation of low molecular weight paraffins to produce hydrogen and mono-olefins, including, contacting the organic materials with a catalyst of an active metal from Group VIII of the Periodic System, such as platinum, palladium, ruthenium and nickel, in amounts of about 0.5 to 5 percent of the finished catalyst and a promoter from the rare earth metal Group of the Periodic System, such as cerium and thorium, in an amount of 1 to 10 percent of the finished catalyst, both deposited on an inert oxide support, such as gamma-type aluminas, silica-alumina, silica-magnesia, etc., at a temperature between about 550° and 1,250°F, a pressure of 0.01 to 2,600 mm. of mercury absolute, and a liquid hourly space velocity of 0.1 to 10. A promoting amount of a second metal selected from the group consisting of alkali metals and alkaline earth metals may also be deposited on the carrier. The hydrogen produced by the dehydrogenation of paraffins is also separated from the olefins and contacted with coal liquids in the presence of the above catalyst or a hydrogenation catalyst and under hydrogenation conditions to increase the saturation of the coal liquids.

3,679,774

CRYSTALLIZED ORGANOPOLYSILOXANE-POLYCARBONATE BLOCK POLYMERS AND METHOD FOR MAKING THEM

Donald G. Le Grand, Burnt Hills, N.Y., assignor to General Electric Company

Filed March 2, 1970, Ser. No. 15,472

Int. Cl. C08g 47/10

U.S. Cl. 260—824 R **6 Claims**

Random alternating organopolysiloxane-polycarbonate block polymers can be crystallized by contacting the block polymer with a methylalkylketone in the vapor or liquid state. The resulting crystallized organopolysiloxane-polycarbonate block polymers exhibit improved physical characteristics, such as tensile strength (psi) and improved resistance to distortion at elevated temperature. The crystallized organopolysiloxane-polycarbonate block polymers can be employed as dielectrics and as permselective membranes for separating gases and vapors.

3,679,775

OLEFIN POLYMERIZATION PROCESS AND CATALYST

Hugh J. Hagemeyer, Jr., and Vernon K. Park, both of Longview, Tex., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 597,481, Nov. 28, 1966, abandoned, which is a continuation of Ser. No. 464,580, June 16, 1965, abandoned, which is a continuation of Ser. No. 146,004, Oct. 18, 1961, abandoned. This application April 3, 1968, Ser. No. 718,337

Int. Cl. C08f 1/56, 3/10

U.S. Cl. 260—878 B **15 Claims**

Process for polymerizing alpha-olefins employing a catalyst comprising organopolylithiumalumaluminum compound prepared by reacting lithium compounds selected from the group consisting of lithium hydride and lithium alkyl with at least one aluminum compound selected from the group consisting of aluminum trialkyl and dialkyl aluminum hydride, an alkyl compound selected from the group consisting of lithium alkyl, aluminum trialkyl and dialkyl aluminum hydride and the alpha form of $TiCl_3$. This combination provides a catalyst for commercial processes which can be operated at temperatures above 140° C. over extended periods of time.

3,679,776

POLYMERIZATION OF HYDROCARBON DIENES WITH LITHIUM-SODIUM ALLOYS

Robert Paul Foss, Runnymede, Hockessin, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed April 1, 1970, Ser. No. 24,540

Int. Cl. C08d 1/20, 3/06, 3/10

U.S. Cl. 260—879 **12 Claims**

Conjugated hydrocarbon dienes are polymerized with lithium-sodium alloy initiator containing 0.1 to 90 mole percent sodium in a nonpolar medium at about −10°C. to 100°C. to yield the corresponding lithiopolydiene in which a desired high percentage of the repeating units have cis-1,4-structure. The lithiopolydienes can be used to prepare block copolymers of the ABA type in which the A units are polypivalolactone or a polymer of any other anionically polymerizable monomer and the B unit is a polydiene. The alloys can also be applied to prepare homopolydienes with high 1,4-cis structure, which are useful as vulcanizable elastomers.

3,679,777

PHOTODEGRADABLE POLYOLEFINS

Bernard Lambert, Paris, France, assignor to Ethylene Plastique

Filed Aug. 31, 1970, Ser. No. 68,509

Claims priority, application Great Britain, Sept. 5, 1969, 44,093/69

Int. Cl. C08f 45/00, 3/04

U.S. Cl. 260—897 A **3 Claims**

The photodegradation of polyolefin compositions is accelerated by the incorporation therein of from 0.1 to 2 percent by weight of a γ-pyrone ring-containing compound, such as chromone, flavone or xanthone. Polyolefin films containing such additives are useful as wrapping films and, particularly, agricultural mulching films.

3,679,778

AMIDE AND CARBAMATE DIPHOSPHONATES AND PROCESS FOR THEIR MANUFACTURE

Hermann Nachbur, Dornach, and Arthur Maeder, Therwil, both of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

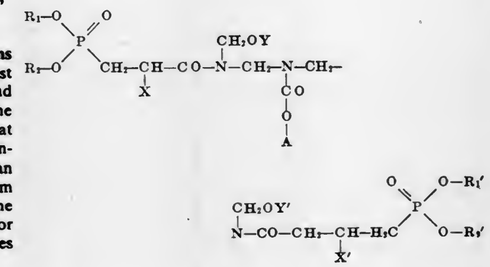
Filed Dec. 16, 1969, Ser. No. 885,645

Claims priority, application Switzerland, Dec. 24, 1968, 19236/68

Int. Cl. C07f 9/38; D06c 27/00

U.S. Cl. 260—932 **11 Claims**

Phosphorus compounds are provided which correspond to the formula



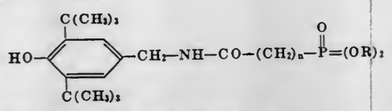
wherein each R is an alkyl, alkenyl or halogenalkyl radical, X and X′ each is a methyl radical or a hydrogen atom, Y and Y′ each is an alkyl radical or a hydrogen atom and A is an alkyl, halogenalkyl, hydroxyalkyl or a phenyl or benzyl group which both may be halogen substituted. The phosphorus compounds are manufactured from the corresponding phosphorus carboxylic acid amides and carbamates and formaldehyde. These compounds optionally together with a curable aminoplast precondensate are useful for flameproofing and creaseproofing of cellulose-containing fiber materials.

3,679,779
PHOSPHONIC ACID DIALKYL ESTERS

Helmut Huber-Emden; Karl Eschle, both of Basel, and Arthur Maeder, Therwil, all of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

Filed Jan. 22, 1970, Ser. No. 5,148
Claims priority, application Switzerland, Jan. 30, 1969, 1460/69
Int. Cl. C07f 9/40
U.S. Cl. 260—943 10 Claims

The subject of the invention is phosphonic acid dialkyl esters of the formula



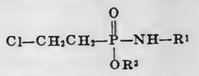
in which R denotes an alkyl radical with one to 18 carbon atoms and *n* denotes 1 or 2. These phosphonic acid dialkyl esters are used as antioxidants for plastics, especially for polypropylene, polyethylene and polyurethane, and rubber. The combined use of the phosphonic acid dialkyl esters with flameproofing agents, may increase the flameproofing action of the flameproofing agent. The use of the compounds according to the invention in combination with other antioxidants also may show advantageous effects.

3,679,780
N-SUBSTITUTED-P-(2-CHLOROETHYL)-PHOSPHONAMIDATES

David I. Randall, and Robert W. Wynn, both of Easton, Pa., assignors to GAF Corporation, New York, N.Y.

Filed Dec. 2, 1969, Ser. No. 881,579
Int. Cl. C07f 9/40
U.S. Cl. 260—959 6 Claims

Plant growth regulating compounds are N-substituted-P-(2-chloroethyl)-phosphonamidic esters of the formula:



wherein R^1 is halophenyl and R^2 is alkyl or haloalkyl. They are prepared by the reaction of 2-chloroethylphosphonohalidic esters with the appropriate haloaniline.

3,679,781
MOLDING PLASTIC COATED NITROCELLULOSE

Theodore A. Olson, Trumbull, and John J. Scanlon, Monroe, both of Conn., assignors to Remington Arms Company, Inc., Bridgeport, Conn.

Filed Oct. 17, 1969, Ser. No. 867,384
Int. Cl. C06b 21/02
U.S. Cl. 264—3 R 5 Claims

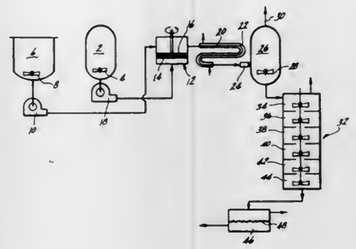
A hot-molded solid propellant or priming charge and the method of making the charge. Nitrocellulose grains are coated with plasticized polyvinyl acetate and then heated and compression molded whereupon the hot molded components retain their geometry and dimensional recovery is negligible. High explosive can be added to the charge prior to molding in order to improve quickness and burning rate of the charge.

3,679,782
MANUFACTURE OF GLOBULAR POWDER

Eugene A. Andrew, St. Louis, Mo., and Henry J. Halverson, St. Clair, Ill., assignors to Olin Corporation

Filed Nov. 20, 1969, Ser. No. 878,269
Int. Cl. C06b 21/02
U.S. Cl. 264—3 E 10 Claims

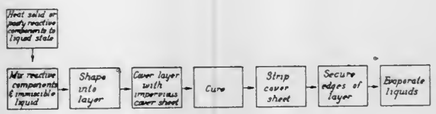
A method of preparing globular propellant powder wherein presized lacquer particles are entrained in a liquor suspending medium and forced to flow through a long section of tubing until the propellant grains are dewatered and rounded into spherical shape. The spherically shaped powder globules are then passed into a flash evaporator having a pressure lower than that in the dewatering and shaping conduit so that a portion of the solvent within the globules volatilizes. The remaining solvent is removed by passing the slurry through a final hardener consisting of several chambers. Each of these chambers are individually heated to increase the temperature of the slurry of powder granules as it moves through the column. The temperature gradient between adjacent chambers in the latter stages may be increased.



3,679,783
PROCESS FOR FORMING A THIN MICROPOROUS SHEET MATERIAL

John J. McGarr, Beverly, Mass., assignor to USM Corporation, Boston, Mass.

Continuation-in-part of Ser. No. 683,015, Nov. 14, 1967, abandoned, which is a continuation-in-part of Ser. No. 500,155, Oct. 21, 1965, abandoned. This application Oct. 16, 1969, Ser. No. 867,986
Int. Cl. B29d 27/04
U.S. Cl. 264—53 19 Claims

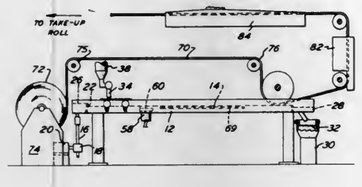


A process for forming a microporous body having improved uniformity and permeability in which a normally solid or highly viscous polymeric reactive material is heated to bring it to a freely fluid state, a liquid having no or only very limited solvent or swelling action on the polymeric material is dispersed to form an emulsion with the polymeric material as the continuous phase, the polymeric material is reacted to tough, solid, resilient, film-forming condition, the emulsion is solidified and the liquid is removed leaving spaces constituting openings or pores in the solidified material. Where thin cross section bodies are desired, the emulsion is formed into a thin layer on a casting surface with a cover on the face of the emulsion opposite the casting surface, the cover remains in place during solidification of the emulsion, and is separated from the solidified emulsion before removal of the liquid.

3,679,784
METHOD OF MAKING DECORATIVE ARTICLES FROM PLASTISOL

Karl M. Rosenberg, Philadelphia, Pa., assignor to Flo-Tech Corp., Wilmington, Del.

Continuation-in-part of Ser. No. 812,795, April 2, 1969, abandoned. This application July 23, 1969, Ser. No. 865,542
Int. Cl. B29d 7/02; B29c 25/00, 5/00
U.S. Cl. 264—73 7 Claims

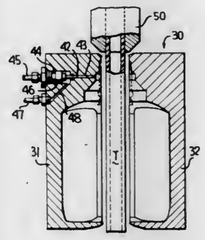


A method of making decorative articles from plastisol is disclosed. In one of its forms, the method is performed by placing bodies of liquid or semi-liquid plastisol of different color on the surface of a pool of liquid material immiscible with the plastisol and having a density in excess of the density of the plastisol. The bodies of plastisol are intermingled as they float on the pool to form a mass having a variegated marblelike appearance. The mass may then be gelled, or alternatively, fused, and then removed from the pool. One aspect of the disclosed method is a step of compressing ungelled plastisol prior to or during gelling to preclude the presence of bubbles in the finished article.

3,679,785
METHOD OF FORMING AN INTEGRAL ONE-PIECE PLASTIC CONTAINER AND CARRYING HANDLE

Roy W. Dike, Tempe, Ariz., assignor to Continental Can Company, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 250,058, Jan. 8, 1963, Pat. No. 3,441,172. This application May 17, 1968, Ser. No. 730,119
Int. Cl. B29c 17/07, 17/12
U.S. Cl. 264—98 2 Claims

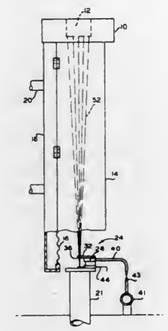


This disclosure relates to a method of forming an integral container and carrying handle by extruding a tube of plastic material, forming a first portion of the tube into an inverted generally U-shaped handle, forming another portion of the tube into a container body having a neck spanned by the handle, and removing waste material from between the handle and the neck to form the inner outline of the handle and form an opening of the neck.

3,679,786
METHOD AND APPARATUS FOR MELT SPINNING OF SYNTHETIC FILAMENTS

Hans Van Doornewaard, Greenville, S.C., and Henry G. Jackson, Guayama, P.R., assignors to Phillips Fibers Corporation

Filed May 21, 1970, Ser. No. 39,273
Int. Cl. B28b 3/20
U.S. Cl. 264—176 F 13 Claims



In melt spinning of synthetic filaments, a stream of gaseous fluid is withdrawn from a region adjacent the entrance to the conditioner tube so as to substantially eliminate undesired turbulence in the quench chamber.

3,679,787
ANTIBIOTIC PROCESS OF TREATMENT

Malcolm E. Bergy, Kalamazoo; Ross R. Herr, and Donald J. Mason, both of Portage, all of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Continuation of Ser. No. 731,679, May 17, 1968, abandoned, which is a continuation of Ser. No. 833,861, June 2, 1969, abandoned, Continuation-in-part of Ser. No. 517,453, Dec. 29, 1965, abandoned, which is a continuation-in-part of Ser. Nos. 398,060, Sept. 21, 1965, Pat. No. 3,261,687, and Ser. No. 134,843, Aug. 30, 1961, Pat. No. 3,155,580. This application Aug. 6, 1970, Ser. No. 61,858
Int. Cl. A61k 21/00
U.S. Cl. 424—181 3 Claims

The combination of lincomycin and spectinomycin, in unit dosage form, in combination with pharmaceutical carriers: useful in treating diseased animals and exhibiting synergistic activity against mycoplasma infections e.g. PPLO and L forms.

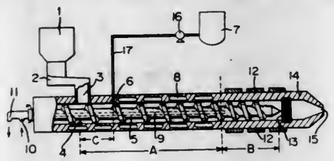
3,679,788
PROCESS FOR THE PREPARATION OF THERMOPLASTIC ARTICLES CONTAINING LIQUID MATTER UNIFORMLY

Hiroshi Kiyono, Kyoto, and Kohei Sugiyama, Ibaraki, both of Japan, assignors to Sekisu Kagaku Kogyo Kabushiki Kaisha, Kita-ku, Osaka, Japan

Filed May 25, 1970, Ser. No. 40,054
Claims priority, application Japan, May 26, 1969, 44/41457
Int. Cl. D01f 1/02
U.S. Cl. 264—211 8 Claims

A process for the preparation of thermoplastic articles containing liquid matter uniformly, which comprises feeding thermoplastic resin into the extrusion cylinder of a screw type extruder through the feeding opening, rotating the screw to

transfer the resin maintained in an unmelted state, injecting the liquid matter into the unmelted resin through the at least one injection nozzle opening into the extrusion cylinder, con-



tinuously rotating the screw to mix and disperse the liquid matter in the unmelted resin and advance the mixture to the extruder outlet, and further rotating the screw to melt the mixture, and to knead and extrude the molten mixture.

3,679,789

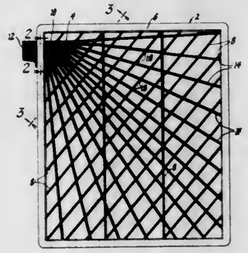
PROCESS OF MAKING A BATTERY PLATE GRID

Ellis G. Wheadon, Yorktown, and Norman L. Willmann, Anderson, both of Ind., assignors to General Motors Corporation, Detroit, Mich.

Division of Ser. No. 780,068, Nov. 29, 1968, Pat. No. 3,556,854. This application May 18, 1970, Ser. No. 38,441

Int. Cl. H01j *35/04*; H01m *35/00*

U.S. Cl. 264—249 **2 Claims**



A process for making a battery plate grid, the grid being formed from a fan-like conductor and a grate-like nonconductor bonded one to the other by a plurality of fusion-interlocked joints.

3,679,790

METHOD OF FINISHING BOARDS OF VEGETABLE MATERIAL

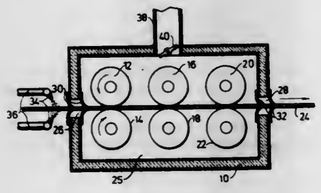
Alf Adolf Alfsen, 116, Riddarvagen, Osterskar, Sweden

Continuation of Ser. No. 689,450, Dec. 11, 1967, abandoned. This application June 12, 1970, Ser. No. 48,864

Claims priority, application Sweden, Dec. 12, 1966, 17032/66

Int. Cl. B29j *5/10*

U.S. Cl. 264—280 **4 Claims**



A method and an apparatus for finishing boards of vegetable material including the production of a sliding movement over at least one surface of the board. Specific apparatus elements are provided to effect the sliding movement including rotative and non-rotative structures. The method includes high temperature and high pressure treatment in combination with the production of a sliding movement on at least one surface of the board. The board may be treated after drying and upon both sides thereof simultaneously.

3,679,791

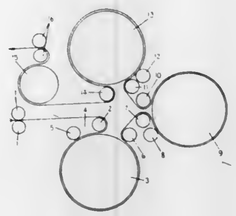
PROCESS FOR SHRINKING FILM

Grahame Melvin Reade, Harpenden, England, assignor to Imperial Chemical Industries Limited, London, England

Division of Ser. No. 627,449, March 31, 1967, Pat. No. 3,570,052. This application Feb. 20, 1970, Ser. No. 12,994

Int. Cl. B29c *25/00*

U.S. Cl. 264—342 RE **12 Claims**



Heat-treating oriented film by feeding it to at least one matt surfaced rotating roll which is maintained at a temperature at which the film will shrink but below the melting point of the film and forcing the film against the roll while uniformly spreading it out on the roll.

3,679,792

DIALDEHYDE-CONTAINING ANTI-CARIES CHEWING GUM COMPOSITIONS

John H. Litchfield, Worthington, and Victor G. Vely, Columbus, both of Ohio, assignors to Wm. Wrigley Jr., Company, Chicago, Ill.

Filed Sept. 5, 1969, Ser. No. 855,763

Int. Cl. A61k *27/00*

U.S. Cl. 424—48 **10 Claims**

Unique chewing gum compositions possessing anti-caries activity characteristics comprising a chewing gum base having incorporated therein at least one anti-microbial agent comprising saturated or unsaturated, substituted or unsubstituted, conjugated or unconjugated dialdehydes. The chewing compositions can and preferably do contain conventional adhesive as well as conventional flavoring agents.

3,679,793

METHOD OF RAISING THE WHITE BLOOD CELL COUNT

Elton S. Cook, Cincinnati, Ohio, and Leo G. Nutini, Burlington, Ky., assignors to Stanley Drug Products, Inc., Portland, Oreg.

Continuation-in-part of Ser. No. 739,639, June 25, 1968,. This application Feb. 13, 1970, Ser. No. 11,299

Int. Cl. A61k *17/00, 27/00*

U.S. Cl. 424—95 **3 Claims**

A method of raising the white blood cell count in mammals by administering thereto a deproteinized extract from yeast and certain animal tissues such as brain, spleen and others, in such a manner as to cause the extract to enter the blood stream.

3,679,794

PROCESS FOR THE MANUFACTURE OF RAPIDLY DISINTEGRATING SOLID DOSAGE UNIT FORMS

Svend Asger Rud Bentholm, Nuland, and Wilhelm Engelinus Koenen, Oss, both of Switzerland, assignors to Organon Inc., West-Orange, N.J.

Continuation-in-part of Ser. No. 799,061, Feb. 13, 1969, abandoned. This application Sept. 17, 1971, Ser. No. 181,588

Int. Cl. A61j *3/10*

U.S. Cl. 424—148 **4 Claims**

A solid dosage unit tablet or pill which is stable at high relative humidities and capable of disintegrating rapidly in the presence of moisture comprises an active ingredient, conventional tableting excipients and/or lubricants, and as a disintegrating agent from about 0.3 to about 3 percent by weight of an alkali metal salt of carboxymethylcellulose having a degree of polymerization between about 100 and about 2000, and a degree of substitution between 0.02 and 0.17 at polymerization degree 100, and between 0.02 and 0.57 at polymerization degree 2000.

ERRATUM

For Class 424—181 see:
Patent No. 3,679,787

3,679,795

ANTIINFECTIOUS COMPOSITIONS AND PROCESS FOR THEIR PREPARATION

Pierre De Somer, Louvain, and Paul Claes, Heverlee, both of Belgium, assignors to Recherche Et Industrie Therapeutiques, R.I.T., Genval, Belgium

Filed June 4, 1970, Ser. No. 43,571

Claims priority, application Belgium, June 17, 1969, 30,722; June 17, 1969, 63,598

Int. Cl. A61k *27/00*

U.S. Cl. 424—180 **9 Claims**

The invention relates to the preparation of antiviral polyacetalcarboxylic acids and to the physiologically acceptable salts thereof, said polyacetalcarboxylic acids being oxidized polysaccharides having at least 50 percent of the monosaccharide rings open, substantially all the open rings oxidized to the carboxylic acid state and substantially all the C-O-C linkages originally present in the original polysaccharide still intact.

3,679,796

METHODS OF CONTROLLING RODENTS AND LEPORINE ANIMALS

Gunter Hermann, Leverkusen, and Karl-Julius Schmidt, Wuppertal-Vohwinkel, both of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Dec. 8, 1969, Ser. No. 883,335

Claims priority, application Germany, Dec. 10, 1968, P 18 13 696.4

Int. Cl. A01n *9/36*

U.S. Cl. 424—211 **10 Claims**

Methods of selectively combating and controlling rodents and leporine animals using certain phosphorus acid esters, i.e. phosphoric, phosphonic, thionophosphoric and thionophosphonic acid esters, or (alkyl and O-alkyl)-O-alkyl-O-[2-(N,N-di[alkyl, alkenyl and cyanoalkyl]-amino-methyl) and 2-(pyrrolidino, piperidino and morpholino)-methyl-4-(alkyl, alkylmercapto, alkylsulfoxyl, alkylsulfonyl, nitro, cyano, aminocarbonyl and chloro)-3,5 and/or 6-(optionally mono and di chloro, nitro and alkyl)-phenyl]-phosphoric, phosphonic, thionophosphoric and thionophosphonic acid esters, and the corresponding dimethyl sulfate quaternary ammonium salts thereof, which are known, which possess strong and selective rodenticidal properties, and which may be produced by conventional methods.

3,679,797

SINGLE-PHASE PESTICIDAL PREPARATIONS

Willem De Lange; Werner Duyfjes, and Willem Maas, all of Amsterdam, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 29, 1969, Ser. No. 888,918

Claims priority, application Netherlands, Nov. 4, 1969, 6,917,222

Int. Cl. A01n *17/08*

U.S. Cl. 424—211 **15 Claims**

A single-phase pesticidal U.L.V. preparation substantially consisting of a pesticide dissolved in isophorone, hexamethyl phosphoric acid triamide, dimethyl formamide or mixtures thereof, and a vegetable or animal wax or a hydrolysis product of the latter product as a phytotoxicity-reducing substance. The preparations are of low volatility, have a slight phytotoxicity and cause vary little leaf damage. The invention is of particular importance for U.L.V. preparations based on carbaryl, carbofuran, dimethoate, D.D.T., dieldrin, endrin, lindane, methoxychlor, tetrasul and tetradifon. The most suitable solvent is isophorone: the most suitable phytotoxicity reducing substance is wool fat alcohol or wool fat acid.

3,679,798

COMPOSITION COMPRISING ARYLAMINOOXAZOLINE AND ANTICHLOLIGENERIC AGENT

Rudolf Culik, 214 LaFayette St., Kennett Square, Pa., and Jurg A. Schneider, 520 Rothbury Road, Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

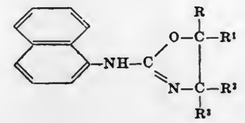
Filed Feb. 28, 1964, Ser. No. 348,291

Int. Cl. A61k *27/00*

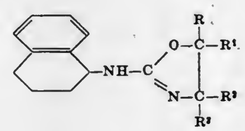
U.S. Cl. 424—265 **32 Claims**

17. A composition comprising one part by weight of an arylaminooxazoline and from about 0.5 to 30 parts by weight of a centrally acting anticholinergic agent, said arylaminooxazoline being selected from the group consisting of those of the following formulas and pharmaceutically acceptable acid addition salts thereof:

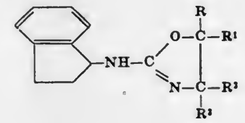
(1)



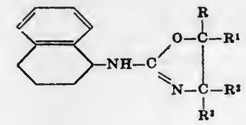
(2)



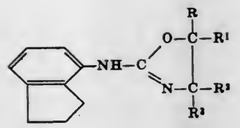
(3)



(4)

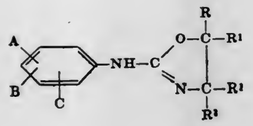


(5)



and

(6)



where in each of formulas (1) through (6) R, R^1, R^2 and R^3 are each separately selected from the group consisting of hydrogen and alkyl of 1 through 4 carbons with the total number of carbons in these four substitutents being 8; where in each of formulas (1) through (5), 1 through 3 hydrogen atoms of the moiety selected from the group consisting of naphthyl, partially reduced naphthyl and indanyl can be replaced with a member selected from the group consisting of halogen, alkyl of 1 through 4 carbons, alkoxy of 1 through 4 carbons, alkylthio of 1 through 4 carbons, trifluoromethyl and trifluoromethoxy; and where in formula (6) A is selected from the group consisting of hydrogen, alkyl of 1 through 4 carbons, alkoxy of 1 through 4 carbons and halogen; B is selected from the group consisting of alkyl of 1 through 4 carbons, alkoxy of 1 through 4 carbons and halogen; and C is selected from the group consisting of hydrogen, alkyl of 1 through 4 carbons, alkoxy of 1 through 4 carbons halogen, alkylthio of 1 through 4 carbons, alkoxyalkyl wherein the alkoxy portion has 1 through 2 carbons and the alkyl portion has 1 through 2 carbons, alkylamino of 1 through 2 carbons, dialkylamino where each alkyl group has 1 through 2 carbons, trifluoromethyl and trifluoromethoxy.

3,679,799

PIPERDINE DERIVATIVES IN AN ANTITUSSIVE COMPOSITION AND METHOD

Hans Herbert Kuhnis, and Denss Rolf, both of Basel, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 739,194, June 24, 1968, Pat. No. 3,551,431. This application March 3, 1970, Ser. No. 15,919

Int. Cl. A61k *27/00*

U.S. Cl. 424—267 **2 Claims**

Piperidine derivatives with a cyano group in four-position and acid addition salts thereof possessing useful antitussive action; therapeutic compositions containing these piperidine derivatives or their pharmaceutically acceptable acid addition salts for producing antitussive effects in warm-blooded animals, particularly mammals. An illustrative embodiment is 1-(2-phenylethyl)isonipecotonitrile.

3,679,800

BICYCLOALKYL PHENOXYALIPHATIC ACID-COMPOSITIONS

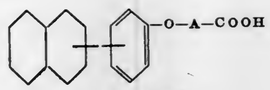
William Laszlo Benoze, New Providence, N.J., assignor to Ciba Corporation, Summit, N.J.

Filed April 3, 1968, Ser. No. 718,374

Int. Cl. A61k *27/00*

U.S. Cl. 424—267 **2 Claims**

Bicycloalkyl-phenoxy-aliphatic acids, e.g., those of the formula



A = alkylene or alkenylene

and their functional derivatives are hypocholesterolemic agents.

3,679,801

ARYL ESTERS OF α-CARBOXYARYLMETHYL-PENICILLINS

Kenneth Butler, Old Lyme, Conn., assignor to Pfizer Inc., New York, N.Y.

Continuation-in-part of Ser. No. 830,516, June 4, 1969, abandoned, Continuation-in-part of Ser. No. 695,894, Jan. 5, 1968, abandoned. This application May 19, 1970, Ser. No. 38,903

Int. Cl. C07d *99/16*

U.S. Cl. 424—271 **8 Claims**

Arylchloro (and bromo) carbonyl ketenes, arylcarboxy ketene aryl esters derived therefrom, methods for their preparation and the use of the esters as acylating agents for the production of antibacterial agents; namely, aryl esters of α-carboxyarylacetyl derivatives of 6-aminopenicillanic acid, and by hydrolysis, the corresponding acid derivatives, are described.

3,679,802

METHOD OF PREVENTING CONVULSIONS

Roger Ratouis, Saint Cloud, and Jacques Robert Boissier, Paris, both of France, assignors to Roussel Uclaf, Paris, France

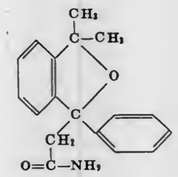
Filed Oct. 7, 1970, Ser. No. 78,961

Claims priority, application France, Oct. 8, 1969, 6934369

Int. Cl. A61k *27/00*

U.S. Cl. 424—285 **2 Claims**

Novel anticonvulsant composition containing as the active ingredient, 3,3-dimethyl-1-phenyl-1-acetamidophthalanne of the formula



I

and to a novel method of preventing convulsions in warm-blooded animals.

3,679,803

SHAPING PRESS, SPECIFICALLY FOR ARTICLES MADE OF PLASTIC

Jacques Palencher, Troyes, France, assignor to Lebocey Industrie, Troyes (Aube), France

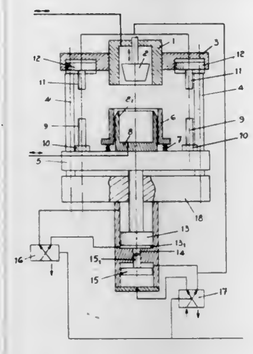
Filed Aug. 25, 1969, Ser. No. 852,805

Claims priority, application France, Nov. 25, 1968, 175215

Int. Cl. B29c *17/04, 17/08*

U.S. Cl. 425—289 **4 Claims**

The invention relates to a shaping press for articles made of plastic, comprising two members that act as a shaping enclosure, inside which the material to be shaped is held at an appreciably uniform pressure strength, this strength being independent of the means operating the moving of one of the mobile members of the shaping enclosure.



3,679,804

METHOD FOR TREATING GLAUCOMA WITH ALKYL GALLATES

Edgar Grunwaldt, New York, N.Y., assignor to Geigy Chemical Corporation, Greenburgh, N.Y.

Filed May 1, 1969, Ser. No. 821,099

Int. Cl. A61r *27/00*

U.S. Cl. 424—308 **2 Claims**

Pharmaceutical compositions containing alkyl gallates are employed for treating glaucoma.

3,679,805

CERTAIN N-ACELYLCYCLOHEXY AMINES

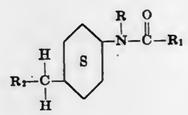
Richard N. Knowles, Hockessin, Del., and Wilfred J. Arthur, Charleston, W. Va., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 532,544, March 1, 1966, abandoned. This application April 20, 1967, Ser. No. 635,305

Int. Cl. A01n *9/20*; **C07c** *103/12*

U.S. Cl. 424—320 **13 Claims**

N-Acylcyclohexylamines of the formula:



wherein

R is hydrogen, methyl or ethyl;

R_1 is hydrogen or alkyl of one through four carbon atoms; and

R_2 is cyclobutyl, cyclopentyl, cyclohexyl, cycloheptyl, cyclooctyl, cyclononyl, bicycloalkyl, cycloalkylalkyl or tricycloalkyl.

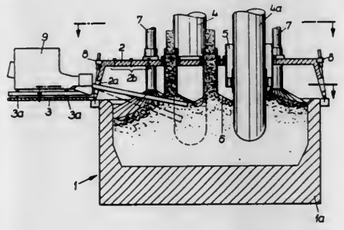
Typical are N-acetyl-cis-4-cyclobutylmethylcyclohexylamine and N-acetyl-cis-4-cyclohexylmethylcyclohexylamine useful for repelling animals.

ELECTRICAL

3,679,806
ELECTRIC REDUCTION FURNACE

Johannes A. Reth, and Winifried H. Fettweis, both of Duisburg, Germany, assignors to Demag Elektrometallurgie GmbH, Duisburg, Germany

Division of Ser. No. 754,892, Aug. 23, 1968, Pat. No. 3,615,346. This application Dec. 15, 1969, Ser. No. 885,395
Claims priority, application Germany, March 12, 1968, D 55 615
Int. Cl. H05b 7/00; F27d 3/00
U.S. Cl. 13—9 4 Claims

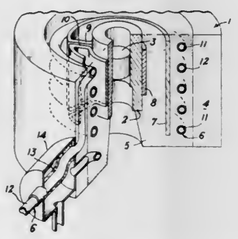


In the production of metals and metal alloys from a charge of material containing at least one of manganese, silicon, and chromium, the charge of material is disposed within a closed combustion chamber and combustion air is directed into the closed space in a volume based on the conditions existing therein. A sufficient amount of combustion air is supplied to completely burn all of the CO in the reduction gases to form CO_2. The amount of combustion air supplied to the closed combustion space is in excess of the amount required to effect the complete combustion of the CO_2. Further, during the reduction operation, the charge is worked by stirring means or the like to assure the permeability of its surface for the release of the reduction gases.

3,679,807
DIE-FURNACE, ESPECIALLY FOR THE FABRICATION OF SINTERED PRODUCTS

Jacques Carcey, Rives, France, assignor to Commissariat A L'Energie Atomique, Paris, France

Filed May 10, 1971, Ser. No. 141,800
Claims priority, application France, May 12, 1970, 7017174
Int. Cl. H05b 5/12
U.S. Cl. 13—27 5 Claims

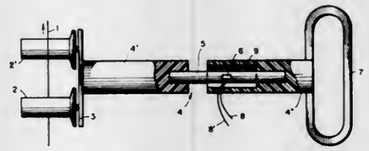


The die-furnace comprises a cylindrical die of refractory material, a banding assembly which surrounds the die externally and transmits a radial compressive force to the die by means of packing material, an induction heating device located within the packing material and constituted by a cooled primary coil connected to an external high-frequency power supply and by a coaxial secondary circuit which surrounds the die and in which a current is induced by the primary coil.

3,679,808
METHOD AND APPARATUS FOR MEASURING YARN TENSION

Dieter Rohner, Hausen, and Wolfgang Duhring, Erlenbach, both of Germany, assignors to Akzona Incorporated, Asheville, N.C.

Filed June 30, 1970, Ser. No. 51,070
Claims priority, application Germany, July 3, 1969, P 19 33 749.6
Int. Cl. G01l 5/10
U.S. Cl. 73—144 10 Claims

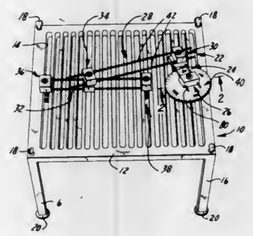


A method and apparatus for measuring yarn tension during high-speed transport of the yarn. The method involves engaging the running yarn with a pair of coupled torque-imparting rollers or similar yarn-contacting surfaces and electrically measuring the resulting torque which is proportional to the yarn tension. The apparatus is a torsion bar assembly with the two yarn-engaging rollers radially mounted on an arm connected by an axle to one end of the torsion bar with means to electrically measure the torque of the torsion bar produced by the yarn tension while the other end of the torsion bar is held in a fixed position by any suitable means.

3,679,809
PIVOT LINKAGE ASSEMBLY KIT

Louis Wertman, Jamaica Estates, N.Y., assignor to Pic Design Corp., East Rockaway, N.Y.

Filed Dec. 2, 1970, Ser. No. 94,393
Int. Cl. G09b 25/02
U.S. Cl. 35—13 14 Claims



A pivot linkage assembly comprises a mounting grid and a plurality of precision ground linkage rods slidingly mounted in parallel pairs within a plurality of pivotal mounting blocks. Means are provided for pivotally mounting said mounting blocks on the slotted mounting structure by means of low-friction pivot sleeves. Several mounting blocks may be pivotally stacked on the same pivot sleeve with spacer means therebetween to insure low-friction relative rotation. Two or more blocks may also be operatively pivotally connected in free floating relationship thereby to form a variety of classic linkage mechanisms and combinations thereof. Precision angularly inscribed dials are provided to enable graphing of linkage motion. The assembly is useful for actual proto-models or for teaching and demonstration purposes.

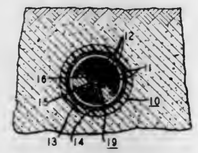
ERRATUM

For Class 73—144 see:
Patent No. 3,679,808

3,679,810
SYSTEM FOR MAINTAINING LOW RELATIVE HUMIDITY IN TELEPHONE CABLES AND OTHER ENCLOSURES

Wendell Glenn Nutt, Phoenix, Md., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 21, 1970, Ser. No. 99,820
Int. Cl. H01b 7/28
U.S. Cl. 174—16 R 5 Claims



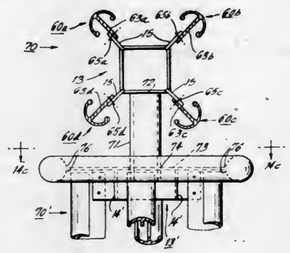
This disclosure describes a system for maintaining a reduced level of relative humidity in telephone cables. A moisture-permeable tube of, for example, polyvinyl chloride with a pulp-insulated pair within it is included in the cable core. The pulp insulation, being a natural desiccant, absorbs moisture that passes through the tube wall from the cable, thus holding down the relative humidity inside the cable. When the pulp is saturated, a longitudinal flow of air coupled with applied electrical current sufficient to heat the pair, purges the moisture from the tube. The pulp insulation is ready thereafter to absorb moisture anew.

3,679,811
RIGID MULTICONDUCTOR BUS SYSTEM FOR USE IN HIGH CURRENT AND EXTRA ULTRA HIGH VOLTAGE SYSTEMS

Eugene Gorin, Greensburg, Pa., assignor to I-T-E Imperial Corporation, Philadelphia, Pa.

Filed Sept. 18, 1970, Ser. No. 73,491
Int. Cl. H02g 5/00
U.S. Cl. 174—72 B 10 Claims

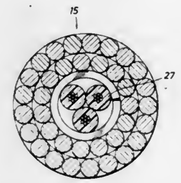
A rigid multiconductor bus system for conducting high currents in multi-phase EHV and UHV transmission system applications. The conductor system for each phase is comprised of a multiplicity of annular or semi-annular-shaped conductors having an integrally mounted flange. The conductors are arranged about spaced intervals along an imaginary cylinder. The integrally mounted flanges are radially aligned, and are mechanically joined at spaced intervals along the bus to "star type" extrusions to provide a rigid multiconductor structure. The integrally mounted flanges may further be employed to mechanically and electrically join the conductors to tap members to couple cable or flat bus thereto.



3,679,812
ELECTRICAL SUSPENSION CABLE FOR WELL TOOLS

Nevyl G. Owens, Houston, Tex., assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed Nov. 13, 1970, Ser. No. 89,325
Int. Cl. H01b 7/22
U.S. Cl. 174—108 3 Claims



Representative embodiments are disclosed herein of new and improved armored electrical cables for supporting well tools in extra-deep well bores in which extreme geothermal temperatures may be encountered. To support the cable armor, the electrical conductors in these cables are enclosed within a tubular jacket which is formed of a helically wound metal strip having a rectangular cross section. In one embodiment of the invention, the individual electrical conductors are encased within thin-wall metal tubes and filled with a compacted powdered thermal and electrical insulating material for providing a suitable insulation capable of withstanding the most extreme temperatures which may be encountered. In another embodiment of the invention, the electrical conductors are sheathed in a special temperature-resistant plastic material to provide a cable for service at less extreme temperatures.

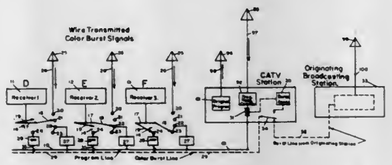
3,679,813
CATV TV OR SUBSCRIPTION TELEVISION OPERATIONS

Thomas A. Banning, Jr., Chicago, Ill., assignor to Frank D. Kenny

Continuation-in-part of Ser. Nos. 490,402, Sept. 27, 1965, and Ser. No. 559,494, June 22, 1966, and Ser. No. 645,843, May 19, 1967, and Ser. No. 661,681, Aug. 18, 1967. This application July 29, 1969, Ser. No. 845,743
Int. Cl. H04n 55/44
U.S. Cl. 178—5.1 15 Claims

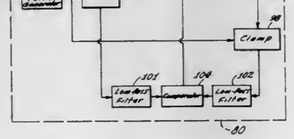
This application discloses a system of pay or subscription television under which distantly emitted pay or subscription

television programs may be received at a local Community Antenna Television Station, also known and hereinafter referred to as a CATV Station, and re-distributed to subscribers connected to such CATV station by non-accessible land lines such as co-axial cables, with provision for requiring pre-payment to be made by the particular subscriber receiver covering the charge made for delivery of such re-distributed



program to such subscriber and which pay or subscription system also includes line synchronizing signals. Otherwise stated this application discloses a system of television program distribution and reception combining a pre-pay or subscription television program with distribution thereof by and through a CATV station.

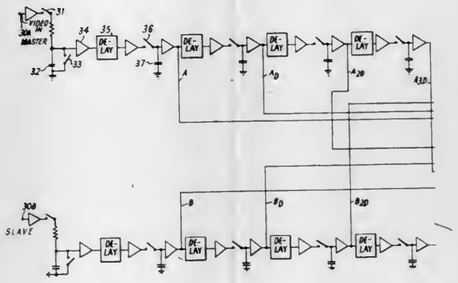
3,679,814
DROPOUT COMPENSATOR FOR COLOR TELEVISION
Ralph R. Barclay, Camarillo, Calif., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Feb. 16, 1970, Ser. No. 11,444
Int. Cl. H04n *5/14, 5/78, 9/02*
U.S. Cl. 178—5.4 CD **9 Claims**

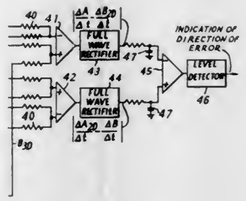


The present invention is directed to an improved dropout compensator for color television that delays a demodulated color video signal by a controlled time interval to provide a delayed color video signal. The luminance information of the delayed color video signal is separated therefrom and applied to an adder. The chrominance information in the delayed color video signal is applied to an automatic phase control to continuously maintain the phase of the chrominance information in phase with the demodulated color video signal. The luminance information and the chrominance information are then added in an adder to provide a dropout compensating signal having the same phase and amplitude as the demodulated color video signal.

The amplitude of the delayed color video signal may be maintained substantially constant by an automatic gain control circuit.

3,679,815
TELEVISION CAMERA REGISTRATION
John David Lunn, 63, Camborne Road, Sutton, Surrey, England
Filed Feb. 1, 1971, Ser. No. 111,361
Int. Cl. H04n *9/08*
U.S. Cl. 178—5.4 M **3 Claims**



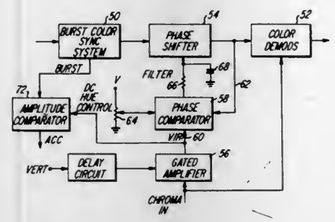


To detect misregistration in the outputs of two or more television camera tubes, the outputs of the tubes are subtracted and differentiated, the resultant being integrated and rectified, and a minimum then being detected in the amplitude of the integrated and rectified signal. The differentiation is achieved by delaying the signals and subtracting the delayed from the undelayed signals, the delay being an incremental delay to detect misregistration in the line scan direction or equal to one or more line periods for the field scan direction.

3,679,816
CONTROL APPARATUS FOR A COLOR TELEVISION RECEIVER
Jack Avins, Princeton, N.J., and Loren Robert Kirkwood, Indianapolis, Ind., assignors to RCA Corporation
Filed March 29, 1971, Ser. No. 128,704
Int. Cl. H04n *9/46*
U.S. Cl. 178—5.4 HE **8 Claims**

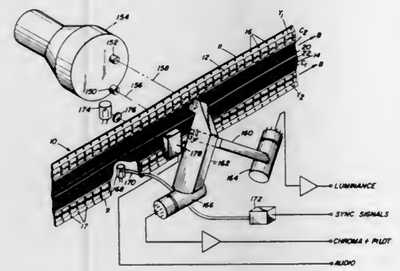
A color reference signal is inserted during the vertical blanking interval of a transmitted television waveform, for utilization by the described apparatus in automatically setting the hue and saturation of the display of an NTSC or a PAL receiver. The apparatus responds to the transmitted burst signal to set the frequency and phase of the sub-carrier oscilla-

tor of the receiver and, further, to the transmitted reference signal to correct any such inaccurate setting of phase as is



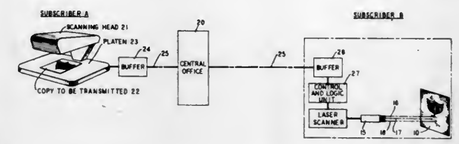
caused by adverse conditions of networking and transmission from the studio to the receiver.

3,679,817
RECORD MEDIUM FOR PICTURE INFORMATION
Peter C. Goldmark, Stamford, Conn., assignor to Columbia Broadcasting System, Inc
Filed April 20, 1971, Ser. No. 135,687
Int. Cl. G11b *7/08, 23/04*; **H04n** *5/84*
U.S. Cl. 178—5.4 CD **13 Claims**



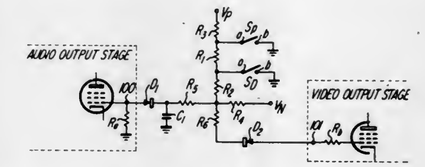
A record medium for use in the reproduction of picture information in the form of an elongated strip of recording material, such as photographic film, on which four sequences of mutually adjacent frames are disposed longitudinally in parallel relationship, each sequence representing a segment of picture information. Designating the lateral positions of the sequences across the film in ascending order from one to four, the frames of the first and third sequences are oriented for reading of their picture information with film motion in one longitudinal direction, and the frames of the second and fourth sequences are oriented for reproduction as the film is advanced in the opposite direction. In a preferred embodiment, the film contains two color programs, with one of the first and third sequences of frames containing monochrome representations of the luminance information of color pictures, and the other containing monochrome representations of the chrominance information of corresponding color pictures. Similarly, the second and fourth sequences of frames contain the luminance and chrominance information of a second color program. The film is packaged in a flip-over type cassette to facilitate playback of the film in either of the two longitudinal directions.

3,679,818
METHOD AND MEDIUM FOR PRODUCING COLOR IMAGES
Jeofry Stuart Courtney-Pratt, Locust, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed April 23, 1971, Ser. No. 136,849
Int. Cl. H04n *9/02, 5/76*
U.S. Cl. 178—5.4 CD **7 Claims**



A film with a repeating color filter dot pattern on one side and an opaque coating such as bismuth metal on the other side, serves as a medium for reproducing color transparencies. Laser light having the same frequency as the dot color is directed through those dots constituting the desired image. The metallic coating behind each such dot is thereby evaporated, leaving the dot color unaffected. Illumination from the metal side produces the desired projected image. The image may also be viewed in reflected light by placing the film against a white background sheet.

3,679,819
VIDEO BLANKING AND SOUND MUTING CIRCUIT EMPLOYING GROUNDED TUNER SWITCHES
Perry Charles Olsen, and Pak Chong Tang, both of Indianapolis, Ind., assignors to RCA Corporation
Filed Feb. 3, 1971, Ser. No. 112,223
Int. Cl. H04n *5/44*
U.S. Cl. 178—5.8 R **9 Claims**

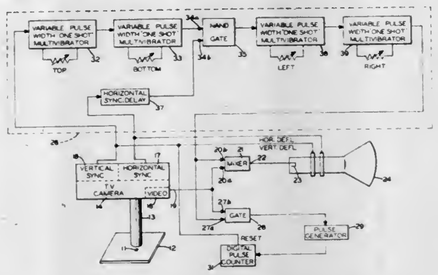


A switching circuit, dependent solely on the value of fixed impedances and supplied direct current voltages, blanks the picture and mutes the sound of a television receiver during its channel selection tuning, either manually or automatically by remote control. The circuit is a modification of that described in our concurrently filed application entitled "VIDEO BLANKING AND SOUND MUTING CIRCUIT" (Ser. No. 112,178), in its rearrangement of resistor components and utilization of a pair of grounded switches.

3,679,820
MEASURING SYSTEM
Liber J. Montone, Reading, Pa., assignor to Western Electric Company, Incorporated, New York, N.Y.
Filed Jan. 19, 1970, Ser. No. 3,628
Int. Cl. H04n *7/02*
U.S. Cl. 178—6 **7 Claims**

Dimensional measurement of a pattern is achieved by televising the pattern and displaying the pattern on a television monitor. A special effect or measuring raster is generated and superimposed upon the pattern in such a manner that the raster overlaps at least one dimension of the pattern to be

measured. By means of a suitable pulse generator and gating circuit, a series of uniformly timed pulses are produced in timed response to the coincidence of (a) the video signal of the pattern exceeding a fixed threshold value, and (b) the

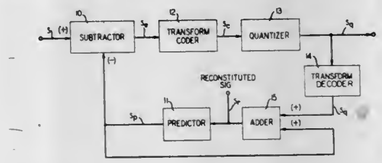


electronic waveform representing the special effect raster exceeding a nominal value. Periodically, the pulses produced are counted and numerical value commensurate therewith is displayed.

3,679,821
TRANSFORM CODING OF IMAGE DIFFERENCE SIGNALS

Manfred Robert Schroeder, Lower Saxony, Germany, assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed April 30, 1970, Ser. No. 33,382
Int. Cl. H04n 7/12
U.S. Cl. 178—6 **2 Claims**



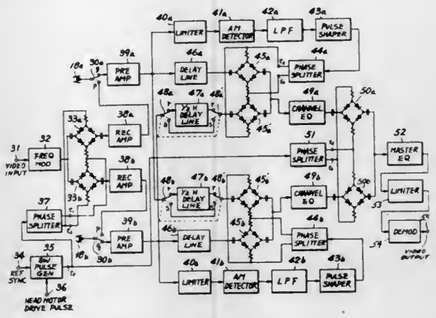
Immunity to transmission errors and worthwhile bandwidth reduction are achieved by distributing the difference signal, developed in differentially coding an image signal, over a spatially large interval or area, and transmitting the coded distributed signal instead of the image or differential signal. Line or frame image difference signals are, accordingly, dispersed by transformation prior to coding, e.g., by quantizing, and transmission, preferably by means of the Fourier, Hadamard, or other unitary matrix transforms, to "scramble" them relatively homogeneously in the domain of the transformed variable. Each transmitted image element thus represents a weighted sum of many or all of the elements of the corresponding line or frame. Simpler coding and other economies are achieved, particularly for relatively slowly varying sequences of images.

3,679,822
SIGNAL COMPENSATION SYSTEM IN RECORDING AND REPRODUCING APPARATUS

Yoshiyo Wada; Hisao Kinjo, both of Yokohama, and Keigo Okana, Tokyo, all of Japan, assignors to Victor Company of Japan, Ltd., Kanagawa-ku, Yokohama, Japan

Filed May 22, 1970, Ser. No. 39,758
Claims priority, application Japan, May 24, 1969, 44/39954
Int. Cl. G11b 5/82, 21/04; H04n 5/78
U.S. Cl. 178—6.6 DO **10 Claims**

The system compensates for an absence of a reproduced signal in one channel with a portion of a reproduced signal in another channel. The compensating signal contains its information which is interrelated with that of the signal absence

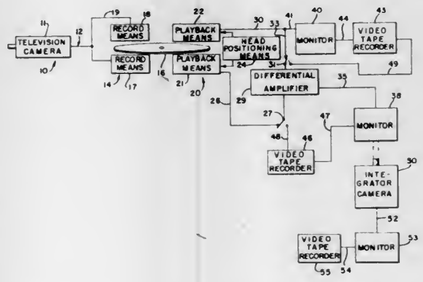


portion. The compensation is performed by a switching pulse having its width corresponding to an interval of the signal absence portion.

3,679,823
DIFFERENTIAL TIME TELEVISION SYSTEM

Matthew J. Corrigan, Jr., deceased, late of Willoughby, Ohio (by Sandra Lee Corrigan, executrix), assignor to Electronic Products Corporation, Cleveland, Ohio

Filed Nov. 9, 1970, Ser. No. 88,027
Int. Cl. H04n 5/78, 7/02, 7/18
U.S. Cl. 178—6.6 DD **23 Claims**



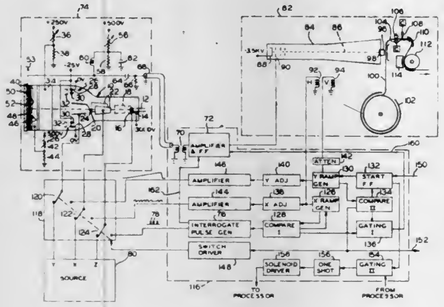
A system for providing a signal which represents the change or displacement in an event or occurrence in a given time period wherein the reference image is continuously updated. In one embodiment, the output from a television system is stored in such a manner that it may be retrieved to provide a pair of output signals. One of the retrieved output signals represents the occurrence of an event at a given time, while the other output signal, which is simultaneously retrieved with the first output signal, represents the occurrence of the event at a time different from the time of the occurrence of the even indicated by the first output. Means are disclosed for subtracting the two retrieved output signals to provide a differential output signal which represents the change in the event during the time corresponding to the difference in time of the occurrence represented by the first retrieved output signal and the second retrieved output signal. In a preferred embodiment, a television camera provides an output signal which is recorded on both sides of a video recording disc. Playback heads, capable of adjustment relative to each other, are offset relative to the registration of the record heads so that the output signals from the first playback head and the second playback head, when subtracted, effectively represent the change in the event

over the period of time determined by the playback head offset. Means are disclosed for adjusting the relative positions of the playback heads. Auxiliary means are also disclosed for monitoring the output of the playback head and recording the monitored output. Means for monitoring the output from the differential amplifier and recording that output with a video tape recorder are also disclosed so that the image difference may be added to the background image. Means for summing the output of the video tape recorder together with the recorded signals from the differential amplifier produce an image which has the background information of the event, but wherein the change in the event over a given time period is enhanced. An integrator camera is also disclosed for integrating the "snow" noise out of the television signal. Application of such a system to an X-ray or a fluoroscopic system for the treatment of patients is also disclosed.

3,679,824
FACSIMILE SYSTEM

Charles B. Gibson, Jr., Portland, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed May 4, 1970, Ser. No. 34,176
Int. Cl. H04n 1/30, 5/02, 5/84
U.S. Cl. 178—6.7 R **13 Claims**



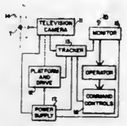
A computer terminal includes a cathode ray storage tube for receiving information from a computer and storing the same for continuous viewing. A copying apparatus is employed for making a permanent copy of the information presented on the cathode ray storage tube screen, such copying apparatus including means for scanning a sensitized surface, later suitably developed to provide the permanent copy. Read out circuit means effects simultaneous scanning of the copying apparatus and the cathode ray storage tube at a relatively slow rate compatible with the scanning capability of the copying apparatus, while at the same time the cathode ray storage tube's electron beam is pulse modulated wherein each pulsation thereof has a duration shorter than necessary to write information on the storage tube. The resultant signal produced at the storage tube target is coupled to the copying apparatus to duplicate the information stored on the cathode ray storage tube screen.

3,679,825
APPARATUS AND INFORMATION PROCESSING METHODS FOR A TRACKING SYSTEM TRACKER UNIT

Richard B. Kuhn, Columbus, Ohio, assignor to North American Aviation, Inc.

Filed Oct. 12, 1964, Ser. No. 403,397
Int. Cl. H04n 3/00
U.S. Cl. 178—6.8 **4 Claims**

This invention relates generally to object tracking, and particularly concerns apparatus and information processing methods for a tracker unit that may be advantageously utilized in a tracking system to establish and maintain the viewing axis

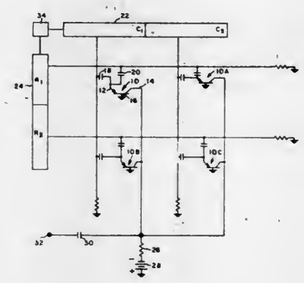


of an optical-type sensor in the tracking system in a prescribed directional relation with respect to a selected target.

3,679,826
SOLID STATE IMAGE SENSING DEVICE

Merton Howard Crowell, Morristown, N.J., assignor to North American Philips Corporation, New York, N.Y.

Filed July 6, 1970, Ser. No. 52,438
Int. Cl. H04n 5/30
U.S. Cl. 178—7.1 **4 Claims**



A solid state imaging device for receiving and storing an optical image is composed of an array of photosensitive diode elements or *p-n* junctions as a first and second region with the further formation of a common collector region. coincident selection of individual storage elements is by virtue of capacitive coupling to row and column lines, and cyclical scanning devices provide a stored charge on the *p-n* junction which is reduced in proportion to the totality of photons incident upon the storage device. Suitable outputs upon recharging are derived from the common collector region. The central or second region is connected to a point of reference potential such as ground for reducing the effect of the capacitive coupling between accessing wires and output leads by virtue of the electrostatic shielding provided by the grounded second region.

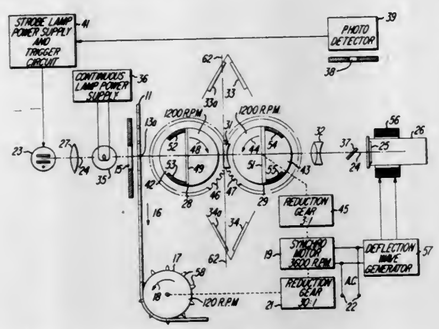
3,679,827
OPTICAL APPARATUS FOR CONTINUOUS TELEVISION FILM PROJECTION SYSTEM

Charles D. Boltz, Jr., Greenwood, Ind., assignor to RCA Corporation

Filed March 2, 1971, Ser. No. 120,075
Int. Cl. H04n 1/04; G03b 41/02
U.S. Cl. 178—7.2 **10 Claims**

Two partially light transmissive and partially light reflective light-forwarding devices in the main optical path between the film and a camera tube are rotated so that a light replica of a film frame is transmitted through the devices when the frame is in the center of the film gate and other light replicas are

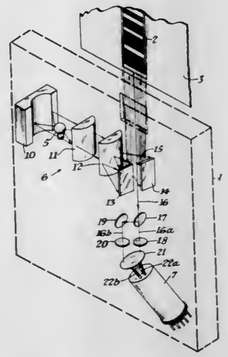
reflected from one device to the other by way of stationary reflectors on opposite sides of the main optical path and thence to the camera tube when the frame has just completely entered and is about to leave the gate, respectively.



3,679,828
ELECTRONIC SCANNER

Raymond Becky, McKeesport, Pa., assignor to Westinghouse Air Brake Company, Swissvale, Pa.

Filed Oct. 8, 1969, Ser. No. 864,752
Int. Cl. H04n 7/00
U.S. Cl. 178—7.6 14 Claims



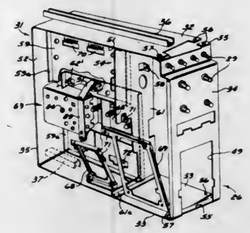
This disclosure relates to a static type of opto-electronic scanner for sensing the coded markings of an information field. The scanner includes a source of radiant energy for illuminating the information field, an optical system for directing radiant energy onto the information field and for resolving received radiant energy from the information field into separate images and an electronic pickup means for sampling and scanning the separate images to produce video signals in accordance with the coded markings of the information field.

3,679,829
ELECTRONIC CHASSIS ASSEMBLY FOR A TELEVISION RECEIVER

Richard J. Hofmeister, 802 E. Crabtree Drive, Arlington Heights, Ill., and Edward A. Salners, 700 Elderberry Lane, Mount Prospect, Ill.

Filed Nov. 27, 1970, Ser. No. 92,997
Int. Cl. H04n 5/64; H02b 9/00
U.S. Cl. 178—7.9 8 Claims

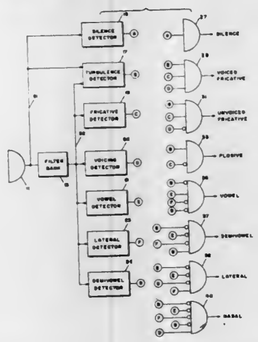
A television receiver including a cabinet housing with a front viewing face having an electronic chassis assembly movably mounted therein on which to mount instrumentalities including electronic modules in the form of printed circuit boards. The chassis assembly includes a plurality of enclosing wall portions defining an accessible internal cavity, one wall portion being pivotally mounted to provide additional access to the cavity, and a plurality of interconnected internal plates providing mounting surfaces and electrical shielding for the instrumentalities Grounding terminal means are separately mounted or integrally formed on the mounting surfaces for connecting and grounding the electronic modules to the chassis assembly. High radiation type electronic modules include a frame assembly of metal stampings having a plurality of grounding points for electrical hot spots and providing shielding between selected portions of the modules.



3,679,830
COHESIVE ZONE BOUNDARY DETECTOR

Malcolm R. Uffelman, 1808 Horseback Trail, Vienna; Richard E. Williams, 2605 Tack Lane, Reston, and Norbert Kleiner, 3030 Cedar Hill Road, Falls Church, all of Va.

Continuation-in-part of Ser. No. 634,332, April 27, 1967. This application May 11, 1970, Ser. No. 36,221
Int. Cl. G10l 1/02
U.S. Cl. 179—1 SA 4 Claims



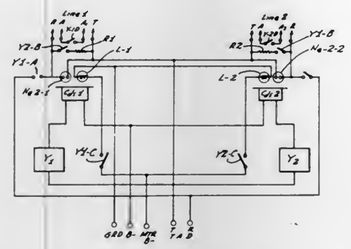
A speech segmenting device having a set of detectors which are activated by various combinations of energy distribution relative to a frequency scale such that continuous speech can be divided into repeatable patterns for use in a speech recognition process. These patterns called cohesive zones are naturally occuring segments or components of speech which are repeatable from speaker to speaker.

3,679,831
MULTI-LINE COUPLING SYSTEM

Elmer C. Bonsky, Long Beach, Calif., assignor to T. A. D. Avanti, Inc., Paramount, Calif.

Filed Oct. 16, 1970, Ser. No. 81,428
Int. Cl. H04m 11/10
U.S. Cl. 179—2 C 4 Claims

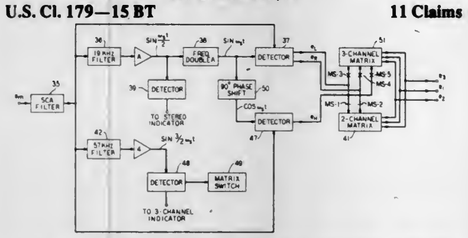
An improved system and network is provided for coupling a unit, such as an electronic telephone answering unit, to a multiplicity of telephone lines. The coupling is achieved by the system in a manner such that no load is imposed on any of the telephone lines until a ringing signal is received, at which time the coupling system of the invention serves to connect the telephone answering unit to the telephone line on which the ringing signal is received and, at the same time, to impose a "busy" connection to the other telephone lines so long as the telephone answering unit is occupied. The coupling system of the invention includes an optical relay circuit which includes a gaseous discharge lamp across each telephone line, and which glows when a ringing signal is received so as to activate an associated photocell which initiates the desired connections between the telephone lines and the telephone answering unit.



3,679,832
THREE-CHANNEL FM STEREO TRANSMISSION

Samuel Walters Halpern, Matawan, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed March 23, 1971, Ser. No. 127,286
Int. Cl. H04h 5/00
U.S. Cl. 179—15 BT 11 Claims



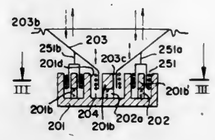
An FM stereo system wherein the composite baseband transmission signal comprises three independent audio signals added together to obtain a sum signal; three double-sideband, amplitude-modulated, suppressed-carrier signals, each corresponding to one of the audio signals and spaced one hundred twenty degrees apart in phase; a conventional phase reference pilot signal; and a second, mode switching, pilot signal that comprises the third harmonic of the phase reference pilot. The second pilot signal assures three-channel receiver compatibility with a monophonic or two-channel stereophonic broadcast.

3,679,833
LOUDSPEAKER SYSTEM

Kiyoshi Inoue, 3-16-8 Kamiyoga, Setagaya-ku, Tokyo-to, Japan

Filed July 16, 1969, Ser. No. 842,161
Claims priority, application Japan, July 18, 1968, 43/50692
Int. Cl. H04r 3/12
U.S. Cl. 179—1 GP 13 Claims

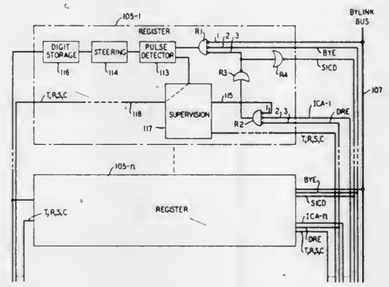
A loudspeaker system having an electrooacoustical transducer and a sound-propagating member with at least a principal sound-emitting axis. The sound director is movable to swing the axis through an angle to its normal position and thereby change the sound distribution accordingly. Stereophonic effects and changes in the quality of the tone (expression) are audible to the listener. The angle control may be effected independently of the electrical signal source or in dependence thereupon.



3,679,834
BYLINK CIRCUIT

Edwin Julius Braun; Rodney Robert Maxon; Henry August Meise, Jr.; George William Taylor, and Ronald Kirk Wiltmore, all of Boulder, Colo., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 21, 1970, Ser. No. 99,899
Int. Cl. H04q 3/42
U.S. Cl. 179—18 C 11 Claims



A switching system is disclosed having improved bylink facilities for interconnecting a calling trunk circuit with an idle digit register. The bylink comprises a single conductor that is connected to all trunk circuits and to all registers. The registers and the trunk circuits have gating elements which are selectively enable by the system controller so that only a single trunk circuit and a single register may be connected signalwise at a time by the bylink bus. If a dial pulse is received prior to the time a bylink path is established, the trunk is connected to a busy tone source and the call is not completed.

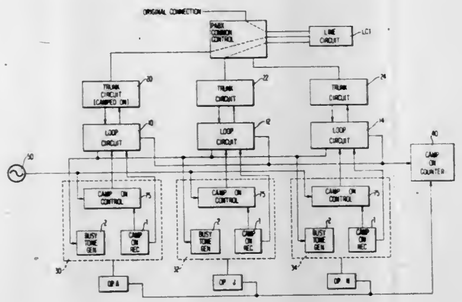
3,679,835
CAMP-ON BUSY CHECKING AND MONITOR CIRCUIT

Klaus Gueldenpfennig, Penfield; Uwe A. Pommerening, and Stanley L. Russell, both of Webster, all of N.Y., assignors to Stromberg-Carlson Corporation, Rochester, N.Y.

Filed March 5, 1971, Ser. No. 121,432
Int. Cl. H04m 3/42
U.S. Cl. 179—27 FD 10 Claims

Camp-on busy checking and monitor circuit which permits only a single line to camp-on a given line at one time and limits

the total number of camp-on connections by applying a tone to the loops which are associated with the connection desiring

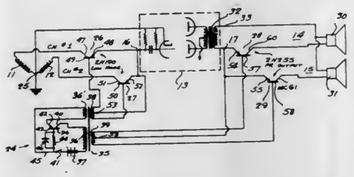


to be camped on and monitoring all of the other loops to see if the tone returns in one of those loops.

3,679,836
KEYED STEREOPHONIC TRANSMISSION SYSTEM

Richard S. Svorec, 824 36th St., South Bend, Ind.

Continuation of Ser. No. 388,979, Aug. 8, 1964, abandoned.
This application June 19, 1969, Ser. No. 834,748
Int. Cl. H04b 5/00
U.S. Cl. 179—15 BT 2 Claims



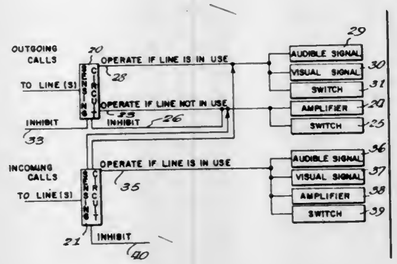
A stereophonic transmission system having two sources of audio signals in which the audio signal of an ultrasonic frequency is keyed in opposite phase for periods of substantially one-half cycle of said frequency to derive the respective trains of pulses amplitude-modulated by said audio signals and displaced in phase relative to each other by the width of the pulses. The trains of pulses are super-imposed and admitted simultaneously to the input of the transmission channel and subsequently separated into the pulse trains at the output of the transmission channel.

3,679,837
INTERCOMMUNICATION SYSTEM

Zvie Liberman, c/o Talk-A-Phone Company, 5013 N. Kedzie Ave., Chicago, Ill.

Filed May 8, 1969, Ser. No. 823,009
Int. Cl. H04m 9/00
U.S. Cl. 179—37 3 Claims

An intercommunication system with multiple stations using a balanced two-wire connection between stations. The connections float when not in use and are connected with a reference potential when in use. The stations have sensing

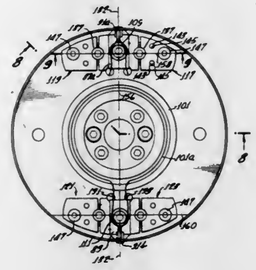


means which respond to the condition of the connections and control the operation during initiation or reception of a call.

3,679,838
VIDEO TAPE SCANNER WITH ADJUSTABLY MOUNTED TRANSDUCERS PROVIDING CHORDAL ADJUSTMENT

Guido Salcedo, San Jose, Calif.; Jimmy J. Graves, deceased, late of Redwood City, Calif., and Marlene D. Graves, heir, Alameda, Calif., assignors to Echo Science Corporation

Continuation-in-part of Ser. No. 887,863, Dec. 24, 1969, abandoned. This application Feb. 19, 1970, Ser. No. 12,621
Int. Cl. G11b 5/56
U.S. Cl. 179—100.2 CA 26 Claims

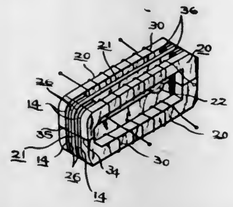


A video tape scanner having a plurality of record-reproduce heads slideably mounted on a rotatable disk. Each head is mounted on a shoe wedged between a pair of positioning blocks which are flexibly connected to respective anchoring blocks attached rigidly to the disk. A split sleeve, recessed in an opening within the rotatable disk forms the flexible connection between each positioning block and its associated anchoring block. The sleeve has a slightly tapered internal thread into which a similarly tapered screw is turned so as to flex the sleeve. By advancing or retarding the screws in both sleeves the flexure of the sleeves is changed, thereby moving the positioning blocks on both sides of the head so as to shift the position of the head which is between them.

3,679,839
TWO TRACK MULTIPLE ELEMENT MAGNETIC HEAD

Toshi Suzuki, Kamakura, and Tsutomu Nishijima, Yokohama, both of Japan, assignors to Victor Company of Japan, Limited, Yokohama, Japan

Division of Ser. No. 780,393, Dec. 2, 1968, Pat. No. 3,545,077.
This application July 22, 1970, Ser. No. 57,155
Claims priority, application Japan, Dec. 4, 1967, 42/77390
Int. Cl. G11b 5/16, 5/28
U.S. Cl. 179—100.2 C 4 Claims

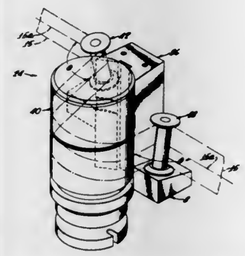


A multiple-element magnetic head comprising a plurality of magnetic head half-members arranged in face to face relation with each other at opposing end surfaces, with magnetic gaps being formed between them. Such magnetic head half-members are each made by holding non-magnetic members of substantially inverted U-shape each including a horizontal portion and oppositely disposed vertical portions between magnetic members identical in shape and configuration with said non-magnetic members, holding the assembly between substantially U-shaped cores including a horizontal portion and oppositely disposed vertical portions, cutting off said horizontal portions of said non-magnetic members and said magnetic members while leaving said oppositely disposed vertical portions, and grinding end surfaces of said oppositely disposed vertical portions of the non-magnetic members and magnetic members at which the horizontal portions have been cut off so that said end surfaces may be flush with end surfaces of the cores which are to be positioned in face to face relation with end surfaces of cores of the other magnetic head half-member.

3,679,840
HELICAL SCANNING ASSEMBLY WITH TAPE TO SCANNER REFERENCING APPARATUS

Alexander R. Maxey, Newark, Calif., assignor to Echo Science Corporation

Division of Ser. No. 738,250, June 19, 1968, Pat. No. 3,516,146. This application March 19, 1970, Ser. No. 19,547
Int. Cl. G11b 5/52, 5/56
U.S. Cl. 179—100.2 T 20 Claims

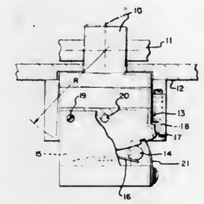


A scanning assembly for a helical-wrap, drum-type, video tape machine includes entry and exit tape guides and a drum assembly interconnected by a bracket. The drum assembly includes upper and lower cylindrical male guides which butt adjustably against an elongate reference way on the bracket to align the axis of the drum assembly. The entry and exit guides are each mounted on the bracket oblique to the drum assembly axis by a pin which extends from the guide into an oversize bore in the bracket and is held in place by adhesive.

3,679,841
MAGNETIC TAPE HEAD SKEW ADJUSTMENT

Zoltan L. Herger, Northglenn, and Dennis R. Olmsted, Westminster, both of Colo., assignors to Storage Technology Corporation, Boulder, Colo.

Filed April 30, 1970, Ser. No. 33,366
Int. Cl. G11b 5/56
U.S. Cl. 179—100.2 CA 1 Claim

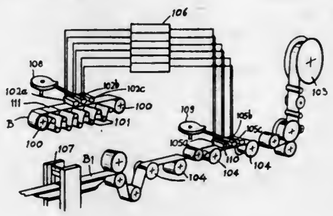


Skew adjusting apparatus for a magnetic tape unit includes a right angle mounting plate for the magnetic head with one surface being curved with a radius of curvature having a center line coincidental with the center line of the tape path. The curved surface is biased toward two guiding pins. The mounting plate moves with the curved surface riding on the pins so that the magnetic head is rotated about the center line of the tape path.

3,679,842
METHOD AND APPARATUS FOR PREPARING COPIES OR DUPLICATES OF WIDE BAND RECORD CARRIERS ON WHICH SIGNALS ARE RECORDED

Jahangir M. Ahy, 13 Duke St., Manchester Square, London W.1, England

Continuation-in-part of Ser. No. 583,898, Oct. 3, 1966, abandoned. This application Nov. 10, 1969, Ser. No. 875,101
Int. Cl. G11b 5/86
U.S. Cl. 179—100.2 E 3 Claims



This invention provides a method and apparatus for preparing duplicates of wide band record carriers on which signals of a continuous program are recorded in a hundred or more track sections arranged side-by-side across the width of the band and generally parallel to the length of the band, the track sections being separate and parallel to the length of the band or being made continuous either by arranging them in a helical path inclined slightly to the length of the band or by arranging them parallel to the length of the band and interconnecting them by inclined sections so that continuous reproduction is possible. Such recordings have a playing time of several hours.

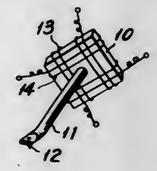
The method and apparatus herein described employ multiple playback heads past which the master wide band record,

which may be in the form of an endless loop provided with a length of blank band between the ends of the track sections, is fed, and multiple recording heads respectively energized by the corresponding one of the playback heads and past which a copy band is fed, whereby the track sections may be duplicated simultaneously. The heads may be staggered along the paths of the respective bands and may, where the track sections are made continuous, follow tracking paths so that the duplicates have the track sections recorded thereon as a continuous program corresponding to the recording on the master wide band record being copied. By means of the invention the duplicates of the master recordings can be produced quickly and economicaly.

3,679,843
MOVING COIL TYPE PHONOGRAPH PICKUP CARTRIDGE

Masanobu Cho, Tokyo, Japan, assignor to Micro Seiki Co., Ltd., Tokyo, Japan

Filed Jan. 4, 1971, Ser. No. 103,438
Int. Cl. H04r 9/16
U.S. Cl. 179—100.41 K **2 Claims**

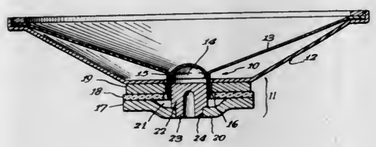


A moving coil type phonograph pickup cartridge consisting of a magnet assembly containing a permanent magnet therein and a stylus assembly detachably mounted on the magnet assembly and including an armature with coils wound thereon. The armature is substantially of a V-shape having two leg portions which are at right angles to each other. The coils are wound on the leg portions. By this construction, a vertical tracking angle of a cantilever arm relative to a record disc can be reduced.

3,679,844
MOVING COIL LOUDSPEAKER USING THIN MAGNET

John J. Derkacz, Chicago, Ill., assignor to Alpha Products, Inc., Chicago, Ill.

Filed Aug. 27, 1970, Ser. No. 67,517
Int. Cl. H04r 9/02
U.S. Cl. 179—115.5 R **4 Claims**

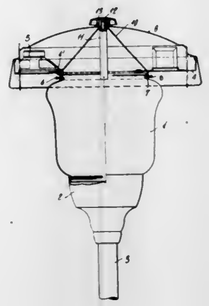


A field assembly for a loudspeaker having a base plate, a front plate and a permanent magnet sandwiched therebetween, a cylindrical post being secured to the center of the base plate in such a manner as to leave a gap for the movements of a voice coil therein. The base plate is provided with an embossment creating additional space for voice coil travel. Instead of an embossment integral with the base plate, a separate disc member with a peripheral flange may be used.

3,679,845
LIGHTING UNIT INCORPORATING LOUDSPEAKERS

Giovanni Geloso, deceased, late of Corso di Porta Romana 76/2, Milan, Italy (by Gianfranca Domini, sole heir)

Filed May 19, 1970, Ser. No. 38,802
Int. Cl. H04r 1/02
U.S. Cl. 179—146 R **8 Claims**

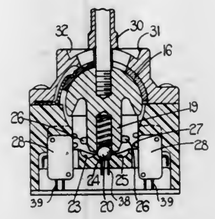


A light unit incorporating, above, a sound distribution unit separate from the lamp and protected by an upper cap designated to also form the sound box of the aforementioned sound distribution system. The elements are assembled in such a way as to permit easy access to the sound distribution system independently of the lamp.

3,679,846
GEAR CHANGE SWITCH WITH MULTI-MOTION CLOSURE ACTUATOR

Stanley Bernard Dillon, Greenford; Dorian Farrar Mowbray, Burnham, and Kenneth Albert Walters, Kamp, London, all of England, assignors to C.A.V. Limited, Birmingham, England

Filed Dec. 3, 1970, Ser. No. 94,742
Claims priority, application Great Britain, Dec. 10, 1969, 60,186/69
Int. Cl. H01h 21/22
U.S. Cl. 200—6 A **11 Claims**

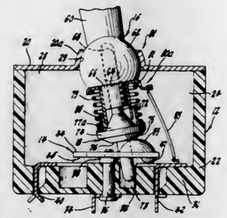


An electrical selector switch including a housing defining a spherical surface, a bearing member defining a spherical surface, and a pivotal member located between the surfaces. The pivotal member carries a spring loaded ball which engages with the surface on the housing to urge a spherical surface on the pivotal member into contact with the spherical surface on the bearing member. The bearing member being shaped to operate switches in selected positions of the pivotal member.

3,679,847
THREE POSITION PIVOTAL SWITCH WITH IMPROVED SPRING BIASED JOYSTICK ACTUATOR AND CONTACT

Ronnalee House, Anderson, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 26, 1971, Ser. No. 175,177
Int. Cl. H01h 25/04, 19/46, 21/50
U.S. Cl. 200—6 A **6 Claims**

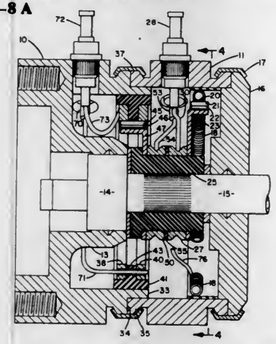


In a preferred form, this disclosure relates to a light switch assembly having a housing means carrying a stationary ground terminal and a plurality of stationary terminals positioned in a spaced relationship about the ground terminal, a pivotally supported bridging contact member, and a swivelly supported actuator means. The bridging contact member is pivotally supported upon the ground terminal for movement to different positions to bridge different ones of the stationary terminals and the ground terminal. The actuator means is swivelly supported by the housing means for pivoting the bridging contact member to different positions. Further, the actuator means includes a plunger member which is spring biased into engagement with a dome portion on the bridging contact member. The plunger member rolls in engagement with the dome portion when the actuator means is manipulated to maintain a substantially equal distribution of pressure upon the bridging contact member when it is moved to its different positions.

3,679,848
COMBINED POTENTIOMETER AND SWITCHING STRUCTURE WITH IMPROVED RADIAL CONTACT PRESSURE CONTACT MEANS

Paul F. Gerwitz, West Covina, Calif., assignor to Spectrol Electronics Corporation, City of Industry, Calif.

Division of Ser. No. 828,618, May 28, 1969, Pat. No. 3,587,027. This application June 1, 1970, Ser. No. 54,042
Int. Cl. H01h 19/56, 21/56
U.S. Cl. 200—8 A **2 Claims**

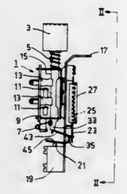


A combined potentiometer and switching structure including wiper contacts fixed to a shaft and having contacting engagement with an annular resistor and a pair of switching rings. The wiper contacts are located coincident, or in phase relation. The switching rings are each provided with an interrupted area, such areas are located in an arc complemental to the arc of the resistor and are circumferentially spaced apart a distance not greater than the length of the resistor contacting surface whereby, during rotation of the shafts, circuits connected to the switch rings are opened at different positions with respect to the resistor wiping contact. An annular supporting ring formed of electrical insulation material and provided with a central rib projecting from the inner surface thereof serves as a convenient mounting for the switch rings.

3,679,849
SWITCH WITH A DELAY MECHANISM

Cornelis Willem Zwiep, and Bernardus Ignatius Maria van Steen, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 11, 1971, Ser. No. 114,459
Claims priority, application Netherlands, March 31, 1970, 7004569
Int. Cl. H01h 43/00
U.S. Cl. 200—33 R **4 Claims**

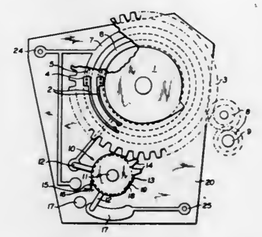


A switch assembly having a primary switch which actuates a secondary switch through an intermediate member. After the switches have been switched to the ON position, the intermediate member is set, by a delay mechanism, to a position in which it is no longer operative to maintain the secondary switch in the ON condition.

3,679,850
SWITCH CLOCK

Friedrich Arzt, and Paul Hofert, both of Frankfurt/Main, Germany, assignors to VDO Tachometer Werke Adolf Schindling Gmbh, Frankfurt/Main, Germany

Filed Nov. 16, 1970, Ser. No. 89,801
Int. Cl. H01h 43/10
U.S. Cl. 200—37 R **6 Claims**



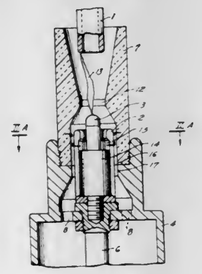
A switch clock, comprising a dial train indicating the time, and at least two switching contacts. A cam means actuates the switching contacts. A switch device contains the cam means. A clockwork and a motor, respectively, drive the cam disk of the dial train. An adjusting means is provided for adjusting the switching times. An adjusting disc carries the switching contacts and engages the adjusting means by means of a drive. A rotary switch means comprises a switch shaft provided for ad-

justing the various operative states of the switch device, and a gear is mounted on the shaft of the rotary switch means and at least directly engages the adjusting disc, wherein the gear is capable of being actuated by means of teeth disposed on a smaller portion of its periphery by turning the adjusting disc.

3,679,851
AUTOEXTINGUISHING INTERRUPTERS

Andre Latour, Grenoble, France, and Giacomo Fumagalli, Bergamo, Italy, assignors to Magrini-Fabbriche Riunite Magrini Scarpa e Magrano M.S.M.-S.p.A., Milan, Italy

Filed June 22, 1970, Ser. No. 48,118
Claims priority, application France, June 23, 1969, 6920971
Int. Cl. H01h *33/70*
U.S. Cl. 200—148 A **6 Claims**

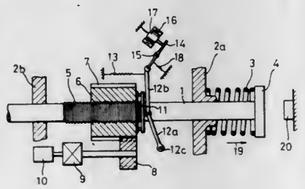


The invention relates to a self-extinguishing interruptor in which one of the contacts is mounted in the upstream portion of an insulating tube. It is characterized in that the total section of the passage of the conduit or conduits which feed the compressed gas to the tube is limited to a value equal to or less than the section of the passage of the neck of the tube.

3,679,852
SPRING OPERATED MAKING DRIVING MECHANISM FOR CIRCUIT BREAKING AND SWITCHING DEVICE

Hitoshi Himi; Yasuhiro Shimmon, and Tokuro Teshima, all of Tokyo, Japan, assignors to Kabushiki Kaisha Meidensha, Tokyo, Japan

Filed March 22, 1971, Ser. No. 126,515
Claims priority, application Japan, March 27, 1970, 45/29294
Int. Cl. H01h *3/30*
U.S. Cl. 200—153 SC **2 Claims**

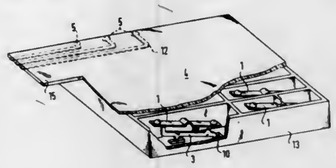


The actuating mechanism for a circuit breaker or switch has a bar moved longitudinally by a spring. The spring is charged by a reversible electric motor which first turns an internally threaded gear on the bar to shift the gear along the bar and thereby to engage a latch on the gear with a remotely controlled mechanism, and thereafter turns the axially secured gear to shift the bar and thereby to tension the spring. The bar is moved by the spring when the mechanism releases the latch.

3,679,853
MULTIPLE CONTACT SYSTEM FOR CAM OPERATED SWITCHES

Walter Holzer, Droste-Hulshoff-Weg, Germany, assignor to Holzer Patent AG

Filed Jan. 25, 1971, Ser. No. 109,444
Claims priority, application Switzerland, Jan. 26, 1970, 1016/70; Jan. 26, 1970, 1017/70; Jan. 26, 1970, 1018/70; Jan. 26, 1970, 1019/70
Int. Cl. H01h *1/20*
U.S. Cl. 200—166 J **10 Claims**

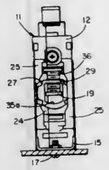


A multiple contact switching apparatus having a plurality of individual switching compartments independent of one another and a printed wiring board which is an integrated component of the apparatus and common to all switching compartments.

3,679,854
ROTATABLY REVERSIBLE CONNECTOR FOR ELECTRIC CIRCUIT BREAKER

Thomas A. Burd, Cedar Rapids, Iowa, assignor to Square D Company, Park Ridge, Ill.

Filed June 18, 1971, Ser. No. 154,388
Int. Cl. H01h *9/00, 9/54*
U.S. Cl. 200—166 BH **4 Claims**



A connector means is provided for electrical connection of a conductor to a circuit breaker which may be selectively mounted at its top or bottom to a panel. A generally cylindrical connector body has an opening in a planar portion to accommodate a clamping screw. Upon removal of the clamping screw, slots in the connector body accommodate insertion of the end of a screwdriver to facilitate rotation of the connector body.

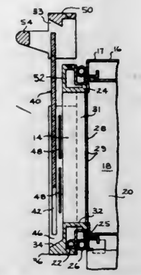
3,679,855
PROTECTIVE BARRIERS FOR WINDOW OF MICROWAVE OVEN DOOR

Thomas J. Binzer, Louisville, Ky., assignor to General Electric Company

Filed June 11, 1971, Ser. No. 152,336
Int. Cl. H05b *9/06*
U.S. Cl. 219—10.55 **8 Claims**

A door construction for a microwave cooking oven where the door has a narrow frame with a large window opening. The inner surface of the window opening is covered with a perforated microwave radiation barrier, while the outer surface of the opening is fitted with a transparent interference barrier.

Air passages are formed in the door to permit a current of ambient air to sweep the inner surface of the transparent barrier as well as to serve as an oven venting means. This transparent

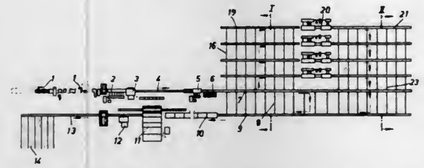


barrier may be quickly removed from the door for ease of cleaning. A portion of the door frame is integral with the transparent barrier for ease of handling this barrier.

3,679,856
DEVICE FOR THE MANUFACTURE OF WELDED STEEL PIPE FROM STEEL OF ANY GRADE

Kurt Gruber, Monchengladbach, Germany, assignor to Mannesmann-Meer Aktiengesellschaft, Monchengladbach, Germany

Continuation of Ser. No. 700,350, Jan. 24, 1968. This application May 21, 1970, Ser. No. 41,664
Claims priority, application Germany, Jan. 25, 1967, M 72538
Int. Cl. B23k *31/06*
U.S. Cl. 219—59 **4 Claims**



A device for welding of soft steel pipe by resistance welding and of high-alloyed steel pipe by arc welding. It consists of two ways, one for each type of welding, which are synchronized to the machines for the preparation of the steel band and its shaping into a split tube. Because arc welding proceeds at considerably lower speed than resistance welding, a plurality of welders are provided together with means for assigning each split pipe length to one such arc welder. The combination of two different welding ways enables manufacture of seamed pipe from any grade of steel, a reduction of bulged-out end waste, perfect deburring of the seam and savings in time when changing dimensions, using high-alloyed steel.

3,679,857
STABLE DIELECTRIC FLUID FOR ELECTRICAL DISCHARGE MACHINING COMPRISING A MINERAL OIL, A METAL SULFONATE AND A PHENOLIC ANTIOXIDANT

Robert A. Stayner, Palos Verdes Estates, Calif., assignor to Chevron Research Company, San Francisco, Calif.

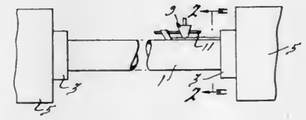
Division of Ser. No. 735,578, June 10, 1968. This application March 22, 1971, Ser. No. 126,981
Int. Cl. B23p *1/08*
U.S. Cl. 219—69 D **1 Claim**

A method for shaping an electrically conductive material by means of electrical discharge machining employing as a dielectric fluid a primarily aliphatic light oil of low viscosity having in minor amounts an oil-soluble metal sulfonate detergent and a phenolic antioxidant.

3,679,858
METHOD FORMING CLAD PLATES FROM CURVED SURFACES

William C. Bollinger, Troy, Mich., assignor to Detroit Flame Hardening Co., Detroit, Mich.

Filed March 17, 1971, Ser. No. 125,202
Int. Cl. B23k *9/04*
U.S. Cl. 219—76 **9 Claims**

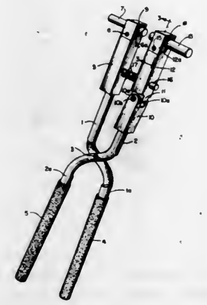


A plate having a special surface layer is made by shaping to a desired configuration a longitudinal section cut from a tube that has been surfaced by a suitable continuous welding deposition process, preferably a bulk welding process.

3,679,859
SPOT WELDING TOOL

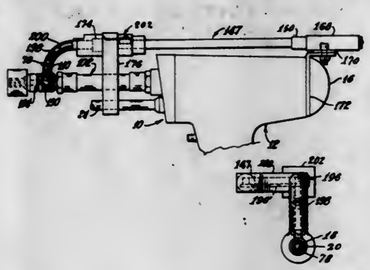
Raymond J. Comeau, 41 High Rock St., Lynn, Mass.

Filed July 20, 1971, Ser. No. 164,358
Int. Cl. B23k *11/28*
U.S. Cl. 219—90 **7 Claims**



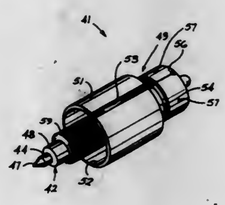
The spot welding tool is of pliers type and has a pair of crossed drill rod handles pivotally connected together. A solid jaw is carried by one drill rod and a movable jaw pivotally connected to the other drill rod. A pair of opposed copper electrodes are carried by the jaws respectively with means for adjusting the gap between the ends of the electrodes. A pin of substantial diameter is mounted on the solid jaw snugly engaging a corresponding bore in the movable jaw. A spring is disposed around the pin between said jaws yieldably tending to separate the jaws, whereby when the handles are squeezed together the movable jaw will move in parallel relation to the solid jaw allowing the electrodes to close over the work evenly.

3,679,860
STUD WELDING TOOL AND STUD LOADING DEVICE THEREFOR
Steve Spisak, Elyria, Ohio, assignor to TRW Inc., Cleveland, Ohio
Division of Ser. No. 358,736, April 10, 1964, Pat. No. 3,525,846. This application June 1, 1970, Ser. No. 54,071
Int. Cl. B23k 9/20
U.S. Cl. 219—98 2 Claims



This is a welding tool having a chuck means, a feed passage means, a pair of spaced socket means, and a removable stud magazine held by the socket means. The magazine has resilient stop means used as a safety mechanism.

3,679,861
METHODS OF ASSEMBLING AND TESTING ELECTRICAL COMPONENTS
Thomas Alvin La Valle, Annapolis, Md., assignor to Western Electric Company, Incorporated, New York, N.Y.
Division of Ser. No. 878,017, Nov. 19, 1969, Pat. No. 3,618,204. This application Aug. 13, 1971, Ser. No. 171,463
Int. Cl. B23k 11/10
U.S. Cl. 219—117 1 Claim

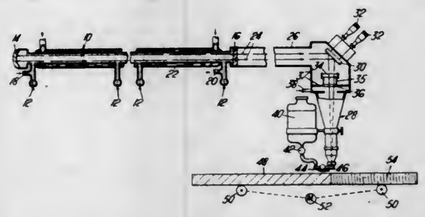


A rotatable turntable having a plurality of workholders spaced about the periphery thereof is indexed to advance each of the workholders successively through each of a plurality of work stations positioned adjacent the periphery of the turntable to assemble electrical components. A first part positioned in one of the workholders at a first work station has the leading end of an insulated wire extending from a supply of wire welded thereto at a second work station, after which the first part is indexed to a third work station without severing the wire extending from the first part to the supply. At the third work station a portion of the wire extending to the first part in the workholder is severed from the supply and the new leading end of the wire is attached to the first part in the next succeeding workholder. The first part is rotated in the first workholder while tensioning the wire extending from and secured to the first part to wind the wire thereon as the workholder is advanced with the turntable through a fourth and a fifth work station to a sixth work station. At the sixth work station a second part is assembled to the first part and, simultaneously, the insulation on a portion of the wire extending from the first part is stripped. At a seventh work station the trailing portion of the wire is welded to a metal cap which is secured to the second part and the strength of the weld is tested.

3,679,862
CORPUSCULAR RADIATION WELDING PROCESS
Albert Stoll, and Walter Wanka, both of Augsburg-Stadtbergen, Germany, assignors to Maschinenfabrik Augsburg-Nurnberg AG, Augsburg, Germany
Filed Nov. 18, 1968, Ser. No. 845,922
Claims priority, application Germany, Nov. 17, 1967, P 16 65 458.3
Int. Cl. B23k 15/00
U.S. Cl. 219—121 EM 4 Claims

A process for welding metal sections in which at least two metal workpieces are welded together across a contact area using corpuscular radiation beams to heat the metal in the respective workpieces adjacent said contact area and form a welded joint. A space is formed in the workpiece in the region of the contact area, the space being positioned within said area in a location in which the corpuscular radiation beams utilized for welding dissipate. A metal tube filled with a corpuscular radiation sink material is placed in said space. Said tube completely fills said space. Corpuscular radiation beams are directed from opposed sides of said joint to weld said workpieces together.

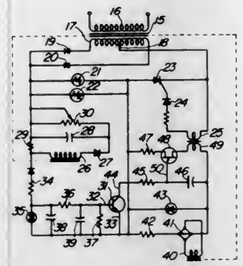
3,679,863
THERMAL CUTTING APPARATUS
Peter Thomas Houldcroft, Royston, and Arthur Basil Joseph Sullivan, Letchworth, both of England, assignors to National Research Development Corporation, London, England
Filed Nov. 10, 1969, Ser. No. 875,365
Claims priority, application Great Britain, Nov. 12, 1968, 53,647/68
Int. Cl. B23k 9/00
U.S. Cl. 219—121 LM 2 Claims



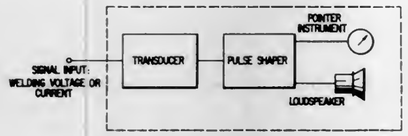
To cut paper, timber, fabric etc., with a laser beam, a jet of air (or other gas which is inert in the process) carrying an atomized stream of a liquid coolant is directed on to the moving region of the workpiece at which the laser beam is concentrated. This reduces the spread of charring or tar deposit from the cut along the surfaces of the workpiece.

3,679,864
ELECTRODE FEED USING PLURAL MOTORS HAVING CONSTANT SPEED DROOPING CHARACTERISTICS
Kenichiro Tanegashima, Ikeda-shi; Makoto Kobayashi, Nishinomiya-shi, and Shinichiro Kudo, Kawanishi-shi, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Dec. 22, 1969, Ser. No. 887,044
Claims priority, application Japan, Dec. 26, 1968, 44/689
Int. Cl. B23k 9/00
U.S. Cl. 219—130 2 Claims

A semi-automatic or automatic welding apparatus using two or more motors having drooping characteristics approximating constant speed for feeding a consumable welding electrode wire, wherein the distance from a wire reel to a welding torch is increased, and the portable portion reduced in size and weight, whereby the maneuverability and portability of the semi-automatic or automatic welding apparatus are improved and the stability of the wire feed is enhanced.



3,679,865
APPARATUS FOR CONTROLLING ELECTRIC WELDING PROCESSES
Friedrich Erdmann Jesuitner, Linden, and Dietrich Rehfeldt, Vlanhorst, both of Germany, assignors to Redemat S.A., Luxembourg-Ville, Luxembourg
Continuation of Ser. No. 859,161, Sept. 18, 1969, abandoned. This application June 18, 1971, Ser. No. 154,633
Claims priority, application Germany, April 15, 1969, P 19 19 034.2
Int. Cl. B23k 9/10
U.S. Cl. 219—131 R 9 Claims



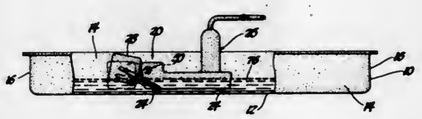
An apparatus for controlling electric welding processes with consumable electrodes by generating electric pulses of the variation in the welding parameters, the voltage, current or mechanical vibration, in the workpiece. These variations which are characteristic for the melting during welding are picked up, transformed and supplied to a signaling device to furnish a statement on the transfer of the material which the welder uses to correctly guide the electrode.

3,679,866
PULSED ARC SPRAY WELDING IN A NARROW GROOVE
Masayasu Arikawa, Fujisawa; Tomokazu Godai; Toshio Arai, Kamakura; Hironosuke Kada, Kamakura, and Akihiko Iechi, Kamakura, all of Japan, assignors to Kobe Steel, Ltd., Kobe, Japan
Filed June 9, 1970, Ser. No. 44,808
Claims priority, application Japan, June 10, 1969, 44/45683
Int. Cl. B23k 9/00
U.S. Cl. 219—137 11 Claims

A process for multi-layered spray arc welding using a gas shielded consumable electrode which comprises: preparing the welding edge of each of a pair of plate members such that when said members are placed into welding alignment, the combination of their prepared edges will together form an I-shaped or V-shaped welding line groove between said members, placing said plate members into welding alignment so as to form said welding line groove, and spray arc welding said plate members along said welding line groove with consumable electrode in the presence of a shielding gas by passing a welding current having a rectangular waveform through said electrode to said welding line, such that at recurring intervals, a welding arc having a current density of from 100 to 300 amp/mm² is established between the tip of said consumable electrode and said welding line groove for a period of time of from 0.3 to 5 seconds, and extinguished for a period of time of from 0.2 to 3 seconds, such that when said arc is established, molten metal droplets are transferred to said groove, and when said arc is extinguished, the transfer of molten metal droplets is interrupted.



3,679,867
FLOAT ACTUATED EVAPORATOR HEATER
James A. Canter, Englewood, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Filed June 1, 1971, Ser. No. 148,420
Int. Cl. F22b 1/28
U.S. Cl. 219—272 3 Claims

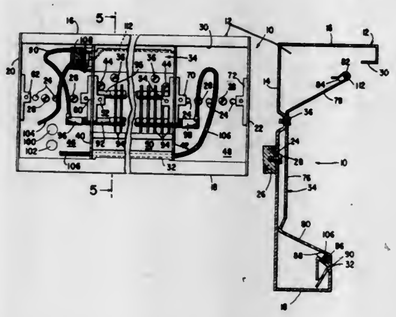


The range of motion of the arm of a float which controls the energization of electrical heater elements disposed within a condensate receiving refrigerator pan will vaporize condensate therein from refrigerator cooling coils automatically to insure sufficient immersion of the heater elements to prevent overheating of the pan. The float actuates a magnetic reed switch which deenergizes the heater elements when the condensate surface level is reduced a small amount to open the contacts of the switch and thereby deenergize the heater.

3,679,868
BAFFLE FOR ELECTRIC BASEBOARD HEATER UNITS
George G. England, Skaneateles, N.Y., assignor to The Singer Company, New York, N.Y.
Filed Aug. 30, 1971, Ser. No. 175,906
Int. Cl. F24h 3/04, 9/10; H05b 1/02
U.S. Cl. 219—368 2 Claims

The baffle of an electric baseboard heater is formed with necked elongated passages, one to house and maintain in

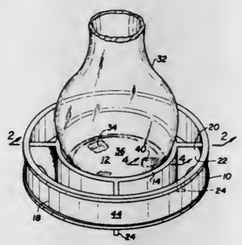
place the capillary tube of a thermal-switch and another to house and maintain in place a wire lead connected to one terminal of a heating element for which the baffle serves as a heat reflector.



3,679,869
WARMER STAND FOR A SELECT NUMBER OF FLUID CONTAINERS

Richard A. Keeler, Tenafly, N.J., and Arthur Eckstein, Roslyn Heights, N.Y., assignors to Chemex Corporation, New York, N.Y.

Filed Jan. 11, 1971, Ser. No. 105,382
Int. Cl. F27d *11/02*
U.S. Cl. 219—432 **4 Claims**



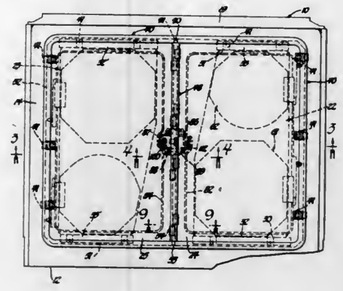
A beverage warmer is provided which has a surface element for supporting a fluid container or vessel thereon and for transferring heat directed thereto by a heating element to the fluid container. The beverage warmer also has an annular upwardly projecting member contiguous with the surface element for reducing the amount of heat loss to the surrounding atmosphere.

3,679,870
TERMINAL BOARD ASSEMBLY FOR OUT-OF-PLANE CONTACTS

Donald L. Opp, Trotwood, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 30, 1971, Ser. No. 176,201
Int. Cl. H05b *3/68*
U.S. Cl. 219—445 **3 Claims**

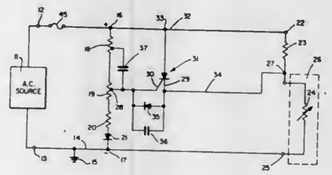
A terminal board arrangement for a cooking assembly including a pair of frangible utensil supporting cover plates supported by clamping means in the assembly wherein the board contacts provide continuity between electrically conductive fracture detector stripes on the underside of each plate. Spring means biases the terminal board upwardly against the underside of the cover plates in bridging fashion such that three of the fixed terminal board contacts are in a coplanar triangular formation for positive contact with their mating cover plate contacts while a fourth floating contact is positioned on a spring arm operative for seeking its mating cover plate contact thereby compensating for any out-of-plane condition which may exist between the cover plates.



3,679,871
TEMPERATURE CONTROL CIRCUIT EMPLOYING A VARIABLE RESISTANCE HEATING ELEMENT

Egils Evalds, 124 Linwood Ave., Ardmore, Pa.

Filed Jan. 5, 1971, Ser. No. 104,075
Int. Cl. H05b *1/02*
U.S. Cl. 219—499 **3 Claims**



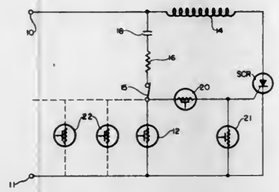
The present circuit employs a heating element whose electrical resistance varies in response to the heat generated thereby. The heating element comprises one leg of a bridge circuit and the output signal from the bridge circuit is connected to fire a silicon-controlled rectifier. The silicon-controlled rectifier is connected to short out a leg of the bridge circuit which is serially connected to the heating element thereby providing full power for energizing the heating element when the silicon-controlled rectifier is turned on and simply providing control current to the heating element when the silicon-controlled rectifier is turned off.

3,679,872
SELF COMPENSATING CONTROL CIRCUIT

Peter Lauck, III, Princeton, N.J., assignor to Robert H. Myers, Washington, D.C., a part interest

Filed Aug. 3, 1971, Ser. No. 168,614
Int. Cl. H05b *1/02*
U.S. Cl. 219—501 **12 Claims**

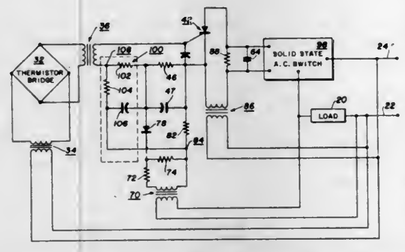
A temperature compensating control device for blankets, wall wire or outlet or fuse breaking devices, which incorporates solid on/off control. The use of solid on/off control with resistance temperature compensation sensors rather than a phase control renders the circuit free of "gate trigger" means normally associated with simplified thyristor circuits. This simplifies greatly the transistor stage gain or transistor shunt controls previously demonstrated in the art. Intrinsic simplification with fewer parts and solid state temperature resistance compensating means of the thyristor itself are innovative, besides requiring fewer parts. The circuits incorporates, preferably a temperature override electromechanical heat sensitive, fail safe control regulator and additionally in one aspect a double-stranded wire fail safe means for temperature responsive means. A thyristor SCR is incorporated in the circuit and functions in such a manner as to give snap on or off control.



3,679,873
STABILIZING CIRCUIT FOR ANTICIPATING CONTROLLER

John R. Bray, Pensacola, and Perry F. McKinney, Santa Rosa, both of Fla., assignors to Monsanto Company, St. Louis, Mo.

Filed Jan. 11, 1971, Ser. No. 105,176
Int. Cl. H05b *1/02*
U.S. Cl. 219—501 **2 Claims**



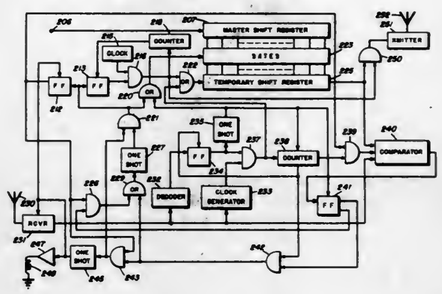
An SCR is supplied with quick-acting positive feedback bias to insure reliable turn-on. A slower acting negative feedback bias then turns the SCR off. The positive feedback bias makes the circuit less sensitive to variations among SCR's and other circuit components.

3,679,874
AUTOMATIC BAGGAGE HANDLING SYSTEM

William E. Fickenscher, Baltimore, Md., assignor to The Bendix Corporation

Division of Ser. No. 735,132, June 6, 1968. This application July 6, 1970, Ser. No. 60,992
Int. Cl. G06k *7/00*
U.S. Cl. 235—61.7 R **3 Claims**

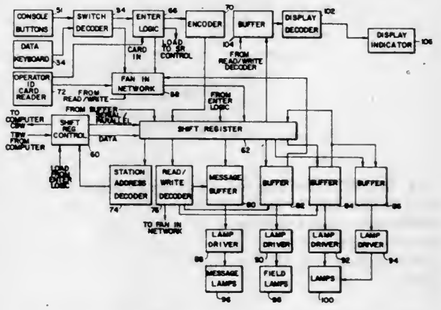
An automatic baggage handling system utilizing individually powered baggage carts designed to carry luggage or other material at airports, railroad stations, and the like. Baggage handling information is converted into an electrical binary train of bits prepared by an optical ticket reader which scans a precoded, specially prepared baggage ticket and converts the data thereon into binary form. Baggage associated with the particular baggage ticket is loaded on to the baggage cart and a low power transmitter transfers the digital data to an escort memory in the form of a transceiver on the baggage cart. The loaded self-propelled baggage cart then moves along a track, with its escort memory being read by track readers located at critical, switching portions of the track, the track being switched in response to information contained in the baggage cart escort memory so that the baggage cart is transported expeditiously to a predetermined point on the track which may be a final destination or an intermediate holding area. Means are also provided for changing the information contained in the escort memory of identified carts in the holding area so as to encode a message therein identifying the desired final destination of the cart. The cart is then released from the holding area and delivered to the desired final destination, the aforementioned track readers reading the escort memory and switching the track in accordance with the information read.



3,679,875
MEDICAL TEST DATA ENTRY TERMINAL

Edward B. Rawson, Lincoln, and John B. Dowling, Stow, both of Mass., assignors to Searle Medidata Inc., Waltham, Mass.

Filed Sept. 21, 1970, Ser. No. 73,973
Int. Cl. G06f *3/02*; G06r *5/00*
U.S. Cl. 235—61.7 R **9 Claims**



A terminal for the real time entry of medical test data into the computer based medical record of a patient. The terminal is operative only by an operator whose identification has been verified, and test data is visually verified before entry into the patient record.

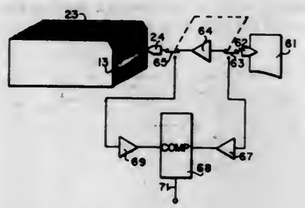
3,679,876
CARD DECK CHECKER

Ruth L. Faith, Alexandria, Va., and William Grobman, Bowie, Md., assignors to The Singer Company, New York, N.Y.

Filed Oct. 20, 1970, Ser. No. 82,262
Int. Cl. G06k *1/12, 5/00*
U.S. Cl. 235—61.7 R **8 Claims**

This invention provides a means for determining if the individual punched cards in a deck of punched cards are in

proper sequence, if the deck is complete, and if the deck contains strange and unrelated cards. Once a deck of cards has been arranged in its proper sequence, the edge of the deck is



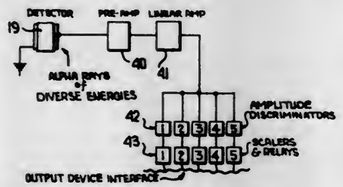
painted with a stripe of magnetic material, and information representing the order of the cards in the deck is recorded thereon. At a subsequent time, and before the deck is read into a computer, the magnetic information on the edge of the deck is read to check the order and completeness of the deck of cards. Information may be recorded on the magnetic stripe in the form of pulse patterns, or in the form of positional information. The recorder is a simple device using a standard multichannel magnetic pulse recording head and provides the means for moving the deck of cards past the head. The reading device is similar to the recording device.

3,679,877

ALPHA RAY PATTERN RECOGNITION SYSTEM

Leon Weiner, 5134 Braesheather St., Houston, Tex.; John E. Kilpatrick, Houston, Tex., and Robert J. Spiger, Bellaire, Tex., assignors to Weiner, by said Kilpatrick and Spiger

Filed June 18, 1969, Ser. No. 834,306
Int. Cl. G06m *11/04*
U.S. Cl. 235—92 PC **13 Claims**



A system for reading out a pattern of areas each of which may or may not be transparent to alpha rays, by counting the alpha rays passing through each of the areas for a predetermined common time interval, to ascertain for which areas a predetermined count is attained in a predetermined time interval.

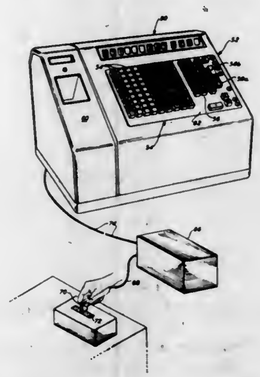
3,679,878

REMOTELY CONTROLLED ACTUATOR

David L. Greenwood, New York, N.Y., assignor to Litton Business Systems, Inc., New York, N.Y.

Filed Oct. 26, 1970, Ser. No. 83,968
Int. Cl. G06c *7/02, 25/00*
U.S. Cl. 235—146 **7 Claims**

A plurality of actuators are disposed so that there is an actuator between each keyrow column of a cash register keyboard. Each actuator is journaled for longitudinal movement from a home position to a plurality of positions whereat successive lugs, carried by the actuator, are aligned with successive key, stems of the cash register; and for rotational movement following alignment of a lug with a keystem of the cash register, to coact with and move the keystem and the key associated therewith into an actuated condition. Each of the actuators is urged from its home position by a spring, but restrained against such movement due to the interaction between rack teeth carried by the actuator and a gear and cam assembly carried by an actuator shaft. As the actuator shaft is operated the cam rotates permitting rotation of its associated gear and longitudinal displacement of the rack due to the spring action. In response to an appropriate signal from a remote source a solenoid, associated with the actuator, is



deenergized and teeth carried by a spring biased pawl engage teeth carried by the actuator to arrest movement of the actuator with the lug thereon aligned with the cash register keystem to be operated. The actuator shaft continues to move carrying with it the cam until an appropriate portion of the cam engages the actuator to rock same about its axis of displacement. The actuator lug now coacts with the keystem to depress same.

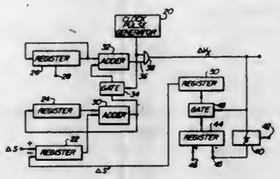
Displacement of the actuator shaft furthermore effects displacement of a timing slide, formed with a plurality of apertures adapted, during movement of the slide, to be aligned with a source of illumination and a photocell such that a timing pulse is generated.

3,679,879

SYSTEM FOR GENERATING SPEED PATTERN FOR SPEED CONTROL OF MOVING BODY

Susumu Seki, Kokubunji-shi; Makoto Noumi, Hachioji-shi, and Tadashi Takaoka, Katsuta-shi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 18, 1969, Ser. No. 886,123
Claims priority, application Japan, Dec. 20, 1968, 44/94044
Int. Cl. G06f *15/50, 15/32, 15/34*
U.S. Cl. 235—150.31 **9 Claims**



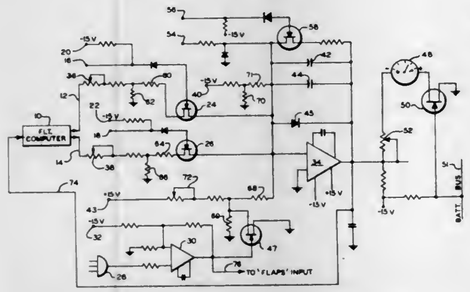
A system for generating a speed pattern for the speed control of a moving body comprising a first register which is preset with the total variation of time including the time required when the speed of the moving body ranging from the initial speed to the final speed is controlled by a predetermined rate of speed change, a coefficient multiplier for computing a very small variation of time during the control of the speed of the moving body by said rate of speed change, a second register to which the result of addition of the output from said coefficient multiplier and the content of said first register is supplied each time a variation of speed occurs during said very small variation of time, and an amplifier having a very great gain for comparing a train of overflow pulses from said second register with a train of pulses, each one thereof representing one unit of the distance, and delivering an output representing the said variation of speed.

3,679,880

SIMULATED INSTRUMENTS

Fred F. Carver, Chenango Forks, N.Y., assignor to The Singer Company, New York, N.Y.

Filed March 27, 1970, Ser. No. 23,152
Int. Cl. G06g *7/56, 7/72*
U.S. Cl. 235—151.34 **10 Claims**



A simulated instrument for use in a vehicle simulator, or the like, to indicate the value of an assumed quantity, position, or other variable requiring the value to be held over a relatively long time constant. The invention provides means for deriving electrical signals to drive the instrument by long-term integration of a value indicating the rate of change of the variables. Means are provided for recycling the integrator at frequency, short intervals to maintain a high degree of accuracy.

3,679,881

DIGITAL SINE WAVE GENERATOR AND METHOD

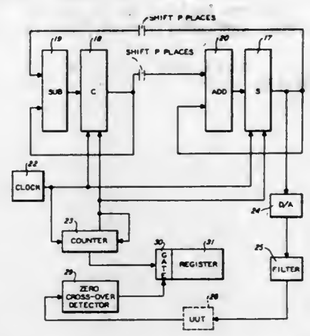
Allan R. Goudeck, Gainsville, Fla., assignor to Western Electric Company, Incorporated, New York, N.Y.

Filed June 19, 1970, Ser. No. 47,726
Int. Cl. G06f *7/38*
U.S. Cl. 235—152 **5 Claims**

A digital sine wave generator utilizes a closed loop according to the formula:

$$\sin\theta = -\int\int \sin\theta d\theta d\theta$$

Initially, a first register is set with O and a second register is set with 1 therein. Incrementally, the sum in the second register is multiplied by a number between zero and one and added to the sum in the first register and the sum in the first register is multiplied by a number between zero and one and subtracted from the sum in the second register. A counter may be provided to count the increments and reset the first and second registers when the count indicates a full cycle. Subtraction is made by adding to the inverse of the second register. The



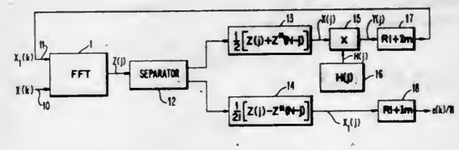
generator may be employed to test the phase shift of a unit under test by reading the counter when the output of the unit under test crosses zero.

3,679,882

FOURIER DIGITAL FILTER OR EQUALIZER AND METHOD OF OPERATION THEREFOR

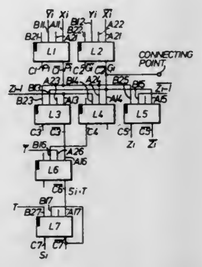
Gerald K. McAuliffe, Mahopac, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed June 11, 1970, Ser. No. 45,520
Int. Cl. G06f *7/38*
U.S. Cl. 235—156 **22 Claims**



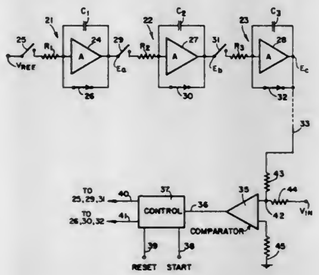
An equalizer system is disclosed which includes a Fourier transform device having first and second input terminals and a separator connected to its output which provides a first output in the time domain and a second output in the frequency domain. A modified version of the second output is obtained by modifying it by a given filter characteristic. The first output and the modified second output are applied to first and second adding means wherein the values of the real and imaginary parts of these outputs are added algebraically to provide an equalized output in the time domain at the output of the first adding means while the output of the second adding means is applied via a feedback path to the second input terminal of the Fourier transform device along with an input on the first terminal thereof which occurs subsequent to the initial input applied to the first terminal. The method of operation consists in adding algebraically the values of the real and imaginary parts of a block of data which has been previously modified by a filter characteristic and transformed to the frequency domain to provide an output consisting of N parts; applying this output to a Fourier transform device to convert it to an apparent frequency domain of N complex parts; separating the output in the apparent frequency domain into frequency and time domain components each of N complex parts and, adding algebraically the values of the real and imaginary parts of the time domain component to provide an equalized or filtered block of data consisting of N real parts in the time domain.

3,679,883
FULL ADDER
Dieter Straub, Constance, Germany, assignor to Telefunken Patentverwertungsgesellschaft, Ulm/Danube, Germany
Filed Nov. 16, 1970, Ser. No. 89,859
Claims priority, application Germany, Nov. 14, 1969, P 19 57 302.5
Int. Cl. G06f 7/385, 7/50
U.S. Cl. 235—175 8 Claims



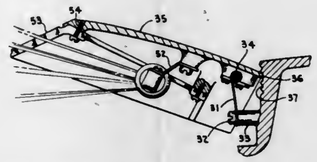
A full adder composed essentially of six identical logic circuits each arranged to receive inputs A1, A2 . . . B1, B2... and to produce outputs C = A1 + A2... + B1 + B2... and C = A1 + A2... (B1 + B2...), the logic circuits being arranged to receive addend input values X_i and Y_i and carry inputs Z_{i-1}, and their complements, and being arranged in at least two groups of circuits, the first group producing an output carry signal and the second group receiving inputs from the first group and producing an output sum signal.

3,679,884
MATHEMATIC ROOT COMPUTER
David R. Figueroa, Dade County, Fla., assignor to Coulter Electronics, Inc., Hialeah, Fla.
Filed April 13, 1970, Ser. No. 27,860
Int. Cl. G06g 7/20
U.S. Cl. 235—193.5 5 Claims



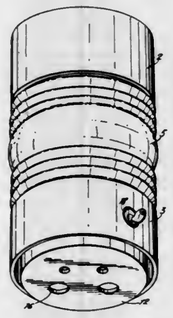
Apparatus for electronically determining the mathematic root of a given value, comprising in series a plurality of integrators, a comparator, and a control circuit. A reference voltage is applied to the input of the first integrator and elicits an output from the last integrator, which output is compared by the comparator with an input voltage that reflects the value to be rooted. When the two compared voltages are equal, the control circuits undergoes a change of state, at which time the output voltage of the first integrator is a mathematic root of the given input value. The order of the root attained at the first integrator depends upon the number of integrators in the series; i.e., a series of three integrators will cause the output from the first integrator to be the cube root value of the input voltage. Moreover, other roots can be obtained from the output of the intermediate integrators.

3,679,885
MOVABLE LIGHT ARRANGEMENT
Wilbur-Webb Selley, Maitland, and Richard H. Schaffer, Orlando, both of Fla., assignors to Vactronics, Inc., Orlando, Fla.
Filed Feb. 24, 1969, Ser. No. 801,608
Int. Cl. F21v 33/00
U.S. Cl. 240—2 VC 5 Claims



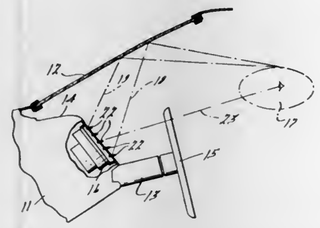
An improved headlight unit for a vacuum cleaner, other cleaning or scrubbing type device, tool or the like involving a simple yet effective construction whereby the proper degree of illumination required for a given job may be easily obtained by the user. Significantly, our attractive headlight unit may be selectively moved to a variety of operative positions, with the unit being automatically retained against further movement when in each such selected position.

3,679,886
LIGHTING UNIT
Peter Ernest Pizzey, Ickenham, England, assignor to Frederick Thomas & Company Limited, London, England
Filed Oct. 20, 1969, Ser. No. 867,719
Int. Cl. F21p 1/00
U.S. Cl. 240—3 6 Claims



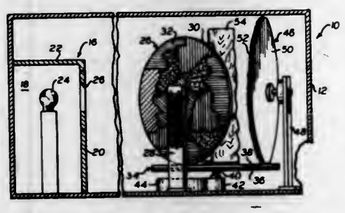
A bollard lighting device having a lighting unit mounted upon a tubular post to provide lighting through a 360° angle in a horizontal median plane. A cylindrical lens member is captively held between a closed end cylindrically shaped upper body member and a cylindrically shaped lower body member. A cylindrically shaped inner base member fits inside the lower body member, and supports the light source which extends into the cylindrical lens. The lower body and inner base members are held together by a bayonet type lug fitting. An access door is provided in the tubular post to facilitate installation and maintenance of the wiring circuit from a power source to the light source. A lock, located in the lower body member, utilizes a cam butting against a stop to prevent activation of the bayonet type lug fitting and therefore, disassembly of the lighting unit, and access through the door to the electric circuit in the tubular post by unauthorized persons.

3,679,887
LIGHT REFLECTION PREVENTIVE DEVICE
Peter J. Kennedy, Rochester, England, assignor to Ford Motor Company, Dearborn, Mich.
Filed June 25, 1971, Ser. No. 156,781
Claims priority, application Great Britain, Oct. 14, 1970, 48,743/70
Int. Cl. B60q 3/04
U.S. Cl. 240—8.16 3 Claims



Reflection by the windshield of light, such as the light from an instrument mounted in a vehicle cowl structure or dash panel, into the eyes of the vehicle operator when viewing the road ahead is prevented by slats arranged between the operator and the lighted instrument. The plane of the slats are approximately aligned with the operators line of sight.

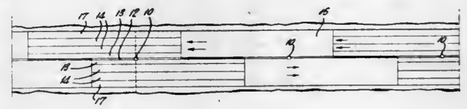
3,679,888
VARIABLE LIGHT PROJECTION APPARATUS
Earl M. Reiback, 20 E. 9th St., New York, N.Y.
Filed Aug. 27, 1970, Ser. No. 67,309
Int. Cl. F21p 3/00
U.S. Cl. 240—10.1 8 Claims



Apparatus for projecting continuously variable, multicolored, random patterns of light onto a translucent screen includes a lamp and a screen. It further includes a multicolored transparent wheel and a crinkle-surfaced reflecting disk, each in a frictional engagement with a motor-driven turntable. Optionally a reflecting strip extends from the turntable eccentrically of its axis of rotation. The screen is preferably transparent plastic containing a light absorbent dye and having a matte front and sandblasted rear surface.

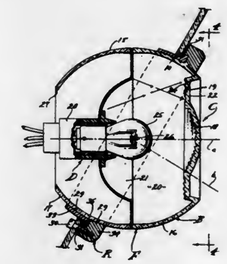
3,679,889
BI-DIRECTIONAL HIGHWAY LUMINAIRE
Kurt Franck, Newark, Ohio, assignor to Holophane Company, Inc., New York, N.Y.
Filed Nov. 18, 1969, Ser. No. 877,697
Int. Cl. F21s 1/10
U.S. Cl. 240—25 11 Claims

A luminaire provides a longitudinally asymmetrical light distribution on both sides of a bi-directional highway with low



non-glare beams facing traffic on both sides of the highway and higher beams in the direction of traffic on both sides of the highway.

3,679,890
LIGHT WITH UNIVERSALLY MOUNTED AXIS FOR BODY PANELS AND THE LIKE
Clarence Pool, 8321 Passons Blvd., Pico Rivera, Calif.
Filed May 22, 1970, Ser. No. 39,644
Int. Cl. F21v 13/06
U.S. Cl. 240—41.6 6 Claims

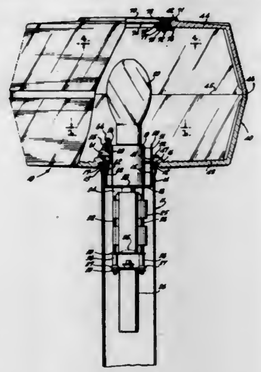


A light fixture having a beam directing axis adapted to be selectively positioned as required when mounted in a panel unpredictably disposed at varying angles, both simple and compound, and comprised of a universally revolvable sphere-shaped body held captive between clamp-rings secured to any panel thickness at an opening therein provided for the exposure therethrough of a beam directive means housed within said body.

3,679,891
LIGHTING FIXTURE ADAPTED TO BE MOUNTED ON A POLE
Wilbert Quack, Newark, Ohio, assignor to Holophane Company, Inc., New York, N.Y.
Filed Jan. 20, 1970, Ser. No. 4,212
Int. Cl. F21v 17/00
U.S. Cl. 240—52 18 Claims

A pole mounted lighting fixture includes a lamp enclosure, i.e., a refractor, having opposed apertures. A lamp mounting adaptor for supporting the electrical components of the lamp, is inserted into the end of the pole and has a lip engaging the end of the pole. The refractor engages the other side of the lip

and is held in place by an internally mounted latching ring which cooperates with a tapered surface on the inside of the



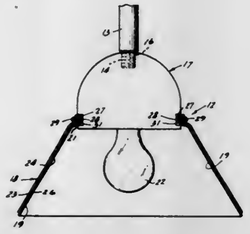
pole. A cover plate for the other aperture has externally operated screws with nuts extending through the aperture to engage the inner surface of the refractor.

3,679,892

DISPOSABLE REFLECTORS FOR LIGHTING FIXTURES

Jack F. Shearer, Lake Forest, Ill., assignor to Harvey Hubbell, Incorporated, Bridgeport, Conn.

Filed March 12, 1970, Ser. No. 18,838
Int. Cl. F21v 7/00
U.S. Cl. 240—103 **4 Claims**



A lighting fixture has a reflector including disposable or expendable means forming a light-reflective surface which is attached to the fixture in a manner to be easily and readily removed and replaced, thereby enabling rapid, convenient and economical restoration of a soiled reflective surface without requiring the trouble and expense of manual cleaning of the surface.

3,679,893

LUMINAIRE REFLECTOR COMPRISING ELLIPTICAL AND PARABOLIC SEGMENTS

Sylvan R. Shemitz, Woodbridge, and Benjamin L. Stahlheber, Clinton, both of Conn., assignors to Sylvan R. Schemitz and Associates, Inc., West Haven, Conn.

Filed Sept. 3, 1970, Ser. No. 69,344
Int. Cl. F21v 7/09
U.S. Cl. 240—103 R **19 Claims**

Substantially uniform magnitude of illumination on a plane surface is provided by a concave reflector having a parabolic reflecting surface and an elliptical reflecting surface oriented relative to one another to satisfy the following criteria.

a. the first focal point of the elliptical surface is on the axis of the parabolic surface,
b. the second focal point of the elliptical surface is not within the closure formed by the inner surfaces of the reflecting surfaces and a plane across the outwardly extending edges of the surfaces,
c. the axis of the parabolic surface is from about 45° to about 90° from nadir, and



d. the major axis of the elliptical surface is from about 5° to about 45° from nadir.

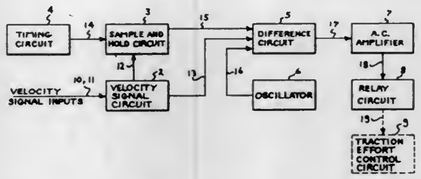
Preferred embodiments include the parabolic surface and elliptical surface separated by one or more general reflecting surfaces, and the same combinations of surfaces with a second parabolic reflecting surface or flat reflecting surface adjacent and below the first parabolic surface and a flat reflecting surface adjacent and outside of the elliptical surface. The additional surfaces provide further improvement in control of the reflections.

3,679,894

ACCELERATION CONTROL SYSTEM FOR VEHICLES

Douglas F. Smith, Erie, Pa., assignor to General Electric Company

Filed July 9, 1970, Ser. No. 53,582
Int. Cl. B60t 15/20
U.S. Cl. 246—182 C **11 Claims**



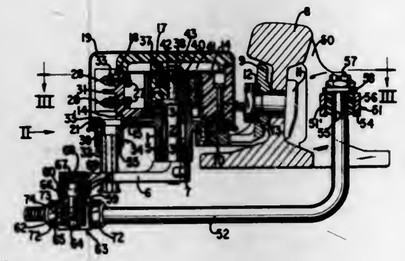
Train acceleration indicating arrangement wherein a sample circuit samples a vehicle velocity signal for a brief interval during each sampling period and produces a sampling signal whose amplitude during each sample period is substantially constant and a function of the sampled velocity signal. Means are provided for algebraically adding an AC signal and the sampling and velocity signals to produce an AC output signal solely during sampling periods when the difference between the sampling and velocity signals exceeds a predetermined magnitude. A relay circuit actuated in response to the AC output signal provides an indication of satisfactory vehicle deceleration. The relay circuit is connected in an emergency circuit of the type applying full service brakes upon detection of an abnormal indication. Actuation of the relay circuit holds off additional actuation of emergency brakes in the event the vehicle decelerates adequately subsequent to detection of an abnormal indication.

3,679,895

ELECTROMECHANICAL APPARATUS FOR CHECKING AND SIGNALLING THE POSITION OF A RAILWAY-TRACK SWITCH OR THE LIKE

Marcel Luc Amedee Pauive, 83 Le Muy, France

Filed Dec. 29, 1970, Ser. No. 102,338
Claims priority, application France, Dec. 31, 1969, 6945746
Int. Cl. B61l 5/00
U.S. Cl. 246—253 **10 Claims**



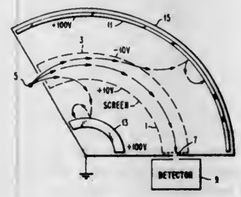
An electromechanical apparatus for checking and signalling the position of a railway-track switch comprising an electric switch actuated by a cam solid with a cam-carrying shaft forming the crank-pin of a crank whose arm is pivoted to one end of a transmission rod, the other end of which is pivoted to a switch blade, said crank and rod being connected by a ball joint comprising a connecting member mounted on and displaceable along said rod for being fixed in a selectively adjustable relative position.

3,679,896

ELECTROSTATIC PRISM

George A. Wardly, Yorktown Heights, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 23, 1969, Ser. No. 887,603
Int. Cl. H01j 39/34
U.S. Cl. 250—41.9 ME **16 Claims**



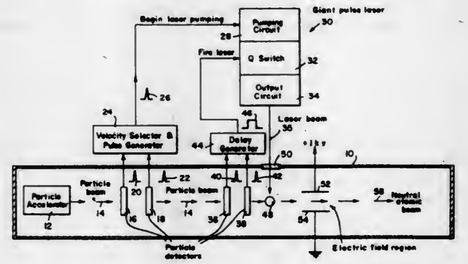
An electrostatic field to manipulate charged particles in a narrow band filter prism and energy discrimination prism arrangement is obtained by employing high transparency opposing screen electrodes. Adjacent each screen electrode particle attractor apparatus act to attract all particles outside the narrow band of particles. In the narrow band filter arrangement collector apparatus are provided to collect particles within the narrow band while in the discrimination arrangement collector apparatus are provided to collect both particles having energies above the narrow band and particles having energies below the narrow band.

3,679,897

LASER BOMBARDMENT OF MICROPARTICLE BEAM FOR PRODUCING ATOMIC PARTICLES IN THE FORM OF A BEAM OR AN EXPANDING CLOUD

David O. Hansen, Westminster; Saul Altshuler, Manhattan Beach; William Bernstein, Los Angeles, all of Calif., and Bernard Hamermesh, Shaker Heights, Ohio, assignors to TRW Inc., Redondo Beach, Calif.

Continuation-in-part of Ser. No. 599,163, Dec. 5, 1966, abandoned. This application Aug. 28, 1969, Ser. No. 853,818
Int. Cl. G01h 21/00; H01s 3/00
U.S. Cl. 250—42 **16 Claims**



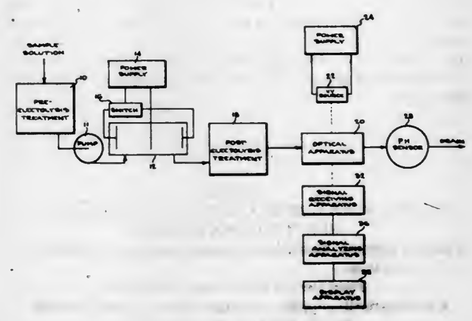
A beam of accelerated microparticles of substantially uniform velocity is passed transversely through an intense pulsed laser beam. In traversing the laser beam, the microparticles are thermally evaporated by the energy of the laser beam to produce either a beam or an expanding cloud of atomic particles.

3,679,898

PHENOL MONITORING METHOD AND APPARATUS

Dinsdale M. J. Compton, Del Mar, and Barry D. Epstein, San Diego, both of Calif., assignors to Gulf Oil Corporation

Filed Aug. 20, 1970, Ser. No. 65,604
Int. Cl. G01n 21/26
U.S. Cl. 250—43.5 R **18 Claims**



A method of and apparatus for determining the quantity of phenols in an aqueous solution after treating the solution to remove interfering impurities therefrom. The treated aqueous solution is electrolytically alternately converted so as to be either acidic or basic with preselected and controlled pH values. These acidic and basic solutions are subjected to ul-

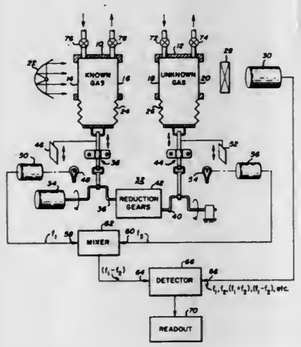
traviolet radiation at a preselected wavelength so that the amount of radiation passing therethrough at the preselected pH values can be measured. The measured amounts of ultraviolet radiation passing through the acidic and basic solutions are compared to determine the concentration of phenols in the aqueous solution.

3,679,899

NONDISPERSIVE GAS ANALYZING METHOD AND APPARATUS WHEREIN RADIATION IS SERIALLY PASSED THROUGH A REFERENCE AND UNKNOWN GAS

John Dimeff, San Jose, Calif., assignor to The United States of America as represented by the National Aeronautics and Space Administration

Filed April 16, 1971, Ser. No. 134,568
Int. Cl. G01n *21/26, 23/12*
U.S. Cl. 250—43.5 R 13 Claims



A nondispersive gas analyzing means including a first variable volume container for receiving a quantity of a reference gas, a second variable volume container for receiving a quantity of an unknown gas to be analyzed, means for differentially varying the density of the gas in the first and second containers, means for causing radiation to pass serially through the first and second containers, a radiation detector for detecting the intensity of the radiation emerging from the second container and generating a radiation signal responsive thereof, and electronic means for selecting and displaying a particular component of the radiation signal which is uniquely related to the amount of gas of the reference type present in the unknown gas.

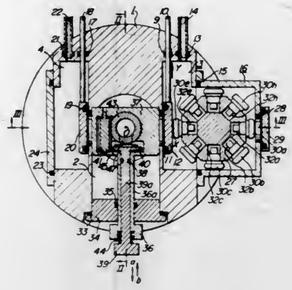
3,679,900

SPECIMEN HOLDER TRANSFER MECHANISM FOR AN ELECTRON MICROSCOPE

Chikara Kimura, Katsuta-shi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 2, 1969, Ser. No. 881,498
Claims priority, application Japan, Dec. 3, 1968, 43/88871
Int. Cl. H01j *37/26;* G01n *23/00*
U.S. Cl. 250—49.5 B 6 Claims

A specimen chamber in an electron microscope and the like apparatus, which is so designed that a plurality of specimens are accommodated in a small, specimen storage and exchanging compartment adjacent to a specimen stage provided within a bodytube in a path of an electron beam, which compartment may be formed symmetrically on both sides of the specimen stage, and after evacuating the small compartment to vacuum, a vacuum sealing between the specimen stage and



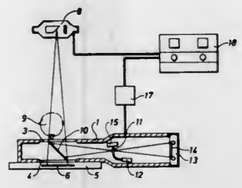
the small compartment is removed and a desired one of the plurality of specimens is transferred onto the specimen stage.

3,679,901

DEVICE FOR SIMULTANEOUS RADIOGRAPHICAL AND PHOTOGRAPHICAL EXAMINATIONS ON THE EYE AND THE ORBITAL REGION

Hugo Bogren, Bastra Frolunda; Gosta Elfstrom, Molndal, and Bjorn Tengroth, Goteborg, all of Sweden, assignors to Incentive Research & Development AB, Bromma, Sweden

Filed Oct. 5, 1970, Ser. No. 78,003
Claims priority, application Sweden, Oct. 6, 1969, 13717/69
Int. Cl. G03b *41/16*
U.S. Cl. 250—59 6 Claims



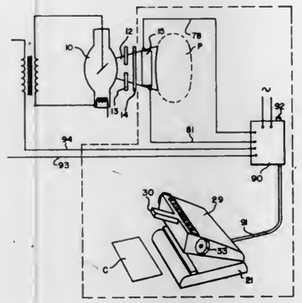
The invention concerns a device for the localization of intraocular foreign bodies and for exophthalmometry. The device can be mounted on any standard model of an X-ray stand usable for skull examination and makes it possible to take simultaneously a radiograph and a photograph of the orbital region of the patient. The photograph and the radiograph are obtained on transparent film material and with exactly the same magnification. The photograph and the radiograph are positioned upon each other in a correct relative position and viewed together in penetrating light. The combined radiograph and photograph reveales both the skeleton and the soft parts as well as any foreign radiopaque bodies in the orbital region and the anterior part of the skull, wherefore the position of any such foreign body can be easily determined or any exophthalmos can be easily detected and accurately measured respectively.

3,679,902

X-RAY IRRADIATION APPARATUS IN WHICH AN X-RAY SOURCE IS ENERGIZED UPON THE RECORDING OF IRRADIATION DOSAGE DATA

George S. Hurst; Norbert Theunard, and Karl A. Schneider, all of Lexington, Ky., assignors to The University of Kentucky Research Foundation, Lexington, Ky.

Filed Oct. 13, 1969, Ser. No. 865,625
Int. Cl. G03b *41/16;* H05g *1/44, 1/28*
U.S. Cl. 250—65 R 15 Claims



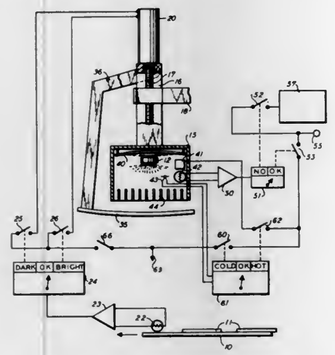
Apparatus for use in examining or treating patients with X-radiation or the like requires the making of a permanent record of the radiation applied. The operation of the radiation source is controlled in dependence upon the making of the record and the to radiation, or dose exposure is limited to a predetermined amount. A method is disclosed for safeguarding the patient and for producing a tangible record of the dose to which the patient is subjected.

3,679,903

APPARATUS FOR CONTROLLING THE INTENSITY OF RADIANT ENERGY ON A STRIP

Frank H. Blitchington, Jr., Greensboro, N.C., assignor to Western Electric Company, Incorporated, New York, N.Y.

Filed Oct. 30, 1970, Ser. No. 85,634
Int. Cl. G01t *1/16*
U.S. Cl. 250—83.3 UV 3 Claims



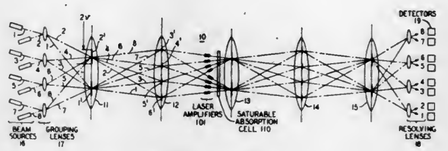
A strip of ultraviolet sensitive material and masks are moved past a divergent source of ultraviolet radiation to expose the strip through the masks. The intensity of ultraviolet radiation is measured adjacent to the strip and the source is moved toward or away from the strip to maintain an intensity between low and high limits of intensity. Interlock facilities at the source sense the color temperature of the source to disable the source moving facilities and source cooling facilities if the source is emitting insufficient ultraviolet radiation.

3,679,904

MULTIPLE BEAM TRANSMISSIONS SYSTEM WITH IMPROVED CROSS-TALK REDUCTION

Daniel Weiner, Hazlet, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed March 3, 1969, Ser. No. 803,739
Int. Cl. H04b *9/00*
U.S. Cl. 250—199 5 Claims



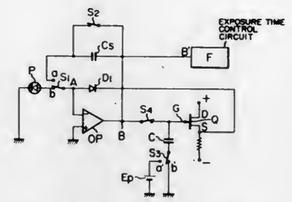
Improved cross-talk reduction with spatial multiplexing of a plurality of N beams in a beam transmission system comprising a sequence of confocally spaced lenses is accomplished by inserting saturable absorption cells in anti-nodal regions of the transmission system, at which regions the beams are spatially distinct. The beams are resolved at the output end into N separate beams. A similar arrangement can be employed using nonconfocally spaced lenses. In a pulse-code-modulation communication system, the saturable absorption cells sharpen the pulses time-wise as well as space-wise.

3,679,905

ELECTRONIC SHUTTER DEVICE COMPRISING LOGARITHMIC-ANTILOGARITHMIC CIRCUITRY

Asao Watanabe, Tokyo, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed March 29, 1971, Ser. No. 128,871
Claims priority, application Japan, April 14, 1970, 45/31258
Int. Cl. G01j *1/00, 1/52;* H01j *39/12*
U.S. Cl. 250—206 1 Claim

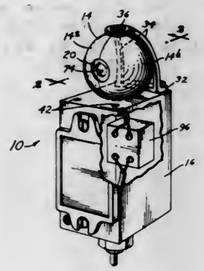


The electronic shutter device of this invention has a circuit for generating a voltage whose value is proportional to a logarithm of a magnitude of the current generated by a photosensitive element for sensing the intensity of the light from an object. It is so designed that said voltage generating circuit is used also for a circuit for controlling a shutter speed by the antilogarithmic transformation. Thus the variation in temperature and aging chracteristics, which are inherent if the separate circuits were provided, of a logarithmic transformation component can be corrected automatically. Further, an element adopted to store therein the intensity of light from the object is placed in the logarithmic transformation circuit.

3,679,906
LIGHT-OPERATED CONTROL DEVICE

Clifford E. Myers, Forest Grove, Oreg., assignor to Xerox, Inc., Portland, Oreg.

Filed March 25, 1970, Ser. No. 22,611
Int. Cl. H01j 3/14
U.S. Cl. 250—239 1 Claim

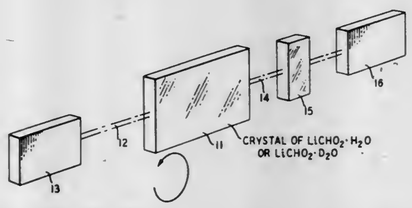


A light-operated control device including a spherical housing mounted on a second housing for universal swiveling movement relative thereto. An arm extending out from the second housing overlies the sphere and is clamped thereagainst to secure the sphere in any selected position. A photocell mounted in the sphere has a light-sensitive side which faces out through an aperture in a side of the sphere. A light-channeling passage having deflector surfaces along its sides extends between the aperture and the light-sensitive side of the photocell. This passage inhibits ambient light from striking the photocell. The photocell is connected to control circuitry in the second housing by elongated flexible conductors which permit free swiveling of the sphere.

3,679,907
LITHIUM FORMATE NONLINEAR DEVICES

William Adam Bonner, Scotch Plains; Shobha Singh, Summit, and Le Grand Gerard Van Uitert, Morris Township, Morris County, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Aug. 3, 1970, Ser. No. 60,697
Int. Cl. H03f 7/00
U.S. Cl. 307—88.3 5 Claims

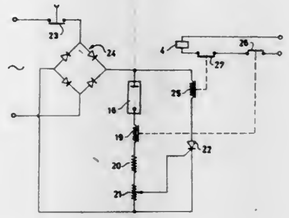


The hydrated and deuterated forms of lithium formate are found to be useful nonlinear materials for use over a wavelength range including the visible spectrum. While conversion efficiency is inferior to that of lithium niobate or barium sodium niobate, resistance to radiation damage is significantly greater. Operation at power levels in excess of 10^6 watts/cm^2 has resulted in no perceptible damage. These materials are suitably incorporated in second harmonic generators as well as in other parametric devices.

3,679,908
SAFETY DEVICE FOR SENSING PREVENTING RADIATION LEAKAGE FROM MICROWAVE-PRODUCING APPARATUS

Lamberto Mazza, Pordenone, Italy, assignor to Industrie A. Zanussi S.p.A., Pordenone, Italy

Filed Dec. 15, 1970, Ser. No. 98,378
Claims priority, application Italy, Jan. 17, 1970, 19510 A/70
Int. Cl. H01h 35/00
U.S. Cl. 307—117 3 Claims



A microwave-leakage preventing safety device, especially adapted for microwave cooking ovens and like appliances, which is characterized by a radiation sensitive gas lamp (or gas diode) placed in the vicinity of the point at which radiation leakages are expected, for example the oven door. The gas lamp is a part of an electric safety circuit which cuts off the current feed to the microwave generator proper whenever the detecting lamp has radiations impinging thereon.

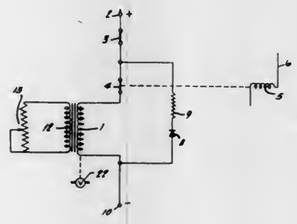
ERRATUM

For Class 307—133 see:
Patent No. 3,679,988

3,679,909
HYDRAULIC DRIVE FOR ELECTRIC SWITCHES

Karl-Heinz Picard, and Joachim Beierer, both of Berlin, Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Jan. 29, 1971, Ser. No. 110,923
Claims priority, application Germany, Jan. 30, 1970, P 20 05 027.5
Int. Cl. H01h 3/24
U.S. Cl. 307—144 5 Claims

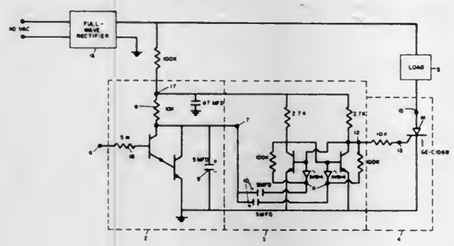


The open time of an electrically controlled valve for the hydraulic drive of an electrical switch is prolonged according to the invention, by providing the excitation coil of the valve with a circuit wherein a rectifier produces a short circuit which delays the deenergization of the valve coil.

3,679,910
TOUCH CONTROL SWITCH

James M. Williams, Waltham, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Filed April 13, 1971, Ser. No. 133,591
Int. Cl. H03k 17/00
U.S. Cl. 307—252 W 5 Claims

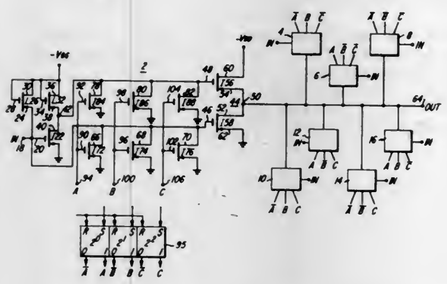


A circuit which is responsive to sixty cycle voltage coupled to the circuit by a human body from a proximate 60 cycle power line. An input terminal when touched by a person's finger has coupled into it a 60 cycle voltage which is amplified and causes the electronic circuitry to assume either a conducting or non-conducting state at its output which is maintained after removal of the finger from the terminal. The output of the circuit is connected to a controlled device which is controlled by the circuit output state.

3,679,911
DECODER CIRCUIT

Melvin Murray Kaufman, Willingboro, N.J., assignor to RCA Corporation

Filed May 28, 1970, Ser. No. 41,324
Int. Cl. H03k 17/00, 19/24
U.S. Cl. 307—251 3 Claims

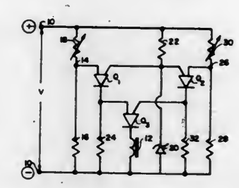


A decoder including a plurality of input terminals and a plurality of circuits between these terminals and a common output terminal. Each circuit includes an inverter, such as one formed of at least one P-type metal-oxide semiconductor (P-MOS) device for deriving from the signal applied to its input terminal a complementary signal, and a second circuit. The latter may include two PMOS devices the conduction paths of which are connected in series, one such path controlled by the complementary signal and the other by the input signal, and an output terminal at the common connection of these two devices. In response to a group of control signals on one value, one circuit is placed in its operating state and each other circuit is rendered inoperative by essentially opening the series connected conduction paths of the two PMOS devices of the circuit.

3,679,912
OVERVOLTAGE-UNDERVOLTAGE SENSOR

Mircea M. Tenenbaum, New Haven, Conn., assignor to Allied Control Company, Inc., Plantsville, Conn.

Filed June 9, 1971, Ser. No. 151,190
Int. Cl. H03k 5/20
U.S. Cl. 307—235 17 Claims

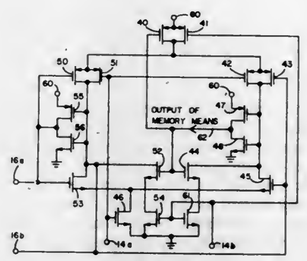


A voltage sensitive device controls the energization of a relay or other load so as to switch it between energized and de-energized states as the sensed voltage passes a low or undervoltage limit and another high or overvoltage limit. Detection of the high and low limits is achieved by two voltage detecting circuits, one for each limit, and a comparator circuit responsive to the outputs of the detecting circuits performs the actual switching of the load between its energized and de-energized states. The two detecting circuits and the comparator circuit are each comprised principally of a programmable unijunction transistor or other three-terminal semiconductor device of generally similar characteristics.

3,679,913
BINARY FLIP-FLOP EMPLOYING INSULATED GATE FIELD EFFECT TRANSISTORS AND SUITABLE FOR CASCADED FREQUENCY DIVIDER OPERATION

James W. Feltz, Scottsdale, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.

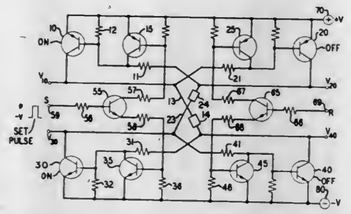
Filed Sept. 14, 1970, Ser. No. 71,889
Int. Cl. H03k 3/26
U.S. Cl. 307—279 12 Claims



A toggle flip-flop suitable for cascaded operation is shown with performs a sequential logic function. More specifically, the future state of the flip-flop depends on its past occurrences and therefore the disclosed flip-flop performs a memory function. This invention realizes the toggle function through an interconnection of two basic functional blocks. One block comprises a memory means and the other an output transfer means. The invention herein described is a circuit utilizing complementary insulated gate field effect transistors which perform the toggle flip-flop function. The circuit requires an

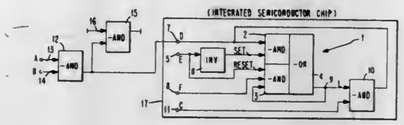
input excitation (a voltage) and its inverse, and its operation is independent of the input width and rise time.

3,679,914
REGENERATIVE CIRCUIT COMPRISING COMPLEMENTARY TRANSISTOR PAIRS
Herbert Anton Schneider, Boulder, Colo., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed April 13, 1971, Ser. No. 133,518
Int. Cl. H03k 3/286, 3/284
U.S. Cl. 307—288 **11 Claims**



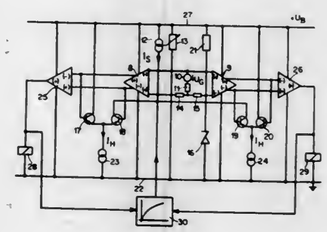
Improved triggering circuitry is incorporated into a regenerative circuit comprising complementary transistor pairs. When the circuit is triggered, a switching sequence is established in which both ON transistors are turned OFF before either OFF transistor turns ON. Potential transistor and power supply damage during the state transition period are thereby avoided.

3,679,915
POLARITY HOLD LATCH WITH COMMON DATA INPUT-OUTPUT TERMINAL
Ronald J. Kriger, Endicott, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed March 4, 1971, Ser. No. 121,098
Int. Cl. H03k 3/12
U.S. Cl. 307—289 **16 Claims**



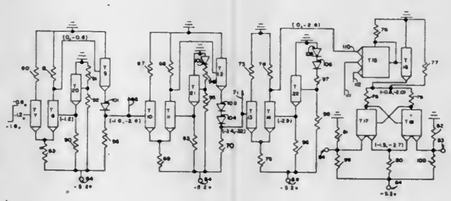
A logical circuit couples the in-phase output terminal of a polarity hold latch to the data input terminal of the latch to provide a common data input-output terminal. This is particularly useful in heavily integrated monolithically fabricated circuits where the amount of logical function that can be achieved is usually limited by the number of input-output pin connections that are available rather than the number of transistor circuits which are formed on a single semiconductor chip. However, the improved latch is also useful in reducing the number of input-output terminals in printed circuit cards for densely packaged electronic circuits since they also encounter pin limitations rather than electronic component limitations Gating means external to the semiconductor chip (or card) and in some instances gating of the logic circuit determine the time intervals when good input data and good output data exist on the common input-output terminals. In some instances, output data can be made available sooner than otherwise possible by careful use of the input data itself as good output data during the set time of the latch; i.e. the input signal to the latch is available sooner than its output and with the common input-output terminal its input signal can be used as an output signal before the latch output becomes available—an input to output signal delay of zero.

3,679,916
CONTROLLED HYSTERESIS INTEGRATED CIRCUIT SWITCHING CIRCUIT
Holger Siebers, Zug, Switzerland, assignor to Landis & Gyr AG, Zug, Switzerland
Filed July 17, 1970, Ser. No. 55,843
Claims priority, application Switzerland, Sept. 16, 1969, 13958/69
Int. Cl. H03k 3/295
U.S. Cl. 307—290 **1 Claim**



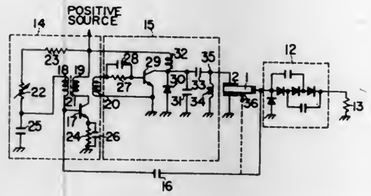
A controlled hysteresis integrated circuit switching circuit wherein a bias signal and an input signal are connected in opposition across the input of an operational amplifier. A current source establishes the bias signal across a bias resistor. When the input signal overcomes the bias signal, the amplifier begins to change state. The output of the amplifier controls an active feedback network and, as the amplifier changes stage, a predetermined amount of current is switched to the bias resistor in opposition to that supplied by the current source to reduce the magnitude of the bias signal.

3,679,917
INTEGRATED CIRCUIT SYSTEM HAVING SINGLE POWER SUPPLY
Richard W. Bryant, Poughkeepsie, and George K. Tu, Wappingers Falls, both of N.Y., assignors to Cogar Corporation, Wappingers Falls, N.Y.
Filed May 1, 1970, Ser. No. 33,671
Int. Cl. H03k 1/14, 19/30
U.S. Cl. 307—297 **31 Claims**



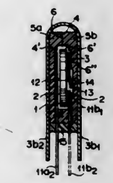
An integrated circuit system having a single power supply. Rather than using multiple voltage sources, a single voltage source is used from which multiple reference voltages are derived. Multiple reference voltages can be used due to the incorporation of temperature compensation circuits.

3,679,918
SELF-EXCITING TYPE HIGH VOLTAGE GENERATING APPARATUS UTILIZING PIEZOLECTRIC VOLTAGE TRANSFORMING ELEMENTS
Inoue Keizi, Yokohama, Japan, assignor to Denki Onkyo Company Limited, Tokyo, Japan
Filed June 19, 1970, Ser. No. 47,759
Claims priority, application Japan, Dec. 30, 1969, 44/105474
Int. Cl. H01v 7/00
U.S. Cl. 310—8.1 **4 Claims**



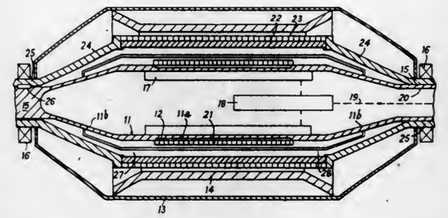
In a self-exciting type high voltage generating apparatus utilizing a piezolectric voltage transforming element driven by an oscillator, a capacitive feedback circuit is provided between the output of the piezolectric voltage transforming element and the oscillator to lock the oscillation frequency of the oscillator to the resonance frequency of the piezolectric voltage transforming element.

3,679,919
CERAMIC RESONATORS
Noboru Ichinose; Katsunori Yokoyama, both of Yokoyama, and Hisashi Nishikawa, Shizuoka-ken, all of Japan, assignors to Tokyo Electric Co., Ltd., Tokyo and Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan
Filed May 5, 1971, Ser. No. 140,482
Claims priority, application Japan, May 13, 1970, 45/45922
Int. Cl. H01v 7/00
U.S. Cl. 310—9.4 **5 Claims**



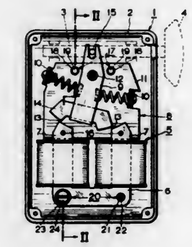
In a ceramic resonator of the type comprising an outer casing, a disc shaped ceramic resonator element, a pair of resilient terminal members on both sides of the resonator element, each including a projection for supporting the resonator element, and a split inner casing contained in the outer casing for containing the resonance element and terminal members, one half of the split inner casing is provided with an annular rib on its mating surface and a cylindrical recess inside the annular rib, and the other half of the split inner casing is provided with a cylindrical recess on its mating surface for receiving the annular rib whereby when the resonator and the terminal members are assembled in a space defined by the recesses of the inner casing halves, the resonator element is resiliently supported between the projections of the terminal members at its geometrical center.

3,679,920
SUPERCONDUCTING DYNAMO-ELECTRIC MACHINES
Robert Beattie MacNab, and Brian Edward Mulhall, both of Newcastle upon Tyne, England, assignors to International Research & Development Company, Newcastle upon Tyne, England
Filed April 1, 1971, Ser. No. 130,242
Claims priority, application Great Britain, April 9, 1970, 17,007/70
Int. Cl. H01v 11/00
U.S. Cl. 310—10 **21 Claims**



An A.C. generator has a superconducting D.C. field winding on the rotor and a multi-phase A.C. winding on the stator. To prevent A.C. loss in the superconducting winding an electromagnetic flux screen is interposed between the windings and is secured to the rotor. In a preferred construction the flux screen is part of an outer rotor cylinder of strong mechanical construction which operates at ambient temperature. The outer rotor cylinder is coupled for rotation with an inner cylinder which carries the superconducting winding, is of relatively light construction to minimize heat inflow and is separated from the outer cylinder by a vacuum space.

3,679,921
APPARATUS WITH AN OSCILLATING ARMATURE MOTOR
Reinhard Jank, Klagenfurt, Austria, assignor to U.S. Philips Corporation, New York, N.Y.
Filed March 1, 1971, Ser. No. 119,520
Claims priority, application Austria, March 2, 1970, A1908/70
Int. Cl. H02k 1/34
U.S. Cl. 310—37 **8 Claims**

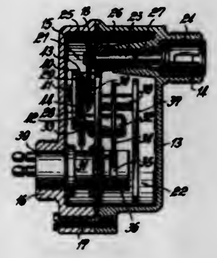


Apparatus including a housing, a tool movable in a guide in the housing, and an electric motor of oscillating armature type mounted in the housing and arranged to drive the tool, the motor having a stator, a carrier fixed to the stator at the pole end thereof, and an oscillating armature lever pivoted on the carrier, the carrier being fixed relatively to the housing by carrier positioning means, and the end of the stator remote from the oscillating armature lever being held to the housing by a clamp connection which permits forced relative movement between the stator and the housing.

3,679,922
HOUSING ARRANGEMENT FOR AN APPARATUS TRANSFORMING ROTARY SPEED INTO ELECTRIC SIGNALS

Horst Rahn, Villingen, Germany, assignor to Kienzle Apparate GmbH, Villingen/Schwarzwald, Germany

Filed April 6, 1971, Ser. No. 131,739
Claims priority, application Germany, April 7, 1970, G 70 12 543.8
Int. Cl. H02k 5/00
U.S. Cl. 310—89 9 Claims



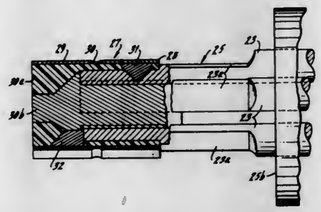
The housing of an apparatus transforming the rotary speed of the motor shaft of a motorcar into electric signals is constructed divisible and shaped to permit easy attachment to the gear casing of the motorcar.

A housing envelopes an adapter transmission and an electromechanical transducer, and has a tapered end formed by converging walls tangential to a connector tube projecting from the housing. The tapered housing end fits into a confined space on a transmission casing when the connector tube is attached to an other connecting tube projecting from the transmission casing so that a coupling in the connector tube connects the transmission in the casing with the adapter transmission in the housing.

3,679,923
AUTOMATIC WORK REPEATING MECHANISM

Kenneth B. Harper, Winnetka, and Hubert J. Tremblay, Roselle, both of Ill., assignors to Harper Associates, Inc., Winnetka, Ill.

Division of Ser. No. 852,538, Aug. 25, 1969. This application April 9, 1971, Ser. No. 132,741
Int. Cl. H02k 47/08
U.S. Cl. 310—128 5 Claims

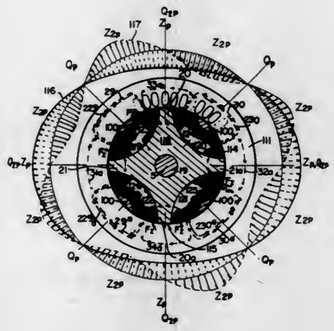


A direct current electrical motor haVing a commutator formed of conductor elements and spaced rings thereon with first brushes engaging the elements and additional brushes engaging the rings; the method of operating a direct current motor which involves delivering direct current pulses to some commutator elements and to all of said elements to operate and bias the direction of said motor and operating a direct current motor to produce recordable signals.

3,679,924
SYNCHRONOUS RELUCTANCE MOTORS AND METHOD OF STARTING

Robert W. Menzies, Winnipeg, Manitoba, Canada, assignor to Canadian Patents and Development Limited, Ottawa, Ontario, Canada

Filed Jan. 19, 1971, Ser. No. 107,635
Int. Cl. H02k 19/00
U.S. Cl. 310—163 8 Claims



Improved synchronous-running, induction-starting reluctance motors having rotors exhibiting magnetic anisotropy are designed with a large ratio of direct axis reactance X_D to quadrature-axis reactance X_Q, and low values of winding resistance R_s and leakage reactance X_s, to obtain high efficiency synchronous-running, but the rotor eliminates most of the known damper windings and instead incorporates a vestigial cage structure limiting damping currents to diametral planes around the rotor core, and a number of parameters are drastically changed from conventional practise, to obtain a high value of asynchronous torque with a P-pole stator winding connection over the speed range s_p= 1.0 to about s_p= 0.5, but providing a rapid negative change of torque as the rotor speed approaches s_p= 0.5, becoming negative beyond half-synchronous speed. Very large inertial loads may be accelerated without regard to time interval with moderate starting currents during the induction-starting mode, and the motor would run indefinitely at half-synchronous speed. Reconnecting the winding to 2P-pole number enables the revolving rotor to lock on to the MMF field which is rotating substantially synchronously with it, thus converting the motor to a synchronous reluctance machine.

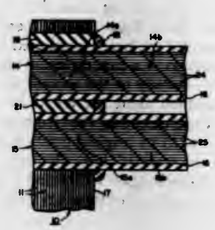
3,679,925
ELECTRICAL APPARATUS WITH CORONA SUPPRESSION MEANS

Emil M. Fert, Murrysville, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Feb. 2, 1971, Ser. No. 111,811
Int. Cl. H02k 15/12
U.S. Cl. 310—196 6 Claims

In electrical apparatus in which high voltages may occur between two closely spaced conductive members, at least one of which is insulated by a coating of insulation, and in which the electric field gradient parallel to the surface of this insulated conductor in some area is sufficient to cause surface corona, an additional member of electrical insulation is introduced to this area to form a new insulation surface with a lower field gradient, thus suppressing surface corona. To suppress end corona between the end portion of a stator coil and

the stator core of a dynamoelectric machine, a collar encircling the coil at the face of the core is provided in accordance

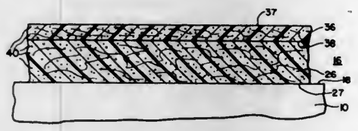


with this invention. The invention facilitates the production of high voltage machines in which the coils are insulated by post impregnation (i.e., after winding on the core).

3,679,926
DYNAMOELECTRIC MACHINE WITH IMPROVED SIDE FILLERS FOR COIL RETENTION

Leonard B. Simmonds, and John C. Botts, both of Monroeville, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jan. 20, 1971, Ser. No. 108,040
Int. Cl. H02k 3/48, 3/36
U.S. Cl. 310—214 7 Claims



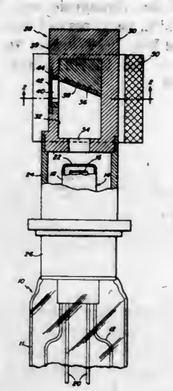
For retention of coils in cores of large dynamo-electric machines, a side filler is used between the insulated coil and the core slot wall with different surface characteristics on each side of the side filler. The surface adjacent the slot wall has a coefficient of friction that is relatively high compared with the coefficient of friction of the surface adjacent the coil. The surface adjacent the slot wall also tends to have a greater degree of adhesion with the slot wall under heat and pressure, than does the surface of the side filler adjacent the coil. These qualities can be provided by employing as the side filler a member having a surface comprising a fluorocarbon polymer adjacent the coil while the other surface includes a different, more conventional, resinous material. The combination of the invention permits free movement of the coil during thermal cycling without tending to remove the side filler from the slot and without damaging the coil insulation.

3,679,927
HIGH POWER X-RAY TUBE

Thomas D. Kirkendall, Potomac, Md., assignor to The Machlett Laboratories, Incorporated, Springdale, Conn.

Filed Aug. 17, 1970, Ser. No. 64,387
Int. Cl. H01j 35/00
U.S. Cl. 313—59 3 Claims

An X-ray tube with a metal window and having increased power loading capabilities without undesirable overheating of the window, this being achieved by the use of a magnet which is arranged so that magnetic field lines pass over the window



surface to reduce bombardment of the window with secondary or back-scattered electrons from the anode.

ERRATUM

For Class 313—217 see:
Patent No. 3,679,474

3,679,928
HIGH INTENSITY FAR U.V. RADIATION SOURCE

Peter D. Johnson, Schenectady, N.Y., assignor to General Electric Company

Filed June 26, 1970, Ser. No. 50,106
Int. Cl. H01j 61/12
U.S. Cl. 313—225 12 Claims

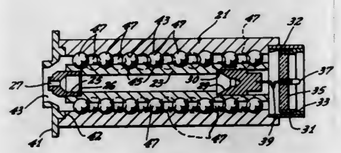


A far U.V. radiation source emitting high intensity of U.V. wavelengths principally shorter than 2,300 A.U. includes a low pressure of mercury vapor in the range 10^{-3} to 0.75 torr under operating conditions in an ambient of a noble gas at a pressure of 0.5 to 25 torr. During operation, lamp current is very high, in range of 0.5 to 25 ampere/cm.^{2}, emitting strongly at 1,849 and 1,942 A.U.

3,679,929
CERAMIC BALL INSULATED DEPRESSED COLLECTOR FOR A MICROWAVE TUBE

Robert Leander Holm, Sunnyvale, and John Wesley Ashford, Altos, both of Calif., assignors to Litton Systems, Inc.

Filed Dec. 2, 1970, Ser. No. 94,387
Int. Cl. H01j 23/02
U.S. Cl. 315—5.38 18 Claims

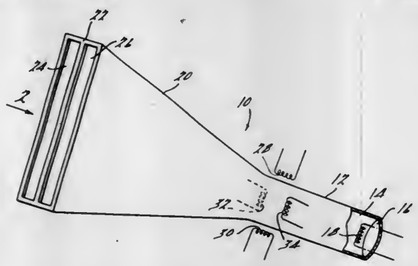


An improved depressed collector assembly for a microwave tube is described in which a pair of metal cylindrical members are arranged concentrically, one within the other, and are in that relationship supported spaced apart and electrically insulated from one another by a fill of dielectric ceramic balls or spheres, suitably aluminum oxide or beryllium oxide, located within and about and along the space between the cylinders. The spheres are maintained therein embedded in indentations in the opposed walls of the cylindrical members. The inner cylinder forms the major part of the depressed collector electrode which is in the tube maintained at a high voltage, and the outer cylinder forms the collector shield maintained at a much lower voltage, normally ground. The ceramic spheres are dielectric and, hence, provide voltage insulation and are good heat conductors and, hence, form a thermal path for removing heat dissipated at the collector during operation of the tube. In addition, a novel method of fitting such ceramic spheres between the inner and outer metal cylinders is described in which the space between the concentric cylinders is first filled with the relatively incompressible ceramic spheres, and the outer surface of the inner cylinder is forced outward to embed said spheres primarily in that outer surface while the inner surface of the outer cylinder is forced inwardly to embed the spheres primarily in the inner surface of the outer cylinder so that the spheres are seated in place and cannot move and, likewise, relative movement between the inner and outer cylinders is precluded.

3,679,930
METHOD FOR INCREASING THE OUTPUT OF AN ELECTRON ACCELERATOR

Alex D. Colvin, Livonia; David H. McNitt, Royal Oak, and Allen H. Turner, Ann Arbor, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Aug. 13, 1969, Ser. No. 849,705
Int. Cl. H01j 29/76
U.S. Cl. 315—21 R 6 Claims

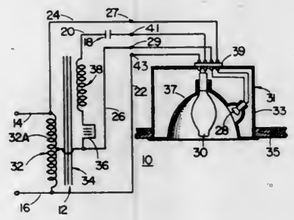


A method of increasing the energy output of an electron accelerator by scanning the electron beam produced in the accelerator in a manner so that excessive heat build-ups do not occur at the electron permeable window structure through which the beam passes to exit the accelerator. This method is used in conjunction with an accelerator having at least two elongate, electron permeable windows arranged in a side-by-side orientation and scanning coils allowing the beam to be scanned parallel to at least two, perpendicular axes. The method provides that the beam is scanned along the length of a first of the windows in a first direction and then instantaneously is scanned laterally to the second of the windows. The beam then is scanned along the length of the second of the windows in a second direction 180° from the first direction. A return of the beam to its original position is accomplished as the beam then is scanned laterally and instantaneously a second time such that it again is directed at the first of the windows. Unlimited repetition of these scanning steps is possible.

3,679,931
APPARATUS FOR OPERATING ELECTRIC DISCHARGE LAMPS AND AUXILIARY LIGHTING LAMPS

Walter F. Powell, Danville, Ill., assignor to General Electric Company

Continuation of Ser. No. 648,367, June 23, 1967, abandoned.
This application Sept. 16, 1970, Ser. No. 72,891
Int. Cl. H05b 37/04, 41/46
U.S. Cl. 315—92 5 Claims



A ballast for mercury vapor lamps including an auxiliary incandescent lamp for providing illumination immediately after power to the ballast is momentarily interrupted during the hot restart condition of the mercury vapor lamp and also during the warm-up condition of the mercury vapor lamp. The ballast includes a high leakage reactance transformer having its secondary connected in circuit with the mercury vapor lamp. The auxiliary incandescent lamp is energized from a portion of the primary or from a separate winding inductively coupled with the primary. A photo-cell and switch arrangement, responsive to the light level of the electric discharge lamp, turns on the incandescent lamp during the hot restart condition of the mercury vapor lamp.

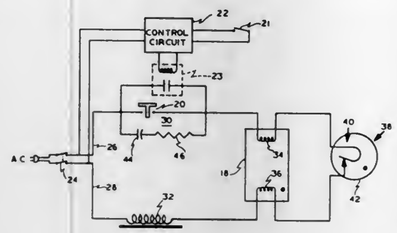
3,679,932
FLUORESCENT LAMP IDLING CIRCUIT

James P. Murphy, Stamford, Conn., assignor to Pitney-Bowes, Inc., Stamford, Conn.

Filed Jan. 19, 1971, Ser. No. 107,795
Int. Cl. H05b 39/04
U.S. Cl. 315—106 4 Claims

A circuit is described for operating a fluorescent lamp at a low power consumption idling level. The circuit provides a

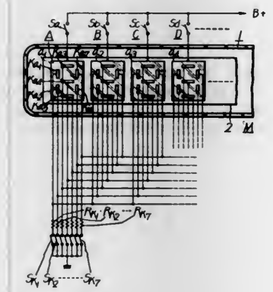
capacitive impedance in series between the fluorescent lamp and an AC supply. The capacitive impedance is selected to reduce the current flow through the lamp to a low idling level, yet full illumination may be quickly and reliably restored by effectively removing the capacitive impedance.



3,679,933
DISPLAY SYSTEM

Yasuo Nakada, and Hideo Takita, both of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Dec. 22, 1969, Ser. No. 886,812
Claims priority, application Japan, Dec. 23, 1968, 43/94737
Int. Cl. H05b 37/00
U.S. Cl. 315—169 TV 8 Claims



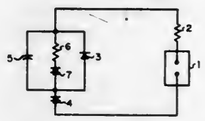
A display system using a gaseous glow indicator tube having a plurality of indicator electrode units such as seven, for instance, each unit including a plurality of cathodes and having anodes disposed opposite the indicator electrodes. The indicator electrode units and the anodes are contained in an envelope and a driving circuit is provided for selectively feeding current to the indicator electrode units in such a manner that adjacent ones are not caused to glow successively.

3,679,934
AUTOMATIC RESTARTING LASER POWER SUPPLY

John N. Dukes, Los Altos Hills, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Feb. 5, 1970, Ser. No. 8,772
Int. Cl. H05b 41/14
U.S. Cl. 315—200 R 4 Claims

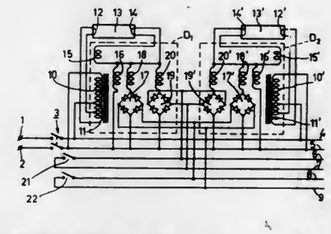
A gas laser is connected in series with a diode and a power supply for maintaining the discharge in the laser. When the laser extinguishes, a capacitor connected in parallel with the diode is charged by an additional power supply to provide the additional voltage necessary to restart the laser.



3,679,935
ARRANGEMENT FOR DIMMING AT LEAST TWO PARALLEL-ARRANGED DISCHARGE LAMPS

Jean-Marie Jacques, Bobigny, and Maurice Beniada, Luneville, both of France, assignors to U.S. Philips Corporation, New York, N.Y.

Filed June 24, 1970, Ser. No. 49,371
Claims priority, application France, June 24, 1969, 6921174
Int. Cl. H05b 27/00, 11/16
U.S. Cl. 315—201 10 Claims



An AC supply system for two or more parallel discharge lamps with means for dimming the lamps in steps. There are n ballast impedances for each lamp ($n = 2$ or more) and n-1 diode bridges therefor. Each diode bridge is connected in series with at least one ballast impedance and in parallel with another ballast impedance. Two diagonal terminals of each diode bridge an connected to the corresponding diagonal terminals of the corresponding diode bridge for another one of the lamps. There are n-1 switching elements arranged to selectively interconnect the aforesaid diagonal terminals of the respective diode bridges in a manner such that the number of dimming steps is greater than the number of ballast impedances per lamp and wherein a failure of one or more lamps does not affect the light output of the remaining lamps.

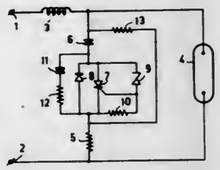
3,679,936
CIRCUIT ARRANGEMENT FOR THE IGNITION AND ALTERNATING CURRENT SUPPLY OF A GAS AND/OR VAPOR DISCHARGE LAMP

Josef Cornelis Moerkens, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed March 11, 1970, Ser. No. 18,546
Claims priority, application Netherlands, March 22, 1969, 6904456
Int. Cl. H05b 37/00
U.S. Cl. 315—205 12 Claims

An ignition circuit for a discharge lamp comprising a ballast impedance in series with the lamp across the AC supply terminals. A capacitor and an SCR connected in series across the

lamp electrodes. A diode connected anti-parallel to the SCR. A zener diode between the SCR anode and gate electrodes.



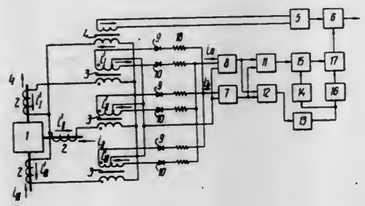
The series circuit, including the ballast impedance, the capacitor, and the SCR and diode connected in anti-parallel, is under critically damped.

3,679,937

METHOD OF AND APPARATUS FOR BLOCKING PHASE-COMPARISON PROTECTION

Evgeny Mefodievich Ulyanitsky, and Eduard Vasilievich Podgorny, both of Rostov-na-Donu, U.S.S.R., assignors to Novocherkassky Ordena Trudovogo Krasnogo Znameni Politekhnicheshy Institute imeni Serge Ordzhonikidze, Novicherkassk, U.S.S.R.

Filed Nov. 24, 1970, Ser. No. 92,402
Int. Cl. H02h 3/28
U.S. Cl. 317—27 R 1 Claim



The invention is related to a method of and an apparatus for the blocking of phase-comparison protection.

According to the invention, the method consists in that the control signals formed from separately summed incoming and outgoing currents are monitored during a predetermined time interval since the very beginning of the first half-cycle of a fault and a blocking signal is applied to the starting element of the protection apparatus only when both these signals are present, thereby preventing the protected plant from being disconnected on an external short-circuit.

The method ensures reliable selectivity and cuts down operate time of the protection.

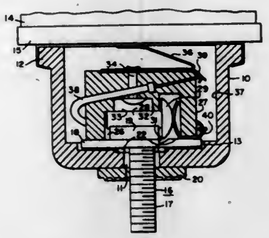
3,679,938

ELECTRICAL DISCONNECTOR

Charles H. Carothers, and Robert M. Kelly, both of Bloomington, Ind., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Sept. 29, 1970, Ser. No. 76,573
Int. Cl. H02h 1/00
U.S. Cl. 317—61 6 Claims

A disconnector for lightning arresters is provided with a simplified configuration wherein a cup-shaped breakable housing has within it a substantially concentric insulating support member that is recessed to accommodate an explosive containing metal case resting on an end portion of a ground terminal. The insulating support defines a fixed spark gap spacing between the metal case and an electrode making direct contact with a lightning arrester. A flexible grading resistor is provided in parallel with the spark gap and comprises



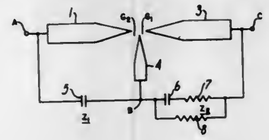
a flexible insulating core on which is wound a plurality of turns of resistive wire, the resistor encircling the insulating support in the space between it and the inner housing wall.

3,679,939

LIGHTNING ARRESTER

Tohei Nitta; Yoshikazu Shibuya, and Yukio Fujiwara, all of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed March 1, 1971, Ser. No. 120,029
Int. Cl. H02h 1/04
U.S. Cl. 317—62 2 Claims



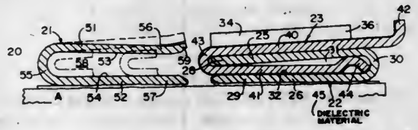
The disclosed gap structure includes two opposed electrodes and a triggering electrode positioned between them to define two gaps with them but not to divide a main electric arc developed between the opposite electrodes. Two impedance elements are connected across the gaps respectively for purpose of voltage division so that, upon applying voltages of the same waveform across the gaps respectively, a ratio of a sparkover voltage across one of the gaps to that across the other gaps ranges from 0.5 to 2.0. This causes the sparkover voltage-to-time characteristic of the gap structure to be flat.

3,679,940

TRIMMER CAPACITOR

Richard J. Newman, West Orange; Martin A. Mittler, Parsippany, and Martin J. Blickstein, West Caldwell, all of N.J., assignors to Voltronics Corporation, Hanover, N.J.

Filed Jan. 21, 1971, Ser. No. 108,294
Int. Cl. H01g 5/14
U.S. Cl. 317—101 C 20 Claims



A variable electronic component having a plurality of unmounted coacting elements adaptable in particular for attachment in sub-miniature electronic circuits on a supporting

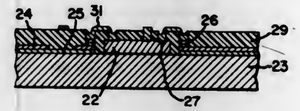
substrate includes, at least one conductive contact means connected to one side of the circuit and adjustable means independent of and in spaced relation to said contact means for operative coaction therewith. The adjustable means has at least one support member of conductive material connected to the other side of the circuit and at least one movable means in current conducting relation with and slidably or rotatably disposed on the support member for guided movement into and out of engagement with the contact means. Means are provided to maintain the movable means in adjusted position of engagement with the contact means, and means disposed between the contact means and the movable means is provided to establish a desired impedance characteristic for said electronic component.

3,679,941

COMPOSITE INTEGRATED CIRCUITS INCLUDING SEMICONDUCTOR CHIPS MOUNTED ON A COMMON SUBSTRATE WITH CONNECTIONS MADE THROUGH A DIELECTRIC ENCAPSULATOR

Donald J. LaCombe, De Witt, and Guy L. Babcock, North Syracuse, both of N.Y., assignors to General Electric Company

Filed Sept. 22, 1969, Ser. No. 859,869
Int. Cl. H01l 19/00
U.S. Cl. 317—101 A 8 Claims



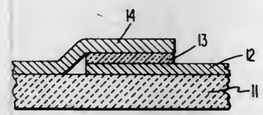
Integrated circuits in which individual semiconductor chips, exhibiting diverse electrical and compositional characteristics, may in combination with thin or thick film passive components be applied to a single supporting electric substrate. The chips and conductive patterns deposited on the substrate being encapsulated in a dielectric material, with electrical connections made to said chips and conductive patterns through openings formed in said dielectric layer.

3,679,942

METAL-OXIDE-METAL, THIN-FILM CAPACITORS AND METHOD OF MAKING SAME

Francis Patrick Daly, Warwick, R.I., assignor to RCA Corporation

Filed Feb. 9, 1971, Ser. No. 113,973
Int. Cl. H01g 3/075
U.S. Cl. 317—230 5 Claims



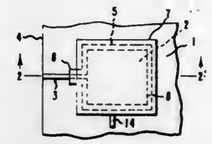
In the manufacture of a metal-oxide-metal (MOM) thin-film capacitor, the layer of dielectric material, such as silicon dioxide, is deposited, by thermal decomposition of a silicon compound, over a conductive ground plate; and the Q factor (or quality factor) of the capacitor is enhanced and the dissipation factor of the silicon dioxide is reduced by low-temperature densification of the silicon dioxide.

3,679,943

CAPACITOR ASSEMBLY HAVING ELECTRODE AND DIELECTRIC LAYERS OVERLAPPED FOR SEALING

Michael J. Bergmann, Nurnberg, Germany, assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed April 20, 1971, Ser. No. 135,703
Int. Cl. H01g 3/06, 9/10
U.S. Cl. 317—230 5 Claims



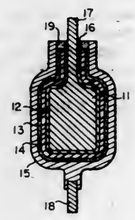
In an electrical capacitor with electrodes and an intermediate dielectric layer successively printed on a dielectric substrate, the improvement of so disposing the electrodes to minimize exposure of the dielectric layer to the atmosphere, and thus decrease the moisture sensitivity of the capacitor. Optionally, all exposed metallizations may be covered by a layer of solder.

3,679,944

SOLID CAPACITOR WITH ELECTROLYTE CONTAINING ORGANIC MATERIAL AND METHOD FOR PRODUCING SAME

Susumu Yoshimura; Yoshimasa Ito; Shirow Asakawa, and Katsue Hasegawa, all of Kadoma, Japan, assignors to Matsushita Electric Industrial Company, Limited, Osaka, Japan

Filed Sept. 20, 1971, Ser. No. 181,971
Int. Cl. H01g 9/05
U.S. Cl. 317—230 11 Claims

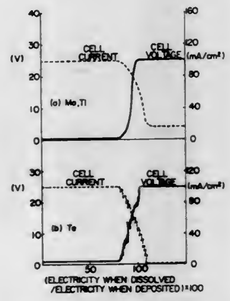


A capacitor and method for preparing the same, which includes a solid electrolyte containing a 7,7,8,8-tetracyanoquinodimethane complex and a polymer which does not dissolve the 7,7,8,8-tetracyanoquinodimethane complex but disperses the same. The capacitor comprises an oxide coated anode electrode, a cathode electrode spaced from the oxide coated anode electrode and a solid electrolyte containing the 7,7,8,8-tetracyanoquinodimethane complex, and the polymer up to 40 percent by weight of the solid electrolyte and having the 7,7,8,8-tetracyanoquinodimethane complex dispersed therein. The method comprises the steps of preparing an electrode having a dielectric oxide film on its surface and a second electrode, pulverizing a 7,7,8,8-tetracyanoquinodimethane complex into fine particles having particle size of 0.1 to 1 μm, mixing the fine particles of the 7,7,8,8-tetracyanoquinodimethane complex and a solvent for the polymer for dispersing the fine particles of the tetracyanoquinodimethane complex into a solution by a suitable method, coating the oxide film with the dispersed solution, evaporating the solvent for forming a solid electrolyte layer on the film, and contacting the second electrode to the solid electrolyte layer.

3,679,945
ELECTRIC QUANTITY MEMORY ELEMENT

Satoshi Sekido, Kyoto, and Tomohiko Arita, Osaka, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Sept. 15, 1970, Ser. No. 72,486
Claims priority, application Japan, Sept. 20, 1969, 44/75564
Int. Cl. H01g 9/16; G11c 13/02
U.S. Cl. 317—231 9 Claims



An electric quantity memory element comprising a first electrode made of a metal electrochemically dissolved or deposited in accordance with Faraday's laws, a second electrode made of a valve metal and an aqueous solution containing a water soluble salt of the metal of the first electrode as an electrolyte.

3,679,946
STRIP MOUNTED SEMICONDUCTOR DEVICE

Robert E. Buck; Robert W. Metzger, Jr.; Albert D. Rittmann, and Eugene H. Sayers, all of Kokomo, Ind., assignors to General Motors Corporation, Detroit, Mich.

Division of Ser. No. 686,589, Nov. 29, 1967. This application July 6, 1970, Ser. No. 60,997
Int. Cl. H01l 3/00, 5/00
U.S. Cl. 317—234 R 8 Claims

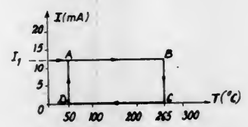


A semiconductor package assembly and method of making it. A semiconductive element is mounted on a flat strip. A portion of the strip is partially separated from, and raised above the plane of, the strip. The raised portion is eventually completely separated from the strip, and forms a terminal member for the semiconductive element. The element and connection to the terminal are enclosed, perferably in a plastic potting. Means are provided to increase the rigidity of the strip in the enclosure area. Means are also provided to enhance adhesion of a plastic potting to the strip and terminal members. A plurality of devices can be simultaneously or successively formed from a single strip. Multiple terminal devices can be formed using adjacent multiple raised portions on the strip.

3,679,947
METAL-INSULATOR SEMI-CONDUCTOR STRUCTURES WITH THERMALLY REVERSIBLE MEMORY

Benoy Kumar Chakraverty, Varces, and Alain Plenier, Grenoble, both of France, assignors to Agence Nationale De Valorisation De La Rechercke (Anvar), Paris, France

Filed Feb. 10, 1971, Ser. No. 114,154
Claims priority, application France, July 10, 1970, 7025759
Int. Cl. H01l 9/00
U.S. Cl. 317—234 R 6 Claims



A metal-insulator semiconductor structure for use in particular as a switching element with thermally reversible memory and comprising a semiconductor substrate, a film of amorphous insulator material on the said substrate and a metallic film which is deposited at least partially on the said insulator film, characterized in that the said amorphous insulator film exhibits a resistivity which is lower than the intrinsic resistivity of the said amorphous insulator material and which is comprised between 10^7 and $10^{11}\Omega$-cm at ambient temperature, the decrease in the said resistivity being due to the diffusion of ions into the said amorphous insulator film, the said structure being in a conducting or insulating stage within a predetermined temperature range, in an insulating state above the said range and in a conducting state below the said range.

3,679,948
VARIABLE CAPACITANCE DIODE

Wolfgang Wenzig, Munich-Solln, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

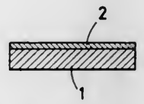
Filed Dec. 11, 1969, Ser. No. 884,348
Claims priority, application Germany, Dec. 17, 1968, P 18 15 158.1
Int. Cl. H01l 13/00
U.S. Cl. 317—234 R 3 Claims

A semiconductor diode for use as voltage dependent capacitance with p^+n^+n or n^+p^+p structure. The concentration of the dopant that determines the conductance type of the middle n^+ or p^+ region decreases monotonously at least in one component region of said zone, as its distance from the p-n junction increases. The outer p^+ or n^+ region is so strongly doped that the space charge region of the p-n junction extends at least predominantly into the n^+n or p^+p region. The coating of the n^+n or p^+p regions is so adjusted that its concentration N(x), in dependence on the distance x from the p-n junction of the diode, meets everywhere the Equation $N(x) > -x/3\,dN/dx$.

3,679,949
SEMICONDUCTOR HAVING TIN OXIDE LAYER AND SUBSTRATE

Genzo Uekusa, Osaka; Shigeru Tanimura, Kyoto; Kazuhiro Higashi, Osaka, and Takao Sumoto, Kyoto, all of Japan, assignors to Omron Tateisi Electronics Co., Ukyo-ku, Kyoto, Japan

Filed Sept. 23, 1970, Ser. No. 74,561
Claims priority, application Japan, Sept. 24, 1969, 44/76483; Sept. 26, 1969, 44/77192
Int. Cl. H01l 3/00, 15/06
U.S. Cl. 317—238 17 Claims



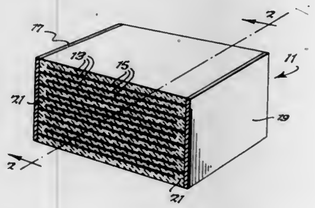
A semiconductor composite having a rectifying characteristic is provided by depositing a tin oxide film on a semiconductor substrate. In view of the fact that the tin oxide film has high transparency and conductivity the composite can be used as an excellent photoelectric device.

Preferably the tin oxide film is deposited on the substrate by reacting a halogenated organic tin compound with oxygen at an elevated temperature. Conductivity of the tin oxide film can be enhanced by incorporation of a small amount of antimony trichloride into the dimethyl tin dichloride. It was found that there are preferred reaction temperatures, time periods, and amount of mixed antimony trichloride for providing a composite having the desired characteristics. By depositing a plurality of separate tin oxide films on a single substrate by a photo-etching process of tin oxide film an integrated photoelectric apparatus is provided.

3,679,950
CERAMIC CAPACITORS

Truman C. Rutt, Niagara Falls, N.Y., assignor to N L Industries, Inc., New York, N.Y.

Filed April 16, 1971, Ser. No. 134,689
Int. Cl. H01g 1/01
U.S. Cl. 317—258 12 Claims

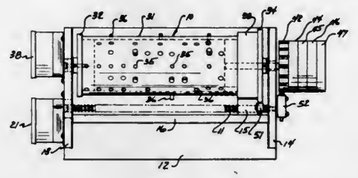


A sintered ceramic article which comprises internal electrodes and/or conductors is formed by producing a sintered ceramic body that has areas of ceramic with interconnected pores extending to an outer face thereof and providing a conductor in said porous areas. The ceramic body may be formed by depositing, as by screen printing, on sheets of a powdered dielectric or insulating ceramic material bonded with a temporary bond, an area of a temporarily bonded powdered ceramic material which on firing becomes porous, consolidating a plurality of such sheets, and sintering them. Subsequently a conductive material may be provided in the porous areas by impregnating said areas with a conductive material or with a material which is reacted or decomposed to form a conductive material in said areas.

3,679,951
ELECTRIC TIMING DEVICE

Robert A. Whitlock, Rockford, Ill., assignor to Aquamatic Inc., Rockford, Ill.

Filed Aug. 2, 1971, Ser. No. 168,329
Int. Cl. H01h 43/12
U.S. Cl. 318—102 18 Claims

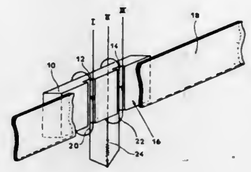


A drum and a rotary switch are driven by an electric motor which indexes them to various circumferential positions. A lead screw is mounted parallel to the drum and is driven by a reversible electric motor. A follower on the lead screw moves therealong until it engages a stop which is adjustably mounted on the drum, whereupon the reversible motor stalls and reverses its direction of rotation to return the follower to the point of beginning. A shoulder on the drum is engaged by the returning follower to again stall the motor and start the next cycle. The returning follower engages a switch to start the indexing of the drum. Thus a sequence of switching operations are timed and the duration of each is readily adjustable.

3,679,952
TWO SLOT LINEAR INDUCTION MOTOR

Yves Pelenc, La Tronche, France, assignor to Merlin Gerin Societe Anonyme, Grenoble, France

Filed Jan. 19, 1971, Ser. No. 107,749
Claims priority, application France, Feb. 25, 1970, 7006858
Int. Cl. H02k 41/02
U.S. Cl. 318—135 4 Claims



Linear induction motor comprising a magnetic field structure bearing two spaced coils supplied with currents out of phase by an angle of $2\pi/3$ and dividing the air gap face into three equal pole faces to produce a balanced travelling magnetic field.

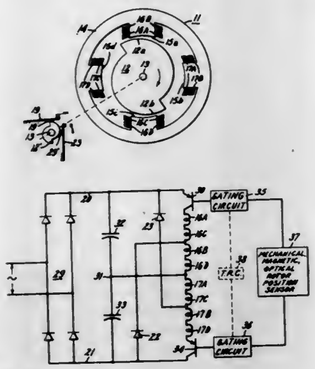
3,679,953
COMPATIBLE BRUSHLESS RELUCTANCE MOTORS AND CONTROLLED SWITCH CIRCUITS

Burnice D. Bedford, Scotia, N.Y., assignor to General Electric Company

Filed Nov. 6, 1970, Ser. No. 87,565
Int. Cl. H02k 29/00
U.S. Cl. 318—138 11 Claims

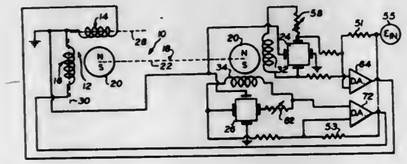
Brushless reluctance motors are compatible with energization by the simple rectilinear voltages easily produced by motor control circuits having a small number of mechanical or solid state switches. These motors with two or three opposing

pairs of main and feedback stator windings, and suitable variable or constant gap nonpolarized rotors, require a like number



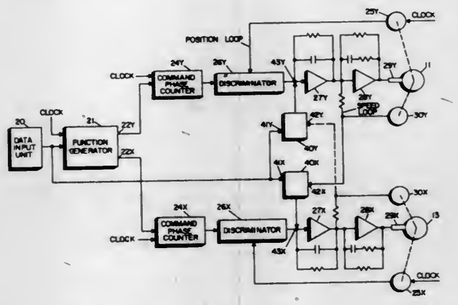
of controlled switches and uncontrolled rectifiers actuated by a rotor position sensor to generate square wave voltages on which the reluctance motors operate efficiently.

3,679,954
BRUSHLESS D.C. MOTOR WITH RATE CONTROL OF POSITION SENSOR
Geoffrey S. Hedrick, Katonah, N.Y., assignor to Lear Siegler, Inc., Armonk, N.Y.
Filed July 13, 1970, Ser. No. 54,387
Int. Cl. H02k *29/00*
U.S. Cl. 318—254 **28 Claims**



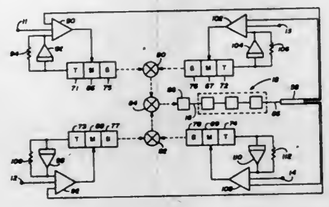
A direct rate feedback signal is provided for a magnetic flux sensor, such as a magneto-sensitive Hall effect sensor or a Magnistor, of a brushless D. C. motor by providing an independent feedback path for the sensor which path contains a stator winding which is independent from the motor excitation stator windings and which is positioned in magnetic coupled relation with the motor rotor. A differential amplifier is also provided which is associated with the Hall sensor for obtaining a differential Hall sensor voltage during rotation of the rotor which voltage is fed to the excitation windings in a separate path. Constant speed control for a brushless D. C. motor having a pair of angularly displaced magnetic flux sensors is provided by providing, in an independent feedback path for one sensor, a means having a center frequency, which means is responsive to a frequency deviation of a frequency associated with the angular velocity of the rotor from the center frequency, for providing a negative feedback signal, and a means for functionally operating on the feedback signal to produce a speed regulation signal which is supplied to both sensors.

3,679,955
CONTROL SYSTEM FOR COMPENSATING FOR DIMENSIONAL ERRORS DUE TO CUTTING TOOL WEAR IN AN AUTOMATIC MACHINE TOOL
John M. Rhoades, Waynesboro, Va., assignor to General Electric Company
Continuation-in-part of Ser. No. 876,692, Nov. 14, 1969. This application June 7, 1971, Ser. No. 150,775
Int. Cl. G05b *19/24*
U.S. Cl. 318—572 **22 Claims**



A control system including apparatus which compensates for wear of the cutting tool. In a contouring control wherein the programmed instantaneous velocity along the contour is represented by a vector V, first and second compensating arrangements measure the motion of the first and second axes drive motors and multiply output signals indicative thereof by a geometrical function of the angle between the programmed tangential path of the cutting tool and one of the axis and by a factor related to the magnitude of tool wear to produce compensation signals. The compensation signals are applied to motor control loops to cause the actual tangential path of the cutting tool to be offset by a distance vector C which is normal to the vector V and has a magnitude equal to that of cutting tool wear.

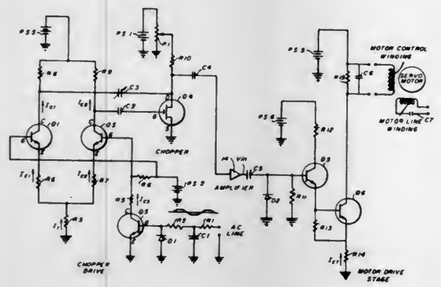
3,679,956
MULTIPLE SERVOMOTOR ACTUATOR
William G. Redmond, Dallas, Tex., assignor to LTV Electrosystems, Inc., Dallas, Tex.
Filed Feb. 2, 1970, Ser. No. 7,676
Int. Cl. G05b *9/02*
U.S. Cl. 318—564 **23 Claims**



Four servomotors are coupled together in a velocity summing arrangement to produce a single motion output. Two of the four servomotors are coupled together through a differential gear set that has a single rotary output. The second servomotor pair is also coupled together through a differential gear set that produces a single rotary output. These two rotary outputs of the differential gear sets are in turn coupled through a third gear set that also has a single rotary output.

This rotary output may be converted into a linear motion by means of a rotary-to-linear motion transducer, or used as a rotary motion. Each of the four servomotors is controlled individually by a separate generated control signal in a system that includes a tachometer for generating velocity feedback signals and a linear variable differential transformer for generating position feedback signals.

3,679,957
CHOPPER CIRCUIT FOR USE IN AN A.C. SERVO AMPLIFIER
C. Anthony Farque, Fayetteville, Ark., assignor to Ray H. Wilburn, Tulsa, Okla. and W. E. Maldonado, Lansing, Mich.
Filed Feb. 26, 1970, Ser. No. 14,516
Int. Cl. G05b *11/12*
U.S. Cl. 318—684 **3 Claims**



This invention relates to a control circuit for driving a servomotor. More particularly, the invention relates to a circuit for controlling a servomotor including a chopper circuit providing a regularly reoccurring square wave signal of constant frequency and selectable voltage levels having a spike voltage signal superimposed thereon, a time complement spike signal generating circuit means providing spike voltage signals of equivalent amplitude in opposite polarity, means of summing said chopper circuit square wave voltage signal and said time complement spike voltage signal to provide a chopper square wave voltage signal output substantially free of spike components which are fed to an amplifier and thence to a motor drive circuit means for communicating the spike-free square wave control voltage signals to a servomotor.

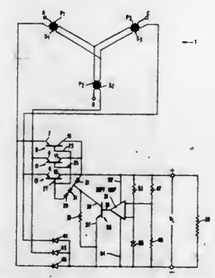
3,679,958
BATTERY POWERED ELECTRIC KNIFE AND CHARGER-STORAGE STAND THEREFOR
Worth L. Chambers, Lombard, Ill., assignor to Sunbeam Corporation, Chicago, Ill.
Division of Ser. No. 775,064, Nov. 12, 1968, Pat. No. 3,606,216, which is a division of Ser. No. 574,648, Aug. 24, 1966, Pat. No. 3,432,702. This application Sept. 10, 1970, Ser. No. 71,186
Int. Cl. H01m *45/04*
U.S. Cl. 320—2 **4 Claims**

A battery operated electric knife having an elongated housing defining the knife handle and enclosing an electric motor and battery unit. A pair of charging contacts are mounted entirely within the elongated housing with access openings thereto below the motor and a charging and storage stand are provided shaped to receive the knife handle in only one predetermined position whereby said housing for the electric knife may be resiliently clamped in assembled relationship



with the charging unit. An improved permanent magnet rotor is employed having an outer field member comprising a resilient cylindrical shell with a slit therein.

3,679,959
HIGH CURRENT LOW VOLTAGE REGULATED POWER SUPPLY
James P. Beesley, Kingston, and John B. Gunn, Mount Kisco, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 31, 1970, Ser. No. 103,245
Int. Cl. H02m *7/12*
U.S. Cl. 321—47 **20 Claims**



A polyphase source of alternating current is converted to a low voltage high current regulated d.c. in a manner to conserve power and reduce costs by reduction of the number of components required therefor. To achieve this end, a single transistor is employed for each phase of the polyphase input transformer secondary winding configuration which transistor acts to perform the dual function of providing both rectification and regulation of the a.c. input.

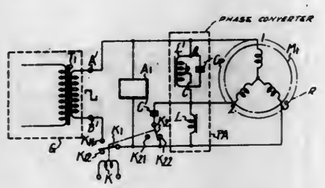
ERRATUM

For Class 321—18 see:
Patent No. 3,679,962

3,679,960
ELECTRIC POWER SOURCE SYSTEM FOR GYROSCOPIC INSTRUMENT
Yoichi Hirokawa, Kamakura, and Masatoshi Sato, Tokyo, both of Japan, assignors to Kabushikikaisha Tokyo Keiki (Tokyo Keiki Co., Ltd.), Tokyo, Japan
Filed Jan. 19, 1971, Ser. No. 107,669
Claims priority, application Japan, Jan. 23, 1970, 45/6193; Jan. 23, 1970, 45/6194; Jan. 23, 1970, 45/6195
Int. Cl. H02k *7/02*
U.S. Cl. 322—4 **1 Claim**

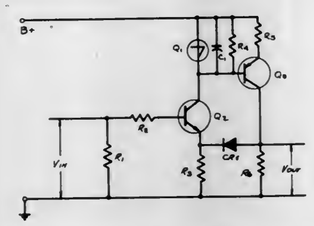
An electric power source system for a gyroscopic instru-

ment in which the kinetic energy of the gyro rotor revolving at high speed is used as an induction generator during times when the normal electrical power source for the gyroscopic



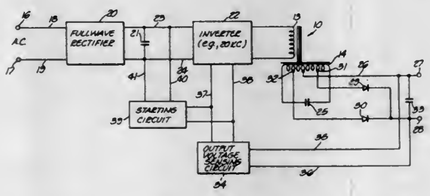
instrument fails and to maintain the gyroscopic instrument in its normal operative condition during the time the electrical power source is disconnected.

3,679,961
BUFFER AMPLIFIER AND VOLTAGE REGULATING CIRCUIT
David C. Hamilton, Midland Park, N.J., assignor to Ramsey Controls, Inc., Mahwah, N.J.
Filed July 7, 1971, Ser. No. 160,392
Int. Cl. G05f 3/08
U.S. Cl. 323—8 **8 Claims**



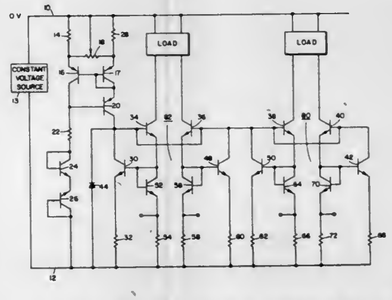
A circuit for providing a D.C. voltage output equal to the D.C. voltage input regardless of the output load while giving current amplification. An emitter follower circuit in conjunction with an output diode is utilized to regulate the output voltage. The circuit also protects against overload and short circuit conditions, as well as suppressing spurious oscillations.

3,679,962
HIGH FREQUENCY PARAMETRIC VOLTAGE REGULATOR
Cravens L. Wanlass, Santa Ana, Calif., assignor to Ambac Industries, Incorporated
Continuation-in-part of Ser. No. 771,816, Oct. 30, 1968. This application Jan. 12, 1970, Ser. No. 871,477
Int. Cl. H02m 7/52; G05f
U.S. Cl. 321—18 **3 Claims**



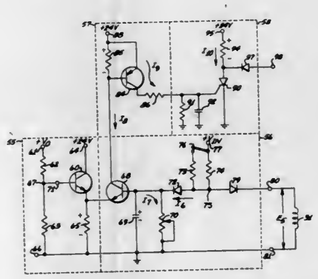
A parametric regulator in which an inverter is positioned between the input source of power and a parametric device to provide the parametric device with a high frequency input. The output of the parametric device is rectified and monitored by a sensing circuit which controls the frequency of the inverter to maintain the output voltage constant. A sensing and control circuit is provided which permits the use of conventional transistors in the inverter by establishing a proper timing pattern for the triggering of these transistors into and out of conduction.

3,679,963
NEUTRON RADIATION AND GAMMA RAY HARDENED ADJUSTABLE POWER SUPPLY
Maurice G. Free, Tempe, and Leo L. Wiseman, Scottsdale, both of Ariz., assignors to MOOTORA, Inc., Franklin Park, Ill. and Motorola, Inc., Franklin Park, Ill.
Filed Jan. 30, 1970, Ser. No. 7,164
Int. Cl. G5f 1/58
U.S. Cl. 323—4 **6 Claims**



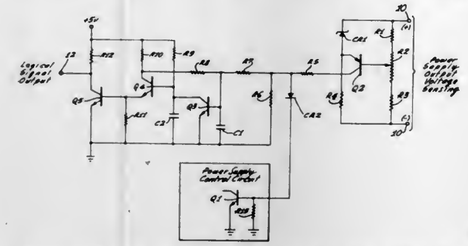
A current supply including matched transistors and diodes in which circulating paths are provided for the increased base currents due to decrease of beta of the transistors caused by neutron radiation and for the photoelectric currents produced in the transistors and diodes due to gamma ray radiation. The flow of current provided by the radiation and gamma hardened current source is adjustable.

3,679,964
OVER-CURRENT DETECTOR
John R. Nowell, Phoenix, Ariz., assignor to Honeywell Information Systems Inc., Waltham, Mass.
Filed Oct. 4, 1971, Ser. No. 186,122
Int. Cl. H02h 7/12; H02m 3/32
U.S. Cl. 323—9 **10 Claims**



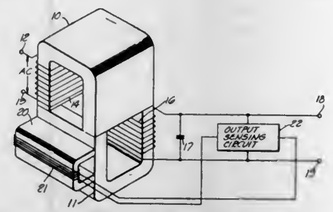
An over-current detector monitors the current delivered by a switching regulator and provides a signal for disabling the switching regulator when the current exceeds a threshold value. The threshold value is determined by the value of the output voltage from the switching regulator.

3,679,965
POWER SUPPLY VOLTAGE OUTPUT DETECTOR
Bruce L. Wilkinson, Torrance, Calif., assignor to Pioneer Magnetics, Inc., Santa Monica, Calif.
Filed Feb. 25, 1971, Ser. No. 118,656
Int. Cl. G05f 1/48; G08b 29/00
U.S. Cl. 323—19 **4 Claims**



A circuit for use in conjunction with a power supply and which provides a first signal amplitude (e.g., logical "1") when the voltage output from the power supply is at or above its proper value, and which provides a second signal amplitude (e.g., logical "0") when the power supply voltage is below its proper value.

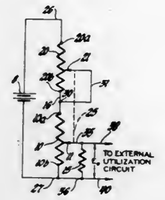
3,679,966
CLOSED LOOP PARAMETRIC VOLTAGE REGULATOR
Cravens L. Wanlass, Santa Ana, Calif., assignor to Ambac Industries, Incorporated
Filed July 31, 1968, Ser. No. 749,198
Int. Cl. G05f 1/32
U.S. Cl. 323—56 **3 Claims**



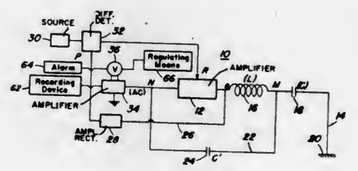
A parametric voltage regulator in which the inductance component of the resonant circuit of a parametric device is varied in response to changes in the output voltage, caused for example by changes in line frequency, to maintain the output voltage constant. The inductance is preferably changed by providing an external flux generator on the core of the parametric device to vary the reluctance of a part of the core, but can also be accomplished by the use of a separate inductor in the resonant circuit.

3,679,967
POTENTIOMETER-RESISTOR NETWORK FOR PRODUCING A NON-LINEAR DIRECT CURRENT POTENTIAL OUTPUT SIGNAL
William C. Staker, Springfield, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Filed Dec. 21, 1970, Ser. No. 100,301
Int. Cl. H02p 13/00
U.S. Cl. 323—79 **1 Claim**

A potentiometer-resistor network for producing a non-linear direct current potential output signal in response to an applied constant direct current potential input signal. A source of constant direct current potential is connected across two series connected linear potentiometers, each having a movable contact mechanically interconnected with the other for ganged operation. The movable contact of one potentiometer is connected to the junction between the two potentiometers and a resistor is connected across the movable contact of the other potentiometer and the terminal end thereof opposite the junction between the series connected potentiometers. Upon the operation of the potentiometer movable contacts, a non-linear direct current output potential signal appears across output circuitry connected across the parallel combination of the resistor and that portion of the potentiometer between the movable contact and the terminal end thereof to which the resistor is connected.



3,679,968
METHOD AND DEVICE FOR MEASURING THE THICKNESS OF A METAL DEPOSIT ON AN INSULATING SUPPORT
Jean Claude Commercon, 35 Chemin des Petites Brosses, 69 Caluire, and Guy Berthier, Avenue Posteur, 01 Saint Maurice de Beynost, both of France
Filed March 16, 1970, Ser. No. 19,933
Int. Cl. G01r 33/12
U.S. Cl. 324—34 TK **3 Claims**

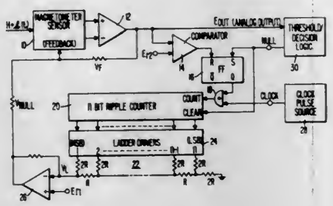


Plastic film is drawn from a spool and passes around a drum in a vacuum chamber in such a way that the film is exposed to metal vapor which is deposited thereon in thickness ranging from 50 angstroms to several microns. The metallized film then passes around guide rollers and is wound on a reel. One of the guide rollers comprises a novel hermetically sealed shell of electrical insulating material containing novel detectors which are responsive to the thickness of the metal coating on the film. Such detectors consist of coreless induction coils, each constituting the tuning element of a unique stabilized oscillating circuit, the voltage of which is a very accurate measure of the relative thickness of the metal coating on the film by virtue of the eddy currents induced therein.

3,679,969
MAGNETOMETER SENSOR DIGITAL AMBIENT NULLING SYSTEM

Richard L. Fussell, Chester Springs, Pa., assignor to Burroughs Corporation, Detroit, Mich.

Filed June 1, 1971, Ser. No. 148,796
Int. Cl. G01r 33/02
U.S. Cl. 324—43 R 10 Claims

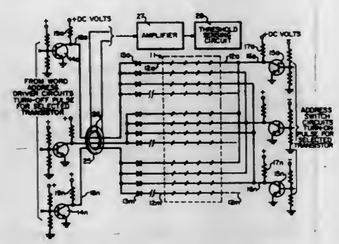


A system is described for use with a magnetometer sensor to provide automatic cancellation of comparatively large steady state ambient magnetic field effects in order to sense the very small magnitude, very low frequency signal information. The system which is effective at the emplacement and initial actuation of the sensor as well as upon the subsequent occurrence of a gross ambient field change, causes a nulling voltage, electrically controlled in predetermined increments, to eliminate the ambient field effects. The resultant magnetometer sensor output responds to input information with full sensitivity and without the direct passband constraints introduced by other ambient nulling techniques.

3,679,970
SELECTION MATRIX INCLUDING A DIODE TEST CIRCUIT

Hilary M. Winters, Forest Park, and James R. Creasy, Lombard, both of Ill., assignors to Automatic Electric Laboratories, Inc., Northlake, Ill.

Filed April 22, 1970, Ser. No. 30,731
Int. Cl. G01r 31/02
U.S. Cl. 324—51 2 Claims

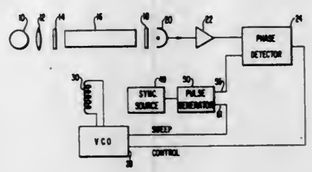


A test circuit routinely tests buffer diodes of a selection matrix for shorts. Drive lines that are connected to operating conductors of the selection matrix pass through a toroidal magnetic core to induce into a output winding of the core a voltage proportional to change in current in a selected operating conductor. Switching circuits for applying current to selected conductors are arranged to reverse the polarity of voltage applied to the conductors so that when an operating conductor with a shorted diode is selected, approximately twice the normal current change is detected by the test circuit.

3,679,971
DIGITAL WAVEFORM GENERATOR WITH ADJUSTABLE TIME SHIFT AND AUTOMATIC PHASE CONTROL

Marshall B. Broome, Tulsa, Okla., and William W. Burress, Dallas, Tex., assignors to Atlantic Richfield Company

Division of Ser. No. 874,206, Nov. 5, 1969, Pat. No. 3,619,793.
This application June 3, 1971, Ser. No. 149,510
Int. Cl. G01n 27/78
U.S. Cl. 324—0.5 R 8 Claims

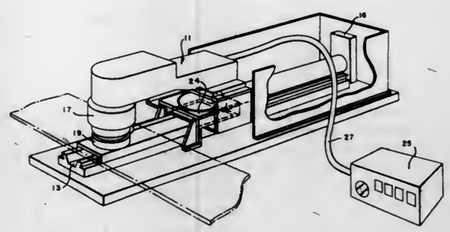


A circuit for generating two pulse waveforms having a desired time and phase relationship, and an optically pumped magnetometer utilizing that circuit. A synchronization signal toggles a bistable multivibrator to provide one pulse waveform. The synchronization signal also triggers a monostable multivibrator, the output of which toggles a second bistable multivibrator to provide the second pulse waveform. The time the monostable multivibrator remains in its unstable state determines the desired time relationship between the two waveforms. Should the waveforms assume the wrong phase relationship, gating circuitry returns them to the proper phase relationship. The circuit can be utilized to provide a phase reference signal and a sweep control signal in an optically pumped magnetometer, giving the desired time and phase relationship between those two signals.

3,679,972
MICROMETER THICKNESS GAGE

Louis Michelson, Belmont, Mass., assignor to Lion Precision Corporation, Newton, Mass.

Filed April 26, 1971, Ser. No. 137,324
Int. Cl. G01r 27/26, 7/00
U.S. Cl. 324—61 R 5 Claims

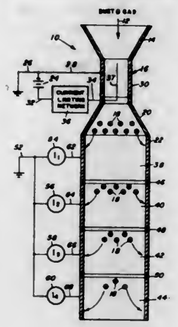


A gage for measuring the deviation in thickness of sheet material by measuring the sum of the capacitances between a top electrode and the upper surface of the sheet and a lower electrode and the bottom surface of the sheet. The gage is calibrated with a precise calibration sheet of known thickness, by adjusting the vertical position of the upper electrode to produce a null output on a capacitance bridge. For measuring, the upper electrode, adjustably mounted on a precise micrometer screw, is then adjusted by a distance precisely equal to the difference between the calibration sheet thickness and the target thickness of the material to be measured.

3,679,973
ELECTROGASDYNAMIC DUST MONITOR

Nelson S. Smith, Jr., and George E. Fasching, both of Morgantown, W. Va., assignors to The United States of America as represented by the Secretary of the Interior

Filed Oct. 20, 1970, Ser. No. 82,288
Int. Cl. G01n 27/00
U.S. Cl. 324—71 R 9 Claims

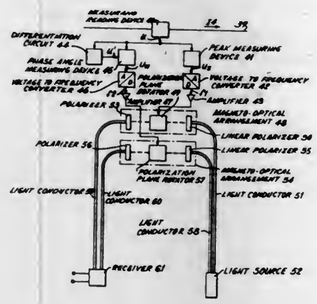


Size and flow rate of dust particles entrained in a flowing gas stream are measured by an electrogasdynamic dust monitor. A multiple segment collector section generates currents with interdependent values related to dust properties.

3,679,974
DEVICE FOR MEASURING CURRENTS IN A HIGH VOLTAGE CONDUCTOR INCLUDING A CONTROLLED OPTICAL ARRANGEMENT

Klaus Mollenbeck, Berlin, Germany, assignor to Siemens Aktiengesellschaft, Berlin, Germany

Filed July 24, 1970, Ser. No. 58,032
Claims priority, application Germany, Aug. 1, 1969, P 19 39 912.3
Int. Cl. G01n 31/00
U.S. Cl. 324—96 15 Claims

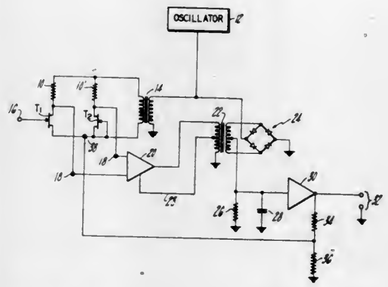


A control unit derives a control magnitude from a current to be measured in a high voltage conductor. A controlled optical arrangement utilizes the control magnitude for converting a light beam into light pulses having an information content corresponding to the current to be measured. A light beam is directed into the controlled optical arrangement. A receiver converts the light pulses to output signals corresponding to the current to be measured. The controlled optical arrangement comprises an electro-optical or a magneto-optical device including a double refractor or a polarization plane rotator for transverse double refracting and rotating of the plane of polarization of the light beam. A polarizer polarizes the light beam after rotation of the plane of polarization thereof.

3,679,975
RESISTIVE MODULATOR

Harry Fein, 832 Quarter Mile Rd., Orange, Conn.

Filed Aug. 6, 1970, Ser. No. 61,545
Int. Cl. G01r 19/18, 17/06
U.S. Cl. 324—118 3 Claims

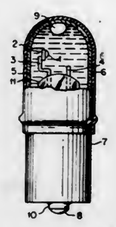


Circuitry for sensing applied potentials, the circuitry presenting a high impedance to the source of the potentials to be sensed, is disclosed. The invention employs a matched pair of field effect transistors which are operated in accordance with a resistive modulation technique. In the disclosed embodiment the transistors are connected in opposite legs of a balanced bridge circuit and are excited by alternating the current, input signals applied to the gate of one of the transistors producing a small change in the resistance of that transistor.

3,679,976
ELAPSED TIME INDICATOR HAVING COLOR INDICATION

Juro Ogawa, and Fujimoto Yoshiaki, both of Tokyo, Japan, assignors to Japan Radio Company, Limited, Tokyo, Japan

Filed March 23, 1971, Ser. No. 127,193
Claims priority, application Japan, March 31, 1970, 45/27557; Nov. 9, 1970, 45/98543
Int. Cl. G04f 9/00; G01r 11/44
U.S. Cl. 324—182 13 Claims



The anode electrode of an elapsed time indicator includes an elapsed time measuring metallic element superposed on a coloring metallic element, the normal electrode potential of the coloring element being higher than that of the elapsed time measuring element, and lower than the electrolyzing potential of the electrolytic solution, so that electrolysis of the elapsed time measuring element precedes that of the coloring

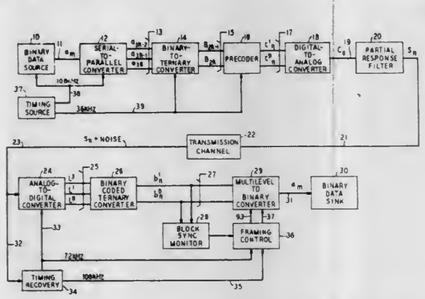
element. The electrolytic solution contains a substance which reacts with the coloring element on electrolysis thereof to change the color of the electrolytic solution, thereby indicating the elapsed time.

3,679,977

PRECODED TERNARY DATA TRANSMISSION

Robert D. Howson, River Plaza, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed June 24, 1969, Ser. No. 835,984
Int. Cl. H04b 1/62, 1/66
U.S. Cl. 325—42 7 Claims



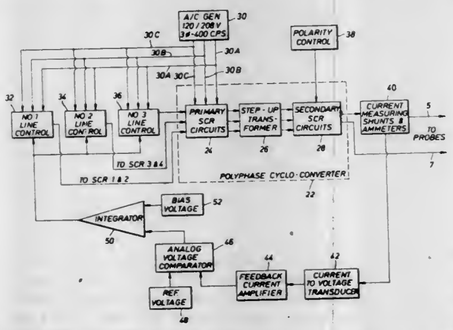
A digital data transmission rate of three bits per cycle of bandwidth is achieved in precoded partial-response band-limited communication channels by partitioning binary digits into groups of three two-level digits and translating these binary groups of three into pairs of three-level digits prior to transmission. Correct pairwise association of received signals is accomplished by reserving a three-level digit pair of monitoring purposes. This reserved pair can validly occur only at a transition between allowable pairs. By monitoring the presence of the reserved pair, correct pairwise association of ternary digits is assured and binary digits are properly decoded without having to provide a special framing signal.

3,679,978

INDUCED POLARIZATION SYSTEM AND METHOD FOR GEOLOGICAL INVESTIGATION HAVING A STABLE WAVEFORM

George H. Hopkins, Jr., P.O. Box 5546, Austin, Tex.

Filed Jan. 19, 1970, Ser. No. 3,642
Int. Cl. H04b 1/04
U.S. Cl. 325—187 23 Claims



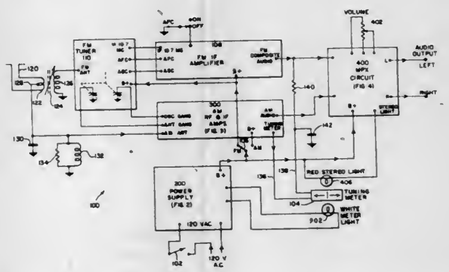
An induced polarization transmitter circuit is provided with a polyphase cycloconverter for rendering the transmitter output signal independent of both the load on the transmitter circuit and the AC power supply which energizes the transmitter circuit. Novel analog and digital feedback circuitry is provided for monitoring and controlling the amplitude and waveform of the transmitter output signal.

3,679,979

AM, FM, AND FM STEREO TUNER HAVING SIMPLIFIED AM TO FM SWITCHING MEANS

James Edgar Krepps, Jr.; Meredith K. Chamberlain, and Robert D. Fisher, all of Bloomington, Ind., assignors to Sarkes Tarzian, Inc., Bloomington, Ind.

Filed June 26, 1969, Ser. No. 836,754
Int. Cl. H04b 1/16
U.S. Cl. 325—315 6 Claims



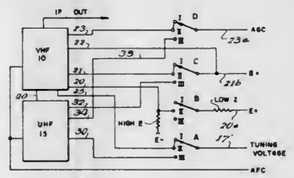
A tuner can be switched between AM, FM, and stereo modes of reception without any radio or audio-frequency band-switching, and without any changes being made in the tuning meter connections. Separate AM and FM radio sections have power terminals which are alternately connected to a source of power by a single pole, double throw AM or FM selector switch. The audio outputs of the two radio sections are fed into a mixing amplifier, and the mixing amplifier output is fed to stereo demodulation circuitry. A single tuning meter is connected between the FM section audio output and the AM section automatic gain control.

3,679,980

SOLID STATE TELEVISION TUNER WITH VOLTAGE VARIABLE CAPACITORS

Edward L. Midgley, Carol Stream, and Reuben C. Carlson, Bloomingdale, both of Ill., assignors to Standard Kollsman Instrument Corporation, Melrose Park, Ill.

Filed July 7, 1969, Ser. No. 839,167
Int. Cl. H04b 1/16
U.S. Cl. 325—464 2 Claims



A solid state television tuner is disclosed herein. Actuation of a channel selector mechanism to one of a plurality of channel selection settings connects a distinctive level of voltage to a wide band signal selecting circuit. The signal selecting circuit includes a resonant circuit having solid state voltage variable capacitance that is selectively controllable in accordance

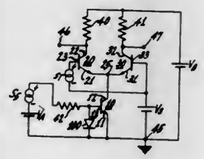
with the level of applied voltage. A different voltage level is connected for each of the channel selection settings and each is independently controllable through actuation of preset tuning mechanism only when connected for effecting fine tuning of the channel.

3,679,981

SYNCHRONOUS DEMODULATOR EMPLOYING COMMON BASE TRANSISTOR AMPLIFIER INPUT AND BASE-EMITTER CLAMPING ACTION

Allen Le Roy Limberg, Somerville, N.J., assignor to RCA Corporation

Filed Nov. 13, 1970, Ser. No. 89,272
Int. Cl. H03d 3/18
U.S. Cl. 329—50 6 Claims



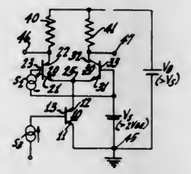
Input signals are coupled in common to the emitter electrodes of a pair of transistors arranged in a differential amplifier configuration, and are synchronously detected by switching signals coupled to the respective transistor base electrodes. The coupling to the emitter electrodes is through an amplifier transistor similar to that disclosed in U.S. Pat. No. 3,531,730, but exhibiting characteristics analagous to a common-base amplifier "folded around" ground potential as herein described.

3,679,982

SYNCHRONOUS DEMODULATOR EMPLOYING TRANSISTOR BASE-EMITTER CLAMPING ACTION

Allen LeRoy Limberg, Somerville, N.J., assignor to RCA Corporation

Filed Nov. 13, 1970, Ser. No. 89,271
Int. Cl. H03d 3/18
U.S. Cl. 329—50 8 Claims



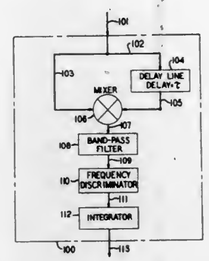
Input voltage signals are coupled in common to the emitter electrodes of a pair of transistors arranged in a differential amplifier configuration, and are synchronously detected by switching voltage signals coupled to the respective transistor base electrodes. The coupling to the emitter electrodes is through an amplifier transistor having a base electrode to which current signals to be demodulated are applied, a collector electrode connected to the common electrodes of the differential pair, and an emitter electrode connected to a point of reference or ground potential.

3,679,983

PHASE DISTORTION DETECTOR FOR DETECTING PHASE DISTORTION ON A LINEARLY FREQUENCY MODULATED WAVEFORM

Eugene Joseph Theriot, Greensboro, N.C., assignor to Bell Telephone Laboratories, Murray Hill, Berkeley Heights, N.J.

Filed Jan. 18, 1971, Ser. No. 107,002
Int. Cl. H03d 3/04
U.S. Cl. 329—110 5 Claims



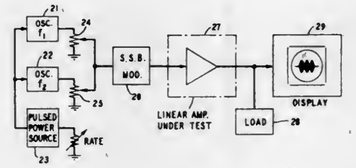
A phase distortion detector is used to detect phase distortion on a pulsed linearly frequency modulated waveform, commonly known as a chirp radar pulse. The detector mixes two differently delayed components of the chirp pulse to produce a constant difference frequency component, from which the phase modulation envelope is recovered to generate an error signal proportional to the phase distortion on the chirp pulse. The detector is utilized with a phase modulator in a feedback arrangement to compensate a chirp pulse dynamically for undesirable phase distortion. The detector is also used in another combination with a phase modulator and an amplitude equalizer to compensate a chirp pulse dynamically for both undesirable amplitude distortion and phase distortion.

3,679,984

PULSED TWO-TONE TEST SIGNAL GENERATOR FOR LINEAR AMPLIFIERS

Robert George Buus, Helmdel, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Oct. 19, 1970, Ser. No. 81,755
Int. Cl. H03f 19/00
U.S. Cl. 330—2 4 Claims



The response of a linear amplifier may be evaluated by applying a two-tone test signal, composed of the modulation product of equal amplitude sinusoids at frequencies f_1 and f_2, to an amplifier and observing the waveform of the output signal on an oscilloscope, or the like. The peak factor of the test signal may be increased by simultaneously pulsing both sinusoidal signals.

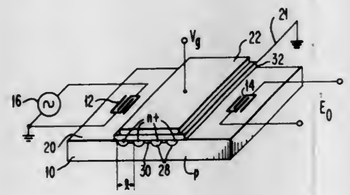
According to the invention, a stable envelope pattern with a high peak factor is obtained by developing each of two sinusoidal signals with a pulsed oscillator which employs an operational amplifier in a twin-tee configuration. Feedback in

each oscillator is controlled at the threshold between oscillation and high Q bandpass operation. A simple half-wave rectifier arrangement is used to pulse the oscillators.

3,679,985
ACOUSTIC WAVE PARAMETRIC AMPLIFIER/CONVERTER

Frank F. Fang, Yorktown Heights, and Eric G. Lean, Mahopac, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 30, 1970, Ser. No. 51,287
Int. Cl. H03f 7/00
U.S. Cl. 330—4.6 **11 Claims**

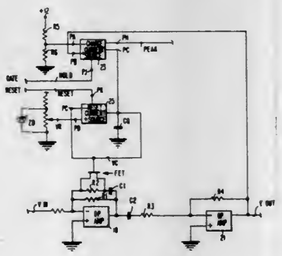


A parametric device for acoustic waves which does not depend on the non-linearities of a medium for operation. Both degenerate and non-degenerate parametric amplifier/converters are provided in which first order velocity changes give parametric interactions. The electric field associated with an acoustic wave in a piezoelectric medium is modulated by an electric pump wave. This is accomplished by modulating the conductivity of a region in the piezoelectric medium, or close to that medium. The resulting modulation of the K-vector of the acoustic wave leads to parametric interactions between the acoustic signal wave, the electric pump wave, and the generated idler wave. Various effects, such as the field effect and the photoconductive effect, are used to modulate the conductivity of the region.

3,679,986
NON-LINEAR FEEDBACK GAIN CONTROL AND PEAK DETECTOR SYSTEM

Louis F. Zaman, III, Endicott, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Sept. 4, 1970, Ser. No. 69,645
Int. Cl. H03g 3/30
U.S. Cl. 330—86 **6 Claims**

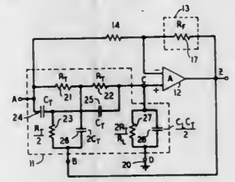


A non-linear feedback gain control and peak detector system in which the output of an amplifier is compared with a reference voltage, and the error or difference therebetween is stored in a hold circuit which in turn controls the gain of the amplifier. Peak detection is accomplished by providing an output from the feedback control circuit, which provides a signal when the first voltage peak reaches its maximum value.

3,679,987
ACTIVE RC WAVE TRANSMISSION NETWORK USING SINGLE AMPLIFIER TO ACHIEVE ALL-PASS TRANSFER FUNCTION

George Samson Moschytz, Highland Park, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Nov. 24, 1970, Ser. No. 92,399
Int. Cl. H03f 1/36
U.S. Cl. 330—107 **3 Claims**

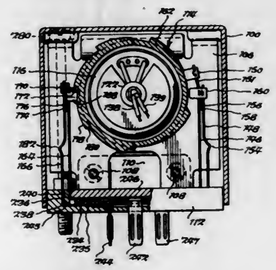


A resistance-capacitance network in circuit with a single operational amplifier provides an all-pass 360° phase transfer function. The single amplifier is arranged for operation in the differential mode with the signal to be controlled applied directly to the inverting input and through an amplitude shaping network to the noninverting input. Depending on whether the shaping network is loaded with a parallel or series resistance-capacitance combination parasitic phase shift or signal loss in the amplifier can also be compensated.

3,679,988
CAM ACTUATED SWITCH ASSEMBLY

Arthur W. Hayden, Middlebury, Conn., assignor to Tri-Tech, Inc., Waterbury, Conn.

Filed Nov. 10, 1970, Ser. No. 88,299
Int. Cl. H01h 7/16
U.S. Cl. 307—133 **12 Claims**

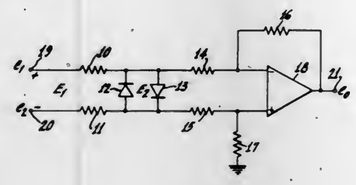


An electro-mechanical, plug-in device with a rotating cam which operates contact equipped, paired leaf-springs to provide specific open and closed electrical circuits in prescribed cyclic patterns. The cam is rotated by an AC synchronous motor mounted within the cam. The cam has lobes on its surface representative of a plurality of timing sequences. The leaf-springs are cantilever mounted in spaced-apart pairs in a plug base. In some embodiments the AC synchronous motor is operated directly from a sixty cycles per second external source while in another embodiment a solid-state non-polarized DC to AC inverter is mounted on the plug base of the device to convert power from an external D.C. source into alternating current to operate the cam motor.

3,679,989
CLAMP CIRCUIT FOR PREVENTING SATURATION OF OPERATIONAL AMPLIFIER

Gregg Joseph Thibodeau, Dracut, Mass., assignor to RCA Corporation

Filed Nov. 16, 1970, Ser. No. 89,573
Int. Cl. H03f 1/00, 3/00
U.S. Cl. 330—185 **5 Claims**

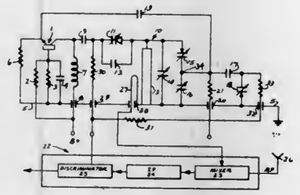


An input clamping circuit for use with an operational amplifier to prevent saturation of the amplifier and to prevent excessive input signals thereto by limiting the differential input voltage applied to the amplifier.

3,679,990
VARIABLE FREQUENCY OSCILLATOR WITH SUBSTANTIALLY LINEAR AFC OVER TUNING RANGE

David R. Hiday, Ludlow, and Ralph L. Mull, Jr., Fairview, both of Mass., assignors to General Instrument Corporation, Newark, N.J.

Filed Jan. 27, 1971, Ser. No. 110,093
Int. Cl. H03b 3/04, 5/12
U.S. Cl. 331—36 C **16 Claims**

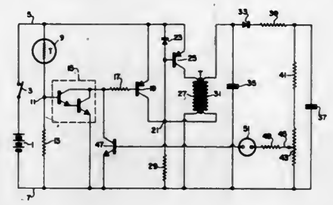


A tuned transistor oscillator for use with an RF receiver includes a transistor amplifier having a tuned network coupled between the collector and base of the transistor. Feedback is provided by a capacitor coupled between the tuned network and the emitter of the transistor. The tuned network includes a transmission line, a variable capacitive reactance means in parallel therewith, a first variable capacitance diode in series with said reactance means, and a second variable capacitance diode serially connected to said line. The capacitance of said reactance means is varied to allow the oscillator to sweep the desired frequency range, and the first and second capacitance diodes are varied by a DC AFC (automatic frequency control) voltage provided by the discriminator of the RF receiver to prevent oscillator drift. Said first and second diode capacitances are arranged so that the first capacitance has its greatest effect at the lower end of the oscillator frequency range while the second capacitor has its greatest effect at the upper end of said range, thereby providing an AFC signal which varies the oscillator frequency by a substantially constant amount independently of the oscillator frequency.

3,679,991
RAPID RECYCLE OSCILLATOR WITH CUTOFF AND THERMAL PROTECTION

Dennis J. Wilwerding, Littleton, Colo., assignor to Honeywell Inc., Minneapolis, Minn.

Filed April 15, 1971, Ser. No. 134,219
Int. Cl. H01h 7/20; H05b 41/40
U.S. Cl. 331—62 **5 Claims**

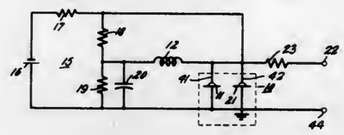


An oscillator provides an oscillation signal which is rectified and applied to a selectively dischargable capacitor. A control circuit monitors the charge on the capacitor and controls the cyclic operation of the oscillator to maintain the charge on the capacitor within predetermined limits, giving a visual signal indicative thereof. Temperature compensation means are included to terminate the operation of the oscillator while the temperature of the oscillator exceeds a predetermined value.

3,679,992
TUNNEL DIODE OSCILLATOR FM TEMPERATURE SENSOR

Alexander J. Yerman, Scotia, N.Y., assignor to General Electric Company

Continuation-in-part of Ser. No. 883,787, Dec. 10, 1969, abandoned. This application June 1, 1971, Ser. No. 149,011
Int. Cl. G01k 7/00; H03b 7/08
U.S. Cl. 331—66 **4 Claims**



In a tunnel diode oscillator used as a temperature sensor including a second tunnel diode to shift the bias for the tunnel diode oscillator with temperature changes, an approximately linear relationship is obtained between temperature and output frequency. A further correction is provided by having temperature variations induce strains in the substrate material of the tunnel diode which will further modify the output frequency in accordance with temperature variations.

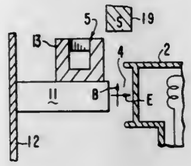
3,679,993
CROSSED-FIELD NOISE GENERATOR TUBE EMPLOYING A HIGH MAGNETIC FIELD INTENSITY

John E. Hentschel, East Brunswick, N.J., assignor to Varian Associates, Palo Alto, Calif.

Filed Sept. 27, 1967, Ser. No. 671,055
Int. Cl. H03b 29/00
U.S. Cl. 331—78 **6 Claims**

A crossed-field noise generator tube having substantially improved efficiency is disclosed. The noise generator tube includes a cylindrical cathode emitter surrounded by a slow-wave circuit to define an annular crossed-field interaction region therebetween. The slow-wave circuit is a fundamental

forward wave circuit provided with a circuit sever to define an upstream end and a downstream output end for the circuit. A resistive termination is provided at the upstream end of the circuit and an output terminal is provided at the downstream end of the circuit for extracting r.f. noise output. A magnetic circuit is provided for producing an axially directed magnetic field in the crossed-field interaction region between the anode and cathode. The intensity of the axial magnetic field produced in the interaction region is greater than ten times the



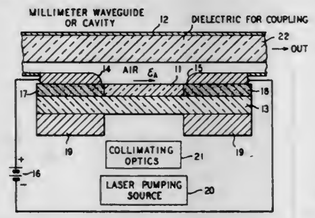
cut-off magnetic field intensity for crossed-field interaction region. Use of this exceptionally high axial magnetic field intensity produces an unexpected substantial enhancement in the efficiency of the noise generator. It is believed that this improved efficiency is due to a resultant decrease in the thickness of the rotating hub of space charge in the crossed-field interaction region, thereby yielding a more efficient noise transfer mechanism for transfer of noise energy from the turbulent electron flow in the space charge to the synchronous waves on the slow-wave circuit.

3,679,994

BROADBAND OPTICALLY PUMPED SEMICONDUCTIVE LASERS

Van-Tran Nguyen, and Jagdeep Chandravadan Shah, both of Matawan, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 20, 1971, Ser. No. 145,182
Int. Cl. H01s 3/18
U.S. Cl. 331—94 8 Claims



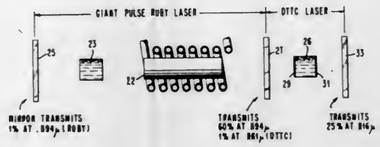
The disclosed optically pumped masers and lasers employ multiple valley semiconductive devices for amplification and oscillation in the millimeter or submillimeter frequency range. This operation results from the population inversion of carriers within continuum states of the conduction band. Electronic charge carriers are excited to the conduction band from impurity levels of from the valence band by one-photon or two-photon optical pumping. The energy of excited carriers is selected to be just below the intervalley energy gap. A small electric field is able to create a transfer of charge carriers between the two valleys in order to obtain the carrier population peak near the intervalley energy level. The combination of the optical pumping and the appropriate small electric field avoids Gunn instabilities. A moderate magnetic field increases available gain at the expense of oscillation bandwidth by providing discrete energy levels below the intervalley energy gap.

3,679,995

OPTICALLY PUMPED LIQUID LASERS

Peter P. Sorokin, Ossining, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation-in-part of Ser. No. 532,182, March 7, 1966, abandoned. This application March 11, 1970, Ser. No. 18,001
Int. Cl. H01s 3/20
U.S. Cl. 331—94.5 24 Claims



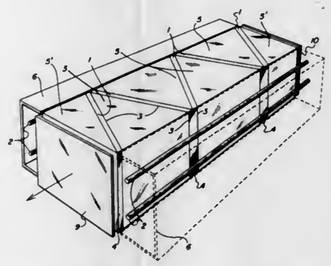
An optically pumped organic laser using materials having allowed electric dipole fluorescent transitions. These materials include photosensitizing dyes. The active fluorescent materials are pumped with either a laser pulse or a flashlamp pulse, the pumping pulse having a risetime not exceeding a few times the decay time between the first excited singlet state and a triplet state of the fluorescent material.

3,679,996

FACE-PUMPED LASER DEVICE WITH LATERALLY POSITIONED PUMPING MEANS

Joseph C. Almasi, and William S. Martin, both of Schenectady, N.Y., assignors to General Electric Company

Continuation-in-part of Ser. No. 755,654, Aug. 27, 1968, abandoned. This application Aug. 3, 1970, Ser. No. 60,741
Int. Cl. H01s 3/00
U.S. Cl. 331—94.5 30 Claims



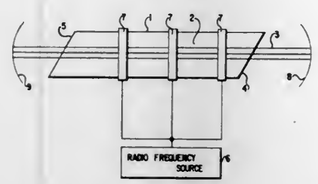
In one embodiment, a plurality of planar laser elements comprising the active laser medium are assembled into a zig-zag pattern with refracting prisms forming interfaces with the major surfaces of the laser elements. A source of radiation of pumping wavelengths is positioned close to and uniformly illuminates the adjacent surfaces of the refracting prisms, the incident radiation of pumping wavelengths being refracted and reflected through the prism medium and being uniformly incident on the major surfaces of the planar laser elements, causing uniform activation therein. The coherent radiation emitted by the active laser medium radiates along an axis which extends through the interfaces but not through the uniformly illuminated surfaces adjacent the source of pumping radiation. Thus, the pumping means is laterally positioned with respect to the coherent laser beam axis. A fluid coolant having an index of refraction approximately the same as that of the laser medium or significantly different therefrom, may be utilized, flowing between the major surfaces of the laser elements and surfaces of the refracting prisms.

3,679,997

NOBLE GAS-MOLECULAR NITROGEN LASER

Wolfgang Friedl, Neckargemund, and Volker Schafer, Bruchkobel near Hanau, both of Germany, assignors to Original Hanau Quarzlampen GmbH, Hanau, Germany

Continuation-in-part of Ser. No. 477,286, Aug. 4, 1965, abandoned. This application Oct. 21, 1970, Ser. No. 57,769
Claims priority, application Germany, Aug. 4, 1972, Q 792
Int. Cl. H01s 3/00
U.S. Cl. 331—94.5 12 Claims



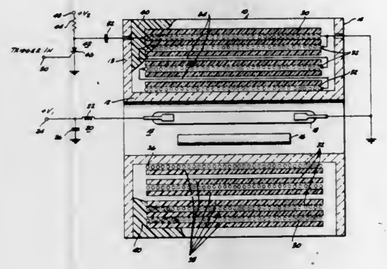
Optical transmitter or amplifier apparatus having as its operating medium a gas mixture including a noble gas and up to about one mole per cent of molecular nitrogen, said mixture being maintained at pressures such that the range of partial pressures of the noble gas is about 10 to 500 Torr.

3,679,998

LASER FLASHTUBE TRIGGERING ARRANGEMENT

Rodney J. Dahlinger, Canoga Park, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Jan. 21, 1971, Ser. No. 108,487
Int. Cl. H01s 3/09; H01f 39/00
U.S. Cl. 331—94.5 7 Claims



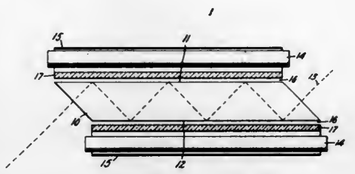
The trigger transformer for the disclosed laser excitation arrangement includes a spool-like ceramic core having a pair of radially outwardly extending annular end wall portions and defining an elongated laser cavity along its axis. A primary winding and a plurality of secondary windings are coaxially wound about the core at different radial locations, with the secondary windings disposed radially inwardly of the primary winding and with an electrical conductor interconnecting the longitudinally opposite ends of each pair of successive secondary windings. A layer of plastic is disposed between each secondary winding and the adjacent interconnecting conductor and between the outermost secondary winding and the primary winding, while epoxy resin potting surrounds the primary and secondary windings and the interconnecting conductors. A laser rod and a flashtube are mounted parallel to one another within the laser cavity. Electrical excitation circuitry includes an RC pulse-forming network coupled to the flashtube and a triggering network including a silicon controlled rectifier coupled to the transformer primary winding.

3,679,999

LASER COOLING METHOD AND APPARATUS

Joseph P. Chernoch, Scotia, N.Y., assignor to General Electric Company

Filed June 12, 1970, Ser. No. 45,691
Int. Cl. H01s 3/00
U.S. Cl. 331—94.5 4 Claims



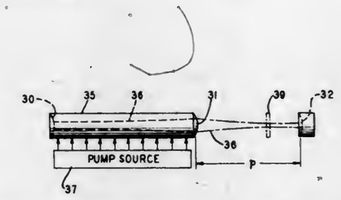
A new laser cooling method is disclosed in which materials in different physical states are laminated about the laser body. Specifically, thin gas layer is used as a heat conductor in thermal contact with the laser body. In contact with the gas layer is a high thermal conductivity solid which is also optically transparent at the pump wavelength. This material, in turn, has its opposite face or edges, or both, in contact with a liquid coolant. Thus, there is provided a cooling method in which gaseous and solid state materials act as heat conductors for liquid cooling the laser apparatus.

3,680,000

LASER ARRANGEMENT INCLUDING A CAVITY DEFINED BY CONVEX AND CONCAVE MIRRORS

Ronald Benjamin Chesler, Summit, and Dan Maydan, Berkeley Heights, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed March 19, 1971, Ser. No. 126,133
Int. Cl. H01s 3/08
U.S. Cl. 331—94.5 5 Claims



A laser cavity defined by convex and concave mirrors and including a discrete intracavity lens is characterized by a relatively large TEM_{oo} spot radius, a short physical length and good stability.

3,680,001

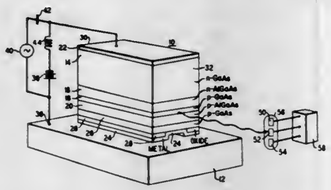
DYNAMIC AM CONTROL OF THE TRANSVERSE MODES OF A SELF-PULSING SEMICONDUCTOR LASER

Thomas Lee Paoli, Catham, and Jose Ellis Ripper, North Plainfield, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 13, 1971, Ser. No. 142,982
Int. Cl. H01s 3/00
U.S. Cl. 331—94.5 14 Claims

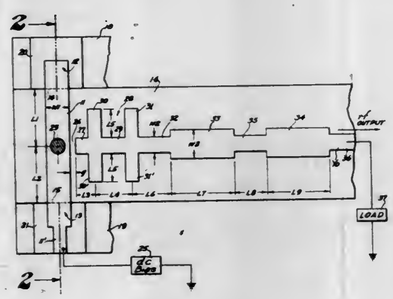
A semiconductor laser, at appropriate values of current above threshold, enters a nonlinear regime characterized by (1) a continuous region in which the output radiation self-pulses simultaneously in two competing transverse modes and/or (2) a bistable region in which the output radiation self-pulses

in either of two noncompeting transverse modes, but not both. In one embodiment the laser is current biased in one of these



regions and is switched between different transverse modes by amplitude modulating the injection current.

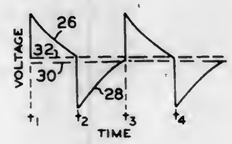
3,680,002
MICROSTRIP MICROWAVE OSCILLATORS
John P. Quine, Schenectady, N.Y., assignor to General Electric Company
Filed Oct. 19, 1970, Ser. No. 81,767
Int. Cl. H03b 7/14
U.S. Cl. 331—96 **14 Claims**



A microwave oscillator in microstrip form is single-tuned simultaneously at both fundamental and second harmonic frequencies to enhance efficient generation of fundamental frequency output voltage. The circuit, manufacturable by printed circuit techniques, comprises a microstrip cavity formed by a strip resonator and solid state oscillator device. The orthogonally arranged output circuit is capacitively coupled for fundamental frequency impedance matching and includes a coupling line terminated by an open-ended-line filter network which passes fundamental frequency energy while reflecting second harmonic energy. An application is LSA-mode operation of transferred-electron diodes.

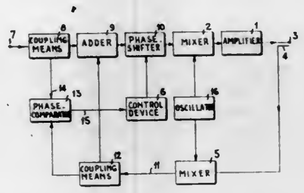
3,680,003
MULTIVIBRATOR CIRCUITS EMPLOYING OR-NOR GATES
Maurice Mark Walker, Beaverton, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.
Filed Feb. 27, 1970, Ser. No. 14,922
Int. Cl. H03k 3/282
U.S. Cl. 331—108 D **13 Claims**

An astable or a monostable multivibrator includes a single stage, integrated circuit, "or-nor" gate, and timing circuitry intercoupling one or more gate outputs with the gate input. In the case of a monostable multivibrator, a timing capacitor couples the "or" output to the gate input, and a current source provides capacitor charging current to the timing capacitor. In the instance of the astable multivibrator, a timing capacitor also couples the gate's "or" output to the gate input, while a charging resistor is disposed between the gate's "nor" output



and the gate input. An additional gate may be employed in conjunction with the astable multivibrator for selectively enabling and disabling operation thereof.

3,680,004
WIDE-BAND FREQUENCY-CONVERTING AND AMPLIFYING CIRCUITS
Antoine Poussin, Paris, France, assignor to Thomson-CSF, Paris, France
Filed Oct. 19, 1970, Ser. No. 81,722
Claims priority, application France, Oct. 24, 1969, 6936502
Int. Cl. H03c 3/08
U.S. Cl. 332—19 **2 Claims**

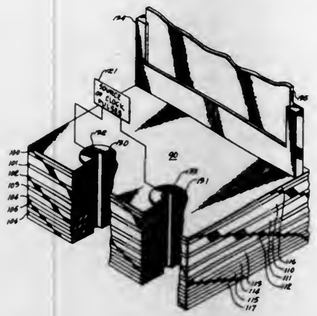


In a circuit for translating to a variable carrier frequency an input signal with a fixed carrier frequency, comprises said signal at said variable frequency, the linearity of the amplifier being obtained by means of a negative feedback loop between the output of the amplifier and of the signal input of the frequency converter and this feedback loop including a frequency converter for re-translating the feedback signal to the frequency of the input signal, the variable phase-shifter ensuring the addition in phase opposition, in an adder, of the input signal and of the feedback signal is inserted between this adder and the frequency converter feeding the amplifier.

This location of the phase-shifter causes the gain of the circuit to be substantially independent of the variable frequency which is used. In addition the phase-shifter is automatically controlled.

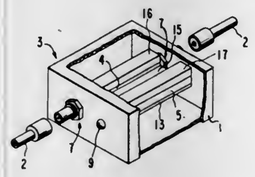
3,680,005
INTEGRAL ELECTRICAL POWER DISTRIBUTION NETWORK HAVING STACKED PLURAL CIRCUIT PLANES OF DIFFERING CHARACTERISTIC IMPEDANCE WITH INTERMEDIATE GROUND PLANE FOR SEPARATING CIRCUIT PLANES
Arnold J. Jorgensen, Duarte; Lawrence L. Bewley, Cupertino, and Kenneth H. White, Newport Beach, all of Calif., assignors to Burroughs Corporation, Detroit, Mich.
Continuation-in-part of Ser. No. 537,049, March 24, 1966, Pat. No. 3,519,959. This application Dec. 15, 1969, Ser. No. 885,117The portion of the term of this patent subsequent to July 7, 1987, has been disclaimed.
Int. Cl. H01p 3/02, 3/18; H05k 1/04
U.S. Cl. 333—6 **10 Claims**

A plurality of conductive sheets are stacked in spaced relationship. A plurality of dielectric sheets are stacked in the spaces between the conductive sheets to form with the conductive sheets an integral structure. A source of bias voltage is coupled to a first pair of the conductive sheets, a source of



clock pulses is coupled to a second pair of the conductive sheets having a larger characteristic impedance than the first pair, and a source of logic levels is coupled to a third pair of the conductive sheets having a larger characteristic impedance than the second pair. The sources are coupled to their respective pairs of conductive sheets such that alternate conductive sheets are grounded. The terminal pins of circuit board connectors are selectively connected to the conductive sheets.

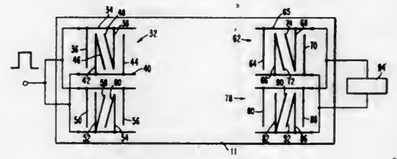
3,680,006
MICROWAVE ISOLATOR
Robert L. Addington, Cupertino, and Gerald J. Latus, Jr., Los Gatos, both of Calif., assignors to Addington Laboratories, Inc., Santa Clara, Calif.
Filed Aug. 21, 1970, Ser. No. 65,804
Int. Cl. H01p 1/32, 3/02, 3/08
U.S. Cl. 333—24.2 **2 Claims**



A microwave isolator is described having first and second conductive members positioned parallel to one another and spaced apart by a ferrimagnetic member positioned therebetween with all elements positioned on a dielectric plate. An unbalanced twin transmission line isolator and a balanced three line isolator are described.

3,680,007
SURFACE WAVE TRANSDUCER FOR DIGITAL SIGNALS
Samuel Chin-Cheng Tseng, Ossining, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Sept. 30, 1970, Ser. No. 76,942
Int. Cl. H03h 7/30
U.S. Cl. 333—30 R **8 Claims**

Surface wave transducers of the interdigital type for generating and detecting return to zero pulse sequences of surface waves are disclosed. The transducer, which is located on the surface of a suitable surface wave medium, is an interdigitated electrode array including main electrodes that are



perpendicular to the transducer leads and auxiliary electrodes that are inclined at an angle to the main electrodes.

3,680,008
ULTRASONIC WAVE DELAY DEVICE HAVING A TRAP ZONE FOR UNDESIRED SIGNAL COMPONENTS
Toshiaki Yamamoto, Tokyo, Japan, assignor to Victor Company of Japan, Limited, Yokohama, Japan
Filed Dec. 4, 1970, Ser. No. 95,018
Claims priority, application Japan, Dec. 6, 1969, 44/98087
Int. Cl. H03h 7/30, 9/30
U.S. Cl. 333—30 R **3 Claims**

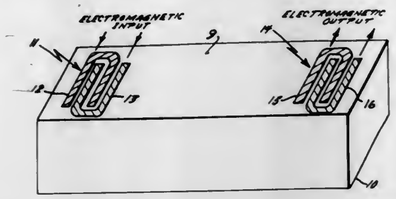


An ultrasonic wave delay device for delaying an ultrasonic wave signal a predetermined time by propagating the ultrasonic wave signal through a solid propagation medium, in which principal signal component reflection surfaces constituting a path of propagation for principal components of the signal are arranged in the solid component propagation zone in the solid propagation medium and cause unnecessary components of the signal to escape from the principal signal component propagation zone. Reflection surfaces exclusively for the unnecessary signal components may be provided adjacent the principal signal component propagation zone in the solid propagation medium, whereby the unnecessary signal components can be subjected to multiple reflection between the unnecessary signal component reflection surfaces and outer walls of the solid propagation medium to ensure that the unnecessary signal components become extinct.

3,680,009
ACOUSTIC SURFACE WAVE DELAY LINE
Andrew J. Slobodnik, Jr., Lowell, Mass., assignor to The United States of America as represented by the Secretary of the Air Force
Filed March 18, 1971, Ser. No. 125,572
Int. Cl. H03h 7/30
U.S. Cl. 333—30 **3 Claims**

An acoustic surface wave delay line having a lithium niobate substrate member the surface wave propagation plane

of which is parallel to the lithium niobate crystalline X axis and intersects the crystalline Z and −Y axes. Optimum results



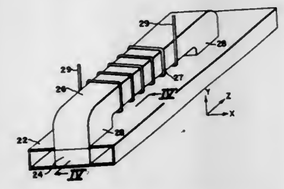
are obtained when the intersecting angle of the propagation plane and the Z axis is in the vicinity of 48.5°.

3,680,010

FERRITE WAVEGUIDE PHASE SHIFTER EXHIBITING NEGATIVE PHASE SHIFT

Daniel C. Buck, Hanover, Md., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed April 3, 1969, Ser. No. 813,073
Int. Cl. H01p 1/18
U.S. Cl. 333—31 A **9 Claims**



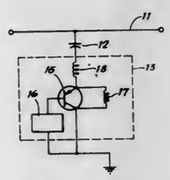
Described is a longitudinally magnetized, latching ferrite reciprocal phase shifter for use in wave guides having a thickness which causes the wave energy to experience a negative phase shift in passing through the ferrite, and wherein the ferrite material itself fills only the center portion of the wave guide and is longitudinally magnetized by means of coil means surrounding one or more U-shaped magnetically permeable members external to the wave guide but forming with the ferrite within the wave guide a toroid-type magnetic circuit.

3,680,011

LOSS CANCELLING RESONATOR AND FILTERS

David K. Adams, Portola Valley, and Raymond Y.-C. Ho, Sunnyvale, both of Calif., assignors to Stanford Research Institute, Menlo Park, Calif.

Filed Aug. 3, 1970, Ser. No. 60,381
Int. Cl. H03h 7/10, 11/00
U.S. Cl. 333—70 R **13 Claims**



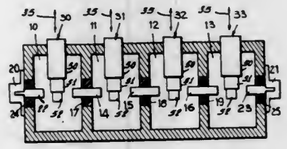
A loss cancelling resonator is disclosed which comprises a passive LC circuit coupled to a transistor in the inverted-common-collector configuration. Typical notch filter configurations are also disclosed including notch filters with more than one resonator. Switchable notch filters are disclosed as well as a frequency synthesizer which utilizes a plurality of switchable notch filters.

3,680,012

MICROWAVE BAND-PASS FILTER HAVING CONSTANT BANDWIDTH AS FILTER IS TUNED

Jean-Noël Moreau, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Feb. 3, 1970, Ser. No. 8,315
Claims priority, application France, Feb. 17, 1969, 6903852
Int. Cl. H03b 7/10
U.S. Cl. 333—73 W **3 Claims**



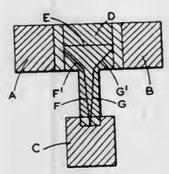
In a filter comprising a plurality of cavities coupled to each other by means of metal probes, the cavities have respective tuning rods which extend therein and whose cross-sectional area is not constant throughout the whole of their length, so that the filter bandwidth is made fairly constant within a large range of tuning frequencies.

3,680,013

FILM ATTENUATOR

Walter Arnold Pye, Morpeth, Northumberland, England, assignor to Welwyn Electric Limited, Northumberland, England

Filed Feb. 16, 1971, Ser. No. 115,244
Claims priority, application Great Britain, Feb. 27, 1970, 9,720/70
Int. Cl. H01p 1/22
U.S. Cl. 333—81 R **8 Claims**



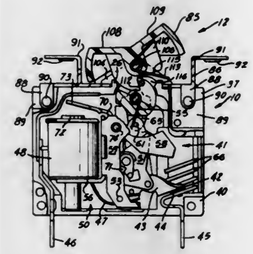
An electrical film attenuator or other film resistor network comprising an insulating substrate having adherently mounted thereon a single film resistive element, said element being provided with at least three terminals in electrical contact therewith and, on said element and in electrical contact therewith, an electrically conductive layer dividing up said element into three distinct portions two of which will have the same electrical resistance value after removal of part of said element at a locus midway between two of said terminals, one of which being an input and the other an output terminal, the third portion of said electrical resistive element being shaped so as to enable its electrical resistance value to be adjusted by removing part of it, each of said first two portions being in electrical contact with only one of said two terminals, the third portion being electrically connected to the remaining terminal or terminals.

3,680,014

CIRCUIT BREAKER WITH AN IMPROVED ACTUATING MECHANISM

John C. Wilkinson, Lawrenceville, N.J., assignor to Heinemann Electric Company, Trenton, N.J.

Filed Jan. 19, 1971, Ser. No. 107,618
Int. Cl. H01h 77/02
U.S. Cl. 335—26 **15 Claims**



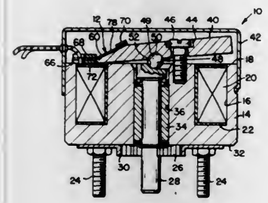
A circuit breaker having an automatically resettable linkage mechanism which includes a pivotal link for moving the circuit breaker contacts between the open and closed positions. The circuit breaker also includes a manual actuating mechanism which engages the pivotal link and is operable to manually move the contacts to the "closed" position but is inoperable to subsequently manually move the contacts to the "open" position and which is itself reset by the reset movement of the pivotal link after the collapse of the linkage mechanism in response to the occurrence of a preselected electrical condition.

3,680,015

IMPROVED HINGE MEANS FOR A ROTARY SOLENOID ARMATURE

Raymond J. Ganowsky, Clifton Springs, N.Y., assignor to Cliftronics, Inc., Clifton Springs, N.Y.

Filed Nov. 27, 1970, Ser. No. 93,157
Int. Cl. H01f 7/08
U.S. Cl. 335—228 **12 Claims**



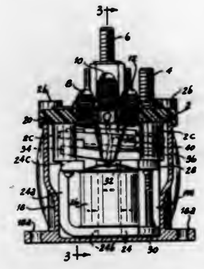
In a rotary solenoid having a hinged armature and converter means between the armature and a rotary shaft for transmitting arcuate pivotal movement of the armature into rotary movement of the shaft, the improvement wherein the hinge is a flexible hinge, preferably a one-piece thin metal strip, connected at one side thereof to the armature and at the other side thereof to a solenoid casing.

3,680,016

AUXILIARY SWITCH FOR AN ELECTROMAGNETIC RELAY

Albert H. Becker; Joseph M. Hart, both of Milwaukee, and John A. Quaal, Wauwatosa, all of Wis., assignors to Cutler-Hammer, Inc., Milwaukee, Wis.

Filed June 23, 1971, Ser. No. 155,853
Int. Cl. H01h 50/54
U.S. Cl. 335—106 **8 Claims**



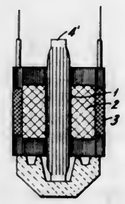
One or two auxiliary switches are built into an electromagnetic relay. At each side of the relay, up to three auxiliary terminal inserts are molded in the relay base, each having a screw connector on the outside, and on the inside of the relay housing either a stationary contact, a wire (solder) connector, or both, thus affording a choice of a number of different auxiliary switching and relay coil connection arrangements as auxiliary functions to be performed simultaneously with the main power switching function of the relay. A support for a single-pole double-throw movable contact for the auxiliary switch is molded integrally on each of the left and right ends of the relay contact support that is rigidly secured to the relay armature for rocking movement therewith, and a movable contact is mounted on one or both supports and connected by a wire to the center auxiliary terminal at that side of the base. This provides an auxiliary switch structure having low contact bounce, more overtravel, direct drive, increased reliability and stability under vibration, and economy.

3,680,017

IGNITION COIL FOR INTERNAL COMBUSTION ENGINE

Yoshimichi Shiari, and Toshimi Komori, both of Kariya, Japan, assignors to Nippon Denso Kabushiki Kaisha, Kariya-shi, Japan

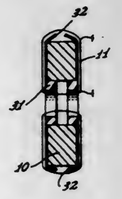
Continuation-in-part of Ser. No. 33,157, May 5, 1970, abandoned, which is a continuation of Ser. No. 726,712, May 6, 1968, abandoned. This application March 23, 1971, Ser. No. 127,173
Claims priority, application Japan, May 15, 1967, 42/30773
Int. Cl. H01f 27/24
U.S. Cl. 336—213 **5 Claims**



An ignition coil for an internal combustion engine comprises a spirally wound sheet of silicon steel. The sheet of silicon steel has a series of slits extending in substantially parallel

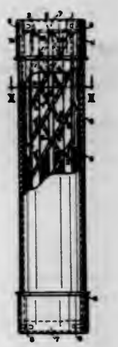
relation transversely thereof and closely adjacent each other, the slits terminating short of the opposite side edges of the sheet. The spirally wound silicon sheet is inserted into a dielectric winding cylinder or form for the primary and secondary windings of the ignition coil, and the wound sheet bulges intermediate its axially opposite ends to closely engage the winding core. The sheet tends to unwind to some extent, and this leaves an axially extending opening at the center of the wound core, this axially extending opening having a diameter not more than one-half the internal diameter of the winding core.

3,680,018
MINIATURE INDUCTANCES
Martin Elberger, 7020 Bothwell Road, Reseda, Calif.
Continuation-in-part of Ser. No. 810,718, March 26, 1969, abandoned. This application Feb. 3, 1971, Ser. No. 112,252
Int. Cl. H01f 17/04
U.S. Cl. 336—221 3 Claims



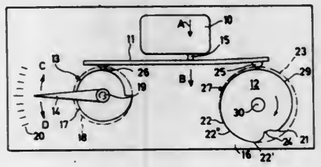
Improved insulation for inductances, such as ring-shaped miniature transformers, is disclosed. An inductance is provided with a pair of similar axial end caps made of insulating material and interposed between core and winding.

3,680,019
HIGH-VOLTAGE FUSE HAVING A PLURALITY OF FUSE LINKS WOUND HELICALLY AROUND AN INSULATING MANDREL
Frederick J. Kozacka, South Hampton, N.H., assignor to The Chase-Shawmut Company, Newburyport, Mass.
Filed June 8, 1970, Ser. No. 44,135
Int. Cl. H01h 85/08, 85/10, 85/12
U.S. Cl. 337—161 3 Claims



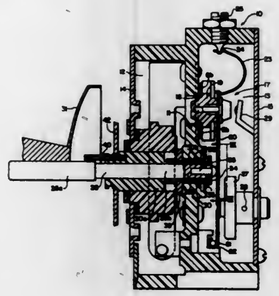
A high-voltage fuse having a mandrel supporting a plurality of ribbon fuse links wound substantially helically around the mandrel. Each fuse link has relatively short serially related neck portions, and each fuse link has a relatively long neck portion. The relatively long neck portions of the various fuse links are displaced in a direction longitudinally of the mandrel to substantially equalize heat generation by said neck portions along the mandrel.

3,680,020
FOR THE THERMOSTATIC REGULATION OF ROOM TEMPERATURES
Hans Berger, Schonaich, Germany, assignor to Zeuna Albert Barkle Kommanditgesellschaft, Schonaich, Germany
Filed March 31, 1970, Ser. No. 24,176
Claims priority, application Austria, March 31, 1969, 4A3178/69
Int. Cl. H01h 37/04, 37/20, 37/52
U.S. Cl. 337—305 14 Claims



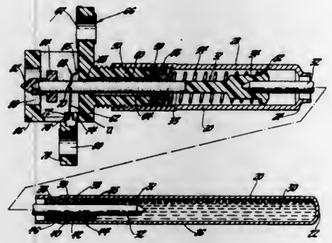
In an apparatus for the control of temperature, a continuously rotating contour disc causes a bimetallic element to execute a slow oscillating motion for alternately turning on and off a switch operatively connected to a heat generating device. The complemental lengths of one off- and one on-period which together constitute a cycle of constant duration, depend upon an arbitrary positioning of the bimetallic element (setting of the desired temperature value) and upon the temperature-responsive deformation (actual temperature value) of the bimetallic element.

3,680,021
OVEN THERMOSTAT FOR HEAT CLEANING OVEN
Calvin J. Holtkamp, Mansfield, Ohio, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Dec. 31, 1970, Ser. No. 103,097
Int. Cl. H01h 37/12
U.S. Cl. 337—312 9 Claims



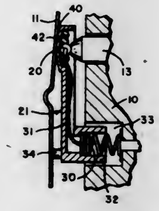
An oven thermostat for a heat cleaning oven is provided in which a concentric shaft arrangement controls positioning of a movable member which establishes the temperature at which cycling of the switch contacts of the thermostat will take place to correspondingly cycle heating means in the oven, the inner shaft of the arrangement being used to establish the temperature in the cooking temperature range and the outer shaft being used to set the heat cleaning temperature.

3,680,022
HYDRAULIC THERMOSTAT
James A. Bright, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Filed Jan. 14, 1971, Ser. No. 106,443
Int. Cl. G01k 5/32; G05d 23/12; H01h 37/36
U.S. Cl. 337—315 3 Claims



In the preferred form, a closed tube is provided with fixed shoulders on the opposite sides of a ring-shaped elastic seal member and a washer surrounding and having close fit with a rod extending into a viscous silicone thermal expansion fluid. At the open end of the tube the rod has a shoulder adapted on the inward movement to engage a double throw switch to move it from engagement with an outer contact into engagement with an inner contact. The rod is urged inwardly by a coil spring having its inner end pressing against a spring retainer fixed to the rod and having its outer end pressing against a second seal ring surrounding the rod for preventing leakage into an outer part of the tube.

3,680,023
THERMOSTAT USING THE HEAT ANTICIPATION HEATER AS A PART OF THE MECHANICAL CONNECTION BETWEEN THE TEMPERATURE RESPONSIVE ELEMENT AND SWITCH OPERATING MEMBER
Murrell F. Kautz, Minneapolis, Minn., assignor to Honeywell Inc., Minneapolis, Minn.
Filed June 1, 1971, Ser. No. 148,362
Int. Cl. H01h 37/14, 37/52
U.S. Cl. 337—377 8 Claims



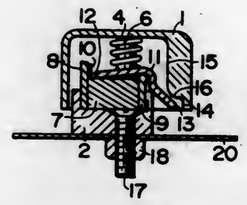
A thermostat having a temperature responsive means for providing a mechanical output force to operate a switch wherein a heater means, for providing heat to a thermostat for heat anticipation, provides the mechanical connection between the temperature responsive means and the switch whereby the thermal connection between the heater means and the temperature responsive means remains the same throughout the operation of the thermostat.

3,680,024
LIGHT RESPONSIVE AND MEASURING DEVICE
Kenichi Tashiro, and Hirokazu Tanaka, both of Tokyo-to, Japan, assignors to Stanley Denki Kabushiki Kaisha, Tokyo-to, Japan
Division of Ser. No. 376,477, June 19, 1964, Pat. No. 3,521,962. This application Feb. 27, 1970, Ser. No. 18,399
Int. Cl. H01c 7/08
U.S. Cl. 338—17 8 Claims



A photosensitive device includes an insulator base on which are located inner, outer and intermediate space electrodes which delineate concentric circular or noncircular areas which are occupied by a photoconductive material engaging opposing edges of the electrodes along their lengths. One or more of the electrodes may be open across their lengths, the openings being occupied by photoconductive material connecting adjacent areas. One or more of the electrodes may be provided with spaced parallel legs interdigitated by legs of another of the electrode.

3,680,025
CONTACTLESS PUSH BUTTON SWITCH
Tsunekazu Kobayashi, Kawasaki, Japan, assignor to Denki Onkyo Company, Limited, Tokyo, Japan
Filed Sept. 18, 1970, Ser. No. 73,391
Claims priority, application Japan, Sept. 19, 1970, 45/88864; Sept. 19, 1970, 45/88865
Int. Cl. H01c 7/16
U.S. Cl. 338—32 8 Claims

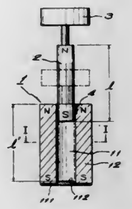


A contactless push button switch comprising a magnetic circuit including a magnet, stationary yokes, a movable yoke and a field-sensitive element (such as reluctance effect element, hole effect element, SMD, etc.), said magnetic circuit being disposed between a button cover and a base of the switch. By depressing the button cover the movable yoke is caused to undergo a physical change, thereby extremely reducing the density of the magnetic flux penetrating the field-sensitive element to cause a change of the terminal voltage or electro-motive force across the field-sensitive element so as to bring about the switching action of the switch.

3,680,026
CONTACTLESS SWITCHING APPARATUS

Noboru Masuda, Kawaguchi, and Masashi Kuroyanagi, Tokyo, both of Japan, assignors to Denki Onkyo Co., Ltd., Tokyo, Japan

Filed May 24, 1971, Ser. No. 146,151
Int. Cl. H01c 7/16
U.S. Cl. 338—32 H 17 Claims

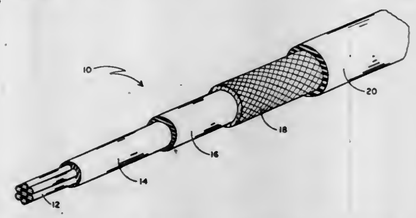


A contactless switching apparatus wherein a magnetic-containing casing with poles located at both ends and a central space extending along the length of the casing is provided. A bar magnet is positioned in the space of the casing so that the bar magnet can be slidably moved within the casing. A galvano-magnetro effect device is provided at at least one of the poles of the casing or on the bar magnet; the device being positioned in the central space and either fixed at the internal surface of the polar portion of the casing, or being capable of alignment with said internal surface. The switching apparatus is designed so that the device functions when the polar portion of the bar magnet, the polarity of which is opposite to the polarity of the magnet of casing, is opposed to the polar portion of the casing.

3,680,027
IGNITION CABLE

Joseph Michael Vitale, Cranston, R.I., assignor to Avnet, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 121,859, March 8, 1971, abandoned. This application April 19, 1971, Ser. No. 135,044
Int. Cl. H01c 3/00
U.S. Cl. 338—214 18 Claims



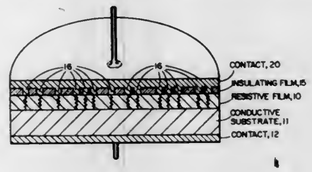
An ignition cable having an interior conductive core directly and tightly engaged by surrounding insulation, the engaged layers of the core and insulation being of material that are relatively nonadherent.

3,680,028
VERTICAL RESISTOR

James R. Black, Phoenix, and Harold S. Gurev, Paradise Valley, both of Ariz., assignors to Motorola, Inc., Franklin Park, Ill.

Filed April 2, 1971, Ser. No. 130,610
Int. Cl. H01c 7/00
U.S. Cl. 338—308 9 Claims

There is disclosed a high valued vertical resistor whose high value is a result of contacting the resistive film through pinholes in an insulating film on top of the resistive film. The value is controlled by the areal density of pinholes through the thin overlaying insulating film such that the higher the areal density the lower the resistance value for the particular resistor. The resistor is completed by providing a metal layer over the pinholed film such that the metal extends through the pinholes to the resistive layer making contact thereto at a multiplicity of points. The number and size of the contacts made to the resistive layer as well as the resistivity and thickness of the resistive layer controls the total resistance value of the resistor. The holes in the thin insulating film are formed and the hole size and number controlled by one of three methods involving the use of opaque particles, metal particles and porous photoresists as masks for etching the thin insulating film.



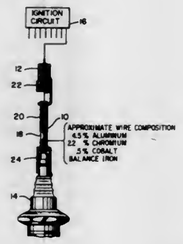
In one embodiment metallization fills the pinholes in the thin insulating layer so as to provide a multiplicity of contacts to the resistive layer which are spaced and insulated one from another. The structure in this case can be used as a sensing device for determining a planar contact area of an electrically conducting structure contiguous to the top surface of the resistor, the contact area varying in an inverse manner with the resistance of the resistor. The structure fabricated without continuous overlaying metallization can also be used as a sensing device for sensing the contact area of a resilient structure having a conductive film on the outside thereof.

The greatest utility of the vertical resistor thus formed is in electrical circuits in which a high but accurate resistive value for the resistor must be obtained. The resistance value of the resistor is provided by altering the areal density of the pinholes in the thin insulating film.

3,680,029
IGNITION CIRCUIT RADIATION SUPPRESSION RESISTOR

Norman H. Berry, 49 Cambridge, Pleasant Ridge, Mich.

Filed Dec. 16, 1970, Ser. No. 98,604
Int. Cl. H01c 1/06
U.S. Cl. 338—334 9 Claims

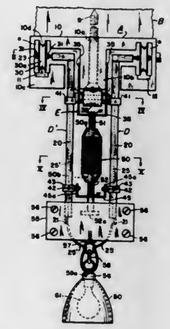


A wire resistor including a ceramic core and a resistor wire wrapped on the core constructed of approximately 4.5 percent aluminum, 22 percent chromium, 0.5 percent cobalt and the balance iron, which is coated with an insulating material, is positioned between an internal combustion engine ignition circuit spark plug lead and the associated spark plug for suppressing electromagnetic radiation on firing of the spark plug in the frequency range of 20–1,000 megahertz to prevent pollution of the air by extraneous radiation.

3,680,030
ELECTRICAL OUTLET TROLLEY

Ernest E. Johnson, 25 Rose St., Brookville, Pa.

Filed March 30, 1971, Ser. No. 129,475
Int. Cl. H01r 41/00
U.S. Cl. 339—2 R 17 Claims

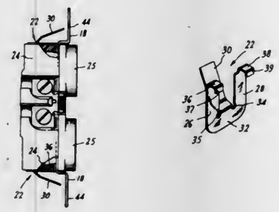


An overhead electrical outlet is suspended from a trolley frame structure that is provided with opposite pairs of side-mounted, closely coupled trolley wheels. A fixedly mounting head or box carries a pair of conductor bars of opposite electrical polarity that serve as guide tracks and electric current supplying rails for opposite pairs of trolley wheels. The frame structure has means cooperating with centrally disposed guide rollers and the head or box to regulate or adjust engagement pressure force applied by the trolley wheels to the associated current supplying rails. The construction enables the outlet to be easily moved longitudinally in line or in a circular or curved path from one position to another.

3,680,031
GROUNDING DEVICE FOR MOUNTING STRAP

Walter C. Schumacher, Warwick, R.I., assignor to General Electric Company

Filed April 30, 1971, Ser. No. 138,986
Int. Cl. H01r 3/06
U.S. Cl. 339—14 R 1 Claim

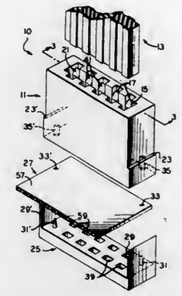


Grounding connection between the mounting strap of a wiring device and the metal housing in which the device is mounted by the strap is achieved by means of a spring clip designed for use with the mounting strap to ensure continuity of electrical connection between the strap and metal housing.

3,680,032
PRINTED CIRCUIT BOARD CONNECTOR ASSEMBLY

John L. Mosier, Kane, and Richard J. Peterson, Warren, both of Pa., assignors to Sylvania Electric Products, Inc.

Filed Jan. 7, 1971, Ser. No. 104,640
Int. Cl. H01r 11/32; H05k 1/02
U.S. Cl. 339—17 F 8 Claims

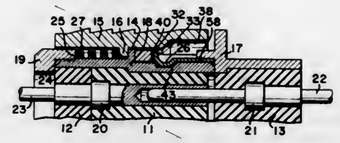


A printed circuit board connector assembly utilizing an insulating body having a plurality of pliable metallic contacts established therein. Each of these contacts has an upper elongated portion for contacting the side of a printed circuit board, a central portion for retaining the contact within the insulating body, and a lower wedge-shaped portion which extends from beneath the insulating body and penetrates the insulating material of a flat cable and contacts an electrically conducting wire located therein. This connection is accomplished when the insulating body is forced against a corresponding cover member, compressing the flat cable between.

3,680,033
COUPLING DEVICE FOR AN ELECTRIC CONNECTOR

Mitsuru Kawai, Matsudo, Japan, assignor to Hirose Electric Co., Ltd., Tokyo, Japan

Filed April 15, 1971, Ser. No. 134,264
Claims priority, application Japan, May 14, 1970, 45/47170
Int. Cl. H01r 13/62
U.S. Cl. 339—46 4 Claims

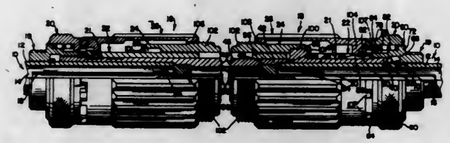


An electric connector employs a coupling device comprising a connecting ring having head portions and provided in a receptacle part, and a tubular body, an outer tube surrounding the tubular body and a spring located between the tubular body and the outer tube, said tubular body, outer tube and spring being provided in a plug part. When the receptacle part is fitted to the plug part, the outer tube is longitudinally retracted against the spring by the head portions of the connecting ring. Then, when the head portions of the connecting ring fall into outer recesses provided in the tubular body, the outer tube returns to its original position to keep the head portions of the connecting ring fitted into the outer recesses, thereby the receptacle part is kept coupled to the plug part. The outer tube can be longitudinally retracted to release the coupling of the receptacle part with the plug part.

3,680,034
CONNECTOR - UNIVERSAL

Weichien Chow, Park Forest, and Jerry Provinsky, Downers Grove, both of Ill., assignors to The Bunker-Ramo Corporation, Oak Brook, Ill.

Filed July 17, 1969, Ser. No. 842,450
Int. Cl. H01r 25/00
U.S. Cl. 339—48 20 Claims

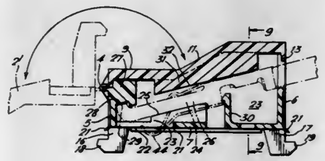


A universal connector assembly for a co-axial cable, or air line, including a pair of identical units, each mounted one one of the line sections to be connected, one of them having an inner sleeve fitted over the ends of both line sections at the juncture when the units are connected, and an outer coupling ring connectable to a fixed element in the other unit; also center contact means for connecting the center conductor, including a button on each, and each button including radially flexible fingers penetrable into its own center conductor and self-biased into engagement with the other button.

3,680,035
PCB HINGED POD CONNECTOR

Wladimiro Teagno, and Franco Trevisiol, both of Turin, Italy, assignors to AMP Incorporated, Harrisburg, Pa.

Filed Feb. 16, 1971, Ser. No. 115,512
Claims priority, application Italy, Feb. 25, 1970, 210 A/79
Int. Cl. H01r 13/48
U.S. Cl. 339—59 M 10 Claims



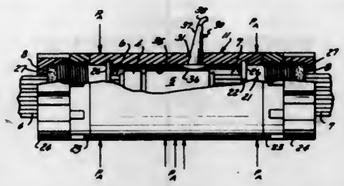
An electrical connector assembly for effecting releasable connection to a printed circuit board according to the present invention comprises the use of resilient insulating material and at least one contact releasably mounted in the housing, and the housing being formed with feet projecting below the floor of the housing for penetrating apertures in and engaging the underside of the circuit board.

3,680,036
ELECTRICAL CONNECTOR

Marvin J. McCamis, Pocasset, and George W. Gibson, E. Falmouth, both of Mass., assignors to The United States of America as represented by the Secretary of the Navy

Filed Sept. 17, 1970, Ser. No. 72,963
Int. Cl. H01r 13/52
U.S. Cl. 339—60 M 1 Claim

An undersea electrical connector is disclosed which can quickly effect a disconnect between two undersea cables by the application of a large tensional force across the connector which causes the connector to disengage. The connector is

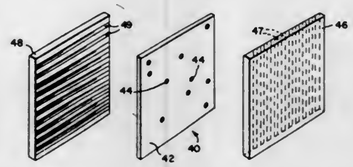


pressurized to prevent the collapse of the flexible connector housing which permits the rapid disconnect without further mechanical detents or escape mechanisms.

3,680,037
ELECTRICAL INTERCONNECTOR

Stewart Nellis, Colts Neck; Joseph Ellis Kopf, Cranford, both of N.J., and Adrian R. Reti, Cambridge, Mass., assignors to Technical Wire Products Inc., Cranford, N.J.

Filed Nov. 5, 1970, Ser. No. 87,172
Int. Cl. H01r 13/24; H05k 1/04
U.S. Cl. 339—61 M 13 Claims

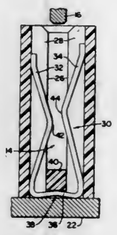


Compressible electrical interconnectors have dielectric holder sheets with compressible conductive plastic rods extending through the sheets. When electrical contacts are pressed against opposite ends of the rods, interconnection is completed.

3,680,038
ELECTRICAL CONNECTOR WITH VIBRATION RESISTANCE

Lennart B. Johnson, Topsfield, Mass., assignor to Teradyne, Inc., Boston, Mass.

Filed April 28, 1970, Ser. No. 32,692
Int. Cl. H01r 13/62
U.S. Cl. 339—65 10 Claims



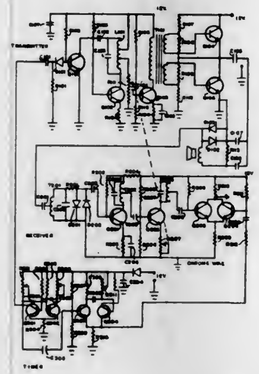
A printed circuit card connector having upwardly extending card guides at its ends, each card guide having a heightwise end slot formed therein to receive the side edge of an inserted circuit card. Retention of the printed circuit card in the connector is enhanced by a pair of spaced, heightwise extending,

resilient fingers which are supported within each end slot and which are adapted to receive and grip the circuit card therebetween. Each pair of fingers engages opposite faces of the inserted circuit card at a level which is above the socket and the fingers are of unequal length to retard vibration or common resonance. The fingers also may be employed as electrical contacts or terminals.

3,680,039
APPARATUS FOR DETECTING MOVABLE OBJECTS

Thomas K. Tsao, 4306 Sarasota Place, Beltsville, Md.

Filed Oct. 8, 1970, Ser. No. 79,016
Int. Cl. G01s 9/66
U.S. Cl. 340—1 R 2 Claims



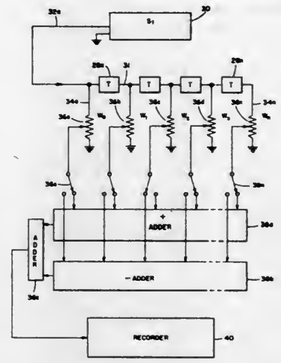
Apparatus for detecting objects by means of ultrasonic waves and echos reflected from objects within a detection zone, the apparatus including a transmitter for generating electric energy at ultrasonic frequencies; means forming pulses of the electric energy; timing means for selectively determining the frequency of said pulses; transducer means for converting electric pulses into ultrasonic pulses and ultrasonic pulses into electric pulses and for projecting said ultrasonic pulses along a narrow beam into a detection zone and receiving echo pulses from said detection zone; receiver means connected to said transducer for detecting and amplifying said electromagnetic pulses, control means connected to said receiver for indicating the presence of objects in the detection zone, gating means in said connection for limiting the pulses transmitted to said control device to those reflected from within the detection zone and means for simultaneously and selectively controlling the power output of the transmitter and the gain of the receiver.

3,680,040
METHOD AND APPARATUS FOR THE ANALYSIS OF SEISMIC RECORDS

Daniel Silverman, and Sven Treitel, both of Tulsa, Okla., assignors to Amoco Production Company, Tulsa, Okla.

Continuation of Ser. No. 450,806, April 26, 1965, abandoned. This application May 4, 1970, Ser. No. 34,514
Int. Cl. G01v 1/28
U.S. Cl. 340—15.5 R 12 Claims

A method of analyzing a recorded seismic signal. An input signal impressed on the earth is controlled by a known drive signal. A Wiener operator W is derived from (a) this known drive signal and (b) a selected desired output signal. Reflections from the transmitted input signal are recorded. The received or recorded signal is convolved with the Wiener operator W to obtain the convolution thereof. The convolu-

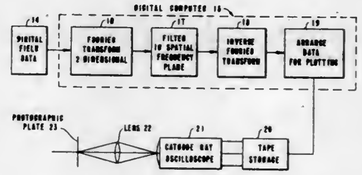


tion contains compressed signals to indicate reflections from subsurface interfaces. Any known input signal and any selected output signal can be used.

3,680,041
FILTERED COHERENT WAVE HOLOGRAPHY

Noyes D. Smith, Jr., Bellaire, Tex., assignor to Shell Oil Company, New York, N.Y.

Continuation-in-part of Ser. No. 659,084, Aug. 8, 1967. This application Nov. 28, 1969, Ser. No. 880,579
Int. Cl. G01v 1/32
U.S. Cl. 340—15.5 DP 2 Claims



A process for producing a hologram by illuminating an object with a coherent elastic wave is improved by digitally depicting the substantially full dynamic range of the mixture of reference wave energy and diffracted wave energy that forms the holographic data, subjecting the digitally depicted data to a low-pass spatial filtration, and displaying the hologram that is provided by the filtered data.

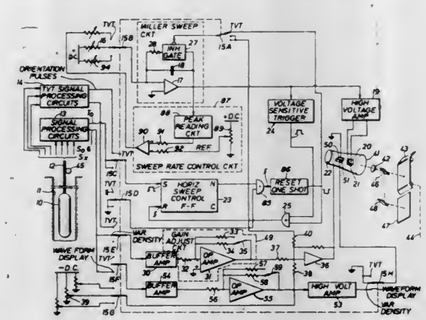
3,680,042
METHODS AND APPARATUS FOR RECORDING WELL LOGGING DATA

Theodore F. Brunn, Houston, Tex., assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed May 26, 1969, Ser. No. 829,159
Int. Cl. G01v 1/24
U.S. Cl. 340—18 23 Claims

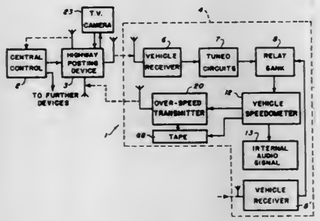
In accordance with an illustrative embodiment of the present invention, a recording and displaying apparatus is adapted to record or display well logging signals derived from a well tool in a borehole. The apparatus can record signals derived from a well logging tool of the type which rotates an acoustic transducer while emitting and receiving energy therefrom to thereby scan a borehole wall. Information signals representative of the energy received by the rotating trans-

ducer and synchronizing signals representative of the orientation of the transducer are transmitted from the well tool to the surface of the earth. At the surface of the earth, the recording apparatus uses the synchronizing signals to control the sweep of an oscilloscope generated electron beam across an indicating means while modulating the beam intensity with the information signals. A sweep rate control circuit synchronizes the sweep rate with the frequency of the synchronizing signals. The apparatus can also record or display signals derived from



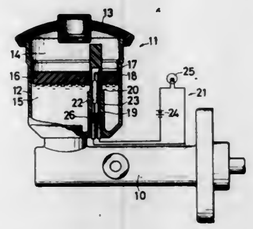
a well tool of the type which repetitively emits acoustic energy from a transmitter and receives the energy with one or more nearby acoustic receivers to produce information signals representative of the received energy and synchronizing signals representative of the time of energy emission. The synchronizing signals cause the electron beam to sweep across the indicating means and the information signals are used to modulate either the intensity or vertical deflection of the beam.

3,680,043
VEHICLE SPEED MONITORING SYSTEMS
Paul Angeloni, R.F.D. #2, Harrison, Maine
Filed Nov. 25, 1969, Ser. No. 879,854
Int. Cl. G08g 1/00
U.S. Cl. 340—33 **20 Claims**



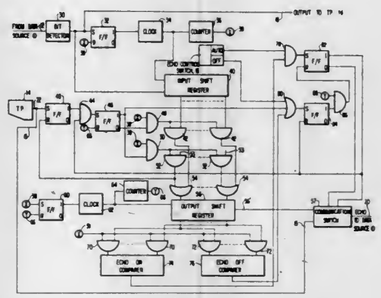
A system is disclosed for monitoring speed of highway vehicles from a central control station. The system includes posting devices positioned at intervals along the highway and adapted to receive a speed message from the control station and transmit the speed message to passing vehicles in a limited region of the highway in the form of an r-f signal. Each vehicle contains an r-f receiver which is connected to the vehicle speedometer or other vehicle indication means in a manner that will provide, upon the occurrence of some predetermined excessive speed, an indication to the driver of the vehicle that the speed limit at that particular region of the highway is being exceeded. There is provision, also, for means for reporting back to the control station the occurrence of excessive vehicular speed as well as for providing accident warnings and the like.

3,680,044
LIQUID LEVEL INDICATING ARRANGEMENT FOR VEHICLES
Kadru Tsubouchi, Toyota, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan
Filed Feb. 5, 1971, Ser. No. 112,914
Claims priority, application Japan, Feb. 10, 1970, 45/13154
Int. Cl. G08b 21/00
U.S. Cl. 340—59 **6 Claims**



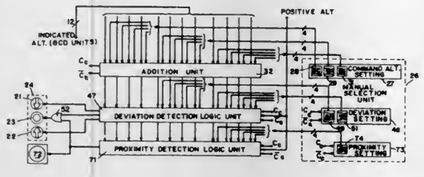
A liquid level indicating arrangement for an oil reservoir of a brake master cylinder, comprising a magnetically actuated lead switch to operate a warning lamp for indicating the need of supplying the oil, said lead switch being housed within a coaxially extending tubular housing formed vertically to and integrally with a bottom wall of a reservoir shell whereby it may be easy to supply the oil.

3,680,045
DATA TRANSMISSION ECHOING UNIT
Reuven Meidan, Stony Brook, L. I., N.Y., assignor to Applied Digital Data Systems, Inc.
Continuation-in-part of Ser. No. 856,538, Sept. 10, 1969, abandoned. This application Aug. 18, 1970, Ser. No. 64,730
Int. Cl. G08c 25/02
U.S. Cl. 340—146.1 BA **9 Claims**



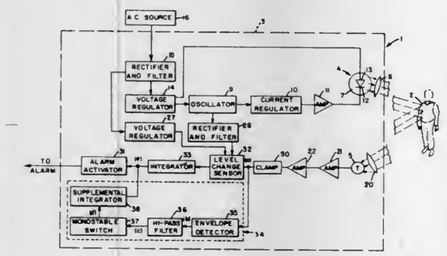
Apparatus for receiving pulse coded signals from a signal source such as an automatic data processing system and for returning the same signals to that source to permit detection and correction of transmission errors. The signals are applied to an input memory device and to the local utilizing device. Once a complete character is in that memory, it is compared with precoded On and Off commands to determine whether it is a control signal for the apparatus. If the apparatus is on, the character is returned to the signal source. If a signal is generated at the local utilizing device, the apparatus switches itself off to prevent confusion of signals, and the apparatus sends the signal source a character indicating it has switched off.

3,680,046
ALERTING SYSTEM
John M. K. Bergey, Doylestown, and Stephen Kalatucka, Willow Grove, both of Pa., assignors to The United States of America as represented by the Secretary of the Navy
Filed Dec. 18, 1970, Ser. No. 99,563
Int. Cl. G06f 7/02, 7/385
U.S. Cl. 340—146.2 **12 Claims**



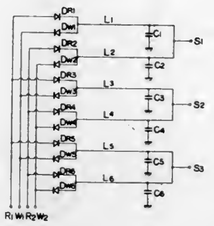
An aircraft cockpit display system for indicating whether the aircraft is above, below, within or adjacent to a preset altitude corridor. The binary coded decimal output of an altitude reporting encoder is combined with a signal indicative of the assigned altitude preselected by thumbwheel switches. The computed deviation from the command altitude is compared to a similarly selected deviation setting. A deviation detection logic unit provides output signals to shape-coded, lightable indicators advising the pilot to descend or climb to the flight corridor, if necessary. A proximity detection logic unit receives signals from the deviation detection logic unit and an adjustable proximity range selector indicative of proximity zones above and below the flight corridor to drive an indicator and audio beeper to alert the pilot of approaches to and departures from the flight corridor.

3,680,047
PARAMETRIC INTEGRATOR FOR CONDITION-RESPONSIVE SYSTEMS
David E. Perlman, Rochester, N.Y., assignor to Detection Systems, Inc., East Rochester, N.Y.
Filed Dec. 15, 1970, Ser. No. 98,353
Int. Cl. G08b 13/00
U.S. Cl. 340—258 B **2 Claims**



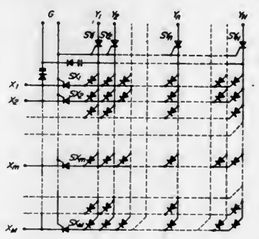
A parametric integrator adapted for use in condition-responsive systems such as intruder detection devices. The integrator is normally inactive until a transient signal, uncharacteristic of a change in the condition being monitored, is received at the system input. The integrator is then rapidly switched into system circuitry for a predetermined time interval to reduce system sensitivity and thereby avoid the possibility of false alarming in response to the transient.

3,680,048
CORE DRIVE AND BIASING SYSTEM
Joichiro Ezaki, Funabashi, Japan, assignor to TDK Electronics Company Ltd., Tokyo, Japan
Filed March 4, 1970, Ser. No. 16,404
Claims priority, application Japan, March 8, 1969, 44/17724
Int. Cl. H04q 9/00
U.S. Cl. 340—166 R **4 Claims**



A read/write drive circuit for a circuit having a driver and a plurality of read/write circuit units connected in parallel thereto, wherein when one desired circuit unit is driven with a potential of one polarity, a potential of the opposite polarity is applied to other circuit units, thereby preventing a flow of current through the other circuit units and through an inadvertent ground path including stray capacitances. A higher speed operation is feasible because no charging current flows through the other circuit units that are not driven.

3,680,049
DISPLAY DEVICE AND METHOD FOR SCANNING SAID DEVICE
Toshihisa Tsukada, Tokyo, Japan, assignor to Hitachi, Ltd., Tokyo, Japan
Filed Sept. 8, 1970, Ser. No. 70,119
Claims priority, application Japan, Sept. 12, 1969, 44/71922
Int. Cl. H04q 3/00
U.S. Cl. 340—166 EL **5 Claims**



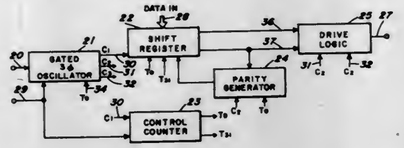
A display device comprising a number of light emitting diodes disposed in a matrix array, a switching element being connected in series with each of the horizontal (row) and the vertical (column) scanning lines; said array being scanned in such a manner that the column lines are scanned with a pulse consisting of a negative part and a subsequent positive part while the row lines which are always biased with a negative voltage of a value smaller than that of the said negative part of the column scanning pulse are scanned with a negative pulse of a value larger than that of the said negative part of the column scanning pulse, a trigger pulse being applied to the gate electrode of the switching elements in synchronization with the column scanning pulse for a column which includes a light emitting diode to be energized, thus a light emitting diode

which has been transferred to a conductive state being returned to the non-conductive state by the negative part of the column scanning pulse just before the relevant column is scanned for the second time, a bright display being thereby ensured.

3,680,050
SERIAL DIGITAL PULSE PHASE INTERFACE DRIVER AND RECEIVER

Joe H. Griffin, Rockville, Md., assignor to General Electric, Westlynn, Mass.

Filed July 10, 1970, Ser. No. 53,751
Int. Cl. H04q 1/32
U.S. Cl. 340—167 R **9 Claims**

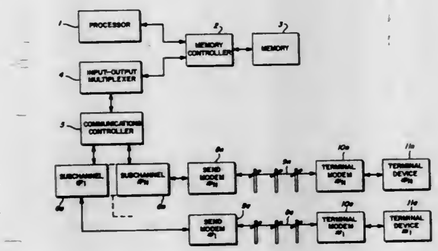


A digital transmission system comprising a transmitter and receiver capable of transmitting and receiving digital data at high bit rates in a noisy environment, utilizing transformer coupling to a single transmission line, serial to parallel and parallel to serial conversion, and parity generation and checking circuits. The system is capable of operation from a 5 volt source and of being densely packaged. The serial digital receiver utilizes a decoding and filtering circuit which provides high noise immunity for the system. Data transmitted and received is in the form of pulses having a positive and negative peak so as to eliminate the necessity of a separate syne line.

3,680,051
APPARATUS FOR MAINTAINING CHARACTER SYNCHRONIZATION IN A DATA COMMUNICATION SYSTEM

Ronald W. Blessin, and James A. Kennedy, both of Phoenix, Ariz., assignors to Honeywell Information Systems Inc.

Filed July 29, 1970, Ser. No. 59,094
Int. Cl. G06f 1/04
U.S. Cl. 340—172.5 **4 Claims**

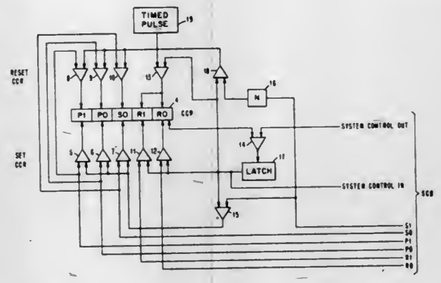


Apparatus for maintaining character synchronization in a data communication system comprises a buffer to store characters being transferred from a communications controller to a terminal device, a shift register connected between the buffer and the terminal device and a source of fill characters which provides characters to fill any gap between message characters provided by the communications controller.

3,680,052
CONFIGURATION CONTROL OF DATA PROCESSING SYSTEM UNITS

Jeganandaraj A. Arulpragasam; Dennis C. Binks, both of Chandlers Ford; John J. Holmes, Winchester; John F. Minshull, Winchester; Martin C. Pinnell, Winchester, and Clive Williams, Chandlers Ford, all of England, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 20, 1970, Ser. No. 13,251
Int. Cl. G06f 15/16
U.S. Cl. 340—172.5 **2 Claims**

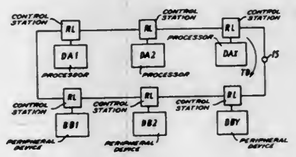


The disclosed data processing system, which includes plural processing units, plural storage units and plural input/output units, can be configured into various groups of interconnected units. In response to a single pattern of signals broadcast to configuration control registers in each unit, a particular unit can be disconnected from one group of units and connected to another group. This invention relates to a data processing system, and more particularly to a system including plural units which, in response to a single program instruction, can be configured into various interconnected groups of units.

3,680,053
DATA TRANSMISSION SYSTEMS

John Michael Cotton, and Peter Anthony Lloyd, both of Taplow, England, assignors to Plessey BTR Limited, Taplow, England

Continuation-in-part of Ser. No. 638,803, May 15, 1967, Pat. No. 3,444,755. This application April 13, 1970, Ser. No. 27,631
Claims priority, application Great Britain, May 17, 1966, 21,829/66
Int. Cl. G06f 9/18
U.S. Cl. 340—172.5 **5 Claims**

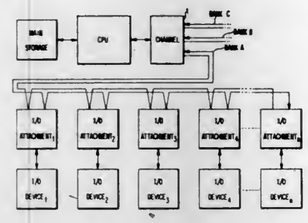


A data transmission highway, in the form of a ring has a plurality of data handling devices connected thereto. A different priority number is allocated to each device. When a device wishes to transmit data it first transmits its own priority number on the highway and the device having the highest priority number of the devices which wish to transmit is allowed to seize the highway.

3,680,054
INPUT/OUTPUT CHANNEL

William H. Bunker, Rochester; John W. Kerr, Byron; Nicholas S. Mitrofanoff, and Kent W. Swearingen, both of Rochester, all of Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed July 6, 1970, Ser. No. 52,488
Int. Cl. G06f 9/18
U.S. Cl. 340—172.5 **10 Claims**

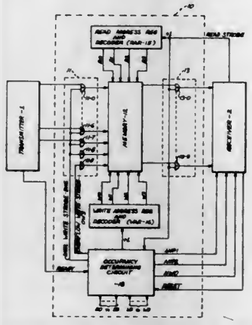


The invention relates to a unique input/output channel used in a data processing system. The channel couples a plurality of external devices and their control units to a central processing unit. The configuration of the channel is such that it allows each of the control units direct control over many of the central processing unit functions during an input/output cycle. It allows each of the control units to share the system's main storage and central processing unit during these cycles. The design further allows for local store registers located in the central processing unit to be used as address registers for the external devices.

3,680,055
BUFFER MEMORY HAVING READ AND WRITE ADDRESS COMPARISON FOR INDICATING OCCUPANCY

Roy A. Wilson, Monrovia, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Filed July 6, 1970, Ser. No. 52,514
Int. Cl. G06f 13/06
U.S. Cl. 340—172.5 **7 Claims**

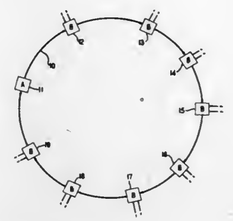


A buffering system has a memory with a plurality of addressable storage locations, an address register for writing, a separate address register for reading, and occupancy determining circuitry which develops indicating signals useful in controlling the flow of data through the buffer. Among these useful signals are attention needed signals, next word occupied signals and overflow signals for notifying a receiving device of the type of action that is appropriate in reading data from the buffer.

3,680,056
USE EQUALIZATION ON CLOSED LOOP MESSAGE BLOCK TRANSMISSION SYSTEMS

Walter Joseph Kropfl, Murray Hill, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Oct. 8, 1970, Ser. No. 79,080
Int. Cl. H04j 3/08
U.S. Cl. 340—172.5 **10 Claims**

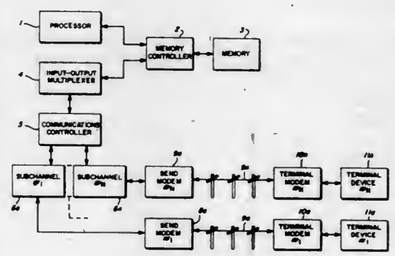


A closed loop transmission system is described in which a plurality of stations have access to the loop to write messages into and read messages from standard-sized message blocks transmitted around the loop. One station provides regeneration of all message blocks. In order to prevent one or more stations from monopolizing the use of the transmission loop, a field is reserved in each message block for setting flags each time a station desires to transmit a message but is unable to do so because the message block is filled. Originating stations are thereafter prevented from initiating a second message until all other requesting stations have been served, as indicated by the flagged field in the message block.

3,680,057
DATA COMMUNICATIONS SUBCHANNEL

Ronald W. Blessin, and James A. Kennedy, both of Phoenix, Ariz., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Filed Nov. 2, 1970, Ser. No. 86,093
Int. Cl. G06f 13/04
U.S. Cl. 340—172.5 **6 Claims**

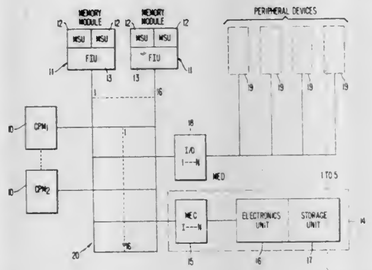


A data communications subchannel uses input signals and decoding logic to select the baud rate, the length of message characters, the mode of operation and the number of stop bits in a message character used in transmitting binary message characters between a data communications subchannel and a terminal device.

3,680,058
INFORMATION PROCESSING SYSTEM HAVING FREE FIELD STORAGE FOR NESTED PROCESSES

Alfred J. De Santis, Norristown; LeRoy W. Beers, Exton; James A. White, West Chester, and John A. Moysey, Malvern, all of Pa., assignors to Burroughs Corporation, Detroit, Mich.

Filed Nov. 28, 1969, Ser. No. 880,535
Int. Cl. G06f *15/16*
U.S. Cl. 340—172.5 **17 Claims**

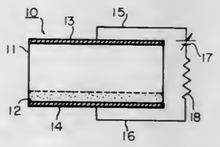


This disclosure relates to an information processing system employing plural processors which system is provided with a free field storage array to accommodate operands and data segments of any size and format. Each of the respective memory storage units is, in fact, structure oriented. However, pairs of such storage units are provided with isolation units having the capability of extracting and inserting fields of information independent of the memory structure. During a fetching operation, the isolation unit is adapted to fetch two contiguous parallel words and a shifting network or barrel switch is provided to position the desired field for transfer to the requesting device. During a store operation, the shifting network or barrel switch is employed to position incoming data into the proper bit location of the memory. The selected field is determined by the starting bit and the length field information provided by the memory control word and also by the type of operation requested. Each of the requesting devices is provided with its own interface unit that contains logic to construct a memory control word for each memory module involved in a fetch or store operation. In this manner, the entire array of memory units will appear to each of the requesting devices as being free field or without structure.

3,680,059
MEMORY DEVICE UTILIZING PULSE GENERATING DIODE

Sadahiko Yamashita, Osaka, Japan, assignor to Matsushita electric Industrial Company, Limited, Osaka, Japan

Filed Sept. 16, 1970, Ser. No. 72,697
Claims priority, application Japan, Sept. 14, 1969, 44/76057
Int. Cl. G11c *11/36*; H03b *7/06*
U.S. Cl. 340—173 NR **1 Claim**

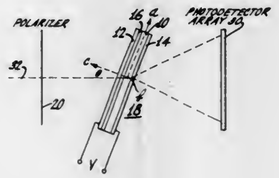


A memory device comprising a circuit including in combination a gate diode and an oscillatory loop having a pulse generating diode. The oscillatory loop is adapted to produce a pulse train to be stored and to cease oscillate respectively in response to application thereto of a single and negative trigger pulse when the pulse generating diode is biased at a voltage between the oscillation starting and terminating voltages of the diode. With a reading-out pulse being applied to the loop, a single pulse or a pulse train is obtained from the stored pulse train. The pulse generating diode employed in the device is a novel having a *v*-N structure.

3,680,060
ELECTRO-OPTICAL MEMORY EMPLOYING FERROELECTRIC ELEMENT

Scott Allen Keneman, Cranbury, and Arthur Miller, Princeton Junction, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed April 10, 1970, Ser. No. 27,336
Int. Cl. G11c *11/22*
U.S. Cl. 340—173.2 **7 Claims**



A photoconductive-ferroelectric device is employed as an erasable storage medium for recording and reading light patterns. The ferroelectric material may be a bismuth titanate crystal and its polarization pattern (corresponding to the recorded light pattern) is read out by directing linearly polarized light at the *ab*-face of the crystal, at an angle to the *c*-axis of the crystal and preferably perpendicular to the *b*-axis of the crystal. With proper choice of the direction of linear polarization, the incident light is phase delayed different amounts in the differently polarized regions of the crystal and this difference in phase may be detected and employed as the basis for reconstructing the light pattern. Operation in this way is found to provide substantially greater readout efficiency than has been available heretofore.

3,680,061
INTEGRATED CIRCUIT BIPOLAR RANDOM ACCESS MEMORY SYSTEM WITH LOW STAND-BY POWER CONSUMPTION

Majid Arbab, Redondo Beach; William Y. Wong, Torrance, and Kuenseng Yu, Westminster, all of Calif., assignors to The National Cash Register Company, Dayton, Ohio

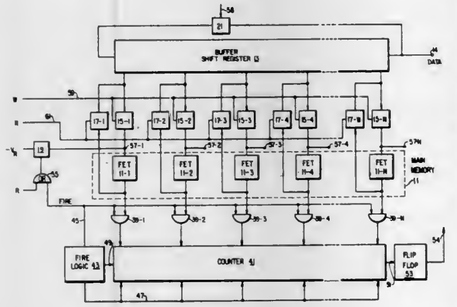
Filed April 30, 1970, Ser. No. 33,253
Int. Cl. G11c *7/00*
U.S. Cl. 340—173 R **3 Claims**

A semiconductor memory circuit for fabrication on a LSI chip. The circuit on the chip corresponding to a digit plane of a computer memory comprises a two-coordinate array of memory cells and all the service circuits associated with the operation of the memory array. During standby or idling operation of the memory circuit all of the service circuits are de-energized such that the only power dissipated is that resulting from the current flow required for retaining the binary digits stored in the memory cells. In order to operate the memory circuit, a chip enable pulse is applied to energize all the service circuits thus causing the memory circuit to momentarily operate at a higher power dissipation level during which either a read or write function is performed on a selected memory cell of the array.

3,680,062
RESETTABLE NON-VOLATILE MEMORY UTILIZING VARIABLE THRESHOLD VOLTAGE DEVICES

James R. Cricchi, Baltimore, Md., assignor to Westinghouse Electric Corporaton, Pittsburgh, Pa.

Filed June 24, 1970, Ser. No. 49,101
Int. Cl. G11c *11/40*
U.S. Cl. 340—173 R **12 Claims**

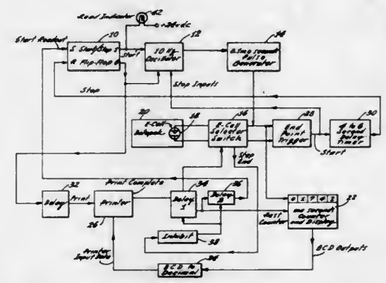


A non-volatile memory employing variable threshold voltage field effect transistors as main memory storage elements is utilized in a fuse system for detonating explosive projectiles. Each transistor is selectively set to first and second stable threshold voltages by applying positive or negative polarizing voltages between the gate and the source of the transistor. The threshold voltage state of the transistor is determined by applying a read voltage having a magnitude greater than the first stable threshold voltage and less than the second stable threshold voltage. The transistor is activated only if it has assumed the first threshold voltage. A buffer shift register is provided for receiving a serial data input and producing a corresponding parallel output of positive and negative polarizing voltages. The information in the buffer shift register is transferred to the main memory by a plurality of write transmission gates and is transferred from the main memory to the shift register by a plurality of read transmission gates. A fire command generated by the firing of a projectile, such as an artillery shell, transfers the information in the main memory to a counter. The counter is then operated until overflow occurs and a signal is generated by the counter to detonate the explosive projectile.

3,680,063
AUTOMATIC DATA READOUT

James J. Pinto, San Diego, Calif., assignor to The Bissett-Berman Corporation, Santa Monica, Calif.

Filed July 10, 1970, Ser. No. 53,749
Int. Cl. G11c *13/02*
U.S. Cl. 340—173 CH **26 Claims**

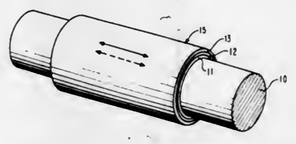


An automatic data readout is provided to extract data stored in a plurality of electrolytic cells, such as 20 cells, which cells form a data pack to store 20 channels of information. The automatic data readout reads out the 20 channels of information stored in the cells, either in a manual mode or automatically in sequence 1 through 20. A printer operates to record the data readout from a first one of the channels before passing on to read out a next channel of information. The readout is accomplished by deplating the electrolytic cells by passing a plurality of pulses each having a fixed charge value through the cell in a direction to deplate the electrolytic cell. When the voltage across the electrolytic cell rises above a particular value, the pulses are discontinued. However, if the voltage across the cell then drops below a particular value within a predetermined time, such as 4 to 6 seconds, then the readout pulses are continued. The number of pulses fed to the electrolytic cell represents the true digital count of the stored integral in the electrolytic cell.

3,680,064
COAXIAL ANISOTROPIC MAGNETIC FILM STORAGE DEVICE WITH BURST CYCLE WRITING

Albert W. Vinal, Owego, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

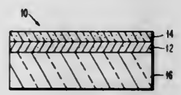
Filed April 23, 1970, Ser. No. 31,211
Int. Cl. G11c *11/04*, *11/14*
U.S. Cl. 340—174 QA **10 Claims**



A memory cell composed of a pair of coaxial anisotropic magnetic films separated by a coaxial barrier film represents binary information by anti-parallel magnetic fields in the pair of magnetic films. Burst cycle writing is used to change the binary storage state of the memory cell. This involves the application of N word current pulses I_w each of which passes along a conductor enclosed by coaxial magnetic film layers to apply

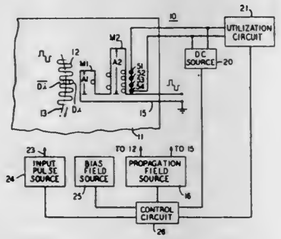
a magnetic field to said coaxial magnetic film layers and simultaneously with each such word current pulse I_w a pair of bipolar bit current pulses I_b are applied to an insulated conductor which extends around and in non-electrical contact with the outer most magnetic film of the memory cell to apply an axial magnetic field to said coaxial magnetic films. The burst number N is inversely proportional to the amplitude of the word current pulses and the bit current pulses.

3,680,065
NONVOLATILE MAGNETO-OPTICAL MEMORY ELEMENT AND A METHOD OF WRITING THEREON
George S. Almasi, Purdy Station, and Eugene R. Genovese, Yorktown Heights, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed May 25, 1970, Ser. No. 40,234
Int. Cl. G11c *11/14*
U.S. Cl. 340—174 YC 6 Claims



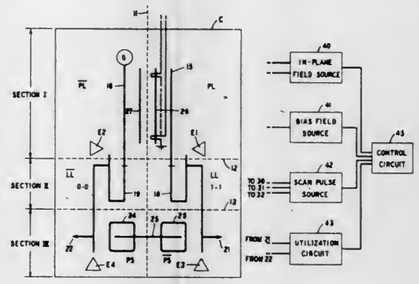
A magneto-optical memory element for use as a light beam addressable memory element is formed of permalloy and europium oxide films arranged in adjoining layers. Information is written into the permalloy layer while the device is at room temperature. The ambient temperature is then reduced below the Curie point of europium oxide causing the magnetization of the permalloy layer to be directly transferred by negative or anti-parallel exchange coupling to the europium oxide layer. The europium oxide then preserves the stored information in a form suitable for optical read-out which will take place at this low temperature. The device has the advantage that if the ambient temperature accidentally should rise above the Curie point of europium oxide going even as high as room temperature, the stored information will be preserved in the permalloy film until the temperature again is brought below the Curie point of europium oxide. Whereupon the europium oxide film is restored to its previous magnetic state by negative exchange coupling. Thus, the subject magneto-optical memory device is nonvolatile under fluctuating temperature conditions.

3,680,066
SINGLE WALL DOMAIN FANOUT CIRCUIT
John Alexander Copeland, III, Gillette, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed July 8, 1971, Ser. No. 160,842
Int. Cl. G11c *11/14, 19/00*
U.S. Cl. 340—174 TF 11 Claims



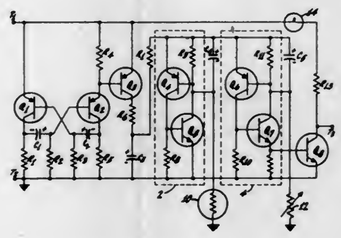
A single wall domain fanout circuit is provided by an electrical conductor of serpentine geometry having consecutive loops of increasing amplitude. Increasing numbers of domains, associated with consecutive loops, propagate interactions therebetween responsive to an information domain.

3,680,067
DOMAIN PROPAGATION CIRCUIT
Woo Foung Chow, Berkeley Heights, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Nov. 16, 1970, Ser. No. 89,821
Int. Cl. G11c *15/00, 11/14*
U.S. Cl. 340—174 TF 15 Claims



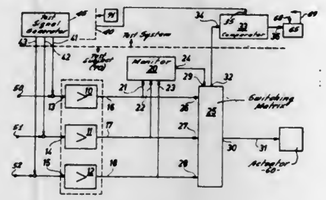
An autonomous scanning circuit is realized by an arrangement of magnetically soft elements on the surface of a material in which single wall domains can be moved. Information representative of the conditions of a set of lines is stored in a domain register and compared with that of a previous scan period similarly stored. The expected one of two significant outputs from any given line is controlled by a unique domain circuit which remembers the next preceding output associated with that line.

3,680,068
ALARM CIRCUIT
George D. Hanchett, Summit, N.J., assignor to RCA Corporation, New York, N.Y.
Filed Sept. 5, 1968, Ser. No. 757,573
Claims priority, application Great Britain, May 15, 1968, 23,101/68
Int. Cl. G08b *23/00*
U.S. Cl. 340—213 6 Claims



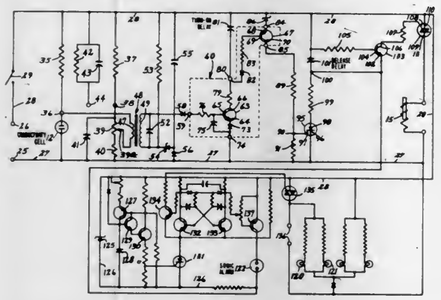
Disclosed is an alarm circuit for detecting change in the condition of an ambient being monitored. Two voltage dependent regenerative switches are connected in parallel with a power supply that provides an intermittent voltage. A condition sensitive element is coupled to the circuit to cause one of said regenerative switches to be in a conducting state as a function of the condition being monitored. When a change occurs in the ambient, the other regenerative switch becomes conductive thereby activating an alarm device which is coupled thereto.

3,680,069
TESTING OF REDUNDANT CONTROL SYSTEMS
Dietrich Neumann, and George Pattberg, both of Bremen, Germany, assignors to Vereinigte Flugtechnische Werke-Fokker GmbH, Bremen, Germany
Filed Sept. 14, 1970, Ser. No. 71,842
Claims priority, application Germany, Oct. 17, 1969, P 19 52 349.0
Int. Cl. G08b *29/00*
U.S. Cl. 340—214 20 Claims



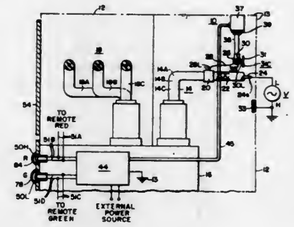
Testing equipment for aircraft, redundant control systems provides preliminary test of the testing equipment, then tests operativeness of the monitor which detects normally parallel operation of these systems and, finally, parallel operation of the control circuits is tested with the aid of the monitor.

3,680,070
ELECTRONIC CONTROL MEANS FOR DISPENSING APPARATUS
Marcus I. Nystuen, St. Paul, Minn., assignor to Economics Laboratory, Inc., St. Paul, Minn.
Filed May 25, 1970, Ser. No. 40,206
Int. Cl. G08b *21/00*
U.S. Cl. 340—244 9 Claims



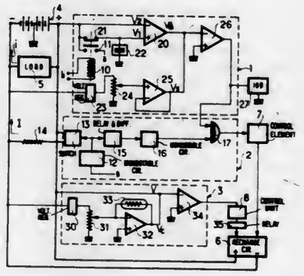
An electrical bridge circuit having a conductivity cell in one leg thereof, normally biased away from the null point so that a signal is produced by the bridge when the conductivity cell is operating at a desired set point. A semiconductor switching circuit is attached to a solenoid valve to vary material added to a solution, such as soap mixed with water. A combination of switching circuit bias, the signal from the bridge and a signal platform produced by a zener diode during portions of the positive cycle of an alternating power source, normally maintain the switch in a non-conducting state but sufficient variation of the conductivity cell in a direction caused by low conductivity, or too little material in the solution, produces a sufficient signal to switch the semiconductor switch into a conducting state to operate the solenoid valve.

3,680,071
VOLTAGE INDICATOR FOR HIGH VOLTAGE SWITCHGEAR
Richard J. Burgess, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Dec. 24, 1970, Ser. No. 101,347
Int. Cl. G08b *21/00*
U.S. Cl. 340—248 R 14 Claims



A neon glow tube is mounted proximate to the high voltage conductors of metalclad or metal enclosed switch-gear. In the presence of high voltage on these conductors the tube glows. A light sensing device such as a cesium cell detects the glow or light from the neon tube and converts it to electrical energy which may be amplified through a suitable amplifying means and transmitted to a remote indicator. Capacitive coupling between the metal housing of the switchgear and a flat plate attached to the flow tube is used to complete the effective circuit for the glow tube. The glow tube and cesium cell may be mounted within a porcelain enclosed cylinder to avoid the effect of ambient light.

3,680,072
STORAGE BATTERY MONITORING APPARATUS
Gerard Charbonnier, Marolles-en-Hurepoix, and Gerard Gauthier, Montrouge, both of France, assignors to Compagnie Generale D'Automatisme, Paris, France
Filed Jan. 26, 1971, Ser. No. 109,918
Int. Cl. G08b *21/00*; H02j *7/00*
U.S. Cl. 340—249 12 Claims

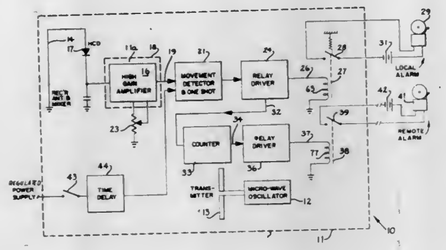


An apparatus for monitoring the charge of a storage battery which gives an indication of the state of the charge. The charge is monitored by placing a current pulse through the internal resistance of the battery and monitoring the change in voltage at the terminals of the battery. The apparatus also includes a recharging circuit for recharging the battery when its charge falls below a predetermined level and a control circuit for stopping the recharging of the battery when the battery becomes fully charged.

3,680,073
INTRUSION ALARM SYSTEM

Harold D. Humphrey, and Richard O. Juengel, both of San Jose, Calif., assignors to Electro-Security Devices, San Jose, Calif.

Filed Feb. 18, 1970, Ser. No. 12,392
Int. Cl. G08b *13/18*
U.S. Cl. 340—258 A **6 Claims**

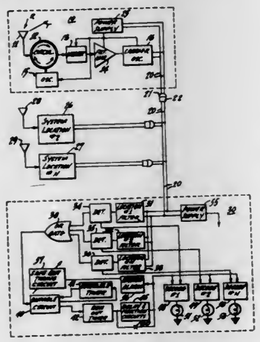


An intrusion alarm system for monitoring a spacial zone to detect the occurrence of movement of an object within the zone consists of an oscillator providing R.F. signals from a radiating antenna coupled to the oscillator to propagate an R.F. field of signals within the zone being monitored, and a chassis having a portion shielded from the R.F. propagation of the antenna and disposed adjacent the antenna. The system further includes a receiving antenna adjacent the chassis for receiving the signals and modulations thereof caused by movement of an object within the field. A high gain amplifier, carried by the shielded portion of the chassis, amplifies the modulations of the received signals. Detecting means coupled to the amplifier provides an output signal in response to the amplified modulations. The output signal is adapted to activate means for manifesting occurrence of a moving object within the zone. Both local and remote alarms are actuated by the detecting system, the remote alarm being actuated only upon the occurrence of a predetermined number of detected movements.

3,680,074
INTRUSION SYSTEMS EMPLOYING DIGITAL PROCESSING CIRCUITRY

Zeev Lieser, 1048 Coolidge Road, Elizabeth, N.J.

Filed Nov. 3, 1969, Ser. No. 873,550
Int. Cl. G08b *25/00*; H03k *23/00*
U.S. Cl. 340—258 A **12 Claims**



A plurality of Doppler systems are utilized to monitor a plurality of locations against intrusions by radiating energy covering the volume enclosed by said location and providing a Doppler frequency shift for the presence of an intruder. Each of said Doppler signals if present are impressed upon a carrier frequency and transmitted for propagated along a common path to a monitor location.

A plurality of detector circuits at the monitor location each respond to one of said carrier frequencies to provide an output signal representative of said Doppler frequency generated by said one location. A gating circuit has a plurality of input terminals each coupled to one of said detector circuits to provide an output signal between first and second levels having a repetition rate determined by said Doppler frequency.

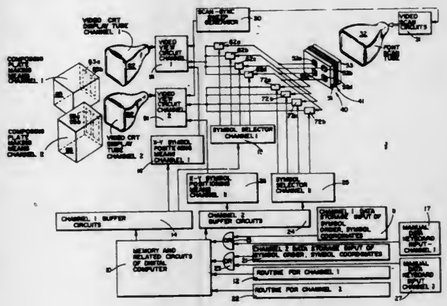
A first timing circuit is caused to initiate a time delay upon activation thereof by said first voltage level from said gate and resets upon receipt of said second voltage level. A second timing circuit commmences a larger time delay on receipt of said second voltage level from said gate and if not reset by said first circuit indicates that the receipt of said transmitted signal along said path was in fact a true Doppler frequency.

The processing circuit including the first and second timing circuits further includes alarm activating means and a plurality of location gates to indicate to a security guard both the presence of a true Doppler frequency and, therefore an intrusion, and the locations at which the intrusion is taking place.

3,680,075
SYSTEM FOR COMPOSITION OF SYMBOLS

Cedric F. O'Donnell, Fullerton; Richard C. Platzek, Whittier, and James S. Sweeney, Laguna Beach, all of Calif., assignors to North American Rockwell Corporation

Filed May 4, 1970, Ser. No. 34,232
Int. Cl. G06f *3/14*
U.S. Cl. 340—324 A **16 Claims**

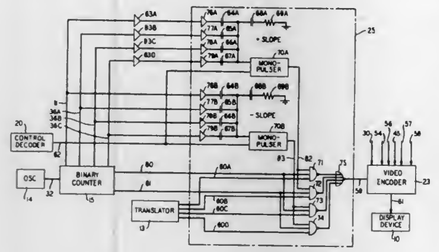


A system for composition of symbols in inclusive of a first means for scanning a plurality of the symbols simultaneously. The system comprises a second means which is responsive to the first means for imaging the scanning of all the symbols simultaneously and for sensing the scanned symbols. The system also provides for a third means which includes a computer system and which is in communication with the second means for automatically selecting the symbols in a predetermined order and placing the symbols in predetermined locations thereby enabling a preselected composition of the symbols to be created. A fourth means is in communication with the third means for permanently recording the composition on a permanent medium. Symbols may be alternatively injected by a fifth means into the computer portion of the third means by utilization of a manual keyboard.

3,680,076
DATA DISPLAY SYSTEMS

Kenneth John Duffek, Woodridge, and Thomas Hoyt Nolan, Westmont, both of Ill., assignors to Western Electric Company, Incorporated, New York, N.Y.

Filed July 13, 1970, Ser. No. 54,399
Int. Cl. G06f *3/14*
U.S. Cl. 340—324 A **14 Claims**

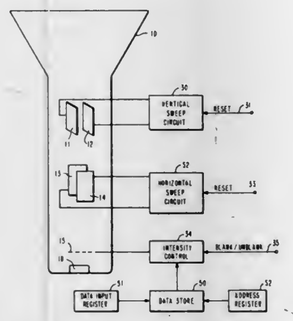


A digitally controlled raster-type data display system utilizes a special circuit for generating the diagonal-line portions of characters to be displayed on the display system comprising a time-delayed monopulser circuit actuated by a plurality of time-constant circuits combinationally selected by selection means within the display system. This results in high resolution of characters displayed while using less circuitry for character generation than previously taught by the art for an equivalent degree of resolution of displayed characters.

3,680,077
METHOD OF SCROLLING INFORMATION DISPLAYED ON CATHODE RAY TUBE

Verlin L. Hoberecht, New Paltz, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed July 31, 1970, Ser. No. 60,048
Int. Cl. G06f *3/14*
U.S. Cl. 340—324 A **11 Claims**

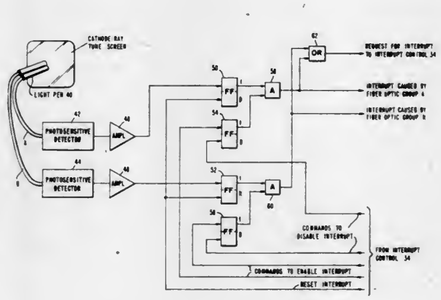


A method of scrolling up or down on the face of a television type display device is described where frames are repetitively generated, and video information cyclically supplied by a storage device is displayed during each frame. The method involves selectively changing the cycle of the frames generated on the face of the cathode ray tube to commence at a home position or initial starting point at any selected storage location in the cyclical storage device. This is accomplished by the method steps of storing a home position character at any storage location in the cyclical storage device, initiating a new frame starting from the home position whenever the home position character is detected, and moving the home position character to different storage locations to scroll up or down.

3,680,078
LIGHT PEN ARRANGEMENT FOR PROVIDING THREE DEGREES OF FREEDOM FOR A LIGHT PEN IN AN INTERACTIVE GRAPHICS SYSTEM

Herbert B. Baskin, Pinole, Calif.; Laszlo A. Belady, Yorktown Heights; Carlo J. Evangelisti, Jefferson Valley, both of N.Y., and Stephen P. Morse, Paris, France, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 23, 1969, Ser. No. 887,702
Int. Cl. G06f *3/14*
U.S. Cl. 340—324 A **2 Claims**



A light pen arrangement is described wherein the light pen has three degrees of freedom, viz. two-dimensional translation in the (X,Y) plane of a cathode ray tube screen and rotation about the projection of its own longitudinal axis to the normal of the screen. To sense the angular position of the light pen, at least two independent light sensitive elements, i.e., fiber optic bundles are required, the latter being suitably provided by dividing the bundle of fiber optics emerging from a single light pen into at least two separate groups and having photosensitive transducer respectively associated with each of the separate groups. When the light pen is placed on the screen and its presence there is sensed, an (X,Y) value pair is stored for the location of each light sensitive area of the light pen, i.e., each of the aforementioned separate fiber optic groups. The storing is accomplished by having an electron beam draw lines or points in each light sensitive area and, receiving in response thereto, interrupts for points or lines in the field of view of each fiber optic group, the (X,Y) coordinate of each point or line causing an interrupt and the fiber optic group that picked up the interrupt is now known to the computer or other control arrangement controlling the cathode ray tube. The computer or control arrangement can then compute the (X,Y) location of the light pen as the centroid of the individual areas and the angular position of the pen.

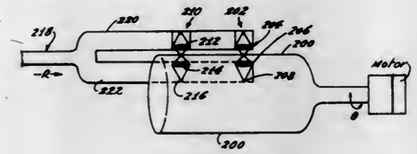
3,680,079
APPARATUS FOR PROVIDING CONVERSION BETWEEN ANALOG AND DIGITAL VALUES

Charles P. Hedges, 3532 B Midwest Drive, Bryan, Tex.

Filed June 8, 1970, Ser. No. 44,001
Int. Cl. G08c *9/00*
U.S. Cl. 340—347 P **16 Claims**

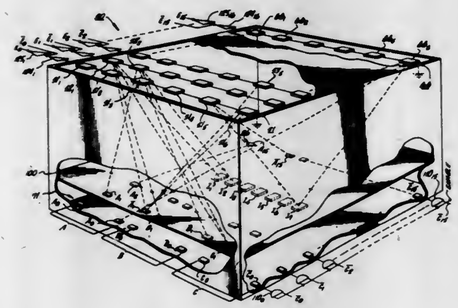
This invention relates to an encoder or converter which provides a conversion between analog and digital values of a functional relationship between two independent variables. For example, the invention provides a conversion between analog

and digital values of a function R sin θ. The conversion is provided in accordance with the synchronous movement along



two coordinate axes of a plurality of encoded patterns relative to sensors associated with the patterns.

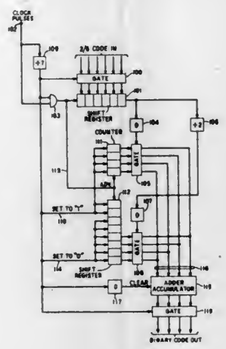
3,680,080
OPTICAL LOGIC FUNCTION GENERATOR
Douglas Raymond Maure, Santa Ana, Calif., assignor to Optical Memory Systems, Inc., Santa Ana, Calif.
Filed June 29, 1970, Ser. No. 50,551
Int. Cl. G06f 7/00
U.S. Cl. 340—347 DD **34 Claims**



An optical logic function generator, capable of generating a vast number of logical functions, is disclosed. The optical generator comprises a housing for an array of light sensing elements, an array of light emitting elements and an optical mask positioned therebetween. Given m sensors and n emitters, mn portions of a mask are positioned in mn light transmission paths between the sensors and the emitters. The mask portions may either pass or block light, depending on the binary function desired. More than one emitter may be energized simultaneously. At least a pair of sensors are connected in a series electrical circuit between a point of reference potential and an output terminal. Interchangeable masks and selectively operable input and output circuitry provide the capability of performing computer operations with the optical logic disclosed by this invention.

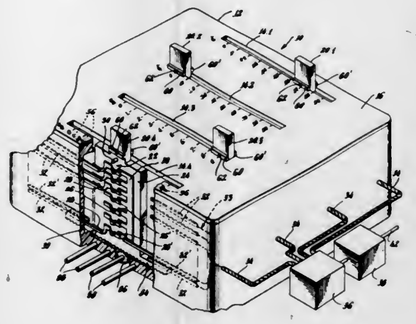
3,680,081
NUMERICAL CONVERSION
Philip C. Richards, Geneva, Ill., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Dec. 23, 1969, Ser. No. 887,606
Int. Cl. H03k 13/24
U.S. Cl. 340—347 DD **6 Claims**

Conversion apparatus and methods for converting two-out-of-six digital code signals into binary code signals. The numerical value of the positions of the two "1's" in the two-out-of-six code signals are added together, along with a constant, shifted by the value of the position of the leftmost "1." This scheme is implemented by programming a general purpose



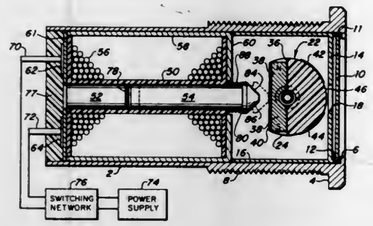
computer, and by special purpose hardware, both using shift registers and adding circuits.

3,680,082
NUMERICAL ENCODING KEYBOARD
Fredric E. Zucker, Stamford, Conn., assignor to Pitney-Bowes, Inc., Stamford, Conn.
Filed Jan. 18, 1971, Ser. No. 107,175
Int. Cl. G08c 1/00
U.S. Cl. 340—365 **13 Claims**



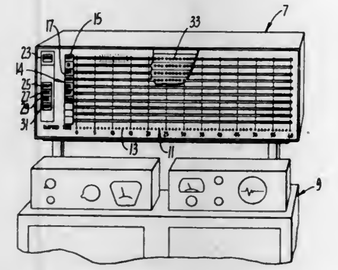
An encoder transmits numerical data in the form of coded bursts of audio frequency tones. The encoder includes levers which move through successive index positions in slots having numerical indicia. Each lever represents a different decimal order digit of the price of merchandise sold. Each lever is provided with a plurality of encoding switches which are moved past stationary switch actuators. Different groups of switch actuators are aligned with successive index positions of the levers to actuate selected pairs of switches according to the numerical indicia with which the levers are aligned. A tone generator is electrically coupled to the switches by a multiplexer to produce a serial output comprising frequencies which uniquely identify the selected data.

3,680,083
THREE POSITION ELECTROMAGNETIC INDICATOR
George E. Pihl, Abington, Mass., assignor to Miniature Electronic Components Corp., Holbrook, Mass.
Filed Jan. 25, 1971, Ser. No. 109,138
Int. Cl. G08b 5/22, 5/26
U.S. Cl. 340—373 R **18 Claims**



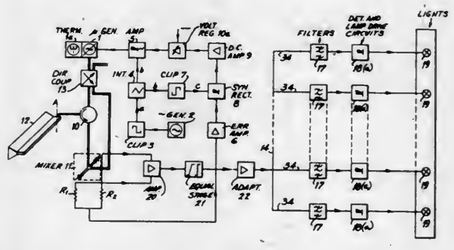
A three-position indicating device including an indicator member having localized magnetic poles and rotatably mounted for positioning in any one of three positions by an electromagnetic structure. The electromagnetic structure essentially comprises (1) a movable pole piece which is adapted to lock the indicator member in an intermediate "center" position or to unlock the indicator member so that it may be moved to either of two limit positions each determined by engagement of said indicator member with said pole piece, and (2) one or two coils for establishing magnetic fields to effect movement of the pole piece to unlock said indicator member and also to effect movement of the indicator member to one or the other of its two limit positions by interaction of said electromagnetic fields with the localized magnetic poles of said indicator member.

3,680,084
STATUS DISPLAY PANEL INDICATING PERFORMANCE AS A FUNCTION OF TIME WITH RECORD FEATURE
Denis Franklin, 510 Hazel Ave, Millbrae, Calif.; Jerald S. Gingold, 136 Merced Drive, San Bruno, Calif.; Ronald B. Oxenham, 89 Perita Drive, Daly City, Calif., and Raymond E. Rogers, 2126 "C" 62nd Ave, Oakland, Calif.
Filed Aug. 3, 1970, Ser. No. 60,323
Int. Cl. G08b 21/00
U.S. Cl. 340—381 **6 Claims**



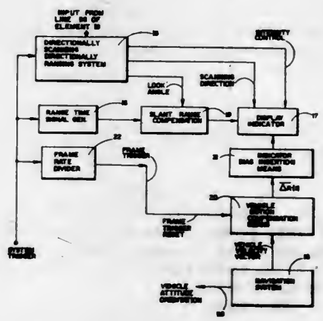
The device of the present invention, termed a resuscigraph, coordinates and organizes systematically the effort of an individual or, more typically, a team of individuals in the performance of a given job involving multiple operations to be done either simultaneously or in a certain sequence as in the case of an attempt to resuscitate a person suffering a cardiac arrest, a common event in nearly every hospital. It is particularly useful in circumstances where the job to be done is of an emergency nature or where limitations of time, lack of personnel for purely coordinating purposes, or other factors, limit verbal intercommunication between team members.

3,680,085
ANTI-COLLISION APPARATUS FOR VEHICLES
Giovanni Del Signore, Via San Matteo in Arcertri 25, Firenze, Italy
Filed Jan. 21, 1970, Ser. No. 4,537
Claims priority, application Italy, Jan. 21, 1969, 4428 A/69; Jan. 16, 1970, 9325 A/70
Int. Cl. G01s 9/24
U.S. Cl. 343—14 **5 Claims**



A safety apparatus or anti-collision device to be installed on motor vehicles for detecting and indicating obstacles encountered on a road during conditions of poor or reduced visibility. The apparatus includes wave propagation means to emit a continuous periodically frequency modulated wave with, for example, a triangular pattern. The wave is emitted by an antenna and echo waves reflected by obstacles are received and mixed with a portion of the transmitted wave to obtain a raw signal which is passed through filters to activate one of a plurality of transducers including, for example, light bulbs which are illuminated to indicate the presence and distance of the obstacles. Arrangements are made to limit the number of light bulbs which are illuminated.

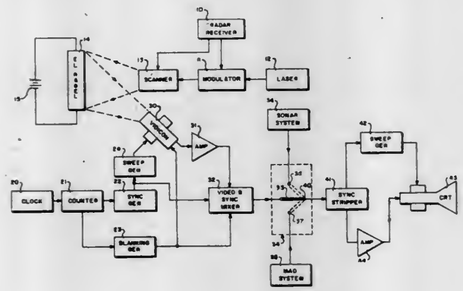
3,680,086
GROUND MAPPING RADAR SYSTEM
Jacob E. Valstar, Orange, Calif., assignor to North American Rockwell Corporation, El Segundo, Calif.
Filed Nov. 26, 1969, Ser. No. 880,821
Int. Cl. G01s 9/02
U.S. Cl. 343—5 CM **14 Claims**



An azimuthally scanning, directionally ranging system adapted for airborne use in a mapping application. Means

cooperating with an autonavigation system compensates for system platform motion occurring during each azimuthal scan for referencing a mapping display to a preselected position and orientation in a preselected horizon plane. Navigation check point means cooperating with the ranging system determines motion of the system platform relative to a selected target, to allow monitoring of the navigation system and three-dimensional checkpointing.

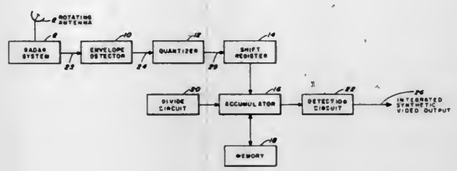
3,680,087
SCAN CONVERSION THROUGH ELECTROLUMINESCENT STORAGE PANELS
Walter R. Gustafson, Furlong; William H. McMillen, Perkasie, and Lewis Lippel, Jr., Warminster, all of Pa., assignors to The United States of America as represented by the Secretary of the Navy
Filed Oct. 20, 1970, Ser. No. 82,243
Int. Cl. G01s 9/00
U.S. Cl. 343—5 SC **9 Claims**



A system for displaying on a cathode ray tube data contained in modulating signals not compatible with the scan of the cathode ray tube. The modulating signals are first applied to an electro-optic crystal for modulating a laser beam in order to present the information on an electroluminescent storage panel. A vidicon camera having a scan compatible with the CRT senses the information on the electroluminescent panel and provides an electrical signal containing the data and this is displayed on the CRT. A plurality of additional signals are also adapted for display on the same CRT. A manual selector determines which of the plurality of signals is to be displayed.

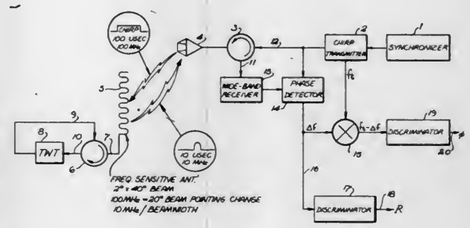
3,680,088
RECURSIVE INTEGRATOR
Kenneth Owen Bryant, Ridgecrest; William R. Morrow, Inyokern, and Vernon J. Logue, Ridgecrest, all of Calif., assignors to The United States of America as represented by the Secretary of the Navy
Filed March 30, 1970, Ser. No. 23,645
Int. Cl. G01s 9/02
U.S. Cl. 343—5 DP **6 Claims**

An apparatus and method for weighting new and stored radar information. For each hit (or detected noise pulse), a quantizer sends a digital signal to a corresponding storage bin. The information from the current signal and respective previous signals is accumulated, recorded in a memory circuit for



future retrieval and sent to a detection circuit which provides an output. After a predetermined number of hits the accumulation is divided by two, thereby effectively reducing the influence of previous signals while retaining their significance.

3,680,089
AIRCRAFT ELECTRONIC LANDING RESPONSER SYSTEM USING AIRBORNE CHIRP INTERROGATION
Lon L. Sanders, Rolling Hills, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.
Filed March 30, 1970, Ser. No. 23,869
Int. Cl. G01s 9/56, 9/23
U.S. Cl. 343—6.5 R **10 Claims**



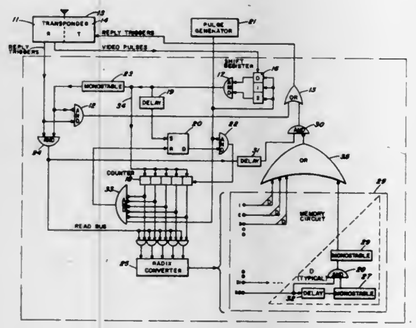
An instrument landing system particularly adapted for VTOL aircraft, including an airborne chirp pulsed interrogator. A ground station antenna has the characteristic of directively transmitting and receiving at a beam angle which is a function of frequency.

The ground station also includes a power amplifier and RF hybriding apparatus, so that the ground station can perform as a selective amplifying reflector or phase coherent repeater. Reradiated energy from the ground station is then at the same angle as reception. The reradiated frequency is compared with the airborne chirp frequency (as it correlates with ground station antenna beam angle) to obtain an air-derived approach angle.

Range is determined in the air by correlating reradiated frequency with chirp frequency as it relates to time delay (round trip transmission time).

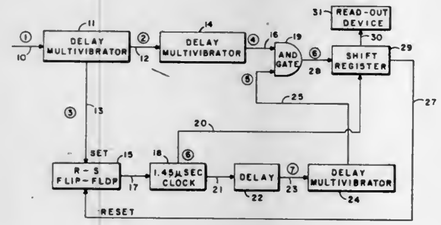
The ground antenna beam is relatively broad in the plane orthogonal to the plane of angle measurement.

3,680,090
NON-MAIN BEAM REFLECTED IFF INTERROGATION REJECTOR
Walton B. Bishop, Oxon Hill, Md., assignor to The United States of America as represented by the Secretary of the Navy
Filed July 27, 1970, Ser. No. 58,321
Int. Cl. G01s 9/56
U.S. Cl. 343—6.5 LC **7 Claims**



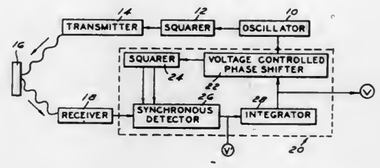
A technique of utilizing the measured time between reception of a sidelobe suppression signal and reflected signals of an IFF interrogation to inhibit further responses to succeeding reflected path interrogations.

3,680,091
PULSE TRAIN FRAMING AND INTERMEDIATE PULSE SPACING ACCURACY TEST CIRCUIT
Kenneth R. Rutherford, Cedar Rapids, Iowa, and Arthur C. Strebe, St. Petersburg, Fla., assignors to Collins Radio Company, Cedar Rapids, Iowa
Filed July 21, 1970, Ser. No. 56,901
Int. Cl. G01s 9/56
U.S. Cl. 343—6.5 R **7 Claims**



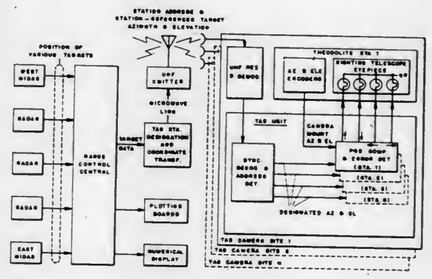
A coded pulse train tolerance check is provided by utilizing the first of a train of input pulses to activate a timing clock pulse source. Pulses in the input train bearing a predetermined time coincidence with the clock pulses are used to set a shift register. The transfer action of the register is also under timing clock control. At the conclusion of a decoding cycle, the code word defined by the input pulse train is stored in the register only if each pulse in the input train is present and in its assigned time-space position with respect to the initial one of the input pulses.

3,680,092
RANGING SYSTEM USING PHASE DETECTION
Gerald C. Scott, Ann Arbor, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed March 30, 1970, Ser. No. 23,651
Int. Cl. G01s 9/04, 9/46
U.S. Cl. 343—7 A **21 Claims**



A modulated alternating waveform produced by an oscillator is transmitted to a target and a receiver receives reflections of the waveform from the target. The waveform of the modulation also is applied through a voltage controlled phase shifter and squaring amplifier to a synchronous detector coupled to the receiver. In the synchronous detector, the signal and any spurious noise from the receiver is multiplied by the waveform from the squaring amplifier in a manner that cancels out all spurious noise. A DC voltage representative of the phase shift produced in the modulation of the received signal by the distance from transmitter to target to receiver is applied to an integrator. Integrator output is applied to the voltage controlled phase shifter and is representative of the distance traveled by the waveform.

3,680,093
DIGITAL TARGET ACQUISITION SYSTEM
Claude W. Brown, China Lake, Calif., assignor to The United States of America as represented by the Secretary of the Navy
Filed Feb. 11, 1970, Ser. No. 10,542
Int. Cl. G01s 9/02
U.S. Cl. 343—7 ED **9 Claims**

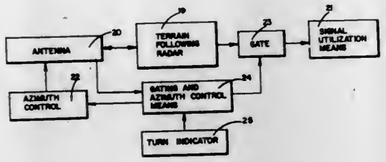


A digital target acquisition system for assisting the operators of manually controlled theodolites acquiring fast maneuvering targets. The system compares the pointing angles of a theodolite to acquisition orders transmitted by a remote range-control central and supplies the theodolite operator with visual error indications that will enable him to train his camera on the designated target. The system is capable of simultaneously assisting the operators of up to four theodolites in acquiring four different targets.

3,680,094
TERRAIN-WARNING RADAR SYSTEM

Guy P. Bayle, Orange, and Douglas A. Johnson, Garden Grove, both of Calif., assignors to North American Aviation, Inc.

Filed April 4, 1966, Ser. No. 540,053
Int. Cl. G01s 9/02
U.S. Cl. 343—7 TA 8 Claims

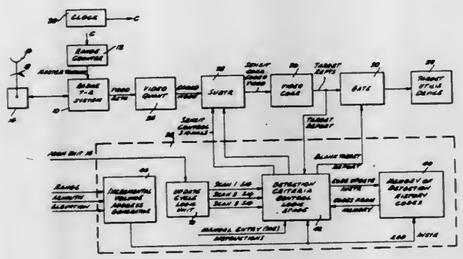


In a directionally-ranging device adapted for airborne use as a terrain-following system, means for limiting or modifying the effective field of view of the system during a lateral or turning maneuver of a utilizing vehicle, to view that terrain about the predicted flight path associated with such maneuver. The azimuth direction angle of the directivity of the directionally-ranging device is varied from a forward direction toward the direction of the turn maneuver, while range-gating means blanks-out signals received from terrain lying in such maneuver direction and beyond the predicted flight path, whereby the utility of such terrain following system during lateral maneuvering is improved.

3,680,095
AUTOMATIC DETECTION CRITERIA CONTROL UNIT FOR PENCIL BEAM RADARS

Norol T. Evans, San Pedro, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed April 17, 1967, Ser. No. 631,307
Int. Cl. G01s 9/02
U.S. Cl. 343—7 A 20 Claims

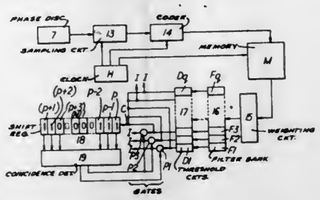


An automatic detection criteria control system for pencil beam radar in which video returns are coded and correlated to provide target reports. The amplitude of the coded returns from each range bin is subject to modification as a function of the history of target detection in an incremental volume of space which includes the particular range bin. The system includes a memory in which a target-detection-history indicating code is stored for each incremental volume. The code is read out, in real time, with the video returns from all range bins of a given incremental volume. The codes are updated during a sequence of update cycles to indicate the latest history of target detection in each incremental volume.

3,680,096
CIRCUITS ELIMINATING LARGE CLUTTER ECHOES

Henri J. Boac, Paris, France, assignor to International Standard Electric Corporation, New York, N.Y.

Filed May 28, 1970, Ser. No. 41,524
Int. Cl. G01s 9/42
U.S. Cl. 343—7.7 4 Claims

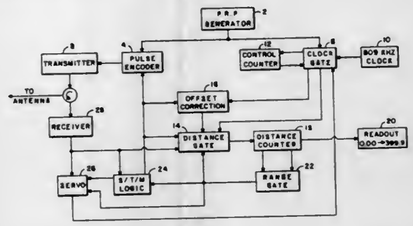


A digital Doppler MTI radar system including pulse Doppler video signal digital encoding by discrete range increments over a plurality of system pulse repetition intervals, sampling, averaging and detecting signals for developing an analog video train representative of target echo history over said plural repetition intervals, and a bank of Doppler filters covering the anticipated range of target velocities. Circuits are included for "counting" the range increments (in a shift register) during which reflective media of large radial size and low velocity, such as wind-swayed forested areas and hydrometeoric phenomena, present return signal energy. Lower frequency Doppler channels are disabled during the time of reception of echoes from said media, eliminating this source of clutter without also eliminating higher velocity echo reception.

3,680,097
ALL DIGITAL DISTANCE MEASURING EQUIPMENT

Dean P. Huntsinger, Marion, Iowa, assignor to Collins Radio Company, Cedar Rapids, Iowa

Filed Oct. 28, 1969, Ser. No. 870,026
Int. Cl. G01s 9/14
U.S. Cl. 343—7.3 10 Claims



This invention relates to all-digital distance-measuring radio equipment wherein all time measurements are performed by counting oscillator pulses, and a single counter performs both search and memory functions while yielding directly readable distance values.

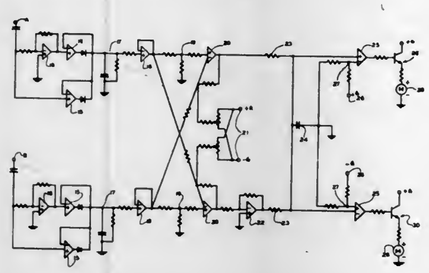
3,680,098
LARGE DYNAMIC RANGE COHERENT RADAR PROCESSOR

Paul E. Harris, and George E. Mader, both of Syracuse, N.Y., assignors to Syracuse University Research Corporation, Syracuse, N.Y.

Filed Nov. 4, 1970, Ser. No. 86,906
Int. Cl. G01s 9/42
U.S. Cl. 343—7.7 5 Claims

A processor for a coherent radar detecting direction of motion can distinguish between targets which oscillate from those

having net motion and uses a radar which splits the received signals into two equal parts containing doppler components, shifting one part by 90°. The invention is embodied in the processor whose inputs are these doppler components, usually audio or subaudio frequency signals. The processor shifts the relative phase of the doppler components an additional 90° and combines the shifted components in sum and difference

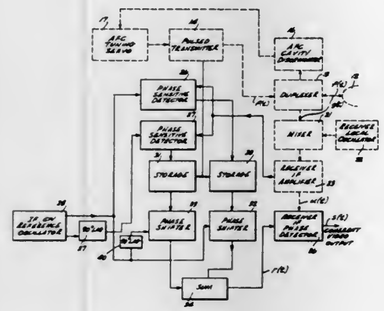


circuits, thus isolating signals due to outgoing target motion in one channel and signals due to incoming target motion in the other channel. The separated signals are then detected, integrated, and combined so as to measure net motion of a moving target. The net motion signal is then applied to a threshold detector whose output indicates an alarm. Unity gain circuitry is used, avoiding automatic gain control whose adaptation time is sometimes prohibitively long.

3,680,099
NON-COHERENT RADAR SYSTEM WITH MEANS TO CORRECT THE PHASE OF THE RETURN SIGNAL

Elvin E. Herman, and Henry L. McCord, both of Los Angeles, Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed June 21, 1965, Ser. No. 465,793
Int. Cl. G01s 9/42
U.S. Cl. 343—7.7 9 Claims

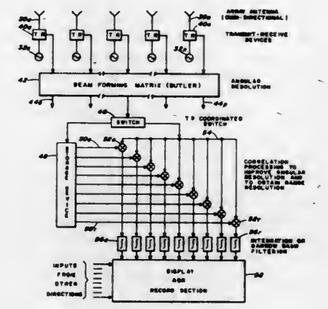


A pulsed radar including a phase detector connected to detect rf phase variations between transmitted pulses and a stable clock signal for generating an error signal which is fed to a phase shifter which, in turn, is connected in circuit between the radar receiver and a *c–w* reference signal generator for shifting the phase of the echo signal relative to the *c–w* reference signal for removing the relative phase variation between the echo signal and the c-w reference signal resulting from random starting phase variation in the transmitted signals.

3,680,100
RANDOMLY PHASE CODED ANTENNA TECHNIQUE FOR SEARCH RADAR

Hermann H. Woerrlein, Dunkirk, Md., assignor to The United States of America as represented by the Secretary of the Navy

Filed Dec. 15, 1970, Ser. No. 98,248
Int. Cl. G01s 9/06
U.S. Cl. 343—11 R 11 Claims

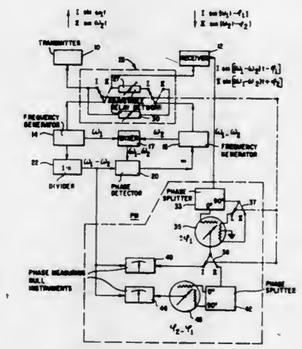


A search radar having an array antenna wherein the individual antenna array elements are energized by random phases having a beam forming matrix to sense direction dependent phase codes in the antenna far field, which phase codes are in turn used in correlation processing in the radar receiver for the purpose of obtaining angular resolution and radar sensitivity.

3,680,101
DISTANCE MEASURING DEVICE

Carl-Erik Granqvist, Lidingo, Sweden, assignor to AGA Aktiebolag, Lidingo, Sweden

Filed Aug. 10, 1970, Ser. No. 62,548
Claims priority, application Sweden, Aug. 11, 1969, 11120/69
Int. Cl. G01s 9/24
U.S. Cl. 343—14 8 Claims



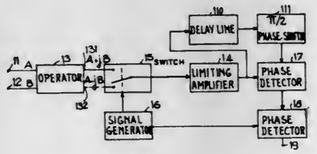
A distance measuring device wherein the phase difference between a transmitted signal and the received reflection thereof is used to determine the distance the received signal has traversed. The device generates a pair of electromagnetic waves at two accurately known frequencies. The first frequency wave is transmitted and the other frequency wave is used to

modulate the received reflected wave in the receiver to produce a difference frequency. A phase measuring circuit compares the phase of this difference frequency to the phase of a signal of the same difference frequency that has been generated locally within the device. To resolve the ambiguity in the resulting phase difference measurement obtained, a switching means is provided to reverse the roles of the generated waves by connecting the second frequency wave to the transmitter and connecting the first frequency wave to the modulatable receiver. This same switching means also changes the phase measuring circuit so that the phase difference associated with the modulated received second frequency is subtracted from the first phase difference. By providing a phase difference measurement at a difference frequency having an associated effective wave length larger than the distance to be measured any ambiguity regarding the number of wavelengths contained in the measured distance is eliminated.

3,680,102
RECEIVERS FOR ANGULAR MEASUREMENT SYSTEMS, IN PARTICULAR TO RADAR SYSTEM RECEIVERS

Henri Poinsard, Paris, France, assignor to Thomson-CSF

Filed Feb. 12, 1970, Ser. No. 11,036
Claims priority, application France, Feb. 19, 1969, 6904134
Int. Cl. G01s 9/22, 9/52
U.S. Cl. 343—16 M **9 Claims**

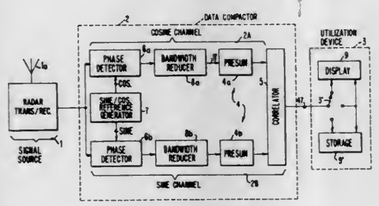


In a receiver of an angular measurement system of the type in which an angular indication is given by the ratio of two simultaneously received signals A and B, the useful signal is obtained through alternately phase detecting signals A + jB and A − jB with either signal A or alternately signals A − jB and A + jB, and alternately inverting the sign of the phase detection signal thus obtained. Distortions due to amplification are thus avoided.

3,680,103
DATA PROCESSOR AND COMPACTOR THEREFOR

George G. Houser, San Diego, Calif., and Robert E. Jenkins, Owego, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed April 4, 1969, Ser. No. 813,453
Int. Cl. G01s 7/30
U.S. Cl. 343—17.1 R **26 Claims**

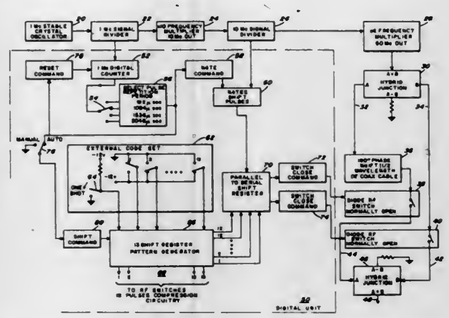


A data processing system and compaction means therefor sums groups of incoming data signals and provides a composite data signal for each group of signals summed. The composite signals are correlated in a predetermined sequence and provide correlated output signals indicative of the information contained in the plural data signals.

3,680,104
PHASE REVERSAL PULSE MODULATOR AND PULSE COMPRESSION FILTER FOR A COHERENT RADAR

Thomas A. Westaway, Provo, Utah, assignor to The United States of America as represented by the Secretary of the Navy

Filed July 22, 1970, Ser. No. 57,262
Int. Cl. G01s 9/233
U.S. Cl. 343—17.2 PC **10 Claims**

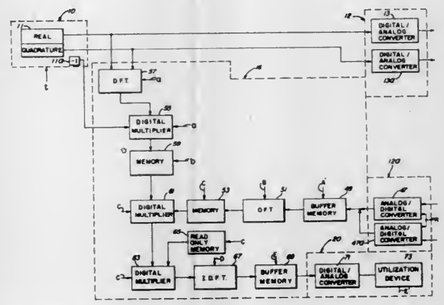


A coherent, 13 bit phase reversal pulse modulator and pulse compression filter for increasing the range resolution of a coherent radar. The transmitted pulse is subdivided into equal duration bits, and as the pulse is being formed each bit may or may not be shifted in phase determined by a digital code generator. The range resolution of which this pulse reversal modulated pulse is capable is achieved by processing the radar return signal in an approximation to a matched filter.

3,680,105
PULSE COMPRESSION RADAR SYSTEM

Bertram J. Goldstone, Lexington, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed Oct. 5, 1970, Ser. No. 77,768
Int. Cl. G01s 9/02
U.S. Cl. 343—17.2 PC **4 Claims**

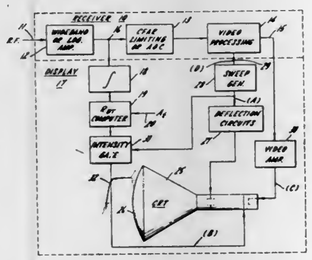


A pulse compression radar system wherein a coding signal indicative of the modulation to be impressed on a transmitted signal is read out of a read only memory and converted to: (a) an analog modulation signal impressed on a radio frequency carrier; and (b) the complex conjugate of the discrete Fourier transform of the coding signal stored in a memory. Each echo signal resulting from illumination of a different target by the modulated transmitted signal is converted to a corresponding digital form indicative of the modulation on each such echo signal, transformed in a discrete Fourier transform and correlated with the stored complex conjugate of the coding signal for the transmitted signal. The resulting correlation signal is weighted and then converted back to a time varying signal in an inverse discrete Fourier transform for utilization.

3,680,106
METHOD FOR DISPLAYING THE RANGE DETECTION CAPABILITY OF A SEARCH RADAR IN A NOISY ENVIRONMENT

Thomas P. Foley, Severna Park, Md., assignor to The United States of America as represented by the Secretary of the Navy

Filed May 7, 1963, Ser. No. 279,044
Int. Cl. G01s 7/36
U.S. Cl. 343—18 E **7 Claims**



A means of displaying the range detection capability of a search radar in a noisy environment comprising:

a constant false alarm radar receiver for receiving echo radio frequency signals reflected from targets and subject to broadband noise jamming, said receiver having a wideband amplifier of radio frequency and a constant false alarm limiting circuit therein;

a cathode ray display tube circuit including a sweep generator and a deflection circuit for producing cathode ray tube beam traces on the tube screen, and including two beam intensity controlling electrodes, said sweep generator being coupled to the synchronizing circuits of said receiver to synchronize the generation of sweep voltages for said deflection circuits and one of said intensity controlling electrodes being coupled to the video output of said receiver to paint targets on said screen in accordance with their range position from said receiver;

an integrator coupled to said receiver at the output of said wideband amplifier and the input of said constant false alarm limiting circuit to produce a voltage on its output averaging the received radio and noise jamming frequencies;

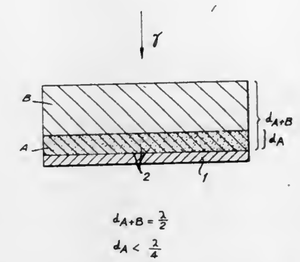
a burn-through range computer coupled to the output of said integrator and having an adjustable voltage input representative of target size, said computer producing a voltage representative of the burn-through range on an output thereof; and

an intensity gating means coupled to the output of said range computer and to the sweep generator to gate the burnthrough range voltage on an output thereof proportional to noise jamming frequency with respect to adjusted voltage representative of target size, said intensity gating means output being coupled to the other beam intensity controlling electrode of said cathode ray display tube to light intensity with said burnthrough range voltage the range areas on said tube screen being jammed whereby operators of the radar may control the display of target information as a function of anticipated target size to eliminate false target display.

3,680,107
WIDE BAND INTERFERENCE ABSORBER AND TECHNIQUE FOR ELECTROMAGNETIC RADIATION

Hans H. Meinke, Arorstrasse 21, Munich; Kurt Ullrich, Elchingerweg 6, II, Ulm-Boffingen, and Ludwig Wesch, Gaisbergstr 2, Heidelberg, all of Germany

Filed April 11, 1967, Ser. No. 634,020
Int. Cl. H01q 17/00
U.S. Cl. 343—18 A **8 Claims**

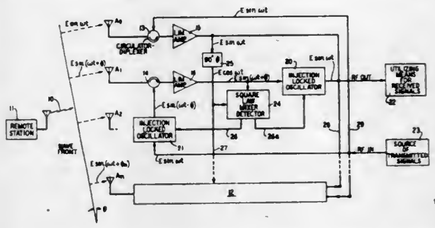


A multiple-stage interference-type absorber for extinguishing a wide band of high-frequency electromagnetic waves by interference. The absorber includes a reflecting base layer on which are superposed at least two further layers having in combination a total thickness of about λ/2 wherein λ is the average wavelength in the frequency band to be extinguished. One of the superposed layers is adjacent the base layer and consists of an embedding material in which fillers are embedded to impart to the material an increased relative magnetic permeability. This layer has a thickness which is less than λ/4. The other layer is of a loss-free material.

3,680,108
SELF-STEERING ARRAY REPEATER

Thomas Lawrence Osborne, Holmdel, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

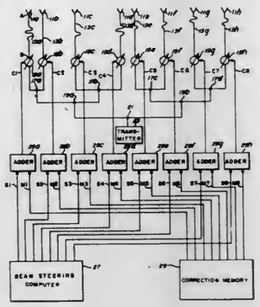
Filed June 9, 1970, Ser. No. 44,715
Int. Cl. H01q 3/26
U.S. Cl. 343—100 TD **11 Claims**



A self-steering phased antenna array repeater system in which signals from a distant source at two spaced receptors are relatively shifted in phase and combined in a square law mixer. The output mixer current is a function of their phase difference and indicates the direction in which the signals arrive. This current is used to bring the phase of received signals together for combining and to introduce the same phase difference but of opposite sign for re-radiation by applying the

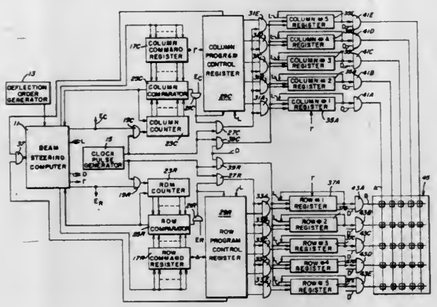
current as the control for at least one injection locked oscillator which produces a phase shift according to the same function as the mixer output.

3,680,109
PHASED ARRAY
Fritz Steudel, Sudbury, Mass., assignor to Raytheon Company, Lexington, Mass.
Filed Aug. 20, 1970, Ser. No. 65,460
Int. Cl. H01q 3/26
U.S. Cl. 343—100 SA **3 Claims**



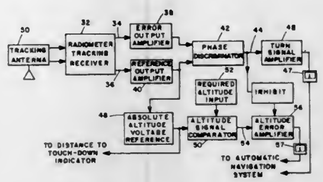
A corporate feed phased array for radio frequency energy, such array being adapted to frequency angle phase shifter scanning. The electrical length of each transmission line leading to each radiating element is randomly selected to permit the digital phase shifter associated with each radiating element to be randomly actuated to produce a collimated and deflected beam.

3,680,110
ANALOG FERRITE PHASE SHIFTER CONTROL CIRCUIT
Bertram J. Goldstone, Lexington, Mass., assignor to Raytheon Company, Lexington, Mass.
Filed Oct. 14, 1970, Ser. No. 80,706
Int. Cl. H01q 3/26
U.S. Cl. 343—100 SA **1 Claim**



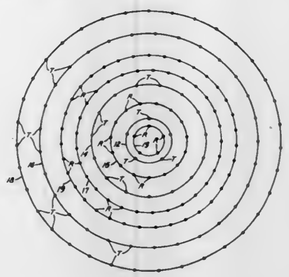
A control circuit for analog ferrite phase shifters in an antenna array wherein such phase shifters are arranged in rows and columns. The circuit includes a recirculating shift register for each row, each such register repetitively producing a "start" current flow signal for the phase shifters in each row and a recirculating shift register for each column, each such register repetitively producing a "stop" current flow signal for the phase shifters in each column. The various recirculating shift registers are programmed so that the time between the "start" and the "stop" current flow signal to each one of the phase shifters results in the proper average current to accomplish collimation and deflection of the beam from the antenna array.

3,680,111
RADIOMETRIC AIRCRAFT LANDING SYSTEM
Derling G. Killion, and Frank J. Janza, both of San Diego, Calif., assignors to Teledyne Ryan Aeronautical Company, San Diego, Calif.
Filed Oct. 12, 1970, Ser. No. 79,894
Int. Cl. G01w 1/00
U.S. Cl. 343—100 ME **10 Claims**



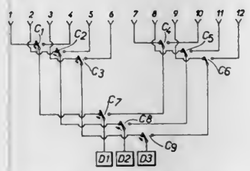
An aircraft landing system employing passive radiometer apparatus mounted in an aircraft to scan a specially arranged ground target, which will provide directional and altitude guidance in the vicinity of an airfield. The ground target extends along the desired flight path and is designed to cause large differences between horizontally and vertically polarized radiometric noise, easily detected and analyzed by the radiometer. Portions of the ground target may have augmented noise sources in specific patterns, for marking and identification purposes. The radiometer output can provide visual or audible aid to manual control, or be used to operate an automatic pilot, or the like.

3,680,112
REDIRECTIVE DUAL ARRAY ANTENNA
Richard K. Thomas, Wayne, Pa., assignor to General Electric Company
Filed July 28, 1969, Ser. No. 845,198
Int. Cl. H01q 3/26
U.S. Cl. 343—100 TD **1 Claim**



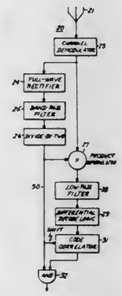
Two circularly symmetrical concentric phase-steerable antenna arrays, scaled 3/2 in proportion to the wavelength at which each is designed to operate, have homologous radiators arranged in rings symmetrical about the common center. The radii of successive rings in a given array are 2.5, 4.75, and 5.75 times the radius of the innermost ring; the angular spacing of the radiators in each ring, beginning with the innermost, is 72°, 24°; 12.4°; and 10.28°. Each receiving radiator is tied to its homologous transmitting radiator through a network which corrects the phase of the received information band by reference to a receiving phase signal transmitted from the transmitting station, then further corrects the phase of the thus corrected information band by reference to a transmitting phase signal transmitted from the receiving station, and converts the thus doubly corrected information band to the transmitting frequency. As a result of the double phase correction, the frequency-converted information band is phase-steered to the receiving station.

3,680,113
ANTENNA SYSTEM FOR SATELLITES
Bernard Louis Marcel Dorier, La Celle Saint-Cloud, and Denis Jacques Laedlein, Villennes-Sur-Seine, both of France, assignors to Societe Nationale D'Etude et de Construction de Moteurs D'Aviation, Paris, France
Filed Oct. 14, 1969, Ser. No. 866,342
Claims priority, application France, Oct. 15, 1968, 68170016
Int. Cl. H01q 3/26
U.S. Cl. 343—100 SA **7 Claims**



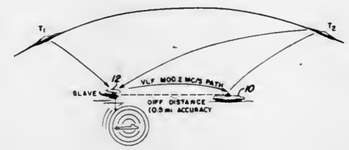
In a set of *n* antennas arranged along a circle, say on a satellite, only *m* antennas, say those facing Earth are operative at a time and are switched in as they pass into the operative area. The radiating lobes are constrained to be directed permanently towards a substantially unvarying area and the phase-shifting required is obtained by means of digital phase-shifters which operate stepwise, so as to make up for variations of the length of the path between an antenna as it revolves and Earth.

3,680,114
MODULATION FORMAT FOR SIGNAL ARRIVE TIME DETERMINATION UTILIZING DIFFERENTIAL CODE LOGIC
James R. Whitten, Scotia, N.Y., assignor to General Electric Company
Filed Dec. 8, 1969, Ser. No. 882,987
Int. Cl. H04b 7/00
U.S. Cl. 343—100 CL **7 Claims**



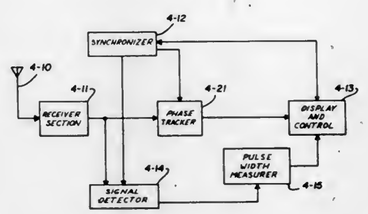
A method of modulating a signal is disclosed wherein ancillary information is encoded on a sub-carrier so that the information and the time of arrival of the signal may be simultaneously determined. When the ancillary information is an identification code, the technique may be used in timing, vehicle location, navigation systems, and the like. In a receiving station, a portion of the signal is detected and used to demodulate the remainder of the signal which is then code filtered and correlated with the detected signal to obtain arrival time.

3,680,115
VERY LOW FREQUENCY LOCATION FINDING SYSTEM
John E. Bickel; Clemens H. Freres, both of San Diego; Earl E. Gossard, Delmar; James E. Britt, San Diego; Norman R. Ortwein, San Diego, and Eric R. Swanson, San Diego, all of Calif., assignors to The United States of America as represented by the Secretary of the Navy
Filed April 29, 1969, Ser. No. 823,239
Int. Cl. G01s 1/30
U.S. Cl. 343—105 R **4 Claims**



To display at a command post the positions of all vehicles in a tactical area, each vehicle receives two very low frequencies (VLF's) of an "Omega" system, and retransmits the phase information thereof by a high frequency link to the command post where a general purpose computer determines the direction and the distance to each remote vehicle.

3,680,116
METHOD AND APPARATUS FOR SIGNAL DETECTION
Paul Rademacher, Glen Head, and Burton L. Hulland, Glenwood Landing, both of N.Y., assignors to Dynell Electronics Corporation, Melville, N.Y.
Filed May 7, 1970, Ser. No. 35,468
Int. Cl. G01s 1/30
U.S. Cl. 343—105 **17 Claims**

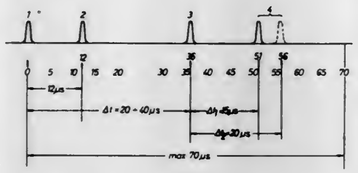


A visual display is provided by juxtaposing indications of locally generated signals with indications of corresponding received signals. The locally generated signals and the received signals are synchronized by observation of the display and adjustment of the phase of the local signals.

3,680,117
TACAN METHOD

Klaus-Dieter Eckert, Ludwigsburg, and Hans-Joachim Roper, Korntwestheim, both of Germany, assignors to International Standard Electric Corporation, New York, N.Y.

Filed June 17, 1970, Ser. No. 47,067
Int. Cl. G01s 1/46
U.S. Cl. 343—106 R 7 Claims

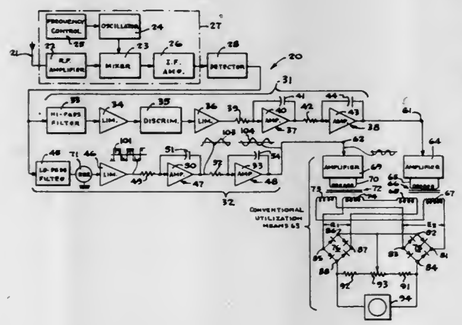


An antenna system arranged at the end of the runway radiates Tacan pulses, and an antenna system arranged beside the runway radiates additional information in the form of pulses having specific time relationships with the Tacan pulse-pair. The additional information is evaluated by means of a Tacan receiver whose video stage is followed by a decoder for the additional information.

3,680,118
AIRCRAFT NAVIGATION RECEIVER APPARATUS USING ACTIVE FILTERS

Myron L. Anthony, La Grange, Ill., assignor to Statistical Services, Inc., Chicago, Ill., a part interest

Continuation-in-part of Ser. No. 713,786, March 18, 1968, abandoned. This application July 14, 1970, Ser. No. 54,778
Int. Cl. G01s 1/44
U.S. Cl. 343—106 R 25 Claims

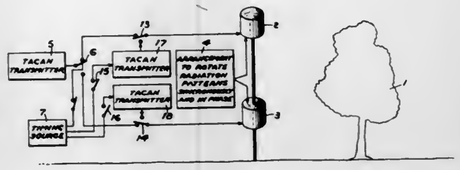


Aircraft navigation receiver apparatus of the kind in which two data signals are compared to determine the orientation of an aircraft (e.g., VOR and ILS receivers). Active filters, including integrators, constant current amplifiers and differential tuned amplifiers, and particularly constant slew rate filters, eliminate extraneous frequencies from the data signals without the phase distortion and other errors of passive filter circuits. A limiter circuit is preferably interposed in the receiver apparatus ahead of any of the filtering means. A phase detector that is inherently immune to amplitude variations is provided. For VOR receivers, a phase discriminator that is inherently immune to amplitude modulation distortion is presented. An AGS circuit for the receiver apparatus, which operates substantially independently of any amplitude modulation in the received signal, is provided.

3,680,119
TACAN ANTENNA SYSTEM

Sven H. Dodington, Mountain Lakes, N.J., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed Aug. 14, 1970, Ser. No. 63,877
Int. Cl. G01s 1/46
U.S. Cl. 343—106 R 10 Claims

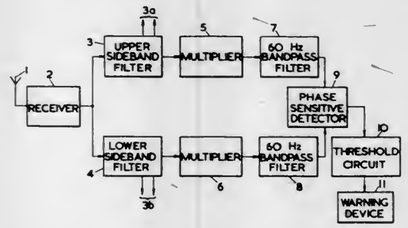


The nulls and lobes of a Tacan antenna horizontal and/or vertical radiation patterns due to unwanted reflections are reduced by employing two or more Tacan antennas disposed in a predetermined horizontal and/or vertical spaced relation having each of their radiation patterns rotated synchronously and in phase. In one embodiment, complete redundancy of transmitter and antenna is provided by having a different transmitter coupled to a different one of the two or more antennas timed to sequentially excite the two or more antennas with a Tacan signal. In another embodiment, one transmitter is sequentially coupled to each of the two or more antennas for sequential excitation thereof by a Tacan signal.

3,680,120
AIRCRAFT LANDING RADIO GUIDANCE RECEIVER WHICH WARNS OF SIGNAL REFLECTIONS

John Benjamin, Farnborough, England, assignor to Minister of Technology in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed May 8, 1970, Ser. No. 35,870
Claims priority, application Great Britain, May 9, 1969, 23,734/69
Int. Cl. G01s 1/14
U.S. Cl. 343—109 2 Claims

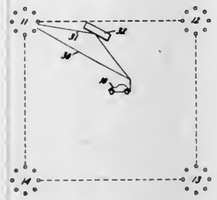


Receiver apparatus for use in an aircraft landing radio guidance system, including means for deriving beat frequencies from combinations of the upper-sideband components of a received guidance signal, means for deriving beat frequencies from combinations of the lower-sideband components of the received guidance signal, and comparison means for detecting and indicating a discrepancy between the upper-sideband beat-frequencies and the lower-sideband beat-frequencies. The apparatus may comprise sideband filter circuits, two mixer circuits, a phase-sensitive detector and a threshold circuit.

3,680,121
MOBILE LOCATOR SYSTEM FOR METROPOLITAN AREAS

Roy E. Anderson, Schenectady, N.Y., and Miguel A. Merigo, Lynchburg, Va., assignors to General Electric Company

Filed Jan. 2, 1970, Ser. No. 361
Int. Cl. G01s 5/02
U.S. Cl. 343—112 TC 11 Claims

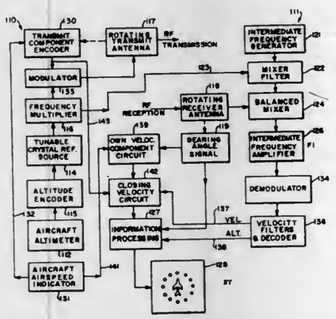


A locator system is disclosed wherein the vehicle whose location is unknown transmits a short, modulated radio frequency pulse. Receiving stations about the periphery of the area being serviced phase compare the received signal with a standard time reference signal. The phase difference is used to determine the arrival time differences at the known locations of the receiving stations from which the location of the vehicle may be determined. The wavelength of the modulating signal is generally greater than the maximum distance encountered in the service area. The effects of multipath reflections are minimized by utilizing a space dispersed antenna.

3,680,122
PILOT WARNING INDICATOR SYSTEM UTILIZING A TRANSMISSION OF SIGNALS WITHIN THE ABSORPTION BAND OF THE OXYGEN SPECTRUM

Walton Graham, Roslyn, and Robert R. Keegan, Scarsdale, both of N.Y., assignors to Control Data Corporation, Minneapolis, Minn.

Filed March 13, 1970, Ser. No. 19,246
Int. Cl. G01s 1/12
U.S. Cl. 343—112 CA 20 Claims

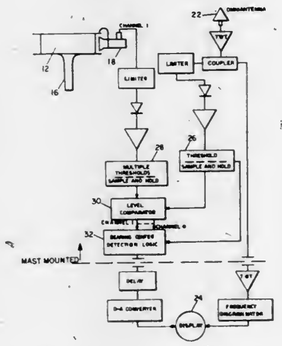


A proximity indicator system for aircraft which includes a radio signal transmitter having a predetermined output frequency range within an absorption band of the spectrum of a major invariable constituent of the atmosphere. A transmit antenna, which may be rotatable, is employed to propagate an output frequency within the predetermined range which may be responsive to variations in ambient atmosphere density and hence altitude. A rotatable antenna is connected to a radio receiver which has a predetermined amplitude threshold receiving level and is attuned to at least a portion of the output frequency range. A display is connected to the receiver to indicate reception of a signal and, optionally its direction. The output signal may be monitored by a receiver which contains a modulating circuit to compare a received signal with the monitored signal, the resultant being representative of any altitude differential which may exist between the respective signal sources. Resultants which represent more than a predetermined maximum differential will be rejected. A rotatable transmit antenna may supply bearing information regarding the output signal to a modulating circuit simultaneously with a signal representing air speed, whereby the output signal is impressed with a bearing velocity component. The output signal is monitored and compared with a similarly encoded received signal to reject information derived from a receding source (or other sources not representing a near term collision threat).

3,680,123
LUNEBERG LENS ECM APPARATUS

Marion B. Bryant, and Barry R. Hunt, both of San Diego, Calif., assignors to The United States of America as represented by the Secretary of the Navy

Filed Oct. 9, 1970, Ser. No. 79,592
Int. Cl. G01s 3/18
U.S. Cl. 343—113 R 6 Claims



A Luneberg lens antenna system for ECM applications. A cylindrical Luneberg lens of suitable dimensions is rigidly mounted between a pair of juxtaposed, parallel conducting plates. A selectively predetermined number of feed-horns are mounted and disposed independently of the lens about the periphery of the lens and in close proximity thereto. The antenna system can be combined with an IFM (Instantaneous Frequency Measurement) receiver to provide instantaneous reception of signals and precise and accurate direction-finding of signals over 360° azimuth. The antenna system also features high-gain, narrow beamwidths, low sidelobes, and acceptance of multiple signal polarizations.

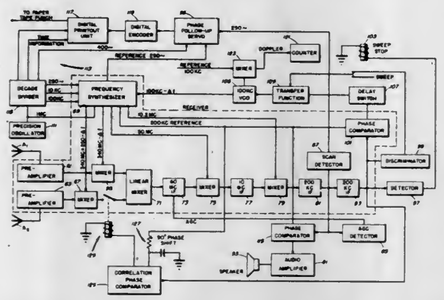
3,680,124
SYSTEM FOR DETERMINING AZIMUTH

Albert M. Stone, and Edwin E. Westerfield, both of Silver Spring, Md., assignors to The United States of America as represented by the Secretary of the Navy

Filed May 11, 1964, Ser. No. 367,899
Int. Cl. G01s 3/48
U.S. Cl. 343—113 R 20 Claims

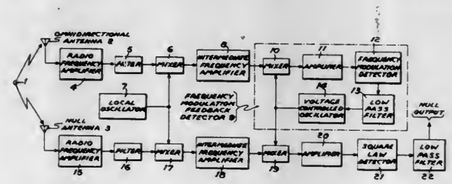
The invention provides a system employing a radio interferometer, in conjunction with a satellite whose orbit is precisely known, for determining the azimuth of a receiving

station receiving a signal from said satellite by computing the relative phase difference of the signal from said satellite as it



appears at each of two spaced antennas at said receiving station.

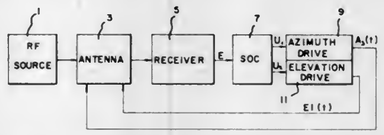
3,680,125
ANGULAR MODULATION DIRECTION FINDING RECEIVER
Bernard Cooper, Fair Lawn, N.J., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.
Filed June 16, 1970, Ser. No. 46,680
Int. Cl. G01s 3/40
U.S. Cl. 343—115 **7 Claims**



An improved null-sensing direction finding receiver responsive to an angle modulated signal is disclosed. The receiver includes an omnidirectional antenna and a directional null antenna. The omnidirectional antenna output signal is down converted to encompass the modulated frequency spectrum and in turn is fed to a FMFB detector where the VCO therein closely follows the angle modulated signal. The null antenna output signal is down converted, as in the case of the omnidirectional antenna output signal and then is subjected to a second frequency conversion employing the output signal of the VCO of the FMFB detector as the local oscillator signal for the second frequency conversion. This results in an improved null-sensitivity in the order of the modulation index, since the null accuracy is a direct function of signal-to-noise ratio. A square law detector and low pass filter after the second frequency conversion provides a null detection process insensitive to random phase fluctuations of the input signals.

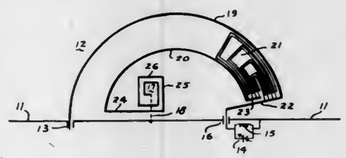
3,680,126
SELF-PROGRAMMING ANTENNA TRACKING SYSTEM
Roger L. Barron, Burke; Kenneth S. Kelleher, Alexandria, and George C. Vieth, Jr., Springfield, all of Va., assignors to Adaptronics, Inc., McLean, Va.
Filed Aug. 18, 1969, Ser. No. 850,996
Int. Cl. G01s 3/42
U.S. Cl. 343—117 R **10 Claims**

The disclosure relates to a self-programming antenna tracking system having a single channel between the antenna system and the control system, the antenna system being capable of providing a single output signal which is indicative of tracking error and the control system comprising a self-organizing controller capable of providing multiple actuator



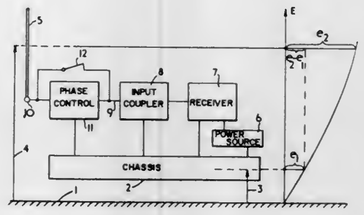
control signals to multiple actuators to minimize tracking error based upon evaluation of the single error signal provided along the single channel.

3,680,127
TUNABLE OMNIDIRECTIONAL ANTENNA
David J. Richard, Fairborn, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force
Filed April 7, 1971, Ser. No. 132,016
Int. Cl. H01q 9/00
U.S. Cl. 343—708 **5 Claims**



Two loaded, concentric, semicircular, radiating members provide a physically planar omnidirectional antenna having a relatively uniform nominal impedance and a tunable operation over approximately a 3:1 bandwidth with a protrusion above the ground plane of less than one-tenth wavelength at the high frequency end of the operating bandwidth.

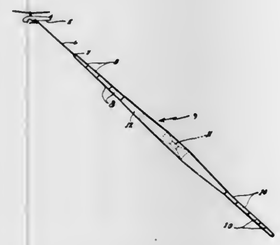
3,680,128
RECEIVER WITH INPUT PHASE CONTROL BETWEEN ANTENNA AND CHASSIS
Edward N. Wille, Locust Valley, and Walter K. Volkers, deceased, late of Sand Point, L.I., N.Y. (by Daphne Volkers, executrix), assignors to Volkers Research Inc., Port Washington, N.Y.
Continuation of Ser. No. 648,298, June 23, 1967. This application Oct. 20, 1970, Ser. No. 82,524
Claims priority, application Great Britain, June 23, 1966, 28,117/66
Int. Cl. H01q 1/24
U.S. Cl. 343—702 **4 Claims**



A receiver system including a differential input of which one end is connected to the antenna and the other end is grounded to the receiver chassis and a phase control device

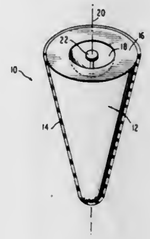
for adjusting the phase relationship between the antenna signal and the parasitic signal extracted from space by the receiver chassis.

3,680,129
AIRCRAFT TOWED INFLATABLE ANTENNA
John H. Darrah, Albuquerque, N. Mex.; James C. Bell, Uniontown, Ohio; Jerome J. Vorachek, Barberton, Ohio; John W. Bezbatchenko, Akron, Ohio; George A. Blecker, Akron, Ohio; James A. Barton, Uniontown, Ohio; Robert C. Gordon, Cuyahoga Falls, Ohio, and Gerald D. Kirschner, Akron, Ohio, assignors to The United States of America as represented by the Secretary of Air Force
Filed April 29, 1971, Ser. No. 138,424
Int. Cl. H01q 1/28
U.S. Cl. 343—706 **6 Claims**



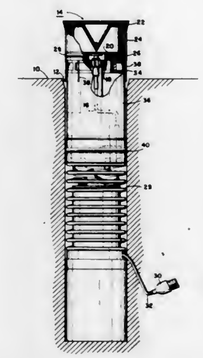
The invention comprehends a towed airborne electromagnetic radiating pulse antenna simulator. The antenna simulates the rf energy spectrum of radiation emitted from a nuclear detonation. It consists of a helium inflated centerbody to which are appended two trailing wire cages, the whole of which is towed by either an aircraft or helicopter. The inflated semi-rigid centerbody has extended lengths of wire cages which extend the effective antenna length. Electrical performance is enhanced by means of continuous resistive surfaces and lumped resistance elements located between cage segments.

3,680,130
RE-ENTRY VEHICLE NOSE CONE WITH ANTENNA
Howard S. Jones, Jr., Washington, D.C.; Joseph J. Witte, Silver Spring, Md., and Harry K. Morlock, Washington, D.C., assignors to The United States of America as represented by the Secretary of the Army
Filed Nov. 12, 1969, Ser. No. 875,879
Int. Cl. H01q 1/28, 13/10, 13/18
U.S. Cl. 343—708 **4 Claims**



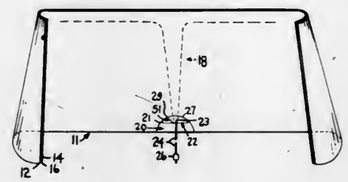
Disclosed is a re-entry vehicle in the form of a nose cone body having an electrically conductive outer surface free of discontinuities and incorporating an antenna for exciting the body. The antenna is adjacent the vehicle base where the plasma layer during re-entry is a minimum. The antenna is disclosed as recessed into the base surface of the body.

3,680,131
LOW PROFILE ANTENNA MOUNTED ON A WATERCRAFT
Roger D. Hall, Encino, and David N. Clasby, Newhall, both of Calif., assignors to The Bendix Corporation
Filed Nov. 16, 1970, Ser. No. 89,913
Int. Cl. H01q 1/34
U.S. Cl. 343—710 **12 Claims**



An omnidirectional, ultra high frequency transmitting antenna is disclosed having an unusually low profile and being of unusually rugged physical construction. A cylindrical monopole is attached to the outside conductor of a coaxial cable, and the center conductor is fastened to the apex of a conical dipole, with mechanical spacing and support between the dipoles being supplied by means of a ring of low loss dielectric material which provides dielectric loading for the antenna. With the dielectric loading, the height of the antenna can be made appreciably less than in the case of a conventional dipole antenna. A light flasher is incorporated into the cylindrical monopole as an aid in visually locating the antenna and associated equipment.

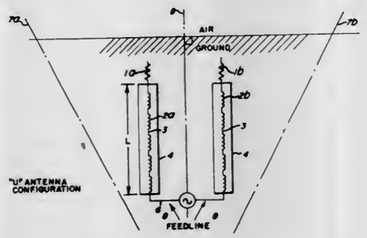
3,680,132
ANTENNA WINDSHIELD
Richard J. Tolliver, Greensburg, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.
Filed June 15, 1970, Ser. No. 46,305
Int. Cl. H01q 1/32
U.S. Cl. 343—713 **3 Claims**



An improved antenna for a laminated windshield comprising a single continuous antenna wire mounted in a plastic interlayer and having its central portion forming a loop in spaced relation to the windshield edge to receive a single

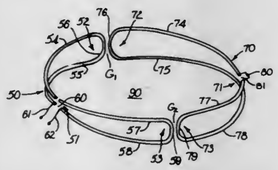
solder connection to a metal tab electrically connected to a radio receiver.

3,680,133
SUBSURFACE TRAVELING WAVE ANTENNA
Carson K. H. Tsao, Braintree; Joseph T. De Bettencourt, West Newton, and Howard J. Rowland, Newton Highlands, all of Mass., assignors to Raytheon Company, Lexington, Mass.
Continuation of Ser. No. 742,690, July 5, 1968. This application June 8, 1970, Ser. No. 48,811
Int. Cl. H01q 1/04
U.S. Cl. 343—719 **14 Claims**



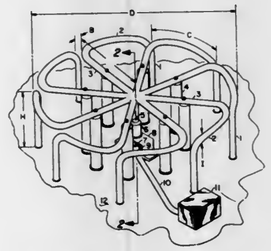
A subsurface traveling wave antenna in which a first and a second insulated matched load terminated linear radiating element is positioned in a plane normal to and under the surface. Each of the radiating elements are spaced apart but are located within the refracting cone at the surface interface. The load terminated ends are located at the surface end of each element. The distance between the elements is sufficiently close to provide phase reinforcement. Means are provided for mutually exciting the radiating elements, as well as for matching the phase velocity of an electromagnetic wave propagated along the radiating element to the phase velocity of an electromagnetic wave propagating in a medium external to the radiating elements.

3,680,134
LOOP ANTENNA WITH SPACED IMPEDANCE ELEMENTS
Toshitada Doi, Yokohama, and Kosuke Akiba, Tokyo, both of Japan, assignors to Sony Corporation, Tokyo, Japan
Continuation-in-part of Ser. No. 856,281, Sept. 9, 1969, Pat. No. 3,573,832. This application July 21, 1971, Ser. No. 164,529
Int. Cl. H01q 11/12
U.S. Cl. 343—740 **11 Claims**



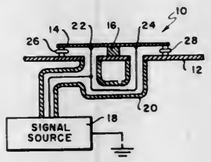
A directional antenna comprises a pair of semi-circular antenna members arranged to form a loop, each of the antenna members includes arcuate upper and lower wire-like conductive elements which are at a small distance from each other, at the middle of the respective antenna member, and at a relatively large distance from each other at the ends of the antenna member, and interconnecting elements are connected to the upper and lower conductive elements at the ends of each antenna member, and are preferably integral wire-like extensions of the upper and lower elements. Output terminals are connected to one of the antenna members at the narrow portion thereof, and an impedance acting as a dummy load is connected to the narrow portion of the other antenna member. The interconnecting elements at the adjacent ends of the antenna members being held in opposing spaced relation to form impedances therebetween for determining the distribution of current flow in the directional antenna.

3,680,135
TUNABLE RADIO ANTENNA
Joseph M. Boyer, 17350 Sunset Blvd., Pacific Palisades, Calif.
Filed Feb. 5, 1968, Ser. No. 702,963
Int. Cl. H01q 11/12
U.S. Cl. 343—742 **20 Claims**



A tunable, resonant antenna in which reduction in height and multiple frequency band operation is achieved by using a symmetrical in-phase array of two or more electrically short, vertical wave radiator elements of equal length which are brought to electrical resonance by end connection to an equal number of horizontal transmission line sections so folded in alignment as to be non-radiative, such transmission line sections being commonly terminated in a shunt variable reactor located at the center of the symmetrical array to provide change of the resonant frequency.

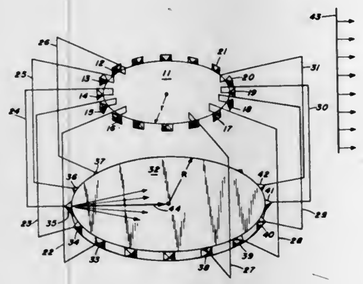
3,680,136
CURRENT SHEET ANTENNA
Rupert H. Collings, Santa Clara, Calif., assignor to The United States of America as represented by the Secretary of the Navy
Continuation-in-part of Ser. No. 807,303, March 14, 1969, abandoned. This application Oct. 20, 1971, Ser. No. 190,845
Int. Cl. H01q 13/10
U.S. Cl. 343—746 **14 Claims**



An antenna comprises a conductive ground surface element and at least one conductive radiator element in the form of an extended two dimensional sheet. The conductive radiator element is mounted parallel to the ground surface element and no more than one-fifteenth of an operating free-space wavelength from it. Signals are fed to at least two points on the radiator element wherein the signals at the points excite the radiator element symmetrically to cause current to flow across

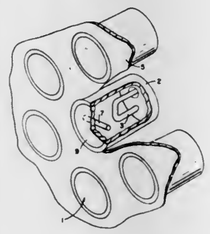
the outer surface of the conductive radiator element in the lowest mode of excitation.

3,680,137
CIRCULAR SYMMETRIC BOOTLACE LENS SYSTEM
Billy D. Wright, Oxon Hill, Md., assignor to The United States of America as represented by the Secretary of the Navy
Filed Dec. 3, 1970, Ser. No. 94,709
Int. Cl. H01q 3/26
U.S. Cl. 343—754 **6 Claims**



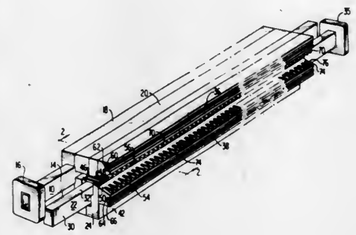
The Circular Symmetric Bootlace Lens is a system of focusing energy into a well colliminated beam. The system comprises a circular parallel plate lens and a circular array of elements. Energy is launched into the circular parallel plate lens and is collected by elements on the opposite side of the lens and then passes through equal length transmission lines to the circular array of elements where it is radiated.

3,680,138
CROSS-MODE REFLECTOR FOR THE FRONT ELEMENT OF AN ARRAY ANTENNA
Harold A. Wheeler, Smithtown, N.Y., assignor to The United States of America as represented by the Secretary of the Army
Filed Sept. 21, 1970, Ser. No. 73,822
Int. Cl. H01q 19/00
U.S. Cl. 343—756 **5 Claims**



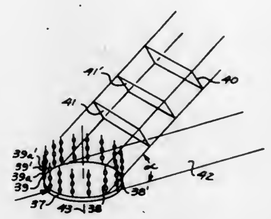
A circular aperture waveguide emitting element of cross-section comparable with the emitted wavelengths is made to have a linear polarization output by a cross-mode reflector which is a resonant bar mounted on a window located in the aperture.

3,680,139
COMMON ANTENNA APERTURE HAVING POLARIZATION DIVERSITY
Arthur T. Reynolds, Jr., Pasadena, Md., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Aug. 17, 1970, Ser. No. 64,421
Int. Cl. H01q 13/00
U.S. Cl. 343—756 **11 Claims**



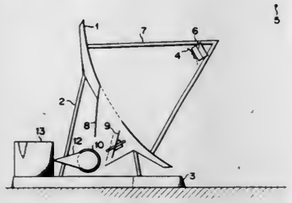
A common aperture including beamwidth compensating septums or fins in conjunction with a double sidelobe suppression choke for a slotted antenna system which is adapted to illuminate a single cylindrical reflector with both horizontally and vertically polarized primary patterns which are substantially identical due to the subject aperture to provide secondary patterns reflected from the reflector which are polarization insensitive.

3,680,140
SCANNING ANTENNA HAVING A CIRCULAR LENS WITH PERIPHERALLY SPACED LINEAR ARRAYS
Gregory T. Chaffin, Pasadena; Merlin E. Louapre, Tujunga, and Richard C. Olson, Walnut, all of Calif., assignors to Aerojet-General Corporation, El Monte, Calif.
Filed Jan. 17, 1969, Ser. No. 792,070
Int. Cl. H01q 19/06
U.S. Cl. 343—754 **15 Claims**



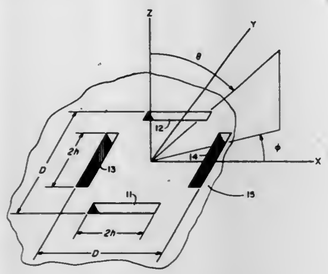
This disclosure relates to antenna arrays for propagating electromagnetic radiation wherein a lens, such as a geodesic or Luneberg lens, is utilized as a phase resolver of electromagnetic radiation coupled to an array of a plurality of antennas. The array of antennas is mounted to the lens in such a manner as to propagate a narrow beam of electromagnetic radiation. Preferably, phase-shift means is provided for simultaneously altering the degree of phase shift of propagated radiation between each radiating element by an incremental amount.

3,680,141
ANTENNA DEVICE
Mashahiro Karikomi, Tokyo, Japan, assignor to Nippon Telegraph and Telephone Public Corporation, Tokyo, Japan
Filed Nov. 30, 1970, Ser. No. 93,795
Claims priority, application Japan, Nov. 28, 1969, 44/94962
Int. Cl. H01q *19/14*
U.S. Cl. 343—758 **6 Claims**



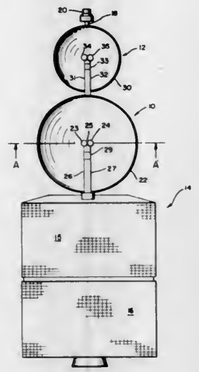
An antenna device comprising a main spherical reflector; a sub-reflector for reflecting electromagnetic waves to said main reflector so as to compensate for the spherical aberration of said main reflector, a primary radiator, plane reflectors and a parabolic reflector wherein the sub-reflector and plane reflectors are interlocked with each other so as to cause plane waves to be brought from the primary radiator to the sub-reflector through the plane reflectors and parabolic reflector.

3,680,142
CIRCULARLY POLARIZED ANTENNA
Lester C. Van Atta, Wellesley, and Robert J. Mailloux, Wayland, both of Mass., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration
Filed Oct. 6, 1969, Ser. No. 863,914
Int. Cl. H01q *13/10*
U.S. Cl. 343—770 **13 Claims**



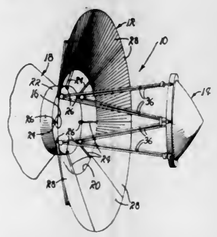
A circularly polarized antenna is provided using a planar array of at least two perpendicular pairs of linearly polarized elements (slot antennas or dipoles). The distance D between a given pair of parallel elements is selected to provide in a plane perpendicular to the elements of the pair, a field pattern very similar to that in a plane parallel to the elements, where both principal planes pass through the center of the array and are perpendicular to the plane of the array. Elements of a given pair are excited in phase, and the two pairs are excited in phase quadrature, whereby circularly polarized radiation is produced over a very wide sector of space in each principal plane, and therefore in all planes passing through the axis of the array.

3,680,143
SHAPED BEAM ANTENNA
James S. Ajioka, Fullerton, and Harold A. Rosen, Santa Monica, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.
Filed July 1, 1970, Ser. No. 51,423
Int. Cl. H01q *19/14*
U.S. Cl. 343—778 **3 Claims**



The apparatus of the present invention provides an antenna adapted to optimize the transmission or reception performance of a satellite subject to the usually encountered weight and volume constraints. The antenna features dual mode operation which provides two independent terminals, each providing the same gain pattern and polarization sense, but having differing senses of phase progression across the beam pattern. In addition, the beamwidth of the antenna is designed to cover a prescribed area on earth wherein minimum gain in this area is maximized rather than the gain at the beam center. The disclosed antenna system may also be used with a single reflector and two orthogonal polarizations, providing a total of four antenna terminals. To provide the second polarization which may be either crossed linear or counter rotating circular, each of the feeds must support the two polarizations, and the two pairs of terminals of a given polarization interconnected via individual hybrids.

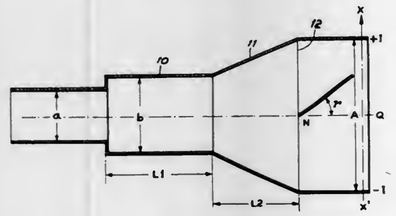
3,680,144
SINGLY-CURVED REFLECTOR FOR USE IN HIGH-GAIN ANTENNAS
George M. Low, Acting Administrator of the National Aeronautics & Space Administration with respect to an invention of, and Arthur C. Ludwig, 4823 Grand Ave., Lacanada, Calif.
Filed Feb. 5, 1971, Ser. No. 112,988
Int. Cl. H01q *15/20*
U.S. Cl. 343—781 **6 Claims**



A furlable antenna particularly suited for use aboard spacecraft. The antenna is characterized by an improved reflector plate conforming to a frusto-conical configuration

combined with a point-source feed and a secondary reflector having a reflective surface conforming to a figure of revolution generated by rotating a segment of a parabola about an axis parallel the ray path of the intermediate rays, whereby the antenna can be stowed in a furled configuration without substantially reducing its efficiency.

3,680,145
MULTIMODE HORN
Daniel Edmond Beguin, Saint-Prix, France, assignor to International Standard Electric Corporation, New York, N.Y.
Continuation of Ser. No. 743,527, July 9, 1968, abandoned. This application March 29, 1971, Ser. No. 129,229
Claims priority, application France, June 10, 1967, 67113688
Int. Cl. H01q *13/00*
U.S. Cl. 343—786 **3 Claims**



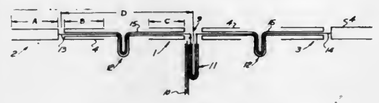
Multimode horn enabling to obtain a radiation pattern the phase of which is practically nil within a wide range of values of the radiation angle, characterized by the fact that the length of the paths of the modes according to the geometrical axis of the horn is such as phase differences exist between the said modes at the center of the horn aperture.

3,680,146
ANTENNA SYSTEM WITH FERRITE RADIATION SUPPRESSORS MOUNTED ON FEED LINE
Robert T. Leitner, Norwich, and John E. Drake, Sherburne, both of N.Y., assignors to Jerrold Electronics Corporation, Hatboro, Pa.
Filed March 2, 1970, Ser. No. 15,612
Int. Cl. H01q *1/50*
U.S. Cl. 343—792 **2 Claims**



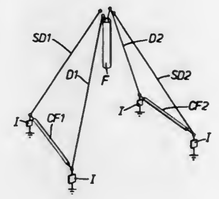
A high frequency antenna system comprises an antenna, a transmission line such as a coaxial cable electrically connected to the antenna, and a magnetic member surrounding the outer conductor of the coaxial cable. The magnetic member suppresses extraneous currents that are induced in the outer conductor of the coaxial cable by radiations from the antenna. By suppressing the extraneous current in the outer conductor distortion of radiations is prevented. In the preferred embodiment, the magnetic member comprises a plurality of ferrite toroids which collectively form a cylindrical covering on the conductor. Several antenna systems of this type may be closely spaced in a compact array, and each system may operate independently of the others in the array without interference between antennas.

3,680,147
COLINEAR ANTENNA APPARATUS
Robert W. Redlich, 9 Grand Park Boulevard, Athens, Ohio
Filed Aug. 30, 1970, Ser. No. 60,236
Int. Cl. H01q *21/00*
U.S. Cl. 343—792 **10 Claims**



A colinear antenna array having three half wave dipoles equally spaced and driven by currents which are equal in magnitude and phase and are properly polarized for a three element broadside array. The equal and in-phase currents are achieved by connecting the outboard dipoles to the common feed point through 360 electrical degree lengths of coaxial cable. The 360 electrical degree length coaxial cables pass through the interior of tubing which forms the dipole arms. A half wave balun transformer changes the input impedance of the dipole elements to match the characteristic impedance of the readily available coaxial cables. A predetermined separation between the dipoles determines the angular separation between the central maximum and the first null of the radiation pattern transmitted by the antenna array.

3,680,148
OMNIDIRECTIONAL ORTHOGONAL SLANTED DIPOLE ARRAY
Sean Ulic Nolan, Essex, England, assignor to The Marconi Company Limited, London, England
Filed Jan. 4, 1971, Ser. No. 103,738
Claims priority, application Great Britain, Jan. 29, 1970, 4,259/70
Int. Cl. H01q *21/26*
U.S. Cl. 343—797 **3 Claims**

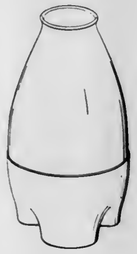


Known wide band, omni-directional, H.F. aerial system formed by two co-planar dipoles sloping downwardly and outwardly from a central twin wire feeder suffer the defect that large amounts of power are dissipated in terminating resistances at the lower ends of the dipoles. The need for the resistances is obviated by using a pair of mutually perpendicular dipoles each consisting of two co-planar half dipoles sloping downwardly and outwardly from a central feeder, the two halves of the dipoles being connected together by a length of screened cable. Insulating supports are connected between the lower ends of the half dipoles and ground.

DESIGNS

JULY 25, 1972

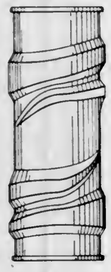
224,381
BOTTLE
Edward H. Lawton, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio
Filed May 24, 1971, Ser. No. 146,603
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—1



224,382
CAN OR SIMILAR ARTICLE
Carmen T. Mascia, Westmont, and Richard B. Bagguley, Dolton, Ill., assignors to Continental Can Company, Inc., New York, N.Y.
Filed June 14, 1971, Ser. No. 153,133
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—216



224,383
CAN OR SIMILAR ARTICLE
Carmen T. Mascia, Westmont, and Richard B. Bagguley, Dolton, Ill., assignors to Continental Can Company, Inc., New York, N.Y.
Filed June 14, 1971, Ser. No. 152,648
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—216



224,384
BATH BENCH
William R. Brewer, Arleta, Calif., assignor to Hamilton C. de Jong, Pasadena, Calif.
Filed Apr. 22, 1970, Ser. No. 22,554
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—70



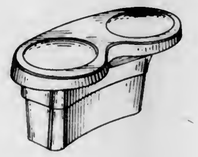
224,385
BATHING CAP
Philip Allen Wilson-Haffenden, Deal, England, assignor to W. W. Haffenden Limited
Filed July 10, 1970, Ser. No. 23,903
Claims priority, application Great Britain Apr. 22, 1970
Term of patent 14 years
Int. Cl. D2—*03*
U.S. Cl. D2—237



224,386
BATHING CAP
Philip Allen Wilson-Haffenden, Deal, England, assignor to W. W. Haffenden Limited
Filed July 10, 1970, Ser. No. 23,904
Claims priority, application Great Britain Apr. 22, 1970
Term of patent 14 years
Int. Cl. D2—*03*
U.S. Cl. D2—237



224,387
BENCH OR THE LIKE
Richard G. Reineman, Balboa, Calif., and George E. Schaefer, Muskegon, Mich., assignors to The Brunswick Corporation
Filed Nov. 20, 1970, Ser. No. 26,084
Term of patent 14 years
Int. Cl. D6—*02*
U.S. Cl. D6—58



224,388
FOLDING KNIFE
Barry Bertram Wood, 38 S. Venice Blvd., Venice, Calif. 92091
Filed Apr. 1, 1971, Ser. No. 130,554
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—99



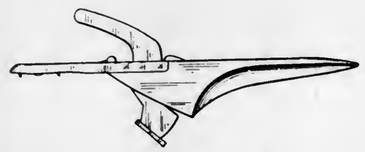
224,389
FOLDING KNIFE
Barry Bertram Wood, 38 S. Venice Blvd., Venice, Calif. 92091
Filed Apr. 1, 1971, Ser. No. 130,549
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—99



224,390
ABRASIVE TYPE HAND TOOL
Robert W. Martin, 1057 Pennington Road, Trenton, N.J. 08618
Filed Aug. 28, 1970, Ser. No. 24,755
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—90



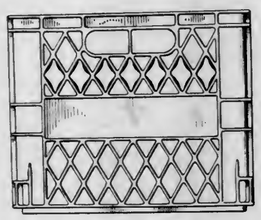
224,391
AEROSOL CAN HANDLE
Frank C. Wallace, 12861 West St., Garden Grove, Calif. 92640, and Elmer R. Livingston, 3515 Surfview Lane, Corona, Del Mar, Calif. 92625
Filed Jan. 7, 1971, Ser. No. 104,832
Term of patent 14 years
Int. Cl. D9—*07*
U.S. Cl. D9—291



224,392
JUG
Max Ries, Chicago, Ill., assignor to Continental Specialties Company, Inc., Chicago, Ill.
Filed Feb. 16, 1971, Ser. No. 115,901
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—50



224,393
CARRYING CASE FOR BOTTLES OR THE LIKE
Theodor Box, 1108 Ailene Road, Brielle, N.J. 08730
Filed Apr. 13, 1970, Ser. No. 22,379
Term of patent 14 years
Int. Cl. D9—*04*
U.S. Cl. D9—177



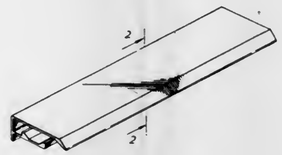
224,394
BUILDING STRUCTURE OR THE LIKE
Edgar H. Hunter and Margaret K. Hunter, both of 1108 Manchester Drive, Raleigh, N.C. 27609
Filed Mar. 12, 1970, Ser. No. 21,879
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1



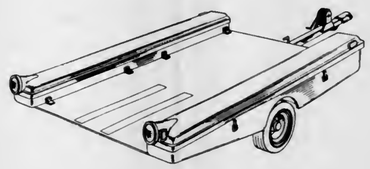
224,395
TELEPHONE SHELF
Bob R. Adams, % Bird-Adams Co., Inc., P.O. Box 38, Doraville, Ga. 30340
Filed May 17, 1971, Ser. No. 144,362
Term of patent 14 years
Int. Cl. D25—*99*
U.S. Cl. D13—1



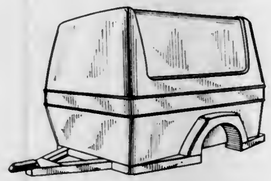
224,396
SEAL RETAINING MEMBER FOR A ROLLER SHUTTER
Donald Henry William Dover, "Igls," The Ridge, Little Baddow, near Chelmsford, England
Filed Sept. 21, 1970, Ser. No. 25,097
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D13—6



224,397
TRAILER
Arlen L. Huff, South Bend, Ind., assignor to Sellers Manufacturing, Inc., Wakarusa, Ind.
Filed Apr. 1, 1971, Ser. No. 130,568
Term of patent 14 years
Int. Cl. D12—*10*
U.S. Cl. D14—3



224,398
ASPORTABLE TRAILER
Benjamin C. Baugh and Robert R. Deines, Wichita, Kans., assignors to Nationwide Trailer Rental System, Inc.
Filed June 1, 1970, Ser. No. 23,244
Term of patent 14 years
Int. Cl. D12—*10*
U.S. Cl. D14—3



224,399
HUNTING KNIFE
Jefferson Spivey, Los Angeles, Calif., assignor to Mark A. Brick, Beverly Hills, Calif., and to said Spivey, fractional part interest to each
Filed Dec. 21, 1970, Ser. No. 26,592
Term of patent 14 years
Int. Cl. D22—*02*
U.S. Cl. D22—1



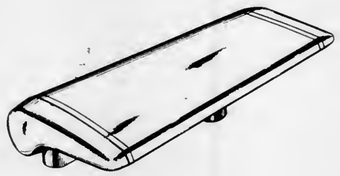
224,400
COMBINATION HOLLOW FISH POLE AND REEL HOUSING
Lloyd J. LeRoue, Rte. 2, P.O. Box 2360, Wapato, Wash. 98951
Filed Mar. 13, 1970, Ser. No. 21,903
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—23



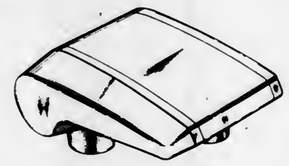
224,401
SWIMMING POOL CHLORINATOR
Harry M. Clinton, Northridge, Calif., assignor to Swimrite, Inc., Van Nuys, Calif.
Filed Dec. 15, 1970, Ser. No. 26,517
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—3



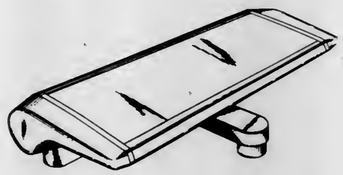
224,402
FAUCET
Dee L. Jenner, San Pedro, Calif., assignor to Hi-Shear Corporation, Torrance, Calif.
Filed Oct. 5, 1970, Ser. No. 25,333
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—25



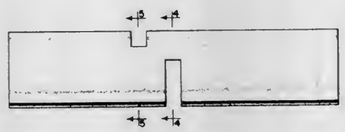
224,403
FAUCET
Dee L. Jenner, San Pedro, Calif., assignor to Hi-Shear Corporation, Torrance, Calif.
Filed Oct. 5, 1970, Ser. No. 25,334
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—23



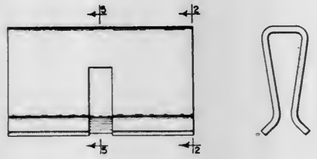
224,404
FAUCET
Dee L. Jenner, San Pedro, Calif., assignor to Hi-Shear Corporation, Torrance, Calif.
Filed Oct. 5, 1970, Ser. No. 25,332
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—25



224,405
INSULATED JUMPER CLIP
Daniel C. Heck, Deerfield, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.
Filed Sept. 23, 1970, Ser. No. 25,166
Term of patent 14 years
Int. Cl. D13—*99*
U.S. Cl. D26—1



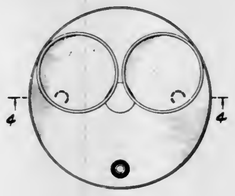
224,406
JUMPER CLIP
Daniel C. Heck, Deerfield, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.
Filed Jan. 19, 1971, Ser. No. 107,876
Term of patent 14 years
Int. Cl. D13—*99*
U.S. Cl. D26—1



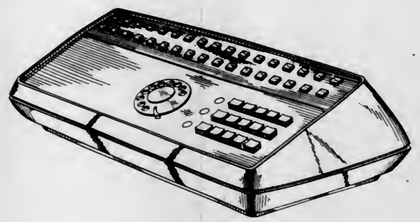
224,407
CIRCULAR RADIO TUNING FREQUENCY CONTROL WITH TRANSVERSE INDICATOR FACES
Maurice D. Katz, 35 Broadway, Lawrence, N.Y. 11559
Filed Mar. 12, 1971, Ser. No. 123,938
Term of patent 14 years
Int. Cl. D14—*03, 99*
U.S. Cl. D26—1



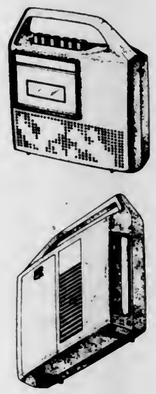
224,408
FILTRATION UNIT FOR BLOOD AND OTHER MEDICAL LIQUIDS
Frank M. Edwards, West Los Angeles, Calif., assignor to McGaw Division of American Hospital Supply Corporation, Glendale, Calif.
Filed Dec. 31, 1970, Ser. No. 26,714
Term of patent 14 years
Int. Cl. D24—*01*
U.S. Cl. D16—2



224,409
TELEPHONE OPERATOR'S ANSWER TURRET
George M. Janda, Westchester, Ill., assignor to Automatic Electric Laboratories, Inc., Northlake, Ill.
Filed Dec. 21, 1970, Ser. No. 26,731
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14



224,410
CASSETTE TAPE RECORDER
Takemi Ebata, Kyoto, Japan, assignor to Matsuhita Electric Industrial Co., Ltd., Osaka, Japan
Filed Apr. 6, 1971, Ser. No. 131,842
Claims priority, application Japan Oct. 9, 1970
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D26—14



224,411
CHRISTMAS ORNAMENT
Dario Moranduzzo, Stroda Tosco Romagnola 463, Florence, Italy
Filed May 28, 1971, Ser. No. 148,289
Claims priority, application Italy Dec. 1, 1970
Term of patent 7 years
Int. Cl. D11—*05*
U.S. Cl. D29—1



224,412
RELIGIOUS ORNAMENT
George M. Wallace, 64 Clinton St., Paterson, N.J. 07522
Filed Apr. 21, 1971, Ser. No. 136,299
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D29—23



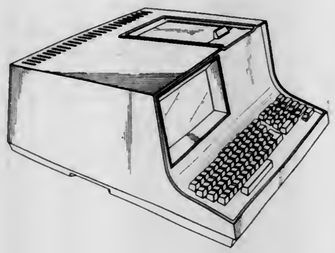
224,413
VASE
Zachary P. Abuza, 19425 Van Aken 44122, and Stanley W. Morgenstern, 2887 Broxton 44120, both of Shaker Heights, Ohio
Filed Jan. 25, 1971, Ser. No. 109,738
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D29—28



224,414
FLORAL VASE OR THE LIKE
Edwin K. Kaelke, Dundee, Ill., assignor to The Haeger Potteries, Inc., Dundee, Ill.
Filed July 15, 1971, Ser. No. 163,140
Term of patent 7 years
Int. Cl. D11—*02*
U.S. Cl. D29—28

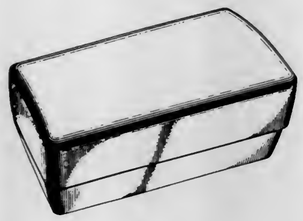


224,415
COMPUTER TERMINAL
Jon P. Ray and Austin O. Roche, San Antonio, Tex., and John R. Frassanito, Oyster Bay, N.Y., assignors to Computer Terminal Corporation, San Antonio, Tex.
Filed Nov. 27, 1970, Ser. No. 26,176
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5



224,416
OUTDOOR TELEPHONE ENCLOSURE
Donald Michael Genaro, Haworth, N.J., and Ralph Andrew Holmes and Stanley Edward Seretny, Indianapolis, Ind.; said Genaro and said Seretny assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J., said Holmes assignor to Western Electric Company, New York, N.Y.
Filed Sept. 3, 1970, Ser. No. 24,831
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14





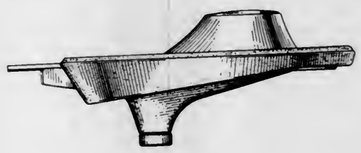
224,417
TOY MONKEY FIGURE
Jennifer Jenkins Houser, 520 1 E., Apt. 3, Provo, Utah 84601
Filed Dec. 28, 1970, Ser. No. 26,654
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—2



224,418
GOLF CLUB
Eugene H. Lesch, 5702 E. St. Andrews Way, Scottsdale, Ariz. 85254
Filed Apr. 29, 1970, Ser. No. 22,699
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5



224,419
CLUSTER BOWLING BALL RETURN RACK
George E. Schaefer, Muskegon, Mich., assignor to The Brunswick Corporation
Filed Oct. 26, 1970, Ser. No. 25,643
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5



224,420
BOWLING BALL RETURN RACK WITH PROVISION FOR BOWLER IDENTIFICATION PANEL
Richard G. Reineman, Balboa, Calif., and George E. Schaefer, Muskegon, Mich., assignors to The Brunswick Corporation
Filed Oct. 26, 1970, Ser. No. 25,644
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5



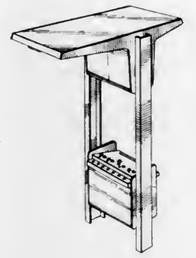
224,421
IN-LINE BOWLING BALL RETURN RACK
Richard G. Reineman, Balboa, Calif., and George E. Schaefer, Muskegon, Mich., assignors to The Brunswick Corporation
Filed Nov. 20, 1970, Ser. No. 26,088
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5



224,422
EXERCISER
Barney A. Beach, Memphis, Tenn., assignor to Health Thru Education, Inc., Memphis, Tenn.
Filed Dec. 3, 1970, Ser. No. 26,267
Term of patent 3½ years
Int. Cl. D21—*02*
U.S. Cl. D34—5



224,423
GOLF GAME CONSOLE
Robert I. Anderson, Spring Lake, and Phillip E. Crossman, Ada, Mich., assignors to Brunswick Corporation
Filed Dec. 11, 1970, Ser. No. 26,401
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5



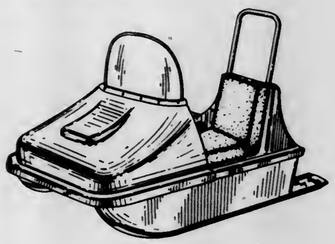
224,424
SKATE BOARD
Thomas E. Schell, 2460 Delisle Court, Glendale, Calif. 91208
Filed July 27, 1970, Ser. No. 24,136
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15



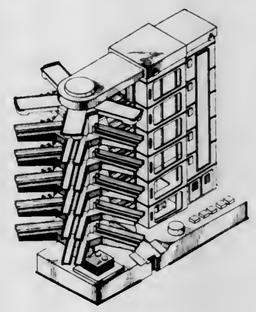
224,425
TOY BLOCK
Alwin J. Stahel II, New Brighton, Minn., assignor to General Foods Corporation, White Plains, N.Y.
Filed Oct. 30, 1970, Ser. No. 25,729
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15



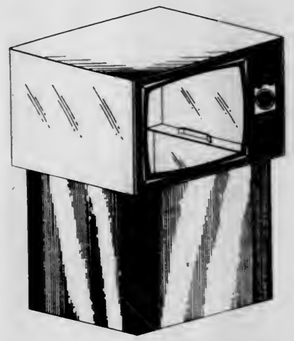
224,426
SLEIGH
Leonard Marois, Montmagny, Quebec, Canada, assignor to Aurele Marois Inc., Montmagny, Quebec, Canada
Filed Jan. 11, 1971, Ser. No. 105,775
Claims priority, application Canada Dec. 29, 1970
Term of patent 14 years
Int. Cl. D12—*13*
U.S. Cl. D34—15



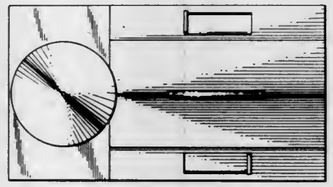
224,427
TOY PARKING GARAGE
Eijiro Tomiyama, Tokyo, Japan, assignor to Tomy Kogyo Co., Ltd., Tokyo, Japan
Filed Jan. 15, 1971, Ser. No. 106,937
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15



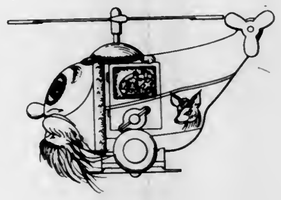
224,428
TELEVISION TOY
William R. Dixon, Le Roy, N.Y., assignor to GTE Sylvania Incorporated
Filed Feb. 8, 1971, Ser. No. 113,808
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15



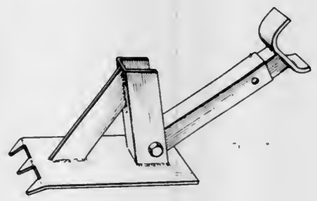
224,429
TOY FARMHOUSE
Frank C. Fusco, Monroe, N.Y., assignor to Louis Marx & Co. Inc.
Filed Apr. 19, 1971, Ser. No. 135,260
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15



224,430
HELICOPTER TOY
Perry Feuer, Roslyn, N.Y., assignor to Creative Creations, Inc., Hicksville, N.Y.
Filed June 9, 1971, Ser. No. 151,616
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15



224,431
JACK
Robert J. Keegan, 111 Welland Ave., Toronto 7, Ontario, Canada
Filed June 8, 1971, Ser. No. 151,158
Term of patent 14 years
Int. Cl. D12—*05*
U.S. Cl. D41—1



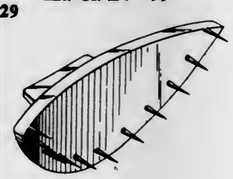
224,432
COMBINED DIAL AND HANDS FOR A WATCH OR THE LIKE
Sondra J. Sicherman, Fresh Meadows, N.Y., assignor to Startime Watch Co., Inc., Roslyn, N.Y.
Filed Nov. 4, 1970, Ser. No. 25,807
Term of patent 3½ years
Int. Cl. D10—*07*
U.S. Cl. D42—1



224,433
COMBINED DIAL AND HANDS FOR A WATCH OR THE LIKE
Sondra J. Sicherman, Fresh Meadows, N.Y., assignor to Startime Watch Co., Inc., Roslyn, N.Y.
Filed Nov. 4, 1970, Ser. No. 25,810
Term of patent 14 years
Int. Cl. D10—*07*
U.S. Cl. D42—1



224,434
CAKE DECORATING MARKER
Freda Dailey, 1312 W. High St., Haddon Heights, N.J. 08035
Filed Oct. 30, 1970, Ser. No. 25,740
Term of patent 14 years
Int. Cl. D7—*99*
U.S. Cl. D44—29



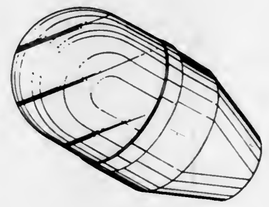
224,435
WINE BOTTLE RACK
David M. Stravitz, 205 3rd Ave., New York, N.Y. 10003
Filed Dec. 28, 1970, Ser. No. 26,646
Term of patent 3½ years
Int. Cl. D6—*99*
U.S. Cl. D44—29



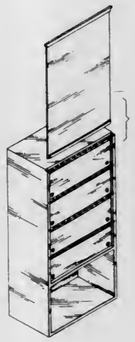
224,436
COMBINED WASHER AND SCALER FOR FISH
Robert T. Olmschied, 3535 Lyndale Ave. N., Minneapolis, Minn. 55412
Filed Mar. 15, 1971, Ser. No. 124,626
Term of patent 14 years
Int. Cl. D7—*04*
U.S. Cl. D44—29



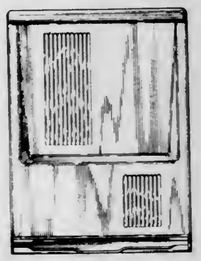
224,437
HOUSING FOR AIRCRAFT SEARCHLIGHT
Richard D. Wood, Pasadena, Calif., assignor to Optical Radiation Corporation, Monrovia, Calif.
Filed Oct. 23, 1970, Ser. No. 25,618
Term of patent 14 years
Int. Cl. D26—*06, 03*
U.S. Cl. D48—32



224,438
COMBINED TAPE DISPENSING CABINET AND DRAWERS THEREFOR
Milton Rosenblum, 8–01 Plymouth Drive, Fair Lawn, N.J. 07509
Filed Oct. 26, 1970, Ser. No. 25,657
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D52—2



224,439
TOWEL DISPENSING CABINET
John B. Engel, Green Bay, Wis., assignor to Bay West Paper Company, Green Bay, Wis.
Filed Nov. 20, 1970, Ser. No. 26,083
Term of patent 14 years
Int. Cl. D31; D6—*04*
U.S. Cl. D52—2



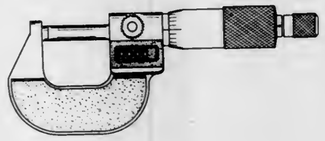
224,440
CRAB SIZING GAUGE
Albert E. Daughtry, 700 Wilkes Drive, Eugene, Oreg. 97402
Filed Jan. 25, 1971, Ser. No. 109,742
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D52—6



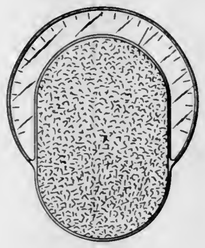
224,441
METAL DETECTOR
Robert F. Gardiner, 4729 N. 7th Ave., Phoenix, Ariz. 85013
Filed Apr. 7, 1971, Ser. No. 132,251
Term of patent 14 years
Int. Cl. D10—*05*
U.S. Cl. D52—6



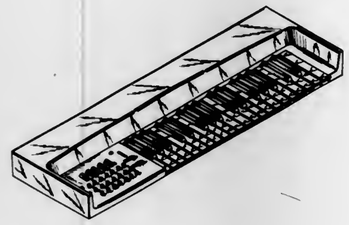
224,442
DIGITAL MICROMETER
Goro Nishikata, Kawasaki, Japan, assignor to Yehan Numata, Yokohama, Japan
Filed Aug. 26, 1970, Ser. No. 24,711
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D52—6



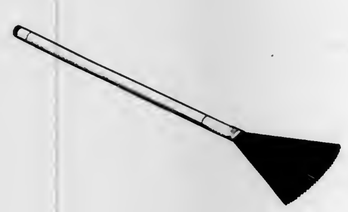
224,443
BATHROOM SCALE
Dieter Rams, Konigstein, Germany, assignor to Braun Aktiengesellschaft, Frankfurt am Main, Germany
Filed Jan. 27, 1971, Ser. No. 110,368
Claims priority, application Germany Oct. 17, 1970
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D52—10



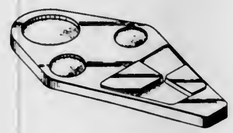
224,444
KEYBOARD FOR MUSICAL INSTRUMENT OR THE LIKE
Frederick R. Chilton, Palos Verdes Estates, Edward Barczak, Los Angeles, and Salvatore Merendino, Pasadena, Calif., assignors to Mattel, Inc., Hawthorne, Calif.
Filed Jan. 11, 1971, Ser. No. 105,772
Term of patent 14 years
Int. Cl. D17—*01*
U.S. Cl. D56—1



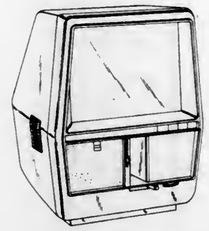
224,445
SNARE DRUM BRUSH OR SIMILAR ARTICLE
Alfred J. De Christopher II, 10072 Westwanda Drive, Beverly Hills, Calif. 90210
Filed Jan. 25, 1971, Ser. No. 109,745
Term of patent 14 years
Int. Cl. D17—*04*
U.S. Cl. D56—1



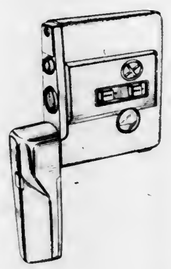
224,446
HAND MAGNIFIER
John Orfei, North Revere, Mass., assignor to American Science and Engineering, Inc., Cambridge, Mass.
Filed Oct. 13, 1969, Ser. No. 19,518
Term of patent 14 years
Int. Cl. D16—*06*
U.S. Cl. D57—1



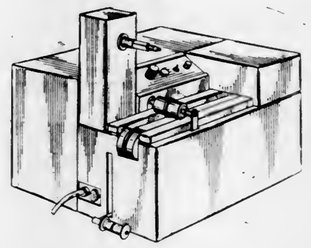
224,447
REAR PROJECTION VIEWER
Paul D. Catalano, Manhasset, and George C. Hoehne, Bellerose, N.Y., assignors to Retention Communications Systems, Inc., New York, N.Y.
Filed Dec. 14, 1970, Ser. No. 26,498
Term of patent 14 years
Int. Cl. D16—*04*
U.S. Cl. D61—1



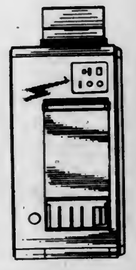
224,448
MOTION PICTURE CAMERA
Masahiro Fukuda, Tokyo, Japan, assignor to Fuji Shashin Film Kabushiki Kaisha, Minamiashigara-machi, Ashigarakami-gun, Kanagawa-ken, Japan
Filed Feb. 1, 1971, Ser. No. 111,804
Claims priority, application Japan Aug. 1, 1970
Term of patent 14 years
Int. Cl. D16—*01*
U.S. Cl. D61—1



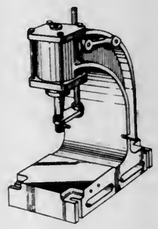
224,449
FILM CUTTER
Thomas C. Laughon, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Mar. 15, 1971, Ser. No. 124,641
Term of patent 14 years
Int. Cl. D16—*99*
U.S. Cl. D61—1



224,450
COPIER
Kazuteru Nagata, Fujisawa, and Tatsuya Mikami, Narashino, Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan
Filed Apr. 22, 1971, Ser. No. 136,628
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D61—1



224,451
AIR-OPERATED PRESS FRAME
Robert G. Marks, 63 Winthrop Road, Brookline, Mass. 02147
Filed Sept. 28, 1970, Ser. No. 25,217
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D63—1



224,452
DESK ELECTRONIC CALCULATOR
Tatsuya Mikami, Narashino, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan
Filed Oct. 15, 1970, Ser. No. 25,507
Claims priority, application Japan Apr. 16, 1970
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5



224,453
TOOL FOR EMBOSSING STRIPS OF MATERIAL
Donald E. Van Arnam, Surfside, Calif., assignor to Avery Products Corporation, San Marino, Calif.
Filed Nov. 4, 1970, Ser. No. 25,821
Term of patent 14 years
Int. Cl. D18—*99*
U.S. Cl. D64—10



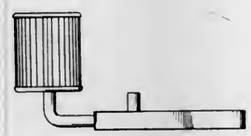
224,454
HOLDER FOR HIGHWAY FLARES
George L. Kernan, 1810 Market Ave., San Pablo, Calif. 94806
Filed Oct. 30, 1970, Ser. No. 25,736
Term of patent 14 years
Int. Cl. D29—*02*
U.S. Cl. D72—1



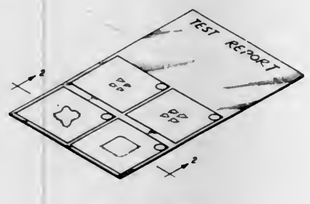
224,455
PEN DESK SET
Gerald N. Oberton, Addison, Ill., assignor to Sanford Research Company
Filed Jan. 18, 1971, Ser. No. 107,609
Term of patent 14 years
Int. Cl. D19—*06*
U.S. Cl. D74—5



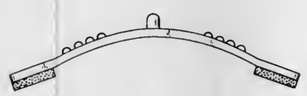
224,456
POISONOUS GAS ELIMINATING DEVICE OF AN ENGINE FOR AN AUTOMOBILE
Jiro Sakai, 1954–6, Yahatamachi, Suzaka; and Junichi Kawaguchi 322, Oaza-Koyama, Suzaka, both of Nagano Prefecture, Japan; and Michihiro Noda, 1, 4-chome, Showa, Chiryumachi Hekikai-gun, Aichi Prefecture, Japan
Filed July 23, 1970, Ser. No. 24,073
Claims priority, application Japan Feb. 5, 1970
Term of patent 14 years
Int. Cl. D15—*01*
U.S. Cl. D77—1



224,457
SKIN TEST INDURATION REPORT CARD
Robert Oppenheimer, Old Greenwich, Conn., assignor to American Cyanamid Company, Stamford, Conn.
Filed Sept. 8, 1970, Ser. No. 24,877
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D83—1



224,458
RETENTION SUTURE BRIDGE
Ingram S. Chodorow, New York, N.Y., assignor to Technalytics Incorporated, New York, N.Y.
Filed June 3, 1970, Ser. No. 23,284
Term of patent 14 years
Int. Cl. D24—*05*
U.S. Cl. D83—12

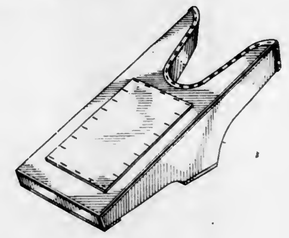




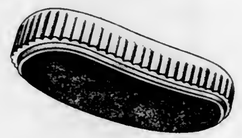
224,459
ILLUMINABLE MIRROR
Donald P. Stahl, North Bellmore, N.Y., assignor to Telecommunications Industries, Incorporated, Farmingdale, N.Y.
Filed Apr. 6, 1970, Ser. No. 22,286
Term of patent 14 years
Int. Cl. D6—*07*
U.S. Cl. D86—10



224,460
BOOTJACK
Earl R. Wright, 200 E. Industrial Blvd., Comanche, Tex. 76442
Filed Dec. 1, 1970, Ser. No. 26,237
Term of patent 14 years
Int. Cl. D3—*99*
U.S. Cl. D86—10



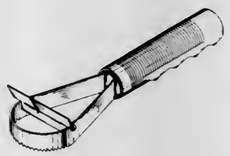
224,461
CLOTHESBRUSH
Charles Edwards Ferris, Don Mills, Ontario, Canada, assignor to Stanwood Plastic Products Limited
Filed Mar. 17, 1971, Ser. No. 125,444
Claims priority, application Canada Sept. 21, 1970
Term of patent 14 years
Int. Cl. D4—*02*
U.S. Cl. D86—13



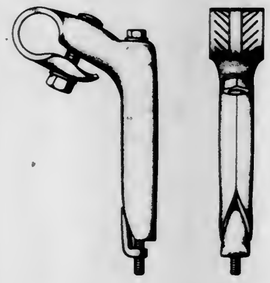
224,462
UMBRELLA
Maurice E. Lyons, 300 E. 74th St., New York, N.Y. 10021
Filed June 2, 1971, Ser. No. 149,411
Term of patent 14 years
Int. Cl. D3—*03*
U.S. Cl. D88—3



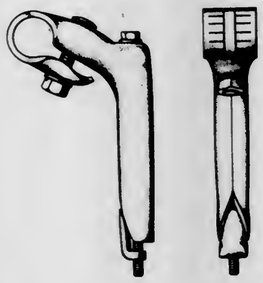
224,463
SQUASH KNIFE
Wilford B. Nelson, 9630 219th SW., Edmonds, Wash. 98020, and Stuart D. Nelson, 15136 Beach Drive NE., Seattle, Wash. 98155
Filed May 21, 1971, Ser. No. 146,005
Term of patent 14 years
Int. Cl. D7—*04*
U.S. Cl. D89—1



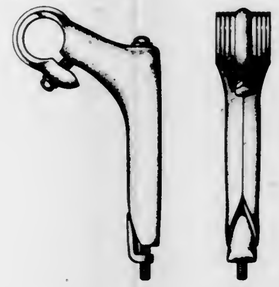
224,464
BICYCLE STEERING POST
Robert F. Humlong, Maysville, Ky., assignor to Wald Manufacturing Company, Inc., Maysville, Ky.
Filed Apr. 1, 1970, Ser. No. 22,149
Term of patent 14 years
Int. Cl. D12—*14*
U.S. Cl. D90—9



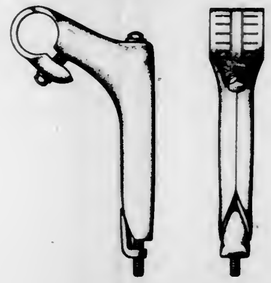
224,465
BICYCLE STEERING POST
Robert F. Humlong, Maysville, Ky., assignor to Wald Manufacturing Company, Inc., Maysville, Ky.
Filed Apr. 1, 1970, Ser. No. 22,151
Term of patent 14 years
Int. Cl. D12—*14*
U.S. Cl. D90—9



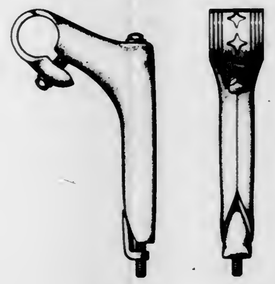
224,466
BICYCLE STEERING POST
Carlton P. Pawsat, Maysville, Ky., assignor to Wald Manufacturing Company, Inc., Maysville, Ky.
Filed Apr. 1, 1970, Ser. No. 22,152
Term of patent 14 years
Int. Cl. D12—*14*
U.S. Cl. D90—9



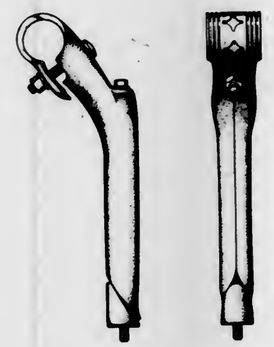
224,467
BICYCLE STEERING POST
Robert F. Humlong, Maysville, Ky., assignor to Wald Manufacturing Company, Inc., Maysville, Ky.
Filed Apr. 1, 1970, Ser. No. 22,153
Term of patent 14 years
Int. Cl. D12—*14*
U.S. Cl. D90—9



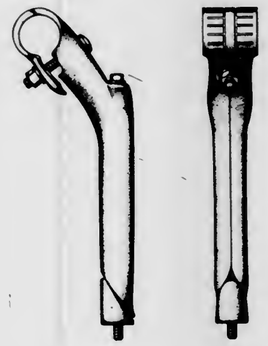
224,468
BICYCLE STEERING POST
Robert F. Humlong, Maysville, Ky., assignor to Wald Manufacturing Company, Inc., Maysville, Ky.
Filed Apr. 1, 1970, Ser. No. 22,155
Term of patent 14 years
Int. Cl. D12—*14*
U.S. Cl. D90—9



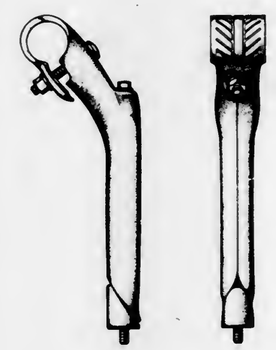
224,469
BICYCLE STEERING POST
Robert F. Humlong, Maysville, Ky., assignor to Wald Manufacturing Company, Inc., Maysville, Ky.
Filed Apr. 1, 1970, Ser. No. 22,157
Term of patent 14 years
Int. Cl. D12—*14*
U.S. Cl. D90—9



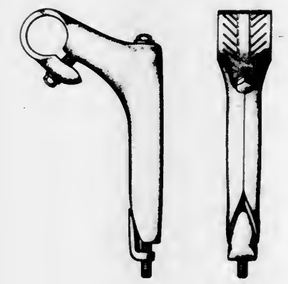
224,470
BICYCLE STEERING POST
Robert F. Humlong, Maysville, Ky., assignor to Wald Manufacturing Company, Inc., Maysville, Ky.
Filed Apr. 1, 1970, Ser. No. 22,158
Term of patent 14 years
Int. Cl. D12—*14*
U.S. Cl. D90—9



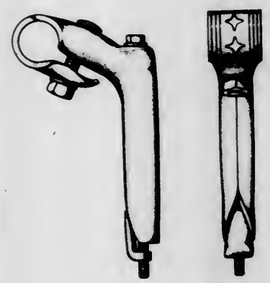
224,471
BICYCLE STEERING POST
Robert F. Humlong, Maysville, Ky., assignor to Wald Manufacturing Company, Inc., Maysville, Ky.
Filed Apr. 1, 1970, Ser. No. 22,159
Term of patent 14 years
Int. Cl. D12—*14*
U.S. Cl. D90—9



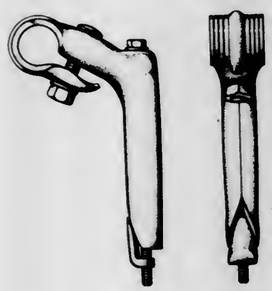
224,472
BICYCLE STEERING POST
Robert F. Humlong, Maysville, Ky., assignor to Wald Manufacturing Company, Inc., Maysville, Ky.
Filed Apr. 1, 1970, Ser. No. 22,160
Term of patent 14 years
Int. Cl. D12—*14*
U.S. Cl. D90—9



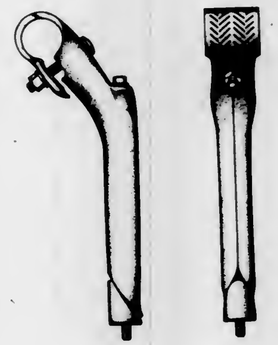
224,473
BICYCLE STEERING POST
Robert F. Humlong, Maysville, Ky., assignor to Wald Manufacturing Company, Inc., Maysville, Ky.
Filed Apr. 1, 1970, Ser. No. 22,161
Term of patent 14 years
Int. Cl. D12—*14*
U.S. Cl. D90—9



224,474
BICYCLE STEERING POST
Carlton P. Pawsat, Maysville, Ky., assignor to Wald Manufacturing Company, Inc., Maysville, Ky.
Filed Apr. 1, 1970, Ser. No. 22,175
Term of patent 14 years
Int. Cl. D12—*14*
U.S. Cl. D90—9



224,475
BICYCLE STEERING POST
Carlton P. Pawsat, Maysville, Ky., assignor to Wald Manufacturing Company, Inc., Maysville, Ky.
Filed Apr. 1, 1970, Ser. No. 22,176
Term of patent 14 years
Int. Cl. D12—*14*
U.S. Cl. D90—9



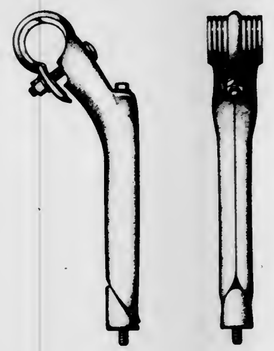
224,476
BICYCLE STEERING POST
Carlton P. Pawsat, Maysville, Ky., assignor to Wald Manufacturing Company, Inc., Maysville, Ky.
Filed Apr. 1, 1970, Ser. No. 22,177
Term of patent 14 years
Int. Cl. D12—*14*
U.S. Cl. D90—9



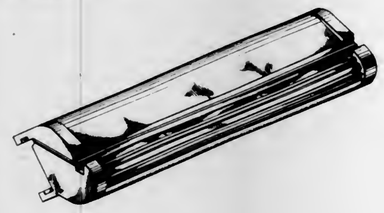
224,477
BICYCLE STEERING POST
Carlton P. Pawsat, Maysville, Ky., assignor to Wald Manufacturing Company, Inc., Maysville, Ky.
Filed Apr. 1, 1970, Ser. No. 22,180
Term of patent 14 years
Int. Cl. D12—*14*
U.S. Cl. D90—9



224,478
BICYCLE STEERING POST
Carlton P. Pawsat, Maysville, Ky., assignor to Wald Manufacturing Company, Inc., Maysville, Ky.
Filed Apr. 1, 1970, Ser. No. 22,183
Term of patent 14 years
Int. Cl. D12—*14*
U.S. Cl. D90—9



224,479
SINGLE BLADE UNIT FOR A SAFETY RAZOR
Roger L. Perry, Lynnfield Center, Mass., assignor to The Gillette Company, Boston, Mass.
Filed Mar. 15, 1971, Ser. No. 124,621
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D95—3



224,480
SAFETY RAZOR OR SIMILAR ARTICLE
Martin Glaberson, Ardsley, N.Y., assignor to Warner-Lambert Company, Morris Plains, N.J.
Filed Apr. 16, 1971, Ser. No. 134,922
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D95—3



224,481
RAZOR HANDLE
Norman D. Poisson, Andover, Mass., assignor to The Gillette Company, Boston, Mass.
Continuation-in-part of design application Ser. No. 124,619, Mar. 15, 1971. This application May 10, 1971, Ser. No. 142,103
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D95—3



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 25TH DAY OF JULY, 1972

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. C. I. Operations Pty., Limited: *See—*
Corderoy, Henry M., 3,678,647.

Aaakawa, Shirow: *See—*
Yoshimura, Susumi; Ito, Yoshimasa; Aaakawa, Shirow; and Hasegawa, Katsue, 3,679,944.

AB Svensk Industris Konstruktionsoch berakningskontor Sikob: *See—*
Eriksson, Anders Karl Oskar; and Wallenius, Jan Folke, 3,678,791.

Abbott, Dominic C.; and Chen, Godfrey, to Abbott Tresses Inc. Method of making precut and preset wig and precut and preset wig. 3,678,942, Cl. 132-5.000.

Abbott Tresses Inc.: *See—*
Abbott, Dominic C.; and Chen, Godfrey, 3,678,942.

Abex Corporation: *See—*
Coakley, James L., 3,678,951.

ACF Industries, Incorporated: *See—*
O'Leary, Walter E.; Thornton, Duane V.; Hammonds, James C.; and Dare, Roy R., 3,678,866.

Adams, David K.; and Ho, Raymond Y.-C., to Stanford Research Institute. Loss cancelling resonator and filters. 3,680,011, Cl. 333-70.00r.

Adams, James E.; Leder, Lewis B.; and Haas, Werner E. L., to Xerox Corporation. Liquid crystal optical filter system. 3,679,290, Cl. 350-157.000.

Adaptronics, Inc.: *See—*
Barron, Roger L.; Kelleher, Kenneth S.; and Vieth, George C., Jr., 3,680,126.

Adcole Corporation: *See—*
Cole, Addison D.; and Smith, Roger S., 3,678,937.

Addinall, Ramon L.; Lewis, William T.; and Mudroch, Otokar, to Steel Company of Canada Limited, The. Process for applying a polymeric film to a steel substrate. 3,679,513, Cl. 156-309.000.

Addington Laboratories, Inc.: *See—*
Addington, Robert L.; and Latus, Gerald J., Jr., 3,680,006.

Addington, Robert L.; and Latus, Gerald J., Jr., to Addington Laboratories, Inc. Microwave isolator. 3,680,006, Cl. 333-24.200.

Adler, Stanford L.: *See—*
Livshitz, Stanley L.; Engelhardt, Alvin; and Adler, Stanford L., 3,679,129.

Aerojet-General Corporation: *See—*
Chalfin, Gregory T.; Louapre, Merlin E.; and Olson, Richard C., 3,680,140.

Affiliated Hospital Products, Inc.: *See—*
Wexstaff, Charles W., 3,679,209.

Aga Aktiebolag: *See—*
Granqvist, Carl-Erik, 3,680,101.
Unger, Hans Peter Olof; Westberg, Johan E. H.; Berndtsson, Gunnar Ingemar; and Schwartz, Stephan Lars, 3,679,128.

Agence Nationale de Valorisation de la Recherche (ANVAR): *See—*
Chakraverty, Benoy Kumar; and Plenier, Alain, 3,679,947.

Agfa-Gevaert: *See—*
Vrancken, Marcel Nicolas; and Claeys, Daniel Alois, 3,679,410.

AGFA-Gevaert A.G.: *See—*
Rauffer, Walter, 3,679,202.

Agfa-Gevaert Aktiengesellschaft: *See—*
Kohler, Roland; Frick, Hans-Dieter; Fengler, Harald; and Geyken, Erwin, 3,678,843.

Ahy, Jahangir M. Method and apparatus for preparing copies or duplicates of wide band record carriers on which signals are recorded. 3,679,842, Cl. 179-100.20e.

Air Preheater Company, Inc.: *See—*
Bakker, Lubertus, 3,678,870.

Aisin Seiki Kabushiki Kaisha: *See—*
Kawabe, Tsuneo, 3,679,030.
Tsubouchi, Kaoru, 3,680,044.
Watabe, Shigeru; and Ohmi, Atsushi, 3,678,687.

Ajinomoto Co., Inc.: *See—*
Yoshimura, Ippei; Fukue, Norihiko; Sakamoto, Hiroshi; Murofushi, Hisashi; Hiyama, Takami; and Matsunaga, Takao, 3,679,707.

Ajioka, James S.; and Rosen, Harold A., to Hughes Aircraft Company. Shaped beam antenna. 3,680,143, Cl. 343-778.000.

Akeyama Masamoto; and Takahashi, Sohji, to Hitachi, Ltd. Manufacturing method of a magnetron anode. 3,678,575, Cl. 29-600.000.

Akiba, Kosuke: *See—*
Doi, Toshitada; and Akiba, Kosuke, 3,680,134.

Akihiko, Iochi: *See—*
Arikawa, Masayasu; Godai, Tomokazu; Arai, Toshio; Hironosuke, Kada; and Akihiko, Iochi, 3,679,866.

Akiyama, Hideaki: *See—*
Katagiri, Nobuyuki; and Akiyama, Hideaki, 3,679,453.

Aktiebolaget Bofors: *See—*
Davidson, Ragnar Per-Olof, 3,678,854.

Aktiebolaget Electrolux: *See—*
Fagerstrom, Kurt Gunnar, 3,678,595.
Holleitner, Hans Johann Gustav, 3,678,699.

Aktiebolaget Karlstads Mekaniska Werkstad: *See—*
Danielsson, Erik, 3,678,775.

Akzona Incorporated: *See—*
Ostertag, Karl; and Nilgens, Heinrich, 3,679,114.
Rohner, Dieter; and Duhring, Wolfgang, 3,679,808.

Alam, Anthony A. Vocabulary building game cards and holder. 3,678,602, Cl. 35-35.00j.

Albright, Charles F.: *See—*
United States of America, National Aeronautics and Space Administration, 3,678,654.

Alburger, James R. Inspection penetrant process and compositions employing mixtures of fluorescent indicator dye and nonfluorescent ultraviolet absorber dye. 3,679,598, Cl. 252-301.20r.

Alcan Aluminum Corporation: *See—*
Englund, James A.; and Popek, Stephen, 3,678,641.

Aldridge, Gerald T. Apparatus for proportioning and mixing particulate materials. 3,679,101, Cl. 222-136.000.

Alexander, Stuart John: *See—*
Wakefield, Norman; Alexander, Stuart John; Morrish, James Francis Gerrards Cross; Beck, William; Groves, Raymond Sturgis; and Harvey, Michael J., 3,678,644.

Alfsen, Alf Adolf. Method of finishing boards of vegetable material. 3,679,790, Cl. 264-280.000.

Alfter, Franz-Werner: *See—*
Wienand, Michael; Jensen, Klaus; Primesning, Franz; and Alfter, Franz-Werner, 3,679,531.

Algoship International Limited: *See—*
Campbell, George Thomas Richardson; and Ohta, Kimio, 3,678,875.

Allied Chemical Corporation: *See—*
Balint, Laszlo J.; Roth, David W. H., Jr.; and Snider, Orvill E., 3,679,368.
Pistilli, Donald J.; and Degginger, Edward R., 3,679,462.
Rothwell, Ronald E.; and Beringer, Charles W., 3,678,676.
Stoffel, Robert W., 3,679,152.

Allied Control Company, Inc.: *See—*
Tenenbaum, Mircea M., 3,679,912.

Allis-Chalmers Manufacturing Company: *See—*
Lesiecki, Gerald, 3,679,217.
Zilkalns, Juris, 3,678,559.

Almasi, George S.; and Genovese, Eugene R., to International Business Machines Corporation. Nonvolatile magneto-optical memory element and a method of writing thereon. 3,680,065, Cl. 340-174.0yc.

Almasi, Joseph C.; and Martin, William S., to General Electric Company. Face-pumped laser device with laterally positioned pumping means. 3,679,996, Cl. 331-94.500.

Alpha Products, Inc.: *See—*
Derkacz, John J., 3,679,844.

Altenschopfer, Theodor: *See—*
Schnegelberger, Harald; and Altenschopfer, Theodor, 3,679,589.

Alter, Hobart L., to Coast Catamaran Corporation. Jib sheet apparatus for sailboats. 3,678,876, Cl. 114-102.000.

Altshuler, Saul: *See—*
Hansen, David O.; Altshuler, Saul; Bernstein, William; and Hamermesh, Bernard, 3,679,897.

AMBAC Industries, Incorporated: *See—*
Burkhart, Clark B., 3,679,062.
Feldman, Irwin M., 3,678,765.
Wanlass, Cravens L., 3,679,962.
Wanlass, Cravens L., 3,679,966.
Weiss, Paul C., 3,679,098.

American Chain & Cable Company, Inc.: *See—*
Drayton, Walker E., 3,679,175.

American Cyanamid Company: *See—*
Brown, James Marvin, 3,679,719.
Bullock, Milon Walker, 3,679,696.
Bullock, Milon Walker, 3,679,725.
Feldman, Martin Louis; and Gordon, John Edson, 3,679,713.
Schoenbrunn, Erwin Frederick, 3,679,745.
Shah, Girish Chandulal; and Shroff, Mahesh Shantilal, 3,679,614.
Skrivan, Joseph Francis, 3,679,363.
Weinberg, Norman Louis, 3,679,534.
Weissbein, Leonard; and O'Brien, Samuel James, 3,679,351.

American Hydrocarbon Company: *See—*
Proell, Wayne A., 3,679,486.

American Massage Sales and Manufacturing Corporation: *See—*
Oetinger, Norman, 3,678,923.

American Standard Inc.: *See—*

Snyder, Robert L., 3,678,757.

American Sterilizer Company: *See—*
Brendgord, Thomas; and Kereluk, Karl, 3,678,921.

American Technical Industries, INC.: *See—*
Spiegel, Si, 3,679,528.

American Velcro, Inc.: *See—*
Perina, Joseph, 3,679,530.

Ametek, Inc.: *See—*
Guerster, Rene L., 3,679,145.

Amir, Ilan; and Peranio, Anthony, to Technion Research and Development Foundation Limited. Flow measuring device. 3,678,754, Cl. 73-419.000.

Amoco Production Company: *See—*
Silverman, Daniel; and Treitel, Sven, 3,680,040.

AMP Incorporated, mesne: *See—*
Teagno, Wladimiro; and Trevisiol, Franco, 3,680,035.

Amsted Industries, Incorporated: *See—*
Mulcahy, Harry W.; Bushnell, Eldon W.; and Kaim, John W., 3,679,028.

Ancra Corporation: *See—*
Prete, Ernest Jr., 3,678,542.

Anderegg, Paul; and Graner, Rolf G., to International Standard Electric Corporation. Wrapping machine. 3,679,522, Cl. 156-477.000.

Andersen, Anton M. Method for molding forms on various substrates. 3,679,498, Cl. 156-3.000.

Andersen, Anton M. Apparatus for molding forms on various substrates. 3,679,525, Cl. 156-515.000.

Anderson, Arthur William; and Truett, William Lawrence, to DuPont de Nemours, E. I., and Company. Olefin polymerization catalyst and process. 3,679,652, Cl. 260-94.90b.

Anderson, Charles Merton, to Year-A-Round Cab Corporation. Refrigeration and cooling device for shrimp boats. 3,678,697, Cl. 62-274.000.

Anderson, Glenn H.: *See—*
Tsai, James H.; and Anderson, Glenn H., 3,679,722.

Anderson, Richard W.: *See—*
Frick, Hughie R.; and Anderson, Richard W., 3,679,709.

Anderson, Roy E.; and Merigo, Miguel A., to General Electric Company. Mobile locator system for metropolitan areas. 3,680,121, Cl. 343-112.0tc.

Anderson, William S.; and Bucher, Foster L. Conveyor structure. 3,679,050, Cl. 209-84.000.

Andler, Richard C.; and Keck, Harley B., to Eastman Kodak Company. Heater control apparatus for packaging machinery. 3,679,518, Cl. 156-351.000.

Andrew, Eugene A.; and Halverson, Henry J., to Olin Corporation. Manufacture of globular powder. 3,679,782, Cl. 264-3.00e.

Andrews, David, to Ford Motor Company. Adjustable guide connector for Bowden cable. 3,678,964, Cl. 138-103.000.

Andrews, Francis W.; Sussman, Philip S.; and Barlow, Sidney D., to Mark-Tex Corporation. Compound tool for use in textile painting. 3,678,521, Cl. 7-1.00g.

Angello, Stephen J.: *See—*
Handy, Robert M.; Angello, Stephen J.; Malmberg, Paul R.; and O'Keeffe, Terence W., 3,679,497.

Angeloni, Paul. Vehicle speed monitoring systems. 3,680,043, Cl. 340-33.000.

Angus, Hamish Carmichael; and Gainsbury, Peter Edward, to International Nickel Company, Inc., The. Oxide resistor materials. 3,679,607, Cl. 252-518.000.

Anner, Georg; and Kalvoda, Jaroslav, to Ciba-Geigy Corporation. 3,16α,17-β-trihydroxy-$^{1,3,5(10)}$-oestratriene. 3,679,716, Cl. 260-397.500.

Anstalt fur Elektrohydraulische Anlagen: *See—*
Sorensen, Leif Erik, 3,678,684.

Anthony, Myron L., 45% to Statistical Services, Inc. Aircraft navigation receiver apparatus using active filters. 3,680,118, Cl. 343-106.00r.

Aoki,, Hidemasa. Viscous rubber dampers. 3,678,782, Cl. 74-574.000.

Aomic Power Development Associates, Inc.: *See—*
Warberg, Henrik S., 3,679,547.

Apfel, Joseph H.; and Gelber, Robert M., to Optical Coating Laboratory, Inc. Filter with neutral transmitting multilayer coating having asymmetric reflectance. 3,679,291, Cl. 350-164.000.

Applied Digital Data Systems, Inc.: *See—*
Meidan, Reuven, 3,680,045.

Applied Power Industries, Inc.: *See—*
Cattanach, Hamish A. G., 3,679,328.

Aquamatic Inc.: *See—*
Whitlock, Robert A., 3,679,951.

Arai, Toshio: *See—*
Arikawa, Masayasu; Godai, Tomokazu; Arai, Toshio; Hironosuke, Kada; and Akihiko, Iochi, 3,679,866.

Arai, Toshiyuki: *See—*
Tanaka, Hiroshi; and Arai, Toshiyuki, 3,679,296.

Arbab, Majid; Wong, William Y.; and Yu, Kuenseng, to National Cash Register Company, The. Integrated circuit bipolar random access memory system with low stand-by power consumption. 3,680,061, Cl. 340-173.00r.

Arcadia Products Corporation: *See—*
Packman, Elias W., 3,679,583.

Archer, Sydney; and Lorenz, Roman R., to Sterling Drug Inc. 2-Cyclohexylacylcyclo-alkanones. 3,679,752, Cl. 260-586.00r.

Architectural Research Corporation: *See—*
Prusinski, Richard C.; Fermani, Marcello; Torcolacci, Attilio; and Fermani, Luigi, 3,679,529.

Arikawa, Masayasu; Godai, Tomokazu; Arai, Toshio; Hironosuke, Kada; and Akihiko, Iochi, to Kobe Steel, Ltd. Pulsed arc spray welding in a narrow groove. 3,679,866, Cl. 219-137.000.

Arita, Tomohiko: *See—*
Sekido, Satoshi; and Arita, Tomohiko, 3,679,945.

Armstrong Cork Company: *See—*
Bagley, Donald H.; and Erickson, Richard L., 3,679,336.

Arnold, Herbert: *See—*
Scholl, Hermann; Norbert, Stuttgart; Gansert, Willi; and Arnold, Herbert, 3,678,904.

Arnold, Richard E.: *See—*
Ray, Donald A.; and Arnold, Richard E., 3,679,479.

Aronoff, Elihu; and Labana, Santokh S., to Ford Motor Company. Tetravinyl-vinyl monomer paint composition and painting process. 3,679,447, Cl. 106-287.000.

Aronson, Theodore F. Child-proof container closure means. 3,679,084, Cl. 215-9.000.

Arrigoni, Virgilio; Sezzi, Franco; and Gaetani, Bruno, to Snam Progetti S.p.A. Device for the simultaneous and quantitative detection of detonation and preignition. 3,678,732, Cl. 73-35.000.

Artelt, Herbert C., Jr., to Xerox Corporation. Label printing apparatus. 3,679,300, Cl. 355-3.000.

Arth, Glen E.; and Rasmusson, Gary H., to Merck & Co., Inc. Steroid compounds and process. 3,679,717, Cl. 260-397.450.

Arthur, Wilfred J.: *See—*
Knowles, Richard N.; and Arthur, Wilfred J., 3,679,805.

Artz, Klaus: *See—*
Desai, Nalin Binduprasad; Jayaraman, Ponnusami; Ramanathan, Visvanathan; Artz, Klaus; Naik, Navnitrai Nagarji; and Jenny, Walter, 3,679,657.

Arulpragasam, Jeganandaraj A.; Binks, Dennis C.; Holmes, John J.; Minshull, John F.; Pinnell, Martin C.; and Williams, Clive, to International Business Machines Corporation. Configuration control of data processing system units. 3,680,052, Cl. 340-172.500.

Arzt, Friedrich; and Hofert, Paul, to VDO Tachometer Werke-Adolf Schindling GmbH. Switch clock. 3,679,850, Cl. 200-37.00r.

Asahi Glass Co., Ltd.: *See—*
Kanai, Eizo, 3,679,389.

Asahi Kasei Kogyo Kabushiki Kaisha: *See—*
Yamaguchi, Hiroyuki; Tuji, Katsuyoshi; Maki, Kenji; and Shimonishi, Isoo, 3,679,355.

Asahi Kogaku Kogyo Kabushiki Kaisha: *See—*
Mori, Chiharu; and Ota, Katsumi, 3,678,826.
Nobusawa, Tsukumo, 3,678,825.

Asahi, Matahiko; Murakami, Hisamichi; Hasegawa, Yukio; Matsui, Hideo; and Takayanagi, Eifu, to Mitsui Toatsu Chemicals, Inc. Combined process for dyeing and finishing fabrics composed of cellulosic fibers. 3,679,348, Cl. 8-18.000.

Asakuno, Hiroyoshi: *See—*
Hino, Hiroyuki; Asakuno, Hiroyoshi; and Yamada, Tetsuya, 3,678,545.

Ashcombe Products Company: *See—*
Munchel, Eugene A.; and Thornton, Henry M., 3,679,319.

Ashford, John Wesley: *See—*
Holm, Robert Leander; and Ashford, John Wesley, 3,679,929.

Ashikaga, Tadao; and Higashimori, Shosuke, to Kurashiki Rayon Co., Ltd. Process for the production of water-resistant paper or nonwovens containing water soluble polyvinyl alcohol. 3,679,544, Cl. 162-157.00r.

Ashland Oil, Inc.: *See—*
Clocker, Edwin T., 3,679,182.
Kmecak, Ronald A.; Kovach, Stephen M.; and Patrick, Ralph E., 3,679,768.
Kmecak, Ronald A.; and Kovach, Stephen M., 3,679,769.
Kovach, Stephen M.; and Kmecak, Ronald A., 3,679,773.

Asper, Jean-Jacques, to Brasco S.A. Filtration apparatus and method. 3,679,052, Cl. 210-75.000.

ATI, Inc.: *See—*
Zoot, Robert Martin; and Scieszinski, James Leo, 3,679,307.

Atlantic Richfield Company: *See—*
Broome, Marshall B.; and Burress, William W., 3,679,971.
Yoo, Jin S., 3,679,772.

Aubert, Harry Julius; and Gemperle, Edward Carroll, to Procter & Gamble Company, The. Low foaming hard surface cleaners. 3,679,608, Cl. 252-526.000.

Augustinsky, Jan Witold: *See—*
Dalard, Francis Jean; Augustinsky, Jan Witold; and Sohm, Jean-Claude, 3,679,488.

Auriemma, Nicholas A., to Universal Oil Products Company. Unit for storing and serving articles such as condiments. 3,679,065, Cl. 312-312.000.

Ausnit, Steven. Flexible pilfer proof closure construction for bags. 3,679,511, Cl. 156-251.000.

Aust, Manfred; and Smuda, Gerhard, to Fried. Krupp Gesellschaft mit beschrankter Haftung. Apparatus for feeding fabric and rubber inserts to a tire building drum. 3,679,520, Cl. 156-406.000.

Automatic Electric Laboratories, Inc.: *See—*
Winters, Hilary M.; and Creasy, James R., 3,679,970.

Avant Corporation: *See—*
Macone, Frederick W., 3,679,512.

Avant Incorporated: *See—*
Kuhns, Roger J., 3,679,514.

Avco Corporation: *See—*
Maresca, Neal J.; and Winton, Orrin J., 3,678,743.

Avins, Jack; and Kirkwood, Loren Robert, to RCA Corporation. Control apparatus for a color television receiver. 3,679,816, Cl. 178-5.4he.

Avnet, Inc.: *See—*
Vitale, Joseph Michael, 3,680,027.

Avron, Mordhay: *See—*
Schneyour, Amir; and Avron, Mordhay, 3,679,139.

Azoplate Corporation: *See—*
Gillich, Thomas N., 3,679,419.

Babcock & Wilcox Company, The: *See—*
Leirvik, Raymond M., 3,679,545.
Ratcliffe, Temple W., 3,679,105.

Babcock, Guy L.: *See—*
LaCombe, Donald J.; and Babcock, Guy L., 3,679,941.

Babcock, John C.; and Beal, Philip F., III, to Upjohn Company, The. Process for making prostaglandins and compounds related to prostaglandins. 3,679,705, Cl. 260-340.700.

Babin, Mikhail Artemievich: *See—*
Rubinshtein, Sholom Yakovlevich; Babin, Mikhail Artemievich; Gutman, Anatoly Lvovich; Naumenko, Viktor Dmitrievich; Orlov, Evgeny Mikhailovich; Presman, Vladimir Alexandrovich; Maev, Veniamin Evnovich; and Bondarenko, Fedor Alexeevich, 3,678,664.

Babson, Arthur L., to Warner-Lambert Company. Preparation of water-soluble, dyed substrates for amylase assay. 3,679,661, Cl. 260-233.30r.

Bach, Bert; and Gerber, Eliot S. Vibration isolation structure. 3,679,159, Cl. 248-22.000.

Bachofen, Willy A. Mixing apparatus. 3,679,183, Cl. 259-9.000.

Backer, Leonard N., to Burlington Industries, Inc. Automated production of men's boxer shorts. 3,678,516, Cl. 2-224.00r.

Badische Anilin- & Soda-Fabrik Aktiengesellschaft: *See—*
Kiefer, Hans, 3,679,665.
Koenig, Karl-Heinz; Maschke, Artur; and Fischer, Adolf, 3,679,678.
Pohlemann, Heinz; and Wurmb, Rolf, 3,679,737.
Schulz, Gerhard; and Matthias, Guenther, 3,679,739.

Bagley, Donald H.; and Erickson, Richard L., to Armstrong Cork Company. Dry lubricant coating of exturded tubing. 3,679,336, Cl. 425-95.000.

Bahnson Company, The: *See—*
Sloan, Donald A., 3,678,538.

Baier, Robert J. Apparatus for drawing in perspective. 3,678,589, Cl. 33-64.00d.

Bailey, Robert C.; Estes, Harry A.; James, Glen S.; Klug, James R.; Montillon, Henry A.; Myring, Verne E.; Robertson, Orville H.; Sargeant, Blaine W.; and Sorensen, Neal E., to Holden Industries, Inc. Method of making a magazine insert. 3,679,200, Cl. 270-4.000.

Baker, Calvin Lee; and Rogers, Clarence H. Vertically adjustable trailer hitch. 3,679,233, Cl. 280-476.00r.

Baker, Cole H.: *See—*
Geis, James D.; Troll, John H.; Gluz, Harry; and Baker, Cole H., 3,678,729.

Baker, Donald H.; and Kallio, Frank H., to Sperry Rand Corporation. Compass system and components therefor having automatic field cancellation. 3,678,593, Cl. 33-222.000.

Baker, James G., to Polaroid Corporation. Compact folding reflex camera. 3,678,831, Cl. 95-13.000.

Baker, James G., to Polaroid Corporation. Schmidt optical system suitable for a panoramic scanning camera including means to compensate for variations in off-axis magnification. 3,679,293, Cl. 350-184.000.

Baker Oil Tools, Inc.: *See—*
Cockrell, Darryl W.; and Callihan, Rudy B., 3,678,998.

Baker, Thomas D.; and Ojala, William K., to Ford Motor Company. Exhaust gas recirculation control mechanism. 3,678,909, Cl. 123-119.00a.

Bakker, Lubertus, to Air Preheater Company, Inc. Sludge burner. 3,678,870, Cl. 110-8.00r.

Balint, Lajos, to Hilti Aktiengesellschaft. Apparatus for producing molded bodies of rotation by rolling. 3,679,344, Cl. 425-366.000.

Balint, Laszlo J.; Roth, David W. H., Jr.; and Snider, Orvill E., to Allied Chemical Corporation. Continuous polyester polymerization apparatus. 3,679,368, Cl. 23-263.000.

Ballam, Jack: *See—*
Linton, Denton C.; Zinkl, Andrew; and Ballam, Jack, 3,679,399.

Ballard, Norman D., to United Aircraft Corporation. Electrochemical spark detection system. 3,679,567, Cl. 204-228.000.

Balleis, Peter. Toy tops. 3,678,615, Cl. 46-68.000.

Ballenger, William G., to Central Specialties Co. Portable litter bag holder. 3,679,160, Cl. 248-97.000.

Banford, J. C., Excavators Limited: *See—*
Prime, Derek Arthur, 3,678,605.

Banning, Thomas A., Jr., to Kenney, Frank D.; trustee. CATV TV or subscription television operations. 3,679,813, Cl. 178-5.100.

Baranchikov, Vladimir Mikhailovich: *See—*
Efimov, Leonid Alexandrovich; Shtin, Lev Mikhailovich; Sinitsky, Vladimir Mikhailovich; Khirdzheiv, Sergei Grigorievich; Pylaikin, Petr Alexeevich; Satovskaya, Ljudmila Sergeevna; Grebnev, Nikolai Feodosovich; Rasseikin, Mikhail Grigorievich; Kalugin, Konstantin Yakovlevich; Somov, Boris Stepanovich; and Baranchikov, Vladimir Mikhailovich, 3,678,728.

Baranowski, Frank, Jr. Torch handle. 3,679,171, Cl. 251.148.000.

Barber-Colman Company: *See—*
Finkbiner, Roy R., 3,679,490.

Barber-Greene Company: *See—*
Martenson, Earl D.; and Gebhardt, James J., Jr., 3,678,817.

Barbier, Jean-France Leon Paul; and Renard, Guy, to Eastman Kodak Company. Fogged, direct-positive silver halide emulsion containing nitron. 3,679,424, Cl. 96-109.000.

Barchard, Francis M., to Singer Company, The. Automatic dewatering of gas wells. 3,678,997, Cl. 166-53.000.

Barclay, Ralph R., to Minnesota Mining and Manufacturing Company. Dropout compensator for color television. 3,679,814, Cl. 178-5.4cd.

Bard, John C.; and Olson, Floyd C., to Mayer, Oscar, & Co., Inc. Method of preparing fresh uncured meat products. 3,679,434, Cl. 99-107.000.

Bard, Martin. Shelf-supporting standard. 3,679,164, Cl. 248-243.000.

Bargain, Michel; Gruffaz, Max; Laurent, Serge; and Mallet, Maurice, to Rhone-Poulenc S.A. Curable compositions of an unsaturated bisamide, a diamine, and a multicyclic aromatic compound. 3,679,639, Cl. 260-78.00u.

Barlow, Sidney D.: *See—*
Andrews, Francis W.; Sussman, Philip S.; and Barlow, Sidney D., 3,678,521.

Barocca, Aldo J.; and Benedict, Ralph H., to Olin Mathieson Chemical Corporation. Support means for fusees. 3,678,856, Cl. 102-37.400.

Barrett, Maurice L., Jr. Meter proving system. 3,678,730, Cl. 73-3.000.

Barron, Roger L.; Kelleher, Kenneth S.; and Vieth, George C., Jr., to Adaptronics, Inc. Self-programming antenna tracking system. 3,680,126, Cl. 343-117.00r.

Barry, Gerald J.: *See—*
Roberts, William E.; and Barry, Gerald J., 3,679,215.

Barton, James A.: *See—*
Darrah, John H.; Bell, James C.; Vorachek, Jerome J.; Bezbatchenko, John W.; Biecker, George A.; Barton, James A.; Gordon, Robert C.; and Kirschner, Gerald D., 3,680,129.

Basche, Malcolm; Fanti, Roy; Galasso, Francis S.; Kuntz, Urban E.; and Schile, Richard D., to United Aircraft Corporation. Method for producing boron-carbon fibers. 3,679,475, Cl. 117-216.000.

Baskin, Herbert B.; Belady, Laszlo A.; Evangelisti, Carlo J.; and Morse, Stephen P., to International Business Machines Corporation. Light pen arrangement for providing three degrees of freedom for a light pen in an interactive graphics system. 3,680,078, Cl. 340-324.00a.

Bassett, Kirk W.; and Ford, Frank P., to Rice Barton Corporation. Splicing webs. 3,679,524, Cl. 156-502.000.

Bath Institute of Medical Engineering, The: *See—*
Morse-Brown, Austin G., 3,679,260.

Battelle Development Corporation, The: *See—*
Cremeans, George E., 3,679,738.

Battenfeld Maschinenfabriken GmbH., Firma, mesne: *See—*
Stuhlmann, Hans; and Stuhlmann, Werner, 3,678,597.

Batzer, Hans: *See—*
Habermeier, Juergen; Batzer, Hans; and Porret, Daniel, 3,679,681.

Baumgartner, Emma F. Over arm carrying bag. 3,678,977, Cl. 150-30.000.

Bayle, Guy P.; and Johnson, Douglas A., to North American Aviation, Inc. Terrain-warning radar system. 3,680,094, Cl. 343-7.0ta.

Bayze, Thomas F. Air pollution circulation device. 3,678,658, Cl. 55-230.000.

Beal, Philip F., III: *See—*
Babcock, John C.; and Beal, Philip F., III, 3,679,705.

Beaman, Alden Gamaliel; Duschinsky, Robert; and Tautz, William Paul, to Hoffmann- La Roche Inc. 2-Nitroimidazoles. 3,679,698, Cl. 260-309.000.

Beaton, John M.; Van Rheenen, Verlan H.; and Parikh, Jekishan R., to Upjohn Company, The. Process for the selective reduction of 6-methylene-3-keto-Δ-steroids. 3,679,715, Cl. 260-397.100.

Beatrice Foods Co.: *See—*
Brorson, Donald L.; and Magnuson, Raymond A., 3,679,100.

Bechtel International Corporation: *See—*
Goerz, David J., Jr.; and Stephansen, Erik W., 3,678,594.
Ragsdale, Harold E., 3,678,950.

Beck, Edward: *See—*
Bedo, Alfred; and Beck, Edward, 3,679,169.

Beck, Marvin G.: *See—*
Woods, John A.; and Beck, Marvin G., 3,678,529.

Beck, William: *See—*
Wakefield, Norman; Alexander, Stuart John; Morrish, James Francis Gerrards Cross; Beck, William; Groves, Raymond Sturgis; and Harvey, Michael J., 3,678,644.

Becker, Albert H.; Hart, Joseph M.; and Quaal, John A., to Cutler-Hammer, Inc. Auxiliary switch for an electromagnetic relay. 3,680,016, Cl. 335-106.000.

Becker, Raymond M., to Webb, Jervis B., Company. Roller transfer conveyor. 3,679,043, Cl. 198-105.000.

Beckett, William J.: *See—*
North, William L.; and Beckett, William J., 3,679,106.

Beckman, William J.: *See—*
Lloyd, Allen H.; and Beckman, William J., 3,678,525.

Becky, Raymond, to Westinghouse Air Brake Company. Electronic scanner. 3,679,828, Cl. 178-7.600.

Bedford, Burnice D., to General Electric Company. Compatible brushless reluctance motors and controlled switch circuits. 3,679,953, Cl. 318-138.000.

Bedo, Alfred; and Beck, Edward, to Sno-Trik Company. High pressure valve and method. 3,679,169, Cl. 251-88.000.

Beereboom, John J., to Pfizer Inc. γ-ionone derivatives and process therefor. 3,679,754, Cl. 260-587.000.

Beers, Le Roy W.: *See—*
De Santis, Alfred J.; Beers, Le Roy W.; White, James A.; and Moysey, John A., 3,680,058.

Beesley, James P.; and Gunn, John B., to International Business Machines Corporation. High current low voltage regulated power supply. 3,679,959, Cl. 321-47.000.

Beguin, Daniel Edmond, to International Standard Electric Corporation. Multimode horn. 3,680,145, Cl. 343-786.000.

Behrens, Alvin J. Chuck jaw insert and assembly. 3,679,221, Cl. 279-1.0sj.

Beierer, Joachim: *See—*
Picard, Karl-Heinz; and Beierer, Joachim, 3,679,909.

Beightol, Leroy Earl, to Nutt, Roy, mesne. Biopsy method. 3,679,450, Cl. 117-3.000.

Beiswanger, John Paul Gerhardt; and Nassry, Assadullah, to GAF Corporation. Glycol ether-chromium corrosion resistant coatings for metallic surfaces. 3,679,493, Cl. 148-6.160.

Belady, Laszlo A.: *See—*
Baskin, Herbert B.; Belady, Laszlo A.; Evangelisti, Carlo J.; and Morse, Stephen P., 3,680,078.

Bell, Harvey W., III, to Stewart-Warner Corporation. Device for supporting semiconductor wafers. 3,678,893, Cl. 118-500.000.

Bell, James C.: *See—*
Darrah, John H.; Bell, James C.; Vorachek, Jerome J.; Bezbatchenko, John W.; Biecker, George A.; Barton, James A.; Gordon, Robert C.; and Kirschner, Gerald D., 3,680,129.

Bell Tech Systems, Inc.: *See—*
Zweig, Leon A., 3,679,483.

Bell Telephone Laboratories, Incorporated: *See—*
Biazzo, Martin Robert; King, Bernard George; and Ortel, William Charles Gormley, 3,678,574.
Bonner, William Adam; Singh, Shobha; and Van Uitert, Le Grand Gerard, 3,679,907.
Braun, Edwin Julius; Maxon, Rodney Robert; Meise, Henry August, Jr.; Taylor, George William; and Witmore, Ronald Kirk, 3,679,834.
Buus, Robert George, 3,679,984.
Chesler, Ronald Benjamin; and Maydan, Dan, 3,680,000.
Chow, Woo Foung, 3,680,067.
Copeland, John Alexander, III, 3,680,066.
Dembiak, Matthew Raymond; and Webster, George H., 3,679,503.
Halpern, Samuel Walter, 3,679,832.
Howson, Robert D., 3,679,977.
Kropfl, Walter Joseph, 3,680,056.
Moschytz, George Samson, 3,679,987.
Nguyen, Van-Tran; and Shah, Jagdeep Chandravadan, 3,679,994.
Nutt, Wendell Glenn, 3,679,810.
Osborne, Thomas Lawrence, 3,680,108.
Paoli, Thomas Lee; and Ripper, Jose Ellis, 3,680,001.
Pratt, Jeofry Stuart Courtney, 3,679,818.
Richards, Philip C., 3,680,081.
Rosenberg, Robert, 3,679,313.
Schneider, Herbert Anton, 3,679,914.
Schroeder, Manfred Robert, 3,679,821.
Sondhi, Man M., 3,679,020.
Theriot, Eugene Joseph, 3,679,983.
Weiner, Daniel, 3,679,904.

Belyaeva, Ljudmila Pavlovna: *See—*
Ezhov, Leonid Antipovich; Kudevitsky, Yankel Veniaminovich; and Belyaeva, Ljudmila Pavlovna, 3,678,554.

Belzak Corporation: *See—*
Zak, Henry C., 3,679,659.

Bencze, William Laszlo, to Ciba Corporation. Bicycloalkyl phenoxyaliphatic acid-compositions. 3,679,800, Cl. 424-267.000.

Bender, Alfred: *See—*
Ostwald, Fritz; Bender, Alfred; and Nonn, Gerhard, 3,678,954.

Bender, David L.; and Lane, Richard L., to Kayex Corporation. Device for tensioning an annular sawblade. 3,678,917, Cl. 125-12.000.

Bendix Corporation, The: *See—*
Blatter, Albert, 3,678,733.
Colson, William B.; Niedermiller, Herbert C.; and Deradoorian, Bagdasar, 3,679,384.
Enslin, Frieder H., 3,679,571.
Fickenscher, William E., 3,679,874.
Hall, Roger D.; and Clasby, David N., 3,680,131.
Helava, Uuno V.; and Forrest, Robert B., 3,678,582.
Miller, Donald L., 3,679,034.

Benedict, Ralph H.: *See—*
Barocca, Aldo J.; and Benedict, Ralph H., 3,678,856.

Beniada, Maurice: *See—*
Jacques, Jean-Marie; and Beniada, Maurice, 3,679,935.

Benjamin, John, to United Kingdom of Great Britain and Northern Ireland, Minister of Technology in Her Britannic Majesty's Government of the. Aircraft landing radio guidance receiver which warns of signal reflections. 3,680,120, Cl. 343-109.000.

Bennett, John D., to Sun Oil Company. Method and apparatus for cutting ice. 3,678,873, Cl. 114-42.000.

Bennett, John S., to Massey-Ferguson Services, N.V. Lockable overrun device. 3,679,032, Cl. 192-46.000.

Bennett, William C., to Novar Corporation. Character select indicator for typewriter. 3,679,037, Cl. 197-19.000.

Benson, Royal H.; and Bodre, Robert J., to Monsanto Company. Safety device for removing tritium gas from a gas stream. 3,679,366, Cl. 23-254.00r.

Bentholm, Svend Asger Rud; and Koenen, Wilhelm Engelinus, to Organon Inc. Process for the manufacture of rapidly disintegrating solid dosage unit forms. 3,679,794, Cl. 424-148.000.

Bentley Machine Development Company Limited, The: *See—*
Gostelow, Daniel William Fredrick, 3,678,710.

Beny, Janos; Kingsbury, LC James; and Scribner, David L., to Mattel, Inc. Toy coupling apparatus and method for uncoupling same. 3,678,618, Cl. 46-221.000.

Beresniewicz, Aleksander, to Du Pont de Nemours, E. I., and Company. Uniform ethylene/vinyl acetate/N-methylol acrylamide terpolymer dispersions. 3,679,620, Cl. 260-29.6ta.

Berger, Hans, to Zentro Albert Burkle Kommanditgesellschaft. Apparatus for the thermostatic regulation of room temperatures. 3,680,020, Cl. 337-305.000.

Bergey, John M. K.; and Kalatucka, Stephen, to United States of America, Navy. Alerting system. 3,680,046, Cl. 340-146.200.

Bergmann, Michael J., to Du Pont de Nemours, E. I., and Company. Capacitor assembly having electrode and dielectric layers overlapped for sealing. 3,679,943, Cl. 317-230.000.

Bergna, Horacio E., to Du Pont de Nemours, E. I., and Company. Hot-pressed titanium nitride-titanium carbide compositions. 3,679,442, Cl. 106-43.000.

Bergy, Malcolm E.; Herr, Ross R.; and Mason, Donald J., to Upjohn Company, The. Antibiotic process of treatment. 3,679,787, Cl. 424-181.000.

Beringer, Charles W.: *See—*
Rothwell, Ronald E.; and Beringer, Charles W., 3,678,676.

Berman, George A.: *See—*
Drutchas, Gilbert H.; Berman, George A.; and Spencer, Phillip B., 3,679,329.

Bernas, Richard J.; and Kaczynski, Clarence J., to Dow Chemical Company, The. Ball valve with positive locking mechanism. 3,679,170, Cl. 251-104.000.

Berndtsson, Gunnar Ingemar: *See—*
Unger, Hans Peter Olof; Westberg, Johan E. H.; Berndtsson, Gunnar Ingemar; and Schwartz, Stephan Lars, 3,679,128.

Bernstein, William: *See—*
Hansen, David O.; Altshuler, Saul; Bernstein, William; and Hamermesh, Bernard, 3,679,897.

Berry, David A.; and Gynn, Gilbert M., to Dart Industries Inc. Allyl carbonate and substituted allyl carbonate esters of 1,4-dimethylol cyclohexane, and polymers thereof. 3,679,727, Cl. 260-463.

Berry, Norman H. Ignition circuit radiation suppression resistor. 3,680,029, Cl. 338-334.000.

Berry, Ronald G. Hair cutting apparatus. 3,678,944, Cl. 132-45.00r.

Bert, Stephen F., to Textron, Inc. End attachment for watch bands. 3,678,544, Cl. 24-265.00b.

Berthier, Guy: *See—*
Commercon, Jean Claude; and Berthier, Guy, 3,679,968.

Bertin, Daniel; and Perronnet, Jacques, to UCLAF-Roussel. Alkoxy-al-kylamino-s-triazine herbicides. 3,679,393, Cl. 71-93.000.

Bertolacini, Ralph J., to Standard Oil Company (Indiana). Reforming with a platinum mordenite-alumina catalyst. 3,679,575, Cl. 208-65.000.

Besser Company: *See—*
Springs, Thomas W., 3,679,340.

Betker, Ted C.: *See—*
Tabor, Joseph M.; and Betker, Ted C., 3,678,607.

Betts, Colin; and Collinson, Alfred Edward, to United Kingdom Atomic Energy Authority. Liquid flow control devices. 3,678,963, Cl. 138-41.000.

Betzer, Cloyd L., to Roper Corporation. Burner grate. 3,679,467, Cl. 117-129.000.

Bewley, Lawrence L.: *See—*
Jorgensen, Arnold J.; Bewley, Lawrence L.; and White, Kenneth H., 3,680,005.

Bezbatchenko, John W.: *See—*
Darrah, John H.; Bell, James C.; Vorachek, Jerome J.; Bezbatchenko, John W.; Biecker, George A.; Barton, James A.; Gordon, Robert C.; and Kirschner, Gerald D., 3,680,129.

Bhappu, Roshan B.: *See—*
O'Connor, Lawrence T.; Brierley, James A.; and Bhappu, Roshan B., 3,679,397.

Biazzo, Martin Robert; King, Bernard George; and Ortel, William Charles Gormley, to Bell Telephone Laboratories, Incorporated. Acoustically absorbent mounting method for optical modulator. 3,678,574, Cl. 29-592.000.

Bicicchi, Vincent A., to Woolley, W. J., Co. Door with double-inflatable seal and pressure chamber. 3,678,624, Cl. 49-68.000.

Bickel, John E.; Freres, Clemens H.; Gossard, Earl E.; Britt, James E.; Ortwein, Norman R.; and Swanson, Eric R., to United States of America, Navy. Very low frequency location finding system. 3,680,115, Cl. 343-105.00r.

Biecker, George A.: *See—*
Darrah, John H.; Bell, James C.; Vorachek, Jerome J.; Bezbatchenko, John W.; Biecker, George A.; Barton, James A.; Gordon, Robert C.; and Kirschner, Gerald D., 3,680,129.

Bielle, Eugene. Multi-purpose watering equipment. 3,679,138, Cl. 239-267.000.

Binks, Dennis C.: *See—*

Arulpragasam, Jeganandaraj A.; Binks, Dennis C.; Holmes, John J.; Minshull, John F.; Pinnell, Martin C.; and Williams, Clive, 3,680,052.

Binzer, Thomas J., to General Electric Company. Protective barriers for window of microwave oven door. 3,679,855, Cl. 219-10.550.

Biometrics, Inc.: *See—*
Newman, Joel S.; and Jernigan, Marvin E., 3,679,295.

Birke, Walter: *See—*
von der Eltz, Hans-Ulrich; Birke, Walter; Kunze, Wolfgang; Taunus, Hofheim; and Schon, Franz, 3,679,349.

Birnbaum, Hermann, to Caravan Products Co., Inc. Conditioner for baked goods. 3,679,430, Cl. 99-90.0cb.

Bishop, Walton B., to United States of America, Navy. Non-main beam reflected IFF interrogation rejector. 3,680,090, Cl. 343-6.5lc.

Bison Instruments, Inc.: *See—*
Grangaard, Orrin H., Jr.; and Selig, Ernest T., 3,678,739.

Bissett-Berman Corporation, The: *See—*
Pinto, James J., 3,680,063.

Biswell, Charles B.; and Johnston, Thomas F., to Du Pont de Nemours, E. I., and Company. Pour improvers for fuel oils. 3,679,380, Cl. 44-62.000.

Bixby, Leo A., to North American Rockwell Corporation. Vehicle provided with four wheel drive system. 3,679,016, Cl. 180-44.000.

Bjorkegren, Lars Gstaf. Roll press comprising two dissimilar rolls with equal deflection characteristics. 3,678,846, Cl. 100-155.00r.

Bjorklund, Lowell L., to Illinois Tool Works Inc. Sealing washer. 3,678,979, Cl. 151-37.000.

Black, James A.: *See—*
Black, James A.; and Farwell, Harry Russell, 3,679,112.

Black, James A.; and Farwell, Harry Russell, to Black, James A. Vacuum belt guiding means. 3,679,112, Cl. 226-33.000.

Black, James R.; and Gurev, Harold S., to Motorola, Inc. Vertical resistor. 3,680,028, Cl. 338-308.000.

Blackburn, Bobby J. Method and apparatus for determining unbalance. 3,678,761, Cl. 73-457.000.

Blair, George R.; and Keller, Sherman R., to Hughes Aircraft Company. Method of electropolishing molybdenum. 3,679,559, Cl. 204-140.500.

Blanchard, Byron E.: *See—*
Westcott, Vernon C.; Blanchard, Byron E.; Davis, Paul A.; and Prevot Stephane, 3,678,742.

Bland, Ray A.: *See—*
Dickey, Clyde W.; and Bland, Ray A., 3,678,720.

Blatchford, John K.; Peterson, Edward C.; and Burda, Jan C., to Whirlpool Corporation. Method of making a heating element. 3,679,473, Cl. 117-212.000.

Blatter, Albert, to Bendix Corporation, The. Fluidic viscometer. 3,678,733, Cl. 73-54.000.

Blattner, Raymond J., to Dresser Industries, Inc. Torque measuring hand screwdriver. 3,678,743, Cl. 73-139.000.

Blech, Joab J., to Ford Motor Company. Gas turbine ceramic regenerator. 3,678,991, Cl. 165-9.000.

Blessin, Ronald W.; and Kennedy, James A., to Honeywell Information Systems Inc., mesne. Apparatus for maintaining character synchronization in a data communication system. 3,680,051, Cl. 340-172.500.

Blessin, Ronald W.; and Kennedy, James A., to Honeywell Information Systems, Inc. Data communications subchannel. 3,680,057, Cl. 340-172.500.

Blickstein, Martin J.: *See—*
Newman, Richard J.; Mittler, Martin A.; and Blickstein, Martin J., 3,679,940.

Blitchington, Frank H., Jr., to Western Electric Company, Incorporated. Apparatus for controlling the intensity of radiant energy on a strip. 3,679,903, Cl. 250-83.3uv.

Block, Aleck, to Merit Abrasive Products, Inc. Abrasive pack with anchor assembly. 3,678,633, Cl. 51-337.000.

Bloomquist, Evert V.; and Bloomquist, Gerald E. Key lock assembly for a pair of relatively movable members. 3,679,246, Cl. 287-52.050.

Bloomquist, Gerald E.: *See—*
Bloomquist, Evert V.; and Bloomquist, Gerald E., 3,679,246.

Blaw-Knox Foundry & Mill Machinery, Inc.: *See*
Feuer, Michael M.; and Kotler, Richard G., 3,679,150.

Blum, Arthur B.: *See—*
Davis, James R.; and Blum, Arthur B., 3,678,978.

Blumenkranz, James J.: *See—*
Wise, Eugene H.; and Blumenkranz, James J., 3,678,634.

Boari, Gianfranco; Liberti, Lorenzo; Merli, Carlo; and Passino, Roberto, to Consiglio Nazionale Delle Ricarche. Process for the deionization of aqueous saline solutions. 3,679,580, Cl. 210-26.000.

Bobst, J., & Fils, S.A.: *See—*
Boujon, Gerard, 3,679,316.

Bodre, Robert J.: *See—*
Benson, Royal H.; and Bodre, Robert J., 3,679,366.

Boettcher, Richard W. Jack or lift mechanism and drive therefor. 3,679,174, Cl. 254-45.000.

Bogle, David M., to Ford Motor Company. Rotatable plate and impact means for scrap fragmentizing machine. 3,679,144, Cl. 241-300.000.

Bogren, Hugl; Elfstrom, Gosta; and Tengroth, Bjorn, to Incentive Research and Development AB. Device for simultaneous radiographical and photographical examinations on the eye and the orbital region. 3,679,901, Cl. 250-59.000.

Bohorquez, Luis; and Vindez, Pierre G., to Zephyr Manufacturing Co., Inc. Portable right angle drill. 3,679,320, Cl. 408-99.000.

Boise Cascade Corporation: *See—*
Ehrensing, Alvin T.; and Taylor, Clement R., 3,678,890.

Boissier, Jacques Robert: *See—*
Ratouis, Roger; and Boissier, Jacques Robert, 3,679,802.

Bolduan, Dieter: *See—*
Markewitz, Wolfgang; and Bolduan, Dieter, 3,678,693.

Bolduc, Berthelemi J. Paper cutting apparatus. 3,678,581, Cl. 30-294.000.

Bollinger, William C., to Detroit Flame Hardening Co. Method forming clad plates from curved surfaces. 3,679,858, Cl. 219-76.000.

Boltz, Charles D., Jr., to RCA Corporation. Optical apparatus for continuous television film projection system. 3,679,827, Cl. 178-7.00.

Bomberger, Howard B., Jr.; and Seagle, Stanley R., to RMI Company, mesne. Method of improving macrostructure of titanium-base alloy products. 3,679,403, Cl. 75-175.500.

Bondarenko, Fedor Alexeevich: *See—*
Rubinshtein, Sholom Yakovlevich; Babin, Mikhail Artemievich; Gutman, Anatoly Lvovich; Naumenko, Viktor Dmitrievich; Orlov, Evgeny Mikhailovich; Presman, Vladimir Alexandrovich; Maev, Veniamin Evnovich; and Bondarenko, Fedor Alexeevich, 3,678,664.

Bonelli, Giovanni. Process for alum cracking and the so obtained products. 3,679,361, Cl. 23-121.000.

Bonner, William Adam; Singh, Shobha; and Van Uitert, Le Grand Gerard, to Bell Telephone Laboratories, Incorporated. Lithium formate nonlinear devices. 3,679,907, Cl. 307-88.300.

Bonnet, Jean-Loup, to Schlumberger Technology Corporation. Magnetic suspension densimeter including means to vary float volume and weight. 3,678,760, Cl. 73-453.000.

Bonsky, Elmer C., to T.A.D. Avanti, Inc. Multi-line coupling system. 3,679,831, Cl. 179-2.00c.

Boothe, Willis A.; and Healey, Anthony J., to General Electric Company. Fluidic lead-lag frequency responsive circuit. 3,678,953, Cl. 137-81.500.

Borcherding, Karl, to Heye, Hermann. Honing apparatus. 3,678,630, Cl. 51-58.000.

Borden, Gavin Gale: *See—*
Ludwig, Frederic G., 3,679,302.

Borden Inc.: *See—*
Sandler, Stanley Robert, 3,679,700.
Sorell, Henry P.; Pomazak, Eugene; and Rygg, Sven, 3,679,458.
Stine, Orrin Burr, 3,679,110.

Borg-Warner Corporation: *See—*
Szucs, Robert J., 3,678,519.

Borisov, Vasily Semenovich: *See—*
Kulikov, Ivan Vladimirovich; Borisov, Vasily Semenovich; and Treschev, Viktor Georgievich, 3,678,999.

Bosc, Henri J., to International Standard Electric Corporation. Circuits eliminating large clutter echoes. 3,680,096, Cl. 343-7.700.

Bosch, Robert, G.m.b.H.: *See—*
Scholl, Hermann; Norbert, Stuttgart; Gansert, Willi; and Arnold, Herbert, 3,678,904.
Schulten, Reinhard; and Michel, Hartmut, 3,679,517.
Zimmermann, Kurt; and Gemander, Georg, 3,678,913.

Bosworth, George: *See—*
Eggleston, Gerard; and Bosworth, George, 3,678,753.

Botts, John C.: *See—*
Simmonds, Leonard B.; and Botts, John C., 3,679,926.

Boujon, Gerard, to Bobst, J., & Fils, S.A. Method and apparatus for optically positioning printing plates. 3,679,316, Cl. 356-168.000.

Boulanger, Gilbert; and Samoel, Alain, to Commissariat a l'Energie Atomique. Installation for ultrasonic testing. 3,678,735, Cl. 73-67.700.

Boulter, Thomas W.: *See—*
Wesson, Jerry J.; and Boulter, Thomas W., 3,678,859.

Bowman Enterprises, Inc.: *See—*
Bowman, Vernon D., 3,678,869.

Bowman, Mark M., Jr., to Phillips Petroleum Company. Repelling of marine animal pests. 3,679,466, Cl. 117-127.000.

Bowman, Vernon D., to Bowman Enterprises, Inc. Air heater and exhaust gas diluting apparatus for incinerator. 3,678,869, Cl. 110-8.00r.

Boyd, Reed L. Rotating disc scraper. 3,678,532, Cl. 15-236.000.

Boyer, Joseph M. Tunable radio antenna. 3,680,135, Cl. 343-742.000.

Boylan, Jack B.; and Sturwold, Robert J., to Emery Industries, Inc. Flexibilized phenol-formaldehyde resins. 3,679,617, Cl. 260-19.00r.

Boyte, Jack D. Golf club swing training aid. 3,679,214, Cl. 273-189.00r.

Bozich, Robert A. Compressor clutch with time delay control. 3,678,700, Cl. 62-323.000.

Bradbury, Keith Douglas. Apparatus for pulling row crops. 3,679,002, Cl. 171-56.000.

Brake, Loren D., to Du Pont de Nemours, E. I., and Company. Isomer enrichment of bicyclohexyl-4,4-diamine. 3,679,746, Cl. 260-563.00r.

Brameda Resources Limited: *See—*
Tisdel, Lawrence C.; and Scott, Harry B., 3,679,371.

Bramson Instruments, Incorporated: *See—*
Horton, Robert C., 3,679,526.

Brandli, Paul: *See—*
Zuhlke, Gerhard; Brandli, Paul; and Spalti, Max, 3,678,550.

Brasco S.A.: *See—*
Asper, Jean-Jacques, 3,679,052.

Braun, Edwin Julius; Maxon, Rodney Robert; Meise, Henry August, Jr.; Taylor, George William; and Witmore, Ronald Kirk, to Bell Telephone Laboratories, Incorporated. By link circuit. 3,679,834, Cl. 179-18.00c.

Braun, Richard E.; Hopkins, Lionel G.; Sheehan, Neil J.; and Sanchez, Edward J., to Magnetic Head Corporation. Method of manufacturing multiple track, single gap magnetic heads. 3,678,576, Cl. 29-603.000.

Bray, John R.; and McKinney, Perry F., to Monsanto Company. Stabilizing circuit for anticipating controller. 3,679,873, Cl. 219-501.000.

Brendgord, Thomas; and Kereluk, Karl, to American Sterilizer Company. Portable isolator. 3,678,921, Cl. 128-1.00r.

Brennan, John F.: *See—*
Lester, George R.; and Brennan, John F., 3,679,704.

Breslow, Jeffrey D., to Glass, Marvin, & Associates. Board game apparatus. 3,679,210, Cl. 273-134.00c.

Bresser, Thomas G. Golf club carrier or cart. 3,679,226, Cl. 280-47.190.

Breunich, Theodore R.: *See—*
Di Noia, Emanuel J.; and Breunich, Theodore R., 3,678,750.

Bridgestone Tire Company Limited: *See—*
Watanabe, Shigeo; Sogi, Toshiyuki; and Mukai, Tsuneo, 3,678,982.

Brierley, James A.: *See—*
O'Connor, Lawrence T.; Brierley, James A.; and Bhappu, Roshan B., 3,679,397.

Bright, James A., to General Motors Corporation. Hydraulic thermostat. 3,680,022, Cl. 337-315.000.

Brinkmann, Ludwig; and Herwig, Walter, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Thermoplastic polyester moulding compositions containing boron nitride. 3,679,628, Cl. 260-45.7ps.

Brinks, Floyd J.; Day, Lucian P., Jr.; and Jones, Jerry L., to Pullman Incorporated. Roof structure for railway cars. 3,678,867, Cl. 105-377.000.

Brissey, Charles David; and Trotter, Marvin Nathaniel, to Stevens, J. P., & Co., Inc. Quill or bobbin spinning and winding frame with semi-automatic doffing and donning. 3,678,672, Cl. 57-52.000.

Bristol, Bertram W. Grinding apparatus. 3,679,141, Cl. 241-106.000.

Bristol, John E., to Du Pont de Nemours, E. I., and Company. Preparation of polyvinyl alcohol having improved color properties by treating the polyvinyl ester with an alkali metal borohydride. 3,679,646, Cl. 260-91.3pv.

Bristol, John E., to Du Pont de Nemours, E. I., and Company. Preparation of polyvinyl alcohol having improved color properties by treating the polyvinyl ester with magnesium metal. 3,679,647, Cl. 260-91.3pv.

Bristol, John E., to Du Pont de Nemours, E. I., and Company. Preparation of polyvinyl alcohol having improved color properties by treating the polyvinyl ester with an alkaline earth metal hydride. 3,679,648, Cl. 260-91.3pv.

Bristol-Myers Company: *See—*
Essery, John Michael, 3,679,663.

British Iron and Steel Research Association, The: *See—*
Davies, Gordon Idris; Killay, Swansea; and Williams, Terence, 3,678,888.

British Titan Products Company Limited: *See—*
Brook, David Whiteley; and Ward, Raymond, 3,679,721.

Britt, James E.: *See—*
Bickel, John E.; Freres, Clemens H.; Gossard, Earl E.; Britt, James E.; Ortwein, Norman R.; and Swanson, Eric R., 3,680,115.

Brocbman, Henry J.; and Sandor, Bela, to General Motors Corporation. Closure latch. 3,679,251, Cl. 292-216.000.

Bronstein, Harry. Circumcision clamp. 3,678,935, Cl. 128-325.000.

Brook, David Whiteley; and Ward, Raymond, to British Titan Products Company Limited. Titanium compounds. 3,679,721, Cl. 260-429.500.

Brook, James H. T.; and Williams, Joyce, to Shell Oil Company. Lubricant compositions. 3,679,585, Cl. 252-51.50a.

Brooks, Rodney A.; and Orlando, Vincent A., to General Motors Corporation. Acceleration sensor. 3,678,763, Cl. 73-514.000.

Broome, Marshall B.; and Burress, William W., to Atlantic Richfield Company. Digital waveform generator with adjustable time shift and automatic phase control. 3,679,971, Cl. 324-.50b.

Brorson, Donald L.; and Magnuson, Raymond A., to Beatrice Foods Co. Molded plastic garment hanger. 3,679,100, Cl. 223-88.000.

Brown, Claude W., to United States of America, Navy. Digital target acquisition system. 3,680,093. Cl. 343-7.0ed.

Brown, Frederick G., to Lever Brothers Company. Dyeing human hair with a peroxy compound and a reactive dyestuff. 3,679,347, Cl. 8-10.100.

Brown, James Marvin, to American Cyanamid Company. Non-yellowing softening agent for cotton and rayon textiles. 3,679,719, Cl. 260-400.000.

Brown, Melancthon S., to Chevron Research Company. N-polyhalovinylthiocarboxamides. 3,679,673, Cl. 260-239.300.

Brown, Melancthon Starr; deceased (by Kohn, Gustave; administrator), to Chevron Research Company. N-substituted arylcarbamoyl sulfides. 3,679,733, Cl. 260-479.00c.

Brown, Roger S.: *See—*
Rhodes, Philip L.; and Brown, Roger S., 3,678,537.

Brown, William A.; and Earnest, Eugene P. Pipe perforating machine. 3,678,718, Cl. 72-71.000.

Brown, William E.; Heitz, Robert G.; and Levine, Charles A., to Dow Chemical Company, The. Electrical cell assembly. 3,679,480, Cl. 136-6.000.

Bruhwiler, Othmar; and Egloff, Anton, to Fischer, Georg AG. Shedding motion for a weaving machine. 3,678,967, Cl. 139-35.000.

Bruninghans Hydraulik GmbH: *See—*
Riedhammer, Josepf; and Glaser, Fritz-Jorg, 3,679,327.

Brunn, Theodore F., to Schlumberger Technology Corporation. Methods and apparatus for recording well logginng data. 3,680,042, Cl. 340-18.000.

Brunnee, Curt; and Bultemann, Hans-Joachim. Separating device for mixtures of gaseous or vaporous substances, especially for separating a carrier gas from a fraction to be analyzed in a combined gaschromatograph and mass-spectrometer. 3,678,656, Cl. 53-197.000.

Brunswick Corporation: *See—*
Roberts, John A.; and King, Alwyn H., 3,678,564.

Brunswick Corporation, mesne: *See—*
Clark, Raymond C.; and Ziebell, Donn G., 3,679,271.

Bryant, Kenneth Owen; Morrow, William R.; and Logue, Vernon J., to United States of America, Navy. Recursive integrator. 3,680,088, Cl. 343-5.0dp.

Bryant, Marion B.; and Hunt, Barry R., to United States of America, Navy. Luneberg lens ECM apparatus. 3,680,123, Cl. 343-113.00r.

Bryant, Richard W.; and Tu, George K., to Cogar Corporation. Integrated circuit system having single power supply. 3,679,917, Cl. 307-297.000.

Bucher, Foster L.: *See—*
Anderson, William S.; and Bucher, Foster L., 3,679,050.

Buck, Barry L. Mixing and dispersing device. 3,679,323, Cl. 416-183.000.

Buck, Daniel C., to Westinghouse Electric Corporation. Ferrite waveguide phase shifter exhibiting negative phase shift. 3,680,010, Cl. 333-31.00a.

Buck, Keith E., to United States of America, Atomic Energy Commission. Modified stirling cycle engine-compressor having a freely reciprocable displacer piston. 3,678,686, Cl. 60-24.000.

Buck, Robert E.; Metzger, Robert W., Jr.; Rittmann, Albert D.; and Sayers, Eugene H., to General Motors Corporation. Strip mounted semiconductor device. 3,679,946, Cl. 317-234.00r.

Buckler, Sheldon A.; Milligan, Terry W.; and Rogers, Howard G., to Polaroid Corporation. Color diffusion transfer processes and elements for use thereon with incorporated image-forming material impermeable layer. 3,679,409, Cl. 96-3.000.

Bucourt, Robert; Nedelec, Lucien; and Gasc, Jean-Claude, to Roussel Uclaf. Novel 7α-methyl-Δ-gonadienes. 3,679,718. Cl. 260-397.450.

Budan, Gerhard: *See—*
Hartmann, Hellmut; and Budan, Gerhard, 3,679,362.

Buecheler, Paul; and Mueller, Fred to Sandoz Ltd. Esters of 2-(β-car-(boxyethyl) amino-3,4-phthaloyl-benzarocridone benzacridome. 3,679,685, Cl. 260-276.000.

Buehler, William J., to United States of America, Navy. Method for casting high T content alloys. 3,679,394, Cl. 75-10.000.

Buitelaar, Arnold A.: *See—*
van der Meij, Pieter H.; and Buitelaar, Arnold A., 3,679,644.

Bullivant, Kenneth W., to K-Tron Corporation. Digitally controlled mass flow feeder and weight integrator. 3,679,010, Cl. 177-16.000.

Bullock, Michael K.; Miller, Myrl J.; and Voit, William F., Jr., to International Business Machines Corporation. Balance type toner concentration sensing and monitoring system. 3,679,099, Cl. 222-55.000.

Bullock, Milon Walker, to American Cyanamid Company. Method of preparing dl 6-phenyl-2,3,5,6-tetrahydroimidazo [2,1-b]-thiazole hydrochloride. 3,679,696, Cl. 260-306.700.

Bullock, Milon Walker, to American Cyanamid Company. Compound ((β-hydroxyphenethyl)amino)ethyl thiocyanate and acid addition salts thereof. 3,679,725, Cl. 260-454.000.

Bultemann, Hans-Joachim: *See—*
Brunnee, Curt; and Bultemann, Hans-Joachim, 3,678,656.

Bumbalek, Karel; and Olser, Ladislav, to Zavody Presneho strojirenstvi Gottwaldow narodni podnik. Shaping machine for shoe uppers. 3,678,522, Cl. 12-8.100.

Bunker, William H.; Kerr, John W.; Mitrofanoff, Nicholas S.; and Swearingen, Kent W., to International Business Machines Corporation. Input/output channel. 3,680,054, Cl. 340-172.500.

Bunker-Ramo Corporation, The: *See—*
Chow, Weichien; and Provinsky, Jerry, 3,680,034.

Burch, John L., to United States of America, National Aeronautics and Space Administration. Two-speed drive system. 3,678,771, Cl. 74-217.000.

Burd, Thomas A., to Square D Company. Rotatably reversible connector for electric circuit breaker. 3,679,854, Cl. 200-166.0bh.

Burda, Jan C.: *See—*
Blatchford, John K.; Peterson, Edward C.; and Burda, Jan C., 3,679,473.

Burgess, Anthony Joseph; Eagles, Alan Charles; and Steel, Margaret Lillian, to Imperial Chemical Industries Limited. Transfer coating process. 3,679,506, Cl. 156-209.000.

Burgess, James F.; Kopczewski, Robert F.; and Holeman, John M., to General Electric Company. Method and apparatus for opti cal projection of deformation images. 3,679,299, Cl. 353-67.000.

Burgoon, Richard J., to Westinghouse Electric Corporation. Voltage indicator for high voltage switchgear. 3,680,071, Cl. 340-248.00r.

Burke, Edward F., Jr., to Polaroid Corporation. System for processing photographic material. 3,678,841, Cl. 95-89.00r.

Burkhart, Clark B., to AMBAC Industries, Incorporated. Filter leaf and method of making the same. 3,679,062, Cl. 210-486.000.

Burkholder, Charles R. Portable ball washer. 3,678,526, Cl. 15-97.00r.

Burley, Harvey A., to General Motors Corporation. Engine combustion monitor. 3,678,741, Cl. 73-116.000.

Burley, Maurice N. Garbage can lid holding device. 3,679,162, Cl. 248-156.000.

Burlington Industries, Inc.: *See—*
Backer, Leonard N., 3,678,516.
McGee, James Newton; and Griffin, Thomas Franklin, 3,679,516.

Burress, George T.; and Willis, James L., Jr., to Mobil Oil Corporation. Purifying and milling terephthalic acid. 3,679,741, Cl. 260-525.000.

Burress, William W.: *See—*
Broome, Marshall B.; and Burress, William W., 3,679,971.

Burroughs Corporation: *See—*
De Santis, Alfred J.; Beers, Le Roy W.; White, James A.; and Moysey, John A., 3,680,058.
Fussell, Richard L., 3,679,969.
Jorgensen, Arnold J.; Bewley, Lawrence L.; and White, Kenneth H., 3,680,005.
Wilson, Roy A., 3,680,055.

Busby, Samuel J. Weighted whirling type exercising device. 3,679,204, Cl. 272-81.000.

Buscher, Judy G. Face mask. 3,678,929, Cl. 128-146.600.

Buschman, Elmer W., 2/3% to Buschman, Kenneth, and 1/3% to Price, William R. Electrostatic precipitator. 3,678,653, Cl. 55-2.000.

Buschman, Kenneth, and 1/3% to Price, William R.: *See—*
Buschman, Elmer W., 3,678,653.

Bushnell, Eldon W.: *See—*
Mulcahy, Harry W.; Bushnell, Eldon W.; and Kaim, John W., 3,679,028.

Butler, Kenneth, to Pfizer Inc. Aryl esters of α-carboxyarylmethyl-penicillins. 3,679,801, Cl. 424-271.000.

Butter, Karl, to Messerschmitt-Bolkow-Blohm Gesellschaft mit beschrankter Haftung. Arrangement of cooling channels for rocket engine combustion chambers. 3,678,802, Cl. 90-11.00c.

Buus, Robert George, to Bell Telephone Laboratories, Incorporated. Pulsed two-tone test signal generator for linear amplifiers. 3,679,984, Cl. 330-2.000.

Buzano, Michel, to Societe Rhodiaceta. Process for the manufacture of high-bulk yarn. 3,678,549, Cl. 28-72.12.

Byxbee, Crawford Ralph: *See—*
United States of America, National Aeronautics and Space Administration, 3,678,685.

Cadiou, Jean Georges, to Societe Anonyme Automobiles Citroen. Seat comprising independently mounted blocks of deformable elastic padding. 3,679,263, Cl. 297-456.000.

Calgon Corporation: *See—*
Rivers, Hubert M., 3,679,543.

California Pellet Mill Company: *See—*
Gilman, Robert W., 3,679,343.

Callaghan, Joseph C., to Canada, Her Majesty the Queen in the right of, as represented by the Minister of National Defence. Cable control system. 3,679,180, Cl. 254-172.000.

Callihan, Rudy B.: *See—*
Cockrell, Darryl W.; and Callihan, Rudy B., 3,678,998.

Calogero, William J.: *See—*
Negersmith, Kent M.; and Calogero, William J., 3,679,367.

Calvet, Francisco Vancells, to Hilados Y Tintes Soler, S.A. Procedure for the dyeing of textile ribbons. 3,679,356, Cl. 8-149.100.

Camdex, Inc.: *See—*
Leich, Robert A., 3,678,799.

Cameron, Gordon N. Hydraulically actuated chuck. 3,679,219, Cl. 279-1.00q.

Cammarata, Italo: *See—*
Vecchio, Martino; Cammarata, Italo; and Pattore, Vittorio, 3,679,767.

Campbell, Douglas Earl; and Harris, Richard Allen, to Western Electric Company, Incorporated. Method of partial shuttering for even exposure of photosensitive material. 3,679,310, Cl. 355-132.000.

Campbell, George Thomas Richardson; and Ohta, Kimio, to Algoship International Limited. Trimming pipe system for free-flowing cargoes. 3,678,875, Cl. 114-73.000.

Campbell, William W. Belt tightening tool. 3,679,176, Cl. 254-54.000.

Canada, Her Majesty the Queen in the right of, as represented by the Minister of National Defence: *See—*
Callaghan, Joseph C., 3,679,180.

Canada Packers Limited: *See—*
Donovan, Ross Grant; and Wolf, Stewart Franklin, 3,679,548.

Canadian Patents and Development Limited: *See—*
Menzies, Robert W., 3,679,924.

Canon Kabushiki Kaisha: *See—*
Inoue, Shozo, 3,679,301.
Mashimo, Yukio; and Ishikawa, Mitsuo, 3,678,828.
Takishima, Yoshiyuki, 3,678,835.

Canter, James A., to General Motors Corporation. Float actuated evaporator heater. 3,679,867, Cl. 219-272.000.

Capell, A. Earl; and Wilson, Leroy E., to Kimberly-Clark Corporation. Self bonded tissue-fiber laminate process. 3,679,515, Cl. 156-309.000.

Carabateas, Philip M., to Sterling Drug Inc. Certain N-(pyridyl)propionanilides. 3,679,690, Cl. 260-295.0am.

Caravan Products Co., Inc.: *See—*
Birnbaum, Hermann, 3,679,430.

Carcey, Jacques, to Commissariat a l'Energie Atomique. Die-furnace, especially for the fabrication of sintered products. 3,679,807, Cl. 13-27.000.

Carlson, Reuben C.: *See—*
Midgley, Edward L.; and Carlson, Reuben C., 3,679,980.

Carlson, William C. Plant cover. 3,678,619, Cl. 47-29.000.

Carothers, Charles H.; and Kelly, Robert M., to Westinghouse Electric Corporation. Electrical disconnector. 3,679,938, Cl. 317-61.000.

Carrano, Andrew J., Jr.; Cotsalas, Stephen N.; and Jacobson, John E., to Edu-Matic Designs, Ltd. Game apparatus for catching randomly moving articles. 3,679,208, Cl. 273-95.00r.

Carrillo, Gilberto, to Rohr Corporation. Method and composition for stripping structural adhesives and the like. 3,679,591, Cl. 252-142.000.

Carter, Cecil O.: *See—*
Hutson, Thomas, Jr.; and Carter, Cecil O., 3,679,771.

Carver, Fred F., to Singer Company, The, mesne. Simulated instruments. 3,679,880, Cl. 235-151.340.

Case, J. I., Company: *See—*
Jansson, Birger F., 3,679,027.

Castner, Charles S., to Schuyler Development Corporation. Cleaning and conditioning concentrate compositions. 3,679,609, Cl. 252-527.000.

Catalysts and Chemicals Inc.: *See—*
La Hue, Richard W.; and Smith, Nolan A., 3,679,762.
Livingston, Jimmy Y., 3,679,763.

Caterpillar Tractor Company: *See—*
Dadds, Floyd S.; and Gee, James E., 3,679,216.

Cattanach, Hamish A. G., to Applied Power Industries, Inc. Variable pressure sensitive pump. 3,679,328, Cl. 417-270.000.

C.A.V. Limited: *See—*
Dillon, Stanley Bernard; Mowbray, Dorian Farrar; and Kamp, Kenneth Albert Walters, 3,679,846.

Celanese Corporation: *See—*
Druin, Melvin L.; Loft, John T.; and Plovan, Steven G., 3,679,538.
Vogelfanger, Elliot A., 3,679,636.
Zimmerman, Daniel; and Wolfowitz, Stanley, 3,679,540.

Centofanti, Armando P. Balloon and parachute combination. 3,679,155, Cl. 244-32.000.

Central Specialties Co.: *See—*
Ballenger, William G., 3,679,160.

Cesenek, Bedrich: *See—*
Prochazka, Miloslav; Seidl, Karel; and Cesenek, Bedrich, 3,678,673.

Ceskoslovenska akademie ved: *See—*
Wichterle, Otto, 3,679,504.

Chakraverty, Benoy Kumar; and Plenier, Alain, to Agence Nationale de Valorisation de la Recherche (ANVAR). Metal-insulator-semiconductor structures. 3,679,947, Cl. 317-234.00r.

Chalfin, Gregory T.; Louapre, Merlin E.; and Olson, Richard C., to Aerojet-General Corporation. Scanning antenna having a circular lens with peripherally spaced linear arrays. 3,680,140, Cl. 343-754.000.

Chalk, Alan J.; and Factor, Arnold, to General Electric Company. Method for stabilizing polycarbonates and compositions made thereby. 3,679,629, Cl. 260-37.0pc.

Chamberlain, Meredith K.: *See—*
Krepps, James Edgar, Jr.; Chamberlain, Meredith K.; and Fisher, Robert D., 3,679,979.

Chambers, Worth L., to Sunbeam Corporation. Battery powered electric knife and charger-storage stand therefor. 3,679,958, Cl. 320-2.000.

Chang, Henry M., to First Dynamics, Inc. Combination food container and implement for extracting the contents. 3,679,093, Cl. 220-90.200.

Chang, Wen-Hsuan: *See—*
Dowbenko, Rostyslaw; and Chang, Wen-Hsuan, 3,679,564.

Chang, Yun Ger, to Reichhold Chemicals, Inc. Peroxides bearing gamma-lactone ring and method of making the same. 3,679,708, Cl. 260-343.600.

Chapman, Clifford Victor Gascoyne: *See—*
Wyatt, James Andrew Stewart; Chapman, Clifford Victor Gascoyne; Solt, George Stefan; and Mullet, Sidney George, 3,679,059.

Charbonnier, Gerard; and Gauthier, Gerard, to Compagnie Generale d'Automatisme. Storage battery monitoring apparatus. 3,680,072, Cl. 340-249.000.

Charle, Roger; Kalopissis, Gregoire; and Zviak, Charles, to L'Oreal. Aerosol composition and method for producing same. 3,679,102, Cl. 222-192.000.

Charles, James F., to Shur-Lok Corporation. Sectional sandwich panel insert with frictional telescopic coupling. 3,678,535, Cl. 16-2.000.

Charles River Foundation, The: *See—*
Merrill, Edward W., 3,678,756.
Merrill, Edward W., 3,679,625.

Charpente: *See—*
Duclaux, Daniel; Givry, Jean-Pierre; and Pointud, Jacky, 3,679,555.

Chase-Shawmut Company, The: *See—*
Kozacka, Frederick J., 3,680,019.

Chaussonnet, Pierre E.: *See—*
Van Impe, Jean; Chaussonnet, Pierre E.; and Rombaux, Jean-Pierre M., 3,679,378.

Chemech Engineering Ltd.: *See—*

Westerlund, Gothe O., 3,679,568.
Chemex Corporation: *See—*
Keeler, Richard A.; and Eckstein, Arthur, 3,679,869.
Chemical Construction Corporation: *See—*
Newman, Daniel J.; and Klein, Louis A., 3,679,549.
Chemische Werke Huls, A.G.: *See—*
Feinauer, Roland; Thier, Werner; and Schneider, Wolfgang, 3,679,468.
Chen, Godfrey: *See—*
Abbott, Dominic C.; and Chen, Godfrey, 3,678,942.
Chen, Philip L.; and Paradysz, Louis F., to Xerox Corporation. Optical system for projection recording apparatus. 3,678,820, Cl. 95-4.500.
Cheng, Chen Yen; and Cheng, Sing-Wang. Fractional solidification process with heat reuse by the application of pressure. 3,678,696, Cl. 62-58.000.
Cheng, Sing-Wang: *See—*
Cheng, Chen Yen; and Cheng, Sing-Wang, 3,678,696.
Chernoch, Joseph P., to General Electric Company. Laser cooling method and apparatus. 3,679,999, Cl. 331-94.500.
Chesler, Ronald Benjamin; and Maydan, Dan, to Bell Telephone Laboratories, Incorporated. Laser arrangement including a cavity defined by convex and concave mirrors. 3,680,000, Cl. 331-94.500.
Chessin, Hyman, to M & T Chemicals Inc. Novel composite. 3,679,381, Cl. 29-199.000.
Chevron Research Company: *See—*
Brown, Melancthon S., 3,679,673.
Brown, Melancthon Starr, 3,679,733.
Kohn, Gustave K., 3,679,734.
Stayner, Robert A., 3,679,857.
Chi, Dongsuk: *See—*
Lee, Hanju; and Chi, Dongsuk, 3,679,604.
Chicotka, Richard J., to International Business Machines Corporation. Method of polishing gallium phosphide. 3,679,501, Cl. 156-17.000.
Childress, James D.: *See—*
Rubin, Bernard; and Childress, James D., 3,679,360.
Chisso Corporation: *See—*
Hino, Hiroyuki; Asakuno, Hiroyoshi; and Yamada, Tetsuya, 3,678,545.
Chlebus, Rold: *See—*
Kretzschmar, Heinz; Chlebus, Rold; and Ochsner, Willi, 3,679,040.
Chmela, John F.; and Fohrman, Seymour F. Combination carrying handle and pour spout. 3,679,103, Cl. 222-192.000.
Cho, Masanobu, to Micro Seiki Co., Ltd. Moving coil type phonograph pickup cartridge. 3,679,843, Cl. 179-100.410.
Chock Full-O-Nuts Corporation: *See—*
Reich, Ismar M., 3,679,416.
Chong, Wilson. Pile borer. 3,679,008, Cl. 175-220.000.
Chow, Weichien; and Provinsky, Jerry, to Bunker-Ramo Corporation, The. Connector-universal. 3,680,034, Cl. 339-48.
Chow, Woo Foung, to Bell Telephone Laboratories, Incorporated. Domain propagation circuit. 3,680,067, Cl. 340-174.0tf.
Christ, Wilhelm; and Weissbach, Peter, to Then, Rudolf, Farbereimaschinenfabrik Gesellschaft mit beschrankter Haftung, Firma. Method for wet treatment of elongated textile material. 3,679,357, Cl. 8-152.000.
Christensen, Ferdinand. Strip material holder. 3,679,199, Cl. 269-254.00r.
Christy, Melvin G.: *See—*
Key, Robert L., III; and Christy, Melvin G., 3,678,939.
Chromalloy American Corporation: *See—*
Dabrush, Charles; and Strauss, Irving, 3,678,585.
Chromatix, Inc.: *See—*
Harris, Stephen E., 3,679,288.
Chrysler France: *See—*
Soubis, Jean-Pierre, 3,678,911.
Ciba Corporation: *See—*
Bencze, William Laszlo, 3,679,800.
Ciba-Geigy AG: *See—*
Desai, Nalin Binduprasad; Jayaraman, Ponnusami; Ramanathan, Visvanathan; Artz, Klaus; Naik, Navnitrai Nagarji; and Jenny, Walter, 3,679,657.
Habermeier, Juergen; Batzer, Hans; and Porret, Daniel, 3,679,681.
Huber-Emden, Helmut; Eschle, Karl; and Maeder, Arthur, 3,679,779.
Maeder, Erwin; and Siegrist, Adolf Emil, 3,679,669.
Nachbur, Hermann; and Maeder, Arthur, 3,679,778.
Ciba-Geigy Corporation: *See—*
Anner, Georg; and Kalvoda, Jaroslav, 3,679,716.
Flynn, Robert, 3,679,465.
Heusler, Karl; and Fechtig, Bruno, 3,679,676.
Knell, Martin; and Dexter, Martin, 3,679,744.
Knight, Donald V., 3,679,523.
Kuhnis, Hans Herbert; and Rolf, Denss, 3,679,799.
Morf, Max; Wenger, Markus; and Feisst, Jutta, 3,679,621.
Wasley, Jan W. F.; and Gruenfeld, Norbert, 3,679,687.
Cielaszyk, Edward F., to General Time Corporation. One-piece roller-impulse member for timepiece escapement. 3,678,683, Cl. 58-122.000.
Cincinnati Milacron Chemicals, Inc.: *See—*
Stapfer, Christian H.; and Racz, William B., 3,679,619.
Cincinnati Mine Machinery Company, The: *See—*
Krekeler, Claude B., 3,679,265.
Citizens and Southern National Bank, The: *See—*
Green, William E., Jr., 3,678,650.
Claes, Paul: *See—*
De Somer, Pierre; and Claes, Paul, 3,679,795.
Claeys, Daniel Alois: *See—*
Vrancken, Marcel Nicolas; and Claeys, Daniel Alois, 3,679,410.
Clancy, David, to Colgate-Palmolive Company. Packaging apparatus. 3,678,649, Cl. 53-124.00d.
Clark Equipment Company: *See—*
Orns, James L., 3,679,256.
Clark, Raymond C.; and Ziebell, Donn G., to Brunswick Corporation, mesne. Support for a fluidized bed. 3,679,271, Cl. 302-45.000.
Clark, Timothy M.; Shanfield, Henry; and Grunau, David L., to Polymetrics, Incorporated. Reverse osmosis water purifier. 3,679,055, Cl. 210-110.000.
Clark, William C.: *See—*
Houston, William L., Jr.; and Clark, William C., 3,679,765.
Clark, William Russell, to Eddystone Machinery Company. Wrapping rotating rolls of sheet material. 3,678,646, Cl. 53-14.000.
Clarke Floor Machine Company; division of: *See—*
Nise, Wilfred C.; and Lowder, Dale E., 3,678,524.
Clasby, David N.: *See—*
Hall, Roger D.; and Clasby, David N., 3,680,131.
Clayson N.V.: *See—*
De Coene, Frans J., 3,678,938.
Clayton, David Henry; and Karkalas, John. Wort production. 3,679,431, Cl. 99-52.000.
Clecak, Nicholas J.; and Cox, Robert J., to International Business Machines Corporation. Arsenic containing bisazide compounds. 3,679,670, Cl. 260-240.00g.
Clifford, Dennis A.: *See—*
Teal, James L.; Hamilton, Charles Eugene; and Clifford, Dennis A., 3,679,364.
Cliftronics, Inc.: *See—*
Ganowsky, Raymond J., 3,680,015.
Clocker, Edwin T., to Ashland Oil, Inc. Process suitable for preparing homogeneous emulsions. 3,679,182, Cl. 259-9.000.
Coakley, James L., to Abex Corporation. Method and apparatus for improved jet pipe valve. 3,678,951, Cl. 137-14.000.
Coast Catamaran Corporation: *See—*
Alter, Hobart L., 3,678,876.
Coathylene S.A.: *See—*
Korsgen, Hans Helmuth; and Weller, Wolfgang, 3,679,638.
Cobb, William R., to Westinghouse Electric Corporation. Latch mechanism for refrigerators freezers and the like. 3,678,716, Cl. 70-92.000.
Cockrell, Darryl W.; and Callihan, Rudy B., to Baker Oil Tools, Inc. Retrievable well packer. 3,678,998, Cl. 166-123.000.
Cogar Corporation: *See—*
Bryant, Richard W.; and Tu, George K., 3,679,917.
Cohen, Michel; Lavigne, Pierre; and Sauvagnac, Robert, to Commissariat a l'Energie Atomique. Radioisotope heat source boiler for power generators. 3,678,920, Cl. 126-344.000.
Cohen, Milton J. Syringe. 3,678,931, Cl. 128-220.000.
Cohen, Seymour. Supports for curtains, venetian blinds, and the like. 3,678,636, Cl. 52-39.000.
Cohrs, William E.; and Stroiwas, Edward, to Dow Chemical Company, The. Thickened fuel compositions and method and material for thickening same. 3,679,382, Cl. 44-7.00d.
Cole, Addison D.; and Smith, Roger S., to Adcole Corporation. Demand cardiac pacer with interference protection. 3,678,937, Cl. 128-419.00p.
Cole Manufacturing Company: *See—*
Hatcher, John c., 3,679,224.
Colgate-Palmolive Company: *See—*
Clancy, David, 3,678,649.
Gerecht, John Fred, 3,679,611.
Collard, Jacques Roger, to RCA Corporation. Support for electrical components and method of making the same. 3,678,995, Cl. 165-185.000.
Colliau, Frank. Reflective plastic coated trailer hitch ball. 3,679,234, Cl. 280-511.000.
Collings, Rupert H., to United States of America, Navy. Current sheet antenna. 3,680,136, Cl. 343-746.000.
Collins Radio Company: *See—*
Huntsinger, Dean P., 3,680,097.
Rutherford, Kenneth R.; and Strebe, Arthur C., 3,680,091.
Collinson, Alfred Edward: *See—*
Betts, Colin; and Collinson, Alfred Edward, 3,678,963.
Colson, William B.; Niedermiller, Herbert C.; and Deradoorian, Bagdasar, to Bendix Corporation, The. Method for forming a honeycomb structure. 3,679,384, Cl. 65-4.000.
Colt Industries Operating Corporation, mesne: *See—*
Mello, William R.; and Warren, James A., 3,678,572.
Columbia Broadcasting System, Inc.: *See—*
Goldmark, Peter C., 3,679,817.
Colvin, Alex D.; McNitt, David H.; and Turner, Allen H., to Ford Motor Company. Method for increasing the output of an electron accelerator. 3,679,930, Cl. 315-21.00r.
Comeau, Raymond J. Spot welding tool. 3,679,859, Cl. 219-90.000.
Commercial Shearing & Stamping Company: *See—*
Haspert, John C., 3,678,694.
Commercon, Jean Claude; and Berthier, Guy. Method and device for measuring the thickness of a metal deposit on an insulating support. 3,679,968, Cl. 324-34.0tk.
Commissariat a l'Energie Atomique: *See—*

Boulanger, Gilbert; and Samoel, Alain, 3,678,735.
Carcey, Jacques, 3,679,807.
Cohen, Michel; Lavigne, Pierre; and Sauvagnac, Robert, 3,678,920.
Costa, Charles; Loupere, Andre; Monsel,Philippe; and Schmitt, Bertrand, 3,679,272.
Commonwealth Oil Refining Company, Inc.: *See—*
McDonald, Gerald W. G., 3,679,576.
Compagnia Italiana Westinghouse Freni e Segnali: *See—*
Nardi, Giancarlo, 3,679,185.
Compagnie de Saint-Gobain: *See—*
Malburet, Rene A., 3,679,073.
Compagnie Generale d'Automatisme: *See—*
Charbonnier, Gerard; and Gauthier, Gerard, 3,680,072.
Compagnie Pechiney et Electrification: *See—*
Duclaux, Daniel; Givry, Jean-Pierre; and Pointud, Jacky, 3,679,555.
Compton, Dinsdale M. J.; and Epstein, Barry D., to Gulf Oil Corporation. Phenol monitoring method and apparatus. 3,679,898, Cl. 250-43.50r.
Conical Containers Company (Proprietary) Limited: *See—*
Van Manen, Jacob Teunis Teunissen, 3,678,814.
Conley, Kenneth E.; and Ellison, Thomas M., to Riegel Paper Corporation. Weather resistant moldable laminate. 3,679,510, Cl. 156-245.000.
Conrady, James A.; and Fitzpatrick, John S., to Goodrich, B. F., Company, The. Sand core and mold compositions containing glycerine and an ammonium salt. 3,679,703, Cl. 260-33.40r.
Consiglio Nazionale Delle Ricarche: *See—*
Boari, Gianfranco; Liberti, Lorenzo; Merli, Carlo; and Passino, Roberto, 3,679,580.
Continental Can Company, Inc.: *See—*
Dike, Roy W., 3,679,785.
Morgese, Nicholas V., 3,679,121.
Continental Gummi-Werke Aktiengesellschaft: *See—*
Pusch, Dietrich, 3,679,158.
Continental Rubber Works: *See—*
Malutich, William J., 3,679,345.
Control Data Corporation: *See—*
Graham, Walton; and Keegan, Robert R., 3,680,122.
Cook, Elton S.; and Nutini, Leo G., to Stanley Drug Products, Inc. Method of raising the white blood cell count. 3,679,793, Cl. 424-95.000.
Cooper, Bernard, to International Telephone and Telegraph Corporation. Angular modulation direction finding receiver. 3,680,125, Cl. 343-115.000.
Copeland, John Alexander, III, to Bell Telephone Laboratories, Incorporated. Single wall domain fanout circuit. 3,680,066, Cl. 340-174.0tf.
Copley, Stephen M.: *See—*
Tien, John K.; and Copley, Stephen M., 3,678,988.
Copping, Keith Philip. Injection moulded plastic cup-like article. 3,679,119, Cl. 229-1.500.
Corderoy, Henry M., to A. C. I. Operations Pty., Limited. Packaging of bottles or other articles. 3,678,647, Cl. 53-14.000.
Corey, Victor B., to Sundstrand Data Control, Inc. Fluidic sensor for fluid stream velocity. 3,678,746, Cl. 73-194.00r.
Corlite Corporation: *See—*
Fredericks, Carl K., 3,678,558.
Cormany, Charles L.; and Spotts, John A., Jr., to PPG Industries, Inc. Solvent bleaching. 3,679,590, Cl. 252-104.000.
Cornell Aeronautical Laboratory, Inc.: *See—*
Schneeberger, Richard F., 3,678,759.
Cornish Containers, Inc.: *See—*
Cornish, Edward; and Liebherr, Harold R., 3,678,703.
Cornish, Edward; and Liebherr, Harold R., to Cornish Containers, Inc. Cold storage carton. 3,678,703, Cl. 62-371.000.
Corrigan, Matthew J., Jr.; deceased (by Corrigan, Sandra Lee; executrix), to Electronic Products Corporation. Differential time television system. 3,679,823, Cl. 178-6.6dd.
Corrigan, Sandra Lee: *See—*
Corrigan, Matthew J., Jr., 3,679,823.
Corson, Frederick P., to Dow Chemical Company, The. Curable compositions comprising a polyepoxide, a polyisocyanato silane and a catalyst therefor. 3,679,630, Cl. 260-47.0en.
Costa, Charles; Loupere, Andre; Monsel,Philippe; and Schmitt, Bertrand, to Commissariat a l'Energie Atomique. Automatic alignment bearings for guiding in translational or rotational motion. 3,679,272, Cl. 308-9.000.
Cotsalas, Stephen N.: *See—*
Carrano, Andrew J., Jr.; Cotsalas, Stephen N.; and Jacobson, John E., 3,679,208.
Cottle, John E.: *See—*
Hinton, Robert A.; and Cottle, John E., 3,679,764.
Cotton, Incorporated, mesne: *See—*
Vehe, Dennis A.; Porterfield, Jay G.; and Roth, Lawrence O., 3,679,132.
Cotton, John Michael; and Lloyd, Peter Anthony, to Plessey BTR Limited. Data transmission systems. 3,680,053, Cl. 340-172.500.
Coulter Electronics, Inc.: *See—*
Figueroa, David R., 3,679,884.
Coulter, Stanley M.; and Mevissen, Ernst A., to Dravo Corporation. Nose ring for metallurgical processing vessels. 3,679,195, Cl. 266-35.000.
Cox, Robert J.: *See—*
Clecak, Nicholas J.; and Cox, Robert J., 3,679,670.
Coyle, Jan R. Thermal battery with percussion cap. 3,679,487, Cl. 136-90.000.
Cramazou, Etienne: *See—*
Friederich, Claude; and Cramazou, Etienne, 3,679,280.
Crane Canada Limited: *See—*
Lennon, Andrew Gordon, 3,678,767.
Cravits, Phillip, to London, Arnold B., mesne. Escalator cleaning apparatus. 3,678,533, Cl. 15-302.000.
Creasy, James R.: *See—*
Winters, Hilary M.; and Creasy, James R., 3,679,970.
Cremeans, George E., to Battelle Development Corporation, The. Alkali metal salts of polyacetylenic polyoic acids. 3,679,738, Cl. 260-485.00r.
Cricchi, James R., to Westinghouse Electric Corporation. Resettalbe non-volatile memory utilizing variable threshold voltage devices. 3,680,062, Cl. 340-173.00r.
Crick, Roger Dudley Salway, to English Electric Company Limited, The. Laminated structures. 3,679,527, Cl. 161-5.000.
Cronkhite, Leonard W., Jr.: *See—*
Merrill, Edward W., 3,678,756.
Merrill, Edward W., 3,679,625.
Crosby, Gerald E.; and Shanefield, Daniel J., to Western Electric Company, Incorporated. Method for bonding a metal pattern to a substrate. 3,679,472, Cl. 117-212.000.
Crowell, Merton Howard, to North American Philips Corporation. Solid state image sensing device. 3,679,826, Cl. 178-7.100.
Croyle, Jack V.: *See—*
Swett, James B.; and Croyle, Jack V., 3,679,088.
Swett, James B.; and Croyle, Jack V., 3,679,089.
Csupor, Denis D. A., to Maierform Holding S.A. Passive stabilisation tanks. 3,678,877, Cl. 114-125.000.
Culik, Rudolf; and Schneider, Jurg A., to Du Pont de Nemours, E. I., and Company. Composition comprising arylaminooxazoline and antichloligeneric agent. 3,679,798, Cl. 424-265.000.
Cupler, John A., II. Adjustable vee bearing. 3,679,273, Cl. 308-36.000.
Cutler-Hammer, Inc.: *See—*
Becker, Albert H.; Hart, Joseph M.; and Quaal, John A., 3,680,016.
Czajkowski, Henry J. Sweeper attachment for harvesting machinery. 3,678,669, Cl. 56-314.000.
Czeck, Joseph J.; Glen Lyon; and Reusser, Raymond E., to Western Electric Company, Incorporated. Crystal grower with expandable chamber and method of use thereof. 3,679,370, Cl. 23-273.0sp.
Dabrush, Charles; and Strauss, Irving, to Chromalloy American Corporation. Bow gauge for turbine engine vanes. 3,678,585, Cl. 33-174.00p.
Dadds, Floyd S.; and Gee, James E., to Caterpillar Tractor Company. Pressure-balanced track roller. 3,679,216, Cl. 277-3.000.
Dahlinger, Rodney J., to Hughes Aircraft Company. Laser flashtube triggering arrangement. 3,679,998, Cl. 331-94.500.
Dainippon Screen Manufacturing Company, Limited: *See—*
Kubo, Nobuzo; and Ito, Takeshi, 3,679,500.
Daitoku, Kouichi; and Kimura, Shuji, to Nippon Kogaku K.K. Light-intercepting means in a camera capable of combination with power driven film rewinding means. 3,679,148, Cl. 242-71.600.
Dalard, Francis Jean; Augustinsky, Jan Witold; and Sohm, Jean-Claude, to Societe des Accumulateurs Fixes et de Traction. Silver oxide-magnesium cell or electrochemical generator. 3,679,488, Cl. 136-100.00m.
Dalson, Milton H.; Gallagher, James P.; Keith, Carl D.; and Pfefferle, William C. Reforming a paraffinic fraction with a platinum-rhenium catalyst. 3,679,578, Cl. 208-138.000.
Daly, Francis Patrick, to RCA Corporation. Metal-oxide-metal, thin-film capacitors and method of making same. 3,679,942, Cl. 317-230.000.
Dammel, Milton H. Looping and hooking machine. 3,678,970, Cl. 140-103.000.
Daniels, Alexander, to U.S. Philips Corporation. Thermal regenerator. 3,678,992, Cl. 165-10.000.
Daniels, David A.: *See—*
Morgan, Charles R.; and Daniels, David A., 3,679,728.
Daniels, David A., to Grace, W. R., & Co. Continuous process for preparing methylenebisiminodiacetonitrile. 3,679,729, Cl. 260-465.5.
Danielsson, Erik, to Aktiebolaget Karlstads Mekaniska Werkstad. Apparatus for transmitting rotational power to a roll. 3,678,775, Cl. 74-410.000.
Danline Manufacturing Company: *See—*
Horton, John P.; and Sulser, Troy S., 3,678,530.
Dannatt, Hugh St. L.: *See—*
Hunt, John M.; and Dannatt, Hugh St. L., 3,679,038.
Danusso, Ferdinando: *See—*
Natta, Giulio; Danusso, Ferdinando; and Ferruti, Paolo, 3,679,643.
Darby, Kenneth S. Precipitating sand and gravel anti-pollution dryer for asphalt plants. 3,678,600, Cl. 34-167.000.
Dare, Roy R.: *See—*
O'Leary, Walter E.; Thornton, Duane V.; Hammonds, James C.; and Dare, Roy R., 3,678,866.
Darrah, John H.; Bell, James C.; Vorachek, Jerome J.; Bezbatchenko, John W.; Biecker, George A.; Barton, James A.; Gordon, Robert C.; and Kirschner, Gerald D., to United States of America, Air Force, mesne. Aircraft towed inflatable antenna. 3,680,129, Cl. 343-706.000.

Dart Industries Inc.: *See—*
Berry, David A.; and Gynn, Gilbert M., 3,679,727.
Parkell, Edward F., 3,679,041.
Swett, James B.; and Croyle, Jack V., 3,679,088.
Swett, James B.; and Croyle, Jack V., 3,679,089.

Davey, Catherine Margaret: *See—*
Wells, Frank Herbert; and Davey, Cyril Norman, 3,678,731.

Davey, Cyril Norman: *See—*
Wells, Frank Herbert; and Davey, Cyril Norman, 3,678,731.

Davidson, James P.: *See—*
Miller, Stanley J.; and Davidson, James P., 3,679,090.

Davidson, Melvin J., & Zitomer, Bernard M.: *See—*
Ehrlich, Joseph R., 3,678,947.

Davidson, Ragnar Per-Olof, to Aktiebolaget Bofors. Flare body. 3,678,854, Cl. 102-37.800.

Davies, Gordon Idris; Killay, Swansea; and Williams, Terence, to British Iron and Steel Research Association, The. Material depositing apparatus. 3,678,888, Cl. 118-48.000.

Davies, John W., III: *See—*
Enters, Edward W.; Price, Warren H.; Davies, John W.; III; and Hochwitz, Lynn E., 3,678,770.

Davis, Anthony Charles; and Fisher, Ian Stuart, to Imperial Chemical Industries Limited. Sheath/core bicomponent filaments and process of preparing same. 3,679,541, Cl. 161-175.000.

Davis, Edwin R. Multiple stage vapor condensing unit. 3,678,661, Cl. 55-269.000.

Davis, James R.; and Blum, Arthur B., to Standard Pressed Steel Co. Locknut. 3,678,978, Cl. 151-21.

Davis, Paul A.: *See—*
Westcott, Vernon C.; Blanchard, Byron E.; Davis, Paul A.; and Prevot Stephane, 3,678,742.

Davis, Steven S., to Envirotech Corporation. Molded filter leaf. 3,679,061, Cl. 210-486.000.

Day, Lucian P., Jr.: *See—*
Brinks, Floyd J.; Day, Lucian P., Jr.; and Jones, Jerry L., 3,678,867.

DCA Food Industries Inc.: *See—*
Schiffmann, Robert F.; Roth, Howard; Lipka, David H.; and Goodman, Abraham H., 3,679,432.

De Angelis, William M., to Technicon Instruments Corporation. Coupling for joining glass pipe sections and the like. 3,679,237, Cl. 285-109.000.

De Bettencourt, Joseph T.: *See—*
Tsao, Carson K. H.; De Bettencourt, Joseph T.; and Rowland, Howard J., 3,680,133.

De Bucs, Eugen Szabo: *See—*
Oesterhelt, Gerhard; and De Bucs, Eugen Szabo, 3,678,986.

De Coene, Frans J., to Clayson N.V. Separator device for combine harvesters. 3,678,938, Cl. 130-27.00e.

de Lange, Willem; Duyfjes, Werner; and Maas, Willem, to U.S. Philips Corporation. Single-phase pesticidal preparations. 3,679,797, Cl. 424-211.000.

De Mauriac, Richard A.; and Hiller, Gary Lynn, to Eastman Kodak Company. Photothermic composition containing onium halide sensitizer and the use thereof. 3,679,422, Cl. 96-107.000.

De Santis, Alfred J.; Beers, Le Roy W.; White, James A.; and Moysey, John A., to Burroughs Corporation. Information processing system having free field storage for nested processes. 3,680,058, Cl. 340-172.500.

De Simone, Robert: *See—*
Grossman, James D.; Mookherjee, Braja D.; De Simone, Robert; and Theimer, Ernst T., 3,679,749.

De Somer, Pierre; and Claes, Paul, to Recherche et Industrie Therapeutiques, R.I.T. Antiinfectious compositions and process for their preparation. 3,679,795, Cl. 424-180.000.

De Voe, John M., to United States Tobacco Company. Continuous twister pipe cleaner machine. 3,678,674, Cl. 57-77.420.

Deal, Robert S.; and Evans, Joseph H., to Raychem Corporation. Pyrotechnic heating device. 3,679,189, Cl. 263-50.000.

Dean, George A.: *See—*
Miller, Alfred H.; and Dean, George A., 3,679,076.

Degginger, Edward R.: *See—*
Pistilli, Donald J.; and Degginger, Edward R., 3,679,462.

Del Signore, Giovanni. Anti-collision apparatus for vehicles. 3,680,085, Cl. 343-14.00.

Delesdernier, Penelope Brodtmann: *See—*
Reynoir, Diane Greenslit; and Delesdernier, Penelope Brodtmann, 3,678,945.

Dellert, Robert C., to General Electric Company. Testing means for fluidic circuit elements. 3,678,752, Cl. 73-389.000.

Delta Scientific Corporation: *See—*
Kushner, Jack, 3,679,331.

Delta Strapping Industries, Inc.: *See—*
Lefkowitz, Harold, 3,678,541.

Demag Aktiengesellschaft: *See—*
Nieboer, Pieter Hendrik, 3,679,193.

Demag Elektrometallurgie GmbH: *See—*
Reth, Johannes A.; and Fettweis, Winifried H., 3,679,806.

Dembiak, Matthew Raymond; and Webster, George H., to Bell Telephone Laboratories, Incorporated and Western Electric Company, Incorporated. Methods of making shielded electrical cable. 3,679,503, Cl. 156-54.000.

Den Herder, Marvin J.: *See—*
Schaap, Luke A.; and Den Herder, Marvin J., 3,679,588.

Denis, Richard E., to General Motors Corporation. Bell byro and method of making same. 3,678,762, Cl. 73-505.000.

Denki Onkyo Co., Ltd.: *See—*
Masuda, Noboru; and Kuroyanagi, Masashi, 3,680,026.

Denki Onkyo Company Limited: *See—*
Inoue, Keizi, 3,679,918.
Kobayashi, Tsunekazu, 3,680,025.

Deradoorian, Bagdasar: *See—*
Colson, William B.; Niedermiller, Herbert C.; and Deradoorian, Bagdasar, 3,679,384.

Derkacz, John J., to Alpha Products, Inc. Moving coil loudspeaker using thin magnet. 3,679,844, Cl. 179-115.50r.

Derr, Millard A., Jr. Trailer hitch. 3,679,231, Cl. 280-406.00a.

Desai, Nalin Binduprasad; Jayaraman, Ponnusami; Ramanathan, Visvanathan; Artz, Klaus; Naik, Navnitrai Nagarji; and Jenny, Walter, to Ciba-Geigy AG. Monoazo dyestuffs. 3,679,657, Cl. 260-205.000.

Detection Systems, Inc.: *See—*
Perlman, David E., 3,680,047.

Detroit Flame Hardening Co.: *See—*
Bollinger, William C., 3,679,858.

Dexter, Martin: *See—*
Knell, Martin; and Dexter, Martin, 3,679,744.

Dey, Arabinda N.; and Holmes, Robert W., to Mallory, P. R., & Co., Inc. Lithium-thallium (ic) oxide organic electrolyte cell. 3,679,484, Cl. 136-83.00r.

Dhaliwal, Pritam Singh; and Jaffe, Edward E., to Du Pont de Nemours, E. I., and Company. Yellow pigments. 3,679,684, Cl. 260-272.000.

Di Noia, Emanuel J.; and Breunich, Theodore R., to Universal Oil Products Company. Liquid level indicator system. 3,678,750, Cl. 73-313.000.

Diamond, Horace W., to Morton-Norwich Products, Inc., mesne. Salt production process. 3,679,375, Cl. 23-303.000.

Diamond Power Specialty Corporation: *See—*
Sherrick, Ronald E.; and Singleton, John C., 3,679,173.

Dickey, Clyde W.; and Bland, Ray A., to Sutton Engineering Company. Roller leveler and method of leveling. 3,678,720, Cl. 72-160.000.

Diehl, Roy E., to Ford Motor Company. Internal combustion engine dual induction system. 3,678,905, Cl. 123-52.00m.

Dietz, Milton S.; and Finnemore, Frederick M., to Polaroid Corporation. Photographic apparatus having a handle for effecting film processing. 3,678,832, Cl. 95-13.000.

Dietz, Milton S., to Polaroid Corporation. Ranging and focusing method and apparatus. 3,678,836, Cl. 95-45.000.

Dike, Roy W., to Continental Can Company, Inc. Method of forming an integral one-piece plastic container and carrying handle. 3,679,785, Cl. 264-98.000.

Dillon, Stanley Bernard; Mowbray, Dorian Farrar; and Kamp, Kenneth Albert Walters, to C.A.V. Limited. Gear change switch with multimotion closure actuator. 3,679,846, Cl. 200-6.00a.

Dimeff, John, to United States of America, National Aeronautics and Space Administration. Nondispersive gas analyzing method and apparatus wherein radiation is serially passed through a reference and unknown gas. 3,679,899, Cl. 250-43.50r.

Dixon, Bernard, to Dixon, Bernard, and Partners Limited. Seals for double doors and the like. 3,678,627, Cl. 49-485.000.

Dixon, Bernard, and Partners Limited: *See—*
Dixon, Bernard, 3,678,627.

Dixon, Ronald L., to Eastman Kodak Company. Tobacco smoke filter element and method for making. 3,678,941, Cl. 131-261.00b.

Dodge, Gerald F., III: *See—*
Gelbard, Robert B.; Dodge, Gerald F., III; and True, Howard D. F., Jr., 3,678,698.

Dodington, Sven H., to International Telephone and Telegraph Corporation. Tacan antenna system. 3,680,119, Cl. 343-106.00r.

Doevenspeck, Heinz, to Eifer, Richard, Dr., Wirtschaftsprufungszesellschaft und Steuerberatungsgesellschaft mit beschrankter Haftung. Device for treating disperse systems. 3,679,556, Cl. 204-269.000.

Dohmen, Heinz. Sealed bearings lubricated by a lubricating medium. 3,679,277, Cl. 308-187.100.

Doi, Toshitada; and Akiba, Kosuke, to Sony Corporation. Loop antenna with spaced impedance elements. 3,680,134, Cl. 343-740.000.

Dolan, Richard F., to General Motors Corporation. Measuring probe assembly. 3,678,584, Cl. 33-169.00r.

Dollgast, Walter, to Siemens Aktiengesellschaft. Method of concentrating radioactive waste. 3,679,595, Cl. 252-301.10w.

Domini, Gianfranca: *See—*
Geloso, Giovanni, 3,679,845.

Dominy, Beryl William, to Pfizer Inc. Preparation of quinoxaline-di-N-oxides from Ω-quinnonedioxime and butent-1,4-diones. 3,679,679, Cl. 260-250.00r.

Donovan, Ross Grant; and Wolf, Stewart Franklin, to Canada Packers Limited. Process for the enzymic unhairing of hides. 3,679,548, Cl. 195-6.000.

Dorier, Bernard Louis Marcel; and Laedlein, Denis Jacques, to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation. Antenna system for satellites. 3,680,113, Cl. 343-100.0sa.

Dornier A.G.: *See—*
Heise, Georg, 3,678,692.

Doutt, Kingsley A., to Scovill Manufacturing Company. Vented piston bearing for hydraulic piston and cylinder assemblies. 3,678,809, Cl. 92-86.000.

Dow Chemical Company, The: *See—*

Bernas, Richard J.; and Kaczynski, Clarence J., 3,679,170.
Brown, William E.; Heitz, Robert G.; and Levine, Charles A., 3,679,480.
Cohrs, William E.; and Stroiwas, Edward, 3,679,382.
Corson, Frederick P., 3,679,630.
Frick, Hughie R.; and Anderson, Richard W., 3,679,709.
Jones, Griffin D.; Geyer, Gerald R.; and Hatch, Melvin J., 3,679,748.
Moore, Carl, 3,679,469.
Moore, Eugene R.; and Park, William R. R., 3,679,640.
Peterson, Laurence I., 3,679,671.
Reifschneider, Walter, 3,679,735.
Stefancin, James M., 3,679,127.
Stenger, Vernon A., 3,679,396.
Teal, James L.; Hamilton, Charles Eugene; and Clifford, Dennis A., 3,679,364.
Tsai, James H.; and Anderson, Glenn H., 3,679,722.

Dowbenko, Rostyslaw; and Chang, Wen-Hsuan, to PPG Industries, Inc. Process for electrodepositing acrylic compositions. 3,679,564, Cl. 204-181.000.

Dowling, John B.: *See—*
Rawson, Edward B.; and Dowling, John B., 3,679,875.

Doyle, William P.: *See—*
Michelson, Malvin J.; and Doyle, William P., 3,679,680.

Drake, John: *See—*
Jack, James; Drake, John; Thompson, David Crompton; and Harris, Frederick John, 3,679,391.

Drake, John E.: *See—*
Leitner, Robert T.; and Drake, John E., 3,680,146.

Dravo Corporation: *See—*
Coulter, Stanley M.; and Meissen, Ernst A., 3,679,195.
Smith, George A., 3,679,071.

Drayton, Walker E., to American Chain & Cable Company, Inc. Energy absorbing tie-down winch. 3,679,175, Cl. 254-51.000.

Dresser Industries, Inc.: *See—*
Blattner, Raymond J., 3,678,743.

Driver, Michael C., to Westinghouse Electric Corporation. Self-aligned gate field effect transistor and method of preparing. 3,678,573, Cl. 29-571.000.

Drucker, William A.: *See—*
Madden, Ernest Francis, 3,678,587.

Druin, Melvin L.; Loft, John T.; and Plovan, Steven G., to Celanese Corporation. Open-celled microporous film. 3,679,538, Cl. 161-159.000.

Drutchas, Gilbert H.; Berman, George A.; and Spencer, Phillip B., to TRW Inc. Flat side valve for a pump. 3,679,329, Cl. 417-300.000.

Dryan, James J.: *See—*
Scarnato, Thomas J.; Dryan, James J.; Lawler, Craig M.; and Sorensen, Robert, 3,678,671.

Du Bois, Robert Clark; and Miller, Wayne H., to Pitney-Bowes, Inc. Feedback system for controlling image light energy in electrostatic photocopiers. 3,679,306, Cl. 355-68.000.

Du Pont de Nemours, E. I., and Company: *See—*
Anderson, Arthur William; and Truett, William Lawrence, 3,679,652.
Beresniewicz, Aleksander, 3,679,620.
Bergmann, Michael J.., 3,679,943.
Bergna, Horacio E., 3,679,442.
Biswell, Charles B.; and Johnston, Thomas F., 3,679,380.
Brake, Loren D., 3,679,746.
Bristol, John E., 3,679,646.
Bristol, John E., 3,679,647.
Bristol, John E., 3,679,648.
Culik, Rudolf; and Schneider, Jurg A., 3,679,798.
Dhaliwal, Pritam Singh; and Jaffe, Edward E., 3,679,684.
Foss, Robert Paul, 3,679,776.
Griggs, Ernest Lee, Jr.; and Porter, John David, 3,679,153.
Harrell, Jerald R.; Logothetis, Anestis L.; and Verbanc, John J., 3,679,627.
Knowles, Richard N.; and Arthur, Wilfred J., 3,679,805.
Lohr, James E., 3,679,618.
Milgram, Alvin A., 3,679,439.
Short, Oliver Alton, 3,679,606.
Vasta, Joseph A., 3,679,642.

Duclaux, Daniel; Givry, Jean-Pierre; and Pointud, Jacky, 50% to Compagnie Pechiney et Electrification and 50% to Charpente. Process and apparatus for supplying alumina. 3,679,555, Cl. 204-67.000.

Dudley, Robert H.: *See—*
Larson, Charles R.; and Dudley, Robert H., 3,679,051.

Duffek, Kenneth John; and Nolan, Thomas Hoyt, to Western Electric Company, Incorporated. Data display systems. 3,680,076, Cl. 340-324.00a.

Duffy, William, to Wiss, J., and Sons Co. Scroll shears or the like. 3,678,580, Cl. 30-267.000.

Dufour, Raymond J.; and Grimm, James J., to Northern Illinois Gas Company. Internal pipe sealing system. 3,678,560, Cl. 29-235.000.

Duhring, Wolfgang: *See—*
Rohner, Dieter; and Duhring, Wolfgang, 3,679,808.

Dukes, John N., to Hewlett-Packard Company. Automatic restarting laser power supply. 3,679,934, Cl. 315-200.00r.

Dulle, William J. Rotating bird perch. 3,678,901, Cl. 119-26.000.

Duncan, Johnson L. Curtain and shade support. 3,679,165, Cl. 248-256.000.

Duncan, Wilson B., Jr. Bin carrier. 3,679,081, Cl. 214-516.000.

Dunlop Company Limited, The: *See—*
Riley, Raymond A., 3,678,790.

Dunlop Holdings Limited: *See—*
Jervis, Roy, 3,679,552.

Dunn, W. E., Mfg. Co.: *See—*
Nordgren, Alfred A., 3,678,971.

Dura-Pak, Inc.: *See—*
Panasewicz, Anton Z., 3,678,652.

Durr, Helmut. Photographic apparatus with indicating means for selected exposure time and aperture size. 3,678,824, Cl. 95-10.0ce.

Duschinsky, Robert: *See—*
Beaman, Alden Gamaliel; Duschinsky, Robert; and Tautz, William Paul, 3,679,698.

Duvall, David Scott: *See—*
Paulonis, Daniel F.; Duvall, David Scott; and Owczarski, William A., 3,678,570.

Duyfjes, Werner: *See—*
de Lange, Willem; Duyfjes, Werner; and Maas, Willem, 3,679,797.

Dvorak, Frank. Metal plate shears. 3,678,792, Cl. 83-459.000.

Dynamit Nobel AG: *See—*
Termin, Erich; Rogler, Walter; Joch, Wilhelm; and Honigschmid-Grossich, Rudiger, 3,679,724.

Dynamit Nobel Aktiengesellschaft: *See—*
Hack, Peter; Hass, Karl; and Schinke, Georg, 3,679,383.
Wienand, Michael; Jensen, Klaus; Primessing, Franz; and Alfter, Franz-Werner, 3,679,531.

Dynell Electronics Corporation: *See—*
Rademacher, Paul; and Hulland, Burton L., 3,680,116.

Dziedzic, Jan. Electrical sensing device for measurement of liquid metal. 3,678,748, Cl. 73-290.00r.

Eagle, John H., deceased (by Eagle, Lee A; executrix; and Lincoln Rochester Trust Company; executor), to Eastman Kodak Company. Means for adjusting camera low-light signal in accordance with film exposure latitude. 3,678,827, Cl. 95-10.0cd.

Eagle, Lee A: *See—*
Eagle, John H., deceased, 3,678,827.

Eagles, Alan Charles: *See—*
Burgess, Anthony Joseph; Eagles, Alan Charles; and Steel, Margaret Lillian, 3,679,506.

Earnest, Eugene P.: *See—*
Brown, William A.; and Earnest, Eugene P., 3,678,718.

Earthwood, Incorporated: *See—*
Fullerton, George W., 3,678,795.

Eastern Time Limited: *See—*
Lee, Admond K.; and Wong, Kwok-Ming, 3,678,679.

Eastman Kodak Company: *See—*
Andler, Richard C.; and Keck, Harley B., 3,679,518.
Barbier, Jean-France Leon Paul; and Renard, Guy, 3,679,424.
De Mauriac, Richard A.; and Hiller, Gary Lynn, 3,679,422.
Dixon, Ronald L., 3,678,941.
Eagle, John H., deceased, 3,678,827.
Gray, William C., Jr., 3,679,413.
Hagemeyer, Hugh J., Jr.; and Park, Vernon K., 3,679,775.
Hahm, Paul Timothy, 3,679,600.
Hamlin, David R.; and Torpey, William A., 3,679,116.
Hollister, Kenneth robert; and Perry, Ernest John, 3,679,425.
Huschle, Peter; and Ettischer, Helmut, 3,678,838.
Kasper, George P., 3,679,421.
Knowles, Frederick G.; and Taylor, Clarence R., 3,679,298.
Kryman, Frederick J., 3,679,406.
Kryman, Frederick J.; and Staudenmayer, William J., 3,679,408.
Lincoln, Lewis L.; and Heseltine, Donald W., 3,679,427.
McNally, James G., Jr., 3,679,415.
Ray, Donald A.; and Arnold, Richard E., 3,679,479.
Stephens, Curtis L., 3,679,407.
Tucker, Archie J., 3,679,339.
Youngquist, Mary J., 3,679,426.

Eaton Corporation, mesne: *See—*
Van Niel, Clarence R., 3,678,798.

Eaton, Randell C. Coupling guard device. 3,678,717, Cl. 70-232.000.

Eaton, Russell K.: *See—*
Warfield, Wayne N.; and Eaton, Russell K., 3,678,934.

Ebin, Joseph A., to Lockheed Aircraft Corporation. Redundant seal ball valve. 3,678,956, Cl. 137-242.000.

Echo Science Corporation, mesne: *See—*
Maxey, Alexander R., 3,678,563.
Maxey, Alexander R., 3,679,840.
Salcedo, Guido; and Graves, Jimmy J., 3,679,838.

Eckert, Klaus-Dieter; and Roper, Hans-Joachim, to International Standard Electric Corporation. Tacan method. 3,680,117, Cl. 343-106.00r.

Eckstein, Arthur: *See—*
Keeler, Richard A.; and Eckstein, Arthur, 3,679,869.

Economics Laboratory, Inc.: *See—*
Nystuen, Marcus I., 3,680,070.

Eddystone Machinery Company: *See—*
Clark, William Russell, 3,678,646.

Edgar, Owen Burchell; Hughes, William; Lawrance, Derek Robert; Lederer, Gerald; and Ritchie, Colin Foster, to Imperial Chemical Industries Limited. Polyamides. 3,679,624, Cl. 260-37.00n.

Edu-Matic Designs, Ltd.: *See—*
Carrano, Andrew J., Jr.; Cotsalas, Stephen N.; and Jacobson, John E., 3,679,208.

Efimov, Leonid Alexandrovich; Shtin, Lev Mikhailovich; Sinitsky, Vladimir Mikhailovich; Khirdzheiv, Sergei Grigorievich; Pylaikin, Petr Alexeevich; Satovskaya, Ljudmila Sergeevna; Grebnev, Nikolai Feodosovich; Rasseikin, Mikhail Grigorievich; Kalugin, Konstantin Yakovlevich; Somov, Boris Stepanovich; and Baranchikov, Vladimir Mikhailovich. Framework structure for a hydraulic press. 3,678,728, Cl. 72-455.000.

EG&G, Inc.: *See—*
Goldberg, Seymour, 3,679,021.

Eggleston, Gerard; and Bosworth, George, to Microdot, Inc. Pressure transducer. 3,678,753, Cl. 73-393.000.

Egloff, Anton: *See—*
Bruhwiler, Othmar; and Egloff, Anton, 3,678,967.

Ehbrecht, Edwin. Knee joint for prosthetic appliance. 3,678,517, Cl. 3-27.000.

Ehrenberg, Hermann, to Fouquet-Werk Frauz & Planck. Article of manufacture. 3,679,245, Cl. 287-52.000.

Ehrensing, Alvin T.; and Taylor, Clement R., to Boise Cascade Corporation. Panel coating apparatus. 3,678,890, Cl. 118-63.000.

Ehrlich, Joseph R., to Davidson, Melvin J., & Zitomer, Bernard M. Eyeliner. 3,678,947, Cl. 132-88.700.

Eifer, Richard, Dr., Wirtschaftsprufungszesellschaft und Steuerberatungsgesellschaft mit beschrankter Haftung: *See—*
Doevenspeck, Heinz, 3,679,556.

Elberger, Martin. Minature inductances. 3,680,018, Cl. 336-221.000.

Electrical Remote Control Company Limited: *See—*
Ponting, Ivor, 3,678,780.

Electro-Security Devices, mesne: *See—*
Humphrey, Harold D.; and Juengel, Richard O., 3,680,073.

Electronic Products Corporation: *See—*
Corrigan, Matthew J., Jr., 3,679,823.

Elfstrom, Gosta: *See—*
Bogren, Hugl; Elfstrom, Gosta; and Tengroth, Bjorn, 3,679,901.

Elitex, Zavody textilniho strojirenstvi: *See—*
Prochazka, Miloslav; Seidl, Karel; and Cesenek, Bedrich, 3,678,673.

Elkhart Welding & Boiler Works, Inc.: *See—*
Weber, Charles A., 3,679,232.

Elliott Associated Developments Limited: *See—*
Elliott, Herbert James, 3,679,269.

Elliott, Herbert James, to Elliott Associated Developments Limited. Transport of sulphur. 3,679,269, Cl. 302-14.

Ellis, Colin R. G.; and Lilly, Rodger H., to Welding Institute, The. Friction welding. 3,678,566, Cl. 29-470.300.

Ellison, Thomas M.: *See—*
Conley, Kenneth E.; and Ellison, Thomas M., 3,679,510.

Emery Industries, Inc.: *See—*
Boylan, Jack B.; and Sturwold, Robert J., 3,679,617.

Enchelmaier, Harvard W. K.: *See—*
Enchelmaier, William F.; Enchelmaier, Harvard W. K.; and Enchelmaier, William J., 3,678,523.

Enchelmaier, William F.; Enchelmaier, Harvard W. K.; and Enchelmaier, William J. Brushing device. 3,678,523, Cl. 15-21.00d.

Enchelmaier, William J.: *See—*
Enchelmaier, William F.; Enchelmaier, Harvard W. K.; and Enchelmaier, William J., 3,678,523.

Energy Conversion Devices, Inc.: *See—*
Feinleib, Julius; Klose, Peter H.; and Ovshinsky, Stanford R., 3,678,852.

Eng, Albert, to Foto-Mem, Inc. Microfiche reproduction system. 3,679,304, Cl. 355-41.000.

Engelhard Minerals & Chemicals Corporation: *See—*
Greenspan, Lawrence, 3,679,553.
Zysk, Edward D.; and Osovitz, Eugene E., 3,679,491.

Engelhardt, Alvin: *See—*
Livshitz, Stanley L.; Engelhardt, Alvin; and Adler, Stanford L., 3,679,129.

Engineered Products, Inc.: *See—*
Vance, Lawrence T., 3,678,625.

England, George G., to Singer Company, The. Baffle for electric baseboard heater units. 3,679,868, Cl. 219-368.000.

English Electric Company Limited, The: *See—*
Crick, Roger Dudley Salway, 3,679,527.

Englund, James A.; and Popek, Stephen, to Alcan Aluminum Corporation. Ceiling suspension system. 3,678,641, Cl. 52-484.000.

ENI-l'Electro-Navale & Industrielle S.E.P.I.: *See—*
Van Impe, Jean; Chaussonnet, Pierre E.; and Rombaux, Jean-Pierre M., 3,679,378.

Ensslin, Frieder H., to Bendix Corporation, The. R-F Sputtering apparatus. 3,679,571, Cl. 204-298.000.

Enters, Edward W.; Price, Warren H.; Davies, John W., III; and Hochwitz, Lynn E., to Gilson Bros. Co. Single lever control. 3,678,770, Cl. 74-197.000.

Envirotech Corporation: *See—*
Davis, Steven S., 3,679,061.
Haymore, Ralph B., 3,679,056.

Eppler, Richard Andrew, to SCM Corporation. Composition and process for glazing ceramic ware. 3,679,464, Cl. 117-175.000.

Epstein, Barry D.: *See—*
Compton, Dinsdale M. J.; and Epstein, Barry D., 3,679,898.

Erdley, Harold F.; and Wyse, Stanley F., to Litton Systems, Inc. Gyroscope having vibrating gimbals. 3,678,764, Cl. 74-5.000.

Erickson, Richard L.: *See—*
Bagley, Donald H.; and Erickson, Richard L., 3,679,336.

Eriez Manufacturing Company: *See—*
Tenpas, Emerson J., 3,678,723.

Eriksson, Anders Karl Oskar; and Wallenius, Jan Folke, to AB Svensk Industris Konstruktionsoch berakningskontor Sikob. Apparatus for cutting annular elastic bands. 3,678,791, Cl. 83-95.000.

Erlichman, Irving, to Polaroid Corporation. Photographic apparatus. 3,678,830, Cl. 95-13.00r.

Erman, William F.: *See—*
Kretschmar, Herbert C.; and Erman, William F., 3,679,756.

Ernst, Lothar; and Ruggen, Werner, to Maschinenfabrik Stromag G.m.b.H. Flexible couplings. 3,678,708, Cl. 64-11.00r.

Eschle, Karl: *See—*
Huber-Emden, Helmut; Eschle, Karl; and Maeder, Arthur, 3,679,779.

Essery, John Michael, to Bristol-Myers Company. Pivaloyloxymethyl hetacillin. 3,679,663, Cl. 260-239.100.

Esso Research and Engineering Company: *See—*
Gorbaty, Martin L., 3,679,683.

Estes, Harry A.: *See—*
Bailey, Robert C.; Estes, Harry A.; James, Glen S.; Klug, James R.; Montillon, Henry A.; Myring, Verne E.; Robertson, Orville H.; Sargeant, Blaine W.; and Sorensen, Neal E., 3,679,200.

Estin, Hans: *See—*
Merrill, Edward W., 3,678,756.

Estin, Hans H.: *See—*
Merrill, Edward W., 3,679,625.

Ethyl Corporation: *See—*
Lehikoinen, Urho A., 3,679,594.

Ethyl Development Corporation: *See—*
Marchant, Paul A., 3,679,137.

Ethylene Plastique: *See—*
Lambert, Bernard, 3,679,777.

Ettischer, Helmut: *See—*
Huschle, Peter; and Ettischer, Helmut, 3,678,838.

Evalds, Egils. Temperature control circuit employing a variable resistance heating element. 3,679,871, Cl. 219-499.000.

Evangelisti, Carlo J.: *See—*
Baskin, Herbert B.; Belady, Laszlo A.; Evangelisti, Carlo J.; and Morse, Stephen P., 3,680,078.

Evans, Joseph H.: *See—*
Deal, Robert S.; and Evans, Joseph H., 3,679,189.

Evans, Norol T., to Hughes Aircraft Company. Automatic detection criteria control unit for pencil beam radars. 3,680,095, Cl. 343-7.00a.

Evans, Robert W.; Grimm, Richard C.; and Olstein, Myron A., to Susquehanna Corporation, The. Aerosol disseminator. 3,678,857, Cl. 102-39.000.

Evans, Ronald James Peter, to Talley Surgical Instruments Limited. Alternating pressure pads for bed patients. 3,678,520, Cl. 5-91.000.

Eversole, William C.; and Heaton, James W., to Kennametal Inc. Quill for machine tools. 3,678,632, Cl. 51-168.000.

Ezaki, Joichiro, to TDK Electronics Company Ltd. Core drive and biasing system. 3,680,048, Cl. 340-/166.00r.

Ezhov, Leonid Antipovich; Kudevitsky, Yankel Veniaminovich; and Belyaeva, Ljudmila Pavlovna, to Leningradsky Metallichesky Zavod Imeni XXII Siezda KPSS. Profile flat tooth milling cutter. 3,678,554, Cl. 29-103.000.

Fabbrica Italiana Magneti Marelli S.p.A.: *See—*
Zoppi, Bruno, 3,679,333.

Fabens, Andrew Lawrie, Jr., to Truline Casting Company. Apparatus for continuous casting of hollow bar. 3,678,990, Cl. 164-274.000.

Faccou, Armand L., to FMC Corporation. Pipe swivel joint for corrosive fluids. 3,679,235, Cl. 285-14.000.

Factor, Arnold: *See—*
Chalk, Alan J.; and Factor, Arnold, 3,679,629.

Fagerstrom, Kurt Gunnar, to Aktiebolaget Electrolux. Method of drying articles being surface-coated. 3,678,595, Cl. 34-13.400.

Fairchild, Albert R., to Western Electric Company, Incorporated. Pallet and mask for substrates. 3,678,892, Cl. 118-504.000.

Faith, Ruth L.; and Grobman, William, to Singer Company, The, mesne. Card deck checker. 3,679,876, Cl. 235-61.70r.

Falk, Robert A.: *See—*
Mayes, Nathan; and Falk, Robert A., 3,679,755.

Fall, Herbert S.; York William D.; and Huff, Larry D., said York and said Huff assors. to said Fall. Ball bearing slide with synchronizing mechanism. 3,679,275, Cl. 308-3.800.

Fang, Frank F.; and Fowler, Alan B., to International Business Machines Corporation. Process for making mosfet's. 3,679,492, Cl 148-1.500.

Fang, Frank F.; and Lean, Eric G., to International Business Machines Corporation. Acoustic wave parametric amplifier/converter. 3,679,985, Cl. 330-4.600.

Fanta, Wayne I., to Procter & Gamble Company, The. Esters of 3-(2,2-tetramethylene ethenyl)-2,2-dimethylcyclopropanecarboxylic acid. 3,679,667, Cl. 260-240.00r.

Fanti, Roy: *See—*
Basche, Malcolm; Fanti, Roy; Galasso, Francis S.; Kuntz, Urban E.; and Schile, Richard D., 3,679,475.

Farbenfabriken Bayer Aktiengesellschaft: *See—*
Gilch, Heinrich; and Schnell, Hermann, 3,679,613.
Gossens, Hubert; Kammermeier, Jurgen; and Kloker, Werner, 3,679,539.
Hagemann, Hermann, 3,679,743.
Hermann, Gunter; and Schmidt, Karl-Julius, 3,679,796.
Hildebrand, Dietrich; and Neufang, Karl, 3,679,354.

Kudamatsu, Akio; Miyamoto, Masao; and Fukazawa, Nobuo, 3,679,726.

Farbwerke Hoechst Aktiengesellschaft: *See—*
Jurgen-Lohmann, Ludwig; and Holtermann, Rolf, 3,679,268.

Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning: *See—*
Horn, Anton; Schinzel, Erich; and Rosch, Gunter, 3,679,668.
Jager, Georg; and Geiger, Rolf, 3,679,655.
Lohe, Konrad; Mohr, Reinhard; Mundlos, Eberhard; and Freb, Hermann, 3,679,358.
Lowenfeld, Rudolf; and Kaiser, Hans, 3,679,350.
Schott, Herbert; and Herwig, Walter, 3,679,650.
von der Eltz, Hans-Ulrich; Birke, Walter; Kunze, Wolfgang; Taunus, Hofheim; and Schon, Franz, 3,679,349.

Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning: *See—*
Brinkmann, Ludwig; and Herwig, Walter, 3,679,628.
Friedrich, Herbert; and Trapp, Gunther, 3,679,674.
Schuierer, Erich; Renz, Werner; and Sommer, Hans, 3,679,634.

Farcilli, Andre: *See—*
Warnant, Julien; and Farcilli, Andre, 3,679,714.

Farnam, F. D., Co.: *See—*
Farnam, Robert G., 3,679,218.

Farnam, Robert G., to Farnam, F. D., Co. Unitized valve plate, gaskets and the like. 3,679,218, Cl. 277-233.000.

Farque, C. Anthony, to Wilburn, Ray H. and Maldonado, W. E., mesne. Chopper circuit for use in an A.C. servo amplifier. 3,679,957, Cl. 318-684.000.

Farrant, David J. Systems for drawing trailers behind tractors. 3,679,230, Cl. 280-405.00b.

Farwell, Harry Russell: *See—*
Black, James A.; and Farwell, Harry Russell, 3,679,112.

Fasching, George E.: *See—*
Smith, Nelson S., Jr.; and Fasching, George E., 3,679,973.

Fazio, Joseph. Safety plug for firearms. 3,678,609, Cl. 42-1.00n.

Fechtig, Bruno: *See—*
Heusler, Karl; and Fechtig, Bruno, 3,679,676.

Fein, Harry. Resistive modulator. 3,679,975, Cl. 324-118.000.

Feinauer, Roland; Thier, Werner; and Schneider, Wolfgang, to Chemische Werke Huls, A.G. Process for the antistatic treatment of linear crystallizable polyesters and products thus treated. 3,679,468, Cl. 117-138.80f.

Feinleib, Julius; Klose, Peter H.; and Ovshinsky, Stanford R., to Energy Conversion Devices, Inc. Printing and copying employing materials with surface variations. 3,678,852, Cl. 101-465.000.

Feisst, Jutta: *See—*
Morf, Max; Wenger, Markus; and Feisst, Jutta, 3,679,621.

Feldman, Irwin M., to Ambac Industries, Incorporated. Magnetically-tuned gyroscope. 3,678,765, Cl. 74-5.460.

Feldman, Martin Louis; and Gordon, John Edson, to American Cyanamid Company. Recovery and purification of basic triarylmethane dyes. 3,679,713, Cl. 260-388.000.

Fengler, Harald: *See—*
Kohler, Roland; Frick, Hans-Dieter; Fengler, Harald; and Geyken, Erwin, 3,678,843.

Fenner, James M., to National-Standard Company. Apparatus for handling shrinkable material. 3,679,190, Cl. 266-3.00r.

Fenton, Donald M., to Union Oil Company of California. Preparation of substituted pyridines. 3,679,688, Cl. 260-290.00p.

Fenton, Donald M., to Union Oil Company of California. Preparation of substituted pyridines. 3,679,689, Cl. 260-290.00h.

Ferguson, William K. Slope and grade meter. 3,678,885, Cl. 116-124.000.

Fermani, Luigi: *See—*
Prusinski, Richard C.; Fermani, Marcello; Torcolacci, Attilio; and Fermani, Luigi, 3,679,529.

Fermani, Marcello: *See—*
Prusinski, Richard C.; Fermani, Marcello; Torcolacci, Attilio; and Fermani, Luigi, 3,679,529.

Ferraro, Natty P. Animal run leasch guide assembly. 3,678,903, Cl. 119-120.000.

Ferruti, Paolo: *See—*
Natta, Giulio; Danusso, Ferdinando; and Ferruti, Paolo, 3,679,643.

Fettweis, Winifried H.: *See—*
Reth, Johannes A.; and Fettweis, Winifried H., 3,679,806.

Feuer, Michael M.; and Kotler, Richard G., to Blow-Knox Foundry & Mill Machinery, Inc. Rolling mill. 3,679,150, Cl. 242-78.100.

Fiber Industries, Inc.: *See—*
Portus, Bruce W., 3,679,635.

Fickenscher, William E., to Bendix Corporation, The. Automatic baggage handling system. 3,679,874, Cl. 235-61.70r.

Field, Nathan D.: *See—*
Freyermuth, Harlan B.; and Field, Nathan D., 3,679,649.

Fielibert, Josef Frans, to Lever Brothers Company. Process for sealing laminated materials. 3,679,509, Cl. 156-182.000.

Figueroa, David R., to Coulter Electronics, Inc. Mathematic root computer. 3,679,884, Cl. 235-193.500.

Files, Charles R. Fishing tackle carrier. 3,678,611, Cl. 43-26.000.

Filper Corporation: *See—*
Kilner, George E., 3,679,049.

Fink, Arno: *See—*
Muller, Alfred; and Fink, Arno, 3,679,401.

Finkbiner, Roy R., to Barber-Colman Company. Adjustable depth immersion temperature sensing device. 3,679,490, Cl. 136-221.000.

Finkle, Eugene D.; and Patterson, James A. Tennis racket for developing tennis swing. 3,679,205, Cl. 273-29.00a.

Finnemore, Frederick M.: *See—*
Dietz, Milton S.; and Finnemore, Frederick M., 3,678,832.

Finney, Karl F.: *See—*
Pomeranz, Yeshajahu; and Finney, Karl F., 3,679,433.

Firestone, Raymond A., to Merck & Co., Inc. Method of preparing(cis-1,2-epoxypropyl)phosphonic acid esters. 3,679,711, Cl. 260-348.00r.

Firestone, Raymond A., to Merck & Co., Inc. Method for the preparation of (cis 1,2-epoxypropyl) phosphonic acid derivatives. 3,679,712, Cl. 260-348.00r.

First Dynamics, Inc.: *See—*
Chang, Henry M., 3,679,093.

Fischer, Adolf: *See—*
Koenig, Karl-Heinz; Maschke, Artur; and Fischer, Adolf, 3,679,678.

Fischer, Artur: *See—*
Fischer, Artur; and Muller, Jean-Nicolas, 3,678,925.

Fischer, Artur; and Muller, Jean-Nicolas, to Fischer, Artur. Connector for fractured bones. 3,678,925, Cl. 128-92.0bb.

Fischer, Georg AG: *See—*
Bruhwiler, Othmar; and Egloff, Anton, 3,678,967.

Fischer, John F., to Smith International Incorporated. Worn bearing indicator. 3,678,883, Cl. 116-114.00q.

Fisher, Ian Stuart: *See—*
Davis, Anthony Charles; and Fisher, Ian Stuart, 3,679,541.

Fisher, Robert D.: *See—*
Krepps, James Edgar, Jr.; Chamberlain, Meredith K.; and Fisher, Robert D., 3,679,979.

Fitness Industries, Inc.: *See—*
Rohrbach, Royal E.; and Ray, Royce W., 3,678,773.

Fitzpatrick, John S.: *See—*
Conrady, James A.; and Fitzpatrick, John S., 3,679,703.

Flaminaire Marcel Quercia: *See—*
Lambert, Jacques, 3,678,695.

Fleischner, Peter L., to National Beryllia Corporation. Apparatus and method for continuously depositing beryllia through vaporization of a basic formate. 3,679,463, Cl. 117-107.20r.

Flink, John W. Convertible boat. 3,678,874, Cl. 114-66.50p.

Flint, Hans Gerhard; and Neitzel, Ulrich E. G., to Great Salt Lake Minerals and Chemicals Corporation. Process for removing sulfate from magnesium chloride brines contaminated therewith. 3,679,376, Cl. 23-304.000.

Flo-Tech Corporation, mesne: *See—*
Rosenberg, Karl M., 3,678,891.

Flo-Tech Corporation: *See—*
Rosenberg, Karl M., 3,679,784.

Florian, Raymond J. Golf putter construction. 3,679,207, Cl. 273-80.00a.

Flowers, Ralph G.; and Sherer, Thomas L., to General Electric Company. Polyamide-acid composition and method of preparation. 3,679,632, Cl. 260-47.0cp.

Flynn, Robert, to Ciba-Geigy Corporation. Process for producing hardenable epoxy resin compositions. 3,679,465, Cl. 117-126.0ge.

FMC Corporation: *See—*
Faccou, Armand L., 3,679,235.
Gibbons, Loren K., 3,679,682.
Guyaux, James R.; Le Duc, Donald; and McDonald, Dean T., 3,679,075.
Miller, Rodney D.; and Nielsen, John K., 3,678,677.
Mizuma, Noriaki; and Yokota, Yuzo, 3,679,352.
Orwoll, Edward F., 3,679,550.
Putch, Samuel W., 3,679,238.
Satterwhite, Lawrence E.; Williamson, Alton M.; and Shindler, George R., 3,678,958.
Stock, David K., 3,679,115.

Fohrman, Seymour F.: *See—*
Chmela, John F.; and Fohrman, Seymour F., 3,679,103.

Foley, Thomas P., to United States of America, Navy, mesne. Method for displaying the range detection capability of a search radar in a noisy environment. 3,680,106, Cl. 343-18.00e.

Foltz, James W., to Motorola, Inc. Binary flip-flop employing insulated gate field effect transistors and suitable for cascaded frequency divider operation. 3,679,913, Cl. 307-279.000.

Food Protein Concentrates, Inc.: *See—*
Zhumkhawala, Yusuf M., 3,678,994.

Forance, Ronald B.; Madden, William F.; and Gaucher, Clair H. Sanitary bag holder. 3,679,125, Cl. 229-55.000.

Ford, Frank P.: *See—*
Bassett, Kirk W.; and Ford, Frank P., 3,679,524.

Ford Motor Company: *See—*
Andrews, David, 3,678,964.
Aronoff, Elihu; and Labana, Santokh S., 3,679,447.
Baker, Thomas D.; and Ojala, William K., 3,678,909.
Blech, Joab J., 3,678,991.
Bogle, David M., 3,679,144.
Colvin, Alex D.; McNitt, David H.; and Turner, Allen H., 3,679,930.
Diehl, Roy E., 3,678,905.
Gennick, William, 3,679,077.
Gilchrist, Allan E., 3,679,615.
Groves, Donald W., 3,678,778.
Hansen, Gunnar W., 3,678,663.
Hertz, Kuri J., 3,678,552.

Hideg, Laszlo, 3,679,186.
Hoffmann, Donald R., 3,679,249.
Howard, Michael R., 3,678,557.
Jania, Zbigniew J., 3,679,270.
Janosi, Francis L., 3,678,779.
Kennedy, Peter J.; and Ford Motor Company, 3,679,887.
Kittredge, Frank M., 3,678,806.
Lemieux, George E., 3,678,784.
Malett, N. William, 3,678,910.
Olsen, Ralph A., 3,678,777.
Rao, Vemulapalli D.; Telang, Yeshwant P.; and White, Jerry E., 3,679,459.
Repko, Louis L.; and Ronzi, Richard C., 3,678,906.
Scott, Gerald C., 3,680,092.
Simonelli, Chris P., 3,679,259.
Smith, Arthur G.; and Turner, Allen H., 3,679,572.
Stahlberg, Hans J., 3,678,785.
Ulica, George, 3,678,707.
Vagi, Louis D.; and Westerdale, Maurice M., 3,678,635.
Vartanian, Richard D., 3,678,907.

Forenta, Limited: *See—*
North, William L.; and Beckett, William J., 3,679,106.

Forrest, Robert B.: *See—*
Helava, Uuno V.; and Forrest, Robert B., 3,678,582.

Forster, Wolfgang C., to Reichhold Chemicals, Inc. Method of isomerizing 4-cyclo-hexene-1,2- dicarboxylic acid anhydrides. 3,679,710, Cl. 260-346.300.

Fort, Emil M., to Westinghouse Electric Corporation. Electrical apparatus with corona suppression means. 3,679,925, Cl. 310-196.000.

Foss, Robert Paul, to Du Pont de Nemours, E. I., and Company. Polymerization of hydrocarbon dienes with lithium-sodium alloys. 3,679,776, Cl. 260-879.000.

Foto-Mem, Inc.: *See—*
Eng, Albert, 3,679,304.

Fougeray, Jean Henri Roger; and Giffard, Louis Henri Jules. Dipping form for making skin-type articles from plastic material. 3,679,342, Cl. 425-275.000.

Fouquet-Werk Frauz & Planck: *See—*
Ehrenberg, Hermann, 3,679,245.

Fowler, Alan B.: *See—*
Fang, Frank F.; and Fowler, Alan B., 3,679,492.

Fram Corporation: *See—*
Strick, Karl H., 3,679,321.

Franck, Kurt, to Halophane Company, Inc. Bi-directional highway luminaire. 3,679,889, Cl. 240-25.000.

Francois, Xavier; Venet, Roland Jean; and Prioretti, Guy Pierre, to Union Siderurgique du Nord et de l'Est de la France Par Abreviation "USINOR'. Machine for tying up coils of filament such as wire. 3,678,845, Cl. 100-4.000.

Franklin, Denis; Gingold, Jerald S.; Oxenham, Ronald B.; and Rogers, Raymond E. Status display panel indicating performance as a function of time with record feature. 3,680,084, Cl. 340-381.000.

Frazier, Lauren L.: *See—*
Powell, John M.; and Frazier, Lauren L., 3,678,701.

Freb, Hermann: *See—*
Lobe, Konrad; Mohr, Reinhard; Mundlos, Eberhard; and Freb, Hermann, 3,679,358.

Fredericks, Carl K., to Corlite Corporation. Method of fabricating cellular structures. 3,678,558, Cl. 29-160.000.

Free, Maurice G.; and Wisseman, Leo L., to Motorola, Inc. Neutron radiation and gamma ray hardened adjustable power supply. 3,679,963, Cl. 323-4.000.

Freres, Clemens H.: *See—*
Bickel, John E.; Freres, Clemens H.; Gossard, Earl E.; Britt, James E.; Ortwein, Norman R.; and Swanson, Eric R., 3,680,115.

Frey, Robert J., to Signode Corporation. Control system for apparatus for friction-fusing overlapping portions of a thermoplastic strapping ligature. 3,679,519, Cl. 156-359.000.

Freyermuth, Harlan B.; and Field, Nathan D., to GAF Corporation. Polyvinyl alcohol esterification in N-methyl-2-pyrrolidone. 3,679,649, Cl. 260-91.3va.

Frick, Hans-Dieter: *See—*
Kohler, Roland; Frick, Hans-Dieter; Fengler, Harald; and Geyken, Erwin, 3,678,843.

Frick, Hughie R.; and Anderson, Richard W., to Dow Chemical Company, The. Preparation of octafluorotetrahydrofuran. 3,679,709, Cl. 260-346.10r.

Fried. Krupp Gesellschaft mit beschrankter Haftung: *See—*
Aust, Manfred; and Smuda, Gerhard, 3,679,520.

Friederich, Claude; and Cramazou, Etienne, to Societe Anonyme dite: Plastra. Closet for storage of clothing and the like. 3,679,280, Cl. 312-6.000.

Friedl, Wolfgang; and Schafer, Volker, to Original Hanau Quartzlampen, GmbH. Noble gas-molecular nitrogen laser. 3,679,997, Cl. 331-94.500.

Friedrich, Herbert; and Trapp, Gunther, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Basic hemicyanine dyestuffs. 3,679,674, Cl. 260-240.800.

Fuji Photo Film Co., Ltd.: *See—*
Honjo, Satoru; and Tamai, Yasuo, 3,679,586.
Kasugai, Tsuneo; and Minagawa, Nobuhiko, 3,679,455.
Makino, Katsuo; and Sawato, Iwao, 3,679,405.
Shiba, Keisuke; Tsubota, Motohiko; Sato, Akira; Ikeda, Tadashi; and Ogawa, Akira, 3,679,428.

Fujii, Tsuneji, to Toyoda Koki Kabushiki Kaisha. Apparatus for dressing side surfaces of grinding wheels. 3,678,916, Cl. 125-11.000.

Fujimoto, Shinichiro. Massaging apparatus. 3,678,924, Cl. 128-46.000.

Fujimoto, Yoshiaki: *See—*
Ogawa, Juro; and Fujimoto, Yoshiaki, 3,679,976.

Fujio, Masaaki. Wrapper with tear tabs of heat-shrinking synthetic resin film. 3,679,048, Cl. 206-46.00r.

Fujisawa, Yukimasa: *See—*
Fukuda, Masao; Goto, Hachiro; Norota, Susumu; and Fujisawa, Yukimasa, 3,679,533.

Fujita, Kinji, to Kabushiki Kaisha Suwa Seikosha. Electronic timepiece. 3,678,680, Cl. 58-23.00r.

Fujiwara, Yukio: *See—*
Nitta, Tohei; Shibuya, Yoshikazu; and Fujiwara, Yukio, 3,679,939.

Fukazawa, Nobuo: *See—*
Kudamatsu, Akio; Miyamoto, Masao; and Fukazawa, Nobuo, 3,679,726.

Fukuda, Masao; Goto, Hachiro; Norota, Susumu; and Fujisawa, Yukimasa, to Teijin Limited. Loop pile fabric and methods for manufacturing same. 3,679,533, Cl. 161-66.000.

Fukue, Norihiko: *See—*
Yoshimura, Ippei; Fukue, Norihiko; Sakamoto, Hiroshi; Murofushi, Hisashi; Hiyama, Takami; and Matsunaga, Takao, 3,679,707.

Fukui, Kakichi: *See—*
Taniguchi, Tetsuji; Fukui, Kakichi; Imai, Shiro; Hayashi, Masahiro; and Seki, Koichi, 3,678,722.

Fulcher, Robert Wendell. Process for launching and recovery of top-of-vehicle transported watercraft. 3,679,080, Cl. 214-450.000.

Fulkerson, Emmet Mitchell, to General Electric Company. Apparatus with stem overcurrent protection. 3,679,566, Cl. 204-228.000.

Fullerton, George W., to Earthwood, Incorporated. Neck mounting for a string instrument. 3,678,795, Cl. 84-293.000.

Fumagalli, Giacomo: *See—*
Latour, Andre; and Fumagalli, Giacomo, 3,679,851.

Funk, Stanley T., to McGraw-Edison Company. Door construction for washer-extractor drum. 3,678,715, Cl. 68-143.000.

Furihata, Hideo: *See—*
Miyasaka, Mamoru; Kurita, Hirohisa; and Furihata, Hideo, 3,678,682.

Fuselier, Claude. Manufacture of plastic articles. 3,679,337, Cl. 425-130.000.

Fussell, Richard L., to Burroughs Corporation. Magnetometer sensor digital ambient null'ing system. 3,679,969, Cl. 324-43.00r.

G. D. Societa in Accomandita Semplice di Enzo Seragnoli e Ariosto Serganoli: *See—*
Seragnoli, Ariosto, 3,679,079.

Gach, Peter P., to Sunbeam Plastics Corporation. Child proof cap for medicine bottles. 3,679,085, Cl. 215-9.000.

Gaetani, Bruno: *See—*
Arrigoni, Virgilio; Sezzi, Franco; and Gaetani, Bruno, 3,678,732.

GAF Corporation: *See—*
Beiswanger, John Paul Gerhardt; and Nassry, Assadullah, 3,679,493.
Freyermuth, Harlan B.; and Field, Nathan D., 3,679,649.
Hort, Eugene V., 3,679,637.
Hort, Eugene V., 3,679,645.
Mestetsky, Thomas S.; and Smolin, Edwin M., 3,679,623.
Randall, Davis I.; and Wynn, Robert W., 3,679,780.
Streck, Clemens, 3,679,353.

Gainsbury, Peter Edward: *See—*
Angus, Hamish Carmichael; and Gainsbury, Peter Edward, 3,679,607.

Galasso, Francis S.: *See—*
Basche, Malcolm; Fanti, Roy; Galasso, Francis S.; Kuntz, Urban E.; and Schile, Richard D., 3,679,475.

Galiano, Francis R.; and Smith, Wayne E., to Gulf Research & Development Company. Treatment of ethylene unsaturated acid ester copolymer with alkaline medium. 3,679,561, Cl. 204-159.150.

Gallagher, James P.: *See—*
Dalson, Milton H.; Gallagher, James P.; Keith, Carl D.; and Pfefferle, William C., 3,679,578.

Gamaunt, Roger L.: *See—*
Nichols, John B.; and Gamaunt, Roger L., 3,679,154.

Ganowsky, Raymond J., to Cliftronics, Inc. Hinge means for a rotary solenoid armature. 3,680,015, Cl. 335-228.000.

Gansert, Willi: *See—*
Scholl, Hermann; Norbert, Stuttgart; Gansert, Willi; and Arnold, Herbert, 3,678,904.

Garber, A. L., Company, The: *See—*
Wood, Robert E., 3,679,123.

Gardner, Danny J.: *See—*
Patton, Frank J., Jr.; and Gardner, Danny J., 3,678,578.

Garnish, Artur Maximovich; Shafransky, Lev Moiseevich; and Ischerikova, Galina Antonovna. Catalyst for oxidation of olefins. 3,679,603, Cl. 252-432.000.

Garrett Corporation, The: *See—*
Rummel, Samuel L., 3,679,025.

Garrison, John H.: *See—*
Smyers, Frank C.; and Garrison, John H., 3,679,395.

Gasc, Jean-Claude: *See—*
Bucourt, Robert; Nedelec, Lucien; and Gasc, Jean-Claude, 3,679,718.

Gaucher, Clair H.: *See—*
Forance, Ronald B.; Madden, William F.; and Gaucher, Clair H., 3,679,125.

Gauthier, Gerard: *See—*
Charbonnier, Gerard; and Gauthier, Gerard, 3,680,072.

Geber, Eugene E., to Industra Products, Inc. Drive for in-slot winding machine. 3,678,766, Cl. 74-23.000.

Gebhardt, James J., Jr.: *See—*
Martenson, Earl D.; and Gebhardt, James J., Jr., 3,678,817.

Gebr. Isringhausen, Firma: *See—*
Sturhan, Klaus, 3,679,166.

Gee, James E.: *See—*
Dadds, Floyd S.; and Gee, James E., 3,679,216.

Geiger, Rolf: *See—*
Jager, Georg; and Geiger, Rolf, 3,679,655.

Geigy Chemical Corporation: *See—*
Grunwaldt, Edgar, 3,679,804.

Geis, James D.; Troll, John H.; Gluz, Harry; and Baker, Cole H., to Iris Corporation. Automatic thermometer calibration system. 3,678,729, Cl. 73-1.00f.

Gelbard, Robert B.; Dodge, Gerald F., III; and True, Howard D. F., Jr., to General Electric Company. Side-by side refrigerator including low cost evaporator means. 3,678,698, Cl. 62-276.000.

Gelber, Robert M.: *See—*
Apfel, Joseph H.; and Gelber, Robert M., 3,679,291.

Geloso, Giovanni; deceased (by Domini, Gianfranca; sole heir). Lighting unit incorporating loudspeakers. 3,679,845, Cl. 179-146.00r.

Gemander, Georg: *See—*
Zimmermann, Kurt; and Gemander, Georg, 3,678,913.

Gemperle, Edward Carroll: *See—*
Aubert, Harry Julius; and Gemperle, Edward Carroll, 3,679,608.

General Electric: *See—*
Griffin, Jon H., 3,680,050.

General Electric Company: *See—*
Almasi, Joseph C.; and Martin, William S., 3,679,996.
Anderson, Roy E.; and Merigo, Miguel A., 3,680,121.
Bedford, Burnice D., 3,679,953.
Binzer, Thomas J., 3,679,855.
Boothe, Willis A.; and Healey, Anthony J., 3,678,953.
Burgess, James F.; Kopczewski, Robert F.; and Holeman, John M., 3,679,299.
Chalk, Alan J.; and Factor, Arnold, 3,679,629.
Chernoch, Joseph P., 3,679,999.
Dellert, Robert C., 3,678,752.
Flowers, Ralph G.; and Sherer, Thomas L., 3,679,632.
Fulkerson, Emmet Mitchell, 3,679,566.
Gelbard, Robert B.; Dodge, Gerald F., III; and True, Howard D. F., Jr., 3,678,698.
Hartman, William A., Jr.; and Siegler, Manny, 3,679,372.
Hill, Howard W.; Kaznoff, Alexis I.; and Marlowe, Mickey O., 3,679,596.
Johnson, Peter D., 3,679,928.
Kauffman, Melvin R., 3,679,282.
Kippax, Donald L.; and Murphy, Kevin E., 3,679,766.
Kydd, Paul H., 3,678,987.
LaCombe, Donald J.; and Babcock, Guy L., 3,679,941.
Le Grand, Donald G., 3,679,774.
May, Harley E., 3,678,736.
Maylotte, Donald H., 3,679,461.
Powell, John M.; and Frazier, Lauren L., 3,678,701.
Powell, Walter F., 3,679,931.
Quine, John P., 3,680,002.
Rhoades, John M., 3,679,955.
Rich, Joseph A., 3,679,474.
Schumacher, Walter C., 3,680,031.
Senft, Stephen P., 3,679,385.
Shinn, Jeffrey N., 3,678,881.
Smith, Douglas F., 3,679,894.
Thomas, Richard K., 3,680,112.
Whitten, James R., 3,680,114.
Yerman, Alexander J., 3,679,992.
Zubler, Edward G., 3,679,285.

General Instrument Corporation: *See—*
Hiday, David R.; and Mull, Ralph L., Jr., 3,679,990.

General Mills Fun Group, Inc.: *See—*
Tabor, Joseph M.; and Betker, Ted C., 3,678,607.

General Mills, Inc.: *See—*
Yueh, Mao Hsun; and Schilling, Eugene D., 3,679,658.

General Motors Corporation: *See—*
Bright, James A., 3,680,022.
Brocbman, Henry J.; and Sandor, Bela, 3,679,251.
Brooks, Rodney A.; and Orlando, Vincent A., 3,678,763.
Buck, Robert E.; Metzger, Robert W., Jr.; Rittmann, Albert D.; and Sayers, Eugene H., 3,679,946.
Burley, Harvey A., 3,678,741.
Canter, James A., 3,679,867.
Denis, Richard E., 3,678,762.
Dolan, Richard F., 3,678,584.
House, Ronalee, 3,679,847.
Jubelt, Warren L., 3,678,738.
O'Malley, John J.; and Smith, Marion D., 3,678,783.
Pietroski, Alex J., 3,678,551.
Staker, William C., 3,679,967.
Upp, Donald L., 3,679,870.
Wagner, Douglas A., 3,679,033.
Weststrate, Willem J. J., 3,679,229.
Wheadon, Ellis G.; and Willmann, Norman L., 3,679,789.

General Time Corporation: *See—*
Cielaszyk, Edward F., 3,678,683.

Gennick, William, to Ford Motor Company. Coupler between a dumpable container and a receiving container dumpable and receiving container coupler. 3,679,077, Cl. 214 -302.000.

Genovese, Eugene R.: *See—*
Almasi, George S.; and Genovese, Eugene R., 3,680,065.

Gerber, Eliot S.: *See—*
Bach, Bert; and Gerber, Eliot S., 3,679,159.

Gerber Products Company: *See—*
Lutz, Roger J., 3,679,338.

Gerecht, John Fred, to Colgate-Palmolive Company. Compositions with hydroxyalkyl piperidine or pyrrolidine oxides. 3,679,611, Cl. 252-542.000.

Gerster, John F.: *See—*
Moore, George G. I.; and Gerster, John F., 3,679,695.

Gerwitz, Paul F., to Spectrol Electronics Corporation. Combined potentiometer and switching structure with improved radial contact pressure contact means. 3,679,848, Cl. 200-8.00a.

Gestra KSB Vertriebsgesellschaft mbH & Co.: *See—*
Hohn, Gerhard; Lingnau, Josef; and Rettemeier, Wulf, 3,679,131.

Geus, John W., to Stamicarbon N.V. Process for the preparation of acicular, submicroscopic, permanently magnetizable metal particles. 3,679,398, Cl. 75-108.000.

Gevaert-AGFA N.V.: *See—*
Pollet, Robert Joseph; and Vandenberghe, Antoon Leon, 3,679,423.

Geyer, Gerald R.: *See—*
Jones, Griffin D.; Geyer, Gerald R.; and Hatch, Melvin J., 3,679,748.

Geyken, Erwin: *See—*
Kohler, Roland; Frick, Hans-Dieter; Fengler, Harald; and Geyken, Erwin, 3,678,843.

Geymeier, Winfried. Block set. 3,678,613, Cl. 46-25.000.

GHH-M.A.N. Technik Gesellschaft fur Anlagenbau m.b.H.: *See—*
Kunz, Gerhard K., 3,679,581.

Gibbons, Loren K., to FMC Corporation. Certain 5H-isoxazolo 5,4-d pyrimioin-4-ones. 3,679,682, Cl. 260-256.40f.

Gibson, Charles B., Jr., to Tektronix, Inc. Facsimile system. 3,679,824, Cl. 178-6.70r.

Gibson, George W.: *See—*
McCamis, Marvin J.; and Gibson, George W., 3,680,036.

Giddings, David George; and Murphy, David Duncan, to Pilkington Brothers Limited. Toughening of glass. 3,679,388, Cl. 65-116.000.

Giesfeldt, William Otto; and Pinnow, Roy Lee, to Globe-Union Inc. Method for forming ohmic contacts. 3,678,569, Cl. 29-473.100.

Giffard, Louis Henri Jules: *See—*
Fougeray, Jean Henri Roger; and Giffard, Louis Henri Jules, 3,679,342.

Gilby, Patricia G.; and Heineman, William R., to Hercules Incorporated. Hexavalent chromium reduction. 3,679,557, Cl. 204-97.000.

Gilch, Heinrich; and Schnell, Hermann, to Farbenfabriken Bayer Aktiengesellschaft. Process for the production of polyamide foams. 3,679,613, Cl. 260-2.50n.

Gilchrist, Allan E., to SCM Corporation. Process for electrolytic treatment of liquors using pressure cell with porous electrode means. 3,679,565, Cl. 204-180.00r.

Gilchrist, Allan E., to Ford Motor Company. Multi-component electrocoating compositions. 3,679,615, Cl. 260-3.300.

Gillich, Thomas N., to Azoplate Corporation. Light-sensitive diazo condensate containing reproduction material. 3,679,419, Cl. 96-91.00r.

Gilman, Robert W., to California Pellet Mill Company. Extrusion mill with roller adjustment means. 3,679,343, Cl. 425-331.000.

Gilson Bros. Co.: *See—*
Enters, Edward W.; Price, Warren H.; Davies, John W., III; and Hochwitz, Lynn E., 3,678,770.

Gingold, Jerald S.: *See—*
Franklin, Denis; Gingold, Jerald S.; Oxenham, Ronald B.; and Rogers, Raymond E., 3,680,084.

Girling Limited: *See—*
Ingram, Brian, 3,678,688.

Giroud, Henri Philibert, to Societe d'Exploitations et de Realisations Industrielles et Commerciales Serico. Siphon-valve stopper comprising a body enclosing a CO capsule. 3,679,104, Cl. 222-396.000.

Givry, Jean-Pierre: *See—*
Duclaux, Daniel; Givry, Jean-Pierre; and Pointud, Jacky, 3,679,555.

G.K.N. Birfield Transmissions Limited: *See—*
Shirley, Brian William; and Hutchinson, Philip, 3,678,706.

Glaser, Fritz-Jorg: *See—*
Riedhammer, Josepf; and Glaser, Fritz-Jorg, 3,679,327.

Glass, Marvin, & Associates: *See—*
Breslow, Jeffrey D., 3,679,210.

Glen, Lyon: *See—*
Czeck, Joseph J.; Glen Lyon; and Reusser, Raymond E., 3,679,370.

Globe Manufacturing Company: *See—*
Mayes, Nathan, 3,679,631.

Globe-Union Inc.: *See—*
Giesfeldt, William Otto; and Pinnow, Roy Lee, 3,678,569.

Gloess, Paul F. Key board printer. 3,679,036, Cl. 197-18.000.
Gluz, Harry: *See—*
Geis, James D.; Troll, John H.; Gluz, Harry; and Baker, Cole H., 3,678,729.
Godai, Tomokazu: *See—*
Arikawa, Masayasu; Godai, Tomokazu; Arai, Toshio; Hironosuke, Kada; and Akihiko, Iochi, 3,679,866.
Godbehere, Albert Edward, to Pryor, Edward, Developments Limited. Electrolytic marking of metal objects. 3,679,558, Cl. 204-143.00r.
Goerz, David J., Jr.; and Stephansen, Erik W., to Bechtel International Corporation. Paper making system and apparatus. 3,678,594, Cl. 34-1.000.
Goldberg, Seymour, to EG&G, Inc. Acoustic pulse generating system. 3,679,021, Cl. 181-.50h.
Golden, Richard L.; and Mazzella, Gerald, to Halcon International, Inc. Boric acid recovery. 3,679,751, Cl. 260-586.00b.
Goldfarb, Adolph E.; Strader, Judith D.; and Strader, George C., to Mattel, Inc., mesne. Doll. 3,678,616, Cl. 46-151.000.
Goldman, Henry. Non-opaque, light-filtering phototypographic font. 3,678,840, Cl. 95-85.000.
Goldmark, Peter C., to Columbia Broadcasting System, Inc. Record medium for picture information. 3,679,817, Cl. 178-5.4cd.
Goldsmith, Clifton R., to Phillips Petroleum Company. Pressurized chamber containing self-curing ingredients. 3,679,599, Cl. 252-305.000.
Goldstein, Robert L. Crystal light modulator providing both aperture and intensity control. 3,679,289, Cl. 350-150.000.
Goldstone, Bertram J., to Raytheon Company. Pulse compression radar system. 3,680,105, Cl. 343-17.2pc.
Goldstone, Bertram J., to Raytheon Company. Analog ferrite phase shifter control circuit. 3,680,110, Cl. 343-100.0sa.
Gondeck, Allan R., to Western Electric Company, Incorporated. Digital sine wave generator and method. 3,679,881, Cl. 235-152.000.
Goodfellow, Robert D., to Kennametal Inc., mesne. Rotary cutter for excavation, especially for use with raise boring and tunnel boring machines. 3,679,009, Cl. 175-374.000.
Goodman, Abraham H.: *See—*
Schiffmann, Robert F.; Roth, Howard; Lipka, David H.; and Goodman, Abraham H., 3,679,432.
Goodman, H., & Sons, Inc.: *See—*
Katz, Norman, 3,678,946.
Goodrich, B. F., Company, The: *See—*
Conrady, James A.; and Fitzpatrick, John S., 3,679,703.
McGinnis, Hebert E., 3,679,044.
Gorbaty, Martin L., to Esso Research and Engineering Company. Barbiturate 3-n-methylene phosphates. 3,679,683, Cl. 260-257.000.
Gorbei, Janos Miklos: *See—*
Widmer, Fritz; and Gorbei, Janos Miklos, 3,678,983.
Gordon, Jeanne E., to Owens-Corning Fiberglas Corporation. Method for determining relative degree of cure of impregnated tire cord. 3,679,457, Cl. 117-66.000.
Gordon, John Edson: *See—*
Feldman, Martin Louis; and Gordon, John Edson, 3,679,713.
Gordon, Robert C.: *See—*
Darrah, John H.; Bell, James C.; Vorachek, Jerome J.; Bezbatchenko, John W.; Biecker, George A.; Barton, James A.; Gordon, Robert C.; and Kirschner, Gerald D., 3,680,129.
Gorin, Eugene, to I-T-E Imperial Corporation. Rigid multiconductor bus system for use in high current and extra ultra high voltage systems. 3,679,811, Cl. 174-72.00b.
Gossard, Earl E.: *See—*
Bickel, John E.; Freres, Clemens H.; Gossard, Earl E.; Britt, James E.; Ortwein, Norman R.; and Swanson, Eric R., 3,680,115.
Gossens, Hubert; Kammermeier, Jurgen; and Kloker, Werner, to Farbenfabriken Bayer Aktiengesellschaft. Lightweight building units. 3,679,539, Cl. 161-159.000.
Gostelow, Daniel William Fredrick, to Bentley Machine Development Company Limited, The. Needle operating means in knitting machines. 3,678,710, Cl. 66-14.000.
Gothard, David O.: *See—*
Manilla, Charles E.; Honaker, Harold H.; and Gothard, David O., 3,678,567.
Gothard, Sydney Averill, to Vickers Limited. Apparatus for treating refuse. 3,679,142, Cl. 241-181.000.
Goto, Hachiro: *See—*
Fukuda, Masao; Goto, Hachiro; Norota, Susumu; and Fujisawa, Yukimasa, 3,679,533.
Gotoh, Miyuki, to Nissan Motor Company Limited. Method and apparatus for detecting mispick in loom. 3,678,969, Cl. 139-370.000.
Grace, W. R., & Co.: *See—*
Daniels, David A., 3,679,729.
Lee, Hanju; and Chi, Dongsuk, 3,679,604.
Morgan, Charles R.; and Daniels, David A., 3,679,728.
Zimmer, Austin A., 3,679,477.
Graham, Walton; and Keegan, Robert R., to Control Data Corporation. Pilot warning indicator system utilizing a transmission of signals within the absorption band of the oxygen spectrum. 3,680,122, Cl. 343-112.0ca.
Gramlich, Fritz, to Spitzer, Ludwig sen. KG. Bulk transporter. 3,679,082, Cl. 214-518.000.
Grammer, Maurine P.: *See—*
Nowicki, Carmen D. T.; and Grammer, Maurine P., 3,678,709.
Grana, Vito. Exercising stand. 3,679,203, Cl. 272-60.000.
Graner, Rolf G.: *See—*
Anderegg, Paul; and Graner, Rolf G., 3,679,522.
Grangaard, Orrin H., Jr.; and Selig, Ernest T., to Bison Instruments, Inc. Soil strain gage. 3,678,739, Cl. 73-88.50r.
Granger, James E.: *See—*
Hansen, Charles N.; Young, Morris D.; and Granger, James E., 3,679,593.
Granqvist, Carl-Erik, to Aga Aktiebolag. Distance measuring device. 3,680,101, Cl. 343-14.000.
Grapha Maschinenfabrik Hans Mueller AG: *See—*
Mueller, Hans, 3,679,072.
Graup, Josef. Fastener particularly for ski or mountaineering boots. 3,678,539, Cl. 24-68.000.
Graup, Josef. Strap holder consisting of two elements. 3,678,540, Cl. 24-70.0sk.
Graves, Jimmy J.: *See—*
Salcedo, Guido; and Graves, Jimmy J., 3,679,838.
Graves, Marlene D.: *See—*
Salcedo, Guido; and Graves, Jimmy J., 3,679,838.
Gray, William C., Jr., to Eastman Kodak Company. Photographic process which produces neutral dye image in diazotype material. 3,679,413, Cl. 96-49.000.
Graybill, Harold W.; Heider, James E.; and Sponseller, Harold P., to Owens-Illinois, Inc. Apparatus for impact injection molding of plastic articles. 3,679,341, Cl. 18-30.0ns.
Great Salt Lake Minerals and Chemicals Corporation: *See—*
Flint, Hans Gerhard; and Neitzel, Ulrich E. G., 3,679,376.
Grebnev, Nikolai Feodosovich: *See—*
Efimov, Leonid Alexandrovich; Shtin, Lev Mikhailovich; Sinitsky, Vladimir Mikhailovich; Khirdzheiv, Sergei Grigorievich; Pylaikin, Petr Alexeevich; Satovskaya, Ljudmila Sergeevna; Grebnev, Nikolai Feodosovich; Rasseikin, Mikhail Grigorievich; Kalugin, Konstantin Yakovlevich; Somov, Boris Stepanovich; and Baranchikov, Vladimir Mikhailovich, 3,678,728.
Greco, Nicholas P., to Koppers Company, Inc. Preparation of dihydrocatechol from cyclohexanone. 3,679,753, Cl. 260-586.00b.
Green, William E., Jr., to Citizens and Southern National Bank, The. Apparatus for packaging coins. 3,678,650, Cl. 53-159.000.
Greenspan, Lawrence, to Engelhard Minerals & Chemicals Corporation. Mirror bright silver plating. 3,679,553, Cl. 204-43.000.
Greenwood, David L., to Litton Business Systems, Inc. Remotely controlled actuator. 3,679,878, Cl. 235-146.000.
Grenda, Edward P.: *See—*
Richardson, Stephen M.; and Grenda, Edward P., 3,678,880.
Grier, Nathaniel, to Merck & Co., Inc. Nitroalkyl-piperazines as antibacterial agents in aqueous paint solutions. 3,679,622, Cl. 260-29.70n.
Griffin, Jon H., to General Electric Company. Serial digital pulse phase interface driver and receiver. 3,680,050, Cl. 340-167.00r.
Griffin, Thomas Franklin: *See—*
McGee, James Newton; and Griffin, Thomas Franklin, 3,679,516.
Griggs, Ernest Lee, Jr.; and Porter, John David, to Du Pont de Nemours, E. I., and Company. Ring and bar tensioner. 3,679,153, Cl. 242-153.000.
Grigoleit Company, The: *See—*
Howie, Robert K., Jr., 3,679,252.
Grimm, James J.: *See—*
Dufour, Raymond J.; and Grimm, James J., 3,678,560.
Grimm, Richard C.: *See—*
Evans, Robert W.; Grimm, Richard C.; and Olstein, Myron A., 3,678,857.
Grimm, Werner; Hasserodt, Ulrich; and Olschewski, Karl-Heinz, to Shell Oil Company. Liquid storage tank. 3,679,086, Cl. 220-10.000.
Grober, Kurt, to Mannesmann-Meer Aktiengesellschaft. Device for the manufacture of welded steel pipe from steel of any grade. 3,679,856, Cl. 219-59.000.
Grobman, William: *See—*
Faith, Ruth L.; and Grobman, William, 3,679,876.
Grosch, Gottlieb W. Irrigation apparatus. 3,679,135, Cl. 239-183.000.
Grosche, Manfred. Mixing valve. 3,678,961, Cl. 137-636.200.
Gross, William R. Method and apparatus for raising and harvesting fish. 3,678,898, Cl. 119-3.000.
Grossman, James D.; Mookherjee, Braja D.; De Simone, Robert; and Theimer, Ernst T., to International Flavors & Fragrances Inc. Perhydro 1,4,9,9-tetramethyl-4,7-methandazulenones. 3,679,749, Cl. 260-586.00r.
Grote, George A., to National Bank and Trust Company of Central Pennsylvania; administrator, d.b.m.c.t.a. of the estate of Beach, Willard C.; deceased, and administrator c.t.a. of the estate of Beach, Mary B. Filter for moisture and oil vapor. 3,678,662, Cl. 55-387.000.
Groves, Donald W., to Ford Motor Company. Adjustable steering column. 3,678,778, Cl. 74-493.000.
Groves, Raymond Sturgis: *See—*
Wakefield, Norman; Alexander, Stuart John; Morrish, James Francis Gerrards Cross; Beck, William; Groves, Raymond Sturgis; and Harvey, Michael J., 3,678,644.
Gruber, Frank R., to Imagex Corporation, The. Photocomposition device. 3,678,819, Cl. 95-4.50r.
Gruenfeld, Norbert: *See—*
Wasley, Jan W. F.; and Gruenfeld, Norbert, 3,679,687.
Gruffaz, Max: *See—*
Bargain, Michel; Gruffaz, Max; Laurent, Serge; and Mallet, Maurice, 3,679,639.
Grunau, David L.: *See—*
Clark, Timothy M.; Shanfield, Henry; and Grunau, David L., 3,679,055.

Grunwaldt, Edgar, to Geigy Chemical Corporation. Method for treating glaucoma with alkyl gallates. 3,679,804, Cl. 424-308.000.
Grunzweig & Hartmann Aktiengesellschaft: *See—*
Krzyzanowski, Erich, 3,678,989.
Mechel, Fridolin; and Kummermehr, Hans, 3,679,443.
Guardian Industries Corporation: *See—*
McMaster, Harold A., 3,678,628.
Gueldenpfennig, Klaus; Pommerening, Uwe A.; and Russell, Stanley L., to Stromberg-Carlson Corporation. Camp-on busy checking and monitor circuit. 3,679,835, Cl. 179-27.0fd.
Guenther Systems, Inc.: *See—*
Kuehl, Guenther L., 3,679,074.
Guerster, Rene L., to Ametek, Inc. Device for moving an elongated body in the direction of its axis. 3,679,145, Cl. 242-54.00r.
Guillamon, Alfonso. Child's stroller. 3,679,222, Cl. 280-36.00r.
Gulf Oil Corporation: *See—*
Compton, Dinsdale M. J.; and Epstein, Barry D., 3,679,898.
Gulf Research & Development Company: *See—*
Galiano, Francis R.; and Smith, Wayne E., 3,679,561.
Gundersen, Ralph W., to Power Drive Corporation. Work positioner. 3,678,583, Cl. 33-125.000.
Gundlach, Robert W., to Xerox Corporation. Porous printing plate prepared from particulate photosensitive resinous material. 3,678,850, Cl. 101-170.000.
Gunn, John B.: *See—*
Beesley, James P.; and Gunn, John B., 3,679,959.
Gunter, James C., to Robertshaw Controls Company. Coiled spring separator device and method. 3,679,097, Cl. 221-163.000.
Gurev, Harold S.: *See—*
Black, James R.; and Gurev, Harold S., 3,680,028.
Gustafson, Walter R.; McMillen, William H.; and Lippel, Lewis, Jr., to United States of America, Navy. Scan conversion through electroluminescent storage panels. 3,680,087, Cl. 343-5.0sc.
Guthrie, William E.; and Parrinello, Anthony J. Lithographic printing plates and methods for preparation thereof. 3,679,412, Cl. 96-33.000.
Gutman, Anatoly Lvovich: *See—*
Rubinshtein, Sholom Yakovlevich; Babin, Mikhail Artemievich; Gutman, Anatoly Lvovich; Naumenko, Viktor Dmitrievich; Orlov, Evgeny Mikhailovich; Presman, Vladimir Alexandrovich; Maev, Veniamin Evnovich; and Bondarenko, Fedor Alexeevich, 3,678,664.
Gutridge, Jack E., to Pullman Incorporated. Articulated motorized truck train. 3,678,864, Cl. 105-400.00r.
Gutshall, Charles E., to Illinois Tool Works Inc. Panel insert device. 3,678,980, Cl. 151-41.700.
Guyaux, James R.; Le Duc, Donald; and McDonald, Dean T., to FMC Corporation. Trailer. 3,679,075, Cl. 214-84.000.
Gynn, Gilbert M.: *See—*
Berry, David A.; and Gynn, Gilbert M., 3,679,727.
Haas, Werner E. L.: *See—*
Adams, James E.; Leder, Lewis B.; and Haas, Werner E. L., 3,679,290.
Haberland, Erich, and Perkow, Werner, to Norddentsche Affinerie. Continuous manufacture of cuprous chloride. 3,679,359, Cl. 23-97.000.
Habermeier, Juergen; Batzer, Hans; and Porret, Daniel, to Ciba-Geigy AG. Diglycidyl ethers. 3,679,681, Cl. 260-256.40c.
Hack, Peter; Hass, Karl; and Schinke, Georg, to Dynamit Nobel Aktiengesellschaft. Process for the manufacture of shaped articles of zirconium corundum. 3,679,383, Cl. 51-309.000.
Hagel, Leo J.: *See—*
Noel, Leona M.; and Hagel, Leo J., 3,678,943.
Hagemann, Hermann, to Farbenfabriken Bayer Aktiengesellschaft. Chloro-oxycarbonyl isocyanates. 3,679,743, Cl. 260-545.00r.
Hagemeyer, Hugh J., Jr.; and Park, Vernon K., to Eastman Kodak Company. Olefin polymerization process and catalyst. 3,679,775, Cl. 260-878.00b.
Hague, Robert Z.; Laucks, Howard H.; and Mastropole, Alfred J., to Moog, Inc. Quick tool change mechanism for machine tools. 3,678,801, Cl. 90-11.00d.
Hahm, Paul Timothy, to Eastman Kodak Company. Container with means for defoaming foaming liquids. 3,679,600, Cl. 252-361.000.
Hahn, Ernest A.: *See—*
Parker, Gordon M.; Wismer, Marco; and Hahn, Ernest A., 3,679,731.
Haije, Johan Arend Frederik. Tooth brush. 3,678,528, Cl. 15-167.00r.
Halcon International, Inc.: *See—*
Golden, Richard L.; and Mazzella, Gerald, 3,679,751.
Hale, Edith A. Fluid pollution eradicator system including an air bubble scrubbing unit. 3,678,657, Cl. 55-222.000.
Hall, Roger D.; and Clasby, David N., to Bendix Corporation, The. Low profile antenna mounted on a watercraft. 3,680,131, Cl. 343-710.000.
Halophane Company, Inc.: *See—*
Franck, Kurt, 3,679,889.
Quack, Wilbert, 3,679,891.
Halpern, Samuel Walter, to Bell Telephone Laboratories, Incorporated. Three-channel FM stereo transmission. 3,679,832, Cl. 179-15.0bt.
Halverson, Henry J.: *See—*
Andrew, Eugene A.; and Halverson, Henry J., 3,679,782.
Hamao, Umezawa; Shinichi, Kondo; Kenji, Maeda; Tomio, Takeuchi; and Masa, Hamada, to Zaidan Hojin Biseibutsu Kagaku Kai. Negamycin. 3,679,742, Cl. 260-534.00m.
Hamerl, Arthur John. Coupling assembly. 3,679,243, Cl. 287-21.000.
Hamermesh, Bernard: *See—*
Hansen, David O.; Altshuler, Saul; Bernstein, William; and Hamermesh, Bernard, 3,679,897.
Hamilton, Charles Eugene: *See—*
Teal, James L.; Hamilton, Charles Eugene; and Clifford, Dennis A., 3,679,364.
Hamilton, David C., to Ramsey Controls, Inc. Buffer amplifier and voltage regulating circuit. 3,679,961, Cl. 323-8.000.
Hamlin, David R.; and Torpey, William A., to Eastman Kodak Company. Web turning and guiding apparatus. 3,679,116, Cl. 226-197.000.
Hammond, Philip G.: *See—*
Nissen, Walter D.; and Hammond, Philip G., 3,679,094.
Nissen, Walter D.; and Hammond, Philip G., 3,679,095.
Hammonds, James C.: *See—*
O'Leary, Walter E.; Thornton, Duane V.; Hammonds, James C.; and Dare, Roy R., 3,678,866.
Hanchett, George D., to RCA Corporation. Alarm circuit. 3,680,068, Cl. 340-213.
Handy, Robert M.; Angello, Stephen J.; Malmberg, Paul R.; and O'Keeffe, Terence W., to Westinghouse Electric Corporation. Electron beam fabrication system and process for use thereof. 3,679,497, Cl. 156-2.000.
Hanes Corporation: *See—*
Safrit, Sam C., 3,678,514.
Hansen, Charles N.; Young, Morris D.; and Granger, James E., to Wasatch Chemical Company. Stripping of condensation polymers with an alkoxide. 3,679,593, Cl. 252-170.000.
Hansen, David O.; Altshuler, Saul; Bernstein, William; and Hamermesh, Bernard, to TRW Inc. Laser bombardment of microparticle beam for producing atomic particles in the form of a beam or an expanding cloud. 3,679,897, Cl. 250-42.000.
Hansen, Gunnar W., to Ford Motor Company. Air cleaner remote from engine and having integrated fuel vapor adsorption means. 3,678,663, Cl. 55-387.000.
Hansen, Robert N.; Hempel, George T.; and Noesges, Raymond. Interior scaffolding arrangement. 3,679,026, Cl. 182-132.000.
Hansen, Wolfgang, to Motoren- und Turbinen-Union Munchen GmbH. Method for connecting cooled or uncooled rotor blades to the blade rim of an associated disc. 3,678,555, Cl. 29-156.80r.
Hardcast, Inc.: *See—*
Young, Chester C., 3,679,456.
Hardman, Carl C., to Westinghouse Electric Corporation. Iron electrode. 3,679,482, Cl. 136-25.000.
Harper Associates Inc.: *See—*
Harper, Kenneth B.; and Tremblay, Hubert J., 3,679,923.
Harper, Kenneth B.; and Tremblay, Hubert J., to Harper Associates Inc. Automatic work repeating mechanism. 3,679,923, Cl. 310-128.000.
Harper, Patrick D. Floatless fluid level gauge. 3,678,749, Cl. 73-304.00r.
Harrell, Jerald R.; Logothetis, Anestis L.; and Verbanc, John J., to Du Pont de Nemours, E. I., and Company. Hydroxylated alpha-olefin/non-conjugated diene polymer. 3,679,627, Cl. 260-41.500.
Harris, Frederick John: *See—*
Jack, James; Drake, John; Thompson, David Crompton; and Harris, Frederick John, 3,679,391.
Harris, Paul E.; and Mader, George E., to Syracuse University Research Corporation. Large dynamic range coherent radar processor. 3,680,098, Cl. 343-7.700.
Harris, Richard Allen: *See—*
Campbell, Douglas Earl; and Harris, Richard Allen, 3,679,310.
Harris, Stephen E., to Chromatix, Inc. Tunable acousto-optic method and apparatus. 3,679,288, Cl. 350-149.
Hart, Joseph M.: *See—*
Becker, Albert H.; Hart, Joseph M.; and Quaal, John A., 3,680,016.
Hartley, Newell D. Ball and socket game device. 3,679,211, Cl. 273-144.00b.
Hartman, William A., Jr.; and Siegler, Manny, to General Electric Company. Off-gas burner system. 3,679,372, Cl. 23-277.00c.
Hartmann, Hellmut: *See—*
Hartmann, Hellmut; and Budan, Gerhard, 3,679,362.
Hartmann, Hellmut; and Budan, Gerhard, to Hartmann, Hellmut and Wintershall Aktiengesellschaft. Process for making magnesium oxide or hydroxide from magnesium containing raw materials. 3,679,362, Cl. 23-201.000.
Harvey, Don E.: *See—*
Rohrberg, Roderick G.; and Harvey, Don E., 3,678,781.
Harvey, Kelsey I. Ceramic product from fly ash and method of making same. 3,679,441, Cl. 106-41.000.
Harvey, Michael J.: *See—*
Wakefield, Norman; Alexander, Stuart John; Morrish, James Francis Gerrards Cross; Beck, William; Groves, Raymond Sturgis; and Harvey, Michael J., 3,678,644.
Hasegawa, Katsue: *See—*
Yoshimura, Susumi; Ito, Yoshimasa; Aaakawa, Shirow; and Hasegawa, Katsue, 3,679,944.
Hasegawa, Yoshinori: *See—*
Irikura, Tsutomu; Nishino, Keigo; Suzue, Seigo; Ushiyama, Keiichi; Shinoda, Hirotaka; and Hasegawa, Yoshinori, 3,679,730.
Hasegawa, Yukio: *See—*

Asahi, Matahiko; Murakami, Hisamichi; Hasegawa, Yukio; Matsui, Hideo; and Takayanagi, Eifu, 3,679,348.

Hashimoto, Hideo; Kasahara, Nobuo; and Yoshino, Toshio. Deodorization device. 3,679,369, Cl. 23-284.000.

Hashimoto, Saburo: *See—*
Strauss, Robert E.; and Hashimoto, Saburo, 3,679,392.

Haspert, John C., to Commercial Shearing & Stamping Company. Methods and apparatus for installing tunnel liners. 3,678,694, Cl. 61-84.000.

Hass, Karl: *See—*
Hack, Peter; Hass, Karl; and Schinke, Georg, 3,679,383.

Hasserodt, Ulrich: *See—*
Grimm, Werner; Hasserodt, Ulrich; and Olschewski, Karl-Heinz, 3,679,086.

Hatch, Melvin J.: *See—*
Jones, Griffin D.; Geyer, Gerald R.; and Hatch, Melvin J., 3,679,748.

Hatcher, John c., to Cole Manufacturing Company. Lifting arrangement for agricultural implement frame. 3,679,224, Cl. 280-43.230.

Haulotte, Georges. Assembly of block pulleys provided with a load measuring system. 3,679,012, Cl. 177-147.000.

Hawver, Ira M. Weighing scale assembly. 3,679,011, Cl. 177-134.000.

Hayashi, Masahiro: *See—*
Taniguchi, Tetsuji; Fukui, Kakichi; Imai, Shiro; Hayashi, Masahiro; and Seki, Koichi, 3,678,722.

Haydon, Arthur W., to Tri-Tech, Inc., mesne. Cam actuated switch assembly. 3,679,988, Cl. 307-133.000.

Haymore, Ralph B., to Envirotech Corporation. Flotation apparatus. 3,679,056, Cl. 210-221.000.

Hays, Robert G., to Motorola, Inc. Gaseous non-preferential etching of silicon. 3,679,502, Cl. 156-17.000.

Hayward, Norman G. Means for illumination of gun sights and the like. 3,678,590, Cl. 33-241.000.

Healey, Anthony J.: *See—*
Boothe, Willis A.; and Healey, Anthony J., 3,678,953.

Heaton, James W.: *See—*
Eversole, William C.; and Heaton, James W., 3,678,632.

Heberlein & Co., AG: *See—*
Slavik, Valter, 3,678,579.

Heckler & Roch GmbH, Firma: *See—*
Seidel, Alex; Moller, Tilo; and Weldle, Helmut, 3,678,800.

Hedges, Charles P. Apparatus for providing conversion between analog and digital values. 3,680,079, Cl. 340-347.00p.

Hedges, Robert H., to Rockwell Manufacturing Company. Pipe cleaning apparatus. 3,678,948, Cl. 134-167.00c.

Hedrick, Geoffrey S., to Lear Siegler, Inc. Brushless D. C. motor with rate control of position sensor. 3,679,954, Cl. 318-254.000.

Heid, Raymond G.: *See—*
Kaufman, Jack B.; and Heid, Raymond G., 3,678,603.

Heider, James E.: *See—*
Graybill, Harold W.; Heider, James E.; and Sponseller, Harold P., 3,679,341.

Heikel, Rolf Rainer. Window fitting. 3,678,626, Cl. 49-402.000.

Heineman, William R.: *See—*
Gilby, Patricia G.; and Heineman, William R., 3,679,557.

Heinemann Electric Company: *See—*
Wilkinson, John C., 3,680,014.

Heinrich Koppers Gesellschaft mit beschrankter: *See—*
Preusser, Gerhard; Schulze, Martin; and Richter, Klaus, 3,679,579.

Heise, Georg, to Dornier A.G. Pulsation power unit. 3,678,692, Cl. 60-247.000.

Heitz, Alfred J.: *See—*
Rogers, Leo C.; Nikirk, Roger G.; and Heitz, Alfred J., 3,679,470.

Heitz, Robert G.: *See—*
Brown, William E.; Heitz, Robert G.; and Levine, Charles A., 3,679,480.

Helava, Uuno V.; and Forrest, Robert B., to Bendix Corporation, The. Photogrammetric apparatus. 3,678,582, Cl. 33-20.00d.

Hellmuth, Walter W., to Texaco Inc. Overbased alkaline earth metal sulfonate lube oil composition manufacture. 3,679,584, Cl. 252-33.400.

Hempel, George T.: *See—*
Hansen, Robert N.; Hempel, George T.; and Noesges, Raymond, 3,679,026.

Hendrickson, Roger L. Collapsible trap for crustaceans. 3,678,612, Cl. 43-66.000.

Henkel & Cie G.m.b.H.: *See—*
Schnegelberger, Harald; and Altenschopfer, Theodor, 3,679,589.

Hensler, Paul, to Porsche, Dr.-Ing. H.c.F., K.G., Firma. Installation in internal combustion engines for preventing the escape of fuel out of the mixture formation system into the atmosphere. 3,678,912, Cl. 123-136.000.

Hentschel, John E., to Varian Associates, mesne. Crossed-field noise generator tube employing a high magnetic field intensity. 3,679,993, Cl. 331-78.000.

Herbenar, Edward J., to TRW Inc. Ball joint. 3,679,248, Cl. 287-87.000.

Hercules Incorporated: *See—*
Gilby, Patricia G.; and Heineman, William R., 3,679,557.

Herd, David P., to Rockwell Manufacturing Company. Well completion and apparatus. 3,678,996, Cl. 166-.500.

Hereford, John R., to U.S. Dynamics Inc., mesne. Microfilm recording system. 3,679,305, Cl. 355-65.000.

Herger, Zoltan L.; and Olmsted, Dennis R., to Storage Technology Corporation. Magnetic tape head skew adjustment. 3,679,841, Cl. 179-100.2ca.

Herman, Elvin E.; and McCord, Henry L., to Hughes Aircraft Company. Non-coherent radar system with means to correct the phase of the return signal. 3,680,099, Cl. 343-7.700.

Hermann, Gunter; and Schmidt, Karl-Julius, to Farbenfabriken Bayer Aktiengesellschaft. Methods of controlling rodents and leporine animals. 3,679,796, Cl. 424-211.000.

Hermans, Hubert Karel Frans; Knaeps, Alfonsus Gillielmus; and Willems, Joannes Josephus Maria, to Janssen Pharmaceutica N.V. N-(bicycloamino-alkanoyl)-anilines. 3,679,686, Cl. 260-287.00r.

Hermelin, Marc S. Plastic foam furniture. 3,678,553, Cl. 29-91.1.

Herr, Ross R.: *See—*
Bergy, Malcolm E.; Herr, Ross R.; and Mason, Donald J., 3,679,787.

Herter, George L.; and Mittelsteadt, Glen L., to Herter's Inc. All plastic polycarbonate shot shell with star crimp. 3,678,858, Cl. 102-43.00p.

Herter's Inc.: *See—*
Herter, George L.; and Mittelsteadt, Glen L., 3,678,858.

Hertrich, Klaus; and Peters, Riener, to VEB Polygraph Leipzig, Kombinat fur polygraphische Maschinen und Ausrustungen. Collecting device especially for transverse folders for web-fed rotary printing presses. 3,679,201, Cl. 271-51.000.

Hertz, Kuri J., to Ford Motor Company. Method of forming an insert. 3,678,552, Cl. 29-91.100.

Herwig, Walter: *See—*
Brinkmann, Ludwig; and Herwig, Walter, 3,679,628.
Schott, Herbert; and Herwig, Walter, 3,679,650.

Heseltine, Donald W.: *See—*
Lincoln, Lewis L.; and Heseltine, Donald W., 3,679,427.

Hess, Alan L.: *See—*
Hill, Vernon L.; Nichols, Harry R.; and Hess, Alan L., 3,679,494.

Hess, James R. Drainage tube coupling. 3,679,242, Cl. 285-417.000.

Hester, Jackson B., Jr. 7-Benzoyl indolines. 3,679,701, Cl. 260-326.110.

Heusler, Karl; and Fechtig, Bruno, to Ciba-Geigy Corporation. Thiadiazabicycloalkane compound. 3,679,676, Cl. 260-243.00r.

Hewitt, Robert E., to Xerox Corporation. Conveyor system. 3,678,896, Cl. 118-637.000.

Hewitt, Robert E., to Xerox Corporation. Developer mixing apparatus. 3,678,897, Cl. 118-637.000.

Hewlett-Packard Company: *See—*
Dukes, John N., 3,679,934.

Heye, Hermann: *See—*
Borcherding, Karl, 3,678,630.

Heyl, Walter, to Linde Aktiengesellschaft. Axial-piston machine. 3,678,804, Cl. 91-507.000.

Heyworth, Ernest, to Tridair Industries. Fastener insert having a replaceable nut. 3,678,981, Cl. 151-41.760.

Hicks, Glen Elton, to Rusco Industries, Incorporated. False muntin assembly. 3,678,651, Cl. 52-311.000.

Hiday, David R.; and Mull, Ralph L., Jr., to General Instrument Corporation. Variable frequency oscillator with substantially linear AFC over tuning range. 3,679,990, Cl. 331-36.00c.

Hideg, Laszlo, to Ford Motor Company. Single fuel system carburetor having improved metering stability. 3,679,186, Cl. 261-50.00r.

Higashi, Kazuhiro: *See—*
Uekusa, Genzo; Tanimura, Shigeru; Higashi, Kazuhiro; and Sumoto, Takao, 3,679,949.

Higashimori, Shosuke: *See—*
Ashikaga, Tadao; and Higashimori, Shosuke, 3,679,544.

Hilados Y Tintes Soler, S.A.: *See—*
Calvet, Francisco Vancells, 3,679,356.

Hilbig, Jack H., to Rohr Corporation. Vacuum cleaner head with supersonic gas jets. 3,678,534, Cl. 15-345.000.

Hildebrand, Dietrich; and Neufang, Karl, to Farbenfabriken Bayer Aktiengesellschaft. Process for the manufacture of high bulk textile materials from polyacrylonitrile. 3,679,354, Cl. 8-130.100.

Hill, Gilman A. Well drilling method. 3,679,001, Cl. 166-292.000.

Hill, Howard W.; Kaznoff, Alexis I.; and Marlowe, Mickey O., to General Electric Company. Nuclear reactor fuel composition. 3,679,596, Cl. 252-301.10r.

Hill, Theodore, 20% to Powell, B. J. Adapter for floor maintenance machines. 3,678,531, Cl. 15-230.190.

Hill, Vernon L.; Nichols, Harry R.; and Hess, Alan L., to IIT Research Institute. Nitrided hafnium-tantalum alloys and method of making the same. 3,679,494, Cl. 148-20.300.

Hiller, Gary Lynn: *See—*
De Mauriac, Richard A.; and Hiller, Gary Lynn, 3,679,422.

Hilti Aktiengesellschaft: *See—*
Balint, Lajos, 3,679,344.
Maier, Elmar; and Rangger, Herbert, 3,679,118.

Himi, Hitoshi; Shinmon, Yasuhiro; and Teshima, Tokuro, to Kabushiki Kaisha Meidensha. Spring operated making driving mechanism for circuit breaking and switching device. 3,679,852, Cl. 200-153.0sc.

Hinderaker, Philip D.; and Nelson, Karl E., to Minnesota Mining and Manufacturing Company. Magnetic insect screen. 3,679,505, Cl. 156-71.000.

Hinds, William H.: *See—*
Wantland, Charles F.; Juge, Frank E., Jr.; and Hinds, William H., 3,679,577.

Hino, Hiroyuki; Asakuno, Hiroyoshi; and Yamada, Tetsuya, to Chisso Corporation. Apparatus for stretching a tubular film of thermoplastic synthetic polymeric resin. 3,678,545, Cl. 26-55.000.

Hinton, Robert A.; and Cottle, John E., to Phillips Petroleum Company. Purification of oxidative dehydrogenation process effluents. 3,679,764, Cl. 260-680.00e.

Hiragaki, Shigeho; and Mochida, Yoshihiro, to Japan Spectroscopic Co., Ltd. Instruments for measuring molecular orientations with the aid of fluorescence. 3,679,309, Cl. 356-114.000.

Hirai, Kentaro: *See—*
Takamizawa, Akira; and Hirai, Kentaro, 3,679,677.

Hirokawa, Yoichi; and Sato, Masatoshi, to Kabushikikaisha Tokyo Keiki(Tokyo Keiki Co., Ltd.). Electric power source system for gyroscopic instrument. 3,679,960, Cl. 322-4.000.

Hironosuke, Kada: *See—*
Arikawa, Masayasu; Godai, Tomokazu; Arai, Toshio; Hironosuke, Kada; and Akihiko, Iochi, 3,679,866.

Hirose Electric Co., Ltd.: *See—*
Kawai, Mitsuru, 3,680,033.

Hirota, Kashichi, to Kyowa Denki Kagaku Kaisha. Pallet. 3,678,868, Cl. 108-51.000.

Hirschhorn, Leo. Porcelain bonding dental gold alloy. 3,679,402, Cl. 75-165.000.

Hitachi, Ltd.: *See—*
Akeyama Masamoto; and Takahashi, Sohji, 3,678,575.
Kimura, Chikara, 3,679,900.
Seki, Susumu; Noumi, Makoto; and Takaoka, Tadashi, 3,679,879.
Taniguchi, Tetsuji; Fukui, Kakichi; Imai, Shiro; Hayashi, Masahiro; and Seki, Koichi, 3,678,722.
Tsukada, Toshihisa, 3,680,049.

Hiyama, Takami: *See—*
Yoshimura, Ippei; Fukue, Norihiko; Sakamoto, Hiroshi; Murofushi, Hisashi; Hiyama, Takami, and Matsunaga, Takao, 3,679,707.

Ho, Raymond Y.-C.: *See—*
Adams, David K.; and Ho, Raymond Y.-C., 3,680,011.

Hobbs, Charles C.: *See—*
Thigpen, Hubert H.; and Hobbs, Charles C., 3,679,706.

Hobbs, Edwin L. Controlled personal descent device. 3,678,543, Cl. 24-230.000.

Hobday, David Stephen: *See—*
Hobday, Stephen William; and Hobday, David Stephen, 3,679,019.

Hobday, Stephen William; and Hobday, David Stephen. Vehicle guidance systems. 3,679,019, Cl. 180-98.000.

Hoberecht, Verlin L., to International Business Machines Corporation. Method of scrolling information displayed on a cathode ray tube. 3,680,077, Cl. 340-324.00a.

Hochwitz, Lynn E.: *See—*
Enters, Edward W.; Price, Warren H.; Davies, John W., III; and Hochwitz, Lynn E., 3,678,770.

Hodogaya Kagaku Kogyo Kabushiki Kaisha: *See—*
Iizuka, Masao; Igari, Norio; and Maeda, Shigeo, 3,679,656.

Hofert, Paul: *See—*
Arzt, Friedrich; and Hofert, Paul, 3,679,850.

Hoffman, Bernard L., to Krause, Frederick A., Associates, Inc. Hydraulic system. 3,678,726, Cl. 72-351.000.

Hoffmann, Donald R., to Ford Motor Company. Rod end connector. 3,679,249, Cl. 287-93.000.

Hoffmann, Ernst, to Schmidt, Kranz & Co., GmbH. Compression pipe coupling. 3,679,241, Cl. 285-340.000.

Hoffmann- La Roche Inc.: *See—*
Beaman, Alden Gamaliel; Duschinsky, Robert; and Tautz, William Paul, 3,679,698.

Hoffmann-La Roche Inc.: *See—*
Laucournet, Robert; and Turpin, Pierre, 3,679,315.
Malatestinic, Nicholas; and Ziering, Albert, 3,679,666.

Hofmann, Christian; and Neumann, Jorg, to Jenoptik Jena G.m.b.H. Fresnel optical systems having echelons on at least one of its faces. 3,679,294, Cl. 350-211.000.

Hofmeister, Richard J.; and Salners, Edward A. Electronic chassis assembly for a television receiver. 3,679,829, Cl. 178-7.900.

Hohn, Gerhard; Lingnau, Josef; and Rettemeier, Wulf, to Gestra KSB Vertriebsgesellschaft mbH & Co. Condensation discharger. 3,679,131, Cl. 236-59.000.

Holbert, Dimitry, to Standard Alliance Industries, Inc. Conveyor. 3,678,861, Cl. 104-172.000.

Holden Industries, Inc.: *See—*
Bailey, Robert C.; Estes, Harry A.; James, Glen S.; Klug, James R.; Montillon, Henry A.; Myring, Verne E.; Robertson, Orville H.; Sargeant, Blaine W.; and Sorensen, Neal E., 3,679,200.

Holeman, John M.: *See—*
Burgess, James F.; Kopczewski, Robert F.; and Holeman, John M., 3,679,299.

Holleitner, Hans Johann Gustav, to Aktiebolaget Electrolux. Absorption refrigeration apparatus of the inert gas type. 3,678,699, Cl. 62-277.000.

Hollister, Kenneth Robert; and Perry, Ernest John, to Eastman Kodak Company. Coagulation of aqueous polymeric dispersions of silver halide. 3,679,425, Cl. 96-114.000.

Holm, Robert Leander; and Ashford, John Wesley, to Litton Systems, Inc. Ceramic ball insulated depressed collector for a microwave tube. 3,679,929, Cl. 315-5.380.

Holm, Vernon C. F.: *See—*
Nolan, George J.; and Holm, Vernon C. F., 3,679,601.

Holmes, John J.: *See—*
Arulpragasam, Jeganandaraj A.; Binks, Dennis C.; Holmes, John J.; Minshull, John F.; Pinnell, Martin C.; and Williams, Clive, 3,680,052.

Holmes, Lloyd H.; and Sundland, William D., to LTV Electrosystems, Inc. Rotational coupling. 3,678,810, Cl. 92-119.000.

Holmes, Robert W.: *See—*
Dey, Arabinda N.; and Holmes, Robert W., 3,679,484.

Holmes, William F.: *See—*
Stone, Guthrie B.; and Holmes, William F., 3,678,724.

Holtermann, Rolf: *See—*
Jurgen-Lohmann, Ludwig; and Holtermann, Rolf, 3,679,268.

Holtkamp, Calvin J., to Westinghouse Electric Corporation. Oven thermostat for heat cleaning oven. 3,680,021, Cl. 337-312.000.

Holzer Patent AG: *See—*
Holzer, Walter, 3,679,853.
Holzer, Walter K., 3,678,769.

Holzer, Walter, to Holzer Patent AG. Multiple contact system for cam operated system. 3,679,853, Cl. 200-166.00j.

Holzer, Walter K., to Holzer Patent AG. Eccentric and knee lever drive for mechanical control elements. 3,678,769, Cl. 74-118.000.

Holzmann, Paul. Branch guide for a berry harvesting machine. 3,678,666, Cl. 56-119.000.

Honaker, Harold H.: *See—*
Manilla, Charles E.; Honaker, Harold H.; and Gothard, David O., 3,678,567.

Honda Giken Kogyo Kabushiki Kaisha: *See—*
Nishimura, Sadanori, 3,678,952.

Honeywell Inc.: *See—*
Kautz, Murrell F., 3,680,023.
Wilwerding, Dennis J., 3,679,991.

Honeywell Information Systems, Inc.: *See—*
Blessin, Ronald W.; and Kennedy, James A., 3,680,057.
Nowell, John R., 3,679,964.

Honeywell Information Systems Inc., mesne: *See—*
Blessin, Ronald W.; and Kennedy, James A., 3,680,051.

Honigschmid-Grossich, Rudiger: *See—*
Termin, Erich; Rogler, Walter; Joch, Wilhelm; and Honigschmid-Grossich, Rudiger, 3,679,724.

Honjo, Satoru; and Tamai, Yasuo, to Fuji Photo Film Co., Ltd. Liquid electrophotographic developers containing a dye modified polypeptide. 3,679,586, Cl. 252-62.100.

Hopkins, George H., Jr. Induced polarization system and method for geological investigation having a stable waveform. 3,679,978, Cl. 325-187.000.

Hopkins, Lionel G.: *See—*
Braun, Richard E.; Hopkins, Lionel G.; Sheehan, Neil J.; and Sanchez, Edward J., 3,678,576.

Hopkins, Richard H.; Roland, George W.; Steinbruegge, Kenneth B.; and Partlow, William D., to Westinghouse Electric Corporation. Calcium containing silicate oxyapatite laser materials. 3,679,597, Cl. 252-301.40f.

Horikawa, Noboru R.: *See—*
Sams, Robert H.; Linton, Robert W.; and Horikawa, Noboru R., 3,679,610.

Horn, Anton; Schinzel, Erich; and Rosch, Gunter, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. 1,2,4-Triazolyl-(1)-derivatives of the stilbene and bis-styrylbenzene series, process for their manufacture and their use as optical brighteners. 3,679,668, Cl. 260-240.0ca.

Hort, Eugene V., to GAF Corporation. Cationic precipitation polymerization of vinyl carbazole. 3,679,637, Cl. 260-88.300.

Hort, Eugene V., to GAF Corporation. Free radical precipitation polymerization of vinyl carbazole. 3,679,645, Cl. 260-88.300.

Horton, John P.; and Sulser, Troy S., to Danline Manufacturing Company. Rotary brush plastic bristle holder and mounting means. 3,678,530, Cl. 15-180.000.

Horton, Robert C., to Bramson Instruments, Incorporated. Sonic or ultrasonic cutting apparatus. 3,679,526, Cl. 156-580.000.

Houldcroft, Peter Thomas; and Sullivan, Arthur Basil Joseph, to National Research Development Corporation. Thermal cutting apparatus. 3,679,863, Cl. 219-121.0lm.

House, Ronalee, to General Motors Corporation. Three position pivotal switch with improved spring biased joystick actuator and contact. 3,679,847, Cl. 200-6.00a.

Houser, George G.; and Jenkins, Robert E., to International Business Machines Corporation. Data processor and compactor therefor. 3,680,103, Cl. 343-17.10r.

Houston, William L., Jr.; and Clark, William C., to Phillips Petroleum Company. Removal of polymer from cracked gas caustic washes or caustic solutions. 3,679,765, Cl. 260-683.00r.

Howard, Michael R., to Ford Motor Company. Method for making gear. 3,678,557, Cl. 29-159.200.

Howe, Alan Colin Scott, to Laing, John, and Son Limited. Low density concretes and their manufacture. 3,679,445, Cl. 106-88.000.

Howe, Ralph S., Jr.: *See—*
Van Dorn, Horace B.; and Howe, Ralph S., Jr., 3,679,279.

Howie, Robert K., Jr., to Grigoleit Company, The. Friction fit knob. 3,679,252, Cl. 292-349.000.

Howkinson, George E. Article holder. 3,679,064, Cl. 211-43.000.

Howson, Robert D., to Bell Telephone Laboratories, Incorporated. Precoded ternary data transmission. 3,679,977, Cl. 325-42.

Hsu, Yung Shing; and Pomeroy, Raymond V., to Omark Industries, Inc. Energy dissipating mechanisms. 3,678,808, Cl. 92-85.000.

Hubbell, Harvey, Incorporated, mesne: *See—*

Shearer, Jack F., 3,679,892.

Huber, Max; and Meier, Werner, to Sulzer Brothers, Ltd. Packing elements for materials-interchange column. 3,679,537, Cl. 161-135.000.

Huber-Emden, Helmut; Eschle, Karl; and Maeder, Arthur, to Ciba-Geigy AG. Phosphonic acid dialkyl esters. 3,679,779, Cl. 260-943.000.

Hudall Corporation: *See—*
Hudson, Rose Marie, 3,678,932.

Hudis, Michael I., to Rex Chainbelt Inc. Apparatus for installing reinforcing in plastic concrete. 3,678,816, Cl. 94-39.000.

Hudson, Rose Marie, to Hudall Corporation. Self-contained internal hydrotherapy apparatus. 3,678,932, Cl. 128-227.000.

Huff, Larry D.: *See—*
Fall, Herbert S.; York William D.; and Huff, Larry D., 3,679,275.

Hughes Aircraft Company: *See—*
Ajioka, James S.; and Rosen, Harold A., 3,680,143.
Blair, George R.; and Keller, Sherman R., 3,679,559.
Dahlinger, Rodney J., 3,679,998.
Evans, Norol T., 3,680,095.
Herman, Elvin E.; and McCord, Henry L., 3,680,099.

Hughes Tool Co.: *See—*
Nichols, John B.; and Gamaunt, Roger L., 3,679,154.

Hughes, William: *See—*
Edgar, Owen Burchell; Hughes, William; Lawrance, Derek Robert; Lederer, Gerald; and Ritchie, Colin Foster, 3,679,624.

Hulland, Burton L.: *See—*
Rademacher, Paul; and Hulland, Burton L., 3,680,116.

Humphrey, Harold D.; and Juengel, Richard O., to Electro-Security Devices, mesne. Intrusion alarm system. 3,680,073, Cl. 340-258.00a.

Hunnebeck GmbH: *See—*
Markewitz, Wolfgang; and Bolduan, Dieter, 3,678,693.

Hunt, Barry R.: *See—*
Bryant, Marion B.; and Hunt, Barry R., 3,680,123.

Hunt, John M.; and Dannatt, Hugh St. L., to Singer Company, The. Electrical circuit for impact contact keyboard. 3,679,038, Cl. 197-98.000.

Hunt, Raymon E.: *See—*
Kirkland, Kenneth C., Jr.; and Hunt, Raymon E., 3,679,024.

Huntsinger, Dean P., to Collins Radio Company. All digital distance measuring equipment. 3,680,097, Cl. 343-7.300.

Hurst, George S.; Thennard, Norbert; and Schneider, Karl A., to University of Kentucky Research Foundation, The, mesne. X-ray irradiation apparatus in which an X-ray source is energized upon the recording of irradiation dosage data. 3,679,902, Cl. 250-65.00r.

Huschle, Peter; and Ettischer, Helmut, to Eastman Kodak Company. Resilient stop for a photographic shutter. 3,678,838, Cl. 95-59.000.

Husting, Liborius F. Garbage container and anchoring base. 3,679,161, Cl. 248-154.000.

Hutchinson, Philip: *See—*
Shirley, Brian William; and Hutchinson, Philip, 3,678,706.

Hutson, Thomas, Jr.; and Carter, Cecil O., to Phillips Petroleum Company. Conversion of hydrocarbons. 3,679,771, Cl. 260-676.00r.

Hydrocarbon Research, Inc.: *See—*
Johnson, Clarence A., 3,679,573.

I-T-E Circuit Breaker (Canada) Limited: *See—*
Turgeon, Joseph A., 3,679,240.

I-T-E Imperial Corporation: *See—*
Gorin, Eugene, 3,679,811.

Ichinose, Noboru; Yokoyama, Katsunori; and Nishikawa, Hisashi, to Tokyo Electric Co., Ltd. and Tokyo Shibaura Electric Co., Ltd. Ceramic resonators. 3,679,919, Cl. 310-9.400.

Igari, Norio: *See—*
Iizuka, Masao; Igari, Norio; and Maeda, Shigeo, 3,679,656.

IIT Research Institute: *See—*
Hill, Vernon L.; Nichols, Harry R.; and Hess, Alan L., 3,679,494.

Iizuka, Masao; Igari, Norio; and Maeda, Shigeo, to Hodogaya Kagaku Kogyo Kabushiki Kaisha. Quaternized 1,2,4-triazolium-3-azo dyestuffs. 3,679,656, Cl. 260-157.000.

Ikeda, Koji: *See—*
Kushihashi, Akira; and Ikeda, Koji, 3,679,386.

Ikeda, Tadashi: *See—*
Shiba, Keisuke; Tsubota, Motohiko; Sato, Akira; Ikeda, Tadashi; and Ogawa, Akira, 3,679,428.

Ill, Manfred: *See—*
Zippel, Christof; and Ill, Manfred, 3,679,335.

Illinois Tool Works Inc.: *See—*
Bjorklund, Lowell L., 3,678,979.
Gutshall, Charles E., 3,678,980.

Imagex Corporation, The: *See—*
Gruber, Frank R., 3,678,819.

Imai, Shiro: *See—*
Taniguchi, Tetsuji; Fukui, Kakichi; Imai, Shiro; Hayashi, Masahiro; and Seki, Koichi, 3,678,722.

Imanishi, Masakazu; Kondou, Kenzi; and Sugiura, Ituo, to Tokyo Shibaura Electric Co., Ltd. Electric pencil sharpener. 3,678,975, Cl. 144-28.500.

Imperial Chemical Industries Limited: *See—*
Burgess, Anthony Joseph; Eagles, Alan Charles; and Steel, Margaret Lillian, 3,679,506.
Davis, Anthony Charles; and Fisher, Ian Stuart, 3,679,541.
Edgar, Owen Burchell; Hughes, William; Lawrance, Derek Robert; Lederer, Gerald; and Ritchie, Colin Foster, 3,679,624.
Jack, James; Drake, John; Thompson, David Crompton; and Harris, Frederick John, 3,679,391.
King, John Howliston; and Smith,Frank, 3,679,570.
Reade, Grahame Melvin, 3,679,791.
Tittle, Barry, 3,679,757.

Inaba, Kohsaku; Yoshida, Seisaku; and Matsuura, Shoji (Murakami, Tsukasa), to Ishikawajima-Harima Jukogyo Kabushiki Kaisha. Diesel hammer. 3,679,005, Cl. 173-128.000.

Incentive Research and Development AB: *See—*
Bogren, Hugl; Elfstrom, Gosta; and Tengroth, Bjorn, 3,679,901.

Indev, Inc.: *See—*
Walsh, David I., 3,678,894.

Industra Products, Inc.: *See—*
Geber, Eugene E., 3,678,766.

Industrie A. Zanussi S.p.A.: *See—*
Mazza, Lamberto, 3,679,908.

Ingram, Brian, to Girling Limited. Hydraulic braking systems for vehicles. 3,678,688, Cl. 60-54.60r.

Ingram, John Anthony, to National Research Development Corporation. Carrier devices for shoulder-strap support on the back. 3,679,108, Cl. 224-8.00r.

Inoue, Keizi, to Denki Onkyo Company Limited. Self-exciting type high voltage generating apparatus utilizing piezoelectric voltage transforming elements. 3,679,918, Cl. 310-8.100.

Inoue, Kiyoshi. Loudspeaker system. 3,679,833, Cl. 179-16.00p.

Inoue, Shozo, to Canon Kabushiki Kaisha. Multicolor electrophotographic device. 3,679,301, Cl. 355-4.000.

Institute of Textile Technology: *See—*
Woodford, Terrence R., 3,678,713.

International Business Machines Corporation: *See—*
Almasi, George S.; and Genovese, Eugene R., 3,680,065.
Arulpragasam, Jeganandaraj A.; Binks, Dennis C.; Holmes, John J.; Minshull, John F.; Pinnell, Martin C.; and Williams, Clive, 3,680,052.
Baskin, Herbert B.; Belady, Laszlo A.; Evangelisti, Carlo J.; and Morse, Stephen P., 3,680,078.
Beesley, James P.; and Gunn, John B., 3,679,959.
Bullock, Michael K.; Miller, Myrl J.; and Voit, William F., Jr., 3,679,099.
Bunker, William H.; Kerr, John W.; Mitrofanoff, Nicholas S.; and Swearingen, Kent W., 3,680,054.
Chicotka, Richard J., 3,679,501.
Clecak, Nicholas J.; and Cox, Robert J., 3,679,670.
Fang, Frank F.; and Fowler, Alan B., 3,679,492.
Fang, Frank F.; and Lean, Eric G., 3,679,985.
Hoberecht, Verlin L., 3,680,077.
Houser, George G.; and Jenkins, Robert E., 3,680,103.
Janssen, Donovan M.; and Meyer, Clarence G., 3,679,283.
Kriger, Ronald J., 3,679,915.
McAuliffe, Gerald K., 3,679,882.
Sorokin, Peter P., 3,679,995.
Tseng, Samuel Chin-Chong, 3,680,007.
Vinal, Albert W., 3,680,064.
Wardly, George A., 3,679,896.
Zaman, Louis F., III, 3,679,986.

International Flavors & Fragrances Inc.: *See—*
Grossman, James D.; Mookherjee, Braja D.; De Simone, Robert; and Theimer, Ernst T., 3,679,749.
Mookherjee, Braja D., 3,679,750.

International Harvester Company: *See—*
Luft, Robert G., 3,679,018.
Scarnato, Thomas J.; Dryan, James J.; Lawler, Craig M.; and Sorensen, Robert, 3,678,671.

International Nickel Company, Inc., The: *See—*
Angus, Hamish Carmichael; and Gainsbury, Peter Edward, 3,679,607.
Manilla, Charles E.; Honaker, Harold H.; and Gothard, David O., 3,678,567.

International Research & Development Company: *See—*
Mac Nab, Robert Beattie; and Mulhall, Brian Edward, 3,679,920.

International Standard Electric Corporation: *See—*
Anderegg, Paul; and Graner, Rolf G., 3,679,522.
Beguin, Daniel Edmond, 3,680,145.
Bosc, Henri J., 3,680,096.
Eckert, Klaus-Dieter; and Roper, Hans-Joachim, 3,680,117.

International Telephone and Telegraph Corporation: *See—*
Cooper, Bernard, 3,680,125.
Dodington, Sven H., 3,680,119.
Sanders, Lon L., 3,680,089.

IRD Mechanalysis, Inc.: *See—*
Smalling, Claude W., Jr., 3,679,761.

Irikura, Tsutomu; Nishino, Keigo; Suzue, Seigo; Ushiyama, Keiichi; Shinoda, Hirotaka; and Hasegawa, Yoshinori,. to Kyorin Seiyaku Kabushiki Kaisha. Aminoacetonitrile derivatives. 3,679,730, Cl. 260-465.00d.

Iris Corporation: *See—*
Geis, James D.; Troll, John H.; Gluz, Harry; and Baker, Cole H., 3,678,729.

Irvine, Robert Leard. Hydrogenation process. 3,679,574, Cl. 208-57.000.

Ischerikova, Galina Antonovna: *See—*
Garnish, Artur Maximovich; Shafransky, Lev Moiseevich; and Ischerikova, Galina Antonovna, 3,679,603.

Ishikawa, Mitsuo: *See—*
Mashimo, Yukio; and Ishikawa, Mitsuo, 3,678,828.

Ishikawajima-Harima Jukogyo Kabushiki Kaisha: *See—*
Inaba, Kohsaku; Yoshida, Seisaku; and Matsuura, Shoji, 3,679,005.

Ishiwata, Samford P. Submerged multistage pump usable as propulsion unit. 3,678,689, Cl. 60-221.000.

Isola, Norman R.: *See—*
Isola, Raymond O.; and Isola, Norman R., 3,678,588.

Isola, Raymond O.; and Isola, Norman R. Wall outlet box locater. 3,678,588, Cl. 33-180.00r.

Ithaca Textiles, Inc.: *See—*
Wehrmann, Nicholas, 3,678,515.

Ito, Akio. Method and apparatus for increasing output of car engine and purifying exhaust gas. 3,678,908, Cl. 123-119.00d.

Ito, Shin; and Kubo, Seitoku, to Toyota Jidosha Kogyo Kabushiki Kaisha. Hydraulic control system for automatic transmission. 3,678,787, Cl. 74-864.000.

Ito, Takeshi: *See—*
Kubo, Nobuzo; and Ito, Takeshi, 3,679,500.

Ito, Yoshimasa: *See—*
Yoshimura, Susumi; Ito, Yoshimasa; Aaakawa, Shirow; and Hasegawa, Katsue, 3,679,944.

ITT Industries, Inc.: *See—*
Ostwald, Fritz; Bender, Alfred; and Nonn, Gerhard, 3,678,954.

Jack, James; Drake, John; Thompson, David Crompton; and Harris, Frederick John, to Imperial Chemical Industries Limited and Scottish Agricultural Industries Limited. Fertilizer compositions. 3,679,391, Cl. 71-64.00e.

Jack-O-Line Corporation: *See—*
O'Brien, John C., 3,678,974.

Jackson, Henry G.: *See—*
Van Doornewaard, Hans; and Jackson, Henry G., 3,679,786.

Jackson, Robert G. Stretch-draw tubing process. 3,678,727, Cl. 72-367.000.

Jacobson, John E.: *See—*
Carrano, Andrew J., Jr.; Cotsalas, Stephen N.; and Jacobson, John E., 3,679,208.

Jacquelin, Guy, to Societe d'Exploitation des Brevets Granofibre. Method of treating suspension of fibers to form fibrous aggregates. 3,679,542, Cl. 162-1.000.

Jacques, Jean-Marie; and Beniada, Maurice, to U.S. Philips Corporation. Arrangement for dimming at least two parallel-arranged discharge lamps. 3,679,935, Cl. 315-201.000.

Jacuzzi, Kenneth A.: *See—*
Jacuzzi, Roy A.; and Jacuzzi, Kenneth A., 3,679,257.

Jacuzzi Research Inc.: *See—*
Jacuzzi, Roy A.; and Jacuzzi, Kenneth A., 3,679,257.

Jacuzzi, Roy A.; and Jacuzzi, Kenneth A., to Jacuzzi Research Inc. Foldable wheel chair. 3,679,257, Cl. 297-42.000.

Jaffe, Edward E.: *See—*
Dhaliwal, Pritam Singh; and Jaffe, Edward E., 3,679,684.

Jager, Georg; and Geiger, Rolf, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. N,N-Disubstituted aminoethylcarbamyl protecting groups for cysteine. 3,679,655, Cl. 260-112.500.

James, Glen S.: *See—*
Bailey, Robert C.; Estes, Harry A.; James, Glen S.; Klug, James R.; Montillon, Henry A.; Myring, Verne E.; Robertson, Orville H.; Sargeant, Blaine W.; and Sorensen, Neal E., 3,679,200.

Jammet, Jlan Firmin, to Societe des Accumulateurs Fixes et de Traction. Process for mass production of batteries of electrochemical generators of stacked flat constituents. 3,679,489, Cl. 136-175.000.

Jania, Zbigniew J., to Ford Motor Company. Skid control apparatus for vehicle brake system. 3,679,270, Cl. 303-21.00f.

Jank, Reinhard, to U.S. Philips Corporation, mesne. Apparatus with an oscillating armature motor. 3,679,921, Cl. 310-37.000.

Janosi, Francis L., to Ford Motor Company. Variable ratio brake pedal. 3,678,779, Cl. 74-516.000.

Janssen, Donovan M.; and Meyer, Clarence G., to International Business Machines Corporation. Cartridge lock actuator. 3,679,283, Cl. 312-319.000.

Janssen Pharmaceutica N.V.: *See—*
Hermans, Hubert Karel Frans; Knaeps, Alfonsus Gillielmus; and Willems, Joannes Josephus Maria, 3,679,686.

Jansson, Birger F., to Case, J. I., Company. Braking method and apparatus. 3,679,027, Cl. 188-74.000.

Janza, Frank J.: *See—*
Killion, Derling G.; and Janza, Frank J., 3,680,111.

Japan Atomic Energy Research Institute: *See—*
Tabata, Yoneho; and Oizumi, Chihiro, 3,679,562.

Japan Exlan Company Limited: *See—*
Takeya, Kenji, 3,679,641.

Japan Radio Company, Limited: *See—*
Ogawa, Juro; and Fujimoto, Yoshiaki, 3,679,976.

Japan Spectroscopic Co., Ltd.: *See—*
Hiragaki, Shigeho; and Mochida, Yoshihiro, 3,679,309.

Jayaraman, Ponnusami: *See—*
Desai, Nalin Binduprasad; Jayaraman, Ponnusami; Ramanathan, Visvanathan; Artz, Klaus; Naik, Navnitrai Nagarji; and Jenny, Walter, 3,679,657.

Jefferson Chemical Company, Inc.: *See—*
Tomomatsu, Hideo, 3,679,723.

Jenkins, Keith T., to Rush, C. J., Limited. Control system for revolving door. 3,678,623, Cl. 49-43.000.

Jenkins, Robert C. Lug template. 3,679,266, Cl. 301-9.0dn.

Jenkins, Robert E.: *See—*
Houser, George G.; and Jenkins, Robert E., 3,680,103.

Jenny, Walter: *See—*
Desai, Nalin Binduprasad; Jayaraman, Ponnusami; Ramanathan, Visvanathan; Artz, Klaus; Naik, Navnitrai Nagarji; and Jenny, Walter, 3,679,657.

Jenoptik Jena G.m.b.H.: *See—*
Hofmann, Christian; and Neumann, Jorg, 3,679,294.

Jensen, Klaus: *See—*
Wienand, Michael; Jensen, Klaus; Primessing, Franz; and Alfter, Franz-Werner, 3,679,531.

Jernigan, Marvin E.: *See—*
Newman, Joel S.; and Jernigan, Marvin E., 3,679,295.

Jerobee Industries, Inc., mesne: *See—*
Weglin, Walter; and Wildebour, Charles W., 3,678,577.

Jerrold Electronics Corporation: *See—*
Leitner, Robert T.; and Drake, John E., 3,680,146.

Jervis, Roy, to Dunlop Holdings Limited. Cellular structures. 3,679,552, Cl. 204-37.00r.

Jesnitzer, Friedrich Erdmann; and Rehfeldt, Dietrich, to Redemat S.A. Apparatus for controlling electric welding processes. 3,679,865, Cl. 219-131.00r.

Joch, Wilhelm: *See—*
Termin, Erich; Rogler, Walter; Joch, Wilhelm; and Honigschmid-Grossich, Rudiger, 3,679,724.

Johnson & Johnson: *See—*
Kalwaites, Frank, 3,679,535.
Kalwaites, Frank, 3,679,536.

Johnson, Clarence A., to Hydrocarbon Research, Inc. Two stage counter-current hydrogenation of coal. 3,679,573, Cl. 208-10.000.

Johnson, Douglas A.: *See—*
Bayle, Guy P.; and Johnson, Douglas A., 3,680,094.

Johnson, Ernest E. Electrical outlet trolley. 3,680,030, Cl. 339-2.00r.

Johnson Hydraulic Equipment Co.: *See—*
Stanke, Rudi G., 3,678,665.

Johnson, Lennart B., to Teradyne, Inc. Electrical connector with vibration resistance. 3,680,038, Cl. 339-65.000.

Johnson, Peter D., to General Electric Company. High intensity far U.V. radiation source. 3,679,928, Cl. 313-225.000.

Johnston, Thomas F.: *See—*
Biswell, Charles B.; and Johnston, Thomas F., 3,679,380.

Jones, Griffin D.; Geyer, Gerald R.; and Hatch, Melvin J., to Dow Chemical Company, The. 2-Aminomethyl-1,3-butadiene monomers. 3,679,748, Cl. 260-583.00h.

Jones, Howard S., Jr.; Witte, Joseph J.; and Morlock, Harry K., to United States of America, Army. Re-entry vehicle nose cone with antenna. 3,680,130, Cl. 343-708.000.

Jones, Jerry L.: *See—*
Brinks, Floyd J.; Day, Lucian P., Jr.; and Jones, Jerry L., 3,678,867.

Jones, John R.: *See—*
Roberts, Richard A.; and Jones, John R., 3,679,157.

Jones, William Dyfrig; and Peel, Eric. Coolers. 3,679,194, Cl. 266-32.000.

Jorgensen, Arnold J.; Bewley, Lawrence L.; and White, Kenneth H., to Burroughs Corporation. Integral electrical power distribution network having stacked plural circuit planes of differing characteristic impedance with intermediate ground planes for separating circuit planes. 3,680,005, Cl. 333-6.000.

Jubelt, Warren L., to General Motors Corporation. Test device for trim assemblies. 3,678,738, Cl. 73-88.00b.

Juengel, Richard O.: *See—*
Humphrey, Harold D.; and Juengel, Richard O., 3,680,073.

Juge, Frank E., Jr.: *See—*
Wantland, Charles F.; Juge, Frank E., Jr.; and Hinds, William H., 3,679,577.

Juillard, Yves, to Societe Alsacienne de Constructions Macaniques de and Mulhouse. Shuttleless loom. 3,678,968, Cl. 139-127.00r.

Jupiter, Bernard; and Kazakowitz, Barry D. Device for forming hamburger patties. 3,679,167, Cl. 249-173.000.

Jurgen-Lohmann, Ludwig; and Holtermann, Rolf, to Farbwerke Hoechst Aktiengesellschaft. Process for discharging solids treated with liquids from vertical columns. 3,679,268, Cl. 302-14.000.

K-Tron Corporation: *See—*
Bullivant, Kenneth W., 3,679,010.

Kabushiki Kaisha Hattori Tokeiten: *See—*
Kitai, Kiyoshi, 3,678,821.

Kabushiki Kaisha Meidensha: *See—*
Himi, Hitoshi; Shinmon, Yasuhiro; and Teshima, Tokuro, 3,679,852.

Kabushiki Kaisha Osaka Packing Seizosho: *See—*
Kubo, Kazuhiko, 3,679,446.

Kabushiki Kaisha Ricoh: *See—*
Katagiri, Nobuyuki; and Akiyama, Hideaki, 3,679,453.
Kawazu, Motoaki, 3,679,292.
Ohta, Wasaburo; Kasuya, Kazuhiko; and Yamauchi, Masayuki, 3,678,895.

Kabushiki Kaisha Suwa Seikosha: *See—*
Fujita, Kinji, 3,678,680.
Miyasaka, Mamoru; Kurita, Hirohisa; and Furihata, Hideo, 3,678,682.
Saito, Toshiaki; and Oki, Toshihiko, 3,678,681.

Kabushikikaisha Copal: *See—*
Sato, Takayoshi, 3,678,823.

Kabushikikaisha Tokyo Keiki(Tokyo Keiki Co., Ltd.): *See—*
Hirokawa, Yoichi; and Sato, Masatoshi, 3,679,960.

Kaczynski, Clarence J.: *See—*
Bernas, Richard J.; and Kaczynski, Clarence J., 3,679,170.

Kadner, Gunter: *See—*
Leuschner, Gerhard; Pietsch, Peter; and Kadner, Gunter, 3,678,648.

Kaim, John W.: *See—*
Mulcahy, Harry W.; Bushnell, Eldon W.; and Kaim, John W., 3,679,028.

Kaiser Aluminum & Chemical Corporation: *See—*
Langewis, Cornelis, 3,678,725.

Kaiser, Hans: *See—*
Lowenfeld, Rudolf; and Kaiser, Hans, 3,679,350.

Kaishita, Yoshiaki; and Sugimoto, Shigeo, to Tiger Vacuum Bottle Industrial Company, Limited. Ice shaver. 3,679,140, Cl. 241-95.000.

Kalatucka, Stephen: *See—*
Bergey, John M. K.; and Kalatucka, Stephen, 3,680,046.

Kalle Aktiengesellschaft: *See—*
Klenk, Ludwig; Strutzel, Hans; and Sobottka, Richard, 3,679,435.
Stroszynski, Joachim, 3,679,418.

Kallio, Frank H.: *See—*
Baker, Donald H.; and Kallio, Frank H., 3,678,593.

Kalopissis, Gregoire: *See—*
Charle, Roger; Kalopissis, Gregoire; and Zviak, Charles, 3,679,102.

Kalugin, Konstantin Yakovlevich: *See—*
Efimov, Leonid Alexandrovich; Shtin, Lev Mikhailovich; Sinitsky, Vladimir Mikhailovich; Khirdzheiv, Sergei Grigorievich; Pylaikin, Petr Alexeevich; Satovskaya, Ljudmila Sergeevna; Grebnev, Nikolai Feodosovich; Rasseikin, Mikhail Grigorievich; Kalugin, Konstantin Yakovlevich; Somov, Boris Stepanovich; and Baranchikov, Vladimir Mikhailovich, 3,678,728.

Kalvoda, Jaroslav: *See—*
Anner, Georg; and Kalvoda, Jaroslav, 3,679,716.

Kalwaites, Frank, to Johnson & Johnson. Nonwoven fabric comprising discontinuous groups of small holes connected by ribbons defining large holes. 3,679,535, Cl. 161-109.000.

Kalwaites, Frank, to Johnson & Johnson. Nonwoven fabric comprising buds plus bundles connected by aligned fibers including bundles. 3,679,536, Cl. 161-109.000.

Kammermeier, Jurgen: *See—*
Gossens, Hubert; Kammermeier, Jurgen; and Kloker, Werner, 3,679,539.

Kamogawa, Yoshiro: *See—*
Kishikawa, Kanichi; Kuwata, Takeo; Kinoshita, Kentaro; Tsuchiya, Takao; and Kamogawa, Yoshiro, 3,678,721.

Kamp, Kenneth Albert Walters: *See—*
Dillon, Stanley Bernard; Mowbray, Dorian Farrar; and Kamp, Kenneth Albert Walters, 3,679,846.

Kanai, Eizo, to Asahi Glass Co., Ltd. Method and apparatus for the manufacture of flat glass. 3,679,389, Cl. 65-99.00a.

Kaneko, Hirokazu, to Ricoh Co., Ltd. Automatic flash selection device for cameras. 3,678,829, Cl. 95-11.00r.

Kanoh, Teruchika: *See—*
Matsugu, Tomoyuki; Notomi, Ryota; and Kanoh, Teruchika, 3,678,546.

Karikomi, Masahiro, to Nippon Telegraph and Telephone Public Corporation. Antenna device. 3,680,141, Cl. 343-758.000.

Karkalas, John: *See—*
Clayton, David Henry; and Karkalas, John, 3,679,431.

Karl Mayer Textilmaschinenfabrik GmbH: *See—*
Schneider, Harald; and Wicha, Cornel, 3,678,711.

Kasahara, Nobuo: *See—*
Hashimoto, Hideo; Kasahara, Nobuo; and Yoshino, Toshio, 3,679,369.

Kasper, George P., to Eastman Kodak Company. Azo dye-forming system including a boric acid ester. 3,679,421, Cl. 96-91.00r.

Kasugai, Tsuneo; and Minagawa, Nobuhiko, to Fuji Photo Film Co., Ltd. Process for the production of a support for a photographic sensitive material. 3,679,455, Cl. 117-47.000.

Kasuya, Kazuhiko: *See—*
Ohta, Wasaburo; Kasuya, Kazuhiko; and Yamauchi, Masayuki, 3,678,895.

Katagiri, Nobuyuki; and Akiyama, Hideaki, to Kabushiki Kaisha Ricoh. Developing method and device therefor for use in wet type electronic or electrostatic photography. 3,679,453, Cl. 117-37.0fe.

Katz, Norman, to Goodman, H., & Sons, Inc. Dual barrettes. 3,678,946, Cl. 132-48.00r.

Kauffman, Melvin R., to General Electric Company. Method and structure for cushioning the operation of a movable rack in a dishwasher. 3,679,282, Cl. 312-311.000.

Kaufman, Jack B.; and Heid, Raymond G. Ski boot with pressure compensating brace. 3,678,603, Cl. 36-2.5al.

Kaufman, Melvin Murray, to RCA Corporation. Decoder circuit. 3,679,911, Cl. 307-251.000.

Kaufman, Paul Richard, to Lubrizol Corporation, The. Secondary oil recovery method using N-sulfohydrocarbon-substituted acrylamide polymers as viscosity increasing agents. 3,679,000, Cl. 166-273.000.

Kautz, Murrell F., to Honeywell Inc. Thermostat using the heat anticipation heater as a part of the mechanical connection between the temperature responsive element and switches operating member. 3,680,023, Cl. 337-377.000.

Kawabe, Tsuneo, to Aisin Seiki Kabushiki Kaisha. Hydraulic brake system. 3,679,030, Cl. 188-345.000.

Kawai, Mitsuru, to Hirose Electric Co., Ltd. Coupling device for an electric connector. 3,680,033, Cl. 339-46.000.

Kawashima, Kenya: *See—*
Morita, Katsura; and Kawashima, Kenya, 3,679,662.

Kawazu, Motoaki, to Kabushiki Kaisha Ricoh. Continuously-variable-magnification afocal lens system. 3,679,292, Cl. 350-184.000.

Kayex Corporation: *See—*
Bender, David L.; and Lane, Richard L., 3,678,917.

Kazakowitz, Barry D.: *See—*
Jupiter, Bernard; and Kazakowitz, Barry D., 3,679,167.

Kaznoff, Alexis I.: *See—*
Hill, Howard W.; Kaznoff, Alexis I.; and Marlowe, Mickey O., 3,679,596.

Keck, Harley B.: *See—*
Andler, Richard C.; and Keck, Harley B., 3,679,518.

Keegan, Robert R.: *See—*
Graham, Walton; and Keegan, Robert R., 3,680,122.

Keeler, Richard A.; and Eckstein, Arthur, to Chemex Corporation. Warmer stand for a select number of fluid containers. 3,679,869, Cl. 219-432.000.

Keith, Carl D.: *See—*
Dalson, Milton H.; Gallagher, James P.; Keith, Carl D.; and Pfefferle, William C., 3,679,578.

Keldrauk, Walter. Fluid power unit. 3,679,334, Cl. 418-142.000.

Kelleher, Kenneth S.: *See—*
Barron, Roger L.; Kelleher, Kenneth S.; and Vieth, George C., Jr., 3,680,126.

Keller, Sherman R.: *See—*
Blair, George R.; and Keller, Sherman R., 3,679,559.

Kelly, Robert M.: *See—*
Carothers, Charles H.; and Kelly, Robert M., 3,679,938.

Kelsey-Hayes Company: *See—*
Trindle, Terry LaVern, 3,679,188.

Keneman, Scott Allen; and Miller, Arthur, to RCA Corporation. Electro-optical memory employing ferroelectric element. 3,680,060, Cl. 340-173.200.

Kenji, Maeda: *See—*
Hamao, Umezawa; Shinichi, Kondo; Kenji, Maeda; Tomio, Takeuchi; and Masa, Hamada, 3,679,742.

Kennametal Inc.: *See—*
Eversole, William C.; and Heaton, James W., 3,678,632.

Kennametal Inc., mesne: *See—*
Goodfellow, Robert D., 3,679,009.

Kennedy, James A.: *See—*
Blessin, Ronald W.; and Kennedy, James A., 3,680,051.
Blessin, Ronald W.; and Kennedy, James A., 3,680,057.

Kennedy, Peter J. to Ford Motor Company. Light reflection preventive device. 3,679,887, Cl. 240-8.160.

Kenney, Frank D.; trustee: *See—*
Banning, Thomas A., Jr., 3,679,813.

Kent, Arthur P.: *See—*
Marks, Alvin M.; Marks, Mortimer M.; and Kent, Arthur P., 3,679,451.

Kereluk, Karl: *See—*
Brendgord, Thomas; and Kereluk, Karl, 3,678,921.

Kerkau, La Vern H. Valve actuator assembly. 3,679,172, Cl. 251-229.000.

Kerr, John W.: *See—*
Bunker, William H.; Kerr, John W.; Mitrofanoff, Nicholas S.; and Swearingen, Kent W., 3,680,054.

Ketterer, Stanley J.: *See—*
Killinger, Karl H.; and Ketterer, Stanley J., 3,678,871.

Key, Robert L., III; and Christy, Melvin G., to Liggett & Meyers Incorporated. Method of treating tobacco with flavorants in a pneumatic system. 3,678,939, Cl. 131-144.000.

Khirdzheiv, Sergei Grigorievich: *See—*
Efimov, Leonid Alexandrovich; Shtin, Lev Mikhailovich; Sinitsky, Vladimir Mikhailovich; Khirdzheiv, Sergei Grigorievich; Pylaikin, Petr Alexeevich; Satovskaya, Ljudmila Sergeevna; Grebnev, Nikolai Feodosovich; Rasseikin, Mikhail Grigorievich; Kalugin, Konstantin Yakovlevich; Somov, Boris Stepanovich; and Baranchikov, Vladimir Mikhailovich, 3,678,728.

Kiefer, Hans, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Lactam-N-carboxylic acid chlorides and their production. 3,679,665, Cl. 260-239.30a.

Kienzle Apparate GmbH: *See—*
Rahn, Horst, 3,679,922.

Kifer, Paul E.: *See—*
Mohrman, Robert K.; Kifer, Paul E.; and Oborsh, Edward V., 3,679,429.

Kii, Toshimichi; and Suka, Motoshi, to Mitsui Toatsu Chemicals Incorporated. Method of polymerizing styrene. 3,679,651, Cl. 260-93.50s.

Kikuchi, Makoto, to Toyoda Machine Works, Limited. Truing device for grinding wheel with rotating cup-shaped truing cutter. 3,678,915, Cl. 125-11.000.

Killay, Swansea: *See—*
Davies, Gordon Idris; Killay, Swansea; and Williams, Terence, 3,678,888.

Killinger, Karl H.; and Ketterer, Stanley J., to Singer Company, The. Overedging device for sewing machines. 3,678,871, Cl. 112-162.000.

Killion, Derling G.; and Janza, Frank J., to Teledyne Ryan Aeronautical Company. Radiometric aircraft landing system. 3,680,111, Cl. 343-100.0me.

Kilmer, Earl E., to United States of America, Navy. Quick disconnect explosive connector assembly. 3,678,853, Cl. 102-17.000.

Kilner, George E., to Filper Corporation. Rotary can separator. 3,679,049, Cl. 209-71.000.

Kilpatrick, John E.: *See—*
Weiner, Leon; Kilpatrick, John E.; and Spiger, Robert J., 3,679,877.

Kimberly-Clark Corporation: *See—*
Capell, A. Earl; and Wilson, Leroy E., 3,679,515.
Nissen, Walter D.; and Hammond, Philip G., 3,679,094.
Nissen, Walter D.; and Hammond, Philip G., 3,679,095.

Kimura, Chikara, to Hitachi, Ltd. Specimen holder transfer mechanism for an electron microscope. 3,679,900, Cl. 250-49.50b.

Kimura, Shuji: *See—*
Daitoku, Kouichi; and Kimura, Shuji, 3,679,148.

King, Alwyn H.: *See—*
Roberts, John A.; and King, Alwyn H., 3,678,564.

King, Bernard George: *See—*
Biazzo, Martin Robert; King, Bernard George; and Ortel, William Charles Gormley, 3,678,574.

King, John Howliston; and Smith, Frank, to Imperial Chemical Industries Limited. Baseplate assembly for mercury-cathode cell. 3,679,570, Cl. 204-297.00r.

King, John O., Jr. Method and apparatus for severing tubing. 3,679,109, Cl. 225-2.000.

Kingsbury, LC James: *See—*
Beny, Janos; Kingsbury, LC James; and Scribner, David L., 3,678,618.

Kinjo, Hisao: *See—*
Wada, Yoshiyo; Kinjo, Hisao; and Okano, Keigo, 3,679,822.

Kinoshita, Kentaro: *See—*
Kishikawa, Kanichi; Kuwata, Takeo; Kinoshita, Kentaro; Tsuchiya, Takao; and Kamogawa, Yoshiro, 3,678,721.

Kinsella, Daniel J., to National Union Electric Corporation. Combination alarm and filter bypass device for a suction cleaner. 3,678,882, Cl. 116-114.0ad.

Kippax, Donald L.; and Murphy, Kevin E., to General Electric Company. Crystallization of 2,6-diphenylphenol. 3,679,766, Cl. 260-620.000.

Kirk, Morris P., & Son, Inc.: *See—*
Larrieu, Leslie J., 3,679,404.

Kirkendall, Thomas D., to Machlett Laboratories, Incorporated, The. High power X-ray tube. 3,679,927, Cl. 313-59.000.

Kirkland, Kenneth C., Jr.; and Hunt, Raymon E., to Stemco Manufacturing Company, Inc. Muffler. 3,679,024, Cl. 181-49.000.

Kirkwood, Loren Robert: *See—*
Avins, Jack; and Kirkwood, Loren Robert, 3,679,816.

Kirschner, Gerald D.: *See—*
Darrah, John H.; Bell, James C.; Vorachek, Jerome J.; Bezbatchenko, John W.; Biecker, George A.; Barton, James A.; Gordon, Robert C.; and Kirschner, Gerald D., 3,680,129.

Kishikawa, Kanichi; Kuwata, Takeo; Kinoshita, Kentaro; Tsuchiya, Takao; and Kamogawa, Yoshiro, to Nippon Steel Corporation. Method of rolling shaped steel members having flanges. 3,678,721, Cl. 72-225.000.

Kitai, Kiyoshi, to Kabushiki Kaisha Hattori Tokeiten. Warning device for an electronically controlled camera shutter. 3,678,821, Cl. 95-10.0ce.

Kitai, Kiyoshi. Exposure time control device for a camera shutter mechanism. 3,678,837, Cl. 95-59.000.

Kittredge, Frank M., to Ford Motor Company. Dual diaphragm distributor. 3,678,806, Cl. 92-48.000.

Kittredge, Raymond Edson, to Singer Company, The, mesne. Inherent rewound film transport system. 3,679,147, Cl. 242-55.180.

Kiyono, Hiroshi; and Sugiyama, Kohei, to Sekisu Kagaku Kogyo Kabushiki Kaisha. Process for the preparation of thermoplastic articles containing liquid matter uniformly. 3,679,788, Cl. 264-211.000.

Klein, Louis A.: *See—*
Newman, Daniel J.; and Klein, Louis A., 3,679,549.

Klein, Walter. Zoom lens objective for stereoscopic vision microscopes. 3,679,286, Cl. 350-184.000.

Klein, William G. Antistatic fabric. 3,678,675, Cl. 57-140.0by.

Kleiner, Norbert: *See—*
Uffelman, Malcolm R.; Williams, Richard E.; and Kleiner, Norbert, 3,679,830.

Klemkowski, Philip J., Jr. Mariner's loom. 3,678,610, Cl. 43-43.120.

Klenk, Ludwig; Strutzel, Hans; and Sobottka, Richard, to Kalle Aktiengesellschaft. Sausage casings of synthetic high-polymer thermoplastic material. 3,679,435, Cl. 99-176.000.

Klipfel, Arthur. Building construction system. 3,678,637, Cl. 52-79.000.

Klitzke, Loren J., to Waldorf, Hoerner, Corporation. Film dispenser. 3,679,146, Cl. 242-55.530.

Kloker, Werner: *See—*
Gossens, Hubert; Kammermeier, Jurgen; and Kloker, Werner, 3,679,539.

Klomp, Cornelis Johannes: *See—*
Van Oosterhout, Gerard Willem; Lemmen, Hendrikus Johannes; and Klomp, Cornelis Johannes, 3,679,476.

Klose, Peter H.: *See—*
Feinleib, Julius; Klose, Peter H.; and Ovshinsky, Stanford R., 3,678,852.

Klug, James R.: *See—*
Bailey, Robert C.; Estes, Harry A.; James, Glen S.; Klug, James R.; Montillon, Henry A.; Myring, Verne E.; Robertson, Orville H.; Sargeant, Blaine W.; and Sorensen, Neal E., 3,679,200.

Kmecak, Ronald A.: *See—*
Kovach, Stephen M.; and Kmecak, Ronald A., 3,679,773.

Kmecak, Ronald A.; Kovach, Stephen M.; and Patrick, Ralph E., to Ashland Oil Inc. Hydroealkylation process with catalyst of group VIB metals promoted by tin oxide or lead oxide. 3,679,768, Cl. 260-672.00r.

Kmecak, Ronald A.; and Kovach, Stephen M., to Ashland Oil, Inc. Alkyl transfer of alkyl aromatics with group VIII metals on zeolites. 3,679,769, Cl. 260-672.00t.

Knaeps, Alfonsus Gillielmus: *See—*
Hermans, Hubert Karel Frans; Knaeps, Alfonsus Gillielmus; and Willems, Joannes Josephus Maria, 3,679,686.

Knell, Martin; and Dexter, Martin, to Ciba-Geigy Corporation. Thiodialkanoamidophenol antioxidants. 3,679,744, Cl. 260-559.00t.

Knight, Donald V., to Ciba-Geigy Corporation. Neck supporting bracket for jug labeling machine. 3,679,523, Cl. 156-447.000.

Knight, Frank W.; and Van Allen, David, to Polaroid Corporation. Simplified diffusion-transfer film products. 3,679,417, Cl. 96-78.000.

Knippel, Willis H.: *See—*
Shaver, William R.; and Knippel, Willis H., 3,679,069.

Knippenberg, Wilhelmus Franciscus; and Verspui, Gerrit, to U.S. Philips Corporation. Method of securing diamond by brazing. 3,678,568, Cl. 29-473.100.

Knogo Corporation: *See—*
Minasy, Arthur J., 3,678,608.

Knowles, Frederick G.; and Taylor, Clarence R., to Eastman Kodak Company. Cassette-type microfilm reader. 3,679,298, Cl. 353-26.000.

Knowles, Richard N.; and Arthur, Wilfred J., to Du Pont de Nemours, E. I., and Company. Certain N-acelylcyclohexy amines. 3,679,805, Cl. 424-320.000.

Kobayashi, Makoto: *See—*
Tanegashima, Kenichiro; Kobayashi, Makoto; and Kudo, Shinichiro, 3,679,864.

Kobayashi, Tsunekazu, to Denki Onkyo Company, Limited. Contactless push button switch. 3,680,025, Cl. 338-32.000.

Kobayashi, Tsuyoshi: *See—*
Yamamoto, Hisao; Okamoto, Tadashi; and Kobayashi, Tsuyoshi, 3,679,672.

Kobe Steel, Ltd.: *See—*
Arikawa, Masayasu; Godai, Tomokazu; Arai, Toshio; Hironosuke, Kada; and Akihiko, Iochi, 3,679,866.

Koda, Kiyoyasu: *See—*
Kudo, Tetsuo; Nakatani, Kozo; and Koda, Kiyoyasu, 3,679,387.

Koenen, Wilhelm Engelinus: *See—*
Bentholm, Svend Asger Rud; and Koenen, Wilhelm Engelinus, 3,679,794.

Koenig, Karl-Heinz; Maschke, Artur; and Fischer, Adolf, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Diamino-s-triazines. 3,679,678, Cl. 260-249.800.

Koepke, Donald H.: *See—*
Steidinger, Donald J.; and Koepke, Donald H., 3,678,851.

Kohjin Company, Limited: *See—*
Matsugu, Tomoyuki; Notomi, Ryota; and Kanoh, Teruchika, 3,678,546.

Kohler, Roland; Frick, Hans-Dieter; Fengler, Harald; and Geyken, Erwin, to Agfa-Gevaert Aktiengesellschaft. Apparatus for developing strips of photographic film. 3,678,843, Cl. 95-94.00r.

Kohlmuller, Hans; and Kuhl, Dieter, to Siemens Aktiengesellschaft. Fuel cell battery for reacting gaseous reactants in fuel cells operated with liquid electrolyte. 3,679,485, Cl. 136-86.00r.

Kohn, Gustave: *See—*
Brown, Melancthon Starr, 3,679,733.

Kohn, Gustave K., to Chevron Research Company. Phenyl N-methyl carbamates. 3,679,734, Cl. 260-479.00c.

Kolesa, Claudine Marie. Process and Clutch for cultivating and harvesting shellfish. 3,678,900, Cl. 119-4.000.

Kolodney, Morris, to United States of America, Atomic Energy Commission, mesne. Method and apparatus for determining the carbon activity of fluids. 3,679,551, Cl. 204-1.00t.

Komatsu, Akira: *See—*
Seikguchi, Masaaki; Yoshikawa, Kaoru; and Komatsu, Akira, 3,679,133.

Komori, Toshimi: *See—*
Shiari, Yoshimichi; and Komori, Toshimi, 3,680,017.

Kondou, Kenzi: *See—*
Imanishi, Masakazu; Kondou, Kenzi; and Sugiura, Ituo, 3,678,975.

Konstant, Anthony N., to Speedrack Inc. Storage rack and bracket therefor. 3,679,067, Cl. 211-182.000.

Kopczewski, Robert F.: *See—*
Burgess, James F.; Kopczewski, Robert F.; and Holeman, John M., 3,679,299.

Kopf, Joseph Ellis: *See—*
Nellis, Stewart; Kopf, Joseph Ellis; and Reti, Adrian R., 3,680,037.

Koppers Company, Inc.: *See—*
Greco, Nicholas P., 3,679,753.
Powell, Russell A., 3,679,192.

Korlow Corporation: *See—*
Orlowski, Gerald J., 3,678,976.

Korsgen, Hans Helmuth; and Weller, Wolfgang, to Coathylene S.A. Preparing finely divided copolyamides by precipitation from alcohol-water solution. 3,679,638, Cl. 260-78.00s.

Korwin, Irving. Adjustable frame for ornament. 3,678,705, Cl. 63-18.000.

Kotler, Richard G.: *See—*
Feuer, Michael M.; and Kotler, Richard G., 3,679,150.

Koulovatos, James; and Thomas, Kenneth L., to Pollution Control Products, Inc. Batch sewage treatment system. 3,679,053, Cl. 210-86.000.

Kovach, Stephen M.: *See—*
Kmecak, Ronald A.; Kovach, Stephen M.; and Patrick, Ralph E., 3,679,768.
Kmecak, Ronald A.; and Kovach, Stephen M., 3,679,769.

Kovach, Stephen M.; and Kmecak, Ronald A., to Ashland Oil, Inc. Dehydrogenation-type reactions with Group VIII catalysts. 3,679,773, Cl. 260-683.3.

Kovacs, William L., to Procter & Gamble Company, The. Separation of phosphorous acid from mixtures of phosphorous acid and phosphoric acid by crystallization. 3,679,374, Cl. 23-297.000.

Kozacka, Frederick J., to Chase-Shawmut Company, The. High-voltage fuse having a plurality of fuse links wound helically around an insulating mandrel. 3,680,019, Cl. 337-161.000.

Krause, Frederick A., Associates, Inc.: *See—*
Hoffman, Bernard L., 3,678,726.

Kreider, Eunice M.; and Tweit, Robert C., to Searle, G. D., & Co. 1-(β-Halophenethyl)imidazoles and congeners. 3,679,697, Cl. 260-309.000.

Krekeler, Claude B., to Cincinnati Mine Machinery Company, The. Chain for mining machines and the like. 3,679,265, Cl. 299-84.000.

Krepps, James Edgar, Jr.; Chamberlain, Meredith K.; and Fisher, Robert D., to Sarkes Tarzian, Inc. AM, FM, and FM stereo tuner having simplified AM to FM switching means. 3,679,979, Cl. 325-315.000.

Kretschmar, Herbert C.; and Erman, William F., to Procter & Gamble Company, The. Process for preparing β-santalol from 3-methylnorcamphor. 3,679,756, Cl. 260-631.500.

Kretzschmar, Heinz; Chlebus, Rold; and Ochsner, Willi, to Organisation Ralfs KG. Collapsible container for use in conveyor systems. 3,679,040, Cl. 198-1.000.

Kriger, Ronald J., to International Business Machines Corporation. Polarity hold latch with common data input-output terminal. 3,679,915, Cl. 307-289.000.

Krolzick, Gordon J., to Whirlpool Corporation. Agitator with reciprocating device. 3,678,714, Cl. 68-131.000.

Kropfl, Walter Joseph, to Bell Telephone Laboratories, Incorporated. Use equalization on closed loop message block transmission systems. 3,680,056, Cl. 340-172.500.

Krupp, Robert F.; and Miller, Stanley J., to National Can Corporation. Vented curl for aerosol dome. 3,679,091, Cl. 220-67.000.

Kryman, Frederick J., to Eastman Kodak Company. Heterogeneous photoconductor composition formed by low-temperature conditioning. 3,679,406, Cl. 96-1.600.

Kryman, Frederick J.; and Staudenmayer, William J., to Eastman Kodak Company. Heterogeneous photoconductor composition formed by two-stage dilution technique. 3,679,408, Cl. 96-1.600.

Krzyzanowski, Erich, to Grunzweig & Hartmann Aktiengesellschaft. Apparatus for making castings. 3,678,989, Cl. 164-246.000.

Kubo, Kazuhiko, to Kabushiki Kaisha Osaka Packing Seizosho. Molding materials of calcium silicate hydrate and shaped products thereof. 3,679,446, Cl. 106-120.000.

Kubo, Kazunori. Continuous slurry dryer. 3,678,596, Cl. 34-68.000.

Kubo, Nobuzo; and Ito, Takeshi, to Dainippon Screen Manufacturing Company, Limited. Method for forming perforations in metal sheets by etching. 3,679,500, Cl. 156-11.000.

Kubo, Seitoku: *See—*
Ito, Shin; and Kubo, Seitoku, 3,678,787.

Kudamatsu, Akio; Miyamoto, Masao; and Fukazawa, Nobuo, to Farbenfabriken Bayer Aktiengesellschaft. Substituted benzyl-thiolcarbamic acid esters. 3,679,726, Cl. 260-455.00a.

Kudevitsky, Yankel Veniaminovich: *See—*
Ezhov, Leonid Antipovich; Kudevitsky, Yankel Veniaminovich; and Belyaeva, Ljudmila Pavlovna, 3,678,554.

Kudo, Shinichiro: *See—*
Tanegashima, Kenichiro; Kobayashi, Makoto; and Kudo, Shinichiro, 3,679,864.

Kudo, Tetsuo; Nakatani, Kozo; and Koda, Kiyoyasu, to Minolta Camera Kabushiki Kaisha. Method and apparatus for manufacturing tubular optical glass. 3,679,387, Cl. 65-105.000.

Kuehl, Guenther L., to Guenther Systems, Inc. Transport device. 3,679,074, Cl. 214-83.260.

Kuhl, Dieter: *See—*
Kohlmuller, Hans; and Kuhl, Dieter, 3,679,485.

Kuhn, Richard B., to North American Aviation, Inc. Apparatus and information processing methods for a tracking system tracker unit. 3,679,825, Cl. 178-6.800.

Kuhni, Rudolf: *See—*
Schmid, Adolf; and Kuhni, Rudolf, 3,678,740.

Kuhnis, Hans Herbert; and Rolf, Denss, to Ciba-Geigy Corporation. Piperdine derivatives in an antitussive composition and method. 3,679,799, Cl. 424-267.000.

Kuhns, Roger J., to Avant Incorporated. Process for improving the production of laminated plastic ID card. 3,679,514, Cl. 156-309.000.

Kulikov, Ivan Vladimirovich; Borisov, Vasily Semenovich; and Treschev, Viktor Georgievich; deceased (by Trescheva, Zinaida Mikhailovna; Trescheva, Vera Viktorovna; and Treschev, Dmitry Viktorovich; administrators). Filter for water-taking wells. 3,678,999, Cl. 166-236.000.

Kummerman, Henri, to MacGregor Comarain S.A. Device for closing a hatch or the like. 3,678,985, Cl. 160-188.000.

Kummermehr, Hans: *See—*
Mechel, Fridolin; and Kummermehr, Hans, 3,679,443.

Kuntz, Urban E.: *See—*
Basche, Malcolm; Fanti, Roy; Galasso, Francis S.; Kuntz, Urban E.; and Schile, Richard D., 3,679,475.

Kunz, Gerhard K., to GHH-M.A.N. Technik Gesellschaft fur Anlagenbau m.b.H. Method and apparatus for softening or desalting water by ion exchange. 3,679,581, Cl. 210-33.000.

Kunze, Wolfgang: *See—*
von der Eltz, Hans-Ulrich; Birke, Walter; Kunze, Wolfgang; Taunus, Hofheim; and Schon, Franz, 3,679,349.

Kuraray Co., Ltd.: *See—*
Matsubayashi, Kanji; and Segawa, Hiroyuki, 3,679,633.

Kurashiki Rayon Co., Ltd.: *See—*
Ashikaga, Tadao; and Higashimori, Shosuke, 3,679,544.

Kurita, Hirohisa: *See—*
Miyasaka, Mamoru; Kurita, Hirohisa; and Furihata, Hideo, 3,678,682.

Kuroyanagi, Masashi: *See—*
Masuda, Noboru; and Kuroyanagi, Masashi, 3,680,026.

Kurtin, Stephen: *See—*
Mead, Carver A.; and Kurtin, Stephen, 3,678,751.

Kushihashi, Akira; and Ikeda, Koji, to Nippon Sheet Glass Co., Ltd. Process and apparatus for forming a metal oxide coating on flat glass. 3,679,386, Cl. 65-60.000.

Kushner, Jack, to Delta Scientific Corporation. Metering pump and valve. 3,679,331, Cl. 417-477.000.

Kuwata, Takeo: *See—*
Kishikawa, Kanichi; Kuwata, Takeo; Kinoshita, Kentaro; Tsuchiya, Takao; and Kamogawa, Yoshiro, 3,678,721.

Kydd, Paul H., to General Electric Company. Elastomeric mold lining for making wax replica of complex part to be cast. 3,678,987, Cl. 164-45.000.

Kyorin Seiyaku Kabushiki Kaisha: *See—*
Irikura, Tsutomu; Nishino, Keigo; Suzue, Seigo; Ushiyama, Keiichi; Shinoda, Hirotaka; and Hasegawa, Yoshinori, 3,679,730.

Kyowa Denki Kagaku Kaisha: *See—*
Hirota, Kashichi, 3,678,868.

La Hue, Richard W.; and Smith, Nolan A., to Catalysts and Chemicals Inc. Selective hydrogenation of acetylenes. 3,679,762, Cl. 260-677.00h.

La Salle Steel Company: *See—*
Nachtman, Elliot Simon, 3,679,400.

La Valle, Thomas Alvin, to Western Electric Company, Incorporated. Methods of assembling and testing electrical components. 3,679,861, Cl. 219-117.000.

La Vant, Laurence L. Multi-projector image composing head. 3,679,303, Cl. 355-40.000.

Labana, Santokh S.: *See—*
Aronoff, Elihu; and Labana, Santokh S., 3,679,447.

LaCombe, Donald J.; and Babcock, Guy L., to General Electric Company. Composite integrated circuits including semiconductor chips mounted on a common substrate with connections made through a dielectric encapsulator. 3,679,941, Cl. 317-101.00a.

Laedlein, Denis Jacques: *See—*
Dorier, Bernard Louis Marcel; and Laedlein, Denis Jacques, 3,680,113.

Laing, John, and Son Limited: *See—*
Howe, Alan Colin Scott, 3,679,445.

Lake, Connie, to Mobil Oil Corporation. Bag structures with integral closure arrangement. 3,679,126, Cl. 229-62.000.

Lambert, Bernard, to Ethylene Plastique. Photodegradable polyolefins. 3,679,777, Cl. 260-897.00a.

Lambert, Jacques, to Flaminaire Marcel Quercia. Fuel reservoirs, especially for gas-lighters. 3,678,695, Cl. 62-50.000.

Lambert, Jacques, to Societe Flaminaire Marcel Quercia. Lighters, especially gas lighters. 3,679,346, Cl. 431-130.000.

Landgraf, Walter D. Ribbon spool. 3,679,039, Cl. 197-175.000.

Landis & Gyr AG: *See—*
Mustert, Rudolf, 3,679,314.

Landis & Zug AG: *See—*
Siebers, Holger, 3,679,916.

Lane, Richard L.: *See—*
Bender, David L.; and Lane, Richard L., 3,678,917.

Langewis, Cornelis, to Kaiser Aluminum & Chemical Corporation. Container forming apparatus. 3,678,725, Cl. 72-344.000.

Largeron, Louis; and Raquin, Roger, to Societe Lorraine de Preparation Textile. Leasing apparatus and method. 3,678,548, Cl. 28-40.000.

Larrieu, Leslie J., to Kirk, Morris P., & Son, Inc. Zinc base casting alloy. 3,679,404, Cl. 75-178.0am.

Larson, Charles R.; and Dudley, Robert H., to Prab Conveyors, Inc. Metal and plastic chip wringing apparatus and process. 3,679,051, Cl. 210-73.000.

Larson, Ivar G. Ball-point pen safety lock. 3,679,317, Cl. 401-109.000.

Latour, Andre; and Fumagalli, Giacomo, to Magrini Fabriche Riunite Magrini Scarpa e Magnano M.S.M.-S.p.A. Autoextinguishing interrupters. 3,679,851, Cl. 200-148.00a.

Latus, Gerald J., Jr.: *See—*
Addington, Robert L.; and Latus, Gerald J., Jr., 3,680,006.

Lauck, Peter, III, 40% to Myers, Robert H. Self compensating control circuit. 3,679,872, Cl. 219-501.000.

Laucks, Howard H.: *See—*
Hague, Robert Z.; Laucks, Howard H.; and Mastropole, Alfred J., 3,678,801.

Laucournet, Robert; and Turpin, Pierre, to Hoffmann-La Roche Inc. Apparatus for measuring the light passing through a liquid sample in a closed flexible walled chamber. 3,679,315, Cl. 356-180.000.

Laurent, Serge: *See—*
Bargain, Michel; Gruffaz, Max; Laurent, Serge; and Mallet, Maurice, 3,679,639.

Lavigne, Pierre: *See—*
Cohen, Michel; Lavigne, Pierre; and Sauvagnac, Robert, 3,678,920.

Lawler, Craig M.: *See—*
Scarnato, Thomas J.; Dryan, James J.; Lawler, Craig M.; and Sorensen, Robert, 3,678,671.

Lawrance, Derek Robert: *See—*
Edgar, Owen Burchell; Hughes, William; Lawrance, Derek Robert; Lederer, Gerald; and Ritchie, Colin Foster, 3,679,624.

Lawrence, Charles R., to Murphy, Frank W., Manufactures, Inc. Pressure indicating and limiting strument. 3,678,758, Cl. 73-411.000.

Le Duc, Donald: *See—*
Guyaux, James R.; Le Duc, Donald; and McDonald, Dean T., 3,679,075.

Le Grand, Donald G., to General Electric Company. Crystallized organopolysiloxane-polycarbonate block polymers and method for making them. 3,679,774, Cl. 260-824.00r.

Leach, John M. Overhead accumulation conveyors. 3,678,862, Cl. 104-172.00s.

Leach, Sam L., to Pid Corporation. Compressed parallax photography. 3,678,833, Cl. 95-18.000.

Lean, Eric G.: *See—*
Fang, Frank F.; and Lean, Eric G., 3,679,985.

Lear Siegler, Inc.: *See—*
Hedrick, Geoffrey S., 3,679,954.
Litkewycz, Stanley, 3,678,518.

Lebocey Industries: *See—*
Palencher, Jacques, 3,679,803.

Leder, Lewis B.: *See—*
Adams, James E.; Leder, Lewis B.; and Haas, Werner E. L., 3,679,290.

Lederer, Gerald: *See—*
Edgar, Owen Burchell; Hughes, William; Lawrance, Derek Robert; Lederer, Gerald; and Ritchie, Colin Foster, 3,679,624.

Lee, Admond K.; and Wong, Kwok-Ming, to Eastern Time Limited. Alarm clocks and watches. 3,678,679, Cl. 58-21.150.

Lee, Hanju; and Chi, Dongsuk, to Grace, W. R., & Co. Ultra-stable 3A molecular sieve. 3,679,604, Cl. 252-455.00f.

Leffeld, Nathan A. Compact rotatable display device. 3,679,066, Cl. 211-163.000.

Lefkowitz, Harold, to Delta Strapping Industries, Inc. Buckle closure for plastic strapping. 3,678,541, Cl. 24-74.000.

Lehikoinen, Urho A., to Ethyl Corporation. Chemiluminescent smokes. 3,679,594, Cl. 252-188.300.

Lehovec, Kurt. Vented clothes cabinet. 3,679,281, Cl. 312-31.000.

Leibinger, Berthold, to Trumpf & Co. Method and device for exchanging tools on machines having reciprocating movement. 3,678,562, Cl. 29-400.000.

Leibinsohn, Saul. Stop cock. 3,678,960, Cl. 137-625.470.

Leich, Robert A., to Camdex, Inc. Ammunition reloader. 3,678,799, Cl. 86-26.000.

Leirvik, Raymond M., to Babcock & Wilcox Company, The. Nuclear fuel rod. 3,679,545, Cl. 176-68.000.

Leitner, Robert T.; and Drake, John E., to Jerrold Electronics Corporation. Antenna system with ferrite radiation suppressors mounted on feed line. 3,680,146, Cl. 343-792.000.

Leliaert, Raymond M., to Wheelabrator-Frye Inc. Centrifugal blasting wheel and blade therefor. 3,678,629, Cl. 51-9.000.

Lemieux, George E., to Ford Motor Company. Automotive transmission mechanism having four forward driving speed ratios. 3,678,784, Cl. 74-759.000.

Lemmen, Hendrikus Johannes: *See—*
Van Oosterhout, Gerard Willem; Lemmen, Hendrikus Johannes; and Klomp, Cornelis Johannes, 3,679,476.

Leningradsky Metallichesky Zavod Imeni XXII Siezda KPSS: *See—*
Ezhov, Leonid Antipovich; Kudevitsky, Yankel Veniaminovich; and Belyaeva, Ljudmila Pavlovna, 3,678,554.

Lennon, Andrew Gordon, to Crane Canada Limited. Piston pump actuating mechanism. 3,678,767, Cl. 74-50.000.

Leonard, Edward H. Balance. 3,679,014, Cl. 177-216.000.

Lesiecki, Gerald, to Allis-Chalmers Manufacturing Company. Automatic shutdown seal. 3,679,217, Cl. 277-3.000.

Lester, George R.; and Brennan, John F., to Universal Oil Products Company. Preparation of dibenzodioxins. 3,679,704, Cl. 260-340.300.

Leuschner, Gerhard; Pietsch, Peter; and Kadner, Gunter, to Veb Kombinat Nagema. Apparatus for the production of a vacuum package. 3,678,648, Cl. 53-112.00a.

Leutert, Friedrich, Firma: *See—*
Lodynski, Emil, 3,679,178.

Lever Brothers Company: *See—*
Brown, Frederick G., 3,679,347.
Fielibert, Josef Frans, 3,679,509.

Levine, Beth, to Levine, Herbert, Inc. Shoe and fastening therefor. 3,678,604, Cl. 36-11.500.

Levine, Charles A.: *See—*
Brown, William E.; Heitz, Robert G.; and Levine, Charles A., 3,679,480.

Levine, Herbert, Inc.: *See—*
Levine, Beth, 3,678,604.

Levine, Seymour D., to Squibb, E. R., & Sons, Inc. Acenaphthene derivatives. 3,679,747, Cl. 260-566.0ae.

Lewis, William T.: *See—*
Addinall, Ramon L.; Lewis, William T.; and Mudroch, Otokar, 3,679,513.

Libbey-Owens-Ford Company: *See—*
Miller, Alfred H.; and Dean, George A., 3,679,076.

Liberman, Zvie. Intercommunication system. 3,679,837, Cl. 179-37.000.

Liberti, Lorenzo: *See—*
Boari, Gianfranco; Liberti, Lorenzo; Merli, Carlo; and Passino, Roberto, 3,679,580.

Liebherr, Harold R.: *See—*
Cornish, Edward; and Liebherr, Harold R., 3,678,703.

Lieser, Zeev. Intrusion systems employing digital processing circuitry. 3,680,074, Cl. 340-258.00a.

Liggett & Meyers Incorporated: *See—*
Key, Robert L., III; and Christy, Melvin G., 3,678,939.

Light reflection preventive device: *See—*
Kennedy, Peter J.; and Ford Motor Company, 3,679,887.

Liguori, Thomas A., to Modern Mold & Tool Corporation. Propel and repel ball point pen mechanism. 3,679,318, Cl. 401-110.000.

Lilly, Rodger H.: *See—*
Ellis, Colin R. G.; and Lilly, Rodger H., 3,678,566.

Limberg, Allen Le Roy, to RCA Corporation. Synchronous demodulator employing common base transistor amplifier input and base-emitter clamping action. 3,679,981, Cl. 329-50.000.

Limberg, Allen Le Roy, to RCA Corporation. Synchronous demodulator employing transistor base-emitter clamping action. 3,679,982, Cl. 329-50.000.

Lincoln, Lewis L.; and Heseltine, Donald W., to Eastman Kodak Company. Rigidized carbocyanine dyes and photographic emulsions. 3,679,427, Cl. 96-120.000.

Lincoln Rochester Trust Company: *See—*
Eagle, John H., deceased, 3,678,827.

Linde Aktiengesellschaft: *See—*
Heyl, Walter, 3,678,804.

Lingnau, Josef: *See—*
Hohn, Gerhard; Lingnau, Josef; and Rettemeier, Wulf, 3,679,131.

Linton, Denton C.; Zinkl, Andrew; and Ballam, Jack, to Micro Copper Corporation. Continuous process to precipitate high purity copper powder from acid leaching liquors containing copper in solution. 3,679,399, Cl. 75-109.000.

Linton, Robert W.: *See—*
Sams, Robert H.; Linton, Robert W.; and Horikawa, Noboru R., 3,679,610.

Linz, Georg; and Sommer, Lothar, to Linz, Georg, Firma. Method of making a ball point pen or a refill therefor. 3,678,565, Cl. 29-441.000.

Linz, Georg, Firma: *See—*
Linz, Georg; and Sommer, Lothar, 3,678,565.

Lion Precision Corporation: *See—*
Michelson, Louis, 3,679,972.

Lipka, David H.: *See—*
Schiffmann, Robert F.; Roth, Howard; Lipka, David H.; and Goodman, Abraham H., 3,679,432.

Liposky, Richard B. Hand operable selector valve. 3,678,959, Cl. 137-625.110.

Lippel, Lewis, Jr.: *See—*
Gustafson, Walter R.; McMillen, William H.; and Lippel, Lewis, Jr., 3,680,087.

Litchfield, John H.; and Vely, Victor G., to Wrigley, Wm., Jr., Company. Dialdehyde-containing anti-caries chewing gum compositions. 3,679,792, Cl. 424-48.000.

Litkewycz, Stanley, to Lear, Siegler Inc. Bunk bed assembly. 3,678,518, Cl. 5-9.000.

Little, Carl H., to Weber-Knapp Company. Hinge latch. 3,678,536, Cl. 16-144.000.

Litton Business Systems, Inc.: *See—*
Greenwood, David L., 3,679,878.

Litton Systems, Inc.: *See—*
Erdley, Harold F.; and Wyse, Stanley F., 3,678,764.
Holm, Robert Leander; and Ashford, John Wesley, 3,679,929.

Livingston, Jimmy Y., to Catalysts and Chemicals Inc. Purification of process gas streams by hydrogenation. 3,679,763, Cl. 260-677.00h.

Livshitz, Stanley L.; Engelhardt, Alvin; and Adler, Stanford L., to Technicon Instruments Corporation. Blood sample tray apparatus. 3,679,129, Cl. 233-26.000.

Lloyd, Allen H.; and Beckman, William J., to Tech-Art, Inc. Machine for brushing and stacking carton blanks. 3,678,525, Cl. 15-77.000.

Lloyd, Peter Anthony: *See—*
Cotton, John Michael; and Lloyd, Peter Anthony, 3,680,053.

Lloyds Bank Limited: *See—*
Woodham, Cecil Halliday, 3,679,184.

Llucia, Antonio Vilas. Hydrometer. 3,678,755, Cl. 73-454.000.

Lobdell-Emery Manufacturing Co.: *See—*
Smith, George J., 3,679,163.

Lobeck, Walter G.: *See—*

Wu, Yao Hua; and Lobeck, Walter G., 3,679,692.

Loch, Alphonse: *See—*
Loch, George N.; and Loch, Alphonse, 3,679,046.

Loch, George N.; and Loch, Alphonse. Grain auger device. 3,679,046, Cl. 198-213.000.

Lockheed Aircraft Corporation: *See—*
Ebin, Joseph A., 3,678,956.

Lodynski, Emil, to Leutert, Friedrich, Firma. Apparatus for setting of rods for deep well installations. 3,679,178, Cl. 254-93.00r.

Loft, John T.: *See—*
Druin, Melvin L.; Loft, John T.; and Plovan, Steven G., 3,679,538.

Logothetis, Anestis L.: *See—*
Harrell, Jerald R.; Logothetis, Anestis L.; and Verbanc, John J., 3,679,627.

Logue, Vernon J.: *See—*
Bryant, Kenneth Owen; Morrow, William R.; and Logue, Vernon J., 3,680,088.

Lohe, Konrad; Mohr, Reinhard; Mundlos, Eberhard; and Freb, Hermann, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Process for the dyeing or printing of textile materials made from polymers or copolymers of acrylonitrile. 3,679,358, Cl. 8-177.0ab.

Lohr, James E., to Du Pont de Nemours, E. I., and Company. Electrodepositon of fluorocarbon polymers. 3,679,618, Cl. 260-21.000.

London, Arnold B., mesne: *See—*
Cravits, Phillip, 3,678,533.

Long Island Oyster Farms, Inc.: *See—*
Mulhall, James Edward, 3,679,478.

Long Mfg. N. C. Inc.: *See—*
Long, William R., 3,678,667.

Long, William R., to Long Mfg. N. C. Inc. Loose peanut recovery apparatus. 3,678,667, Cl. 56-130.000.

Loop, Wendell Harold, to McCulloch Corporation. Method and apparatus for heating carburetor air and flushing an air filter in a chain saw. 3,678,973, Cl. 143-32.00r.

Loopco: *See—*
Singleton, Richard L., 3,678,712.

Lord Corporation: *See—*
Schmidt, Warren E., 3,679,197.

L'Oreal: *See—*
Charle, Roger; Kalopissis, Gregoire; and Zviak, Charles, 3,679,102.

Lorenz, Roman R.: *See—*
Archer, Sydney; and Lorenz, Roman R., 3,679,752.

Louapre, Merlin E.: *See—*
Chalfin, Gregory T.; Louapre, Merlin E.; and Olson, Richard C., 3,680,140.

Loupere, Andre: *See—*
Costa, Charles; Loupere, Andre; Monsel,Philippe; and Schmitt, Bertrand, 3,679,272.

Lovitz, David D., to Sternco Industries, Inc. Shrimp hatchery. 3,678,899, Cl. 119-2.000.

Lowder, Dale E.: *See—*
Nise, Wilfred C.; and Lowder, Dale E., 3,678,524.

Lowenfeld, Rudolf; and Kaiser, Hans, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Process for the dyeing of textile materials made from mixtures of polyester and cellulosic fibres. 3,679,350, Cl. 8-21.00c.

Loy, Henry Albert. Silt dredging apparatus drag scraper for dredging silt. 3,679,004, Cl. 172-26.500.

LTV Electrosystems, Inc.: *See—*
Holmes, Lloyd H.; and Sundland, William D., 3,678,810.
Redmond, William G., 3,679,956.
Redmond, William G., Jr., 3,679,156.

Lubrizol Corporation, The: *See—*
Kaufman, Paul Richard, 3,679,000.

Lucas, Hilda Katie: *See—*
Lucas, Sydney, 3,679,278.

Lucas, Sydney; deceased (by Lucas, Hilda Katie; administrator). Oil seal arrangements for rotary shafts. 3,679,278, Cl. 308-187.100.

Ludwig, Arthur C.: *See—*
United States of America, National Aeronautics and space Administration, 3,680,144.

Ludwig, Frederic G., 1/3 each to Nolte, Albert C., Jr. and Borden, Gavin Gale. Method and means for reproducing printed material. 3,679,302, Cl. 355-17.000.

Luft, Robert G., to International Harvester Company. Dual station transmission control. 3,679,018, Cl. 180-77.00s.

Lunn, John David. Television camera registration. 3,679,815, Cl. 178-5.40m.

Lutz, Roger J., to Gerber Products Company. Apparatus for forming filled food products. 3,679,338, Cl. 107-14.00r.

Luwa AG: *See—*
Widmer, Fritz; and Gorbei, Janos Miklos, 3,678,983.

Lyman, John B.: *See—*
Turner, Phillip H.; and Lyman, John B., 3,678,702.

M & T Chemicals Inc.: *See—*
Chessin, Hyman, 3,679,381.

Maas, Willem: *See—*
de Lange, Willem; Duyfjes, Werner; and Maas, Willem, 3,679,797.

Mac Nab, Robert Beattie; and Mulhall, Brian Edward, to International Research & Development Company. Superconducting dynamo-electric machines. 3,679,920, Cl. 310-10.000.

Macedo, Alfonso O. Reminder clock. 3,678,678, Cl. 58-16.500.

MacGregor Comarain S.A.: *See—*
Kummerman, Henri, 3,678,985.

Machlett Laboratories, Incorporated, The: *See—*
Kirkendall, Thomas D., 3,679,927.

Macone, Frederick W., to Avant Corporation. Laminated card envelope. 3,679,512, Cl. 156-272.000.

Madden, Ernest Francis, to Drucker, William A. Profile transferring device. 3,678,587, Cl. 33-175.

Madden, William F.: *See—*
Forance, Ronald B.; Madden, William F.; and Gaucher, Clair H., 3,679,125.

Mader, George E.: *See—*
Harris, Paul E.; and Mader, George E., 3,680,098.

Maeda, Nobutaka: *See—*
Tsukamoto, Hidehiko; and Maeda, Nobutaka, 3,678,719.

Maeda, Shigeo: *See—*
Iizuka, Masao; Igari, Norio; and Maeda, Shigeo, 3,679,656.

Maeder, Arthur: *See—*
Huber-Emden, Helmut; Eschle, Karl; and Maeder, Arthur, 3,679,779.
Nachbur, Hermann; and Maeder, Arthur, 3,679,778.

Maeder, Erwin; and Siegrist, Adolf Emil, to Ciba-Geigy AG. Phenyl-1,3,4-oxdiazole compounds. 3,679,669, Cl. 260-240.00d.

Maes, Roland. Interferon or viral inhibitor protein induction. 3,679,654, Cl. 260-112.500.

Maev, Veniamin Evnovich: *See—*
Rubinshtein, Sholom Yakovlevich; Babin, Mikhail Artemievich; Gutman, Anatoly Lvovich; Naumenko, Viktor Dmitrievich; Orlov, Evgeny Mikhailovich; Presman, Vladimir Alexandrovich; Maev, Veniamin Evnovich; and Bondarenko, Fedor Alexeevich, 3,678,664.

Magic Chef, Inc.: *See—*
Nance, Joseph W., 3,679,274.

Magnetic Head Corporation: *See—*
Braun, Richard E.; Hopkins, Lionel G.; Sheehan, Neil J.; and Sanchez, Edward J., 3,678,576.

Magnus, Agatha C. Glucosamine- alkylsulfonate and process. 3,679,660, Cl. 260-211.00r.

Magnuson, Raymond A.: *See—*
Brorson, Donald L.; and Magnuson, Raymond A., 3,679,100.

Magri, Joseph L.: *See—*
Shohet, Herbert N.; Magri, Joseph L.; and Primachuk, Edward R., 3,678,690.
Shohet, Herbert N.; and Magri, Joseph L., 3,678,691.

Magrini Fabriche Riunite Magrini Scarpa e Magnano M.S.M.-S.p.A.: *See—*
Latour, Andre; and Fumagalli, Giacomo, 3,679,851.

Maier, Elmar; and Rangger, Herbert, to Hilti Aktiengesellschaft. Powder charge-operated bolt setter for securing exothermic plates on chill molds. 3,679,118, Cl. 227-10.000.

Maierform Holding S.A.: *See—*
Csupor, Denis D. A., 3,678,877.

Mailloux, Robert J.: *See—*
Van Atta, Lester C.; and Mailloux, Robert J., 3,680,142.

Make, Siegfried: *See—*
Rambacher, Paul; and Make, Siegfried, 3,679,694.

Maki, Kenji: *See—*
Yamaguchi, Hiroyuki; Tuji, Katsuyoshi; Maki, Kenji; and Shimonishi, Isoo, 3,679,355.

Makino, Katsuo; and Sawato, Iwao, to Fuji Photo Film Co., Ltd. Electrophotographic element having a series of alternate photoconductive and insulating layers. 3,679,405, Cl. 96-1.500.

Malatestinic, Nicholas; and Ziering, Albert, to Hoffmann-La Roche, Inc. 4-[4-Hydroxypiperidino]-4'-fluorobutyrophenones. 3,679,666, Cl. 260-293.800.

Malburet, Rene A., to Compagnie de Saint-Gobain. Apparatus for handling fragile sheets. 3,679,073, Cl. 214-1.00q.

Maldonado, W. E., mesne: *See—*
Farque, C. Anthony, 3,679,957.

Malett, N. William, to Ford Motor Company. Control valve for positive crankcase ventilation system. 3,678,910, Cl. 123-119.00b.

Mallet, Maurice: *See—*
Bargain, Michel; Gruffaz, Max; Laurent, Serge; and Mallet, Maurice, 3,679,639.

Mallory, P. R., & Co., Inc.: *See—*
Dey, Arabinda N.; and Holmes, Robert W., 3,679,484.

Malmberg, Paul R.: *See—*
Handy, Robert M.; Angello, Stephen J.; Malmberg, Paul R.; and O'Keeffe, Terence W., 3,679,497.

Malutich, William J., to Continental Rubber Works. Flashless compression mold. 3,679,345, Cl. 425-406.000.

Manilla, Charles E.; Honaker, Harold H.; and Gothard, David O., to International Nickel Company, Inc., The. Production of clad metal articles. 3,678,567, Cl. 29-420.500.

Mannesmann-Meer Aktiengesellschaft: *See—*
Grober, Kurt, 3,679,856.

Mansberg, Hyman P., to Technicon Instruments Corporation. Method and apparatus for measuring bioluminescence or chemiluminescence for quantitative analysis of samples. 3,679,312, Cl. 356-36.000.

Mansour, Momtaz Nosshi, to Unitek Corporation. Reciprocating drive apparatus. 3,678,768, Cl. 74-54.000.

Manufacture des Machines du Haut-Rhin Corporation: *See—*
Patrignani, Theo, 3,678,774.

Marchant, Paul A., to Ethyl Development Corporation. Spray dispensing container. 3,679,137, Cl. 239-327.000.

Marchesi, Carlo M. Clay area heater. 3,678,919, Cl. 126-92.00r.

Marconi Company Limited, The: *See—*
Nolan, Sean Olic, 3,680,148.

Maresca, Neal J.; and Winton, Orrin J., to Avco Corporation. Field test unit for a gas turbine fuel injection system. 3,678,743, Cl. 73-119.00a.

Mark-Tex Corporation: *See—*
Andrews, Francis W.; Sussman, Philip S.; and Barlow, Sidney D., 3,678,521.

Markewitz, Wolfgang; and Bolduan, Dieter, to Hunnebeck GmbH. Tunnel formwork. 3,678,693, Cl. 61-45.00c.

Marks, Alvin M.; Marks, Mortimer M.; and Kent, Arthur P., to Marks Polarized Corporation. Nonglare coating for surfaces of TV tubes and the like and such coated surfaces. 3,679,451, Cl. 117-33.300.

Marks, Mortimer M.: *See—*
Marks, Alvin M.; Marks, Mortimer M.; and Kent, Arthur P., 3,679,451.

Marks Polarized Corporation: *See—*
Marks, Alvin M.; Marks, Mortimer M.; and Kent, Arthur P., 3,679,451.

Marlowe, Mickey O.: *See—*
Hill, Howard W.; Kaznoff, Alexis I.; and Marlowe, Mickey O., 3,679,596.

Marsden, Ronald Eric. Splicer for reinforcing bars. 3,679,250, Cl. 287-110.000.

Marshall, Edward M. Food cooking grill. 3,678,844, Cl. 99-340.000.

Martenson, Earl D.; and Gebhardt, James J., Jr., to Barber-Greene Company. Material control system for a finishing machine. 3,678,817, Cl. 94-46.000.

Martin, William S.: *See—*
Almasi, Joseph C.; and Martin, William S., 3,679,996.

Martini-Buchbindereimaschinenfabrik AG: *See—*
Schmid, Adolf; and Kuhni, Rudolf, 3,678,740.

Marzocchi, Alfred, to Owens-Corning Fiberglas Corporation. Method of producing a coated glass fiber strand. 3,679,507, Cl. 156-148.000.

Masa, Hamada: *See—*
Hamao, Umezawa; Shinichi, Kondo; Kenji, Maeda; Tomio, Takeuchi; and Masa, Hamada, 3,679,742.

Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft: *See—*
Stoll, Albert; and Wanka, Walter, 3,679,862.

Maschinenfabrik Meyer & Burger A.G.: *See—*
Stauffer, Alfred, 3,678,918.

Maschinenfabrik Stromag G.m.b.H.: *See—*
Ernst, Lothar; and Ruggen, Werner, 3,678,708.

Maschke, Artur: *See—*
Koenig, Karl-Heinz; Maschke, Artur; and Fischer, Adolf, 3,679,678.

Mashimo, Yukio; and Ishikawa, Mitsuo, to Canon Kabushiki Kaisha. Exposure control device for a camera. 3,678,828, Cl. 95-11.00r.

Mason, Daniel W., to Owens-Illinois, Inc. High K dielectric materials. 3,679,440, Cl. 106-39.00r.

Mason, Donald J.: *See—*
Bergy, Malcolm E.; Herr, Ross R.; and Mason, Donald J., 3,679,787.

Massachusetts Institute of Technology: *See—*
Williams, James M., 3,679,910.

Massey-Ferguson Services, N.V.: *See—*
Bennett, John S., 3,679,032.

Massie, Stephen N., to Universal Oil Products Company. Preparation of aromatic acids. 3,679,740, Cl. 260-524.00r.

Mastropole, Alfred J.: *See—*
Hague, Robert Z.; Laucks, Howard H.; and Mastropole, Alfred J., 3,678,801.

Masuda, Noboru; and Kuroyanagi, Masashi, to Denki Onkyo Co., Ltd. Contactless switching apparatus. 3,680,026, Cl. 338-32.00h.

Matsubayashi, Kanji; and Segawa, Hiroyuki, to Kuraray Co., Ltd. Elongation-set polyurethane elastomeric fibers and process of preparation. 3,679,633, Cl. 260-75.0ne.

Matsuda, Motonobu: *See—*
Ueda, Hiroshi; Yata, Kintaro; and Matsuda, Motonobu, 3,678,822.

Matsugu, Tomoyuki; Notomi, Ryota; and Kanoh, Teruchika, to Kohjin Company, Limited. Apparatus for heat-setting biaxially stretched films of thermoplastic materials. 3,678,546, Cl. 26-63.000.

Matsui, Hideo: *See—*
Asahi, Matahiko; Murakami, Hisamichi; Hasegawa, Yukio; Matsui, Hideo; and Takayanagi, Eifu, 3,679,348.

Matsunaga, Takao: *See—*
Yoshimura, Ippei; Fukue, Norihiko; Sakamoto, Hiroshi; Murofushi, Hisashi; Hiyama, Takami; and Matsunaga, Takao, 3,679,707.

Matsushita Electric Industrial Co., Ltd.: *See—*
Sekido, Satoshi; and Arita, Tomohiko, 3,679,945.
Tanegashima, Kenichiro; Kobayashi, Makoto; and Kudo, Shinichiro, 3,679,864.

Matsushita Electric Industrial Company, Limited: *See—*
Yamashita, Sadahiko, 3,680,059.
Yoshimura, Susumi; Ito, Yoshimasa; Aaakawa, Shirow; and Hasegawa, Katsue, 3,679,944.

Matsuura, Shoji: *See—*
Inaba, Kohsaku; Yoshida, Seisaku; and Matsuura, Shoji, 3,679,005.

Mattel, Inc.: *See—*
Beny, Janos; Kingsbury, LC James; and Scribner, David L., 3,678,618.

Mattel, Inc., mesne: *See—*
Goldfarb, Adolph E.; Strader, Judith D.; and Strader, George C., 3,678,616.

Matthias, Guenther: *See—*
Schulz, Gerhard; and Matthias, Guenther, 3,679,739.

Matti, Leo F. Container top opener. 3,678,788, Cl. 81-3.430.

Maure, Douglas Raymond, to Optical Memory Systems, Inc. Optical logic function generator. 3,680,080, Cl. 340-347.0dd.

Mautz, William J., Sr. Jiffy vehicle brake tester pad removal tool. 3,678,561, Cl. 29-267.000.

Maxey, Alexander R., to Echo Science Corporation, mesne. Helical scanning assembly for video tape machine. 3,678,563, Cl. 29-407.000.

Maxey, Alexander R., to Echo Science Corporation, mesne. Helical scanning assembly with tape to scanner referencing apparatus. 3,679,840, Cl. 179-100.20t.

Maxon, Rodney Robert: *See—*
Braun, Edwin Julius; Maxon, Rodney Robert; Meise, Henry August, Jr.; Taylor, George William; and Witmore, Ronald Kirk, 3,679,834.

May, Harley E., to General Electric Company. Machine with improved operating head traversing workpieces with curved surfaces. 3,678,736, Cl. 73-67.80s.

Maydan, Dan: *See—*
Chesler, Ronald Benjamin; and Maydan, Dan, 3,680,000.

Mayer, Oscar, & Co., Inc.: *See—*
Bard, John C.; and Olson, Floyd C., 3,679,434.

Mayes, Nathan, to Globe Manufacturing Company. Higher heat set spandex prepared from a mixture of a polyether or polyester prepolymer and a dihydric phenol and method of preparation. 3,679,631, Cl. 260-47.0cb.

Mayes, Nathan; and Falk, Robert A., to Thiokol Chemical Corporation. Nitroso ether polymers. 3,679,755, Cl. 260-615.0bf.

Maylotte, Donald H., to General Electric Company. Method for making photopolymerized tetrafluorethylene films. 3,679,461, Cl. 117-93.310.

Mayo, Robert A.; and Ohringer, Philip, to Technicon Instruments Corporation. Container holding rotatable body with adjustable balancing feature. 3,679,130, Cl. 233-26.000.

Mazza, Lamberto, to Industrie A. Zanussi S.p.A. Safety device for sensing preventing radiation leakage from microwave-producing apparatus. 3,679,908, Cl. 307-117.000.

Mazzella, Gerald: *See—*
Golden, Richard L.; and Mazzella, Gerald, 3,679,751.

Mc Garr, John J., to USM Corporation. Process for forming a thin microporous sheet material. 3,679,783, Cl. 264-53.000.

McAuliffe, Gerald K., to International Business Machines Corporation. Fourier digital filter or equalizer and method of operation therefor. 3,679,882, Cl. 235-156.000.

McCamis, Marvin J.; and Gibson, George W., to United States of America, Navy. Electrical connector. 3,680,036, Cl. 339-60.00m.

McCord, Henry L.: *See—*
Herman, Elvin E.; and McCord, Henry L., 3,680,099.

McCormick, Wayne A. Ice bag for treating athletes. 3,678,936, Cl. 128-402.

McCulloch Corporation: *See—*
Loop, Wendell Harold, 3,678,973.

McDonald, A. Y., Mfg. Co.: *See—*
Schmitt, Joseph R., 3,679,239.

McDonald, Dean T.: *See—*
Guyaux, James R.; Le Duc, Donald; and McDonald, Dean T., 3,679,075.

McDonald, Gerald W. G., to Commonwealth Oil Refining Company, Inc. Fluidized catalytic cracking apparatus and process. 3,679,576, Cl. 208-74.000.

McDonnell Douglas Corporation: *See—*
Teng, Robert N., 3,678,745.

McGee, James Newton; and Griffin, Thomas Franklin, to Burlington Industries, Inc. Process for producing an air-impervious tire fabric. 3,679,516, Cl. 156-315.000.

McGinnis, Hebert E., to Goodrich, B. F., Company, The. Conveyor belt. 3,679,044, Cl. 198-193.000.

McGraw-Edison Company: *See—*
Funk, Stanley T., 3,678,715.
Van Dusen, Harold A., Jr., 3,679,311.

McKinney, Merle B., to Pioneer Liquor Company, Inc. Hand truck. 3,679,225, Cl. 280-47.180.

McKinney, Perry F.: *See—*
Bray, John R.; and McKinney, Perry F., 3,679,873.

McKnight, Robert A., to Singer Company, The, mesne. Visual teaching aid for fixed-base vehicle trainer. 3,678,601, Cl. 35-12.00n.

McMaster, Harold A., to Guardian Industries Corporation. Apparatus for cutting and grinding glass. 3,678,628, Cl. 51-5.000.

McMillen, William H.: *See—*
Gustafson, Walter R.; McMillen, William H.; and Lippel, Lewis, Jr., 3,680,087.

McNally, James G., Jr., to Eastman Kodak Company. Diazotype photographic elements having extended exposure latitude with specific U-V absorber. 3,679,415, Cl. 96-68.000.

McNally Pittsburg Manufacturing Corporation, The: *See—*
Pate, Robert Lee, 3,679,063.

McNitt, David H.: *See—*

Colvin, Alex D.; McNitt, David H.; and Turner, Allen H., 3,679,930.

Mead, Carver A.; and Kurtin, Stephen. Thermometer probe. 3,678,751, Cl. 73-362.0ar.

Mead Corporation, The: *See—*
Neff, Robert G., 3,679,122.

Mead Johnson & Company: *See—*
Wu, Yao Hua; and Lobeck, Walter G., 3,679,692.
Wu, Yao Hua; and Ryan, Richard P., Jr., 3,679,702.

Mead Johnson and Company: *See—*
Robbins, Carl L., 3,678,884.

Mechel, Fridolin; and Kummermehr, Hans, to Grunzweig & Hartmann Aktiengesellschaft. Mineral wool made from silicate glass comprising iron oxides. 3,679,443, Cl. 106-50.000.

Meidan, Reuven, to Applied Digital Data Systems, Inc. Data transmission echoing unit. 3,680,045, Cl. 340-146.1ba.

Meier, Werner: *See—*
Huber, Max; and Meier, Werner, 3,679,537.

Meinke, Hans H.; Ullrich, Kurt; and Wesch, Ludwig. Wide band interference absorber and technique for electromagnetic radiation. 3,680,107, Cl. 343-18.00a.

Meise, Henry August, Jr.: *See—*
Braun, Edwin Julius; Maxon, Rodney Robert; Meise, Henry August, Jr.; Taylor, George William; and Witmore, Ronald Kirk, 3,679,834.

Melillo, Dominic S. Reversible film camera with selectable exposure sizes. 3,678,834, Cl. 95-36.000.

Mello, William R.; and Warren, James A., to Colt Industries Operating Corporation, mesne. Tool changer. 3,678,572, Cl. 29-568.000.

Menzi, Hans, to Mettler Instrumente AG. Weighing apparatus with damping means. 3,679,013, Cl. 177-184.000.

Menzies, Robert W., to Canadian Patents and Development Limited. Synchronous relutance motors and method of starting. 3,679,924, Cl. 310-163.000.

Merck & Co., Inc.: *See—*
Arth, Glen E.; and Rasmusson, Gary H., 3,679,717.
Firestone, Raymond A., 3,679,711.
Firestone, Raymond A., 3,679,712.
Grier, Nathaniel, 3,679,622.

Merigo, Miguel A.: *See—*
Anderson, Roy E.; and Merigo, Miguel A., 3,680,121.

Merit Abrasive Products, Inc.: *See—*
Block, Aleck, 3,678,633.

Merli, Carlo: *See—*
Boari, Gianfranco; Liberti, Lorenzo; Merli, Carlo; and Passino, Roberto, 3,679,580.

Merlin Gerin Societe Anonyme: *See—*
Pelenc, Yves, 3,679,952.

Merrill, Edward W., to Estin, Hans, Cronkhite, Leonard W., Jr., Wolbach, William W.; trustees of and Charles River Foundation, The. Capsules and method for testing capsules for wall integrity. 3,678,756, Cl. 73-49.300.

Merrill, Edward W., to Estin, Hans H., Cronkhite, Leonard W., Jr., Wolbach, William W.; trustees of and Charles River Foundation, The. Polysiloxanes in admixing with hydrates or carbonates useful for removing hydrocarbons from tobacco smoke. 3,679,625, Cl. 260-37.0sb.

Messer Griesheim GmbH: *See—*
Neander, Erich, 3,679,191.

Messerschmitt-Bolkow-Blohm Gesellschaft mit beschrankter Haftung: *See—*
Butter, Karl, 3,678,802.

Mestetsky, Thomas S.; and Smolin, Edwin M., to GAF Corporation. Compositions of poly (alkyl vinyl ether/maleic anhydride) with phosphate ester surfactant. 3,679,623, Cl. 260-31.20r.

Metropoliton Industries, Inc.: *See—*
Taylor, Robert B., 3,679,254.

Mettler Instrumente AG: *See—*
Menzi, Hans, 3,679,013.

Metzger, Robert W., Jr.: *See—*
Buck, Robert E.; Metzger, Robert W., Jr.; Rittmann, Albert D.; and Sayers, Eugene H., 3,679,946.

Mevissen, Ernst A.: *See—*
Coulter, Stanley M.; and Mevissen, Ernst A., 3,679,195.

Meyer, Clarence G.: *See—*
Janssen, Donovan M.; and Meyer, Clarence G., 3,679,283.

Mezey, Eugene J., to Procter & Gamble Company, The. Process for the preparation of an anhydride of trivalent phosphorus using excited helium. 3,679,560, Cl. 204-157.10s.

Michaelis, David E., to Plastics Development Corporation of America. Inexpensive camera. 3,678,839, Cl. 95-60.000.

Michel, Hartmut: *See—*
Schulten, Reinhard; and Michel, Hartmut, 3,679,517.

Michelson, Louis, to Lion Precision Corporation. Micrometer thickness gage. 3,679,972, Cl. 324-61.00r.

Michelson, Malvin J.; and Doyle, William P., to Texaco Inc. Process for preparing disubstituted pyrazines. 3,679,680, Cl. 260-250.00r.

Micro Copper Corporation: *See—*
Linton, Denton C.; Zinkl, Andrew; and Ballam, Jack, 3,679,399.

Micro Seiki Co., Ltd.: *See—*
Cho, Masanobu, 3,679,843.

Microdot, Inc.: *See—*
Eggleston, Gerard; and Bosworth, George, 3,678,753.

Midgley, Edward L.; and Carlson, Reuben C., to Standard Kollsman Instrument Corporation. Solid state television tuner with voltage variable capacitors. 3,679,980, Cl. 325-464.000.

Migliaccio, Edward P.: *See—*
Migliaccio, Luigi; and Migliaccio, Edward P., 3,678,872.

Migliaccio, Luigi; and Migliaccio, Edward P. Emergency underwater escape vehicle. 3,678,872, Cl. 114-16.700.

Milgram, Alvin A., to Du Pont de Nemours, E. I., and Company. Lead-containing metallizations. 3,679,439, Cl. 106-1.000.

Miller, Alfred H.; and Dean, George A., to Libbey-Owens-Ford Company. Method and apparatus for handling sheet material. 3,679,076, Cl. 214-152.000.

Miller, Arthur: *See—*
Keneman, Scott Allen; and Miller, Arthur, 3,680,060.

Miller, Darrow L., to North American Rockwell Corporation. Tubular transducer and dry couplant therefor. 3,678,787, Cl. 73-71.500.

Miller, Donald L., to Bendix Corporation, The. Self-adjusting electromagnetic clutch. 3,679,034, Cl. 192-1.100a.

Miller, Harold L. Safety reverse for automatic parking gates. 3,678,622, Cl. 49-28.000.

Miller, Myrl J.: *See—*
Bullock, Michael K.; Miller, Myrl J.; and Voit, William F., Jr., 3,679,099.

Miller, Rodney D.; and Nielsen, John K., to FMC Corporation. De-vining melons. 3,678,677, Cl. 56-327.000.

Miller, Stanley J.: *See—*
Krupp, Robert F.; and Miller, Stanley J., 3,679,091.

Miller, Stanley J.; and Davidson, James P., to National Can Corporation. Vented curl for aerosol dome. 3,679,090, Cl. 220-67.

Miller, Wayne H.: *See—*
Du Bois, Robert Clark; and Miller, Wayne H., 3,679,306.

Milligan, Terry W.: *See—*
Buckler, Sheldon A.; Milligan, Terry W.; and Rogers, Howard G., 3,679,409.

Minagawa, Nobuhiko: *See—*
Kasugai, Tsuneo; and Minagawa, Nobuhiko, 3,679,455.

Minasy, Arthur J., to Knogo Corporation. Label attachment means. 3,678,608, Cl. 40-20.00r.

Miniature Electronic Components Corporation: *See—*
Pihl, George E., 3,680,083.

Minnesota Mining and Manufacturing Company: *See—*
Barclay, Ralph R., 3,679,814.
Hinderaker, Philip D.; and Nelson, Karl E., 3,679,505.
Moore, George G. I.; and Gerster, John F., 3,679,695.
Mukherjee, Joan M. W., 3,679,414.

Minolta Camera Kabushiki Kaisha: *See—*
Kudo, Tetsuo; Nakatani, Kozo; and Koda, Kiyoyasu, 3,679,387.
Ueda, Hiroshi; Yata, Kintaro; and Matsuda, Motonobu, 3,678,822.

Minor, Paul S.: *See—*
Vancamp, Raymond M.; Minor, Paul S.; and Muren, Albert P., Jr., 3,679,373.

Minshull, John F.: *See—*
Arulpragasam, Jeganandaraj A.; Binks, Dennis C.; Holmes, John J.; Minshull, John F.; Pinnell, Martin C.; and Williams, Clive, 3,680,052.

Minzenberger, Thomas C., to Zenith Radio Corporation. Process of back etching a perforated metal mask for color TV tubes. 3,679,499, Cl. 156-7.000.

Mita Industrial Company Limited: *See—*
Yokoyama, Taizo, 3,679,420.

Mitchell, Douglas, to Technicon Instruments Corporation. Analysis of fluids. 3,678,734, Cl. 73-61.10r.

Mitrofanoff, Nicholas S.: *See—*
Bunker, William H.; Kerr, John W.; Mitrofanoff, Nicholas S.; and Swearingen, Kent W., 3,680,054.

Mitsubishi Denki Kabushiki Kaisha: *See—*
Nitta, Tohei; Shibuya, Yoshikazu; and Fujiwara, Yukio, 3,679,939.

Mitsubishi Jukogyo Kabushiki Kaisha: *See—*
Tsukamoto, Hidehiko; and Maeda, Nobutaka, 3,678,719.

Mitsui Toatsu Chemicals, Inc.: *See—*
Asahi, Matahiko; Murakami, Hisamichi; Hasegawa, Yukio; Matsui, Hideo; and Takayanagi, Eifu, 3,679,348.

Mitsui Toatsu Chemicals Incorporated: *See—*
Kii, Toshimichi; and Suka, Motoshi, 3,679,651.

Mittelsteadt, Glen L.: *See—*
Herter, George L.; and Mittelsteadt, Glen L., 3,678,858.

Mittler, Martin A.: *See—*
Newman, Richard J.; Mittler, Martin A.; and Blickstein, Martin J., 3,679,940.

Miyamoto, Masao: *See—*
Kudamatsu, Akio; Miyamoto, Masao; and Fukazawa, Nobuo, 3,679,726.

Miyasaka, Mamoru; Kurita, Hirohisa; and Furihata, Hideo, to Kabushiki Kaisha Suwa Seikosha. Structure for positioning a watch stem. 3,678,682, Cl. 58-58.000.

Miyatani, Kazuo: *See—*
Okamoto, Fumio; Wada, Yasuo; and Miyatani, Kazuo, 3,679,379.

Mizuma, Noriaki; and Yokota, Yuzo, to FMC Corporation. Method of printing textiles using a printing paste containing β-1,4 glucan. 3,679,352, Cl. 8-62.000.

Mobil Oil Corporation: *See—*
Burress, George T.; and Willis, James L., Jr., 3,679,741.

Lake, Connie, 3,679,126.

Mochida, Yoshihiro: *See—*
Hiragaki, Shigeo; and Mochida, Yoshihiro, 3,679,309.

Modern Mold & Tool Corporation: *See—*
Liguori, Thomas A., 3,679,318.

Moerkens, Jozef Cornelis, to U.S. Philips Corporation. Circuit arrangement for the ignition and alternating current supply of a gas and/or vapour discharge lamp. 3,679,936, Cl. 315-205.000.

Mohr, Reinhard: *See—*
Lohe, Konrad; Mohr, Reinhard; Mundlos, Eberhard; and Freb, Hermann, 3,679,358.

Mohrman, Robert K.; Kifer, Paul E.; and Oborsh, Edward V., to Ralston Purina Company. Cat food with hexamic acid flavorant. 3,679,429, Cl. 99-2.000.

Molins Limited: *See—*
Titow, Witold, 3,679,612.

Mollenbeck, Klaus, to Siemens Aktiengesellschaft. Device for measuring currents in a high voltage conductor including a controlled optical arrangement. 3,679,974, Cl. 324-96.000.

Moller, Tilo: *See—*
Seidel, Alex; Moller, Tilo; and Weldle, Helmut, 3,678,800.

Monsanto Chemicals Limited: *See—*
Volans, Peter, 3,679,111.

Monsanto Company: *See—*
Benson, Royal H.; and Bodre, Robert J., 3,679,366.
Bray, John R.; and McKinney, Perry F., 3,679,873.
Schomburg, Noel L., 3,679,592.
Schuck, James M.; and Wildi, Bernard S., 3,679,653.
Smith, Terrill D., 3,679,587.

Monsel,Philippe: *See—*
Costa, Charles; Loupere, Andre; Monsel,Philippe; and Schmitt, Bertrand, 3,679,272.

Monsun-Tison AB: *See—*
Stenlund, Stig Gote, 3,679,276.

Montecatini Edison S.p.A.: *See—*
Natta, Giulio; Danusso, Ferdinando; and Ferruti, Paolo, 3,679,643.
Vecchio, Martino; Cammarata, Italo; and Pattore, Vittorio, 3,679,767.

Montgomery, Helene Irene: *See—*
Montgomery, William T. S., 3,679,143.

Montgomery, William T. S., to Montgomery, Helene Irene. Shavings making machines. 3,679,143, Cl. 241-280.000.

Montillon, Henry A.: *See—*
Bailey, Robert C.; Estes, Harry A.; James, Glen S.; Klug, James R.; Montillon, Henry A.; Myring, Verne E.; Robertson, Orville H.; Sargeant, Blaine W.; and Sorensen, Neal E., 3,679,200.

Montone, Liber J., to Western Electric Company, Incorporated. Measuring system. 3,679,820, Cl. 178-6.000.

Moodie, Donald E., to Polaroid Corporation. Photographic apparatus including removable validation plate. 3,678,818, Cl. 95-1.100.

Moog, Inc.: *See—*
Hague, Robert Z.; Laucks, Howard H.; and Mastropole, Alfred J., 3,678,801.

Mooi, John: *See—*
Sanford, Robert A.; Mooi, John; and Rogers, Edward S., 3,679,605.

Mookherjee, Braja D.: *See—*
Grossman, James D.; Mookherjee, Braja D.; De Simone, Robert; and Theimer, Ernst T., 3,679,749.

Mookherjee, Braja D., to International Flavors & Fragrances Inc. Hexahydro-1,4,9,9-tetramethyl-4,7-methanoazulenones. 3,679,750, Cl. 260-586.00a.

Moore, Carl, to Dow Chemical Company, The. Carpet backsizing with latexes of acidic olefin copolymers. 3,679,469, Cl. 117-161.0uz.

Moore, Eugene R.; and Park, William R. R., to Dow Chemical Company, The. Method for making hydrazine derivatives of copolymers of vinyl aromatic compounds and α,β-unsaturated dicarboxylic acids or anhydrides. 3,679,640, Cl. 260-78.50t.

Moore, Francis C.; and Perkinson, Leon A., to Moore-Perk Corporation. Surgical sponge or bandage. 3,678,933, Cl. 128-296.000.

Moore, George G. I.; and Gerster, John F., to Minnesota Mining and Manufacturing Company. Certain Thiazolylhaloalkanesulfonanilides. 3,679,695, Cl. 260-302.00s.

Moore-Perk Corporation: *See—*
Moore, Francis C.; and Perkinson, Leon A., 3,678,933.

Moreau, Jean-Noel, to Thomson-CSF. Microwave band-pass filter having constant bandwidth as filter is tuned. 3,680,012, Cl. 333-73.00w.

Morf, Max; Wenger, Markus; and Feisst, Jutta, to Ciba-Geigy Corporation. Reaction products of carboxylic acid polymers, alkylenimines and alkylene oxides. 3,679,621, Cl. 260-29.60h.

Morgan, Charles R.; and Daniels, David A., to Grace, W. R., & Co. Process for preparing methylenebisiminodiacetonitrile. 3,679,728, Cl. 260-465.5.

Morgan, George W.; and Whitney, Douglas S. Conveyor system. 3,679,045, Cl. 198-203.000.

Morgese, Nicholas V., to Continental Can Company, Inc. Carton with gussetted ends. 3,679,121, Cl. 229-40.000.

Mori, Chiharu; and Ota, Katsumi, to Asahi Kogaku Kogyo Kabushiki Kaisha. System for controlling a camera shutter. 3,678,826, Cl. 95-10.0ct.

Morimoto, Yoshiro, to Nissan Motor Company, Limited. Inboard-outboard drive for watercraft. 3,678,879, Cl. 115-35.000.

Morita, Katsura; and Kawashima, Kenya, to Takeda Chemical Industries, Ltd. Tetrahydrocyclopropadibenzazepine derivatives. 3,679,662, Cl. 260-239.00d.

Morlock, Harry K.: *See—*
Jones, Howard S., Jr.; Witte, Joseph J.; and Morlock, Harry K., 3,680,130.

Morrish, James Francis Gerrards Cross: *See—*
Wakefield, Norman; Alexander, Stuart John; Morrish, James Francis Gerrards Cross; Beck, William; Groves, Raymond Sturgis; and Harvey, Michael J., 3,678,644.

Morrison, Glenn C.; and Shavel, John, Jr., to Warner-Lambert Company. Pyridyl β-ketosulfoxides and sulfones. 3,679,691, Cl. 260-294.80f.

Morrow, William R.: *See—*
Bryant, Kenneth Owen; Morrow, William R.; and Logue, Vernon J., 3,680,088.

Morse, Stephen P.: *See—*
Baskin, Herbert B.; Belady, Laszlo A.; Evangelisti, Carlo J.; and Morse, Stephen P., 3,680,078.

Morse-Brown, Austin G., to Bath Institute of Medical Engineering, The. Invalid chairs. 3,679,260, Cl. 297-338.000.

Morton-Norwich Products, Inc., mesne: *See—*
Diamond, Horace W., 3,679,375.

Moschytz, George Samson, to Bell Telephone Laboratories, Incorporated. Active RC wave transmission network using single amplifier to achieve all-pass transfer function. 3,679,987, Cl. 330-107.000.

Mosier, John L.; and Peterson, Richard J., to Sylvania Electric Products, Inc. Printed circuit board connector assembly. 3,680,032, Cl. 339-17.00f.

Moss, John Arthur, to Simon, Henry, Limited. Web feeding apparatus. 3,679,117, Cl. 226-199.000.

Moss, Vladimir. Transparent container and lettered cubes puzzle. 3,679,213, Cl. 273-156.000.

Motoren- und Turbinen-Union Munchen GmbH: *See—*
Hansen, Wolfgang, 3,678,555.

Motorola, Inc.: *See—*
Black, James R.; and Gurev, Harold S., 3,680,028.
Foltz, James W., 3,679,913.
Free, Maurice G.; and Wisseman, Leo L., 3,679,963.
Hays, Robert G., 3,679,502.
Rogers, Leo C.; Nikirk, Roger G.; and Heitz, Alfred J., 3,679,470.

Mott, Carl W., to Mott Corporation. Mower blade and connection therefor. 3,678,668, Cl. 56-294.000.

Mott Corporation: *See—*
Mott, Carl W., 3,678,668.

Mougin, George, to Sodeteg, Inc. Building construction of material therebetween. 3,678,638, Cl. 52-79.000.

Mouille, Rene Louis, to Societe Nationale Industrielle Aerospatiale. Rotor hubs on rotary wing aircraft. 3,679,322, Cl. 416-141.000.

Mowbray, Dorian Farrar: *See—*
Dillon, Stanley Bernard; Mowbray, Dorian Farrar; and Kamp, Kenneth Albert Walters, 3,679,846.

Moysey, John A.: *See—*
De Santis, Alfred J.; Beers, Le Roy W.; White, James A.; and Moysey, John A., 3,680,058.

Mozes, Alexander. Hygienic device for detecting unintentional urination. 3,678,928, Cl. 128-138.000.

Mudroch, Otokar: *See—*
Addinall, Ramon L.; Lewis, William T.; and Mudroch, Otokar, 3,679,513.

Mueller, Fred: *See—*
Buecheler, Paul; and Mueller, Fred, 3,679,685.

Mueller, Hans, to Grapha Maschinenfabrik Hans Mueller AG. Transfer apparatus. 3,679,072, Cl. 214-6.0ba.

Muellner, Frank E.; and Sarkozi, Lewis P., to Nus Corporation. Nuclear reactor fuel rod support grid. 3,679,546, Cl. 176-78.000.

Mukai, Tsuneo: *See—*
Watanabe, Shigeo; Sogi, Toshiyuki; and Mukai, Tsuneo, 3,678,982.

Mukherjee, Joan M. W., to Minnesota Mining and Manufacturing Company. Lithographic plate and method. 3,679,414, Cl. 96-67.000.

Mulcahy, Harry W.; Bushnell, Eldon W.; and Kaim, John W., to Amsted Industries, Incorporated. Multiple unit brake. 3,679,028, Cl. 188-202.000.

Mulhall, Brian Edward: *See—*
Mac Nab, Robert Beattie; and Mulhall, Brian Edward, 3,679,920.

Mulhall, James Edward, to Long Island Oyster Farms, Inc. Process for removing crepidula from oyster shells. 3,679,478, Cl. 134-25.00r.

Mulhouse: *See—*
Juillard, Yves, 3,678,968.

Mull, Ralph L., Jr.: *See—*
Hiday, David R.; and Mull, Ralph L., Jr., 3,679,990.

Muller, Alfred; and Fink, Arno, to Siemens Aktiengesellschaft. Superconductive alloy and production thereof. 3,679,401, Cl. 75-134.00v.

Muller, Jacques. Filtering and aerating jet breaker. 3,679,054, Cl. 210-95.000.

Muller, Jean-Nicolas: *See—*
Fischer, Artur; and Muller, Jean-Nicolas, 3,678,925.

Mullet, Sidney George: *See—*
Wyatt, James Andrew Stewart; Chapman, Clifford Victor Gascoyne; Solt, George Stefan; and Mullet, Sidney George, 3,679,059.

Munchel, Eugene A.; and Thornton, Henry M., to Ashcombe Products Company. Cleaning attachment for elevated spray device. 3,679,319, Cl. 401-138.000.

Mundlos, Eberhard: *See—*
Lohe, Konrad; Mohr, Reinhard; Mundlos, Eberhard; and Freb, Hermann, 3,679,358.

Murakami, Hisamichi: *See—*
Asahi, Matahiko; Murakami, Hisamichi; Hasegawa, Yukio; Matsui, Hideo; and Takayanagi, Eifu, 3,679,348.

Murakami, Tsukasa: *See—*
Inaba, Kohsaku; Yoshida, Seisaku; and Matsuura, Shoji, 3,679,005.

Murakami, Yoshio; and Takasi, Yamazaki, to Tokyo Shibaura Electric Co., Ltd. Reflector assembly for reflecting the vapors of high temperature volatile materials. 3,678,889, Cl. 118-49.000.

Muren, Albert P., Jr.: *See—*
Vancamp, Raymond M.; Minor, Paul S.; and Muren, Albert P., Jr., 3,679,373.

Murofushi, Hisashi: *See—*
Yoshimura, Ippei; Fukue, Norihiko; Sakamoto, Hiroshi; Murofushi, Hisashi; Hiyama, Takami; and Matsunaga, Takao, 3,679,707.

Murphy, David Duncan: *See—*
Giddings, David George; and Murphy, David Duncan, 3,679,388.

Murphy, Frank W., Manufactures, Inc.: *See—*
Lawrence, Charles R., 3,678,758.

Murphy, James P., to Pitney-Bowes, Inc. Fluorescent lamp idling circuit. 3,679,932, Cl. 315-106.000.

Murphy, Kevin E.: *See—*
Kippax, Donald L.; and Murphy, Kevin E., 3,679,766.

Musgrave, Ray D., to Western Printing Machinery Co. Doctor blade oscillatable between plate cylinder and ink transfer roll. 3,678,849, Cl. 101-157.000.

Musser, Malcolm E. Unload, check, and bag apparatus for supermarkets. 3,678,660, Cl. 53-255.000.

Musser, Malcolm E. Bag holder and opening apparatus. 3,679,096, Cl. 221-56.000.

Mustert, Rudolf, to Landis & Gyr AG. Apparatus for optically testing the genuineness of bank notes and other tokens of value. 3,679,314, Cl. 356-71.000.

Myers, Clifford E., to Xercon, Inc., mesne. Light-operated control device. 3,679,906, Cl. 250-239.000.

Myers, Robert H.: *See—*
Lauck, Peter, III, 3,679,872.

Myring, Verne E.: *See—*
Bailey, Robert C.; Estes, Harry A.; James, Glen S.; Klug, James R.; Montillon, Henry A.; Myring, Verne E.; Robertson, Orville H.; Sargeant, Blaine W.; and Sorensen, Neal E., 3,679,200.

Nacarato, Ralph A. Mounting means for windshield light filter. 3,679,255, Cl. 296-97.00c.

Nachbur, Hermann; and Maeder, Arthur, to Ciba-Geigy AG. Amide and carbamate diphosphonates and process for their manufacture. 3,679,778, Cl. 260-932.000.

Nachtman, Elliot Simon, to La Salle Steel Company. Hot ductility of steels containing tellurium. 3,679,400, Cl. 75-123.0aa.

Nagel, Norman Eugene. Toy computer capable of limited computation and simulating large computer. 3,678,614, Cl. 46-39.000.

Nagot, Marc N.; and Zucker, Fredric E., to Pitney-Bowes, Inc. Credit card and method of polishing. 3,679,449, Cl. 117-1.000.

Naik, Navnitrai Nagarji: *See—*
Desai, Nalin Binduprasad; Jayaraman, Ponnusami; Ramanathan, Visvanathan; Artz, Klaus; Naik, Navnitrai Nagarji; and Jenny, Walter, 3,679,657.

Nakada, Yasuo; and Takita, Hideo, to Sony Corporation. Display system. 3,679,933, Cl. 315-169.0tv.

Nakatani, Kozo: *See—*
Kudo, Tetsuo; Nakatani, Kozo; and Koda, Kiyoyasu, 3,679,387.

Nance, Joseph W., to Magic Chef, Inc. Broiler drawer and slide. 3,679,274, Cl. 308-3.600.

Nardi, Giancarlo, to Compagnia Italiana Westinghouse Freni e Segnali. Carburetor system having a fluidic proportional amplifier. 3,679,185, Cl. 261-36.00a.

Nassry, Assadullah: *See—*
Beiswanger, John Paul Gerhardt; and Nassry, Assadullah, 3,679,493.

National Bank and Trust Company of Central Pennsylvania; administrator, d.b.m.c.t.a. of the estate of Beach, Willard C.; deceased, and administrator c.t.a. of the estate of Beach, Mary B.: *See—*
Grote, George A., 3,678,662.

National Beryllia Corporation: *See—*
Fleischner, Peter L., 3,679,463.

National Can Corporation: *See—*
Krupp, Robert F.; and Miller, Stanley J., 3,679,091.
Miller, Stanley J.; and Davidson, James P., 3,679,090.

National Cash Register Company, The: *See—*
Arbab, Majid; Wong, William Y.; and Yu, Kuenseng, 3,680,061.

National Research Development Corporation: *See—*
Houldcroft, Peter Thomas; and Sullivan, Arthur Basil Joseph, 3,679,863.
Ingram, John Anthony, 3,679,108.

National Union Electric Corporation: *See—*
Kinsella, Daniel J., 3,678,882.

National-Standard Company: *See—*
Fenner, James M., 3,679,190.

Natta, Giulio; Danusso, Ferdinando; and Ferruti, Paolo, to Montecatini Edison S.p.A. Copolymers of acrylonitrile with nitrogenous monomers and process for their preparation. 3,679,643, Cl. 260-85.50r.

Naumenko, Viktor Dmitrievich: *See—*
Rubinshtein, Sholom Yakovlevich; Babin, Mikhail Artemievich; Gutman, Anatoly Lvovich; Naumenko, Viktor Dmitrievich; Orlov, Evgeny Mikhailovich; Presman, Vladimir Alexandrovich; Maev, Veniamin Evnovich; and Bondarenko, Fedor Alexeevich, 3,678,664.

Neander, Erich, to Messer Griesheim GmbH. Running carriage for a coordinate gas cutting machine. 3,679,191, Cl. 266-23.00k.

Nedelec, Lucien: *See—*
Bucourt, Robert; Nedelec, Lucien; and Gasc, Jean-Claude, 3,679,718.

Neff, Robert G., to Mead Corporation, The. Carton having composite bottom. 3,679,122, Cl. 229-40.000.

Neff, William S., to Westinghouse Electric Corporation. Flexible insulating sheet containing boron nitride fibers and method for forming the same. 3,679,532, Cl. 161-59.000.

Negersmith, Kent M.; and Calogero, William J., to Technicon Instruments Corporation. Apparatus for determining the pack volume of particulates in liquid mixtures. 3,679,367, Cl. 23-259.000.

Neitzel, Ulrich E. G.: *See—*
Flint, Hans Gerhard; and Neitzel, Ulrich E. G., 3,679,376.

Nellis, Stewart; Kopf, Joseph Ellis; and Reti, Adrian R., to Technical Wire Products Inc. Electrical interconnector. 3,680,037, Cl. 339-61.00m.

Nelson, Karl E.: *See—*
Hinderaker, Philip D.; and Nelson, Karl E., 3,679,505.

Nelson, Philip E., to Purdue Research Foundation. Aseptic storage and valving system. 3,678,955, Cl. 137-238.000.

Neufang, Karl: *See—*
Hildebrand, Dietrich; and Neufang, Karl, 3,679,354.

Neumann, Dietrich; and Pattberg, Georg, to Vereinigte Flugtechnische Werke-Fakker GmbH. Testing of redundant control systems. 3,680,069, Cl. 340-214.000.

Neumann, Jorg: *See—*
Hofmann, Christian; and Neumann, Jorg, 3,679,294.

Newman, Daniel J.; and Klein, Louis A., to Chemical Construction Corporation. Separation of ammonia in a thermosyphon evaporator. 3,679,549, Cl. 203-12.000.

Newman, Joel S.; and Jernigan, Marvin E., to Biometrics, Inc. Automatic electronic reading pattern analyzer. 3,679,295, Cl. 351-6.000.

Newman, Richard J.; Mittler, Martin A.; and Blickstein, Martin J., to Voltronics Corporation. Trimmer capacitor. 3,679,940, Cl. 317-101.00c.

Newton, Richard C., to Phillips Petroleum Company. Yarn texturing. 3,678,547, Cl. 28-1.600.

Nguyen, Van-Tran; and Shah, Jagdeep Chandravadan, to Bell Telephone Laboratories, Incorporated. Broadband optically-pumped semiconductive lasers. 3,679,994, Cl. 331-94.000.

Nichols, Harry R.: *See—*
Hill, Vernon L.; Nichols, Harry R.; and Hess, Alan L., 3,679,494.

Nichols, John B.; and Gamaunt, Roger L., to Hughes Tool Co. Heavy lift helicopter with vertically adjustable cockpit. 3,679,154, Cl. 244-17.110.

Nicolet, Charles F., to Standard Oil Company. Process for removal of catalyst complex. 3,679,770, Cl. 260-674.00a.

Nieboer, Pieter Hendrik, to Demag Aktiengesellschaft. Valve packing for metallurgical shaft furnaces. 3,679,193, Cl. 266-27.000.

Niedermiller, Herbert C.: *See—*
Colson, William B.; Niedermiller, Herbert C.; and Deradoorian, Bagdasar, 3,679,384.

Nielsen, John K.: *See—*
Miller, Rodney D.; and Nielsen, John K., 3,678,677.

Nikirk, Roger G.: *See—*
Rogers, Leo C.; Nikirk, Roger G.; and Heitz, Alfred J., 3,679,470.

Nilgens, Heinrich: *See—*
Ostertag, Karl; and Nilgens, Heinrich, 3,679,114.

Nippon Denso Kabushiki Kaisha: *See—*
Shiari, Yoshimichi; and Komori, Toshimi, 3,680,017.

Nippon Gakki Seizo Kabushiki Kaisha: *See—*
Ohashi, Yoshio, 3,679,022.

Nippon Kogaku K. K.: *See—*
Watanabe, Asao, 3,679,905.

Nippon Kogaku K.K.: *See—*
Daitoku, Kouichi; and Kimura, Shuji, 3,679,148.
Takahashi, Kinji; and Shio, Megumu, 3,679,287.
Tanaka, Hiroshi; and Arai, Toshiyuki, 3,679,296.

Nippon Kokan Kabushiki Kaisha: *See—*
Yamagishi, Hidehisa; Takano, Hiroshi; and Takeuchi, Masao, 3,679,554.

Nippon Paint Co., Ltd.: *See—*
Tanekusa, Toshimi; Takasawa, Hideaki; and Yamahata, Achihiko, 3,679,626.

Nippon Sheet Glass Co., Ltd.: *See—*
Kushihashi, Akira; and Ikeda, Koji, 3,679,386.

Nippon Steel Corporation: *See—*
Kishikawa, Kanichi; Kuwata, Takeo; Kinoshita, Kentaro; Tsuchiya, Takao; and Kamogawa, Yoshiro, 3,678,721.

Nippon Telegraph and Telephone Public Corporation: *See—*
Karikomi, Masahiro, 3,680,141.

Nise, Wilfred C.; and Lowder, Dale E., to Clarke Floor Machine Company; division of Studebaker Corporation. Heavy duty vacuum cleaner. 3,678,524, Cl. 15-49.

Nishijima, Tsutomu: *See—*
Suzuki, Toshi; and Nishijima, Tsutomu, 3,679,839.

Nishikawa, Hisashi: *See—*
Ichinose, Noboru; Yokoyama, Katsunori; and Nishikawa, Hisashi, 3,679,919.

Nishimura, Sadanori, to Honda Giken Kogyo Kabushiki Kaisha. Pressure fluid circuit in automatic transmission apparatus. 3,678,952, Cl. 137-53.000.

Nishino, Keigo: *See—*
Irikura, Tsutomu; Nishino, Keigo; Suzue, Seigo; Ushiyama, Keiichi; Shinoda, Hirotaka; and Hasegawa, Yoshinori, 3,679,730.

Nissan Motor Company Limited: *See—*
Gotoh, Miyuki, 3,678,969.
Morimoto, Yoshiro, 3,678,879.

Nissen, Walter D.; and Hammond, Philip G., to Kimberly-Clark Corporation. Interfolded sheet material assembly. 3,679,094, Cl. 221-50.000.

Nissen, Walter D.; and Hammond, Philip G., to Kimberly-Clark Corporation. Folded sheet material and method and apparatus therefor. 3,679,095, Cl. 221-50.000.

Nisshin Flour Milling, Ltd.: *See—*
Yokoyama, Fujihiko; Yoneyama, Tohru; and Sato, Shigehiko, 3,679,438.

Nitta, Tohei; Shibuya, Yoshikazu; and Fujiwara, Yukio, to Mitsubishi Denki Kabushiki Kaisha. Lightning arrester. 3,679,939, Cl. 317-62.000.

Nixon, Charles D. Wheel washing device. 3,679,134, Cl. 239-70.000.

NL Industries, Inc.: *See—*
Rutt, Truman C., 3,679,950.

Nobusawa, Tsukumo, to Asahi Kogaku Kogyo Kabushiki Kaisha. Automatic exposure controls for cameras. 3,678,825, Cl. 95-10.0ct.

Noel, Leona M.; and Hagel, Leo J. Portable hair washing and colouring unit. 3,678,943, Cl. 132-9.000.

Noesges, Raymond: *See—*
Hansen, Robert N.; Hempel, George T.; and Noesges, Raymond, 3,679,026.

Nolan, George J.; and Holm, Vernon C. F., to Phillips Petroleum Company. Dehydrogenation catalysts. 3,679,601, Cl. 252-437.000.

Nolan, Sean Olic, to Marconi Company Limited, The. Omnidirectional orthogonal slanted dipole array. 3,680,148, Cl. 255/080/3/0/.

Nolan, Thomas Hoyt: *See—*
Duffek, Kenneth John; and Nolan, Thomas Hoyt, 3,680,076.

Nolte, Albert C., J r.: *See—*
Ludwig, Frederic G., 3,679,302.

Nomura, Yoshiro. Device of walking legs for a toy animal. 3,678,617, Cl. 46-149.

Nonn, Gerhard: *See—*
Ostwald, Fritz; Bender, Alfred; and Nonn, Gerhard, 3,678,954.

Norbert, Stuttgart: *See—*
Scholl, Hermann; Norbert, Stuttgart; Gansert, Willi; and Arnold, Herbert, 3,678,904.

Nord, Sven Gustaf. Dishwasher device causing an aperiodical water flow. 3,678,957, Cl. 137-268.000.

Norddentsche Affinerie: *See—*
Haberland, Erich, and; and Perkow, Werner, 3,679,359.

Nordgren, Alfred A., to Dunn, W. E., Mfg. Co. Apparatus and method for cage rolling and welding. 3,678,971, Cl. 140-107.000.

Norota, Susumu: *See—*
Fukuda, Masao; Goto, Hachiro; Norota, Susumu; and Fujisawa, Yukimasa, 3,679,533.

North American Aviation, Inc.: *See—*
Bayle, Guy P.; and Johnson, Douglas A., 3,680,094.
Kuhn, Richard B., 3,679,825.

North American Philips Corporation: *See—*
Crowell, Merton Howard, 3,679,826.

North American Rockwell Corporation: *See—*
Bixby, Leo A., 3,679,016.
Miller, Darrow L., 3,678,737.
O'Donnell, Cedric F.; Platzek, Richard C.; and Sweeney, James S., 3,680,075.
Valstar, Jacob E., 3,680,086.

North, William L.; and Beckett, William J., to Forenta, Limited. Control system for garment finishing apparatus. 3,679,106, Cl. 223-73.000.

Northern Illinois Gas Company: *See—*
Dufour, Raymond J.; and Grimm, James J., 3,678,560.

Norton Company: *See—*
Washburn, Malcolm E., 3,679,444.

Nothmann, Gerhard A., to Robertson Photo-Mechanix, Inc. Equilibrated copyboard. 3,679,308, Cl. 355-75.000.

Notomi, Ryota: *See—*
Matsugu, Tomoyuki; Notomi, Ryota; and Kanoh, Teruchika, 3,678,546.

Noumi, Makoto: *See—*
Seki, Susumu; Noumi, Makoto; and Takaoka, Tadashi, 3,679,879.

Novack, Robert M., to Warner-Lambert Company. Process for obtaining 3-trans-dimethylamino- 4-phenyl-4-trans-carbethoxy-Γ¹-cyclohexene. 3,679,732, Cl. 260-471.00a.

Novar Corporation: *See—*
Bennett, William C., 3,679,037.

Novocherkassy Ordena Trudovogo Krasnogo Znameni: *See—*
Ulyanitsky, Evgeny Mefodievich; and Podgorny, Eduard Vasilievich, 3,679,937.

Nowell, John R., to Honeywell Information Systems Inc. Over-current detector. 3,679,964, Cl. 323-9.000.

Nowicki, Carmen D. T.; and Grammer, Maurine P. Loop stitching device of rigid standard length, or adjustable length, slidably mounted in standard base. 3,678,709, Cl. 66-4.000.

Nus Corporation: *See—*
Mueliner, Frank E.; and Sarkozi, Lewis P., 3,679,546.

Nutini, Leo G.: *See—*
Cook, Elton S.; and Nutini, Leo G., 3,679,793.

Nutt, Roy, mesne: *See—*
Beightol, Leroy Earl, 3,679,450.

Nutt, Wendell Glenn, to Bell Telephone Laboratories, Incorporated. System for maintaining low relative humidity in telephone cables and other enclosures. 3,679,810, Cl. 174-16.00r.

Nystuen, Marcus I., to Economics Laboratory, Inc. Electronic control means for dispensing apparatus. 3,680,070, Cl. 340-244.000.

Oborsh, Edward V.: *See—*
Mohrman, Robert K.; Kifer, Paul E.; and Oborsh, Edward V., 3,679,429.

O'Brien, John C.; deceased (by O'Brien, Violet D.; executrix), to Jack-O-Line Corporation. Veneer tenderizing apparatus. 3,678,974, Cl. 144-2.00r.

O'Brien, Samuel James: *See—*
Weissbein, Leonard; and O'Brien, Samuel James, 3,679,351.

O'Brien, Violet D.: *See—*
O'Brien, John C., 3,678,974.

Ochsner, Willi: *See—*
Kretzschmar, Heinz; Chlebus, Rold; and Ochsner, Willi, 3,679,040.

O'Connor, Lawrence T.; Brierley, James A.; and Bhappu, Roshan B., to Regents, New Mexico Institute of Mining and Technology. Bacterial leaching process. 3,679,397, Cl. 75-101.000.

O'Donnell, Cedric F.; Platzek, Richard C.; and Sweeney, James S., to North American Rockwell Corporation. System for composition of symbols. 3,680,075, Cl. 340-324.00a.

Oesterhelt, Gerhard; and De Bucs, Eugen Szabo, to Siemens-Schuckertwerke Aktiengesellschaft. Method for manufacturing homogeneous bodies from semiconductor alloys. 3,678,986, Cl. 164-51.000.

Oetinger, Norman, to American Massage Sales and Manufacturing Corporation. Pulsating vibratory massaging appliance. 3,678,923, Cl. 128-33.000.

Ogawa, Akira: *See—*
Shiba, Keisuke; Tsubota, Motohiko; Sato, Akira; Ikeda, Tadashi; and Ogawa, Akira, 3,679,428.

Ogawa, Juro; and Fujimoto, Yoshiaki, to Japan Radio Company, Limited. Elapsed time indicator having color indication. 3,679,976, Cl. 324-182.000.

O'Hare, Louis Richard. Shock plasma earth drill. 3,679,007, Cl. 175-16.000.

Ohashi, Yoshio, to Nippon Gakki Seizo Kabushiki Kaisha. Speaker box. 3,679,022, Cl. 181-31.00b.

Ohmi, Atsushi: *See—*
Watabe, Shigeru; and Ohmi, Atsushi, 3,678,687.

Ohringer, Philip: *See—*
Mayo, Robert A.; and Ohringer, Philip, 3,679,130.

Ohta, Kimio: *See—*
Campbell, George Thomas Richardson; and Ohta, Kimio, 3,678,875.

Ohta, Wasaburo; Kasuya, Kazuhiko; and Yamauchi, Masayuki, to Kabushiki Kaisha Ricoh. Magnetic cascade development device for dry process electrophotography. 3,678,895, Cl. 118-637.000.

Oizumi, Chihiro: *See—*
Tabata, Yoneho; and Oizumi, Chihiro, 3,679,562.

Ojala, William K.: *See—*
Baker, Thomas D.; and Ojala, William K., 3,678,909.

Okamoto, Fumio; Wada, Yasuo; and Miyatani, Kazuo, to RCA Corporation. Magnetic compositions. 3,679,379, Cl. 23-367.000.

Okamoto, Tadashi: *See—*
Yamamoto, Hisao; Okamoto, Tadashi; and Kobayashi, Tsuyoshi, 3,679,672.

Okano, Keigo: *See—*
Wada, Yoshiyo; Kinjo, Hisao; and Okano, Keigo, 3,679,822.

O'Keeffe, Terence W.: *See—*
Handy, Robert M.; Angello, Stephen J.; Malmberg, Paul R.; and O'Keeffe, Terence W., 3,679,497.

Oki, Toshihiko: *See—*
Saito, Toshiaki; and Oki, Toshihiko, 3,678,681.

O'Leary, Walter E.; Thornton, Duane V.; Hammonds, James C.; and Dare, Roy R., to ACF Industries, Incorporated. Method and means for securing lading on railway flat cars. 3,678,866, Cl. 105-369.00a.

Olin Corporation: *See—*
Andrew, Eugene A.; and Halverson, Henry J., 3,679,782.

Olin Mathieson Chemical Corporation: *See—*
Barocca, Aldo J.; and Benedict, Ralph H., 3,678,856.

Olmsted, Dennis R.: *See—*
Herger, Zoltan L.; and Olmsted, Dennis R., 3,679,841.

Olschewski, Karl-Heinz: *See—*
Grimm, Werner; Hasserodt, Ulrich; and Olschewski, Karl-Heinz, 3,679,086.

Olsen, Perry Charles; and Tang, Pak Chong, to RCA Corporation. Video blanking and sound muting circuit employing grounded tuner switches. 3,679,819, Cl. 178-5.80r.
Olsen, Ralph A., to Ford Motor Company. Energy absorbing steering control system. 3,678,777, Cl. 74-492.000.
Olser, Ladislav: *See—*
Bumbalek, Karel; and Olser, Ladislav, 3,678,522.
Olson, Floyd C.: *See—*
Bard, John C.; and Olson, Floyd C., 3,679,434.
Olson, Richard C.: *See—*
Chalfin, Gregory T.; Louapre, Merlin E.; and Olson, Richard C., 3,680,140.
Olson, Theodore A.; and Scanlon, John J., to Remington Arms Company, Inc. Molding plastic coated nitrocellulose. 3,679,781, Cl. 264-3.00r.
Olstein, Myron A.: *See—*
Evans, Robert W.; Grimm, Richard C.; and Olstein, Myron A., 3,678,857.
O'Malley, John J.; and Smith, Marion D., to General Motors Corporation. Power transmission. 3,678,783, Cl. 74-759.000.
Omark Industries, Inc.: *See—*
Hsu, Yung Shing; and Pomeroy, Raymond V., 3,678,808.
Omron Tateisi Electronics Co.: *See—*
Uekusa, Genzo; Tanimura, Shigeru; Higashi, Kazuhiro; and Sumoto, Takao, 3,679,949.
Oppenheimer, Seymour; and Turbak, Albin F., to Tee-Pak, Inc. Preparation of fibrous reinforced sausage-type casings from organic solvent soluble polyvinyl alcohol resins. 3,679,436, Cl. 99-176.000.
Oppenheimer, Seymour; and Turbak, Albin F., to Tee-Pak, Inc. Preparation of fibrous reinforced sausage-type casings from melt-extruded polyvinyl alcohol resins. 3,679,437, Cl. 99-176.000.
Oppolzer, Wolfgang, to Sandoz Ltd., (a.k.a. Sandoz AG). Cis-2-acetyl-1-methyl-1,2,3,3a,4,9b-hexahydro[1] benzopyrano[4,3-c]pyrazole. 3,679,699, Cl. 260-310.00d.
Optical Coating Laboratory, Inc.: *See—*
Apfel, Joseph H.; and Gelber, Robert M., 3,679,291.
Optical Memory Systems, Inc.: *See—*
Maure, Douglas Raymond, 3,680,080.
Organisation Ralfs KG: *See—*
Kretzschmar, Heinz; Chlebus, Rold; and Ochsner, Willi, 3,679,040.
Organon Inc.: *See—*
Bentholm, Svend Asger Rud; and Koenen, Wilhelm Engelinus, 3,679,794.
Original Hanau Quartzlampen, GmbH: *See—*
Friedl, Wolfgang; and Schafer, Volker, 3,679,997.
Orlando, Vincent A.: *See—*
Brooks, Rodney A.; and Orlando, Vincent A., 3,678,763.
Orlov, Evgeny Mikhailovich: *See—*
Rubinshtein, Sholom Yakovlevich; Babin, Mikhail Artemievich; Gutman, Anatoly Lvovich; Naumenko, Viktor Dmitrievich; Orlov, Evgeny Mikhailovich; Presman, Vladimir Alexandrovich; Maev, Veniamin Evnovich; and Bondarenko, Fedor Alexeevich, 3,678,664.
Orlowski, Gerald J., to Korlow Corporation. Onion peeling apparatus. 3,678,976, Cl. 146-43.00r.
Orns, James L., to Clark Equipment Company. Overhead guard for lift truck. 3,679,256, Cl. 296-102.000.
Ortel, William Charles Gormley: *See—*
Biazzo, Martin Robert; King, Bernard George; and Ortel, William Charles Gormley, 3,678,574.
Ortho Pharmaceutical Corporation: *See—*
Shroff, Arvin Pranlal, 3,679,664.
Ortwein, Norman R.: *See—*
Bickel, John E.; Freres, Clemens H.; Gossard, Earl E.; Britt, James E.; Ortwein, Norman R.; and Swanson, Eric R., 3,680,115.
Orwoll, Edward F., to FMC Corporation. Process for purifying triaryl phosphates by reduced pressure distillation and phenol injection. 3,679,550, Cl. 203-38.000.
Osborne, Thomas Lawrence, to Bell Telephone Laboratories, Incorporated. Self-steering array repeater. 3,680,108, Cl. 343-100.0td.
Osovitz, Eugene E.: *See—*
Zysk, Edward D.; and Osovitz, Eugene E., 3,679,491.
Ostertag, Karl; and Nilgens, Heinrich, to Akzona Incorporated. Multistage injector for thread withdrawal. 3,679,114, Cl. 226-97.000.
Ostwald, Fritz; Bender, Alfred; and Nonn, Gerhard, to ITT Industries, Inc. Control valve. 3,678,954, Cl. 137-106.000.
Ota, Katsumi: *See—*
Mori, Chiharu; and Ota, Katsumi, 3,678,826.
Ottavan, Gerald J. Take-up mechanism for paper strip. 3,679,149, Cl. 242-75.500.
Ovshinsky, Stanford R.: *See—*
Feinleib, Julius; Klose, Peter H.; and Ovshinsky, Stanford R., 3,678,852.
Owczarski, William A.: *See—*
Paulonis, Daniel F.; Duvall, David Scott; and Owczarski, William A., 3,678,570.
Owens, Nevyl G., to Schlumberger Technology Corporation. Electrical suspension cable for well tools. 3,679,812, Cl. 174-108.000.
Owens-Corning Fiberglas Corporation: *See—*
Gordon, Jeanne E., 3,679,457.
Marzocchi, Alfred, 3,679,507.
Owens-Illinois, Inc.: *See—*
Graybill, Harold W.; Heider, James E.; and Sponseller, Harold P., 3,679,341.
Mason, Daniel W., 3,679,440.
Oxenham, Ronald B.: *See—*
Franklin, Denis; Gingold, Jerald S.; Oxenham, Ronald B.; and Rogers, Raymond E., 3,680,084.
Packman, Elias W., to Arcadia Products Corporation. Method of stretching leather shoes. 3,679,583, Cl. 252-8.570.
Pako Corporation: *See—*
Reid, Norman C., 3,678,842.
Palencher, Jacques, to Lebocey Industries. Shaping press, specifically for articles made of plastic. 3,679,803, Cl. 425-289.000.
Palmer Filter Equipment Company: *See—*
Stephens, Leonard W., 3,679,031.
Panasewicz, Anton Z., to Dura-Pak, Inc. Bag opening apparatus. 3,678,652, Cl. 53-385.000.
Panitz, Leon J., to Park Planning Inc. Mobile home arrangement. 3,678,639, Cl. 52-79.000.
Paoli, Thomas Lee; and Ripper, Jose Ellis, to Bell Telephone Laboratories, Incorporated. Dynamic AM control of the transverse modes of a self-pulsing semiconductor laser. 3,680,001, Cl. 331-94.00.
Papirnyik, Andrew G., to Singer Company, The. Storage box with interchangeable graphics. 3,679,047, Cl. 206-39.000.
Papst, Hermann Ernst Robert. Piston motor with swash-plate engine assembly. 3,678,807, Cl. 92-70.000.
Paradysz, Louis F.: *See—*
Chen, Philip L.; and Paradysz, Louis F., 3,678,820.
Parikh, Jekishan R.: *See—*
Beaton, John M.; Van Rheenen, Verlan H.; and Parikh, Jekishan R., 3,679,715.
Park Planning Inc.: *See—*
Panitz, Leon J., 3,678,639.
Park, Vernon K.: *See—*
Hagemeyer, Hugh J., Jr.; and Park, Vernon K., 3,679,775.
Park, William R. R.: *See—*
Moore, Eugene R.; and Park, William R. R., 3,679,640.
Parkell, Edward F., to Dart Industries Inc. Apparatus for the transfer of articles. 3,679,041, Cl. 198-24.000.
Parker, Gordon M.; Wismer, Marco; and Hahn, Ernest A., to PPG Industries, Inc. Acryloxy esters of anhydrides. 3,679,731, Cl. 260-475.00p.
Parker-Hannifin Corporation: *See—*
Swindler, Henry A., 3,678,972.
Parrinello, Anthony J.: *See—*
Guthrie, William E.; and Parrinello, Anthony J., 3,679,412.
Partlow, William D.: *See—*
Hopkins, Richard H.; Roland, George W.; Steinbruegge, Kenneth B.; and Partlow, William D., 3,679,597.
Passavant-Werke: *See—*
Schmitt, Walti, 3,679,035.
Passino, Roberto: *See—*
Boari, Gianfranco; Liberti, Lorenzo; Merli, Carlo; and Passino, Roberto, 3,679,580.
Pate, Robert Lee, to McNally Pittsburg Manufacturing Corporation, The. Mechanism for operating thickener rake arms. 3,679,063, Cl. 210-526.000.
Patrick, Ralph E.: *See—*
Kmecak, Ronald A.; Kovach, Stephen M.; and Patrick, Ralph E., 3,679,768.
Patrignani, Theo, to Manufacture des Machines du Haut-Rhin Corporation. Transmission device. 3,678,774, Cl. 74-250.00r.
Pattberg, Georg: *See—*
Neumann, Dietrich; and Pattberg, Georg, 3,680,069.
Patterson, Donald S., to Sargent Industries, Inc. Sealing and wiping means for ball screw actuator. 3,678,776, Cl. 74-459.000.
Patterson, James A.: *See—*
Finkle, Eugene D.; and Patterson, James A., 3,679,205.
Patton, Frank J., Jr.; and Gardner, Danny J. Aerosol can puncher. 3,678,578, Cl. 30-10.000.
Pattore, Vittorio: *See—*
Vecchio, Martino; Cammarata, Italo; and Pattore, Vittorio, 3,679,767.
Paulonis, Daniel F.; Duvall, David Scott; and Owczarski, William A., to United Aircraft Corporation. Diffusion bonding utilizing transient liquid phase. 3,678,570, Cl. 29-498.000.
Paulve, Marcel Luc Amedee. Electromechanical apparatus for checking and signalling the position of a railway-track switch or the like. 3,679,895, Cl. 246-253.000.
Payne, Winslow C.; and Trottier, Gerard M., to Warner & Swasey Company, The, mesne. Co-ordinated periodic lubrication system for machine tools. 3,678,631, Cl. 51-165.770.
Pear, Charles B., Jr.; and Ross, Joseph A., to Potter Instrument Company, Inc. Hammer firing system for a high speed printer. 3,678,847, Cl. 101-93.00c.
Pedersen, Poul K.; Wagstaff, Robert A.; and Waldrop, Thomas W., to Sperry Rand Corporation. Reverse drive for a forage harvester cutting reel. 3,678,772, Cl. 74-220.000.
Peel, Eric: *See—*
Jones, William Dyfrig; and Peel, Eric, 3,679,194.
Pelenc, Yves, to Merlin Gerin Societe Anonyme. Two slot linear induction motor. 3,679,952, Cl. 318-135.000.
Pender, David R. Seat unit for ski lift apparatus. 3,679,258, Cl. 297-195.000.

Penniman, John G., Jr. Edge-inking of shoe soles and coloring of uppers. 3,679,454, Cl. 117-44.000.
Pennwalt Corporation: *See—*
Popoff, Ivan C.; and Williams, Kenneth I. H., 3,679,736.
Penwell, James T. Oil well pump working barrel. 3,678,811, Cl. 92-169.000.
Peranio, Anthony: *See—*
Amir, Ilan; and Peranio, Anthony, 3,678,754.
Perez, Damaso Rodolfo Adelto. Screen filter pack and method for making same. 3,679,057, Cl. 210-223.000.
Perina, Joseph, to American Velcro, Inc. Attachment device of hook and loop fasteners. 3,679,530, Cl. 161-48.000.
Perkins Engines Limited: *See—*
Vulliamy, Nicholas Martin F., 3,678,914.
Perkinson, Leon A.: *See—*
Moore, Francis C.; and Perkinson, Leon A., 3,678,933.
Perkow, Werner: *See—*
Haberland, Erich, and; and Perkow, Werner, 3,679,359.
Perlman, David E., to Detection Systems, Inc. Parametric integrator for condition-responsive systems. 3,680,047, Cl. 340-258.00b.
Perrine, Walter E. Lifting yoke. 3,679,107, Cl. 224-5.00p.
Perronnet, Jacques: *See—*
Bertin, Daniel; and Perronnet, Jacques, 3,679,393.
Perry, Ernest John: *See—*
Hollister, Kenneth robert; and Perry, Ernest John, 3,679,425.
Peter, Lothar: *See—*
Peter, Oskar E.; and Peter, Lothar, 3,679,247.
Peter, Oskar E.: *See—*
Peter, Oskar E.; and Peter, Lothar, 3,679,247.
Peter, Oskar E.; and Peter, Lothar, to Peter, Oskar E. Hub-to-shaft clamp connection assembly. 3,679,247, Cl. 287-52.060.
Peters, Riener: *See—*
Hertrich, Klaus; and Peters, Riener, 3,679,201.
Peterson, Edward C.: *See—*
Blatchford, John K.; Peterson, Edward C.; and Burda, Jan C., 3,679,473.
Peterson, Laurence I., to Dow Chemical Company, The. Oxidation of phenylacetonitrile derivatives employing a copper(II)-amine catalyst system. 3,679,671, Cl. 260-240.00d.
Peterson, Richard J.: *See—*
Mosier, John L.; and Peterson, Richard J., 3,680,032.
Peterson, William H., to Pullman Incorporated. Cushioning arrangement for railway car. 3,679,068, Cl. 213-8.000.
Pey, Walter Arnold, to Welwyn Electric Limited. Film attenuator. 3,680,013, Cl. 333-81.00r.
Pfefferle, William C.: *See—*
Dalson, Milton H.; Gallagher, James P.; Keith, Carl D.; and Pfefferle, William C., 3,679,578.
Pfizer Inc.: *See—*
Beereboom, John J., 3,679,754.
Pfizer Inc.: *See—*
Butler, Kenneth, 3,679,801.
Dominy, Beryl William, 3,679,679.
Philadelphia Manufacturing Company, Inc.: *See—*
Startzman, Paul E., 3,679,113.
Philadelphia Quartz Company: *See—*
Sams, Robert H.; Linton, Robert W.; and Horikawa, Noboru R., 3,679,610.
Philips, Charles M.; and Sanmarco, Miguel E., to Temple University. Dilution method and apparatus for measurement of fluid flow rate. 3,678,922, Cl. 128-2.05f.
Phillips Fibers Corporation: *See—*
Van Doornewaard, Hans; and Jackson, Henry G., 3,679,786.
Phillips Petroleum Company: *See—*
Bowman, Mark M., Jr., 3,679,466.
Goldsmith, Clifton R., 3,679,599.
Hinton, Robert A.; and Cottle, John E., 3,679,764.
Houston, William L., Jr.; and Clark, William C., 3,679,765.
Hutson, Thomas, Jr.; and Carter, Cecil O., 3,679,771.
Newton, Richard C., 3,678,547.
Nolan, George J.; and Holm, Vernon C. F., 3,679,601.
Quiles, Francisco K., 3,678,598.
Pic Design Corporation: *See—*
Wertman, Louis, 3,679,809.
Picard, Karl-Heinz; and Beierer, Joachim, to Siemens Aktiengesellschaft. Hydraulic drive for electric switches. 3,679,909, Cl. 307-144.000.
Pid Corporation: *See—*
Leach, Sam L., 3,678,833.
Pierce, Boyd J., Jr. Universal four barrel carburetor adapter. 3,678,962, Cl. 138-39.000.
Pierce, Larry J., to Trane Company, The. Heat exchange coil and housing therefor. 3,678,993, Cl. 165-76.000.
Pietroski, Alex J., to General Motors Corporation. Blending device. 3,678,551, Cl. 29-78.000.
Pietsch, Peter: *See—*
Leuschner, Gerhard; Pietsch, Peter; and Kadner, Gunter, 3,678,648.
Pihl, George E., to Miniature Electronic Components Corporation. Three position electromagnetic indicator. 3,680,083, Cl. 340-373.00r.
Pilkington Brothers Limited: *See—*
Giddings, David George; and Murphy, David Duncan, 3,679,388.
Pinard, Emile Jean Lucien, to Societe des Accumulateurs Fixes et de Traction. Process of manufacturing sintered carrier type negative electrodes for alkaline storage cells. 3,679,481, Cl. 136-24.000.
Pinnell, Martin C.: *See—*
Arulpragasam, Jeganandaraj A.; Binks, Dennis C.; Holmes, John J.; Minshull, John F.; Pinnell, Martin C.; and Williams, Clive, 3,680,052.
Pinnow, Roy Lee: *See—*
Giesfeldt, William Otto; and Pinnow, Roy Lee, 3,678,569.
Pinto, James J., to Bissett-Berman Corporation, The. Automatic data readout. 3,680,063, Cl. 340-173.0ch.
Pioneer Liquor Company, Inc.: *See—*
McKinney, Merle B., 3,679,225.
Pioneer Magnetics, Inc.: *See—*
Wilkinson, Bruce L., 3,679,965.
Pistilli, Donald J.; and Degginger, Edward R., to Allied Chemical Corporation. Method for perfecting aircraft emergency landing. 3,679,462, Cl. 117-105.500.
Pitney-Bowes, Inc.: *See—*
Du Bois, Robert Clark; and Miller, Wayne H., 3,679,306.
Murphy, James P., 3,679,932.
Nagot, Marc N.; and Zucker, Fredric E., 3,679,449.
Tramposch, Herbert, 3,679,448.
Zucker, Fredric E., 3,680,082.
Pizzey, Peter Ernest, to Thomas, Frederick, & Company Limited. Lighting unit. 3,679,886, Cl. 240-3.
Plastics Development Corporation of America: *See—*
Michaelis, David E., 3,678,839.
Platzek, Richard C.: *See—*
O'Donnell, Cedric F.; Platzek, Richard C.; and Sweeney, James S., 3,680,075.
Plenier, Alain: *See—*
Chakraverty, Benoy Kumar; and Plenier, Alain, 3,679,947.
Plessey BTR Limited: *See—*
Cotton, John Michael; and Lloyd, Peter Anthony, 3,680,053.
Plovan, Steven G.: *See—*
Druin, Melvin L.; Loft, John T.; and Plovan, Steven G., 3,679,538.
Podgorny, Eduard Vasilievich: *See—*
Ulyanitsky, Evgeny Mefodievich; and Podgorny, Eduard Vasilievich, 3,679,937.
Pohlemann, Heinz; and Wurmb, Rolf, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Production of esters of omega-hydroxyalkanesulfonic acids with alkenoic acids. 3,679,737, Cl. 260-486.00r.
Poinsard, Henri, to Thomson-CSF. Receivers for angular measurement systems, in particular to radar system receivers. 3,680,102, Cl. 343-16.00m.
Pointud, Jacky: *See—*
Duclaux, Daniel; Givry, Jean-Pierre; and Pointud, Jacky, 3,679,555.
Polaroid Corporation: *See—*
Baker, James G., 3,678,831.
Baker, James G., 3,679,293.
Buckler, Sheldon A.; Milligan, Terry W.; and Rogers, Howard G., 3,679,409.
Burke, Edward F., Jr., 3,678,841.
Dietz, Milton S.; and Finnemore, Frederick M., 3,678,832.
Dietz, Milton S., 3,678,836.
Erlichman, Irving, 3,678,830.
Knight, Frank W.; and Van Allen, David, 3,679,417.
Moodie, Donald E., 3,678,818.
Stephens, Robert K., 3,679,411.
Poli, David L. Container apparatus. 3,679,087, Cl. 220-18.000.
Politeknichesky Institut imeni Sergo Ordzhonikidze: *See—*
Ulyanitsky, Evgeny Mefodievich; and Podgorny, Eduard Vasilievich, 3,679,937.
Pollet, Robert Joseph; and Vandenberghe, Antoon Leon, to Gevaert-AGFA N.V. Silver halide emulsion containing acetylene dicarboxylic acid anions antifoggant. 3,679,423, Cl. 96-109.000.
Pollitzer, Ernest L., to Universal Oil Products Company. Hydrocarbon isomerization process. 3,679,602, Cl. 252-442.
Pollock, Andre W., to Sun Oil Company. Houdriflow cracking process. 3,679,563, Cl. 208-166.000.
Pollution Control Products, Inc.: *See—*
Koulovatos, James; and Thomas, Kenneth L., 3,679,053.
Polymetrics, Incorporated: *See—*
Clark, Timothy M.; Shanfield, Henry; and Grunau, David L., 3,679,055.
Pomazak, Eugene: *See—*
Sorell, Henry P.; Pomazak, Eugene; and Rygg, Sven, 3,679,458.
Pomeranz, Yeshajahu; and Finney, Karl F., to United States of America, Agriculture. Protein-enriched baked products and method of making same. 3,679,433, Cl. 99-90.0hp.
Pomeroy, Raymond V.: *See—*
Hsu, Yung Shing; and Pomeroy, Raymond V., 3,678,808.
Pommerening, Uwe A.: *See—*
Gueldenpfennig, Klaus; Pommerening, Uwe A.; and Russell, Stanley L., 3,679,835.
Ponting, Ivor, to Electrical Remote Control Company Limited. Cam assembly. 3,678,780, Cl. 74-568.00r.
Pool, Clarence. Light with universally mounted axis for body panels and the like. 3,679,890, Cl. 240-41.600.
Popek, Stephen: *See—*
Englund, James A.; and Popek, Stephen, 3,678,641.

Popoff, Ivan C.; and Williams, Kenneth I. H., to Pennwalt Corporation. Dinitrophenylcarbamates. 3,679,736, Cl. 260-479.00c.
Porret, Daniel: *See—*
Habermeier, Juergen; Batzer, Hans; and Porret, Daniel, 3,679,681.
Porsche, Dr.-Ing. H.c.F., K.G., Firma: *See—*
Hensler, Paul, 3,678,912.
Portage Machine Company, mesne: *See—*
Reeves, Harold C., 3,679,220.
Porter, John David: *See—*
Griggs, Ernest Lee, Jr.; and Porter, John David, 3,679,153.
Porterfield, Jay G.: *See—*
Vehe, Dennis A.; Porterfield, Jay G.; and Roth, Lawrence O., 3,679,132.
Portus, Bruce W., to Fiber Industries, Inc. Operation of polyamide continuous polymerization system. 3,679,635, Cl. 260-78.00r.
Potter Instrument Company, Inc.: *See—*
Pear, Charles B., Jr.; and Ross, Joseph A., 3,678,847.
Poulsen, Peder Ulrik. Driven mandrel rotatable about its longitudinal axis. 3,679,521, Cl. 156-429.000.
Poussin, Antoine, to Thomson-CSF. Wide-band frequency-converting and amplifying circuits. 3,680,004, Cl. 332-19.000.
Powell, B. J.: *See—*
Hill, Theodore, 3,678,531.
Powell, John M.; and Frazier, Lauren L., to General Electric Company. Ice maker. 3,678,701, Cl. 62-353.000.
Powell, Russell A., to Koppers Company, Inc. Furnace top charging devices. 3,679,192, Cl. 266-27.000.
Powell, Walter F., to General Electric Company. Apparatus for operating electric discharge lamps and auxiliary lighting lamps. 3,679,931, Cl. 315-92.000.
Power Drive Corporation: *See—*
Gundersen, Ralph W., 3,678,583.
Power Flo Products Incorporated: *See—*
Szekely, Otto E., 3,678,786.
PPG Industries, Inc.: *See—*
Cormany, Charles L.; and Spotts, John A., Jr., 3,679,590.
Dowbenko, Rostyslaw; and Chang, Wen-Hsuan, 3,679,564.
Parker, Gordon M.; Wismer, Marco; and Hahn, Ernest A., 3,679,731.
Tolliver, Richard J., 3,680,132.
Vancamp, Raymond M.; Minor, Paul S.; and Muren, Albert P., Jr., 3,679,373.
Prab Conveyors, Inc.: *See—*
Larson, Charles R.; and Dudley, Robert H., 3,679,051.
Praddaude, Pierre A., to Societe Anonyme Poclain. Method for regulating the lifting of an arm articulated on a structure and lifting apparatus for carrying out this method. 3,679,179, Cl. 254-93.00r.
Pratt, Jeofry Stuart Courtney, to Bell Telephone Laboratories, Incorporated. Method and medium for producing color images. 3,679,818, Cl. 178-5.4cd.
Presman, Vladimir Alexandrovich: *See—*
Rubinshtein, Sholom Yakovlevich; Babin, Mikhail Artemievich; Gutman, Anatoly Lvovich; Naumenko, Viktor Dmitrievich; Orlov, Evgeny Mikhailovich; Presman, Vladimir Alexandrovich; Maev, Veniamin Evnovich; and Bondarenko, Fedor Alexeevich, 3,678,664.
Prete, Ernest Jr., to Ancra Corporation. Cam buckle. 3,678,542, Cl. 24-191.000.
Preusser, Gerhard; Schulze, Martin; and Richter, Klaus, to Heinrich Koppers Gesellschaft mit beschrankter. Process for recovering highly pure aromatic substances from hydrocarbon mixtures containing both aromatic and non-aromatic substances. 3,679,579, Cl. 208-323.000.
Prevot Stephane: *See—*
Westcott, Vernon C.; Blanchard, Byron E.; Davis, Paul A.; and Prevot Stephane, 3,678,742.
Price, Warren H.: *See—*
Enters, Edward W.; Price, Warren H.; Davies, John W., III; and Hochwitz, Lynn E., 3,678,770.
Primachuk, Edward R.: *See—*
Shohet, Herbert N.; Magri, Joseph L.; and Primachuk, Edward R., 3,678,690.
Prime, Derek Arthur, to Banford, J. C., Excavators Limited. Tooth mounting means for earth working implements. 3,678,605, Cl. 37-141.00t.
Primessing, Franz: *See—*
Wienand, Michael; Jensen, Klaus; Primessing, Franz; and Alfter, Franz-Werner, 3,679,531.
Pringle, William L., to Pullman Incorporated. Articulated railway car. 3,678,863, Cl. 105-4.00r.
Prioretti, Guy Pierre: *See—*
Francois, Xavier; Venet, Roland Jean; and Prioretti, Guy Pierre, 3,678,845.
Prochazka, Miloslav; Seidl, Karel; and Cesenek, Bedrich, to Elitex, Zavody textilniho strojirenstvi. Device for the mass spinning-in of spinning units in spindleless spinning machines. 3,678,673, Cl. 57-58.950.
Procter & Gamble Company, The: *See—*
Aubert, Harry Julius; and Gemperle, Edward Carroll, 3,679,608.
Fanta, Wayne I., 3,679,667.
Kovacs, William L., 3,679,374.
Kretschmar, Herbert C.; and Erman, William F., 3,679,756.
Mezey, Eugene J., 3,679,560.
Proell, Wayne A., to American Hydrocarbon Company. Fuel cell and method of operating said cell. 3,679,486, Cl. 136-86.00e.
Provinsky, Jerry: *See—*
Chow, Weichien; and Provinsky, Jerry, 3,680,034.
Prusinski, Richard C.; Fermani, Marcello; Torcolacci, Attilio; and Fermani, Luigi, to Architectural Research Corporation. Panel construction. 3,679,529, Cl. 161-44.000.
Pryor, Edward, Developments Limited: *See—*
Godbehere, Albert Edward, 3,679,558.
Pullman Incorporated: *See—*
Brinks, Floyd J.; Day, Lucian P., Jr.; and Jones, Jerry L., 3,678,867.
Gutridge, Jack E., 3,678,864.
Peterson, William H., 3,679,068.
Pringle, William L., 3,678,863.
Shaver, William R.; and Knippel, Willis H., 3,679,069.
Puopolo, Vito. Music slide rule. 3,678,796, Cl. 84-471.000.
Purdue Research Foundation: *See—*
Nelson, Philip E., 3,678,955.
Pusch, Dietrich, to Continental Gummi-Werke Aktiengesellschaft. Elastic bearing for motor suspension of motor vehicles. 3,679,158, Cl. 248-10.000.
Putch, Samuel W., to FMC Corporation. Seat mechanism for through bore well heads. 3,679,238, Cl. 285-144.000.
Pylaikin, Petr Alexeevich: *See—*
Efimov, Leonid Alexandrovich; Shtin, Lev Mikhailovich; Sinitsky, Vladimir Mikhailovich; Khirdzheiv, Sergei Grigorievich; Pylaikin, Petr Alexeevich; Satovskaya, Ljudmila Sergeevna; Grebnev, Nikolai Feodosovich; Rasseikin, Mikhail Grigorievich; Kalugin, Konstantin Yakovlevich; Somov, Boris Stepanovich; and Baranchikov, Vladimir Mikhailovich, 3,678,728.
Quaal, John A.: *See—*
Becker, Albert H.; Hart, Joseph M.; and Quaal, John A., 3,680,016.
Quack, Wilbert, to Halophane Company, Inc. Lighting fixture adapted to be mounted on a pole. 3,679,891, Cl. 240-52.000.
Quiles, Francisco K., to Phillips Petroleum Company. Dual-drum dryer. 3,678,598, Cl. 34-128.000.
Quine, John P., to General Electric Company. Microstrip microwave oscillators. 3,680,002, Cl. 331-96.000.
Racz, William B.: *See—*
Stapfer, Christian H.; and Racz, William B., 3,679,619.
Rademacher, Paul; and Hulland, Burton L., to Dynell Electronics Corporation. Method and apparatus for signal detection. 3,680,116, Cl. 343-105.000.
Ragsdale, Harold E., to Bechtel International Corporation. Method and apparatus for pumping slugs of coal slurry without passing slurry through the pumping station. 3,678,950, Cl. 137-1.000.
Rahn, Horst, to Kienzle Apparate GmbH. Housing arrangement for an apparatus transforming rotary speed into electric signals. 3,679,922, Cl. 310-89.000.
Ralston Purina Company: *See—*
Mohrman, Robert K.; Kifer, Paul E.; and Obosrh, Edward V., 3,679,429.
Ramanathan, Visvanathan: *See—*
Desai, Nalin Binduprasad; Jayaraman, Ponnusami; Ramanathan, Visvanathan; Artz, Klaus; Naik, Navnitrai Nagarji; and Jenny, Walter, 3,679,657.
Rambacher, Paul; and Make, Siegfried. L-and DL-2-guanidino-1,3-thiazoline carboxylic acid-4 and method of making same. 3,679,694, Cl. 260-299.000.
Ramsey Controls, Inc.: *See—*
Hamilton, David C., 3,679,961.
Randall, Davis I.; and Wynn, Robert W., to GAF Corporation. N-Substituted-P-(2-chloroethyl)-phosphonamidates. 3,679,780, Cl. 260-959.000.
Rangger, Herbert: *See—*
Maier, Elmar; and Rangger, Herbert, 3,679,118.
Rankin, John C. Loudspeaker enclosure. 3,679,023, Cl. 181-31.00a.
Rao, Vemulapalli D.; Telang, Yeshwant P.; and White, Jerry E., to Ford Motor Company. Bearing member for high temperature applications. 3,679,459, Cl. 117-69.000.
Raquin, Roger: *See—*
Largeron, Louis; and Raquin, Roger, 3,678,548.
Rasmusson, Gary H.: *See—*
Arth, Glen E.; and Rasmusson, Gary H., 3,679,717.
Rasseikin, Mikhail Grigorievich: *See—*
Efimov, Leonid Alexandrovich; Shtin, Lev Mikhailovich; Sinitsky, Vladimir Mikhailovich; Khirdzheiv, Sergei Grigorievich; Pylaikin, Petr Alexeevich; Satovskaya, Ljudmila Sergeevna; Grebnev, Nikolai Feodosovich; Rasseikin, Mikhail Grigorievich; Kalugin, Konstantin Yakovlevich; Somov, Boris Stepanovich; and Baranchikov, Vladimir Mikhailovich, 3,678,728.
Ratcliffe, Temple W., to Babcock & Wilcox Company, The. Nozzle arrangement for molten metal container vessel. 3,679,105, Cl. 222-567.000.
Ratouis, Roger; and Boissier, Jacques Robert, to Roussel-UCLAF. Methods of preventing convulsions. 3,679,802, Cl. 424-285.000.
Rauffer, Walter, to AGFA-Gevaert A.G. Double sheet detecting and locking arrangement. 3,679,202, Cl. 271-57.000.
Rawson, Edward B.; and Dowling, John B., to Searle Medidata Inc. Medical test data entry terminal. 3,679,875, Cl. 235-61.70r.
Ray, Donald A.; and Arnold, Richard E., to Eastman Kodak Company. Washout-preservative for lithographic printing plates. 3,679,479, Cl. 134-40.000.

Ray, Royce W.: *See—*
Rohrbach, Royal E.; and Ray, Royce W., 3,678,773.
Raychem Corporation: *See—*
Deal, Robert S.; and Evans, Joseph H., 3,679,189.
Raytheon Company: *See—*
Goldstone, Bertram J., 3,680,105.
Goldstone, Bertram J., 3,680,110.
Steudel, Fritz, 3,680,109.
Tsao, Carson K. H.; De Bettencourt, Joseph T.; and Rowland, Howard J., 3,680,133.
RCA Corporation: *See—*
Avins, Jack; and Kirkwood, Loren Robert, 3,679,816.
Boltz, Charles D., Jr., 3,679,827.
Collard, Jacques Roger, 3,678,995.
Daly, Francis Patrick, 3,679,942.
Hanchett, George D., 3,680,068.
Kaufman, Melvin Murray, 3,679,911.
Keneman, Scott Allen; and Miller, Arthur, 3,680,060.
Limberg, Allen Le Roy, 3,679,981.
Limberg, Allen Le Roy, 3,679,982.
Okamoto, Fumio; Wada, Yasuo; and Miyatani, Kazuo, 3,679,379.
Olsen, Perry Charles; and Tang, Pak Chong, 3,679,819.
Thall, Earle Solomon, 3,679,284.
Thibodeau, Gregg Joseph, 3,679,989.
Reade, Grahame Melvin, to Imperial Chemical Industries Limited. Process for shrinking film. 3,679,791, Cl. 264-342.0re.
Reams, Robert M. Horticultural method for giving seeds, plants and harvested items hygroscopic character during arid conditions. 3,678,621, Cl. 47-58.000.
Rebechini, Eugene J.: *See—*
Roser, Gerhard K.; Rebechini, Eugene J.; and Vosburg, Guy M., 3,678,848.
Recherche et Industrie Therapeutiques, R.I.T.: *See—*
De Somer, Pierre; and Claes, Paul, 3,679,795.
Reddy, Robert R. Releasable shaft lock. 3,679,244, Cl. 287-20.00r.
Redemat S.A.: *See—*
Jesnitzer, Friedrich Erdmann; and Rehfeldt, Dietrich, 3,679,865.
Redlich, Robert W. Colinear antenna apparatus. 3,680,147, Cl. 343-792.000.
Redmond, William G., to LTV Electrosystems, Inc. Multiple servomotors actuator. 3,679,956, Cl. 318-564.000.
Redmond, William G., Jr., to LTV Electrosystems, Inc. Fly-by-wire. 3,679,156, Cl. 244-77.00r.
Reeves, Harold C., to Portage Machine Company, mesne. Quick change tool holder. 3,679,220, Cl. 279-1.00b.
Regents, New Mexico Institute of Mining and Technology: *See—*
O'Connor, Lawrence T.; Brierley, James A.; and Bhappu, Roshan B., 3,679,397.
Rehfeldt, Dietrich: *See—*
Jesnitzer, Friedrich Erdmann; and Rehfeldt, Dietrich, 3,679,865.
Reiback, Earl M. Variable light projection apparatus. 3,679,888, Cl. 240-10.100.
Reich, Ismar M., to Chock Full-O-Nuts Corporation. Agglomeration of powdered coffee. 3,679,416, Cl. 99-71.000.
Reichhold Chemicals, Inc.: *See—*
Chang, Yun Ger, 3,679,708.
Forster, Wolfgang C., 3,679,710.
Reid, Edwin Durham, to Union Carbide Corporation. Composite wear resistant material and method of making same. 3,679,460, Cl. 117-93.1pf.
Reid, Norman C., to Pako Corporation. Method and apparatus for processing photographic prints. 3,678,842, Cl. 95-94.00r.
Reifschneider, Walter, to Dow Chemical Company, The. Carbamic acid esters. 3,679,735, Cl. 260-479.00c.
Remington Arms Company, Inc.: *See—*
Olson, Theodore A.; and Scanlon, John J., 3,679,781.
Renard, Guy: *See—*
Barbier, Jean-France Leon Paul; and Renard, Guy, 3,679,424.
Renaut, Henry. Apparatus for pressing and heating textile articles. 3,678,606, Cl. 38-22.000.
Rendel, Inc.: *See—*
Reynoir, Diane Greenslit; and Delesdernier, Penelope Brodtmann, 3,678,945.
Renz, Werner: *See—*
Schuierer, Erich; Renz, Werner; and Sommer, Hans, 3,679,634.
Repko, Louis L.; and Ronzi, Richard C., to Ford Motor Company. Damped valve train system. 3,678,906, Cl. 123-90.470.
Reth, Johannes A.; and Fettweis, Winifried H., to Demag Elektrometallurgie GmbH. Electric reduction furnace. 3,679,806, Cl. 13-9.000.
Reti, Adrian R.: *See—*
Nellis, Stewart; Kopf, Joseph Ellis; and Reti, Adrian R., 3,680,037.
Rettemeier, Wulf: *See—*
Hohn, Gerhard; Lingnau, Josef; and Rettemeier, Wulf, 3,679,131.
Reusser, Raymond E.: *See—*
Czeck, Joseph J.; Glen Lyon; and Reusser, Raymond E., 3,679,370.
Rex Chainbelt Inc.: *See—*
Hudis, Michael I., 3,678,816.
Reynoir, Diane Greenslit; and Delesdernier, Penelope Brodtmann, to Rendel, Inc. Device for holding modern attractive hairdos. 3,678,945, Cl. 132-46.00r.
Reynolds, Arthur T., Jr., to Westinghouse Electric Corporation. Common antenna aperture having polarization diversity. 3,680,139, Cl. 343-756.000.
Rhoades, John M., to General Electric Company. Control system for compensating for dimensional errors due to cutting tool wear in an automatic machine tool. 3,679,955, Cl. 318-572.000.
Rhodes, Philip L.; and Brown, Roger S., to United States of America, Agriculture. Card cover with fiber conveying air-flow channel. 3,678,537, Cl. 19-98.000.
Rhone-Poulenc S.A.: *See—*
Bargain, Michel; Gruffaz, Max; Laurent, Serge; and Mallet, Maurice, 3,679,639.
Rice Barton Corporation: *See—*
Bassett, Kirk W.; and Ford, Frank P., 3,679,524.
Rice, Harold D. Line transfer apparatus. 3,679,151, Cl. 242-85.000.
Rich, Joseph A., to General Electric Company. Periodic electrode structure for vacuum gap devices. 3,679,474, Cl. 313-217.000.
Richard, David J., to United States of America, Air Force. Tunable omidirectional antenna. 3,680,127, Cl. 343-108.000.
Richards, Philip C., to Bell Telephone Laboratories, Incorporated. Numerical conversion. 3,680,081, Cl. 340-347.0dd.
Richardson, Stephen M.; and Grenda, Edward P. Combination card hold down and audible indicator-keytape. 3,678,880, Cl. 116-67.000.
Richmond, Albert R., to Richmond Manufacturing Company, The. Power train for horizontal earth boring machine. 3,679,006, Cl. 173-152.000.
Richmond Manufacturing Company, The: *See—*
Richmond, Albert R., 3,679,006.
Richter, Klaus: *See—*
Preusser, Gerhard; Schulze, Martin; and Richter, Klaus, 3,679,579.
Ricoh Co., Ltd.: *See—*
Kaneko, Hirokazu, 3,678,829.
Riedhammer, Josepf; and Glaser, Fritz-Jorg, to Bruninghans Hydraulik GmbH. Hydraulically regulated drive. 3,679,327, Cl. 417-222.000.
Riegel Paper Corporation: *See—*
Conley, Kenneth E.; and Ellison, Thomas M., 3,679,510.
Ries, Gotfried. Device for automatically cleaning vehicles. 3,678,527, Cl. 15-99.000.
Riley, Raymond A., to Dunlop Company Limited, The. Machine tools. 3,678,790, Cl. 82-38.000.
Ripper, Jose Ellis: *See—*
Paoli, Thomas Lee; and Ripper, Jose Ellis, 3,680,001.
Ritchie, Colin Foster: *See—*
Edgar, Owen Burchell; Hughes, William; Lawrance, Derek Robert; Lederer, Gerald; and Ritchie, Colin Foster, 3,679,624.
Rittmann, Albert D.: *See—*
Buck, Robert E.; Metzger, Robert W., Jr.; Rittmann, Albert D.; and Sayers, Eugene H., 3,679,946.
Rivers, Hubert M., to Calgon Corporation. Controlling the cooking process in pulp digestion by differential conductivity measurements. 3,679,543, Cl. 162-49.000.
RMI Company, mesne: *See—*
Bomberger, Howard B., Jr.; and Seagle, Stanley R., 3,679,403.
Robbins, Carl L., to Mead Johnson and Company. Dispensing and recording container. 3,678,884, Cl. 116-121.000.
Roberts, John A.; and King, Alwyn H., to Brunswick Corporation. Method of producing high resolution images and structure for use therein. 3,678,564, Cl. 29-419.000.
Roberts, Richard A.; and Jones, John R., to United States of America, Navy. Aircrew recovery system. 3,679,157, Cl. 244-141.000.
Roberts, William E.; and Barry, Gerald J., to United States of America, Navy. Tape recorder. 3,679,215, Cl. 274-4.00d.
Robertshaw Controls Company: *See—*
Gunter, James C., 3,679,097.
Scott, Douglas R., 3,679,330.
Robertson, Orville H.: *See—*
Bailey, Robert C.; Estes, Harry A.; James, Glen S.; Klug, James R.; Montillon, Henry A.; Myring, Verne E.; Robertson, Orville H.; Sargeant, Blaine W.; and Sorensen, Neal E., 3,679,200.
Robertson Photo-Mechanix, Inc.: *See—*
Nothmann, Gerhard A., 3,679,308.
Rock, Thomas. Utility cart. 3,679,227, Cl. 280-47.240.
Rockwell Manufacturing Company: *See—*
Hedges, Robert H., 3,678,948.
Herd, David P., 3,678,996.
Roe, Leslie A. Suspension system for vehicles. 3,679,017, Cl. 180-73.0tl.
Rogers, Clarence H.: *See—*
Baker, Calvin Lee; and Rogers, Clarence H., 3,679,233.
Rogers, Edward S.: *See—*
Sanford, Robert A.; Mooi, John; and Rogers, Edward S., 3,679,605.
Rogers, Howard G.: *See—*
Buckler, Sheldon A.; Milligan, Terry W.; and Rogers, Howard G., 3,679,409.
Rogers, Leo C.; Nikirk, Roger G.; and Heitz, Alfred J., to Motorola, Inc. Method for producing high purity monocrystalline silicon. 3,679,470, Cl. 117-200.000.
Rogers, Raymond E.: *See—*
Franklin, Denis; Gingold, Jerald S.; Oxenham, Ronald B.; and Rogers, Raymond E., 3,680,084.
Rogler, Walter: *See—*
Termin, Erich; Rogler, Walter; Joch, Wilhelm; and Honigschmid-Grossich, Rudiger, 3,679,724.

Rohner, Dieter; and Duhring, Wolfgang, to Akzona Incorporated. Method and apparatus for measuring yarn tension. 3,679,808, Cl. 73-144.000.

Rohr Corporation: *See—*
Carrillo, Gilberto, 3,679,591.
Hilbig, Jack H., 3,678,534.
Weidel, Joseph C., 3,679,508.

Rohrbach, Royal E.; and Ray, Royce W., to Fitness Industries, Inc. Variable speed drive. 3,678,773, Cl. 74-230.17a.

Rohrberg, Roderick G.; and Harvey, Don E. Adjustable throw eccentric. 3,678,781, Cl. 74-571.00m.

Roland, George W.: *See—*
Hopkins, Richard H.; Roland, George W.; Steinbruegge, Kenneth B.; and Partlow, William D., 3,679,597.

Rolf, Denss: *See—*
Kuhnis, Hans Herbert; and Rolf, Denss, 3,679,799.

Rombaux, Jean-Pierre M.: *See—*
Van Impe, Jean; Chaussonnet, Pierre E.; and Rombaux, Jean-Pierre M., 3,679,378.

Ronzi, Richard C.: *See—*
Repko, Louis L.; and Ronzi, Richard C., 3,678,906.

Roper Corporation: *See—*
Betzer, Cloyd L., 3,679,467.

Roper, Hans-Joachim: *See—*
Eckert, Klaus-Dieter; and Roper, Hans-Joachim, 3,680,117.

Ropp, Richard C., to Westinghouse Electric Corporation. Process for coating lehring-sensitive phosphor onto lamp envelope. 3,679,452, Cl. 117-33.500.

Rosch, Gunter: *See—*
Horn, Anton; Schinzel, Erich; and Rosch, Gunter, 3,679,668.

Rose, Ronald N. Electrostatic precipitator cell for desk or tabletop air purifier. 3,678,655, Cl. 55-128.000.

Rosen, Harold A.: *See—*
Ajioka, James S.; and Rosen, Harold A., 3,680,143.

Rosenberg, Karl M., to Flo-Tech Corporation, mesne. Coating apparatus, 3,678,891, Cl. 118-402.000.

Rosenberg, Karl M., to Flo-Tech Corporation. Method of making decorative articles from plastisol. 3,679,784, Cl. 264-73.000.

Rosenberg, Robert, to Bell Telephone Laboratories, Incorporated. Dispersive element for optical pulse compression. 3,679,313, Cl. 356-112.000.

Roser, Gerhard K.; Rebechini, Eugene J.; and Vosburg, Guy M., to Weber Marking Systems, Inc. Inking pad and use thereof. 3,678,848, Cl. 101-125.000.

Ross, Joseph A.: *See—*
Pear, Charles B., Jr.; and Ross, Joseph A., 3,678,847.

Ross, Stephen T.; and Zirkle, Charles L., to Smith Kline & French Laboratories. N-pyridylalkyl-β-alkoxy-β-trifluoromethyl-phenalkylamines. 3,679,693, Cl. 260-296.0ae.

Ross-Clunis, Robert Alan. Self-steering arrangement. 3,678,878, Cl. 114-144.00r.

Roth, David W. H., Jr.: *See—*
Balint, Laszlo J.; Roth, David W. H., Jr.; and Snider, Orvill E., 3,679,368.

Roth, Howard: *See—*
Schiffmann, Robert F.; Roth, Howard; Lipka, David H.; and Goodman, Abraham H., 3,679,432.

Roth, Lawrence O.: *See—*
Vehe, Dennis A.; Porterfield, Jay G.; and Roth, Lawrence O., 3,679,132.

Rothwell, Ronald E.; and Beringer, Charles W., to Allied Chemical Corporation. Heat setting trapped pre-inserted twist. 3,678,676, Cl. 57-157.0ts.

Roussel-UCLAF: *See—*
Bertin, Daniel; and Perronnet, Jacques, 3,679,393.

Roussel-UCLAF: *See—*
Bucourt, Robert; Nedelec, Lucien; and Gasc, Jean-Claude, 3,679,718.

Roussel-UCLAF: *See—*
Ratouis, Roger; and Boissier, Jacques Robert, 3,679,802.

Roussel-UCLAF: *See—*
Warnant, Julien; and Farcilli, Andre, 3,679,714.

Rowland, Howard J.: *See—*
Tsao, Carson K. H.; De Bettencourt, Joseph T.; and Rowland, Howard J., 3,680,133.

Royal Packaging Equipment, Inc.: *See—*
Skiba, Alexander, Jr., 3,679,070.

Royer, Clady J. Elastomeric spring bumper. 3,679,196, Cl. 267-140.000.

Rubin, Bernard; and Childress, James D., to United States of America, National Aeronautics and Space Administration. Process for the preparation of brushite crystals. 3,679,360, Cl. 23-109.000.

Rubin, Marion Sturm. Pre-wrapped box. 3,679,120, Cl. 229-23.0bt.

Rubinshtein, Sholom Yakovlevich; Babin, Mikhail Artemievich; Gutman, Anatoly Lvovich; Naumenko, Viktor Dmitrievich; Orlov, Evgeny Mikhailovich; Presman, Vladimir Alexandrovich; Maev, Veniamin Evnovich; and Bondarenko, Fedor Alexeevich. Inertia-type air cleaner. 3,678,664, Cl. 55-449.000.

Ruggen, Werner: *See—*
Ernst, Lothar; and Ruggen, Werner, 3,678,708.

Rummel, Samuel L., to Garrett Corporation, The. Inflatable slide and raft apparatus. 3,679,025, Cl. 182-20.000.

Rusco Industries, Incorporated: *See—*
Hicks, Glen Elton, 3,678,651.

Rush, C. J., Limited: *See—*
Jenkins, Keith T., 3,678,623.

Russell, Stanley L.: *See—*
Gueldenpfennig, Klaus; Pommerening, Uwe A.; and Russell, Stanley L., 3,679,835.

Ruth, Arthur P. Timed animal feeder. 3,678,902, Cl. 119-51.110.

Rutherford, Kenneth R.; and Strebe, Arthur C., to Collins Radio Company. Pulse train framing and intermediate pulse spacing accuracy test circuit. 3,680,091, Cl. 343-6.500r.

Ruti Machinery Works, Ltd.: *See—*
Strauss, Edgar H., 3,678,966.

Rutt, Truman C., to NL Industries, Inc. Ceramic capacitors. 3,679,950, Cl. 317-258.000.

Ryan, Richard P., Jr.: *See—*
Wu, Yao Hua; and Ryan, Richard P., Jr., 3,679,702.

Rygg, Sven: *See—*
Sorell, Henry P.; Pomazak, Eugene; and Rygg, Sven, 3,679,458.

Safrit, Sam C., to Hanes Corporation. Combination garments and method of making same. 3,678,514, Cl. 2-212.000.

Saito, Toshiaki; and Oki, Toshihiko, to Kabushiki Kaisha Suwa Seikosha. Mechanically switched electric timepiece. 3,678,681, Cl. 58-28.00a.

Sakai, Koichi. Portable baby carriage. 3,679,223, Cl. 280-37.000.

Sakamoto, Hiroshi: *See—*
Yoshimura, Ippei; Fukue, Norihiko; Sakamoto, Hiroshi; Murofushi, Hisashi; Hiyama, Takami; and Matsunaga, Takao, 3,679,707.

Salcedo, Guido; and Graves, Jimmy J.; deceased (by Graves, Marlene D.; heir), to Echo Science Corporation, mesne. Video tape scanner with adjustably mounted transducers providing chordal adjustment. 3,679,838, Cl. 179-100.2ca.

Salners, Edward A.: *See—*
Hofmeister, Richard J.; and Salners, Edward A., 3,679,829.

Samoel, Alain: *See—*
Boulanger, Gilbert; and Samoel, Alain, 3,678,735.

Sams, Robert H.; Linton, Robert W.; and Horikawa, Noboru R., to Philadelphia Quartz Company. Tinted granules. 3,679,610, Cl. 252-529.000.

Sanchez, Edward J.: *See—*
Braun, Richard E.; Hopkins, Lionel G.; Sheehan, Neil J.; and Sanchez, Edward J., 3,678,576.

Sanders, Duane V., to Systematic Multi-Level Parking Company. Apparatus for transferring a vehicle to and from an elevator. 3,679,083, Cl. 214-730.000.

Sanders, Lon L., to International Telephone and Telegraph Corporation. Aircraft electronic landing responser system using airborne chirp interrogation. 3,680,089, Cl. 343-6.50r.

Sandler, Stanley Robert, to Borden Inc. Preparation of N-vinyl carbazole. 3,679,700, Cl. 260-315.000.

Sandor, Bela: *See—*
Brocbman, Henry J.; and Sandor, Bela, 3,679,251.

Sandoz Ltd.: *See—*
Buecheler, Paul; and Mueller, Fred, 3,679,685.
von Tobel, Hans, 3,679,675.

Sandoz Ltd., (a.k.a. Sandoz AG): *See—*
Oppolzer, Wolfgang, 3,679,699.

Sanford, Robert A.; Mooi, John; and Rogers, Edward S., to Sinclair Research, Inc. Extruded alumina catalyst support and the preparation thereof. 3,679,605, Cl. 252-463.000.

Sanmarco, Miguel E.: *See—*
Philips, Charles M.; and Sanmarco, Miguel E., 3,678,922.

Sargeant, Blaine W.: *See—*
Bailey, Robert C.; Estes, Harry A.; James, Glen S.; Klug, James R.; Montillon, Henry A.; Myring, Verne E.; Robertson, Orville H.; Sargeant, Blaine W.; and Sorensen, Neal E., 3,679,200.

Sargent Industries, Inc.: *See—*
Patterson, Donald S., 3,678,776.

Sarkes Tarzian, Inc.: *See—*
Krepps, James Edgar, Jr.; Chamberlain, Meredith K.; and Fisher, Robert D., 3,679,979.

Sarkozi, Lewis P.: *See—*
Muellner, Frank E.; and Sarkozi, Lewis P., 3,679,546.

Sato, Akira: *See—*
Shiba, Keisuke; Tsubota, Motohiko; Sato, Akira; Ikeda, Tadashi; and Ogawa, Akira, 3,679,428.

Sato, Masatoshi: *See—*
Hirokawa, Yoichi; and Sato, Masatoshi, 3,679,960.

Sato, Shigehiko: *See—*
Yokoyama, Fujihiko; Yoneyama, Tohru; and Sato, Shigehiko, 3,679,438.

Sato, Takayoshi, to Kabushikikaisha Copal. Electronic shutter for through-the-lens camera having interchangeable lenses of differing aperture. 3,678,823, Cl. 95-10.0ct.

Satovskaya, Ljudmila Sergeevna: *See—*
Efimov, Leonid Alexandrovich; Shtin, Lev Mikhailovich; Sinitsky, Vladimir Mikhailovich; Khirdzheiv, Sergei Grigorievich; Pylaikin, Petr Alexeevich; Satovskaya, Ljudmila Sergeevna; Grebnev, Nikolai Feodosovich; Rasseikin, Mikhail Grigorievich; Kalugin, Konstantin Yakovlevich; Somov, Boris Stepanovich; and Baranchikov, Vladimir Mikhailovich, 3,678,728.

Satterwhite, Lawrence E.; Williamson, Alton M.; and Shindler, George R., to FMC Corporation. Check valve. 3,678,958, Cl. 137-512.100.

Sauvagnac, Robert: *See—*

Cohen, Michel; Lavigne, Pierre; and Sauvagnac, Robert, 3,678,920.

Sawato, Iwao: *See—*
Makino, Katsuo; and Sawato, Iwao, 3,679,405.

Sayers, Eugene H.: *See—*
Buck, Robert E.; Metzger, Robert W., Jr.; Rittmann, Albert D.; and Sayers, Eugene H., 3,679,946.

Scanlon, John J.: *See—*
Olson, Theodore A.; and Scanlon, John J., 3,679,781.

Scarnato, Thomas J.; Dryan, James J.; Lawler, Craig M.; and Sorensen, Robert, to International Harvester Company. Flail shredder. 3,678,671, Cl. 56-505.000.

Schaap, Luke A.; and Den Herder, Marvin J., to Standard Oil Company (Indiana). Hydraulic fluids. 3,679,588, Cl. 252-75.000.

Schafer, Volker: *See—*
Friedl, Wolfgang; and Schafer, Volker, 3,679,997.

Schaffer, Richard H.: *See—*
Selley, Wilbur-Webb; and Schaffer, Richard H., 3,679,885.

Schembs, Wolfgang, to Siemens Aktiengesellschaft. Method of producing electronic planar-type devices applicable for high frequency germanium planar transistors. 3,679,495, Cl. 148-179.000.

Schiffmann, Robert F.; Roth, Howard; Lipka, David H.; and Goodman, Abraham H., to DCA Food Industries Inc. Method of producing cooked products. 3,679,432, Cl. 99-86.000.

Schile, Richard D.: *See—*
Basche, Malcolm; Fanti, Roy; Galasso, Francis S.; Kuntz, Urban E.; and Schile, Richard D., 3,679,475.

Schilling, Eugene D.: *See—*
Yueh, Mao Hsun; and Schilling, Eugene D., 3,679,658.

Schillinger, Joseph F., to Weyerhaeuser Company. Container with opening feature. 3,679,124, Cl. 229-51.0ts.

Schinke, Georg: *See—*
Hack, Peter; Hass, Karl; and Schinke, Georg, 3,679,383.

Schinzel, Erich: *See—*
Horn, Anton; Schinzel, Erich; and Rosch, Gunter, 3,679,668.

Schlumberger Technology Corporation: *See—*
Bonnet, Jean-Loup, 3,678,760.
Brunn, Theodore F., 3,680,042.
Owens, Nevyl G., 3,679,812.

Schmenzfeier, Otto K, to Shell Oil Company. Hydraulic sonic oscillator. 3,678,803, Cl. 91-39.000.

Schmerling, Louis, to Universal Oil Products Company. Preparation of primary alkyl halides. 3,679,759, Cl. 260-663.000.

Schmerling, Louis, to Universal Oil Products Company. Preparation of diarylalkanes. 3,679,760, Cl. 260-668.00c.

Schmid, Adolf; and Kuhni, Rudolf, to Martini-Buchbindereimaschinenfabrik AG. Book sheet testing apparatus. 3,678,740, Cl. 73-93.000.

Schmidt, Karl-Julius: *See—*
Hermann, Gunter; and Schmidt, Karl-Julius, 3,679,796.

Schmidt, Kranz & Co., GmbH: *See—*
Hoffmann, Ernst, 3,679,241.

Schmidt, Warren E., to Lord Corporation. Compressive load carrying bearings. 3,679,197, Cl. 267-152.000.

Schmitt, Bertrand: *See—*
Costa, Charles; Loupere, Andre; Monsel,Philippe; and Schmitt, Bertrand, 3,679,272.

Schmitt, Joseph R., to McDonald, A. Y., Mfg. Co. Compression coupling for plastic pipe. 3,679,239, Cl. 285-176.000.

Schmitt, Walti, to Passavant-Werke. Bearing and drive means for large size revolving drums. 3,679,035, Cl. 192-129.00a.

Schneeberger, Richard F., to Cornell Aeronautical Laboratory, Inc. Rotating cup particle sizing sampling apparatus. 3,678,759, Cl. 73-432.0ps.

Schnegelberger, Harald; and Altenschopfer, Theodor, to Henkel & Cie G.m.b.H. Low-foaming rinsing, washing and cleaning compositions. 3,679,589, Cl. 252-102.000.

Schneider, Abraham, to Sun Oil Company. Dihalogenation of branched alkanes. 3,679,758, Cl. 260-659.00r.

Schneider, Harald; and Wicha, Cornel, to Karl Mayer Textilmaschinenfabrik GmbH. Guide bar shogging mechanism for a warp knitting machine. 3,678,711, Cl. 66-86.000.

Schneider, Herbert Anton, to Bell Telephone Laboratories, Incorporated. Regenerative circuit comprising complementary transistor pairs. 3,679,914, Cl. 307-288.000.

Schneider, Jurg A.: *See—*
Culik, Rudolf; and Schneider, Jurg A., 3,679,798.

Schneider, Karl A.: *See—*
Hurst, George S.; Thennard, Norbert; and Schneider, Karl A., 3,679,902.

Schneider, Wolfgang: *See—*
Feinauer, Roland; Thier, Werner; and Schneider, Wolfgang, 3,679,468.

Schnell, Hermann: *See—*
Gilch, Heinrich; and Schnell, Hermann, 3,679,613.

Schneyour, Amir; and Avron, Mordhay. Process for the disrupting of biological material. 3,679,139, Cl. 241-2.000.

Schoenbrunn, Erwin Frederick, to American Cyanamid Company. Hydration of acrylonitrile. 3,679,745, Cl. 260-561.00n.

Schoffmann, Rudolf, to Vereinigte Osterreichische Eisen- und Stahlwerke Aktiengesellschaft. Method for the production of sheets. 3,678,571, Cl. 29-527.600.

Scholl, Hermann; Norbert, Stuttgart; Gansert, Willi; and Arnold, Herbert, to Bosch, Robert, G.m.b.H. Electrically controlled fuel injection arrangements. 3,678,904, Cl. 123-32.0ea.

Scholz, Donald T., to Scholz Homes, Inc. Method and apparatus for setting a prefabricated building section. 3,679,177, Cl. 254-89.00r.

Scholz Homes, Inc.: *See—*
Scholz, Donald T., 3,679,177.

Schomburg, Noel L., to Monsanto Company. Cleansing and soil preventive composition. 3,679,592, Cl. 252-153.000.

Schon, Franz: *See—*
von der Eltz, Hans-Ulrich; Birke, Walter; Kunze, Wolfgang; Taunus, Hofheim; and Schon, Franz, 3,679,349.

Schott, Herbert; and Herwig, Walter, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Process for the precipitation polymerization of α-methylstyrenes which may be substituted. 3,679,650, Cl. 260-93.50s.

Schouw, Arthur C. Primary collector and manifold. 3,678,659, Cl. 55-238.000.

Schroeder, Manfred Robert, to Bell Telephone Laboratories, Incorporated. Transform coding of image difference signals. 3,679,821, Cl. 178-6.000.

Schuck, James M.; and Wildi, Bernard S., to Monsanto Company. Hormonally-active reaction product of a polymer with a hormone. 3,679,653, Cl. 260-112.500.

Schuierer, Erich; Renz, Werner; and Sommer, Hans, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Polymers of fluorinated ethylene imines and their use for textile finish. 3,679,634, Cl. 260-77.50b.

Schulten, Reinhard; and Michel, Hartmut, to Bosch, Robert, G.m.b.H. Apparatus for etching semiconductor bodies. 3,679,517, Cl. 156-345.000.

Schulz, Gerhard; and Matthias, Guenther, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Production of esters of acetic acid. 3,679,739, Cl. 260-488.00f.

Schulze, Martin: *See—*
Preusser, Gerhard; Schulze, Martin; and Richter, Klaus, 3,679,579.

Schumacher, Walter C., to General Electric Company. Grounding device for mounting strap. 3,680,031, Cl. 339-14.00r.

Schutze, Rainer. Mounting for a plurality of plectrums. 3,678,793, Cl. 84-258.000.

Schuyler Development Corporation: *See—*
Castner, Charles S., 3,679,609.

Schwartz, Boris. Intermixing syringe. 3,678,930, Cl. 128-218.00m.

Schwartz, Stephan Lars: *See—*
Unger, Hans Peter Olof; Westberg, Johan E. H.; Berndtsson, Gunnar Ingemar; and Schwartz, Stephan Lars, 3,679,128.

Schwarz, Alfred V. Plastic sheets for concrete reinforcing mesh. 3,678,643, Cl. 52-686.000.

Scieszinski, James Leo: *See—*
Zcot, Robert Martin; and Scieszinski, James Leo, 3,679,307.

SCM Corporation: *See—*
Eppler, Richard Andrew, 3,679,464.
Gilchrist, Allan E., 3,679,565.

Scott, Douglas R., to Robertshaw Controls Company. Pneumatic control system and parts therefor or the like. 3,679,330, Cl. 417-306.000.

Scott, Gerald C., to Ford Motor Company. Ranging system using phase detection. 3,680,092, Cl. 343-7.00a.

Scott, Harley D., to Smith, Elwin G., & Company, Inc. Insulated wall panel. 3,678,642, Cl. 52-588.000.

Scott, Harry B.: *See—*
Tisdel, Lawrence C.; and Scott, Harry B., 3,679,371.

Scottish Agricultural Industries Limited: *See—*
Jack, James; Drake, John; Thompson, David Crompton; and Harris, Frederick John, 3,679,391.

Scovill Manufacturing Company: *See—*
Doutt, Kingsley A., 3,678,809.

Scribner, David L.: *See—*
Beny, Janos; Kingsbury, LC James; and Scribner, David L., 3,678,618.

Seagle, Stanley R.: *See—*
Bomberger, Howard B., Jr.; and Seagle, Stanley R., 3,679,403.

Searle, G. D., & Co.: *See—*
Kreider, Eunice M.; and Tweit, Robert C., 3,679,697.

Searle Medidata Inc.: *See—*
Rawson, Edward B.; and Dowling, John B., 3,679,875.

Searle, Simon M. St. L.; and Walker, Christopher H. C., to Smiths Industries Limited. Display systems. 3,679,297, Cl. 353-14.000.

Seckerson, Clifford A., to TRW Inc., mesne. Fastener. 3,678,797, Cl. 85-5.00r.

Segawa, Hiroyuki: *See—*
Matsubayashi, Kanji; and Segawa, Hiroyuki, 3,679,633.

Seidel, Alex; Moller, Tilo; and Weldle, Helmut, to Heckler & Roch GmbH, Firma. Self-loading pistol with cocking trigger. 3,678,800, Cl. 89-147.000.

Seidl, Karel: *See—*
Prochazka, Miloslav; Seidl, Karel; and Cesenek, Bedrich, 3,678,673.

Seikguchi, Masaaki; Yoshikawa, Kaoru; and Komatsu, Akira, to Takesago Perfumery Co., Ltd. Apparatus for transpiring perfume. 3,679,133, Cl. 239-34.000.

Seki, Koichi: *See—*

Taniguchi, Tetsuji; Fukui, Kakichi; Imai, Shiro; Hayashi, Masahiro; and Seki, Koichi, 3,678,722.
Seki, Susumu; Noumi, Makoto; and Takaoka, Tadashi, to Hitachi, Ltd. System for generating speed pattern for speed control of moving body. 3,679,879, Cl. 235-150.310.
Sekido, Satoshi; and Arita, Tomohiko, to Matsushita Electric Industrial Co., Ltd. Electric quantity memory element. 3,679,945, Cl. 317-231.000.
Sekisu Kagaku Kogyo Kabushiki Kaisha: *See*—
Kiyono, Hiroshi; and Sugiyama, Kohei, 3,679,788.
Selig, Ernest T.: *See*—
Grangaard, Orrin H., Jr.; and Selig, Ernest T., 3,678,739.
Selig, Stanley A., Jr. Sailing conditions indicator for sailboats. 3,678,591, Cl. 33-222.00r.
Selley, Wilbur-Webb; and Schaffer, Richard H., to Vactronics, Inc. Movable light arrangement. 3,679,885, Cl. 240-2.0vc.
Semel, Bernard J. Practical joke smoke balls or like devices and method of making same. 3,678,855, Cl. 102-37.200.
Senft, Stephen P., to General Electric Company. Manufacture of interior coated bulbs for high temperature glass lamps. 3,679,385, Cl. 65-60.000.
Seragnoli, Ariosto, to G. D. Societa in Accomandita Semplice di Enzo Seragnoli e Ariosto Serganoli. Apparatus for feeding cigarette containers to the hopper loading mechanism of a cigarette packaging-conditioning machine. 3,679,079, Cl. 214-302.000.
Settimi, Raymond J. Restraint apparatus. 3,679,228, Cl. 280-150.0sb.
Sezzi, Franco: *See*—
Arrigoni, Virgilio; Sezzi, Franco; and Gaetani, Bruno, 3,678,732.
Shafer, Homer J. Method of making welded ball valve. 3,678,556, Cl. 29-157.10r.
Shafransky, Lev Moiseevich: *See*—
Garnish, Artur Maximovich; Shafransky, Lev Moiseevich; and Ischerikova, Galina Antonovna, 3,679,603.
Shah, Girish Chandulal; and Shroff, Mahesh Shantilal, to American Cyanamid Company. Method for making porous fibrous sheets containing polytetrafluoroethylene. 3,679,614, Cl. 260-2.50m.
Shah, Jagdeep Chandravadan: *See*—
Nguyen, Van-Tran; and Shah, Jagdeep Chandravadan, 3,679,994.
Shambaugh, Howard G. Golfing aid. 3,679,206, Cl. 273-32.00r.
Shanefield, Daniel J.: *See*—
Crosby, Gerald E.; and Shanefield, Daniel J., 3,679,472.
Shanfield, Henry: *See*—
Clark, Timothy M.; Shanfield, Henry; and Grunau, David L., 3,679,055.
Shavel, John, Jr.: *See*—
Morrison, Glenn C.; and Shavel, John, Jr., 3,679,691.
Shaver, William R.; and Knippel, Willis H., to Pullman Incorporated. Flexible boot type hydraulic cushioning unit with boot protector. 3,679,069, Cl. 213-43.000.
Shearer, Jack F., to Hubbell, Harvey, Incorporated, mesne. Disposable reflectors for lighting fixtures. 3,679,892, Cl. 240-103.000.
Sheehan, Neil J.: *See*—
Braun, Richard E.; Hopkins, Lionel G.; Sheehan, Neil J.; and Sanchez, Edward J., 3,678,576.
Shell Oil Company: *See*—
Brook, James H. T.; and Williams, Joyce, 3,679,585.
Grimm, Werner; Hasserodt, Ulrich; and Olschewski, Karl-Heinz, 3,679,086.
Schmenzfeier, Otto K, 3,678,803.
Smith, Noyes D., Jr., 3,680,041.
van der Meij, Pieter H.; and Buitelaar, Arnold A., 3,679,644.
Wagenaar, Adriaan H.; and van der Meij, Pieter H., 3,679,582.
Wantland, Charles F.; Juge, Frank E., Jr.; and Hinds, William H., 3,679,577.
Shemitz, Sylvan R.; and Stahlheber, Benjamin L., to Shemitz, Sylvan R., and Associates, Inc. Luminaire reflector comprising elliptical and parabolic segments. 3,679,893, Cl. 240-103.00r.
Shemitz, Sylvan R., and Associates, Inc.: *See*—
Shemitz, Sylvan R.; and Stahlheber, Benjamin L., 3,679,893.
Sherer, Thomas L.: *See*—
Flowers, Ralph G.; and Sherer, Thomas L., 3,679,632.
Sherrick, Ronald E.; and Singleton, John C., to Diamond Power Specialty Corporation. Self-aligning tensioner. 3,679,173, Cl. 254-29.00a.
Shiari, Yoshimichi; and Komori, Toshimi, to Nippon Denso Kabushiki Kaisha. Ignition coil for internal combustion engine. 3,680,017, Cl. 336-213.000.
Shiba, Keisuke; Tsubota, Motohiko; Sato, Akira; Ikeda, Tadashi; and Ogawa, Akira, to Fuji Photo Film Co., Ltd. Spectrally sensitized photographic emulsions. 3,679,428, Cl. 96-124.000.
Shibuya, Yoshikazu: *See*—
Nitta, Tohei; Shibuya, Yoshikazu; and Fujiwara, Yukio, 3,679,939.
Shimonishi, Isoo: *See*—
Yamaguchi, Hiroyuki; Tuji, Katsuyoshi; Maki, Kenji; and Shimonishi, Isoo, 3,679,355.
Shindler, George R.: *See*—
Satterwhite, Lawrence E.; Williamson, Alton M.; and Shindler, George R., 3,678,958.
Shinichi, Kondo: *See*—
Hamao, Umezawa; Shinichi, Kondo; Kenji, Maeda; Tomio, Takeuchi; and Masa, Hamada, 3,679,742.
Shinmon, Yasuhiro: *See*—
Himi, Hitoshi; Shinmon, Yasuhiro; and Teshima, Tokuro, 3,679,852.
Shinn, Jeffrey N., to General Electric Company. Device for indicating contamination of a fluid supply to a fluidic circuit. 3,678,881, Cl. 116-70.000.
Shinoda, Hirotaka: *See*—
Irikura, Tsutomu; Nishino, Keigo; Suzue, Seigo; Ushiyama, Keiichi; Shinoda, Hirotaka; and Hasegawa, Yoshinori, 3,679,730.
Shio, Megumu: *See*—
Takahashi, Kinji; and Shio, Megumu, 3,679,287.
Shionogi & Co., Ltd.: *See*—
Takamizawa, Akira; and Hirai, Kentaro, 3,679,677.
Shirley, Brian William; and Hutchinson, Philip, to G.K.N. Birfield Transmissions Limited. Universal joints. 3,678,706, Cl. 64-7.000.
Shohet, Herbert N.; Magri, Joseph L.; and Primachuk, Edward R., to United Aircraft Corporation. Convertible composite engine. 3,678,690, Cl. 60-226.000.
Shohet, Herbert N.; and Magri, Joseph L., to United Aircraft Corporation. Convertible composite engine control. 3,678,691, Cl. 60-239.000.
Short, Oliver Alton, to Du Pont de Nemours, E. I., and Company. Thermistor compositions and thermistors made therefrom. 3,679,606, Cl. 252-514.000.
Shriver, Joe E., to Sperry Rand Corporation. Control for a differentially steered vehicle. 3,679,015, Cl. 180-6.200.
Shroff, Arvin Pranlal, to Ortho Pharmaceutical Corporation. 3-Aza-A-homo-steroids. 3,679,664, Cl. 260-239.30p.
Shroff, Mahesh Shantilal: *See*—
Shah, Girish Chandulal; and Shroff, Mahesh Shantilal, 3,679,614.
Shtin, Lev Mikhailovich: *See*—
Efimov, Leonid Alexandrovich; Shtin, Lev Mikhailovich; Sinitsky, Vladimir Mikhailovich; Khirdzheiv, Sergei Grigorievich; Pylaikin, Petr Alexeevich; Satovskaya, Ljudmila Sergeevna; Grebnev, Nikolai Feodosovich; Rasseikin, Mikhail Grigorievich; Kalugin, Konstantin Yakovlevich; Somov, Boris Stepanovich; and Baranchikov, Vladimir Mikhailovich, 3,678,728.
Shur-Lok Corporation: *See*—
Charles, James F., 3,678,535.
Siddall, John B., to Zeocon Corporation. Acyl fluorides. 3,679,720, Cl. 260-408.000.
Siebers, Holger, to Landis & Zug AG. Controlled hysteresis integrated circuit switching circuit. 3,679,916, Cl. 307-290.000.
Siegler, Manny: *See*—
Hartman, William A., Jr.; and Siegler, Manny, 3,679,372.
Siegrist, Adolf Emil: *See*—
Maeder, Erwin; and Siegrist, Adolf Emil, 3,679,669.
Siemens Aktiengesellschaft: *See*—
Dollgast, Walter, 3,679,595.
Kohlmuller, Hans; and Kuhl, Dieter, 3,679,485.
Mollenbeck, Klaus, 3,679,974.
Muller, Alfred; and Fink, Arno, 3,679,401.
Picard, Karl-Heinz; and Beierer, Joachim, 3,679,909.
Schembs, Wolfgang, 3,679,495.
Wenzig, Wolfgang, 3,679,948.
Siemens-Schuckertwerke Aktiengesellschaft: *See*—
Oesterhelt, Gerhard; and De Bucs, Eugen Szabo, 3,678,986.
Signode Corporation: *See*—
Frey, Robert J., 3,679,519.
Silverman, Daniel; and Treitel, Sven, to Amoco Production Company. Method and apparatus for the analysis of seismic records. 3,680,040, Cl. 340-15.50r.
Simmonds, Leonard B.; and Botts, John C., to Westinghouse Electric Corporation. Dynamoelectric machine with improved side fillers for coil retention. 3,679,926, Cl. 310-214.000.
Simms, James B. Detachable bottle handle. 3,679,253, Cl. 294-31.200.
Simon, Henry, Limited: *See*—
Moss, John Arthur, 3,679,117.
Simonelli, Chris P., to Ford Motor Company. Seat back latch. 3,679,259, Cl. 297-379.000.
Sinclair Research, Inc.: *See*—
Sanford, Robert A.; Mooi, John; and Rogers, Edward S., 3,679,605.
Singer Company, The: *See*—
Barchard, Francis M., 3,678,997.
England, George G., 3,679,868.
Hunt, John M.; and Dannatt, Hugh St. L., 3,679,038.
Killinger, Karl H.; and Ketterer, Stanley J., 3,678,871.
Papirnyik, Andrew G., 3,679,047.
Singer Company, The, mesne: *See*—
Carver, Fred F., 3,679,880.
Faith, Ruth L.; and Grobman, William, 3,679,876.
Kittredge, Raymond Edson, 3,679,147.
McKnight, Robert A., 3,678,601.
Singh, Shobha: *See*—
Bonner, William Adam; Singh, Shobha; and Van Uitert, Le Grand Gerard, 3,679,907.
Singleton, John C.: *See*—
Sherrick, Ronald E.; and Singleton, John C., 3,679,173.
Singleton, Richard L., to Loopco. Combined crocheting and looping needle. 3,678,712, Cl. 66-118.000.
Sinitsky, Vladimir Mikhailovich: *See*—

Efimov, Leonid Alexandrovich; Shtin, Lev Mikhailovich; Sinitsky, Vladimir Mikhailovich; Khirdzheiv, Sergei Grigorievich; Pylaikin, Petr Alexeevich; Satovskaya, Ljudmila Sergeevna; Grebnev, Nikolai Feodosovich; Rasseikin, Mikhail Grigorievich; Kalugin, Konstantin Yakovlevich; Somov, Boris Stepanovich; and Baranchikov, Vladimir Mikhailovich, 3,678,728.
Skiba, Alexander, Jr., to Royal Packaging Equipment, Inc. Machine for package turnover and orientation. 3,679,070, Cl. 214-1.00q.
Skrivan, Joseph Francis, to American Cyanamid Company. Production of phosphorus. 3,679,363, Cl. 23-223.000.
Slabakov, Christo G. Automobile seat back. 3,679,261, Cl. 297-231.000.
Slavik, Valter, to Heberlein & Co., AG. Yarn control apparatus. 3,678,579, Cl. 30-131.000.
Slavitt, Eugene. Leg rest for vehicle driver's seat. 3,679,262, Cl. 297-427.000.
Sloan, Donald A., to Bahnson Company, The. Suction manifold for the lickerin section of a carding machine. 3,678,538, Cl. 19-107.000.
Sloane, R. & G., Manufacturing Company, Inc.: *See*—
Wise, Eugene H.; and Blumenkranz, James J., 3,678,634.
Slobodnik, Andrew J., Jr., to United States of America, Air Force. Acoustic surface wave delay line. 3,680,009, Cl. 333-30.000.
Smalling, Claude W., Jr., to IRD Mechanalysis, Inc. Process for the vaporization of alkyl aromatic liquid feeds with removal of high boilers. 3,679,761, Cl. 260-672.0nc.
Smith, Arthur G.; and Turner, Allen H., to Ford Motor Company. Electrocoating apparatus with ionizing radiation means. 3,679,572, Cl. 204-300.000.
Smith, Douglas F., to General Electric Company. Acceleration control system for vehicles. 3,679,894, Cl. 246-182.00c.
Smith, Elwin G., & Company, Inc.: *See*—
Scott, Harley D., 3,678,642.
Smith, George A., to Dravo Corporation. Apparatus for use in lining vessels. 3,679,071, Cl. 214-1.00h.
Smith, George J., to Lobdell-Emery Manufacturing Co. Steering column mounting bracket assembly. 3,679,163, Cl. 248-223.000.
Smith International Incorporated: *See*—
Fischer, John F., 3,678,883.
Smith, James A. Chance readout educational ball. 3,679,212, Cl. 273-144.00b.
Smith Kline & French Laboratories: *See*—
Ross, Stephen T.; and Zirkle, Charles L., 3,679,693.
Smith, Mansel W. Air diffusion apparatus for the treatment of polluted water. 3,679,187, Cl. 261-123.000.
Smith, Marion D.: *See*—
O'Malley, John J.; and Smith, Marion D., 3,678,783.
Smith, Millard F. Oil collection boom. 3,679,058, Cl. 210-242.000.
Smith, Nelson S., Jr.; and Fasching, George E., to United States of America, Interior. Electrogasdynamic dust monitor. 3,679,973, Cl. 324-71.00r.
Smith, Nolan A.: *See*—
La Hue, Richard W.; and Smith, Nolan A., 3,679,762.
Smith, Noyes D., Jr., to Shell Oil Company. Filtered coherent wave holography. 3,680,041, Cl. 340-15.500.
Smith, Roger S.: *See*—
Cole, Addison D.; and Smith, Roger S., 3,678,937.
Smith, Russell G., to Xomox Corporation. Duplex strainer construction. 3,679,060, Cl. 210-333.000.
Smith, Sam E. Template-mash. 3,678,887, Cl. 118-504.000.
Smith, Terrill D., to Monsanto Company. Functional fluid compositions containing perfluoro surfactants. 3,679,587, Cl. 252-75.000.
Smith, Wayne E.: *See*—
Galiano, Francis R.; and Smith, Wayne E., 3,679,561.
Smith, Frank: *See*—
King, John Howliston; and Smith, Frank, 3,679,570.
Smiths Industries Limited: *See*—
Searle, Simon M. St. L.; and Walker, Christopher H. C., 3,679,297.
Smoker assor. to said Weaver: *See*—
Weaver, Richard L.; and Smoker, Benjamin K., 3,679,168.
Smoker, Benjamin K.: *See*—
Weaver, Richard L.; and Smoker, Benjamin K., 3,679,168.
Smoker, Benjamin K.; Weaver, Richard L.; and Weaver, Marlin P. Feed delivering apparatus. 3,679,042, Cl. 198-57.000.
Smolin, Edwin M.: *See*—
Mestetsky, Thomas S.; and Smolin, Edwin M., 3,679,623.
Smuda, Gerhard: *See*—
Aust, Manfred; and Smuda, Gerhard, 3,679,520.
Smyers, Frank C.; and Garrison, John H., to United States Smelting, Refining & Mining Company. Process for recovering lead, lead alloys, and lead compositions from batteries. 3,679,395, Cl. 75-77.000.
Snam Progetti S.p.A.: *See*—
Arrigoni, Virgilio; Sezzi, Franco; and Gaetani, Bruno, 3,678,732.
Snider, Orvill E.: *See*—
Balint, Laszlo J.; Roth, David W. H., Jr.; and Snider, Orvill E., 3,679,368.
Sno-Trik Company: *See*—
Bedo, Alfred; and Beck, Edward, 3,679,169.
Snyder, Gary L. Convertible water sprinkling device. 3,679,136, Cl. 239-188.000.
Snyder, Robert L., to American Standard Inc. Bimetallic elements. 3,678,757, Cl. 73-363.500.
Sobczak, Sigmar E. Smoking pipe holder. 3,678,940, Cl. 131-260.000.
Sobottka, Richard: *See*—
Klenk, Ludwig; Strutzel, Hans; and Sobottka, Richard, 3,679,435.
Societe Alsacienne de Constructions Macaniques de: *See*—
Juillard, Yves, 3,678,968.
Societe Anonyme Automobiles Citroen: *See*—
Cadiou, Jean Georges, 3,679,263.
Societe Anonyme dite: Plastra: *See*—
Friederich, Claude; and Cramazou, Etienne, 3,679,280.
Societe Anonyme Poclain: *See*—
Praddaude, Pierre A., 3,679,179.
Societe des Accumulateurs Fixes et de Traction: *See*—
Dalard, Francis Jean; Augustinsky, Jan Witold; and Sohm, Jean-Claude, 3,679,488.
Jammet, Jlan Firmin, 3,679,489.
Pinard, Emile Jean Lucien, 3,679,481.
Societe d'Exploitation des Brevets Granofibre: *See*—
Jacquelin, Guy, 3,679,542.
Societe d'Exploitations et de Realisations Industrielles et Commerciales Serico: *See*—
Giroud, Henri Philibert, 3,679,104.
Societe Flaminaire Marcel Quercia: *See*—
Lambert, Jacques, 3,679,346.
Societe Lorraine de Preparation Textile: *See*—
Largeron, Louis; and Raquin, Roger, 3,678,548.
Societe Nationale d'Etude et de Construction de Moteurs d'Aviation: *See*—
Dorier, Bernard Louis Marcel; and Laedlein, Denis Jacques, 3,680,113.
Societe Nationale Industrielle Aerospatiale: *See*—
Mouille, Rene Louis, 3,679,322.
Societe Rhodiaceta: *See*—
Buzano, Michel, 3,678,549.
Sodeteg, Inc.: *See*—
Mougin, George, 3,678,638.
Sogi, Toshiyuki: *See*—
Watanabe, Shigeo; Sogi, Toshiyuki; and Mukai, Tsuneo, 3,678,982.
Sohm, Jean-Claude: *See*—
Dalard, Francis Jean; Augustinsky, Jan Witold; and Sohm, Jean-Claude, 3,679,488.
Soichet, Samuel. Intra uterine device and injector thereof. 3,678,927, Cl. 128-130.000.
Solt, George Stefan: *See*—
Wyatt, James Andrew Stewart; Chapman, Clifford Victor Gascoyne; Solt, George Stefan; and Mullet, Sidney George, 3,679,059.
Sommer, Hans: *See*—
Schuierer, Erich; Renz, Werner; and Sommer, Hans, 3,679,634.
Sommer, Lothar: *See*—
Linz, Georg; and Sommer, Lothar, 3,678,565.
Somov, Boris Stepanovich: *See*—
Efimov, Leonid Alexandrovich; Shtin, Lev Mikhailovich; Sinitsky, Vladimir Mikhailovich; Khirdzheiv, Sergei Grigorievich; Pylaikin, Petr Alexeevich; Satovskaya, Ljudmila Sergeevna; Grebnev, Nikolai Feodosovich; Rasseikin, Mikhail Grigorievich; Kalugin, Konstantin Yakovlevich; Somov, Boris Stepanovich; and Baranchikov, Vladimir Mikhailovich, 3,678,728.
Sondhi, Man M., to Bell Telephone Laboratories, Incorporated. Reconstruction of object shape from sound diffraction pattern. 3,679,020, Cl. 181-.50r.
Sony Corporation: *See*—
Doi, Toshitada; and Akiba, Kosuke, 3,680,134.
Nakada, Yasuo; and Takita, Hideo, 3,679,933.
Sorell, Henry P.; Pomazak, Eugene; and Rygg, Sven, to Borden Inc. Pressure sensitive adhesive tape. 3,679,458, Cl. 117-68.500.
Sorensen, Leif Erik, to Anstalt fur Elektrohydraulische Anlagen. Hydraulic systems. 3,678,684, Cl. 60-19.000.
Sorensen, Neal E.: *See*—
Bailey, Robert C.; Estes, Harry A.; James, Glen S.; Klug, James R.; Montillon, Henry A.; Myring, Verne E.; Robertson, Orville H.; Sargeant, Blaine W.; and Sorensen, Neal E., 3,679,200.
Sorensen, Robert: *See*—
Scarnato, Thomas J.; Dryan, James J.; Lawler, Craig M.; and Sorensen, Robert, 3,678,671.
Sorokin, Peter P., to International Business Machines Corporation. Optically pumped liquid lasers. 3,679,995, Cl. 331-94.500.
Soubis, Jean-Pierre, to Chrysler France. Switching-off device for internal combustion engine fed by a dual-body carburettor. 3,678,911, Cl. 123-127.000.
Spalti, Max: *See*—
Zuhlke, Gerhard; Brandli, Paul; and Spalti, Max, 3,678,550.
Spectrol Electronics Corporation: *See*—
Gerwitz, Paul F., 3,679,848.
Speedrack Inc.: *See*—
Konstant, Anthony N., 3,679,067.
Spencer, Phillip B.: *See*—
Drutchas, Gilbert H.; Berman, George A.; and Spencer, Phillip B., 3,679,329.
Sperry Rand Corporation: *See*—
Baker, Donald H.; and Kallio, Frank H., 3,678,593.
Pedersen, Poul K.; Wagstaff, Robert A.; and Waldrop, Thomas W., 3,678,772.
Shriver, Joe E., 3,679,015.
Spiegel, Si, to American Technical Industries, INC. Indoor-outdoor artificial Christmas tree. 3,679,528, Cl. 161-24.000.

Spiger, Robert J.: *See—*
Weiner, Leon; Kilpatrick, John E.; and Spiger, Robert J., 3,679,877.
Spisak, Steve, to TRW Inc., mesne. Stud welding tool and stud loading device therefor. 3,679,860, Cl. 219-98.000.
Spitzer, Ludwig sen. KG: *See—*
Gramlich, Fritz, 3,679,082.
Sponseller, Harold P.: *See—*
Graybill, Harold W.; Heider, James E.; and Sponseller, Harold P., 3,679,341.
Spotts, John A., Jr.: *See—*
Cormany, Charles L.; and Spotts, John A., Jr., 3,679,590.
Springer, Kurt, to Swiss Aluminum Ltd. Welded joint. 3,679,569, Cl. 204-286.000.
Springs, Thomas W., to Besser Company. Apparatus for forming building blocks. 3,679,340, Cl. 25-41.00j.
Springwater Manufacturing Co., Inc.: *See—*
Stone, Guthrie B.; and Holmes, William F., 3,678,724.
Square D Company: *See—*
Burd, Thomas A., 3,679,854.
Squibb, E. R., & Sons, Inc.: *See—*
Levine, Seymour D., 3,679,747.
Staas, Frans Adrianus, to U.S. Philips Corporation. Device for transporting thermal energy at temperatures lying below the lamda-temperature of helium. 3,678,704, Cl. 62-514.000.
Stahlberg, Hans J., to Ford Motor Company. Four speed ratio power transmission mechanism for automotive vehicles. 3,678,785, Cl. 74-759.000.
Stahlheber, Benjamin L.: *See—*
Shemitz, Sylvan R.; and Stahlheber, Benjamin L., 3,679,893.
Staker, William C., to General Motors Corporation. Potentiometer-resistor network for producing a non-linear direct current potential output signal. 3,679,967, Cl. 323-79.000.
Stamicarbon N.V.: *See—*
Geus, John W., 3,679,398.
Standard Alliance Industries, Inc.: *See—*
Holbert, Dimitry, 3,678,861.
Standard Koilsman Instrument Corporation: *See—*
Midgley, Edward L.; and Carlson, Reuben C., 3,679,980.
Standard Oil Company: *See—*
Nicolet, Charles F., 3,679,770.
Standard Oil Company (Indiana): *See—*
Bertolacini, Ralph J., 3,679,575.
Schaap, Luke A.; and Den Herder, Marvin J., 3,679,588.
Standard Pressed Steel Co.: *See—*
Davis, James R.; and Blum, Arthur B., 3,678,978.
Stanford Research Institute: *See—*
Adams, David K.; and Ho, Raymond Y.-C., 3,680,011.
Stanke, Rudi G., to Johnson Hydraulic Equipment Co. Portable lawn raking devices. 3,678,665, Cl. 56-13.400.
Stanley Denki Kabushiki Kaisha: *See—*
Tashiro, Kenichi; and Tanaka, Hirokazu, 3,680,024.
Stanley Drug Products, Inc.: *See—*
Cook, Elton S.; and Nutini, Leo G., 3,679,793.
Stapfer, Christian H.; and Racz, William B., to Cincinnati Milacron Chemicals, Inc. Rigid halogen-containing resin compositions. 3,679,619, Cl. 260-23.0xa.
Stargardter, Hans, to United Aircraft Corporation. Filament reinforced gas turbine blade. 3,679,324, Cl. 416-229.000.
Startzman, Paul E., to Philadelphia Manufacturing Company, Inc. Ticket dispenser. 3,679,113, Cl. 226-76.000.
Statistical Services, Inc.: *See—*
Anthony, Myron L., 3,680,118.
Staudenmayer, William J.: *See—*
Kryman, Frederick J.; and Staudenmayer, William J., 3,679,408.
Stauffer, Alfred, to Maschinenfabrik Meyer & Burger A.G. Reciprocating saw. 3,678,918, Cl. 125-16.000.
Stayner, Robert A., to Chevron Research Company. Stable dielectric fluid for electrical discharge machining comprising a mineral oil, a metal sulfonate and a phenolic antioxidant. 3,679,857, Cl. 219-69.00d.
Steel Company of Canada Limited, The: *See—*
Addinall, Ramon L.; Lewis, William T.; and Mudroch, Otokar, 3,679,513.
Steel, Margaret Lillian: *See—*
Burgess, Anthony Joseph; Eagles, Alan Charles; and Steel, Margaret Lillian, 3,679,506.
Stefancin, James M., to Dow Chemical Company, The. Bag dispensing arrangement. 3,679,127, Cl. 229-62.500.
Stehning, Paul Rolf. Reaction vessel for chemical and physical reactions of viscous masses. 3,678,984, Cl. 159-25.00a.
Steidinger, Donald J.; and Koepke, Donald H., to Uarco Incorporated. Imprinting attachment for autographic registers. 3,678,851, Cl. 101-260.000.
Steinbruegge, Kenneth B.: *See—*
Hopkins, Richard H.; Roland, George W.; Steinbruegge, Kenneth B.; and Partlow, William D., 3,679,597.
Stemco Manufacturing Company, Inc.: *See—*
Kirkland, Kenneth C., Jr.; and Hunt, Raymon E., 3,679,024.
Stenger, Vernon A., to Dow Chemical Company, The. Mercury recovery from sediment. 3,679,396, Cl. 75-81.000.
Stenlund, Stig Gote, to Monsun-Tison AB. Self-aligning mounting device, particularly for hydraulic or pneumatic cylinders. 3,679,276, Cl. 308-26.000.
Stephansen, Erik W.: *See—*
Goerz, David J., Jr.; and Stephansen, Erik W., 3,678,594.
Stephens, Curtis L., to Eastman Kodak Company. Method of forming heterogeneous photoconductive compositions and elements. 3,679,407, Cl. 96-1.600.
Stephens, Leonard W., to Palmer Filter Equipment Company. Reversible one-way clutch. 3,679,031, Cl. 192-44.000.
Stephens, Robert K., to Polaroid Corporation. Novel frictional resistance motion picture film. 3,679,411, Cl. 96-29.000.
Sterling Drug Inc.: *See—*
Archer, Sydney; and Lorenz, Roman R., 3,679,752.
Carabateas, Philip M., 3,679,690.
Sternco Industries, Inc.: *See—*
Lovitz, David D., 3,678,899.
Steudel, Fritz, to Raytheon Company. Phased array. 3,680,109, Cl. 343-100.0sa.
Stevens, J. P., & Co., Inc.: *See—*
Brissey, Charles David; and Trotter, Marvin Nathaniel, 3,678,672.
Stewart-Warner Corporation: *See—*
Bell, Harvey W., III, 3,678,893.
Stine, Orrin Burr, to Borden Inc. Cutter-type box for dispensing packaging film with protective mounting for the cutter. 3,679,110, Cl. 225-47.000.
Stock, David K., to FMC Corporation. Uniform pressure draw rolls. 3,679,115, Cl. 226-177.000.
Stoffel, Robert W., to Allied Chemical Corporation. Controlled inertia shoulder strap retracting device. 3,679,152, Cl. 242-107.400.
Stoll, Albert; and Wanka, Walter, to Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft. Corpuscular radiation welding process. 3,679,862, Cl. 219-121.0em.
Stone, Albert M.; and Westerfield, Edwin E., to United States of America, Navy System. for determining azimuth. 3,680,124, Cl. 343-113.00r.
Stone, Guthrie B.; and Holmes, William F., to Springwater Manufacturing Co., Inc. Hydraulically operated metal forming machine. 3,678,724, Cl. 72-324.000.
Storage Technology Corporation: *See—*
Herger, Zoltan L.; and Olmsted, Dennis R., 3,679,841.
Strader, George C.: *See—*
Goldfarb, Adolph E.; Strader, Judith D.; and Strader, George C., 3,678,616.
Strader, Judith D.: *See—*
Goldfarb, Adolph E.; Strader, Judith D.; and Strader, George C., 3,678,616.
Straub, Dieter, to Telefunken Patentverwertungsgesellschaft. Full adder. 3,679,883, Cl. 235-175.000.
Strauss, Edgar H., to Ruti Machinery Works, Ltd. Reed tooth arrangement on a wave-type loom. 3,678,966, Cl. 139-12.000.
Strauss, Irving: *See—*
Dabrush, Charles; and Strauss, Irving, 3,678,585.
Strauss, Robert E.; and Hashimoto, Saburo, to Union Oil Company of California. Plant growth stimulated by a combination of glycolic acid and gibberellin. 3,679,392, Cl. 71-89.000.
Strebe, Arthur C.: *See—*
Rutherford, Kenneth R.; and Strebe, Arthur C., 3,680,091.
Streck, Clemens, to GAF Corporation. Direct dye, alkanolamine or morpholine, and neutral salt concentrate and milling preparation thereof. 3,679,353, Cl. 8-79.000.
Strick, Karl H., to Fram Corporation. Prestressed flexible bladed fan. 3,679,321, Cl. 416-132.000.
Strittmatter, Martha L. Support pillow. 3,678,926, Cl. 128-94.000.
Stroiwas, Edward: *See—*
Cohrs, William E.; and Stroiwas, Edward, 3,679,382.
Stromberg-Carlson Corporation: *See—*
Gueldenpfennig, Klaus; Pommerening, Uwe A.; and Russell, Stanley L., 3,679,835.
Stroszynski, Joachim, to Kalle Aktiengesellschaft. Process for treating a metal surface and reprographic material comprising a surface so treated. 3,679,418, Cl. 96-86.000.
Strutzel, Hans: *See—*
Klenk, Ludwig; Strutzel, Hans; and Sobottka, Richard, 3,679,435.
Stryker Corporation: *See—*
Warfield, Wayne N.; and Eaton, Russell K., 3,678,934.
Studebaker Corporation: *See—*
Nise, Wilfred C.; and Lowder, Dale E., 3,678,524.
Stuhlmann, Hans; and Stuhlmann, Werner, to Battenfeld Maschinenfabriken GmbH., Firma, mesne. Apparatus for treatment of granulated goods. 3,678,597, Cl. 34-48.000.
Stuhlmann, Werner: *See—*
Stuhlmann, Hans; and Stuhlmann, Werner, 3,678,597.
Sturhan, Klaus, to Gebr. Isringhausen, Firma. Seat construction. 3,679,166, Cl. 248-399.000.
Sturwold, Robert J.: *See—*
Boylan, Jack B.; and Sturwold, Robert J., 3,679,617.
Sugimoto, Shigeo: *See—*
Kaishita, Yoshiaki; and Sugimoto, Shigeo, 3,679,140.
Sugiura, Ituo: *See—*
Imanishi, Masakazu; Kondou, Kenzi; and Sugiura, Ituo, 3,678,975.
Sugiyama, Kohei: *See—*
Kiyono, Hiroshi; and Sugiyama, Kohei, 3,679,788.
Suka, Motoshi: *See—*
Kii, Toshimichi; and Suka, Motoshi, 3,679,651.
Sullivan, Arthur Basil Joseph: *See—*
Houldcroft, Peter Thomas; and Sullivan, Arthur Basil Joseph, 3,679,863.

Sullivan, Matthew A., to Sullivan Products, Inc. Fuel tank for use in model airplanes. 3,679,092, Cl. 220-85.00r.
Sullivan Products, Inc.: *See—*
Sullivan, Matthew A., 3,679,092.
Sulser, Troy S.: *See—*
Horton, John P.; and Sulser, Troy S., 3,678,530.
Sulzer Brothers, Ltd.: *See—*
Huber, Max; and Meier, Werner, 3,679,537.
Sumitomo Chemical Company, Ltd.: *See—*
Yamamoto, Hisao; Okamoto, Tadashi; and Kobayashi, Tsuyoshi, 3,679,672.
Sumoto, Takao: *See—*
Uekusa, Genzo; Tanimura, Shigeru; Higashi, Kazuhiro; and Sumoto, Takao, 3,679,949.
Sun Oil Company: *See—*
Bennett, John D., 3,678,873.
Pollock, Andre W., 3,679,563.
Schneider, Abraham, 3,679,758.
Sunbeam Corporation: *See—*
Chambers, Worth L., 3,679,958.
Sunbeam Plastics Corporation: *See—*
Gach, Peter P., 3,679,085.
Sundland, William D.: *See—*
Holmes, Lloyd H.; and Sundland, William D., 3,678,810.
Sundstrand Data Control, Inc.: *See—*
Corey, Victor B., 3,678,746.
Susquehanna Corporation, The: *See—*
Evans, Robert W.; Grimm, Richard C.; and Olstein, Myron A., 3,678,857.
Sussman, Philip S.: *See—*
Andrews, Francis W.; Sussman, Philip S.; and Barlow, Sidney D., 3,678,521.
Sutton Engineering Company: *See—*
Dickey, Clyde W.; and Bland, Ray A., 3,678,720.
Suzue, Seigo: *See—*
Irikura, Tsutomu; Nishino, Keigo; Suzue, Seigo; Ushiyama, Keiichi; Shinoda, Hirotaka; and Hasegawa, Yoshinori, 3,679,730.
Suzuki, Toshi; and Nishijima, Tsutomu, to Victor Company of Japan, Limited. Two track multiple element magnetic head. 3,679,839, Cl. 179-100.20c.
Svorec, Richard S. Keyed stereophonic transmission system. 3,679,836, Cl. 179-15.0bt.
Swanson, Eric R.: *See—*
Bickel, John E.; Freres, Clemens H.; Gossard, Earl E.; Britt, James E.; Ortwein, Norman R.; and Swanson, Eric R., 3,680,115.
Swearingen, Kent W.: *See—*
Bunker, William H.; Kerr, John W.; Mitrofanoff, Nicholas S.; and Swearingen, Kent W., 3,680,054.
Sweeney, James S.: *See—*
O'Donnell, Cedric F.; Platzek, Richard C.; and Sweeney, James S., 3,680,075.
Swett, James B.; and Croyle, Jack V., to Dart Industries, Inc. Press type closure. 3,679,088, Cl. 220-42.00r.
Swett, James B.; and Croyle, Jack V., to Dart Industries Inc. Press type closure. 3,679,089, Cl. 220-42.00c.
Swindler, Henry A., to Parker-Hannifin Corporation. Fluid transfer device. 3,678,972, Cl. 141-387.000.
Swiss Aluminum Ltd.: *See—*
Springer, Kurt, 3,679,569.
Sylvania Electric Products, Inc.: *See—*
Mosier, John L.; and Peterson, Richard J., 3,680,032.
Syracuse University Research Corporation: *See—*
Harris, Paul E.; and Mader, George E., 3,680,098.
Systematic Multi-Level Parking Company: *See—*
Sanders, Duane V., 3,679,083.
Szekely, Otto E., to Power Flo Products Incorporated. Variably controlled planetary drive structure and method. 3,678,786, Cl. 74-782.000.
Szucs, Robert J., to Borg-Warner Corporation. Hospital bed. 3,678,519, Cl. 5-62.000.
Tabata, Yoneho; and Oizumi, Chihiro, to Japan Atomic Energy Research Institute. Lower temperature solid phase polymerization of acrylonitrile in the presence of an organic carbonyl compound. 3,679,562, Cl. 204-159.230.
Tabor, Joseph M.; and Betker, Ted C., to General Mills Fun Group, Inc. Frame for stretching and mounting a needlecraft project. 3,678,607, Cl. 38-102.910.
T.A.D. Avanti, Inc.: *See—*
Bonsky, Elmer C., 3,679,831.
Takahashi, Kinji; and Shio, Megumu, to Nippon Kogaku K.K. Illumination system for light microscopes. 3,679,287, Cl. 350-87.000.
Takahashi, Sohji: *See—*
Akeyama Masamoto; and Takahashi, Sohji, 3,678,575.
Takamizawa, Akira; and Hirai, Kentaro, to Shionogi & Co., Ltd. 1,3-Dithiol compounds. 3,679,677, Cl. 260-247.100.
Takano, Hiroshi: *See—*
Yamagishi, Hidehisa; Takano, Hiroshi; and Takeuchi, Masao, 3,679,554.
Takaoka, Tadashi: *See—*
Seki, Susumu; Noumi, Makoto; and Takaoka, Tadashi, 3,679,879.
Takasawa, Hideaki: *See—*
Tanekusa, Toshimi; Takasawa, Hideaki; and Yamahata, Achihiko, 3,679,626.
Takasi, Yamazaki: *See—*
Murakami, Yoshio; and Takasi, Yamazaki, 3,678,889.
Takayanagi, Eifu: *See—*
Asahi, Matahiko; Murakami, Hisamichi; Hasegawa, Yukio; Matsui, Hideo; and Takayanagi, Eifu, 3,679,348.
Takeda Chemical Industries, Ltd.: *See—*
Morita, Katsura; and Kawashima, Kenya, 3,679,662.
Yokoyama, Fujihiko; Yoneyama, Tohru; and Sato, Shigehiko, 3,679,438.
Takesago Perfumery Co., Ltd.: *See—*
Seikguchi, Masaaki; Yoshikawa, Kaoru; and Komatsu, Akira, 3,679,133.
Takeuchi, Masao: *See—*
Yamagishi, Hidehisa; Takano, Hiroshi; and Takeuchi, Masao, 3,679,554.
Takeya, Kenji, to Japan Exlan Company Limited. Production of acrylanitrile unsaturated sulfonic acid copolymers. 3,679,641, Cl. 260-79.3mu.
Takishima, Yoshiyuki, to Canon Kabushiki Kaisha. Automatic focusing device for cameras and the like. 3,678,835, Cl. 95-44.00r.
Takita, Hideo: *See—*
Nakada, Yasuo; and Takita, Hideo, 3,679,933.
Talley Surgical Instruments Limited: *See—*
Evans, Ronald James Peter, 3,678,520.
Tamai, Yasuo: *See—*
Honjo, Satoru; and Tamai, Yasuo, 3,679,586.
Tanaka, Hirokazu: *See—*
Tashiro, Kenichi; and Tanaka, Hirokazu, 3,680,024.
Tanaka, Hiroshi; and Arai, Toshiyuki, to Nippon Kogaku K.K. Automatic exposure device for microscopic motion picture photography. 3,679,296, Cl. 352-84.000.
Tanegashima, Kenichiro; Kobayashi, Makoto; and Kudo, Shinichiro, to Matsushita Electric Industrial Co., Ltd. Electrode feed using plural motors having constant speed drooping characteristics. 3,679,864, Cl. 219-130.000.
Tanekusa, Toshimi; Takasawa, Hideaki; and Yamahata, Achihiko, to Nippon Paint Co., Ltd. Thermoplastic traffic paints and process for the manufacture thereof. 3,679,626, Cl. 260-41.00a.
Tang, Pak Chong: *See—*
Olsen, Perry Charles; and Tang, Pak Chong, 3,679,819.
Taniguchi, Tetsuji; Fukui, Kakichi; Imai, Shiro; Hayashi, Masahiro; and Seki, Koichi, to Hitachi, Ltd. Rolling mill. 3,678,722, Cl. 72-238.000.
Tanimura, Shigeru: *See—*
Uekusa, Genzo; Tanimura, Shigeru; Higashi, Kazuhiro; and Sumoto, Takao, 3,679,949.
Tansky, Michael. Resonator for stringed instrument. 3,678,794, Cl. 84-275.000.
Tashiro, Kenichi; and Tanaka, Hirokazu, to Stanley Denki Kabushiki Kaisha. Light responsive and measuring device. 3,680,024, Cl. 338-17.000.
Taunus, Hofheim: *See—*
von der Eltz, Hans-Ulrich; Birke, Walter; Kunze, Wolfgang; Taunus, Hofheim; and Schon, Franz, 3,679,349.
Tautz, William Paul: *See—*
Beaman, Alden Gamaliel; Duschinsky, Robert; and Tautz, William Paul, 3,679,698.
Taylor, Clarence R.: *See—*
Knowles, Frederick G.; and Taylor, Clarence R., 3,679,298.
Taylor, Clement R.: *See—*
Ehrensing, Alvin T.; and Taylor, Clement R., 3,678,890.
Taylor, George William: *See—*
Braun, Edwin Julius; Maxon, Rodney Robert; Meise, Henry August, Jr.; Taylor, George William; and Witmore, Ronald Kirk, 3,679,834.
Taylor, Robert B., to Metropoliton Industries, Inc. Panel lift clamp assembly. 3,679,254, Cl. 294-81.00r.
TDK Electronics Company Ltd.: *See—*
Ezaki, Joichiro, 3,680,048.
Te Velde, Ties Siebolt; and Van Heusden, Sybrandus, to U.S. Philips Corporation. Semiconductor devices comprising a heterojunction. 3,679,496, Cl. 148-188.000.
Teagno, Wladimiro; and Trevisiol, Franco, to AMP Incorporated, mesne. PCB Hinged pod connector. 3,680,035, Cl. 339-59.00m.
Teal, James L.; Hamilton, Charles Eugene; and Clifford, Dennis A., to Dow Chemical Company, The. Determining the low level oxygen demand of combustible materials in aqueous dispersions. 3,679,364, Cl. 23-230.0pc.
Tech-Art, Inc.: *See—*
Lloyd, Allen H.; and Beckman, William J., 3,678,525.
Technical Wire Products Inc.: *See—*
Nellis, Stewart; Kopf, Joseph Ellis; and Reti, Adrian R., 3,680,037.
Technicon Instruments Corporation: *See—*
De Angelis, William M., 3,679,237.
Livshitz, Stanley L.; Engelhardt, Alvin; and Adler, Stanford L., 3,679,129.
Mansberg, Hyman P., 3,679,312.
Mayo, Robert A.; and Ohringer, Philip, 3,679,130.
Mitchell, Douglas, 3,678,734.
Negersmith, Kent M.; and Calogero, William J., 3,679,367.
Wrightman, Karl B.; and Zehnder, Hans, 3,679,365.
Technion Research and Development Foundation Limited: *See—*
Amir, Ilan; and Peranio, Anthony, 3,678,754.
Tee-Pak, Inc.: *See—*
Oppenheimer, Seymour; and Turbak, Albin F., 3,679,436.

Oppenheimer, Seymour; and Turbak, Albin F., 3,679,437.

Teijin Limited: *See—*
Fukuda, Masao; Goto, Hachiro; Norota, Susumu; and Fujisawa, Yukimasa, 3,679,533.

Tektronix, Inc.: *See—*
Gibson, Charles B., Jr., 3,679,824.
Walker, Maurice Mark, 3,680,003.

Telang, Yeshwant P.: *See—*
Rao, Vemulapalli D.; Telang, Yeshwant P.; and White, Jerry E., 3,679,459.

Teledyne Ryan Aeronautical Company: *See—*
Killion, Derling G.; and Janza, Frank J., 3,680,111.

Telefunken Patentverwertungsgesellschaft: *See—*
Straub, Dieter, 3,679,883.

Telesco Brophey Limited: *See—*
Weber, Heinz, 3,678,949.

Temple University: *See—*
Philips, Charles M.; and Sanmarco, Miguel E., 3,678,922.

Tenenbaum, Mircea M., to Allied Control Company, Inc. Overvoltage-undervoltage sensor. 3,679,912, Cl. 307-235.000.

Teng, Robert N., to McDonnell Douglas Corporation. Ballistic compression decelerator. 3,678,745, Cl. 73-167.000.

Tengroth, Bjorn: *See—*
Bogren, Hugl; Elfstrom, Gosta; and Tengroth, Bjorn, 3,679,901.

Tenpas, Emerson J., to Eriez Manufacturing Company. T-bar twister. 3,678,723, Cl. 72-299.000.

Teradyne, Inc.: *See—*
Johnson, Lennart B., 3,680,038.

Termin, Erich; Rogler, Walter; Joch, Wilhelm; and Honigschmid-Grosich, Rudiger, to Dynamit Nobel AG. Dialkali salts of orthosilicic acid diesters and their preparation. 3,679,724, Cl. 260-448.80r.

Teshima, Tokuro: *See—*
Himi, Hitoshi; Shinmon, Yasuhiro; and Teshima, Tokuro, 3,679,852.

Texaco Inc.: *See—*
Hellmuth, Walter W., 3,679,584.
Michelson, Malvin J.; and Doyle, William P., 3,679,680.

Textron, Inc.: *See—*
Bert, Stephen F., 3,678,544.
Van Dorn, Horace B.; and Howe, Ralph S., Jr., 3,679,279.

Thall, Earle Solomon, to RCA Corporation. Method for filling an evacuated electron tube with gas to atmospheric pressure. 3,679,284, Cl. 316-2.000.

Theimer, Ernst T.: *See—*
Grossman, James D.; Mookherjee, Braja D.; De Simone, Robert; and Theimer, Ernst T., 3,679,749.

Then, Rudolf, Farbereimaschinenfabrik Gesellschaft mit beschrankter Haftung, Firma: *See—*
Christ, Wilhelm; and Weissbach, Peter, 3,679,357.

Thennard, Norbert: *See—*
Hurst, George S.; Thennard, Norbert; and Schneider, Karl A., 3,679,902.

Theriot, Eugene Joseph, to Bell Telephone Laboratories, Incorporated. Phase distortion detector for detecting phase distortion on a linearly frequency modulated waveform. 3,679,983, Cl. 329-110.000.

Thibodeau, Gregg Joseph, to RCA Corporation. Clamp circuit for preventing saturation of operational amplifier. 3,679,989, Cl. 330-185.000.

Thier, Werner: *See—*
Feinauer, Roland; Thier, Werner; and Schneider, Wolfgang, 3,679,468.

Thigpen, Hubert H.; and Hobbs, Charles C. Polymerization inhibitors e-caprolactones. 3,679,706, Cl. 260-343.000.

Thiokol Chemical Corporation: *See—*
Mayes, Nathan; and Falk, Robert A., 3,679,755.
Villa, Jose L., 3,679,616.

Thomas, Frederick, & Company Limited: *See—*
Pizzey, Peter Ernest, 3,679,886.

Thomas, James H. Shock absorber extension. 3,679,029, Cl. 188-321.000.

Thomas, Kenneth L.: *See—*
Koulovatos, James; and Thomas, Kenneth L., 3,679,053.

Thomas, Richard K., to General Electric Company. Redirective dual array antenna. 3,680,112, Cl. 343-100.0td.

Thompson, David Crompton: *See—*
Jack, James; Drake, John; Thompson, David Crompton; and Harris, Frederick John, 3,679,391.

Thomson-CSF: *See—*
Moreau, Jean-Noel, 3,680,012.
Poinsard, Henri, 3,680,102.
Poussin, Antoine, 3,680,004.

Thornton, Duane V.: *See—*
O'Leary, Walter E.; Thornton, Duane V.; Hammonds, James C.; and Dare, Roy R., 3,678,866.

Thornton, Henry M.: *See—*
Munchel, Eugene A.; and Thornton, Henry M., 3,679,319.

Tibbet, James W. Warning flag and mounting carrier therefor. 3,678,886, Cl. 116-173.000.

Tien, John K.; and Copley, Stephen M., to United Aircraft Corporation. Incorporation of dispersoids in directionally solidified castings. 3,678,988, Cl. 164-49.000.

Tiger Vacuum Bottle Industrial Company, Limited: *See—*
Kaishita, Yoshiaki; and Sugimoto, Shigeo, 3,679,140.

Tillie, Jean-Claude, to Tramex S.A. Partition-walls formed of prefabricated elements. 3,678,640, Cl. 52-238.000.

Tisdel, Lawrence C.; and Scott, Harry B., to Brameda Resources Limited. Crystallization and recovery of elemental sulfur from solvents. 3,679,371, Cl. 23-295.000.

Titow, Witold, to Molins Limited. Decorative composition and process for preparing same. 3,679,612, Cl. 260-2.000.

Tittle, Barry, to Imperial Chemical Industries Limited. Preparation of perfluoroalkyl iodides. 3,679,757, Cl. 260-653.1.

Tokyo Electric Co., Ltd.: *See—*
Ichinose, Noboru; Yokoyama, Katsunori; and Nishikawa, Hisashi, 3,679,919.

Tokyo Shibaura Electric Co., Ltd.: *See—*
Ichinose, Noboru; Yokoyama, Katsunori; and Nishikawa, Hisashi, 3,679,919.
Imanishi, Masakazu; Kondou, Kenzi; and Sugiura, Ituo, 3,678,975.
Murakami, Yoshio; and Takasi, Yamazaki, 3,678,889.

Tolliver, Richard J., to PPG Industries, Inc. Antenna windshield. 3,680,132, Cl. 343-713.000.

Tomio, Takeuchi: *See—*
Hamao, Umezawa; Shinichi, Kondo; Kenji, Maeda; Tomio, Takeuchi; and Masa, Hamada, 3,679,742.

Tomomatsu, Hideo, to Jefferson Chemical Company, Inc. Condensation products of aluminum hydroxide and an aluminum alcoholate. 3,679,723, Cl. 260-448.0ad.

Torcolacci, Attilio: *See—*
Prusinski, Richard C.; Fermani, Marcello; Torcolacci, Attilio; and Fermani, Luigi, 3,679,529.

Torpey, William A.: *See—*
Hamlin, David R.; and Torpey, William A., 3,679,116.

Toyoda Koki Kabushiki Kaisha: *See—*
Fujii, Tsuneji, 3,678,916.

Toyoda Machine Works, Limited: *See—*
Kikuchi, Makoto, 3,678,915.

Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
Ito, Shin; and Kubo, Seitoku, 3,678,787.

Tramex S.A.: *See—*
Tillie, Jean-Claude, 3,678,640.

Tramposch, Herbert, to Pitney-Bowes, Inc. Credit card and method of luminescent printing. 3,679,448, Cl. 117-1.000.

Trane Company, The: *See—*
Pierce, Larry J., 3,678,993.

Trans-Sonics, Inc.: *See—*
Westcott, Vernon C.; Blanchard, Byron E.; Davis, Paul A.; and Prevot Stephane, 3,678,742.

Trapp, Gunther: *See—*
Friedrich, Herbert; and Trapp, Gunther, 3,679,674.

Treitel, Sven: *See—*
Silverman, Daniel; and Treitel, Sven, 3,680,040.

Tremblay, Hubert J.: *See—*
Harper, Kenneth B.; and Tremblay, Hubert J., 3,679,923.

Treschev, Dmitry Viktorovich: *See—*
Kulikov, Ivan Vladimirovich; Borisov, Vasily Semenovich; and Treschev, Viktor Georgievich, 3,678,999.

Treschev, Viktor Georgievich: *See—*
Kulikov, Ivan Vladimirovich; Borisov, Vasily Semenovich; and Treschev, Viktor Georgievich, 3,678,999.

Trescheva, Vera Viktorovna: *See—*
Kulikov, Ivan Vladimirovich; Borisov, Vasily Semenovich; and Treschev, Viktor Georgievich, 3,678,999.

Trescheva, Zinaida Mikhailovna: *See—*
Kulikov, Ivan Vladimirovich; Borisov, Vasily Semenovich; and Treschev, Viktor Georgievich, 3,678,999.

Trevisiol, Franco: *See—*
Teagno, Wladimiro; and Trevisiol, Franco, 3,680,035.

Tri-Tech, Inc., mesne: *See—*
Haydon, Arthur W., 3,679,988.

Tridair Industries: *See—*
Heyworth, Ernest, 3,678,981.

Trindle, Terry LaVern, to Kelsey-Hayes Company. Weld-on type leaf spring bracket assembly and method. 3,679,188, Cl. 269-52.000.

Troll, John H.: *See—*
Geis, James D.; Troll, John H.; Gluz, Harry; and Baker, Cole H., 3,678,729.

Trotter, Marvin Nathaniel: *See—*
Brissey, Charles David; and Trotter, Marvin Nathaniel, 3,678,672.

Trottier, Gerard M.: *See—*
Payne, Winslow C.; and Trottier, Gerard M., 3,678,631.

True, Howard D. F., Jr.: *See—*
Gelbard, Robert B.; Dodge, Gerald F., III; and True, Howard D. F., Jr., 3,678,698.

Truett, William Lawrence: *See—*
Anderson, Arthur William; and Truett, William Lawrence, 3,679,652.

Truline Casting Company: *See—*
Fabens, Andrew Lawrie, Jr., 3,678,990.

Trumpf & Co.: *See—*
Leibinger, Berthold, 3,678,562.

TRW Inc.: *See—*
Drutchas, Gilbert H.; Berman, George A.; and Spencer, Phillip B., 3,679,329.
Hansen, David O.; Altshuler, Saul; Bernstein, William; and Hamermesh, Bernard, 3,679,897.
Herbenar, Edward J., 3,679,248.

TRW Inc., mesne: *See—*
Seckerson, Clifford A., 3,678,797.
Spisak, Steve, 3,679,860.

Tsai, James H.; and Anderson, Glenn H., to Dow Chemical Company, The. Metal-cobalt carbonyl complexes. 3,679,722, Cl. 260-429.700.

Tsao, Carson K. H.; De Bettencourt, Joseph T.; and Rowland, Howard J., to Raytheon Company. Subsurface traveling wave antenna. 3,680,133, Cl. 343-719.000.

Tsao, Thomas K. Apparatus for detecting movable objects. 3,680,039, Cl. 340-1.00r.

Tseng, Samuel Chin-Chong, to International Business Machines Corporation. Surface wave transducer for digital signals. 3,680,007, Cl. 333-30.00r.

Tsubota, Motohiko: *See—*
Shiba, Keisuke; Tsubota, Motohiko; Sato, Akira; Ikeda, Tadashi; and Ogawa, Akira, 3,679,428.

Tsubouchi, Kaoru, to Aisin Seiki Kabushiki Kaisha. Liquid level indicating arrangement for vehicles. 3,680,044, Cl. 340-59.000.

Tsuchiya, Takao: *See—*
Kishikawa, Kanichi; Kuwata, Takeo; Kinoshita, Kentaro; Tsuchiya, Takao; and Kamogawa, Yoshiro, 3,678,721.

Tsukada, Toshihisa, to Hitachi, Ltd. Display device and method for scanning said device. 3,680,049, Cl. 340-166.0el.

Tsukamoto, Hidehiko; and Maeda, Nobutaka, to Mitsubishi Jukogyo Kabushiki Kaisha. Support system for a cross-rolling machine for shaping rod-like workpieces. 3,678,719, Cl. 72-95.000.

Tu, George K.: *See—*
Bryant, Richard W.; and Tu, George K., 3,679,917.

Tucker, Archie J., to Eastman Kodak Company. Mold having a slide plate for forming articles having a projection or recess. 3,679,339, Cl. 425-242.000.

Tuji, Katsuyoshi: *See—*
Yamaguchi, Hiroyuki; Tuji, Katsuyoshi; Maki, Kenji; and Shimonishi, Isoo, 3,679,355.

Turbak, Albin F.: *See—*
Oppenheimer, Seymour; and Turbak, Albin F., 3,679,436.
Oppenheimer, Seymour; and Turbak, Albin F., 3,679,437.

Turgeon, Joseph A., to I-T-E Circuit Breaker (Canada) Limited. Tubular circular gasket to seal and reduce force in transmission system. 3,679,240, Cl. 285-233.000.

Turner, Allen H.: *See—*
Colvin, Alex D.; McNitt, David H.; and Turner, Allen H., 3,679,930.
Smith, Arthur G.; and Turner, Allen H., 3,679,572.

Turner, Phillip H.; and Lyman, John B., to Whirlpool Corporation. Nozzle construction for ice maker. 3,678,702, Cl. 62-354.000.

Turpin, Pierre: *See—*
Laucournet, Robert; and Turpin, Pierre, 3,679,315.

Tweit, Robert C.: *See—*
Kreider, Eunice M.; and Tweit, Robert C., 3,679,697.

Uarco Incorporated: *See—*
Steidinger, Donald J.; and Koepke, Donald H., 3,678,851.

Ueda, Hiroshi; Yata, Kintaro; and Matsuda, Motonobu, to Minolta Camera Kabushiki Kaisha. Shutter mechanism control circuitry. 3,678,822, Cl. 95-10.0ct.

Uekusa, Genzo; Tanimura, Shigeru; Higashi, Kazuhiro; and Sumoto, Takao, to Omron Tateisi Electronics Co. Semiconductor having tin oxide layer and substrate. 3,679,949, Cl. 317-238.000.

Uffelman, Malcolm R.; Williams, Richard E.; and Kleiner, Norbert. Cohesive zone boundary detector. 3,679,830, Cl. 179-1.0sa.

Ulics, George, to Ford Motor Company. Bellows flexible joint. 3,678,707, Cl. 64-11.00b.

Ullrich, Kurt: *See—*
Meinke, Hans H.; Ullrich, Kurt; and Wesch, Ludwig, 3,680,107.

Ulyanitsky, Evgeny Mefodievich; and Podgorny, Eduard Vasilievich, to Novocherkassy Ordena Trudovogo Krasnogo Znameni and Politekhnichesky Institut imeni Sergo Ordzhonikidze. Method of and apparatus for blocking phase-comparison protection. 3,679,937, Cl. 317-27.00r.

Unger, Hans Peter Olof; Westberg, Johan E. H.; Berndtsson, Gunnar Ingemar; and Schwartz, Stephan Lars, to AGA Aktiebolag. Centrifuge. 3,679,128, Cl. 233-20.00r.

Union Carbide Corporation: *See—*
Reid, Edwin Durham, 3,679,460.

Union Oil Company of California: *See—*
Fenton, Donald M., 3,679,688.
Fenton, Donald M., 3,679,689.
Strauss, Robert E.; and Hashimoto, Saburo, 3,679,392.
Young, Donald C., 3,679,377.
Young, Donald C., 3,679,390.

Union Pump Company: *See—*
Yohpe, Reinhard A., 3,679,332.

Union Siderurgique du Nord et de l'Est de la France Par Abreviation "USINOR": *See—*
Francois, Xavier; Venet, Roland Jean; and Prioretti, Guy Pierre, 3,678,845.

United Aircraft Corporation: *See—*
Ballard, Norman D., 3,679,567.
Basche, Malcolm; Fanti, Roy; Galasso, Francis S.; Kuntz, Urban E.; and Schile, Richard D., 3,679,475.
Paulonis, Daniel F.; Duvall, David Scott; and Owczarski, William A., 3,678,570.
Shohet, Herbert N.; Magri, Joseph L.; and Primachuk, Edward R., 3,678,690.
Shohet, Herbert N.; and Magri, Joseph L., 3,678,691.
Stargardter, Hans, 3,679,324.
Tien, John K.; and Copley, Stephen M., 3,678,988.

United Kingdom Atomic Energy Authority: *See—*
Betts, Colin; and Collinson, Alfred Edward, 3,678,963.
Wells, Frank Herbert; and Davey, Cyril Norman, 3,678,731.

United Kingdom of Great Britain and Northern Ireland, Minister of Technology in Her Britannic Majesty's Government of the: *See—*
Benjamin, John, 3,680,120.

United States of America
Agriculture: *See—*
Pomeranz, Yeshajahu; and Finney, Karl F., 3,679,433.
Rhodes, Philip L.; and Brown, Roger S., 3,678,537.

Air Force: *See—*
Richard, David J., 3,680,127.
Slobodnik, Andrew J., Jr., 3,680,009.
Wesson, Jerry J.; and Boulter, Thomas W., 3,678,859.

Air Force, mesne: *See—*
Darrah, John H.; Bell, James C.; Vorachek, Jerome J.; Bezbatchenko, John W.; Biecker, George A.; Barton, James A.; Gordon, Robert C.; and Kirschner, Gerald D., 3,680,129.

Army: *See—*
Jones, Howard S., Jr.; Witte, Joseph J.; and Morlock, Harry K., 3,680,130.
Wheeler, Harold A., 3,680,138.

Atomic Energy Commission: *See—*
Buck, Keith E., 3,678,686.

Atomic Energy Commission, mesne: *See—*
Kolodney, Morris, 3,679,551.

Interior: *See—*
Smith, Nelson S., Jr.; and Fasching, George E., 3,679,973.

National Aeronautics and Space Administration: *See—*
Burch, John L., 3,678,771.
Rubin, Bernard; and Childress, James D., 3,679,360.

National Aeronautics and Space Administration: *See—*
Dimeff, John, 3,679,899.
Van Atta, Lester C.; and Mailloux, Robert J., 3,680,142.

National Aeronautics and Space Administration; Deputy Administrator; with respect to an invention of:
Albright, Charles F. Process for separation of dissolved hydrogen from water by use of palladium and process for coating palladium with palladium black. 3,678,654, Cl. 55-16.000.
Byxbee, Crawford Ralph. Solar energy powered heliotrope. 3,678,685, Cl. 60-23.000.
Ludwig, Arthur C. Singly-curved reflector for use in high-gain antennas. 3,680,144, Cl. 343-781.000.

Navy: *See—*
Bergey, John M. K.; and Kalatucka, Stephen, 3,680,046.
Bickel, John E.; Freres, Clemens H.; Gossard, Earl E.; Britt, James E.; Ortwein, Norman R.; and Swanson, Eric R., 3,680,115.
Bishop, Walton B., 3,680,090.
Brown, Claude W., 3,680,093.
Bryant, Kenneth Owen; Morrow, William R.; and Logue, Vernon J., 3,680,088.
Bryant, Marion B.; and Hunt, Barry R., 3,680,123.
Buehler, William J., 3,679,394.
Collings, Rupert H., 3,680,136.
Gustafson, Walter R.; McMillen, William H.; and Lippel, Lewis, Jr., 3,680,087.
Kilmer, Earl E., 3,678,853.
McCamis, Marvin J.; and Gibson, George W., 3,680,036.
Roberts, Richard A.; and Jones, John R., 3,679,157.
Roberts, William E.; and Barry, Gerald J., 3,679,215.
Westaway, Thomas A., 3,680,104.
Woerrlein, Hermann H., 3,680,100.
Wright, Billy D., 3,680,137.

Navy, mesne: *See—*
Foley, Thomas P., 3,680,106.

Navy System: *See—*
Stone, Albert M.; and Westerfield, Edwin E., 3,680,124.

United States Smelting, Refining & Mining Company: *See—*
Smyers, Frank C.; and Garrison, John H., 3,679,395.

United States Tobacco Company: *See—*
De Voe, John M., 3,678,674.

Unitek Corporation: *See—*
Mansour, Momtaz Nosshi, 3,678,768.

Universal Oil Products Company: *See—*
Auriemma, Nicholas A., 3,679,065.
Di Noia, Emanuel J.; and Breunich, Theodore R., 3,678,750.
Lester, George R.; and Brennan, John F., 3,679,704.
Massie, Stephen N., 3,679,740.
Pollitzer, Ernest L., 3,679,602.
Schmerling, Louis, 3,679,759.
Schmerling, Louis, 3,679,760.

University of Kentucky Research Foundation, The, mesne: *See—*
Hurst, George S.; Thennard, Norbert; and Schneider, Karl A., 3,679,902.

Upjohn Company, The: *See—*
Babcock, John C.; and Beal, Philip F., III, 3,679,705.
Beaton, John M.; Van Rheenen, Verlan H.; and Parikh, Jekishan R., 3,679,715.
Bergy, Malcolm E.; Herr, Ross R.; and Mason, Donald J., 3,679,787.

Upp, Donald L., to General Motors Corporation. Terminal board assembly for out-of-plane contacts. 3,679,870, Cl. 219-445.000.

Urbas, John C. Apparatus and method for measuring steam and condensate flows. 3,678,747, Cl. 73-194.00r.

U.S. Dynamics Inc., mesne: *See—*
Hereford, John R., 3,679,305.

U.S. Philips Corporation: *See—*
Daniels, Alexander, 3,678,992.
de Lange, Willem; Duyfjes, Werner; and Maas, Willem, 3,679,797.
Jacques, Jean-Marie; and Beniada, Maurice, 3,679,935.
Knippenberg, Wilhelmus Franciscus; and Verspui, Gerrit, 3,678,568.
Moerkens, Jozef Cornelis, 3,679,936.
Staas, Frans Adrianus, 3,678,704.
Te Velde, Ties Siebolt; and Van Heusden, Sybrandus, 3,679,496.
Van Oosterhout, Gerard Willem; Lemmen, Hendrikus Johannes; and Klomp, Cornelis Johannes, 3,679,476.
Zwiep, Cornelis Willem; and Van Steen, Bernardus Ignatius Maria, 3,679,849.

U.S. Philips Corporation, mesne: *See—*
Jank, Reinhard, 3,679,921.

Ushiyama, Keiichi: *See—*
Irikura, Tsutomu; Nishino, Keigo; Suzue, Seigo; Ushiyama, Keiichi; Shinoda, Hirotaka; and Hasegawa, Yoshinori, 3,679,730.

USM Corporation: *See—*
Mc Garr, John J., 3,679,783.

Vactronics, Inc.: *See—*
Selley, Wilbur-Webb; and Schaffer, Richard H., 3,679,885.

Vagi, Louis D.; and Westerdale, Maurice M., to Ford Motor Company. Assembly having integral sealing means. 3,678,635, Cl. 52-28.000.

Valdes, Juan J. Tile placing machine. 3,678,645, Cl. 52-749.000.

Valstar, Jacob E., to North American Rockwell Corporation. Ground mapping radar system. 3,680,086, Cl. 343-5.0cm.

Van Allen, David: *See—*
Knight, Frank W.; and Van Allen, David, 3,679,417.

Van Atta, Lester C.; and Mailloux, Robert J., to United States of America, National Aeronautics and Space Administration. Circularly polarized antenna. 3,680,142, Cl. 343-770.000.

van der Meij, Pieter H.: *See—*
Wagenaar, Adriaan H.; and van der Meij, Pieter H., 3,679,582.

van der Meij, Pieter H.; and Buitelaar, Arnold A., to Shell Oil Company. Polyalkylmethacrylates as pour point depressants for lubricating oils. 3,679,644, Cl. 260-86.10e.

Van Doornewaard, Hans; and Jackson, Henry G., to Phillips Fibers Corporation. Method and apparatus for melt spinning of synthetic filaments. 3,679,786, Cl. 264-176.00f.

Van Dorn, Horace B.; and Howe, Ralph S., Jr., to Textron, Inc. Self-locking ring construction. 3,679,279, Cl. 308-236.000.

Van Dusen, Harold A., Jr., to McGraw-Edison Company. Ambient contaminant collecting device. 3,679,311, Cl. 356-36.000.

Van Etten, Wallace D. Cargo bolster. 3,678,865, Cl. 105-369.00b.

Van Heusden, Sybrandus: *See—*
Te Velde, Ties Siebolt; and Van Heusden, Sybrandus, 3,679,496.

Van Huisen, Allen T. Geothermal in situ mining and retorting system. 3,679,264, Cl. 299-4.000.

Van Impe, Jean; Chaussonnet, Pierre E.; and Rombaux, Jean-Pierre M., to ENI-l'Electro-Navale & Industrielle S.E.P.I. Process for separating the core of a tubular nuclear fuel element. 3,679,378, Cl. 23-324.000.

Van Manen, Jacob Teunis Teunissen, to Conical Containers Company (Proprietary) Limited. Methods and apparatus for folding sheets. 3,678,814, Cl. 93-49.00m.

Van Niel, Clarence R., to Eaton Corporation, mesne. Fastening device. 3,678,798, Cl. 85-81.000.

Van Oosterhout, Gerard Willem; Lemmen, Hendrikus Johannes; and Klomp, Cornelis Johannes, to U.S. Philips Corporation: Method of coating synthetic resin base. 3,679,476, Cl. 117-236.000.

Van Rheenen, Verlan H.: *See—*
Beaton, John M.; Van Rheenen, Verlan H.; and Parikh, Jekishan R., 3,679,715.

Van Rij, Coenraad. Mixing apparatus. 3,679,181, Cl. 259-5.000.

Van Steen, Bernardus Ignatius Maria: *See—*
Zwiep, Cornelis Willem; and Van Steen, Bernardus Ignatius Maria, 3,679,849.

Van Uitert, Le Grand Gerard: *See—*
Bonner, William Adam; Singh, Shobha; and Van Uitert, Le Grand Gerard, 3,679,907.

Van Veldhuizen, John. Track locking device for air cushion vehicles. 3,678,860, Cl. 104-23.0fs.

Vancamp, Raymond M.; Minor, Paul S.; and Muren, Albert P., Jr., to PPG Industries, Inc. Reactor for use with fluidized beds. 3,679,373, Cl. 23-288.00l.

Vance, Lawrence T., to Engineered Products, Inc. Building wall assembly. 3,678,625, Cl. 49-381.000.

Vandenberghe, Antoon Leon: *See—*
Pollet, Robert Joseph; and Vandenberghe, Antoon Leon, 3,679,423.

Varian Associates, mesne: *See—*
Hentschel, John E., 3,679,993.

Vartanian, Richard D., to Ford Motor Company. Engine spark timing system. 3,678,907, Cl. 123-117.00a.

Vasta, Joseph A., to Du Pont de Nemours, E. I., and Company. Hydroxyl containing copolymers. 3,679,642, Cl. 260-70.720.

VDO Tachometer Werke-Adolf Schindling GmbH: *See—*
Arzt, Friedrich; and Hofert, Paul, 3,679,850.

Veb Kombinat Nagema: *See—*
Leuschner, Gerhard; Pietsch, Peter; and Kadner, Gunter, 3,678,648.

VEB Polygraph Leipzig, Kombinat fur polygraphische Maschinen und Ausrustungen: *See—*
Hertrich, Klaus; and Peters, Riener, 3,679,201.

Vecchio, Martino; Cammarata, Italo; and Pattore, Vittorio, to Montecatini Edison S.p.A. Process for preparing halogenated and mixed halogenated derivatives of methane by the chlorofluorination of methane. 3,679,767, Cl. 260-653.800.

Vehe, Dennis A.; Porterfield, Jay G.; and Roth, Lawrence O., to Cotton, Incorporated, mesne. Jet stream vibratory atomizing device. 3,679,132, Cl. 239-4.000.

Vely, Victor G.: *See—*
Litchfield, John H.; and Vely, Victor G., 3,679,792.

Venet, Roland Jean: *See—*
Francois, Xavier; Venet, Roland Jean; and Prioretti, Guy Pierre, 3,678,845.

Verbanc, John J.: *See—*
Harrell, Jerald R.; Logothetis, Anestis L.; and Verbanc, John J., 3,679,627.

Vereinigte Flugtechnische Werke-Fakker GmbH: *See—*
Neumann, Dietrich; and Pattberg, Georg, 3,680,069.

Vereinigte Osterreichische Eisen- und Stahlwerke Aktiengesellschaft: *See—*
Schoffmann, Rudolf, 3,678,571.

Verspui, Gerrit: *See—*
Knippenberg, Wilhelmus Franciscus; and Verspui, Gerrit, 3,678,568.

Vickers Limited: *See—*
Gothard, Sydney Averill, 3,679,142.

Victor Company of Japan, Limited: *See—*
Suzuki, Toshi; and Nishijima, Tsutomu, 3,679,839.
Yamamoto, Toshiaki, 3,680,008.

Victor Company of Japan, Ltd.: *See—*
Wada, Yoshiyo; Kinjo, Hisao; and Okano, Keigo, 3,679,822.

Vieth, George C., Jr.: *See—*
Barron, Roger L.; Kelleher, Kenneth S.; and Vieth, George C., Jr., 3,680,126.

Villa, Jose L., to Thiokol Chemical Corporation. Method of making ethylene sulfide polymers by addition of stabilizers to reaction mixture prior to polymerization. 3,679,616, Cl. 260-18.00r.

Vinal, Albert W., to International Business Machines Corporation. Coaxial anisotropic magnetic film storage device with burst cycle writing. 3,680,064, Cl. 340-174.0qa.

Vindez, Pierre G.: *See—*
Bohorquez, Luis; and Vindez, Pierre G., 3,679,320.

Vitale, Joseph Michael, to Avnet, Inc. Ignition cable. 3,680,027, Cl. 338-214.00.

Vits, Hilmar, to Vits Maschinenbau GmbH. Apparatus for a non-contacting stabilization of a web which is moved in its longitudinal direction. 3,678,599, Cl. 34-156.000.

Vits Maschinenbau GmbH: *See—*
Vits, Hilmar, 3,678,599.

Vogelfanger, Elliot A., to Celanese Corporation. Formation of aromatic polyamides in gammabutyrolactone as mutual solvent for aromatic diamines, and 2,6-lutidine. 3,679,636, Cl. 260-78.00r.

Voges, Albert John. Package. 3,678,620, Cl. 47-37.000.

Voit, William F., Jr.: *See—*
Bullock, Michael K.; Miller, Myrl J.; and Voit, William F., Jr., 3,679,099.

Volans, Peter, to Monsanto Chemicals Limited. Apparatus for the production of fibrous materials. 3,679,111, Cl. 225-97.000.

Volkers, Daphne: *See—*
Wille, Edward N.; and Volkers, Walter K., 3,680,128.

Volkers, Walter K.: *See—*
Wille, Edward N.; and Volkers, Walter K., 3,680,128.

Voltronics Corporation: *See—*
Newman, Richard J.; Mittler, Martin A.; and Blickstein, Martin J., 3,679,940.

von der Eltz, Hans-Ulrich; Birke, Walter; Kunze, Wolfgang; Taunus, Hofheim; and Schon, Franz, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Removal of polyester oligomers with chlorofluoroalkanes and methylene chloride treatment of polyester fibers. 3,679,349, Cl. 8-17.000.

von Tobel, Hans, to Sandoz Ltd. Phthalocyanines. 3,679,675, Cl. 260-242.000.

Vorachek, Jerome J.: *See—*
Darrah, John H.; Bell, James C.; Vorachek, Jerome J.; Bezbatchenko, John W.; Biecker, George A.; Barton, James A.; Gordon, Robert C.; and Kirschner, Gerald D., 3,680,129.

Vosburg, Guy M.: *See—*
Roser, Gerhard K.; Rebechini, Eugene J.; and Vosburg, Guy M., 3,678,848.

Vrancken, Marcel Nicolas; and Claeys, Daniel Alois, to Agfa-Gevaert. Heat-sensitive recording material. 3,679,410, Cl. 96-27.000.

Vulliamy, Nicholas Martin F., to Perkins Engines Limited. Rubber mounted sump. 3,678,914, Cl. 123-195.00c.

Wada, Yasuo: *See—*
Okamoto, Fumio; Wada, Yasuo; and Miyatani, Kazuo, 3,679,379.
Wada, Yoshiyo; Kinjo, Hisao; and Okano, Keigo, to Victor Company of Japan, Ltd. Signal compensation system in recording and reproducing apparatus. 3,679,822, Cl. 178-6.6do.

Wadsworth, Donald E. Lawn edge trimming machine. 3,679,003, Cl. 172-15.000.

Wagenaar, Adriaan H.; and van der Meij, Pieter H., to Shell Oil Company. Flow improvement of waxy hydrocarbon with the aid of polysaccharide derivatives. 3,679,582, Cl. 252-8.300.

Wagner, Douglas A., to General Motors Corporation. Propeller coupling. 3,679,033, Cl. 192-48.700.

Wagstaff, Robert A.: *See—*
Pedersen, Poul K.; Wagstaff, Robert A.; and Waldrop, Thomas W., 3,678,772.

Wakefield, Norman; Alexander, Stuart John; Morrish, James Francis Gerrards Cross; Beck, William; Groves, Raymond Sturgis; and Harvey, Michael J., to Wates Limited. Method of joining pre-cast concrete panels. 3,678,644, Cl. 52-747.000.

Waldorf, Hoerner, Corporation: *See—*
Klitzke, Loren J., 3,679,146.

Waldrop, Thomas W.: *See—*
Pedersen, Poul K.; Wagstaff, Robert A.; and Waldrop, Thomas W., 3,678,772.

Walker, Christopher H. C.: *See—*
Searle, Simon M. St. L.; and Walker, Christopher H. C., 3,679,297.

Walker, Maurice Mark, to Tektronix, Inc. Multivibrator circuits employing or-nor gates. 3,680,003, Cl. 331-108.00d.

Wallenius, Jan Folke: *See—*
Eriksson, Anders Karl Oskar; and Wallenius, Jan Folke, 3,678,791.

Walsh, David I., to Indev, Inc. Flocking. 3,678,894, Cl. 118-624.000.

Wanka, Walter: *See—*
Stoll, Albert; and Wanka, Walter, 3,679,862.

Wanlass, Cravens L., to Ambac Industries, Incorporated. High frequency parametric voltage regulator. 3,679,962, Cl. 321-18.000.

Wanlass, Cravens L., to Ambac Industries, Incorporated. Closed loop parametric voltage regulator. 3,679,966, Cl. 323-56.000.

Wantland, Charles F.; Juge, Frank E., Jr.; and Hinds, William H., to Shell Oil Company. Molten salt hydrofining process. 3,679,577, Cl. 208-108.000.

Warberg, Henrik S., to Aomic Power Development Associates, Inc. Elastic support grid for nuclear fuel elements. 3,679,547, Cl. 176-78.000.

Ward, Raymond: *See—*
Brook, David Whiteley; and Ward, Raymond, 3,679,721.

Wardly, George A., to International Business Machines Corporation. Electrostatic prism. 3,679,896, Cl. 250-41.9me.

Warfield, Wayne N.; and Eaton, Russell K., to Stryker Corporation. Power osteotome. 3,678,934, Cl. 128-317.000.

Warnant, Julien; and Farcilli, Andre, to Uclaf Roussel. 17α,21-Dimethyl-19-nor-$\Delta^{4,9}$-pregnadiene-3,20-dione and process therefor. 3,679,714, Cl. 260-397.300.

Warner & Swasey Company, The, mesne: *See—*
Payne, Winslow C.; and Trottier, Gerard M., 3,678,631.

Warner-Lambert Company: *See—*
Babson, Arthur L., 3,679,661.
Morrison, Glenn C.; and Shavel, John, Jr., 3,679,691.
Novack, Robert M., 3,679,732.

Warren, James A.: *See—*
Mello, William R.; and Warren, James A., 3,678,572.

Warshawsky, Jerome. Alt azimuth swivel construction. 3,679,236, Cl. 285-39.000.

Wasatch Chemical Company: *See—*
Hansen, Charles N.; Young, Morris D.; and Granger, James E., 3,679,593.

Washburn, Malcolm E., to Norton Company. Control of shrinkage and growth of silicon oxynitride bodies. 3,679,444, Cl. 106-55.000.

Wasley, Jan W. F.; and Gruenfeld, Norbert, to Ciba-Geigy Corporation. Derivatives of 4-[2-(carbocycloalkoxymethyl) phenylimino]-1,4-dihydroquinolines. 3,679,687, Cl. 260-287.00r.

Watabe, Shigeru; and Ohmi, Atsushi, to Aisin Seiki Kabushiki Kaisha. Sealing means between master cylinder and brake booster. 3,678,687, Cl. 60-54.60p.

Watanabe, Asao, to Nippon Kogaku K. K. Electronic shutter device comprising logarithmic-antilogarithmic circuitry. 3,679,905, Cl. 250-206.000.

Watanabe, Shigeo; Sogi, Toshiyuki; and Mukai, Tsuneo, to Bridgestone Tire Company Limited. Pneumatic radial tire. 3,678,982, Cl. 152-361.000.

Wates Limited: *See—*
Wakefield, Norman; Alexander, Stuart John; Morrish, James Francis Gerrards Cross; Beck, William; Groves, Raymond Sturgis; and Harvey, Michael J., 3,678,644.

Weaver, Marlin P.: *See—*
Smoker, Benjamin K.; Weaver, Richard L.; and Weaver, Marlin P., 3,679,042.

Weaver, Richard L.: *See—*
Smoker, Benjamin K.; Weaver, Richard L.; and Weaver, Marlin P., 3,679,042.

Weaver, Richard L.; and Smoker, Benjamin K., said Smoker assor. to said Weaver. Clamping device. 3,679,168, Cl. 249-196.000.

Webb, Jervis B., Company: *See—*
Becker, Raymond M., 3,679,043.

Weber, Anthony V., to Weber Industries, Inc. Pump control. 3,679,326, Cl. 417-38.000.

Weber, Charles A., to Elkhart Welding & Boiler Works, Inc. Trailer hitch. 3,679,232, Cl. 280-406.00a.

Weber, Heinz, to Telesco Brophey Limited. Handle for collapsible umbrella. 3,678,949, Cl. 135-20.000.

Weber Industries, Inc.: *See—*
Weber, Anthony V., 3,679,326.

Weber Marking Systems, Inc.: *See—*
Roser, Gerhard K.; Rebechini, Eugene J.; and Vosburg, Guy M., 3,678,848.

Weber, Russell W. Carpet-trimming. 3,678,586, Cl. 33-174.00g.

Weber-Knapp Company: *See—*
Little, Carl H., 3,678,536.

Webster, George H.: *See—*
Dembiak, Matthew Raymond; and Webster, George H., 3,679,503.

Wech, Robert J. Bag machine. 3,678,812, Cl. 93-20.000.

Wech, Robert J. Bag machine. 3,678,813, Cl. 93-20.000.

Weggeland, John Henry. Photograph mounting jig. 3,679,198, Cl. 269-3.000.

Weglin, Walter; and Wildebour, Charles W., to Jerobee Industries, Inc., mesne. Method of contemporaneously shearing and bonding conductive foil to a substrate. 3,678,577, Cl. 29-625.000.

Wehrmann, Nicholas, to Ithaca Textiles, Inc. Panty-hose. 3,678,515, Cl. 2-224.00r.

Weidel, Joseph C., to Rohr Corporation. Method and apparatus for making plastic tubing. 3,679,508, Cl. 156-173.000.

Weinberg, Norman Louis, to American Cyanamid Company. Electrochemical formation of bonded structures. 3,679,534, Cl. 161-68.000.

Weiner, Daniel, to Bell Telephone Laboratories, Incorporated. Multiple beam transmissions system with improved cross-talk reduction. 3,679,904, Cl. 250-199.000.

Weiner, Leon: *See—*
Weiner, Leon; Kilpatrick, John E.; and Spiger, Robert J., 3,679,877.

Weiner, Leon; Kilpatrick, John E.; and Spiger, Robert J., to Weiner, Leon. Alpha ray pattern recognition system. 3,679,877, Cl. 235-92.0pc.

Weiss, Paul C., to Ambac Industries Incorporated. Vehicular material spreader control apparatus. 3,679,098, Cl. 222-23.000.

Weissbach, Peter: *See—*
Christ, Wilhelm; and Weissbach, Peter, 3,679,357.

Weissbein, Leonard; and O'Brien, Samuel James, to American Cyanamid Company. Attenuation of thermal radiation with phototropic dyes. 3,679,351, Cl. 8-50.000.

Welding Institute, The: *See—*
Ellis, Colin R. G.; and Lilly, Rodger H., 3,678,566.

Weldle, Helmut: *See—*
Seidel, Alex; Moller, Tilo; and Weldle, Helmut, 3,678,800.

Weller, Wolfgang: *See—*
Korsgen, Hans Helmuth; and Weller, Wolfgang, 3,679,638.

Weils, Frank Herbert; and Davey, Cyril Norman; deceased (by Davey, Catherine Margaret; Administratrix), to United Kingdom Atomic Energy Authority. Apparatus for measuring the flow velocity of fluids. 3,678,731, Cl. 73-194.00a.

Welwyn Electric Limited: *See—*
Pey, Walter Arnold, 3,680,013.

Welz, Rudolf. Attachment for rakes. 3,678,670, Cl. 56-400.140.

Wenger, Markus: *See—*
Morf, Max; Wenger, Markus; and Feisst, Jutta, 3,679,621.

Wenzig, Wolfgang, to Siemens Aktiengeselschaft. Variable capacitance diode. 3,679,948, Cl. 317-234.00r.

Wertman, Louis, to Pic Design Corporation. Pivot linkage assembly kit. 3,679,809, Cl. 35-13.000.

Wesch, Ludwig: *See—*
Meinke, Hans H.; Ullrich, Kurt; and Wesch, Ludwig, 3,680,107.

Wesson, Jerry J.; and Boulter, Thomas W., to United States of America, Air Force. Two stage impact fuze. 3,678,859, Cl. 102-76.00r.

Westaway, Thomas A., to United States of America, Navy. Phase reversal pulse modulator and pulse-compression filter for a coherent radar. 3,680,104, Cl. 343-17.2pc.

Westberg, Johan E. H.: *See—*
Unger, Hans Peter Olof; Westberg, Johan E. H.; Berndtsson, Gunnar Ingemar; and Schwartz, Stephan Lars, 3,679,128.

Westcott, Vernon C.; Blanchard, Byron E.; Davis, Paul A.; and Prevot Stephane, to Trans-Sonics, Inc. Tolerance checking system. 3,678,742, Cl. 73-117.300.

Westerdale, Maurice M.: *See—*
Vagi, Louis D.; and Westerdale, Maurice M., 3,678,635.

Westerfield, Edwin E.: *See—*
Stone, Albert M.; and Westerfield, Edwin E., 3,680,124.

Westerlund, Gothe O., to Chemech Engineering Ltd. Cell construction. 3,679,568, Cl. 204-242.000.

Western Electric Company, Incorporated: *See—*
Blitchington, Frank H., Jr., 3,679,903.
Campbell, Douglas Earl; and Harris, Richard Allen, 3,679,310.
Crosby, Gerald E.; and Shanefield, Daniel J., 3,679,472.
Czeck, Joseph J.; Glen Lyon; and Reusser, Raymond E., 3,679,370.
Dembiak, Matthew Raymond; and Webster, George H., 3,679,503.
Duffek, Kenneth John; and Nolan, Thomas Hoyt, 3,680,076.
Fairchild, Albert R., 3,678,892.
Gondeck, Allan R., 3,679,881.
La Valle, Thomas Alvin, 3,679,861.
Montone, Liber J., 3,679,820.

Western Printing Machinery Co.: *See—*
Musgrave, Ray D., 3,678,849.
Westinghouse Air Brake Company: *See—*
Becky, Raymond, 3,679,828.
Westinghouse Electric Corporation: *See—*
Buck, Daniel C., 3,680,010.
Burgoon, Richard J., 3,680,071.
Carothers, Charles H.; and Kelly, Robert M., 3,679,938.
Cobb, William R., 3,678,716.
Cricchi, James R., 3,680,062.
Driver, Michael C., 3,678,573.
Fort, Emil M., 3,679,925.
Handy, Robert M.; Angello, Stephen J.; Malmberg, Paul R.; and O'Keeffe, Terence W., 3,679,497.
Hardman, Carl C., 3,679,482.
Holtkamp, Calvin J., 3,680,021.
Hopkins, Richard H.; Roland, George W.; Steinbruegge, Kenneth B.; and Partlow, William D., 3,679,597.
Neff, William S., 3,679,532.
Reynolds, Arthur T., Jr., 3,680,139.
Ropp, Richard C., 3,679,452.
Simmonds, Leonard B.; and Botts, John C., 3,679,926.
Weststrate, Willem J. J., to General Motors Corporation. Vehicle passive occupant restraining belt arrangement. 3,679,229, Cl. 280-150.0sb.
Wetzel, Walter. Basket device for refuse trucks. 3,679,078, Cl. 214-302.000.
Wexstaff, Charles W., to Affiliated Hospital Products, Inc. Game club. 3,679,209, Cl. 273-129.000.
Weyerhaeuser Company: *See—*
Schillinger, Joseph F., 3,679,124.
Weyman, Henry Walter. Pneumatic cylinder assemblies. 3,678,805, Cl. 92-11.000.
Wheadon, Ellis G.; and Willmann, Norman L., to General Motors Corporation. Process of making a battery plate grid. 3,679,789, Cl. 264-249.000.
Wheelabrator-Frye Inc.: *See—*
Leliaert, Raymond M., 3,678,629.
Wheeler, Harold A., to United States of America, Army. Cross-mode reflector for the front element of an array antenna. 3,680,138, Cl. 343-756.000.
Whirlpool Corporation: *See—*
Blatchford, John K.; Peterson, Edward C.; and Burda, Jan C., 3,679,473.
Krolzick, Gordon J., 3,678,714.
Turner, Phillip H.; and Lyman, John B., 3,678,702.
White, James A.: *See—*
De Santis, Alfred J.; Beers, Le Roy W.; White, James A.; and Moysey, John A., 3,680,058.
White, Jerry E.: *See—*
Rao, Vemulapalli D.; Telang, Yeshwant P.; and White, Jerry E., 3,679,459.
White, Kenneth H.: *See—*
Jorgensen, Arnold J.; Bewley, Lawrence L.; and White, Kenneth H., 3,680,005.
Whitlock, Robert A., to Aquamatic Inc. Electric timing device. 3,679,951, Cl. 318-102.000.
Whitney, Douglas S.: *See—*
Morgan, George W.; and Whitney, Douglas S., 3,679,045.
Whitten, James R., to General Electric Company. Modulation format for signal arrive time determination utilizing differential code logic. 3,680,114, Cl. 343-100.0cl.
Wicha, Cornel: *See—*
Schneider, Harald; and Wicha, Cornel, 3,678,711.
Wichterle, Otto, to Ceskoslovenska akademie ved. Method of forming color effects in hydrogel contact lenses and ophthalmic prostheses. 3,679,504, Cl. 156-62.000.
Widmer, Fritz; and Gorbei, Janos Miklos, to Luwa AG. Thin film apparatus. 3,678,983, Cl. 159-6.00w.
Wienand, Michael; Jensen, Klaus; Primessing, Franz; and Alfter, Franz-Werner, to Dynamit Nobel Aktiengesellschaft. Shaped section of a thermoplastic synthetic material. 3,679,531, Cl. 161-48.000.
Wilburn, Ray H.: *See—*
Farque, C. Anthony, 3,679,957.
Wildebour, Charles W.: *See—*
Weglin, Walter; and Wildebour, Charles W., 3,678,577.
Wildi, Bernard S.: *See—*
Schuck, James M.; and Wildi, Bernard S., 3,679,653.
Wilkinson, Bruce L., to Pioneer Magnetics, Inc. Power supply voltage output detector. 3,679,965, Cl. 323-19.000.
Wilkinson, John C., to Heinemann Electric Company. Circuit breaker with an improved actuating mechanism. 3,680,014, Cl. 335-26.000.
Wille, Edward N.; and Volkers, Walter K.; deceased (by Volkers, Daphne; executrix), to Wolkers Research Inc. Receiver with input phase control between antenna and chassis. 3,680,128, Cl. 343-702.000.
Willems, Joannes Josephus Maria: *See—*
Hermans, Hubert Karel Frans; Knaeps, Alfonsus Gillielmus; and Willems, Joannes Josephus Maria, 3,679,686.
William Boby & Company Limited: *See—*
Wyatt, James Andrew Stewart; Chapman, Clifford Victor Gascoyne; Solt, George Stefan; and Mullet, Sidney George, 3,679,059.
Williams, Clive: *See—*
Arulpragasam, Jeganandaraj A.; Binks, Dennis C.; Holmes, John J.; Minshull, John F.; Pinnell, Martin C.; and Williams, Clive, 3,680,052.
Williams, James M., to Massachusetts Institute of Technology. Touch control switch. 3,679,910, Cl. 307-252.00w.
Williams, Joyce: *See—*
Brook, James H. T.; and Williams, Joyce, 3,679,585.
Williams, Kenneth I. H.: *See—*
Popoff, Ivan C.; and Williams, Kenneth I. H., 3,679,736.
Williams, Richard E.: *See—*
Uffelman, Malcolm R.; Williams, Richard E.; and Kleiner, Norbert, 3,679,830.
Williams, Terence: *See—*
Davies, Gordon Idris; Killay, Swansea; and Williams, Terence, 3,678,888.
Williamson, Alton M.: *See—*
Satterwhite, Lawrence E.; Williamson, Alton M.; and Shindler, George R., 3,678,958.
Williamson, Paul C. Football sideline chain marker. 3,678,592, Cl. 33-289.000.
Willis, James L., Jr.: *See—*
Burress, George T.; and Willis, James L., Jr., 3,679,741.
Willmann, Norman L.: *See—*
Wheadon, Ellis G.; and Willmann, Norman L., 3,679,789.
Wilson, George E. Fuse removal tool. 3,678,789, Cl. 81-64.000.
Wilson, Leroy E.: *See—*
Capell, A. Earl; and Wilson, Leroy E., 3,679,515.
Wilson, Roy A., to Burroughs Corporation. Buffer memory having read and write address comparison for indicating occupancy. 3,680,055, Cl. 340-172.500.
Wilwerding, Dennis J., to Honeywell, Inc. Rapid recycle oscillator with cutoff and thermal protection. 3,679,991, Cl. 331-62.000.
Winters, Hilary M.; and Creasy, James R., to Automatic Electric Laboratories, Inc. Selection matrix including a diode test circuit. 3,679,970, Cl. 324-51.000.
Wintershall Aktiengesellschaft: *See—*
Hartmann, Hellmut; and Budan, Gerhard, 3,679,362.
Winton, Orrin J.: *See—*
Maresca, Neal J.; and Winton, Orrin J., 3,678,743.
Wise, Eugene H.; and Blumenkranz, James J., to Sloane, R. & G., Manufacturing Company, Inc. Fire isolation and insulating apparatus. 3,678,634, Cl. 52-1.000.
Wismer, Marco: *See—*
Parker, Gordon M.; Wismer, Marco; and Hahn, Ernest A., 3,679,731.
Wiss, J., and Sons Co.: *See—*
Duffy, William, 3,678,580.
Wisseman, Leo L.: *See—*
Free, Maurice G.; and Wisseman, Leo L., 3,679,963.
Witmore, Ronald Kirk: *See—*
Braun, Edwin Julius; Maxon, Rodney Robert; Meise, Henry August, Jr.; Taylor, George William; and Witmore, Ronald Kirk, 3,679,834.
Witte, Joseph J.: *See—*
Jones, Howard S., Jr.; Witte, Joseph J.; and Morlock, Harry K., 3,680,130.
Woerrlein, Hermann H., to United States of America, Navy. Randomly phase coded antenna technique for search radar. 3,680,100, Cl. 343-11.00r.
Wolbach, William W.; trustees of: *See—*
Merrill, Edward W., 3,678,756.
Merrill, Edward W., 3,679,625.
Wolf, Stewart Franklin: *See—*
Donovan, Ross Grant; and Wolf, Stewart Franklin, 3,679,548.
Wolfowitz, Stanley: *See—*
Zimmerman, Daniel; and Wolfowitz, Stanley, 3,679,540.
Wolkers Research Inc.: *See—*
Wille, Edward N.; and Volkers, Walter K., 3,680,128.
Wong, Kwok-Ming: *See—*
Lee, Admond K.; and Wong, Kwok-Ming, 3,678,679.
Wong, William Y.: *See—*
Arbab, Majid; Wong, William Y.; and Yu, Kuenseng, 3,680,061.
Wood, Robert E., to Garber, A. L., Company, The. Carton with composite end wall. 3,679,123, Cl. 229-43.000.
Woodford, Terrence R., to Institute of Textile Technology. Creel structure for circular knitting machines. 3,678,713, Cl. 66-132.00r.
Woodham, Cecil Halliday, to Lloyds Bank Limited. Mixing devices. 3,679,184, Cl. 259-72.000.
Woods, John A.; and Beck, Marvin G. Adjustable brush. 3,678,529, Cl. 15-180.000.
Woolley, W. J., Co.: *See—*
Bicicchi, Vincent A., 3,678,624.
Wright, Billy D., to United States of America, Navy. Circular symmetric bootlace lens system. 3,680,137, Cl. 343-754.000.
Wrightman, Karl B.; and Zehnder, Hans, to Technicon Instruments Corporation. Method for the automatic counting of the somatic cells in milk, and novel reaction reagent for use therewith. 3,679,365, Cl. 23-231.000.
Wrigley, Wm., Jr., Company: *See—*
Litchfield, John H.; and Vely, Victor G., 3,679,792.
Wu, Yao Hua; and Lobeck, Walter G., to Mead Johnson & Company. Iminomethylindolines. 3,679,692, Cl. 260-296.00b.

Wu, Yao Hua; and Ryan, Richard P., Jr., to Mead Johnson & Company. 1-[2-Amino-a-(3-indolyl)phenethyl 1]-2-pyrrolidinone. 3,679,702, Cl. 260-326.14r.
Wurmb, Rolf: *See—*
Pohlemann, Heinz; and Wurmb, Rolf, 3,679,737.
Wyatt, James Andrew Stewart; Chapman, Clifford Victor Gascoyne; Solt, George Stefan; and Mullet, Sidney George, to William Boby & Company Limited. Membrane packs. 3,679,059, Cl. 210-321.000.
Wynn, Robert W.: *See—*
Randall, Davis I.; and Wynn, Robert W., 3,679,780.
Wyse, Stanley F.: *See—*
Erdley, Harold F.; and Wyse, Stanley F., 3,678,764.
Wyss, Hugo. Method for the production of electrical resistor bodies, and electrical resistor bodies produced in accordance with said method. 3,679,471, Cl. 117-201.000.
Xercon, Inc., mesne: *See—*
Myers, Clifford E., 3,679,906.
Xerox Corporation: *See—*
Adams, James E.; Leder, Lewis B.; and Haas, Werner E. L., 3,679,290.
Artelt, Herbert C., Jr., 3,679,300.
Chen, Philip L.; and Paradysz, Louis F., 3,678,820.
Gundlach, Robert W., 3,678,850.
Hewitt, Robert E., 3,678,896.
Hewitt, Robert E., 3,678,897.
Xomox Corporation: *See—*
Smith, Russell G., 3,679,060.
Yamada, Tetsuya: *See—*
Hino, Hiroyuki; Asakuno, Hiroyoshi; and Yamada, Tetsuya, 3,678,545.
Yamada, Yasuo. Pneumatic cleaning apparatus for textile machinery. 3,678,965, Cl. 139-1.00c.
Yamagishi, Hidehisa; Takano, Hiroshi; and Takeuchi, Masao, to Nippon Kokan Kabushiki Kaisha. Method for electrolytic treatment of steel surface in a chromate solution. 3,679,554, Cl. 204-56.
Yamaguchi, Hiroyuki; Tuji, Katsuyoshi; Maki, Kenji; and Shimonishi, Isoo, to Asahi Kasei Kogyo Kabushiki Kaisha. Method for improving polyacrylonitrile fiber by peeling off the fiber surface with solvents. 3,679,355, Cl. 8-130.100.
Yamahata, Achihiko: *See—*
Tanekusa, Toshimi; Takasawa, Hideaki; and Yamahata, Achihiko, 3,679,626.
Yamamoto, Hisao; Okamoto, Tadashi; and Kobayashi, Tsuyoshi, to Sumitomo Chemical Company, Ltd. Novel ester of 3-indolylaliphatic acid derivative. 3,679,672, Cl. 260-240.00j.
Yamamoto, Toshiaki, to Victor Company of Japan, Limited. Ultrasonic wave delay device having a trap zone for undesired signal components. 3,680,008, Cl. 333-30.00r.
Yamashita, Sadahiko, to Matsushita Electric Industrial Company, Limited. Memory device utilizing pulse generating diode. 3,680,059, Cl. 340-173.0nr.
Yamauchi, Masayuki: *See—*
Ohta, Wasaburo; Kasuya, Kazuhiko; and Yamauchi, Masayuki, 3,678,895.
Yata, Kintaro: *See—*
Ueda, Hiroshi; Yata, Kintaro; and Matsuda, Motonobu, 3,678,822.
Year-A-Round Cab Corporation: *See—*
Anderson, Charles Merton, 3,678,697.
Yerman, Alexander J., to General Electric Company. Tunnel diode oscillator FM temperature sensor. 3,679,992, Cl. 331-66.000.
Yohpe, Reinhard A., to Union Pump Company. Reciprocating piston pump. 3,679,332, Cl. 417-503.000.
Yokota, Yuzo: *See—*
Mizuma, Noriaki; and Yokota, Yuzo, 3,679,352.
Yokoyama and said Yoneyama assor. to: *See—*
Yokoyama, Fujihiko; Yoneyama, Tohru; and Sato, Shigehiko, 3,679,438.
Yokoyama, Fujihiko; Yoneyama, Tohru; and Sato, Shigehiko, said Yokoyama and said Yoneyama assor. to, Nisshin Flour Milling, Ltd., said Sato assor. to Takeda Chemical Industries, Ltd. Method for maturing wheat flour. 3,679,438, Cl. 99-232.000.
Yokoyama, Katsunori: *See—*
Ichinose, Noboru; Yokoyama, Katsunori; and Nishikawa, Hisashi, 3,679,919.
Yokoyama, Taizo, to Mita Industrial Company Limited. Two component diazotype with azo coupler. 3,679,420, Cl. 96-91.00r.
Yoneyama, Tohru: *See—*
Yokoyama, Fujihiko; Yoneyama, Tohru; and Sato, Shigehiko, 3,679,438.
Yoo, Jin S., to Atlantic Richfield Company. Chemical process. 3,679,772, Cl. 260-680.00b.
York and said Huff assors. to said Fall: *See—*
Fall, Herbert S.; York William D.; and Huff, Larry D., 3,679,275.
York William D.: *See—*
Fall, Herbert S.; York William D.; and Huff, Larry D., 3,679,275.
Yoshida, Seisaku: *See—*
Inaba, Kohsaku; Yoshida, Seisaku; and Matsuura, Shoji, 3,679,005.
Yoshikawa, Kaoru: *See—*
Seikguchi, Masaaki; Yoshikawa, Kaoru; and Komatsu, Akira, 3,679,133.
Yoshimura, Ippei; Fukue, Norihiko; Sakamoto, Hiroshi; Murofushi, Hisashi; Hiyama, Takami; and Matsunaga, Takao, to Ajinomoto Co., Inc. Curing agent for epoxy resins. 3,679,707, Cl. 260-340.700.
Yoshimura, Susumi; Ito, Yoshimasa; Aakawa, Shirow; and Hasegawa, Katsue, to Matsushita Electric Industrial Company, Limited. Solid capacitor with electrolyte containing organic material and method for producing same. 3,679,944, Cl. 317-230.000.
Yoshino, Toshio: *See—*
Hashimoto, Hideo; Kasahara, Nobuo; and Yoshino, Toshio, 3,679,369.
Yost, Clyde E. Automatic pump control. 3,679,325, Cl. 417-17.000.
Young, Chester C., to Hardcast, Inc. Methods of making sealing tapes. 3,679,456, Cl. 117-63.000.
Young, Donald C., to Union Oil Company of California. Iron complexes containing aguo, sulfate and hydroxyl ligands. 3,679,377, Cl. 23-315.000.
Young, Donald C., to Union Oil Company of California. Suspension fertilizers. 3,679,390, Cl. 71-29.000.
Young, Morris D.: *See—*
Hansen, Charles N.; Young, Morris D.; and Granger, James E., 3,679,593.
Youngquist, Mary J., to Eastman Kodak Company. Photosensitive and thermosensitive elements, compositions and processes. 3,679,426, Cl. 96-114.100.
Younker, George C. Concrete structural member. 3,678,815, Cl. 94-1.500.
Yu, Kuenseng: *See—*
Arbab, Majid; Wong, William Y.; and Yu, Kuenseng, 3,680,061.
Yueh, Mao Hsun; and Schilling, Eugene D., to General Mills, Inc. Calcium carboxyalkyl ethers of galactomannan gums. 3,679,658, Cl. 260-209.00r.
Zachmann, Octave B. Spare wheel for automobile. 3,679,267, Cl. 301-38.00r.
Zahnradfabrik Friedrichshafen Aktiengesellschaft: *See—*
Zippel, Christof; and Ill, Manfred, 3,679,335.
Zaidan Hojin Biseibutsu Kagaku Kai: *See—*
Hamao, Umezawa; Shinichi, Kondo; Kenji, Maeda; Tomio, Takeuchi; and Masa, Hamada, 3,679,742.
Zak, Henry C., to Belzak Corporation. Process for the preparation of sodium glucoheptonate. 3,679,659, Cl. 260-209.00r.
Zaman, Louis F., III, to International Business Machines Corporation. Non-linear feedback gain control and peak detector system. 3,679,986, Cl. 330-86.000.
Zavody Presneho strojirenstvi Gottwaldow narodni podnik: *See—*
Bumbalek, Karel; and Olser, Ladislav, 3,678,522.
Zehnder, Hans: *See—*
Wrightman, Karl B.; and Zehnder, Hans, 3,679,365.
Zenith Radio Corporation: *See—*
Minzenberger, Thomas C., 3,679,499.
Zentro Albert Burkle Kommanditgesellschaft: *See—*
Berger, Hans, 3,680,020.
Zeocon Corporation: *See—*
Siddall, John B., 3,679,720.
Zephyr Manufacturing Co., Inc.: *See—*
Bohorquez, Luis; and Vindez, Pierre G., 3,679,320.
Zhumkhawala, Yusuf M., to Food Protein Concentrates, Inc. Condenser. 3,678,994, Cl. 165-111.000.
Ziebell, Donn G.: *See—*
Clark, Raymond C.; and Ziebell, Donn G., 3,679,271.
Ziering, Albert: *See—*
Malatestinic, Nicholas; and Ziering, Albert, 3,679,666.
Zilkalns, Juris, to Allis-Chalmers Manufacturing Company. Lifting device for disassembling and reassembling pump parts. 3,678,559, Cl. 29-200.00d.
Zimmer, Austin A., to Grace, W. R., & Co. Chamber cleaning device and method. 3,679,477, Cl. 134-8.000.
Zimmerman, Daniel; and Wolfowitz, Stanley, to Celanese Corporation. Reinforced microporous film. 3,679,540, Cl. 161-159.000.
Zimmermann, Kurt; and Gemander, Georg, to Bosch, Robert, G.m.b.H. Current generator and electronic ignition circuit. 3,678,913, Cl. 123-149.00d.
Zinkl, Andrew: *See—*
Linton, Denton C.; Zinkl, Andrew; and Ballam, Jack, 3,679,399.
Zippel, Christof; and Ill, Manfred, to Zahnradfabrik Friedrichshafen Aktiengesellschaft. Gear pump. 3,679,335, Cl. 418-170.000.
Zirkle, Charles L.: *See—*
Ross, Stephen T.; and Zirkle, Charles L., 3,679,693.
Zoot, Robert Martin; and Scieszinski, James Leo, to ATI, Inc. Noncontacting optical probe. 3,679,307, Cl. 356-4.000.
Zoppi, Bruno, to Fabbrica Italiana Magneti Marelli S.p.A. Packing for air compressor valve. 3,679,333, Cl. 417-571.000.
Zubler, Edward G., to General Electric Company. Gettering processes for electric lamps and similar devices. 3,679,285, Cl. 316-25.000.
Zucker, Fredric E.: *See—*
Nagot, Marc N.; and Zucker, Fredric E., 3,679,449.
Zucker, Fredric E., to Pitney-Bowes, Inc. Numerical encoding keyboard. 3,680,082, Cl. 340-365.000.
Zuhlke & Brandli AG: *See—*
Zuhlke, Gerhard; Brandli, Paul; and Spalti, Max, 3,678,550.
Zuhlke, Gerhard; Brandli, Paul; and Spalti, Max, to Zuhlke & Brandli AG. Apparatus for separating blanks from plastic sheets. 3,678,550, Cl. 29-23.00k.
Zviak, Charles: *See—*

Charle, Roger; Kalopissis, Gregoire; and Zviak, Charles, 3,679,102.

Zweig, Leon A., to Bell Tech Systems, Inc. Apparatus for cleaning members with fluids. 3,679,483, Cl. 134-46.000.

Zwiep, Cornelis Willem; and Van Steen, Bernardus Ignatius Maria, to U.S. Philips Corporation. Switch with a delay mechanism. 3,679,849, Cl. 200-33.00r.

Zysk, Edward D.; and Osovitz, Eugene E., to Engelhard Minerals & Chemicals Corporation. Platinum-rhodium vs. platinum thermocouple having base metal compensating leads. 3,679,491, Cl. 136-236.000.

LIST OF DEFENSIVE PUBLICATIONS

APPLICANTS TO WHOM

DEFENSIVE PUBLICATIONS WERE ISSUED ON THE 25TH DAY OF JULY, 1972

Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O. G. 687.

Arcesi, Joseph A.: *See*—
Petropoulos, Constantine C., and Arcesi. T900,031.

Baker, Melvin C., and A. O. Rogers. Polytetramethylene ether glycol. T900,025, 7–25–72, Cl. 260—615.

Barr, Charles R. Color diffusion transfer process. T900,029, 7–25–72, Cl. 96—3.

Benjamins, Edwin, to E. I. du Pont de Nemours and Co. Chloroprene polymerization process. T900,023, 7–25–72, Cl. 260—92.3.

Britt, John Q., W. O. Griffiths, and M. A. Howe, Jr., to W. R. Grace & Co. Sleeve-wrapped package and method of preparing same. T900,020, 7–25–72, Cl. 206—65.

Caldwell, John R., and W. J. Jackson, Jr. Method for preparing fire retardant polyester fibers. T900,021, 7–25–72, Cl. 117—136.

Continental Oil Co.: *See*—
Gordy, Travis L. T900,017.

Dickert, James E., and W. D. McGillen. Hot melt carpet backing adhesives and article of manufacture and process. T900,016, 7–25–72, Cl. 260—27.

Dietl, Hans K., and A. E. Lewis, Separation of H-isopropylacrylamide from sulfuric acid solutions thereof. T900,014, 7–25–72, Cl. 260—561.

Du Pont de Nemours, E. I., and Co.: *See*—
Benjamins, Edwin. T900,023.

Firestone Tire & Rubber Co., The: *See*—
Johnson, Charles R., and Jones. T900,022.

Gordy, Travis L., to Continental Oil Co. Strippable coating composition. T900,017, 7–25–72, Cl. 117—6.

Grace, W. R., & Co.: *See*—
Britt, John Q., Griffiths, and Howe. T900,020.

Griffiths, William O.: *See*—
Britt, John Q., Griffiths, and Howe. T900,020.

Hollander, Edward R., Jr. Extrusion apparatus for manufacture of thermoplastic pipe. T900,024, 7–25–72, Cl. 18—14.

Holstead, Colin: *See*—
Thomas, David A., and Holstead. T900,030.

Howe, Milton A., Jr.: *See*—
Britt, John Q., Griffiths, and Howe. T900,020.

Jackson, Winston J., Jr.: *See*—
Caldwell, John R., and Jackson. T900,021.

Johnson, Charles R., and W. E. Jones, to The Firestone Tire & Rubber Co. Polymerization process. T900,022, 7–25–72, Cl. 260—80.7.

Jones, Thomas M. Suspensions. T900,026, 7–25–72, Cl. 71—34.

Jones, Warren E.: *See*—
Johnson, Charles R., and Jones. T900,022.

Lee, Robert G., and R. D. Mitchell. Urea-ammonium polyphosphate production. T900,018, 7–25–72, Cl. 71—29.

Lewis, Alan E.: *See*—
Dietl, Hans K., and Lewis. T900,014.

Mann, Horace C., Jr. Production of urea-ammonium sulfate. T900,027, 7–25–72, Cl. 71—28.

Marsh, William D.: *See*—
Murphy, John J., Jr., Smith, and Marsh. T900,019.

McGillen, William D.: *See*—
Dickert, James E., and McGillen. T900,016.

Mitchell, Robert D.: *See*—
Lee, Robert G., and Mitchell. T900,018.

Murphy, John J., Jr., W. C. Smith, and W. D. Marsh. Polyethylene. T900,019, 7–25–72, Cl. 260—878.

Petropoulos, Constantine C., and J. A. Arcesi. Novel pyrylium salts and uses therefor. T900,031, 7–25–72, Cl. 96—1.5.

Rash, Fred H.: *See*—
Thweatt, John G., and Rash. T900,015.

Rogers, Arthur O.: *See*—
Baker, Melvin C., and Rogers. T900,025.

Rush, Kent R. Method for protecting photographic film against aldehydes. T900,028, 7–25–72, Cl. 96—74.

Smith, Winthrope C.: *See*—
Murphy, John J., Jr., Smith, and Marsh. T900,019.

Thomas, David A., and C. Holstead. Light-sensitive compositions and photographic elements. T900,030, 7–25–72, Cl. 96—48.

Thweatt, John G., and F. H. Rash. Process for preparing trimethylhydroquinone. T900,015, 7–25–72, Cl. 260—621.

LIST OF PLANT PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 25TH DAY OF JULY, 1972

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Anderson, Frederic W., to Arthur Bright. Almond tree. 3,242, 7–25–72, Cl. 30.

Bright, Arthur: *See*—
Anderson, Frederic W. 3,242.

Holtkamp, Hermann. African violet. 3,241, 7–25–72, Cl. 69.

Swim, Herbert C., and O. L. Weeks, to O. L. Weeks, d.b.a. Weeks Wholesale Rose Grower. Rose plant. 3,243, 7–25–72, Cl. 11.

Swim, Herbert C., and O. L. Weeks, to O. L. Weeks, d.b.a. Weeks Wholesale Rose Grower. Rose plant. 3,244, 7–25–72, Cl. 11.

Weeks, O. L.: *See*—
Swim, Herbert C., and Weeks. 3,243.
Swim, Herbert C., and Weeks. 3,244.

Weeks Wholesale Rose Grower: *See*—
Swim, Herbert C., and Weeks. 3,243.
Swim, Herbert C., and Weeks. 3,244.

LIST OF DESIGN PATENTEES

Abuza, Zachary P., and S. W. Morgenstern. Vase. 224,413, 7–25–72, Cl. D29—28.

Adams, Bob R. Telephone shelf. 224,395, 7–25–72, Cl. D13—1.

American Cyanamid Co.: *See*—
Openheimer, Robert. 224,457.

American Science and Engineering, Inc.: *See*—
Orfei, John. 224,446.

Anderson, Robert I., and P. E. Crossman, to The Brunswick Corp. Golf game console. 224,423, 7–25–72, Cl. D34—5.

Aurele Marois Inc.: *See*—
Marois, Leonard. 224,426.

Automatic Electric Laboratories, Inc.: *See*—
Janda, George M. 224,409.

Avery Products Corp.: *See*—
Van Arnam, Donald E. 224,453.

Bagguley, Richard B.: *See*—
Mascia, Carmen T., and Bagguley. 224,382.
Mascia, Carmen T., and Bagguley. 224,383.

Barczak, Edward: *See*—
Chilton, Frederick R., Barczak, and Merendino. 224,444.

Baugh, Benjamin C., and R. R. Deines, to Nationwide Trailer Rental System Inc. Asportable trailer. 224,398, 7–25–72, Cl. D14—3.

Bay West Paper Co.: *See*—
Engel, John B. 224,439.

Beach, Barney A., to Health Thru Education, Inc. 224,422, 7–25–72, Cl. D34—5.

Bell Telephone Laboratories, Inc.: *See*—
Genaro, Donald M., Holmes, and Seretny. 224,416.

Box, Theodor. Carrying case for bottles or the like. 224,393, 7–25–72, Cl. D9—177.

Braun Aktiengesellschaft: *See*—
Rams, Dieter. 224,443.

Brewer, William R., to Hamilton C. de Jong. 224,384, 7–25–72, Cl. D9—70.

Brick, Mark A.: *See*—
Spivey, Jefferson. 224,399.

Brunswick Corp., The: *See*—
Anderson, Robert I., and Crossman. 224,423.
Reineman, Richard G., and Schaefer. 224,387.
Reineman, Richard G., and Schaefer. 224,420.
Reineman, Richard G., and Schaefer. 224,421.
Schaefer, George E. 224,419.

Catalano, Paul D., and G. C. Hoehne, to Retention Communications Systems, Inc. Rear projection viewer. 224,447, 7–25–72, Cl. D61—1.

Chilton, Frederick R., E. Barczak, and S. Merendino, to Mattel, Inc. Keyboard for musical instrument or the like. 224,444, 7–25–72, Cl. D56—1.

Chodorow, Ingram S., to Technalytics Inc. Retention suture bridge. 224,458, 7–25–72, Cl. D83—12.
Clinton, Harry M., to Swimrite, Inc. Swimming pool chlorinator. 224,401, 7–25–72, Cl. D23—3.
Computer Terminal Corp.: *See*—
Ray, Jon P., Roche, and Frassanito. 224,415.
Continental Can Co., Inc.: *See*—
Mascia, Carmen T., and Bagguley. 224,382.
Mascia, Carmen T., and Bagguley. 224,383.
Continental Specialties Co., Inc.: *See*—
Ries, Max. 224,392.
Creative Creations, Inc.: *See*—
Feuer, Perry. 224,430.
Crossman, Phillip E.: *See*—
Anderson, Robert I., and Crossman. 224,423.
Dailey, Freda. Cake decorating marker. 224,434, 7–25–72, Cl. D44—29.
Daughtry, Albert E. Crab sizing gauge. 224,440, 7–25–72, Cl. D52—6.
De Christopher, Alfred J., II. Snare drum brush or similar article. 224,445, 7–25–72, Cl. D56—1.
Deines, Robert R.: *See*—
Baugh, Benjamin C., and Deines. 224,398.
De Jong, Hamilton C.: *See*—
Brewer, William R. 224,384.
Dixon, William R., to GTE Sylvania Inc. Television toy. 224,428, 7–25–72, Cl. D34—15.
Dover, Donald H. Seal retaining member for a roller shutter. 224,396, 7–25–72, Cl. D13—6.
Eastman Kodak Co.: *See*—
Laughon, Thomas C. 224,449.
Ebata, Takemi, to Matsuhita Electric Industrial Co., Ltd. Cassette tape recorder. 224,410, 7–25–72, Cl. D26—14.
Edwards, Frank M., to McGaw Division of American Hospital Supply Corporation. Filtration unit for blood and other medical liquids. 224,408, 7–25–72, Cl. D16—2.
Engel, John B., to Bay West Paper Co. Towel dispensing cabinet. 224,439, 7–25–72, Cl. D52—2.
Ferris, Charles E., to Stanwood Plastic Products Ltd. Clothes brush. 224,461, 7–25–72, Cl. D86—13.
Feuer, Perry, to Creative Creations, Inc. Helicopter toy. 224,430, 7–25–72, Cl. D34—15.
Frassanito, John R.: *See*—
Ray, Jon P., Roche, and Frassanito. 224,415.
Fuji Shashin Film Kabushiki Kaisha: *See*—
Fukuda, Masahiro. 224,448.
Fukuda, Masahiro, to Fuji Shashin Film Kabushiki Kaisha. Motion picture camera. 224,448, 7–25–72, Cl. D61—1.
Fusco, Frank C., to Marx, Louis, & Co., Inc. Toy farm house. 224,429, 7–25–72, Cl. D34—15.
GTE Sylvania Inc.: *See*—
Dixon, William R. 224,428.
Gardiner, Robert F. Metal detector. 224,441, 7–25–72, Cl. D52—6.
Genaro, Donald M., R. A. Holmes, and S. E. Seretny; said Genaro, and said Seretny, assignors to Bell Telephone Laboratories, Inc, said Holmes assignor to Western Electric Co. Outdoor telephone enclosure. 224,416, 7–25–72, Cl. D26—14.
General Foods Corp.: *See*—
Stahel, Alwin J., II. 224,425.
Gillette Co., The: *See*—
Perry, Roger L. 224,479.
Poisson, Norman D. 224,481.
Glaberson, Martin, to Warner-Lambert Co. Safety razor or similar article. 224,480, 7–25–72, Cl. D95—3.
Haeger Potteries, Inc., The: *See*—
Kaelke, Edwin K. 224,414.
Haffenden, W. W., Ltd.: *See*—
Wilson-Haffenden, Philip A. 224,385.
Wilson-Haffenden, Philip A. 224,386.
Health Thru Education, Inc.: *See*—
Beach, Barney A. 224,422.
Heck, Daniel C., to Illinois Tool Works Inc. Insulated jumper clip. 224,405, 7–25–72, Cl. D26—1.
Heck, Daniel C., to Illinois Tool Works, Inc. Jumper clip. 224,406, 7–25–72, Cl. D26—1.
Hi-Shear Corp.: *See*—
Jenner, Dee L. 224,402.
Jenner, Dee L. 224,403.
Jenner, Dee L. 224,404.
Hoehne, George C.: *See*—
Catalano, Paul D., and Hoehne. 224,447.
Holmes, Ralph A.: *See*—
Genaro, Donald M., Holmes, and Seretny. 224,416.
Houser, Jennifer J. Toy monkey figure. 224,417, 7–25–72, Cl. D34—2.
Huff, Arlen L., to Sellers Mfg. Inc. Trailer. 224,397, 7–25–72, Cl. D14—3.
Humlong, Robert F., to Wald Mfg. Co., Inc. Bicycle steering post. 224,464, 7–25–72, Cl. D90—9.
Humlong, Robert F., to Wald Mfg. Co., Inc. Bicycle steering post. 224,465, 7–25–72, Cl. D90—9.
Humlong, Richard F., to Wald Mfg. Co., Inc. Bicycle steering post. 224,467, 7–25–72, Cl. D90—9.
Humlong, Richard F., to Wald Mfg. Co., Inc. Bicycle steering post. 224,468, 7–25–72, Cl. D90—9.
Humlong, Robert F., to Wald Mfg. Co., Inc. Bicycle steering post. 224,469, 7–25–72, Cl. D90—9.
Humlong, Robert F., to Wald Mfg. Co., Inc. Bicycle steering post. 224,470, 7–25–72, Cl. D90—9.
Humlong, Robert F., to Wald Mfg. Co., Inc. Bicycle steering post. 224,471, 7–25–72, Cl. D90—9.
Humlong, Robert F., to Wald Mfg. Co., Inc. Bicycle steering post. 224,472, 7–25–72, Cl. D90—9.
Humlong, Robert F., to Wald Mfg. Co., Inc. Bicycle steering post. 224,473, 7–25–72, Cl. D90—9.
Hunter, Edgar H. and M. K. Building structure or the like. 224,394, 7–25–72, Cl. D13—1.
Hunter, Margaret K.: *See*—
Hunter, Edgar H. and M. K. 224,394.
Illinois Tool Works Inc.: *See*—
Heck, Daniel C. 224,405.
Heck, Daniel C. 224,406.
Janda, George M., to Automatic Electric Laboratories, Inc. Telephone operator's answer turret. 224,409, 7–25–72, Cl. D26—14.
Jenner, Dee L., to Hi-Shear Corp. Faucet. 224,402, 7–25–72, Cl. D23—25.
Jenner, Dee L., to Hi-Shear Corp. Faucet. 224,403, 7–25–72, Cl. D23—23.
Jenner, Dee L., to Hi-Shear Corp. Faucet. 224,404, 7–25–72, Cl. D23—25.
Kaelke, Edwin K., to The Haeger Potteries, Inc. Floral vase or the like. 224,414, 7–25–72, Cl. D29—28.
Katz, Maurice D. Circular radio tuning frequency control with transverse indicator faces. 224,407, 7–25–72, Cl. D26—1.
Kawaguchi, Junichi: *See*—
Sakai, Jiro, Kawaguchi, and Noda. 224,456.
Keegan, Robert J. Jack. 224,431, 7–25–72, Cl. D41—1.
Kernan, George L. Holder for highway flares. 224,454, 7–25–72, Cl. D72—1.
Laughon, Thomas C., to Eastman Kodak Co. Design for film cutter. 224,449, 7–25–72, Cl. D61—1.
Lawton, Edward H., to Owens-Illinois, Inc. Bottle. 224,381, 7–25–72, Cl. D9—1.
LeRoue, Lloyd J. Combination hollow fish pole and reel housing. 224,400, 7–25–72, Cl. D22—23.
Lesch, Eugene H. Golf club. 224,418, 7–25–72, Cl. D34—5.
Livingston, Elmer R.: *See*—
Wallace, Frank C., and Livingston. 224,391.
Lyons, Maurice E. Umbrella. 224,462, 7–25–72, Cl. D88—3.
Marks, Robert G. Air-operated press frame. 224,451, 7–25–72, Cl. D63—1.
Marois, Leonard, to Aurele Marois Inc. Sleigh. 224,426, 7–25–72, Cl. D34—15.
Mortin, Robert W. Abrasive type hand tool. 224,390, 7–25–72, Cl. D8—90.
Marx, Louis, & Co., Inc.: *See*—
Fusco, Frank C. 224,429.
Mascia, Carmen T., and R. B. Bagguley, to Continental Can Co., Inc. Can or similar article. 224,382, 7–25–72, Cl. D9—216.
Mascia, Carmen T., and R. B. Bagguley, to Continental Can Co., Inc. Can or similar article. 224,383, 7–25–72, Cl. D9—216.
Matsuhita Electric Industrial Co., Ltd.: *See*—
Ebata, Takemi. 224,410.
Mattel, Inc.: *See*—
Chilton, Frederick R., Barczak, and Merendino. 224,434.
McGaw Division of American Hospital Supply Corp.: *See*—
Edward, Frank M. 224,408.
Merendino, Salvatore: *See*—
Chilton, Frederick R., Barczak, and Merendino. 224,434.
Mikami, Tatsuya, to Tokyo Shibaura Electric Co., Ltd. Desk electronic calculator. 224,452, 7–25–72, Cl. D26—5.
Mikami, Tatsuya: *See*—
Nagata, Kazuteru, and Mikami. 224,450.
Moranduzzo, Dario. Christmas ornament. 224,411, 7–25–72, Cl. D29—1.
Morgenstern, Stanley W.: *See*—
Abuza, Zachary P., and Morgenstern. 224,413.
Nagata, Kazuteru, and T. Mikami, to Tokyo Shibaura Electric Co., Ltd. Copier. 224,450, 7–25–72, Cl. D61—1.
Nationwide Trailer Rental System Inc.: *See*—
Baugh, Benjamin C., and Deines. 224,398.
Nelson, Stuart D.: *See*—
Nelson, Wilford B. and S. D. 224,463.
Nelson, Wilford B. and S. D. Squash knife. 224,463, 7–25–72, Cl. D89—1.
Nishikata, Goro, to Yehan Numata. Digital micrometer. 224,442, 7–25–72, Cl. D52—6.
Noda, Michihiro: *See*—
Sakai, Jiro, Kawaguchi, and Noda. 224,456.
Oberton, Gerald N., to Sanford Research Co. Pen desk set. 224,455, 7–25–72, Cl. D74—5.
Olmschied, Robert T. Combined washer and scaler for fish. 224,436, 7–25–72, Cl. D44—29.
Oppenheimer, Robert, to American Cyanamid Co. Skin test induration report card. 224,457, 7–25–72, Cl. D83—1.
Optical Radiation Corp.: *See*—
Wood, Richard D. 224,437.
Orfei, John, to American Science and Engineering, Inc. Hand magnifier. 224,446, 7–25–72, Cl. D57—1.
Owens-Illinois, Inc.: *See*—
Lawton, Edward H. 224,381.
Pawsat, Carlton P., to Wald Mfg. Co., Inc. Bicycle steering post. 224,466, 7–25–72, Cl. D90—9.
Pawsat, Carlton P., to Wald Mfg. Co., Inc. Bicycle steering post. 224,474, 7–25–72, Cl. D90—9.
Pawsat, Carlton P., to Wald Mfg. Co., Inc. Bicycle steering post. 224,475, 7–25–72, Cl. 90—9.
Pawsat, Carlton P., to Wald Mfg. Co., Inc. Bicycle steering post. 224,476, 7–25–72, Cl. D90—9.
Pawsat, Carlton P., to Wald Mfg. Co., Inc. Bicycle steering post. 224,477, 7–25–72, Cl. D90—9.
Pawsat, Carlton P., to Wald Mfg. Co., Inc. Bicycle steering post. 224,478, 7–25–72, Cl. D90—9.
Perry, Roger L., to The Gillette Co. Single blade unit for a safety razor. 224,479, 7–25–72, Cl. D95—3.
Poisson, Norman D., to The Gillette Co. Razor handle. 224,481, 7–25–72, Cl. D95—3.
Rams, Dieter, to Braun Aktiengesellschaft. Bathroom scale. 224,443, 7–25–72, D52—10.
Ray, Jon P., A. O. Roche, and J. R. Frassanito, to Computer Terminal Corp. Computer terminal. 224,415, 7–25–72, Cl. D26—5.
Reineman, Richard G., and G. E. Schaefer, to The Brunswick Corp. Bench or the like. 224,387, 7–25–72, Cl. D6—58.

Reineman, Richard G., and G. E. Schaefer, to The Brunswick Corp. Bowling ball return rack with provision for bowler identification panel. 224,420, 7–25–72, Cl. D34—5.
Reineman, Richard G., and G. E. Schaefer, to The Brunswick Corp. In-line bowling ball return rack. 224,421, 7–25–72, Cl. D34—5.
Retention Communications Systems, Inc.: *See*—
Catalano, Paul D., and Hoehne. 224,447.
Ries, Max, to Continental Specialties Co., Inc. Jug. 224,392, 7–25–72, Cl. D9—50.
Roche, Austin O.: *See*—
Ray, Jon P., Roche, and Frassanito. 224,415.
Rosenblum, Milton. Combined tape dispensing cabinet and drawers therefor. 224,438, 7–25–72, Cl. D52—2.
Sakai, Jiro, J. Kawaguchi, and M. Noda. Poisonous gas eliminating device of an engine for an automobile. 224,456, 7–25–72, Cl. D77—1.
Sanford Research Co.: *See*—
Oberton, Gerald N. 224,455.
Schaefer, George E.: *See*—
Reineman, Richard G., and Schaefer. 224,387.
Schaefer, George E., to The Brunswick Corp. Cluster bowling ball return rack. 224,419, 7–25–72, Cl. D34—5.
Schaefer, George E.: *See*—
Reineman, Richard G., and Schaefer. 224,420.
Reineman, Richard G., and Schaefer. 224,421.
Schell, Thomas E. Skate board. 224,424, 7–25–72. Cl. D34—15.
Sellers Mfg. Inc.: *See*—
Huff, Arlen L. 224,397.
Seretny, Stanley E.: *See*—
Genaro, Donald M., Holmes, and Seretny. 224,416.
Sicherman, Sondra J., Startime Watch Co., Inc. Combined dial and hands for a watch or the like. 224,432, 7–25–72, Cl. D42—1.
Sicherman, Sondra J., to Startime Watch Co., Inc. Combined dial and hands for a watch or the like. 224,433, 7–25–72, Cl. D42—1.
Spivey, Jefferson, assignor to Mark A. Brick and to said Spivey, a fractional part interest to each. Hunting knife. 224,399, 7–25–72, Cl. D22—1.
Stahel, Alwin J., II, to General Foods Corp. Toy block. 224,425, 7–25–72, Cl. D34—15.
Stahl, Donald P., to Telecommunications Industries, Inc. Illuminable mirror. 224,459, 7–25–72, Cl. D86—10.
Stanwood Plastic Products Ltd.: *See*—
Ferris, Charles E. 224,461.
Startime Watch Co., Inc.: *See*—
Sicherman, Sondra J. 224,432.
Sicherman, Sondra J. 224,433.
Stravitz, David M. Wine bottle rack. 224,435, 7–25–72. Cl. D44—29.
Swimrite, Inc.: *See*—
Clinton, Harry M. 224,401.
Technalytics Inc.: *See*—
Chodorow, Ingram S. 224,458.
Telecommunications Industries, Inc.: *See*—
Stahl, Donald P. 224,459.
Tokyo Shibaura Electrict Co., Ltd.: *See*—
Mikami, Tatsuya. 224,452.
Nagata, Kazuteru, and Mikami. 224,450.
Tomiyama, Eijiro, to Tomy Kogyo Co., Ltd. Toy parking garage. 224,427, 7–25–72, Cl. D34—15.
Tomy Kogyo Co., Ltd.: *See*—
Tomiyama, Eijiro. 224,427.
Van Arnam, Donald E., to Avery Products Corp. Tool for embossing strips of material. 224,453, 7–25–72, Cl. D64—10.
Wald Mfg. Co., Inc.: *See*—
Humlong, Robert F. 224,464.
Humlong, Robert F. 224,465.
Humlong, Robert F. 224,467–73.
Pawsat, Carlton P. 224,466.
Pawsat, Carlton P. 224,474–78.
Wallace, Frank C., and E. R. Livingston. Aerosol can handle. 224,391, 7–25–72, Cl. D9—291.
Wallace, George M. Religious ornament. 224,412, 7–25–72. Cl. D29—23.
Warner-Lambert Co.: *See*—
Glaberson, Martin. 224,480.
Western Electric Co.: *See*—
Genaro, Donald M., Holmes, and Seretny. 224,416.
Wilson-Haffenden, Philip A., to W. W. Haffenden Ltd. Bathing cap. 224,385, 7–25–72, Cl. D2—237.
Wilson-Haffenden, Philip A., to W. W. Haffenden Ltd. Bathing cap. 224,386, 7–25–72, Cl. D2—237.
Wood, Barry B. Folding knife. 224,388, 7–25–72, Cl. D8—99.
Wood, Barry B. Folding knife. 224,389, 7–25–72, Cl. D8—99.
Wood, Richard D., to Optical Radiation Corp. Housing for aircraft search light. 224,437, 7–25–72, Cl. D48—32.
Wright, Earl R. Bootjack. 224,460, 7–25–72, Cl. D86—10.
Yehan Numata: *See*—
Nishikata, Goro. 224,442.

CLASSIFICATION OF PATENTS

ISSUED JULY 25, 1972

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2
212 3,678,514
224R 3,678,515
3,678,516

CLASS 3
27 3,678,517

CLASS 5
9 3,678,518
62 3,678,519
91 3,678,520

CLASS 7
1G 3,678,521

CLASS 8
10.1 3,679,347
17 3,679,349
18 3,679,348
21C 3,679,350
50 3,679,351
62 3,679,352
79 3,679,353
130.1 3,679,354
3,679,355
149.1 3,679,356
152 3,679,357
177AB 3,679,358

CLASS 12
8.1 3,678,522

CLASS 13
9 3,679,806
27 3,679,807

CLASS 15
21D 3,678,523
49 3,678,524
77 3,678,525
97R 3,678,526
99 3,678,527
167R 3,678,528
180 3,678,529
3,678,530
230.19 3,678,531
236 3,678,532
302 3,678,533
345 3,678,534

CLASS 16
2 3,678,535
144 3,678,536

CLASS 19
98 3,678,537
107 3,678,538

CLASS 23
97 3,679,359
109 3,679,360
121 3,679,361
201 3,679,362
223 3,679,363
230PC 3,679,364
231 3,679,365
254R 3,679,366
259 3,679,367
263 3,679,368
273SP 3,679,370
277C 3,679,372
284 3,679,369
288L 3,679,373
295 3,679,371
297 3,679,374
303 3,679,375
304 3,679,376
315 3,679,377
324 3,679,378
367 3,679,379

CLASS 24
68 3,678,539
70SK 3,678,540
74 3,678,541
191 3,678,542
230 3,678,543
265B 3,678,544

CLASS 26
55 3,678,545
63 3,678,546

CLASS 28
1.6 3,678,547
40 3,678,548
72.12 3,678,549

CLASS 29
33K 3,678,550
78 3,678,551
91.1 3,678,552
3,678,553
103 3,678,554
156.8R 3,678,555
157.1R 3,678,556
159.2 3,678,557
160 3,678,558
199 3,679,381
200D 3,678,559
235 3,678,560
267 3,678,561
400 3,678,562
407 3,678,563
419 3,678,564
420.5 3,678,567
441 3,678,565
470.3 3,678,566
473.1 3,678,568
3,678,569
498 3,678,570
527.6 3,678,571
568 3,678,572
571 3,678,573
592 3,678,574
600 3,678,575
603 3,678,576
625 3,678,577

CLASS 30
10 3,678,578
131 3,678,579
267 3,678,580
294 3,678,581

CLASS 33
20D 3,678,582
125 3,678,583
169R 3,678,584
174G 3,678,586
174P 3,678,585
175 3,678,587
180R 3,678,588
241 3,678,590
263 3,678,591
277 3,678,589
289 3,678,592
355 3,678,593

CLASS 34
1 3,678,594
13.4 3,678,595
48 3,678,597
68 3,678,596
128 3,678,598
156 3,678,599
167 3,678,600

CLASS 35
12N 3,678,601
13 3,679,809
35J 3,678,602

CLASS 36
2.5AL 3,678,603
11.5 3,678,604

CLASS 37
141T 3,678,605

CLASS 38
22 3,678,606
102.91 3,678,607

CLASS 40
20R 3,678,608

CLASS 42
1N 3,678,609

CLASS 43
26 3,678,611
43.12 3,678,610
66 3,678,612

CLASS 44
7D 3,679,382
62 3,679,380

CLASS 46
25 3,678,613
39 3,678,614
68 3,678,615
149 3,678,617
151 3,678,616
221 3,678,618

CLASS 47
29 3,678,619
37 3,678,620
58 3,678,621

CLASS 49
28 3,678,622
43 3,678,623
68 3,678,624
381 3,678,625
402 3,678,626
485 3,678,627

CLASS 51
5 3,678,628
9 3,678,629
58 3,678,630
165.77 3,678,631
168 3,678,632
309 3,679,383
337 3,678,633

CLASS 52
1 3,678,634
28 3,678,635
39 3,678,636
79 3,678,637
3,678,638
3,678,639
238 3,678,640
311 3,678,651
484 3,678,641
588 3,678,642
686 3,678,643
747 3,678,644
749 3,678,645

CLASS 53
14 3,678,646
3,678,647
112A 3,678,648
124D 3,678,649
159 3,678,650
255 3,678,660
385 3,678,652

CLASS 55
2 3,678,653
16 3,678,654
128 3,678,655
197 3,678,656
222 3,678,657
230 3,678,658
238 3,678,659
269 3,678,661
387 3,678,662
3,678,663
449 3,678,664

CLASS 56
13.4 3,678,665
119 3,678,666
130 3,678,667
294 3,678,668
314 3,678,669
327 3,678,677
400.14 3,678,670
505 3,678,671

CLASS 57
52 3,678,672
58.95 3,678,673
77.42 3,678,674
140BY 3,678,675
157TS 3,678,676

CLASS 58
16.5 3,678,678
21.15 3,678,679
23R 3,678,680
28A 3,678,681
58 3,678,682
122 3,678,683

CLASS 60
19 3,678,684
23 3,678,685
24 3,678,686
54.6P 3,678,687
54.6R 3,678,688
221 3,678,689
226 3,678,690
239 3,678,691
247 3,678,692

CLASS 61
45C 3,678,693
84 3,678,694

CLASS 62
50 3,678,695
58 3,678,696
274 3,678,697
276 3,678,698
277 3,678,699
323 3,678,700
353 3,678,701
354 3,678,702
371 3,678,703
514 3,678,704

CLASS 63
18 3,678,705

CLASS 64
7 3,678,706
11B 3,678,707
11R 3,678,708

CLASS 65
4 3,679,384
60 3,679,385
3,679,386
99A 3,679,389
105 3,679,387
116 3,679,388

CLASS 66
4 3,678,709
14 3,678,710
86 3,678,711
118 3,678,712
132R 3,678,713

CLASS 68
131 3,678,714
143 3,678,715

CLASS 70
92 3,678,716
232 3,678,717

CLASS 71
29 3,679,390
64E 3,679,391
89 3,679,392
93 3,679,393

CLASS 72
71 3,678,718
95 3,678,719
160 3,678,720
225 3,678,721
238 3,678,722
299 3,678,723
324 3,678,724
344 3,678,725
351 3,678,726
367 3,678,727
455 3,678,728

CLASS 73
1F 3,678,729
3 3,678,730
35 3,678,732
49.3 3,678,756
54 3,678,733
61.1R 3,678,734
67.7 3,678,735
67.8S 3,678,736
71.5 3,678,737
88B 3,678,738
88.5R 3,678,739
93 3,678,740
116 3,678,741
117.3 3,678,742
119A 3,678,743
139 3,678,744
144 3,679,808
167 3,678,745
194A 3,678,731
194R 3,678,746
3,678,747
3,678,748
290R 3,678,749
304R 3,678,750
313 3,678,751
362AR 3,678,757
363.5 3,678,752
389 3,678,753
393 3,678,754
411 3,678,758
419 3,678,754
432PS 3,678,759
453 3,678,760
454 3,678,755
457 3,678,761
505 3,678,762
514 3,678,763

CLASS 74
5 3,678,764
5.46 3,678,765
23 3,678,766
50 3,678,767
54 3,678,768
118 3,678,769
197 3,678,770
217R 3,678,771
220 3,678,772
230.17A 3,678,773
250R 3,678,774
410 3,678,775
459 3,678,776
492 3,678,777
493 3,678,778
516 3,678,779
568R 3,678,780
571M 3,678,781
574 3,678,782
759 3,678,783
3,678,784
3,678,785
782 3,678,786
864 3,678,787

CLASS 75
10 3,679,394
77 3,679,395
81 3,679,396
101 3,679,397
108 3,679,398
109 3,679,399
123AA 3,679,400
134V 3,679,401
165 3,679,402
175.5 3,679,403
178AM 3,679,404

CLASS 81
3.43 3,678,788
64 3,678,789

CLASS 82
38 3,678,790

CLASS 83
95 3,678,791
459 3,678,792

CLASS 84
258 3,678,793
275 3,678,794
293 3,678,795
471 3,678,796

CLASS 85
5R 3,678,797
81 3,678,798

CLASS 86
26 3,678,799

CLASS 89
147 3,678,800

CLASS 90
11C 3,678,802
11D 3,678,801

CLASS 91
39 3,678,803
507 3,678,804

CLASS 92
11 3,678,805
48 3,678,806
70 3,678,807
85 3,678,808
86 3,678,809
119 3,678,810
169 3,678,811

CLASS 93
20 3,678,812
3,678,813
49M 3,678,814

CLASS 94
1.5 3,678,815
39 3,678,816
46 3,678,817

CLASS 95
1.1 3,678,818
4.5R 3,678,819
4.5 3,678,820
10CD 3,678,827
10CE 3,678,821
3,678,824
10CT 3,678,822
3,678,823
3,678,825
3,678,826
11R 3,678,828
3,678,829
13R 3,678,830
13 3,678,831
3,678,832
18 3,678,833
36 3,678,834
44R 3,678,835
45 3,678,836
59 3,678,837
3,678,838
60 3,678,839
85 3,678,840
89R 3,678,841
94R 3,678,842
3,678,843

CLASS 96
1.5 3,679,405
1.6 3,679,406
3,679,407
3,679,408
3 3,679,409
27 3,679,410
29 3,679,411
33 3,679,412
49 3,679,413
67 3,679,414
68 3,679,415
78 3,679,417
86 3,679,418
91R 3,679,419
3,679,420
3,679,421
107 3,679,422
109 3,679,423
3,679,424
114 3,679,425
114R 3,679,426
120 3,679,427
124 3,679,428

CLASS 99
2R 3,679,429
52 3,679,431
71 3,679,416
86 3,679,432
90CB 3,679,430
90HP 3,679,433
107 3,679,434
176 3,679,435
3,679,436
3,679,437
232 3,679,438
340 3,678,844

CLASS 100
4 3,678,845
155R 3,678,846

CLASS 101
93C 3,678,847
125 3,678,848
157 3,678,849
170 3,678,850
260 3,678,851
465 3,678,852

CLASS 102
27R 3,678,853
37.2 3,678,855
37.4 3,678,856
37.8 3,678,854
39 3,678,857
43P 3,678,858
76R 3,678,859

CLASS 104
23FS 3,678,860
172S 3,678,862

172 3,678,861

CLASS 105

4R 3,678,863
3,678,864
369A 3,678,866
369B 3,678,865
377 3,678,867

CLASS 106

1 3,679,439
39R 3,679,440
41 3,679,441
43 3,679,442
50 3,679,443
55 3,679,444
88 3,679,445
120 3,679,446
287 3,679,447

CLASS 108

51 3,678,868

CLASS 110

8R 3,678,869
3,678,870

CLASS 112

162 3,678,871

CLASS 114

16.7 3,678,872
42 3,678,873
66.5P 3,678,874
73 3,678,875
102 3,678,876
125 3,678,877
144R 3,678,878

CLASS 115

35 3,678,879

CLASS 116

67 3,678,880
70 3,678,881
114AD 3,678,882
114Q 3,678,883
121 3,678,884
124 3,678,885
173 3,678,886

CLASS 117

1 3,679,448
3,679,449
3 3,679,450
33.3 3,679,451
33.5 3,679,452
37LE 3,679,453
44 3,679,454
47 3,679,455
63 3,679,456
66 3,679,457
68.5 3,679,458
69 3,679,459
93.1PF 3,679,460
93.31 3,679,461
105.5 3,679,462
107.2R 3,679,463
125 3,679,464
126GE 3,679,465
127 3,679,466
129 3,679,467
138.8F 3,679,468
161UZ 3,679,469
200 3,679,470
201 3,679,471
212 3,679,472
3,679,473
216 3,679,475
236 3,679,476

CLASS 118

48 3,678,888
49 3,678,889
63 3,678,890
402 3,678,891
500 3,678,893
504 3,678,887
3,678,892
624 3,678,894
637 3,678,895
3,678,896
3,678,897

CLASS 119

2 3,678,899
3 3,678,898
4 3,678,900
26 3,678,901
51.11 3,678,902
120 3,678,903

CLASS 123

32EA 3,678,904
52M 3,678,905
90.47 3,678,906
117A 3,678,907
119A 3,678,909
119B 3,678,910
119D 3,678,908
127 3,678,911
136 3,678,912
149D 3,678,913
195C 3,678,914

CLASS 125

11CD 3,678,916
11 3,678,915
12 3,678,917
16R 3,678,918

CLASS 126

92R 3,678,919
344 3,678,920

CLASS 128

1R 3,678,921
2.05F 3,678,922
33 3,678,923
46 3,678,924
92BB 3,678,925
94 3,678,926
130 3,678,927
138 3,678,928
146.6 3,678,929
218M 3,678,930
220 3,678,931
227 3,678,932
296 3,678,933
317 3,678,934
325 3,678,935
402 3,678,936
419P 3,678,937

CLASS 130

27E 3,678,938

CLASS 131

144 3,678,939
260 3,678,940
261B 3,678,941

CLASS 132

5 3,678,942
9 3,678,943
45R 3,678,944
46R 3,678,945
48R 3,678,946
88.7 3,678,947

CLASS 134

8 3,679,477
25R 3,679,478
40 3,679,479
46 3,679,483
167C 3,678,948

CLASS 135

20 3,678,949

CLASS 136

6 3,679,480
24 3,679,481
25 3,679,482
83R 3,679,484
86E 3,679,486
86R 3,679,485
90 3,679,487
100M 3,679,488
175 3,679,489
221 3,679,490
236 3,679,491

CLASS 137

1 3,678,950
14 3,678,951
53 3,678,952
81.5 3,678,953
106 3,678,954
238 3,678,955
242 3,678,956
268 3,678,957
512.1 3,678,958
625.11 3,678,959
625.47 3,678,960
636.2 3,678,961

CLASS 138

39 3,678,962
41 3,678,963
103 3,678,964

CLASS 139

1C 3,678,965
12 3,678,966
35 3,678,967
127R 3,678,968
370 3,678,969

CLASS 140

103 3,678,970
107 3,678,971

CLASS 141

387 3,678,972

CLASS 143

32R 3,678,973

CLASS 144

2R 3,678,974
28.5 3,678,975

CLASS 146

43R 3,678,976

CLASS 148

1.5 3,679,492
6.16 3,679,493
20.3 3,679,494
179 3,679,495
188 3,679,496

CLASS 150

30 3,678,977

CLASS 151

21 3,678,978
37 3,678,979
41.7 3,678,980
41.76 3,678,981

CLASS 152

361 3,678,982

CLASS 156

2 3,679,497
3 3,679,498
7 3,679,499
11 3,679,500
17 3,679,501
3,679,502
54 3,679,503
62 3,679,504
71 3,679,505
72 3,679,506
148 3,679,507
173 3,679,508
182 3,679,509
245 3,679,510
251 3,679,511
272 3,679,512
309 3,679,513
3,679,514
3,679,515
315 3,679,516
345 3,679,517
351 3,679,518
359 3,679,519
406 3,679,520
429 3,679,521
447 3,679,523
477 3,679,522
502 3,679,524
515 3,679,525
580 3,679,526

CLASS 159

6W 3,678,983
25A 3,678,984

CLASS 160

188 3,678,985

CLASS 161

5 3,679,527
24 3,679,528
44 3,679,529
48 3,679,530
3,679,531
59 3,679,532
66 3,679,533
68 3,679,534
109 3,679,535
3,679,536
135 3,679,537
159 3,679,538
3,679,539
3,679,540
175 3,679,541

CLASS 162

1 3,679,542
49 3,679,543
157R 3,679,544

CLASS 164

45 3,678,987
49 3,678,988
51 3,678,986
246 3,678,989
274 3,678,990

CLASS 165

9 3,678,991
10 3,678,992
76 3,678,993
111 3,678,994
185 3,678,995

CLASS 166

.5 3,678,996
53 3,678,997
123 3,678,998
236 3,678,999
273 3,679,000
292 3,679,001

CLASS 171

56 3,679,002

CLASS 172

15 3,679,003
26.5 3,679,004

CLASS 173

128 3,679,005
152 3,679,006

CLASS 174

16R 3,679,810
72B 3,679,811
108 3,679,812

CLASS 175

16 3,679,007
220 3,679,008
374 3,679,009

CLASS 176

68 3,679,545
78 3,679,546
3,679,547

CLASS 177

16 3,679,010
134 3,679,011
147 3,679,012
184 3,679,013
216 3,679,014

CLASS 178

5.1 3,679,813
5.4CD 3,679,814
3,679,817
3,679,818
5.4HE 3,679,816
5.4M 3,679,815
5.8R 3,679,819
6 3,679,820
3,679,821
6.6DC 3,679,822
6.6DD 3,679,823
6.7R 3,679,824
6.8 3,679,825
7.1 3,679,826
7.2 3,679,827
7.6 3,679,828
7.9 3,679,829

CLASS 179

1GP 3,679,833
1SA 3,679,830
2C 3,679,831
15BT 3,679,832
3,679,836
18C 3,679,834
27FD 3,679,835
37 3,679,837
100.2CA 3,679,838
3,679,841
100.2C 3,679,839
100.2E 3,679,842
100.2T 3,679,840
100.41K 3,679,843
115.5R 3,679,844
146R 3,679,845

CLASS 180

6.2 3,679,015
44 3,679,016
73TL 3,679,017
77S 3,679,018
98 3,679,019

CLASS 181

.5H 3,679,021
.5R 3,679,020
31A 3,679,023
31B 3,679,022
49 3,679,024

CLASS 182

20 3,679,025
132 3,679,026

CLASS 188

74 3,679,027
202 3,679,028
321 3,679,029
345 3,679,030

CLASS 192

3,679,031
46 3,679,032
48.7 3,679,033
111A 3,679,034
129A 3,679,035

CLASS 195

6 3,679,548

CLASS 197

18 3,679,036
19 3,679,037
98 3,679,038
175 3,679,039

CLASS 198

1 3,679,040
24 3,679,041
57 3,679,042
105 3,679,043
193 3,679,044
203 3,679,045
213 3,679,046

CLASS 200

6A 3,679,846
3,679,847
8A 3,679,848
33R 3,679,849
37R 3,679,850
148A 3,679,851
153SC 3,679,852
166BH 3,679,854
166J 3,679,853

CLASS 203

12 3,679,549
38 3,679,550

CLASS 204

1T 3,679,551
37R 3,679,552
43 3,679,553
56 3,679,554
67 3,679,555
97 3,679,557
140.5 3,679,559
143R 3,679,558
157.1S 3,679,560
159.15 3,679,561
159.23 3,679,562
180R 3,679,565
181 3,679,564
228 3,679,566
3,679,567
242 3,679,568
269 3,679,556
286 3,679,569
297R 3,679,570
298 3,679,571
300 3,679,572

CLASS 206

39 3,679,047
46R 3,679,048

CLASS 208

10 3,679,573
57 3,679,574
65 3,679,575
74 3,679,576
108 3,679,577
138 3,679,578
166 3,679,563
323 3,679,579
672R 3,679,768

CLASS 209

71 3,679,049
84 3,679,050

CLASS 210

26 3,679,580
33 3,679,581
73 3,679,051
75 3,679,052
86 3,679,053
95 3,679,054
110 3,679,055
221 3,679,056
223 3,679,057
242 3,679,058
321 3,679,059
333 3,679,060
486 3,679,061
3,679,062
526 3,679,063

CLASS 211

43 3,679,064
163 3,679,066
182 3,679,067

CLASS 213

8 3,679,068
43 3,679,069

CLASS 214

1H 3,679,071
1Q 3,679,070
3,679,073
6BA 3,679,072
83.26 3,679,074
84 3,679,075
152 3,679,076
302 3,679,077
3,679,078
3,679,079
450 3,679,080
516 3,679,081
518 3,679,082
730 3,679,083

CLASS 215

9 3,679,084
3,679,085

CLASS 219

10.55 3,679,855
59 3,679,856
69D 3,679,857
76 3,679,858
90 3,679,859
98 3,679,860
117 3,679,861
121EM 3,679,862
121LM 3,679,863
130 3,679,864
131R 3,679,865
137 3,679,866
272 3,679,867
368 3,679,868
432 3,679,869
445 3,679,870
499 3,679,871
501 3,679,872
3,679,873

CLASS 220

10 3,679,086
18 3,679,087
42C 3,679,089
42R 3,679,088
67 3,679,090
85R 3,679,092
90.2 3,679,093

CLASS 221

50 3,679,094
3,679,095
56 3,679,096
163 3,679,097

CLASS 222

23 3,679,098
55 3,679,099
136 3,679,101
192 3,679,102
3,679,103
396 3,679,104
567 3,679,105

CLASS 223

73 3,679,106
88 3,679,100

CLASS 224

5P 3,679,107
8R 3,679,108

CLASS 225

2 3,679,109
47 3,679,110
97 3,679,111

CLASS 226

3 3,679,112
76 3,679,113
97 3,679,114
177 3,679,115
197 3,679,116
199 3,679,117

CLASS 227

10 3,679,118

CLASS 229

1.5 3,679,119
23BT 3,679,120
40 3,679,121
3,679,122
43 3,679,123
51TS 3,679,124
55 3,679,125
62 3,679,126
62.5 3,679,127

CLASS 233

20R 3,679,128
26 3,679,129
3,679,130

CLASS 235

61.7R 3,679,874
3,679,875
3,679,876
92PC 3,679,877
146 3,679,878
150.31 3,679,879
151.34 3,679,880
152 3,679,881
156 3,679,882
175 3,679,883
193.5 3,679,884

CLASS 236

59 3,679,131

CLASS 239

4 3,679,132
34 3,679,133
70 3,679,134
183 3,679,135
188 3,679,136
267 3,679,138
327 3,679,137

CLASS 240

2VC 3,679,885
3 3,679,886
8.16 3,679,887
10.1 3,679,888
25 3,679,889
41.6 3,679,890
52 3,679,891
103R 3,679,893
103 3,679,892

CLASS 241

2 3,679,139
95 3,679,140
106 3,679,141
181 3,679,142
280 3,679,143
300 3,679,144

CLASS 242

54R 3,679,145
55.18 3,679,147
55.53 3,679,146
71.6 3,679,148
75.5 3,679,149
78.1 3,679,150
85 3,679,151
107.4 3,679,152
153 3,679,153

CLASS 244

17.11 3,679,154
32 3,679,155

77R 3,679,156
141 3,679,157

CLASS 246

182C 3,679,894
253 3,679,895

CLASS 248

9 3,679,160
10 3,679,158
22 3,679,159
154 3,679,161
156 3,679,162
223 3,679,163
243 3,679,164
256 3,679,165
399 3,679,166

CLASS 249

173 3,679,167
196 3,679,168

CLASS 250

41.9MB 3,679,896
42 3,679,897
43.5R 3,679,898
3,679,899
49.5B 3,679,900
59 3,679,901
65R 3,679,902
83.3UV 3,679,903
199 3,679,904
206 3,679,905
239 3,679,906

CLASS 251

88 3,679,169
104 3,679,170
148 3,679,171
229 3,679,172

CLASS 252

8.3 3,679,582
8.57 3,679,583
33.4 3,679,584
51.5A 3,679,585
62.1 3,679,586
75 3,679,587
3,679,588
102 3,679,589
104 3,679,590
142 3,679,591
153 3,679,592
170 3,679,593
188.3 3,679,594
301.1R 3,679,596
301.1W 3,679,595
301.2R 3,679,598
301.4F 3,679,597
305 3,679,599
361 3,679,600
432 3,679,603
437 3,679,601
442 3,679,602
455Z 3,679,604
463 3,679,605
514 3,679,606
518 3,679,607
526 3,679,608
527 3,679,609
529 3,679,610
542 3,679,611

CLASS 254

29A 3,679,173
45 3,679,174
51 3,679,175
54 3,679,176
89R 3,679,177
93R 3,679,178
3,679,179
172 3,679,180

CLASS 259

5 3,679,181
9 3,679,182
3,679,183
72 3,679,184

CLASS 260

2EP 3,679,612
2.5M 3,679,614
2.5N 3,679,613
3.3 3,679,615
18R 3,679,616
19R 3,679,617
21 3,679,618
23XA 3,679,619
29.6TA 3,679,620
29.6H 3,679,621
29.7N 3,679,622
31.2R 3,679,623
33.4R 3,679,703
37PC 3,679,629
37SB 3,679,625
37N 3,679,624
41A 3,679,626
41.5R 3,679,627
45.7PS 3,679,628
47CB 3,679,631
47CP 3,679,632
47EN 3,679,630
68DE 3,679,764
75NE 3,679,633
77.5B 3,679,634
78R 3,679,635
3,679,636
78S 3,679,638
78U 3,679,639
78.5T 3,679,640
79.3MU 3,679,641
80.72 3,679,642
85.5R 3,679,643
86.1E 3,679,644
88.3R 3,679,637
3,679,645
91.3PV 3,679,646
3,679,647
91.3VA 3,679,649
93.5S 3,679,650
3,679,651
94.9B 3,679,652
112.5 3,679,653
3,679,654
3,679,655
157 3,679,656
205 3,679,657
209R 3,679,658
3,679,659
211R 3,679,660
233.3R 3,679,661
239D 3,679,662
239.1 3,679,663
239.3P 3,679,664
239.3R 3,679,665
3,679,673
240CA 3,679,668
240D 3,679,669
3,679,671
240G 3,679,670
240J 3,679,672
240R 3,679,667
240.8 3,679,674
242 3,679,675
243R 3,679,676
247.1 3,679,677
249.8 3,679,678
250R 3,679,679
3,679,680
256.4C 3,679,681
256.4F 3,679,682
257 3,679,683
272 3,679,684
276 3,679,685
287R 3,679,686
3,679,687
290H 3,679,689
290P 3,679,688
293.8 3,679,666
294.8F 3,679,691
295AM 3,679,690
296AE 3,679,693
296B 3,679,692
299 3,679,694
302S 3,679,695
306.7 3,679,696
309 3,679,697
3,679,698
310D 3,679,699
315 3,679,700
326.11 3,679,701
326.14R 3,679,702
340.3 3,679,704
340.7 3,679,705
3,679,707
343 3,679,706
343.6 3,679,708
346.1R 3,679,709
346.3 3,679,710
348R 3,679,711
3,679,712
388 3,679,713
397.1 3,679,715
397.3 3,679,714
397.45 3,679,717
3,679,718
3,679,716
397.5 3,679,719
400 3,679,720
408 3,679,721
429.5 3,679,722
429.7 3,679,723
448AD 3,679,724
448.8R 3,679,725
454 3,679,726
455A 3,679,727
463 3,679,728
465D 3,679,729
465.5 3,679,732
471A 3,679,731
475P 3,679,733
479C 3,679,734
3,679,735
3,679,736
485R 3,679,738
486R 3,679,737
488F 3,679,739
524R 3,679,740
525 3,679,741
534M 3,679,742
545R 3,679,743
559T 3,679,744
561N 3,679,745
563R 3,679,746
566AE 3,679,747
583H 3,679,748
586A 3,679,750
586B 3,679,751
3,679,753
586R 3,679,749
3,679,752
587 3,679,754
615BF 3,679,755
620 3,679,766
631.5 3,679,756
653.1T 3,679,757
653.8 3,679,767
659R 3,679,758
663 3,679,759
668C 3,679,760
672NC 3,679,761
672T 3,679,769
674A 3,679,770
676R 3,679,771
677H 3,679,762
3,679,763
680B 3,679,772
683R 3,679,765
683.3 3,679,773
824R 3,679,774
878B 3,679,775
879 3,679,776
897A 3,679,777
932 3,679,778
943 3,679,779
959 3,679,780

CLASS 261

36A 3,679,185
50R 3,679,186
123 3,679,187

CLASS 263

50 3,679,189

CLASS 264

3E 3,679,782
3R 3,679,781
53 3,679,783
73 3,679,784
98 3,679,785
176F 3,679,786
211 3,679,788
249 3,679,789
280 3,679,790
342RE 3,679,791

CLASS 266

3R 3,679,190
23K 3,679,191
27 3,679,192
3,679,193
32 3,679,194
35 3,679,195

CLASS 267

52 3,679,188
140 3,679,196
152 3,679,197

CLASS 269

3 3,679,198
254R 3,679,199

CLASS 270

4 3,679,200

CLASS 271

51 3,679,201
57 3,679,202

CLASS 272

60 3,679,203
81 3,679,204

CLASS 273

29A 3,679,205
32R 3,679,206
80A 3,679,207
95R 3,679,208
129 3,679,209
134C 3,679,210
144B 3,679,211
3,679,212
156 3,679,213
189R 3,679,214

CLASS 274

4D 3,679,215

CLASS 277

3 3,679,216
3,679,217
233 3,679,218

CLASS 279

1SJ 3,679,221
1B 3,679,220
1Q 3,679,219

CLASS 280

36R 3,679,222
37 3,679,223
43.23 3,679,224
47.18 3,679,225
47.19 3,679,226
47.24 3,679,227
150SB 3,679,228
3,679,229
405B 3,679,230
406A 3,679,231
3,679,232
476R 3,679,233
511 3,679,234

CLASS 285

14 3,679,235
39 3,679,236
109 3,679,237
144 3,679,238
176 3,679,239
233 3,679,240
340 3,679,241
417 3,679,242

CLASS 287

20R 3,679,244
21 3,679,243
52 3,679,245
52.05 3,679,246
52.06 3,679,247
87 3,679,248
93 3,679,249
110 3,679,250

CLASS 292

216 3,679,251
349 3,679,252

CLASS 294

31.2 3,679,253
81R 3,679,254

CLASS 296

97C 3,679,255
102 3,679,256

CLASS 297

42 3,679,257
195 3,679,258
231 3,679,261
338 3,679,260
379 3,679,259
427 3,679,262
456 3,679,263

CLASS 299

4 3,679,264
84 3,679,265

CLASS 301

9DN 3,679,266
38R 3,679,267

CLASS 302

14 3,679,268
3,679,269
45 3,679,271

CLASS 303

21F 3,679,270

CLASS 307

88.3 3,679,907
117 3,679,908
133 3,679,988
144 3,679,909
235 3,679,912
251 3,679,911
252W 3,679,910
279 3,679,913
288 3,679,914
289 3,679,915
290 3,679,916
297 3,679,917

CLASS 308

3.6 3,679,274
3.8 3,679,275
9 3,679,272
26 3,679,276
36 3,679,273
187.1 3,679,277
3,679,278
236 3,679,279

CLASS 310

8.1 3,679,918
9.4 3,679,919
10 3,679,920
37 3,679,921
89 3,679,922
128 3,679,923
163 3,679,924
196 3,679,925
214 3,679,926

CLASS 312

6 3,679,280
31 3,679,281
311 3,679,282
312 3,679,065
319 3,679,283

CLASS 313

59 3,679,927
217 3,679,474
225 3,679,928

CLASS 315

5.38 3,679,929
21R 3,679,930
92 3,679,931
106 3,679,932
169TV 3,679,933
200R 3,679,934
201 3,679,935
205 3,679,936

CLASS 316

2 3,679,284
25 3,679,285

CLASS 317

27R 3,679,937
61 3,679,938
62 3,679,939
101A 3,679,941
101C 3,679,940
230 3,679,942
3,679,943
3,679,944
231 3,679,945
234R 3,679,946
3,679,947
3,679,948
238 3,679,949
258 3,679,950

CLASS 318

102 3,679,951
135 3,679,952
138 3,679,953
254 3,679,954
564 3,679,956
572 3,679,955
684 3,679,957

CLASS 320

2 3,679,958

CLASS 321

18 3,679,962
47 3,679,959

CLASS 322

4 3,679,960

CLASS 323

3,679,963
8 3,679,961
9 3,679,964
19 3,679,965
56 3,679,966
79 3,679,967

CLASS 324

.5R 3,679,971
34TK 3,679,968
43R 3,679,969
51 3,679,970
61R 3,679,972
71R 3,679,973
96 3,679,974
118 3,679,975
182 3,679,976

CLASS 325

42 3,679,977
187 3,679,978
315 3,679,979
464 3,679,980

CLASS 329

50 3,679,981
3,679,982
110 3,679,983

CLASS 330

2 3,679,984
4.6 3,679,985
86 3,679,986
107 3,679,987
185 3,679,989

CLASS 331

36C 3,679,990
62 3,679,991
66 3,679,992
78 3,679,993
94 3,679,994
94.5 3,679,995
3,679,996
3,679,997
3,679,998
3,679,999
3,680,000
7.3 3,680,001
7.7 3,680,002
108D 3,680,003

CLASS 332

19 3,680,004

CLASS 333

6 3,680,005
24.2 3,680,006
30R 3,680,007
3,680,008
30 3,680,009
31A 3,680,010
70R 3,680,011
73W 3,680,012
81R 3,680,013

CLASS 335

26 3,680,014
106 3,680,016
228 3,680,015

CLASS 336

213 3,680,017
221 3,680,018

CLASS 337

161 3,680,019
305 3,680,020
312 3,680,021
315 3,680,022
377 3,680,023

CLASS 338

17 3,680,024
32H 3,680,026
32 3,680,025
214 3,680,027
308 3,680,028
334 3,680,029

CLASS 339

2R 3,680,030
14R 3,680,031
17F 3,680,032
46 3,680,033
48 3,680,034
59M 3,680,035
60M 3,680,036
61M 3,680,037
65 3,680,038

CLASS 340

1R 3,680,039
15.5DP 3,680,041
15.5R 3,680,040
18 3,680,042
33 3,680,043
59 3,680,044
146.1BA 3,680,045
146.2 3,680,046
166EL 3,680,049
166R 3,680,048
167R 3,680,050
172.5 3,680,051
3,680,052
3,680,053
3,680,054
3,680,055
3,680,056
3,680,057
3,680,058
173CH 3,680,063
173NR 3,680,059
173R 3,680,061
3,680,062
173.2 3,680,060
174QA 3,680,064
174TF 3,680,066
3,680,067
174YC 3,680,065
213 3,680,068
214 3,680,069
244 3,680,070
248R 3,680,071
249 3,680,072
258A 3,680,073
3,680,074
258B 3,680,047
324A 3,680,075
3,680,076
3,680,077
3,680,078
347DD 3,680,080
3,680,081
347P 3,680,079
365 3,680,082
373R 3,680,083
381 3,680,084

CLASS 343

5CM 3,680,086
5DP 3,680,088
5SC 3,680,087
6.5LC 3,680,090
6.5R 3,680,089
3,680,091
7ED 3,680,093
7TA 3,680,094
7A 3,680,092
3,680,095
7.3 3,680,097
7.7 3,680,096
3,680,098
3,680,099
11R 3,680,100
14 3,680,085
3,680,101
16M 3,680,102
17.1R 3,680,103
17.2PC 3,680,104
3,680,105
18A 3,680,107
18E 3,680,106
100CL 3,680,114
100ME 3,680,111
100SA 3,680,109

	3,680,110	719	3,680,133	184	3,679,286	75	3,679,308	229	3,679,324	148	3,679,794
	3,680,113	740	3,680,134		3,679,292	132	3,679,310		CLASS 417	180	3,679,795
100TD	3,680,108	742	3,680,135		3,679,293		CLASS 356	17	3,679,325	181	3,679,787
	3,680,112	746	3,680,136	211	3,679,294	4	3,679,307	38	3,679,326	211	3,679,796
105R	3,680,115	754	3,680,137		CLASS 351	36	3,679,311	222	3,679,327	265	3,679,797
105	3,680,116		3,680,140	6	3,679,295		3,679,312	270	3,679,328	267	3,679,798
106R	3,680,117	756	3,680,138		CLASS 352	71	3,679,314	300	3,679,329		3,679,799
	3,680,118		3,680,139	84	3,679,296	112	3,679,313	306	3,679,330		3,679,800
	3,680,119	758	3,680,141		CLASS 353	114	3,679,309	477	3,679,331	271	3,679,801
109	3,680,120	770	3,680,142	14	3,679,297	168	3,679,316	503	3,679,332	285	3,679,802
112CA	3,680,122	778	3,680,143	26	3,679,298	180	3,679,315	571	3,679,333	308	3,679,804
112TC	3,680,121	781	3,680,144	67	3,679,299		CLASS 401		CLASS 418	320	3,679,805
113R	3,680,123	786	3,680,145		CLASS 355	109	3,679,317	142	3,679,334		CLASS 425
	3,680,124	792	3,680,146	3	3,679,300	110	3,679,318	170	3,679,335	95	3,679,336
115	3,680,125		3,680,147	4	3,679,301	138	3,679,319		CLASS 424	130	3,679,337
117R	3,680,126	797	3,680,148	17	3,679,302		CLASS 408	48	3,679,792	131	3,679,338
702	3,680,128		CLASS 350	40	3,679,303	99	3,679,320			163	3,679,340
706	3,680,129	87	3,679,287	41	3,679,304		CLASS 416			242	3,679,339
708	3,680,127	149	3,679,288	65	3,679,305	132	3,679,321			244	3,679,341
	3,680,130	150	3,679,289	68	3,679,306	141	3,679,322			275	3,679,342
710	3,680,131	157	3,679,290			183	3,679,323			289	3,679,803
713	3,680,132	164	3,679,291							331	3,679,343
										366	3,679,344
										406	3,679,345
											CLASS 431
										130	3,679,346

CLASSIFICATION OF DESIGNS

D 2—	237	224,385		224,398		23	224,412	D41—	1	224,431	
		224,386	D16—	2 224,408		28	224,413	D42—		224,432	
D 6—	58	224,387	D22—	1 224,399			224,414			224,433	
D 8—	90	224,390		23 224,400	D34—	2	224,417	D44—	29	224,434	
	99	224,388	D23—	3 224,401		5	224,418			224,435	
		224,389		23 224,403			224,419			224,436	
D 9—	1	224,381		25 224,402			224,420	D48—	32	224,437	
	50	224,392		224,404			224,421	D52—	2	224,438	
	177	224,393	D26—	1 224,406			224,422			224,439	
	216	224,382		224,407			224,423		6	224,440	
		224,383		2 224,405		15	224,424			224,441	
	291	224,391		5 224,415			224,425			224,442	
D06—	7	224,384		224,452			224,426		10	224,443	
D13—	1	224,394		14 224,409			224,427	D56—	1	224,444	
		224,395		224,410			224,428			224,445	
	6	224,396		224,416			224,429	D57—		224,446	
D14—	3	224,397	D29—	1 224,411			224,430	D61—		224,447	

		224,448		224,466							
		224,449		224,467							
		224,450		224,468							
D63—		224,451		224,469							
D64—	10	224,453		224,470							
D72—	1	224,454		224,471							
D74—	5	224,455		224,472							
D77—	1	224,456		224,473							
D83—		224,457		224,474							
	12	224,458		224,475							
D86—	10	224,459		224,476							
		224,460		224,477							
	13	224,461		224,478							
D88—	3	224,462	D95—	3 224,479							
D89—	1	224,463		224,480							
D90—	9	224,464		224,481							
		224,465									

CLASSIFICATION OF PLANTS

P. —	11	3,243	P. —	3,244	P. —	30	3,242	P. —	69	3,241	

DEFENSIVE PUBLICATIONS APPLICATIONS

[Notice of Dec. 16, 1969, 869 O.G. 6877]

18—	14A	T900,024		34	T900,026		48	T900,030		136	T900,021		80.7	T900,022		615B	T900,025
71—	28	T900,027	96—	1.5	T900,031		74	T900,028	206—	65S	T900,020		92.3	T900,023		621R	T900,015
	29	T900,018		3	T900,029	117—	6	T900,017	260—	27	T900,016		561N	T900,014		878	T900,019

GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

(U.S. States, Territories and Armed Forces, the Commonwealth of Puerto Rico, and the Canal Zone)

Alabama	1	Kentucky	21	Oregon	41
Alaska	2	Louisiana	22	Pennsylvania	42
American Samoa	3	Maine	23	Puerto Rico	43
Arizona	4	Maryland	24	Rhode Island	44
Arkansas	5	Massachusetts	25	South Carolina	45
California	6	Michigan	26	South Dakota	46
Canal Zone	7	Minnesota	27	Tennessee	47
Colorado	8	Mississippi	28	Texas	48
Connecticut	9	Missouri	29	Utah	49
Delaware	10	Montana	30	Vermont	50
District of Columbia	11	Nebraska	31	Virginia	51
Florida	12	Nevada	32	Virgin Islands	52
Georgia	13	New Hampshire	33	Washington	53
Guam	14	New Jersey	34	West Virginia	54
Hawaii	15	New Mexico	35	Wisconsin	55
Idaho	16	New York	36	Wyoming	56
Illinois	17	North Carolina	37	U.S. Air Force	57
Indiana	18	North Dakota	38	U.S. Army	58
Iowa	19	Ohio	39	U.S. Navy	59
Kansas	20	Oklahoma	40		

(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

1 : 3,678,771	3,678,833	3,679,480	3,680,111	3,679,932	3,678,848
3,678,773	3,678,874	3,679,487	3,680,115	3,679,975	3,678,849
3,679,523	3,678,876	3,679,508	3,680,123	3,679,988	3,678,851
4 : 3,678,593	3,678,878	3,679,559	3,680,131	3,680,082	3,678,856
3,678,658	3,678,883	3,679,591	3,680,135	10 : 3,678,855	3,678,882
3,678,669	3,678,890	3,679,596	3,680,136	3,679,380	3,678,903
3,678,885	3,678,893	3,679,598	3,680,140	3,679,439	3,678,940
3,679,107	3,678,901	3,679,660	3,680,143	3,679,442	3,678,976
3,679,397	3,678,950	3,679,670	3,680,144	3,679,557	3,678,979
3,679,470	3,678,951	3,679,673	7 : 3,679,841	3,679,606	3,678,980
3,679,502	3,678,956	3,679,688	8 : 3,679,001	3,679,620	3,679,018
3,679,785	3,678,972	3,679,689	3,679,283	3,679,627	3,679,026
3,679,913	3,678,981	3,679,720	3,679,371	3,679,652	3,679,028
3,679,963	3,678,994	3,679,733	3,679,518	3,679,746	3,679,039
3,679,964	3,679,023	3,679,734	3,679,834	3,679,776	3,679,064
3,680,028	3,679,029	3,679,814	3,679,991	3,679,805	3,679,067
3,680,051	3,679,037	3,679,831	9 : 3,678,516	11 : 3,678,654	3,679,068
3,680,057	3,679,038	3,679,838	3,678,570	3,678,685	3,679,069
5 : 3,679,231	3,679,045	3,679,840	3,678,572	3,678,932	3,679,090
3,679,957	3,679,049	3,679,848	3,678,649	3,680,130	3,679,098
6 : 3,678,529	3,679,055	3,679,857	3,678,690	12 : 3,678,521	3,679,100
3,678,532	3,679,057	3,679,890	3,678,691	3,678,561	3,679,103
3,678,533	3,679,075	3,679,897	3,678,717	3,678,786	3,679,124
3,678,534	3,679,081	3,679,898	3,678,729	3,678,789	3,679,160
3,678,535	3,679,154	3,679,899	3,678,743	3,678,844	3,679,206
3,678,542	3,679,157	3,679,929	3,678,988	3,678,859	3,679,210
3,678,543	3,679,174	3,679,934	3,679,058	3,678,860	3,679,216
3,678,558	3,679,189	3,679,962	3,679,148	3,678,900	3,679,252
3,678,563	3,679,199	3,679,965	3,679,208	3,679,003	3,679,300
3,678,594	3,679,203	3,679,966	3,679,211	3,679,065	3,679,303
3,678,611	3,679,205	3,679,998	3,679,237	3,679,143	3,679,308
3,678,614	3,679,213	3,680,005	3,679,271	3,679,198	3,679,323
3,678,616	3,679,214	3,680,006	3,679,279	3,679,317	3,679,375
3,678,618	3,679,215	3,680,011	3,679,302	3,679,873	3,679,400
3,678,633	3,679,228	3,680,018	3,679,306	3,679,884	3,679,429
3,678,634	3,679,235	3,680,055	3,679,324	3,679,885	3,679,436
3,678,661	3,679,244	3,680,061	3,679,363	13 : 3,678,531	3,679,437
3,678,677	3,679,257	3,680,063	3,679,448	3,678,650	3,679,458
3,678,686	3,679,264	3,680,073	3,679,449	3,678,651	3,679,467
3,678,694	3,679,288	3,680,075	3,679,475	3,678,887	3,679,483
3,678,725	3,679,291	3,680,078	3,679,567	3,679,109	3,679,494
3,678,737	3,679,307	3,680,080	3,679,614	3,679,881	3,679,499
3,678,745	3,679,320	3,680,084	3,679,679	17 : 3,678,519	3,679,519
3,678,751	3,679,334	3,680,086	3,679,745	3,678,560	3,679,588
3,678,764	3,679,343	3,680,088	3,679,754	3,678,624	3,679,602
3,678,768	3,679,372	3,680,089	3,679,781	3,678,671	3,679,697
3,678,776	3,679,377	3,680,093	3,679,801	3,678,683	3,679,704
3,678,781	3,679,390	3,680,094	3,679,817	3,678,744	3,679,740
3,678,794	3,679,392	3,680,095	3,679,893	3,678,752	3,679,759
3,678,795	3,679,404	3,680,099	3,679,912	3,678,788	3,679,760
3,678,803	3,679,450	3,680,103	3,679,914	3,678,817	3,679,770

3,679,772
3,679,813
3,679,829
3,679,837
3,679,844
3,679,892
3,679,923
3,679,931
3,679,951
3,679,958
3,679,970
3,679,980
3,680,034
3,680,076
3,680,081
3,680,118
18 : 3,678,578
3,678,591
3,678,629
3,678,701
3,678,766
3,678,864
3,678,867
3,678,884
3,678,933
3,678,944
3,678,955
3,679,017
3,679,033
3,679,085
3,679,232
3,679,275
3,679,325
3,679,330
3,679,395
3,679,486
3,679,490
3,679,575
3,679,692
3,679,702
3,679,789
3,679,819
3,679,827
3,679,836
3,679,847
3,679,938
3,679,946
3,679,979
19 : 3,679,239
3,679,854
3,680,091
3,680,097
20 : 3,678,696
3,678,712
3,678,718
3,678,898
3,679,011
3,679,063
3,679,151
3,679,433
3,679,561
3,679,764
21 : 3,678,653
3,678,698
3,679,099
3,679,282
3,679,605
3,679,762
3,679,763
3,679,768
3,679,769
3,679,773
3,679,855
3,679,902
22 : 3,678,537
3,678,945
3,679,212
23 : 3,679,053
3,680,043
24 : 3,678,610
3,678,639
3,678,749
3,678,853
3,678,931
3,679,080
3,679,273
3,679,394
3,679,464
3,679,477
3,679,546
3,679,550
3,679,604
3,679,691
3,679,728
3,679,810
3,679,861
3,679,874
3,679,927
3,680,010
3,680,039
3,680,050
3,680,062
3,680,100
3,680,106
3,680,124
3,680,137

3,680,139
25 : 3,678,564
3,678,631
3,678,635
3,678,637
3,678,675
3,678,700
3,678,742
3,678,753
3,678,756
3,678,762
3,678,796
3,678,819
3,678,830
3,678,831
3,678,832
3,678,836
3,678,841
3,678,880
3,678,919
3,678,937
3,679,014
3,679,021
3,679,171
3,679,281
3,679,293
3,679,295
3,679,304
3,679,336
3,679,360
3,679,409
3,679,411
3,679,417
3,679,440
3,679,444
3,679,447
3,679,484
3,679,512
3,679,514
3,679,524
3,679,625
3,679,632
3,679,671
3,679,736
3,679,766
3,679,783
3,679,859
3,679,875
3,679,910
3,679,972
3,679,989
3,679,990
3,680,009
3,680,036
3,680,038
3,680,083
3,680,105
3,680,109
3,680,110
3,680,133
3,680,142
26 : 3,678,518
3,678,524
3,678,551
3,678,552
3,678,582
3,678,584
3,678,588
3,678,622
3,678,659
3,678,663
3,678,666
3,678,707
3,678,714
3,678,733
3,678,738
3,678,741
3,678,777
3,678,778
3,678,779
3,678,783
3,678,784
3,678,792
3,678,799
3,678,806
3,678,809
3,678,852
3,678,861
3,678,863
3,678,905
3,678,906
3,678,907
3,678,909
3,678,910
3,678,934
3,678,971
3,678,978
3,678,991
3,679,016
3,679,043
3,679,051
3,679,062
3,679,077
3,679,078
3,679,112
3,679,144

3,679,152
3,679,163
3,679,170
3,679,172
3,679,186
3,679,188
3,679,190
3,679,207
3,679,209
3,679,219
3,679,229
3,679,234
3,679,248
3,679,249
3,679,251
3,679,253
3,679,256
3,679,259
3,679,270
3,679,329
3,679,332
3,679,338
3,679,340
3,679,341
3,679,364
3,679,381
3,679,382
3,679,384
3,679,396
3,679,459
3,679,469
3,679,473
3,679,505
3,679,529
3,679,547
3,679,572
3,679,594
3,679,630
3,679,701
3,679,705
3,679,709
3,679,715
3,679,735
3,679,748
3,679,787
3,679,858
3,679,930
3,680,023
3,680,029
3,680,092
27 : 3,678,583
3,678,619
3,678,655
3,678,665
3,678,697
3,678,702
3,678,739
3,678,842
3,678,858
3,679,050
3,679,091
3,679,146
3,679,161
3,679,182
3,679,200
3,679,267
3,679,414
3,679,640
3,679,658
3,679,695
3,680,054
3,680,070
29 : 3,678,553
3,678,668
3,678,866
3,679,137
3,679,225
3,679,305
3,679,326
3,679,592
3,679,653
3,679,782
31 : 3,678,929
3,679,135
3,679,162
33 : 3,678,818
3,680,019
34 : 3,678,523
3,678,530
3,678,574
3,678,580
3,678,581
3,678,641
3,678,726
3,678,801
3,678,834
3,678,871
3,678,872
3,678,899
3,678,930
3,679,010
3,679,020
3,679,025
3,679,047
3,679,066
3,679,125

3,679,130
3,679,136
3,679,141
3,679,149
3,679,227
3,679,266
3,679,289
3,679,313
3,679,351
3,679,367
3,679,419
3,679,452
3,679,462
3,679,465
3,679,491
3,679,498
3,679,503
3,679,525
3,679,535
3,679,536
3,679,538
3,679,540
3,679,573
3,679,576
3,679,578
3,679,611
3,679,621
3,679,622
3,679,636
3,679,637
3,679,642
3,679,645
3,679,659
3,679,661
3,679,664
3,679,683
3,679,684
3,679,696
3,679,698
3,679,711
3,679,712
3,679,713
3,679,717
3,679,725
3,679,729
3,679,732
3,679,747
3,679,749
3,679,750
3,679,751
3,679,800
3,679,816
3,679,818
3,679,826
3,679,832
3,679,869
3,679,872
3,679,904
3,679,907
3,679,911
3,679,940
3,679,961
3,679,977
3,679,981
3,679,982
3,679,984
3,679,987
3,679,993
3,679,994
3,680,000
3,680,001
3,680,014
3,680,037
3,680,056
3,680,060
3,680,066
3,680,067
3,680,068
3,680,074
3,680,108
3,680,119
3,680,125
35 : 3,678,603
3,678,709
3,679,007
3,679,087
3,680,116
3,680,129
36 : 3,678,536
3,678,541
3,678,576
3,678,585
3,678,601
3,678,604
3,678,608
3,678,609
3,678,636
3,678,638
3,678,645
3,678,657
3,678,689
3,678,705
3,678,724
3,678,734
3,678,750
3,678,757

3,678,759
3,678,765
3,678,820
3,678,827
3,678,840
3,678,847
3,678,850
3,678,862
3,678,865
3,678,870
3,678,881
3,678,896
3,678,897
3,678,917
3,678,923
3,678,927
3,678,935
3,678,946
3,678,947
3,678,953
3,678,987
3,678,992
3,678,995
3,679,034
3,679,041
3,679,070
3,679,074
3,679,084
3,679,093
3,679,110
3,679,116
3,679,120
3,679,121
3,679,126
3,679,129
3,679,147
3,679,159
3,679,164
3,679,167
3,679,233
3,679,236
3,679,290
3,679,298
3,679,299
3,679,312
3,679,318
3,679,331
3,679,339
3,679,353
3,679,365
3,679,402
3,679,406
3,679,407
3,679,408
3,679,412
3,679,413
3,679,415
3,679,416
3,679,421
3,679,422
3,679,425
3,679,426
3,679,427
3,679,432
3,679,451
3,679,454
3,679,461
3,679,463
3,679,474
3,679,478
3,679,479
3,679,492
3,679,501
3,679,511
3,679,526
3,679,528
3,679,530
3,679,534
3,679,549
3,679,551
3,679,553
3,679,571
3,679,584
3,679,600
3,679,616
3,679,629
3,679,646
3,679,647
3,679,648
3,679,663
3,679,666
3,679,680
3,679,682
3,679,687
3,679,690
3,679,710
3,679,744
3,679,752
3,679,774
3,679,804
3,679,809
3,679,835
3,679,868
3,679,878
3,679,880
3,679,882

3,679,888
3,679,896
3,679,915
3,679,917
3,679,928
3,679,941
3,679,950
3,679,953
3,679,954
3,679,959
3,679,985
3,679,986
3,679,992
3,679,995
3,679,996
3,679,999
3,680,002
3,680,007
3,680,015
3,680,045
3,680,047
3,680,064
3,680,065
3,680,077
3,680,098
3,680,114
3,680,121
3,680,122
3,680,128
3,680,138
3,680,146
37 : 3,678,514
3,678,538
3,678,592
3,678,621
3,678,667
3,678,713
3,678,892
3,678,939
3,678,962
3,679,224
3,679,310
3,679,460
3,679,515
3,679,516
3,679,719
3,679,903
3,679,983
39 : 3,678,525
3,678,526
3,678,556
3,678,607
3,678,628
3,678,652
3,678,660
3,678,703
3,678,715
3,678,716
3,678,736
3,678,761
3,678,798
3,678,869
3,678,926
3,678,948
3,678,970
3,678,977
3,678,990
3,679,006
3,679,015
3,679,044
3,679,060
3,679,076
3,679,096
3,679,122
3,679,123
3,679,127
3,679,155
3,679,169
3,679,173
3,679,177
3,679,220
3,679,226
3,679,254
3,679,255
3,679,265
3,679,285
3,679,374
3,679,385
3,679,403
3,679,457
3,679,510
3,679,532
3,679,560
3,679,565
3,679,566
3,679,590
3,679,608
3,679,615
3,679,617
3,679,667
3,679,703
3,679,727
3,679,738
3,679,756
3,679,792
3,679,793

3,679,823
3,679,825
3,679,860
3,679,867
3,679,870
3,679,889
3,679,891
3,679,967
3,680,021
3,680,022
3,680,127
3,680,147
40 : 3,678,758
3,678,811
3,679,196
3,679,466
3,679,587
3,679,601
3,679,771
3,679,971
3,680,040
41 : 3,678,808
3,678,886
3,678,973
3,679,824
3,680,003
42 : 3,678,573
3,678,589
3,678,600
3,678,602
3,678,625
3,678,632
3,678,642
3,678,646
3,678,662
3,678,720

3,678,723
3,678,727
3,678,772
3,678,815
3,678,839
3,678,891
3,678,921
3,678,922
3,678,942
3,678,959
3,679,009
3,679,031
3,679,042
3,679,071
3,679,092
3,679,097
3,679,105
3,679,113
3,679,145
3,679,150
3,679,168
3,679,175
3,679,192
3,679,195
3,679,197
3,679,242
3,679,262
3,679,284
3,679,319
3,679,345
3,679,370
3,679,373
3,679,430
3,679,441
3,679,472

3,679,482
3,679,493
3,679,497
3,679,543
3,679,563
3,679,564
3,679,583
3,679,597
3,679,609
3,679,610
3,679,618
3,679,619
3,679,623
3,679,649
3,679,693
3,679,700
3,679,731
3,679,753
3,679,758
3,679,780
3,679,784
3,679,798
3,679,811
3,679,820
3,679,828
3,679,871
3,679,894
3,679,925
3,679,969
3,680,030
3,680,032
3,680,046
3,680,058
3,680,071
3,680,087

3,680,090
3,680,112
3,680,132
44 : 3,678,544
3,678,894
3,679,088
3,679,089
3,679,507
3,679,631
3,679,755
3,679,906
3,679,942
3,680,027
3,680,031
45 : 3,678,547
3,678,672
3,679,258
3,679,635
3,679,786
47 : 3,678,674
3,678,941
3,678,993
3,679,101
3,679,106
3,679,153
3,679,165
3,679,274
48 : 3,678,730
3,678,810
3,678,873
3,678,902
3,678,958

3,678,996
3,678,998
3,679,024
3,679,132
3,679,134
3,679,156
3,679,176
3,679,187
3,679,222
3,679,238
3,679,261
3,679,366
3,679,456
3,679,577
3,679,599
3,679,706
3,679,708
3,679,723
3,679,741
3,679,761
3,679,765
3,679,775
3,679,812
3,679,877
3,679,956
3,679,978
3,680,041
3,680,042
3,680,079
49 : 3,679,004
3,679,056
3,679,061
3,679,376
3,679,399
3,679,593

3,680,104
51 : 3,678,590
3,678,676
3,678,857
3,678,936
3,679,368
3,679,545
3,679,830
3,679,876
3,679,955
3,680,126
53 : 3,678,577
3,678,612
3,678,746
3,678,974
3,679,083
3,679,204
3,679,221
54 : 3,678,567
3,679,000
3,679,926
3,679,973
55 : 3,678,569
3,678,586
3,678,763
3,678,770
3,678,812
3,678,813
3,678,816
3,679,027
3,679,094
3,679,095
3,679,115
3,679,217
3,679,218
3,679,246
3,679,311
3,679,434
3,680,016
3,680,017

Design Patents

4 : 224,418
224,441
6 : 224,384
224,387
224,388
224,389
224,391
224,399
224,401
224,402
224,403
224,404
224,408
224,420
224,421

224,424
224,437
224,444
224,445
224,453
224,454
9 : 224,457
13 : 224,395
17 : 224,382
224,383
224,392
224,405
224,406
224,409
224,414

224,455
18 : 224,397
20 : 224,398
21 : 224,464
224,465
224,466
224,467
224,468
224,469
224,470
224,471
224,472
224,473
224,474

224,475
224,476
224,477
224,478
25 : 224,446
224,451
224,479
224,481
26 : 224,419
224,423
27 : 224,425
224,436
34 : 224,390
224,393

224,412
224,434
224,438
36 : 224,407
224,428
224,429
224,430
224,432
224,433
224,435
224,447
224,449
224,458
224,459

224,462
224,480
37 : 224,394
39 : 224,381
224,413
224,416
41 : 224,440
47 : 224,422
48 : 224,415
224,460
49 : 224,417
53 : 224,463
54 : 224,400
55 : 224,439

Plant Patents

6 : 3,242

3,243

3,244

Defensive Publications Applications

[Notice of Dec. 16, 1969, 869 O.G. 6877]

1 : T900,018
1 : T900,026
T900,027

26 : T900,023
34 : T900,019
36 : T900,025

T900,028
T900,029
T900,031

39 : T900,022
40 : T900,017
45 : T900,020

47 : T900,014
T900,015
T900,016

T900,021
T900,024

U.S. GOVERNMENT PRINTING OFFICE: 0—197z

U.S.
OFFICIAL GAZETTE
UNITED STATES
PATENT OFFICE
VOL. 900

JULY
1972

MICRO PHOTO DIVISION

BELL & HOWELL

S W